NATIONAL POSTGRADUATE MEDICAL COLLEGE OF NIGERIA

COMPETENCY BASED CURRICULUM FOR SENIOR RESIDENCY TRAINING

FACULTY OF OBSTETRICS & GYNAECOLOGY

APPROVED BY THE SENATE ON 23RD JULY, 2020

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FACULTY OF OBSTETRICS AND GYNAECOLOGY

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FACULTY OF OBSTETRICS AND GYNAECOLOGY

A COMPETENCY BASED CURRICULUM

FOR THE SENIOR RESIDENCY TRAINING WITH SUBSPECIALIZATION IN OBSTETRICS AND GYNAECOLOGY

TOWARDS THE AWARD OF THE FELLOWSHIP OF THE NATIONAL POSTGRADUATE MEDICAL COLLEGE

DRAFT RECOMMENDED BY THE COLLEGE DOCIMOLOGY COMMITTEE MEETING ON THE 30TH OF JUNE, 2020 FOR APPROVAL BY THE COLLEGE SENATE

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CHAPTER 1: GENERAL INTRODUCTION TO THE RESIDENCY TRAINING PROGRAMME IN OBSTETRICS AND GYNAECOLOGY

1.0 PREAMBLE

The Faculty of Obstetrics and Gynaecology is one of the sixteen (16) faculties that make up the National Postgraduate Medical College of Nigeria. The National Postgraduate Medical College of Nigeria (NPMCN) was established by the National Postgraduate Medical College Decree No. 67 of 24th September, 1979, now Cap N59 Laws of the Federation 2004, as a body corporate with perpetual succession and a common seal. It was set up to be the tertiary institution at the apex of medical education in Nigeria and its main function is to produce specialists in all branches of medicine and dentistry.

1.1: A SHIFT TO THE COMPETENCY BASED CURRICULUM AND FELLOWSHIP TRAINING WITH SUB-SPECIALIZATION

The Faculty of Obstetrics and Gynaecology has operated a time-based general training curriculum since inception. However, in line with international current best practices in the specialty, the Faculty has decided to adopt the competency based training framework for the training of obstetricians and gynaecologists in Nigeria, hence forth. In addition, training now been comprises of two distinct stages. The

junior residency training now involves three years of general training in Obstetrics and Gynaecology while the Senior Residency consists of three years of sub-specialty training culminating in the award of the fellowship of the National Postgraduate Medical College with sub specialization in one of the defined subspecialty areas.

Residents who do not have interest in sub-specialization will have the opportunity of training as general obstetricians and Gynaecologists by rotating through all the sub-specialty areas during the senior residency programme.

At both stages of training, learning content will be structured within well-defined themes, with clear definition of the levels of competences and milestones that must be achieved at each stage of training. This is complemented by periodic well-defined formative and summative assessments using objective tools at each stage of training to ensure that the goals of the training programmes, in terms of competencies to be attained at each stage of training, are attained.

It must be acknowledged, from the outset, that the committees that drew up the new framework did not set out to "reinvent the wheel". The process of curriculum development has been greatly influenced by the principles enunciated in the following documents: Faculty of Obstetrics and Gynaecology, NPMCN curriculum 2015, the Canadian Medical Education Directives for Specialists (CanMEDS) 2015 Physician framework, the third edition of the RANZCOG Curriculum,2016, Dutch

National Competency Based Curriculum for Obstetrics & Gynaecology (NL), Recommendations for Postgraduate Training and assessment in Obstetrics and Gynaecology, The European Board and College of Obstetrics and Gynaecology (EBCOG)) 2005, ACGME Program Requirements for Graduate Medical Education in Obstetrics and Gynaecology, 2017 and the RCOG Training curriculum. This curriculum has borrowed significantly from the frameworks for competency based learning at the postgraduate level contained in the aforementioned documents, for which the Faculty of Obstetrics and Gynaecology is eternally grateful. However, in adopting principles from frameworks used in more resource rich settings, the faculty is conscious of the need to adapt such to the peculiarities of our very different socio-cultural environment plagued by the relative dearth of both training personnel and well equipped hospitals in a bid to maximize the use of limited resources to achieve similar goals.

1.2. ALLOCATION OF CREDIT UNITS.

The training workload shall be weighted at each stage of the training using the National University Commission (NUC) guidelines for course credit.

1.2.1 Definition of a Credit Unit

One credit unit is allotted to the under listed;

- 1 hour /week of lectures or tutorials or self-instruction for 15 weeks = [15 Lecture hours] or

- 3 hours/week of term paper work for 15 weeks = [45 term-paper hours] or
- 3 hours/week of practical/clinicals for of 15 weeks. = [45 Practical or Clinical hours.

Note: The residency training programme is continuous and not broken into semesters therefore credit allocation was not based on semesters but the total number of hours accumulated at each stage of training.

CHAPTER 2: INTRODUCTION TO THE SENIOR RESIDENCY TRAINING PROGRAMME

The goal of the senior residency training programme is to train personnel in sub-specialties, which are specific areas requiring expertise, practice and theoretical knowledge beyond the competence of the general obstetrician-gynaecologist. The recognized sub-specialty areas in Obstetrics and Gynaecology include Maternal and Fetal Medicine (MFM), Reproductive Medicine (RM), Gynaecologic Oncology (GO), Urogynaecology (UG) and Obstetric and Gynaecologic Ultrasonography (OGU) among others.

The basic philosophy of the programme is to equip the trainee with a balanced education and training in the subspecialty areas of choice. The trainees shall be expected to acquire and develop proficiencies in the management of complicated cases in the area. As part of their training, they shall also be expected to develop appropriate communication skills and professional conducts that will be sensitive to the emotions of the patients and appropriate to the sociocultural norms of the communities in which they practice. The training shall bestow inquisitive minds on the trainees that will enable them carry out meaningful research that will positively impact on the sub-specialty as well teach and engage in community service while continuing on the path of lifelong learning.

This curriculum draws richly from pre-existing curricula of sister colleges such as the Royal College of Obstetricians and Gynaecologists (RCOG), the Royal Australian and New Zealand College of Obstetricians and Gynaecologists RANZCOG), the American College of Obstetricians and Gynaecologists (ACOG), the European Training Programmes and others. We owe them a debt of gratitude.

CHAPTER 3: VISION AND MISSION OF THE SENIOR RESIDENCY PROGRAMME

.3.1 VISION

To train and produce highly competent sub-specialist Obstetricians and Gynaecologists that will deliver high quality and safe health care to women and their families in Nigeria and internationally.

3.2 MISSION

The Faculty will achieve her vision by promoting excellence in competency-based training, faculty-based courses, maintain uniform standards in accreditation of training institutions, ensuring trainees achieve recommended training milestones and minimum Entrustable Professional Activities (EPAs), and provide opportunities for continuing professional development.

The Faculty will also maintain the culture of inter-faculty training collaborations within the National Postgraduate Medical College and with sister colleges regionally and internationally.

3.3 MOTTO

Competency for improving women's health.

3.4 OBJECTIVES

At the end of this training, the successful trainee would have acquired the requisite knowledge, skills, attitude and competencies in the sub-specialty of choice in Obstetrics & Gynaecology that will enable him/her to:

1. BE A MEDICAL EXPERT: Integrate and apply medical knowledge, clinical skills and professional values in the provision of high-quality and safe women-centred care within any community in Nigeria and elsewhere.
2. BE AN EFFECTIVE COMMUNICATOR: Facilitate effective communication with patients, provide relevant patient education during and after medical encounter and be able to utilize communication technology tools to improve health care delivery and best outcomes.
3. BE AN ASTUTE COLLABORATOR**:** Adapt to changing obstetric and gynaecologic practice settings by working with patients, families, and collaborating with diverse healthcare teams, other health professionals, and communities to achieve optimal delivery of care to women.
4. BE AN EFFECTIVE LEADER: Lead and engage with others to contribute to achievement of high-quality health care teams and take responsibility for the delivery of excellent patient care as clinicians, administrators, scholars, and/or teachers.

5. BE AN ADVOCATE: To practice responsibly with high ethical standards and be able to advocate and influence the attainment of high-quality health and well-being of women in the population**.**

6**.** BE A SCHOLAR: Demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of knowledge.

7. BE A PROFESSIONAL**:** To demonstrate commitment to the health and well-being of women and society through ethical practice, professional regulation, and high personal standards of behaviour.

3.5: STRUCTURE AND MODE OF INSTRUCTION

The Senior residency programme will span a minimum of 36 months . The trainees will spend the initial 9 months to 12 months, as applicable, in the field of general obstetrics and gynaecology before moving into the sub-specialty area of interest where they will spend two to two and a quarter years leading to the award of the Fellowship of the National Postgraduate Medical College (FMCOG) with the area of sub-specialization designated. Trainees with no specific sub-specialty area of interest will rotate through the four subspecialty areas of obstetrics and Gynaecology for a period of 9 months each before qualifying for the final examinations..

The mode of instruction shall consists of formal lectures, tutorials, seminar presentations, skills acquisition (ward/grand rounds, clinics and clinical drills), case

presentation, online and onsite update courses and closely supervised implementation of a Dissertation following external formative assessment driven by senior academics in the specialty area of interest.

The resident doctors will be required to submit their Dissertation proposal,,which must be in the sub-specialty area of interest,*within three months of commencement* of the Senior residency programme. The external formative assessment process should not last beyond three months so that the Dissertation proposal should ideally be approved at most six months after commencement of the programme. Resident doctors registered for the M.D programme of the College or who have registered for a PhD programme will be exempted from the Dissertation component of the Final Fellowship examination if they present evidence of successful defence of the M.D or PhD thesis. The Exit Fellowship examination shall take place at least 6 months after the successful defense of an M.D or PhD thesis.

3.6: **TRAINING CENTRES**

Training will be undertaken in accredited institutions nationwide, the updated list of which is available from the college web site (www.npmcn.edu.ng)**.** Part of the training may however be done in approved centres in other centres,where such centres offer the candidate load and content exposure that may not be readily

available locally. Rotation through state of the Art facilities in developed or developing countries ,for a period of at least three months ,will be encouraged.

CORE COLLEGE COURSES

In addition to courses that are specific to the subspecialties, to be indicated under the specific specialties, all residents will be required to participate in all designated college courses. The courses include

PMC 951: Research Methodology

PMC 952: Health Resources Management

PMC 953: Ethics in Clinical Practice

RURAL POSTING

All residents will be required to do a 13 week posting in a secondary health centre adopted by the training institution. The objective is to provide a setting where the resident doctor can practice the skills acquired in general obstetrics and gynaecology with minimum supervision. It is expected that the resident will spending the working days of the week in the hospital except during weekends. The resident will submit a formal report at the end of the posting providing details of the range and number of cases seen including surgeries performed,deliveries taken and assisted vaginal deliveries carried out.Cases beyond his/her capacity are expected to be referred to the parent training institution.

CHAPTER 4: SENIOR RESIDENCY TRAINING IN MATERNAL AND FETAL MEDICINE

4.1. Vision: Provide composite training in Maternal fetal Medicine of the highest possible standard

4.2. Mission: To produce subspecialist in Maternal Fetal Medicine capable of rendering optimum care to the population and also conduct research that will positively impact on service delivery and outcome.

4.3. Aim of the training

To train subspecialists who can function in collaboration with other care-providers to improve maternal and neonatal outcomes of women with high risk pregnancies.

4.4. Objectives of the training

At the completion of the programme, trainees should have acquired the knowledge and skill to enable them practice at the pinnacle of their career in the management of complicated pregnancies. This will be attained through:

a. Acquisition of knowledge of the basic sciences relevant to maternal and fetal medicine
b. Acquisition of knowledge of the pathophysiology, methods of evaluation and treatment of the maternal disorders and pregnancy complications contributing to high fetal risk and early newborn problems.
c. Acquisition of competence in all the modalities of fetal diagnosis and therapy including obstetric ultrasound and ultrasound-guided diagnostic and therapeutic procedures such as amniocentesis, chorionic villus sampling and cordocentesis
d. Attainment of state of the art skills and competence in the management of all acute and chronic problems within the discipline of Maternal and Fetal Medicine

e. Understanding of the concepts of investigative science and the development of skills in research methods
f. Understanding of the organisation of health services in the areas of Maternal and Fetal Medicine
g. Training in the methods of quality assurance and audit
h. Training in leadership for research and development within the subspecialty

4.5. Entry requirements

A pass at the Part 1 Fellowship Examination of the National Postgraduate Medical College of Nigeria.

4.6. Nature of training

Training shall be structured and competency based. From the beginning of the programme, progress shall be monitored by means of the log book.

Fellows undergoing the MFM training shall participate in all relevant activities of the training unit, such as the care of outpatients and in-patients, on call duties, performing ultrasound examinations, intra-uterine procedures and participating in educational activities, including the teaching of medical students, resident doctors in the general Obstetrics and Gynaecology training and other health professionals and their students. The trainee shall also participate in audit and any ongoing basic or clinical research activities of the training unit.

At the recommendation of the National Training Coordinator/Supervisor and with approval of the College Registrar following consideration by the Board of the Faculty of Obstetrics & Gynaecology, NPMCN, the trainee may spend some of the training periods in other centres accredited by the National Postgraduate Medical College as well as recognized centres in other countries where such, in the opinion

of the Training Coordinator or Supervisor, would enhance the quality of training and exposure of the Resident doctor.

4.7. Duration of training

Duration of subspecialty training in Maternal and Fetal Medicine shall be a minimum of Thirty Six months (3 Years) of full time training.

4.8. Structure of the training

The Senior residency training in Maternal and Fetal Medicine Subspecialty programme shall be centrally regulated by the Senate of the National Postgraduate Medical College of Nigeria via recommendations from the Faculty board of Obstetrics and Gynaecology of the NPMCN. The College Senate shall approve the enrollment of all candidates into the training programme as well as the accreditation of training centres following recommendation by the Faculty Board of Obstetrics and Gynaecology.

Each Trainee shall have at least one Supervisor in MFM appointed by the Faculty Board of Obstetrics and Gynaecology of the NPMCN from the onset of the programme. The Supervisor shall facilitate communication between the Faculty/College and the Trainee when necessary, and conduct periodic evaluations of progress of the trainee. There shall be documented evidence of these evaluations.

The Faculty Board shall be responsible for the appointment of Specialists with requisite proficiencies in specific areas of Maternal and Fetal Medicine as accredited trainers and assessors for the Senior Residency programme in MFM following recommendation by the Faculty Executive. .

The Executive Committee of the Faculty shall recommend for approval of the Faculty Board, a subspecialty training Chairman, for tenure of two years renewable for another two years. The responsibility of the Subspecialty Chairman shall be to hose responsibility shall be lead a Committee including two other senior academics in the subspecialty. They will oversee the training programme in the sub-specialty subject to the Faculty Board and ultimately to the College Senate. The members of this committee shall serve for a maximum of four years, after which there must be an interval of at least two years before they are eligible for re-appointment.

The Subspecialty Committee shall be responsible for collation of the academic and clinical activities of all trainees, in order to confirm that the recommended knowledge and competences for each stage of the training are successfully attained, subject to the Executive Committee of the Faculty and the Faculty Board. The Committee shall achieve this by compiling the reports from the accredited specialists at the designated training centres and reviewing the log books.

4.9. Trainee activities/Duration

Programme Length: 36 months (3 years)

Clinical Rotations

a) General Obstetrics and Gynaecology Posting 6 months
b) High Risk Pregnancy Management (antenatal clinic, in-patients, labour and delivery) 6 months.
c) Fetal ultrasound Clinic 6 months
d) Intrauterine Fetal Surgical Unit 6 months
e) Mandatory posting overseas 3 months

f) Genetics Laboratory Posting 2 months

g) Neonatology 2 months

h) Pathology 1 month

i) Anaesthesia 1 month

(i) Rural Posting 3 months

COURSE CONTENT AND TRAINING ACTIVITIES IN MATERNAL AND FETAL MEDICINE

The course content is organized under the following courses:

OBG 956: Medical Complications of Pregnancy

OBG 957: Genetics

OBG 958: Fetal Abnormalities

OBG 959: Antenatal Complications

OBG 960: Intrapartum Complications

OBG 961: Infectious Diseases

OBG 962: Applied research skills

OBG 956: Medical Complications of Pregnancy (3 Credits)

Objectives:

At the end of this module the trainees should be able to carry out appropriate detailed assessment and management of women with medical complications of pregnancy. Such cases include but not limited to the following:

Hypertension

Chronic Hypertension

Definition and diagnosis:

- Measurement of blood pressure in pregnancy, including validated devices.
- Impact of pregnancy on blood pressure.
- Superimposed pre-eclampsia.
- Prevalence (primary and secondary causes).

Pathophysiology:

- Acute hypertension.
- Chronic hypertension (including end-organ damage)

Management:

- Screening for common causes of secondary hypertension.
- Pregnancy management, including fetal monitoring.
- Maternal and fetal risks.
- Contraception.

Pharmacology, including adverse effects

- Anti-adrenergics (e.g. propranolol, labetalol, oxprenolol).
- Calcium channel blockers (e.g. nifedipine).
- Vasodilators (e.g. hydralazine).
- ACE inhibitors (e.g. lisinopril).

Outcome: long-term and cardiovascular risks.

Pre-eclampsia

Definition and diagnosis:

- pregnancy-induced hypertension (PIH)
- proteinuria
- prevalence.

Pathophysiology:

- placental pathology
- endothelial dysfunction and systemic manifestations
- Oxidative stress etc.

Prediction

Management of severe pre-eclampsia:

- maternal and fetal risks
- maternal monitoring, including indications for invasive monitoring)
- fetal monitoring
- management of complications
- HELLP syndrome
- Eclampsia, including differential diagnosis of convulsions, altered consciousness
- cerebrovascular accident
- pulmonary oedema, acute respiratory distress syndrome
- Contraception.

Pharmacology, including adverse effects:

- magnesium sulphate
- frusemide.

Outcome, including long-term cardiovascular risks.

Renal disease

The kidney in normal pregnancy:

- anatomical changes, including hydronephrosis)
- functional changes
- interpretation renal function tests

- fluid and electrolyte balance.

Pre-existing renal disease (CRD): reflux nephropathy, glomerulonephritis, polycystic kidney disease (PKD):

- pathology
- prevalence
- pre-pregnancy assessment
- pregnancy management
- outcome (including genetic implications).

Renal transplant recipients:

- prepregnancy assessment
- diagnosis rejection
- pregnancy management
- long term considerations
- pharmacology (including adverse effects)
- cyclosporine, tacrolimus
- azathioprine
- corticosteroids

Acute renal failure (ARF) in pregnancy and the puerperium

- aetiology and diagnosis, including differential diagnosis of abnormal renal function
- management and outcome
- indications for and principles of renal support.

Urinary tract infection: differential diagnosis proteinuria

Cardiac disease

The heart in normal pregnancy:

- anatomical and functional changes, including differential diagnosis heart murmur
- ECG, echocardiography and assessment of cardiac function.

Congenital heart disease:

- classification (cyanotic and acyanotic) and risks
- prevalence
- functional impact of pregnancy
- prepregnancy assessment, indications for termination of pregnancy
- pregnancy management including prevention and management of endocarditis, thromboembolism, arrhythmias, cardiac failure
- maternal and fetal outcome, including genetic implications)
- Contraception.

Acquired heart disease (rheumatic, ischaemic, valve replacement, Marfan syndrome, arrythmias):

- functional impact of pregnancy
- prepregnancy assessment
- diagnosis, including differential diagnosis chest pain, palpitations
- pregnancy management, including management of cardiac failure.

Pharmacology, including adverse effects:

- diuretics and antihypertensives
- inotropes (e.g. digoxin, ACE inhibitor)
- anti-arrhythmics (e.g. adenosine, mexiletine, lidocaine, procainamide)
- anticoagulants (low-molecular-weight heparin, warfarin)

Peripartum cardiomyopathy:

- diagnosis, including differential diagnosis of breathlessness
- management and outcome
- recurrence risks.

Liver disease

Liver in normal pregnancy:

- anatomical and functional changes

- interpretation of liver function tests in pregnancy.

Pre-existing liver disease (primary biliary cirrhosis, chronic active hepatitis, liver transplant recipient:

- pathology
- functional impact of pregnancy
- pregnancy management
- maternal and fetal outcome
- Contraception.

Obstetric cholestasis:

- pathogenesis
- prevalence
- diagnosis, including differential diagnosis of itching and altered liver function
- pregnancy management, including fetal monitoring
- pharmacology, including adverse effects:
    - ursodeoxycholic acid
    - corticosteroids

Acute fatty liver of pregnancy (AFLP):

- diagnosis, including differential diagnosis of overlap syndromes (e.g. pulmonary embolism)
- management and outcome, including management of liver failure
- recurrence risks.

Viral hepatitis

Respiratory disease

The lungs in normal pregnancy:

- anatomical and functional changes

- Interpretation of chest X-ray and pulmonary function tests, including blood gases in pregnancy.

Pre-existing lung disease (asthma, sarcoidosis, cystic fibrosis, restrictive lung disease):

- pathogenesis
- prevalence
- functional impact of pregnancy
- pregnancy management
- maternal and fetal outcome
- pharmacology, including adverse effects:
    - betasympathomimetics (e.g. salbutamol, terbutaline)
    - theophyllines
    - sodium cromoglicate
    - corticosteroids
- tuberculosis

Acute lung disease in pregnancy: acute respiratory distress syndrome (ARDS), pneumothorax, pneumonia:

- pathogenesis
- diagnosis, including differential diagnosis of chest pain, breathlessness, tachypnoea, acute hypoxaemia)
- oxygen therapy
- management of respiratory failure, including indications for and principles of ventilator support
- pharmacology, including adverse effects
    - amoxicillin and other antibiotics.

Gastrointestinal (GI) disease

The GI tract in normal pregnancy:

- anatomical and functional changes.

Pre-existing GI disease (ulcerative colitis, Crohn’s disease, coeliac disease irritable bowel syndrome):

- pathogenesis.
- functional impact of pregnancy
- pregnancy management
- maternal and fetal outcome
- pharmacology, including adverse effects):
    - sulfasalazine, 5-ASA
    - corticosteroids
    - bulking agents, lactulose
    - antispasmodics.

Pregnancy-related GI disease (hyperemesis gravidarum, reflux oesophagitis, constipation):

- pathogenesis
- prevalence
- diagnosis, including differential diagnosis of vomiting and role of endoscopy
- pregnancy management, including parenteral nutrition and steroids
- pharmacology, including adverse effects
- anti-emetics (e.g. cyclizine, metoclopramide)
- antacids (e.g. magnesium trisilicate)
- H2-receptor antagonists (e.g. ranitidine).

Appendicitis:

- diagnosis, including differential diagnosis of abdominal pain and role of ultrasound
- Management, including antibiotics)
- Maternal and fetal outcome.

Diabetes

Glucose homeostasis in pregnancy.

Pre-existing diabetes:

- pathogenesis and classification
- prevalence

- complications (metabolic, retinopathy, nephropathy, neuropathy, vascular disease)
- pre-pregnancy assessment
- functional impact of pregnancy in uncomplicated and complicated diabetes
- pregnancy management
    - prepregnancy care
    - maternal monitoring (glycaemic control)
    - fetal monitoring
    - intrapartum care
- maternal and fetal outcome, including fetal abnormality, macrosomia, fetal growth restriction
- pharmacology, including adverse effects
- insulin
- oral hypoglycaemics (e.g. metformin)
- Contraception.

Gestational diabetes:

- pathophysiology and diagnosis
- prevalence
- pregnancy management, including diet, insulin and oral hypoglycaemic agents)
- maternal and fetal outcome
- long term risks and management
- Contraception.

Outcome: neonatal complications, management.

Other Endocrine Disease

Endocrine function in pregnancy:

- Thyroid physiology in pregnancy
- Pituitary and adrenal physiology in pregnancy
- Fetal thyroid and adrenal function.

Thyroid disease (hyperthyroidism, hypothyroidism):

- Prevalence
- Pathogenesis (including Graves' disease)
- Diagnosis
- Maternal and fetal outcome, including fetal hypo/hyperthyroidism, developmental delay
- Pregnancy management:
    - maternal monitoring (FT4, TSH, TSH- receptor immunoglobulins)
    - fetal monitoring (ultrasound, blood sampling)
- Pharmacology, including adverse effects:
    - Thyroxine
    - thionamides (e.g. carbimazole, propylthiouracil)
- Management and outcome of neonatal hypo and hyperthyroidism.

Pituitary and adrenal diseases:

- Pathophysiology (hyperprolactinaemia, Cushing syndrome, hypopituitarism, Addison's disease, diabetes insipidus)
- Maternal and fetal outcome
- Pregnancy management
- Pharmacology, including adverse effects:
- Bromocriptine
- Desmopressin acetate.

Neurological Disease

Neurological function in pregnancy

Pre-existing neurological disease (epilepsy, migraine, multiple sclerosis, myasthenia gravis, myotonic dystrophy, idiopathic intracranial hypertension, spina bifida)

- Pathogenesis
- Prevalence
- Functional impact of pregnancy
- Pregnancy management, including:
    - Prepregnancy care

    - Prenatal diagnosis
    - Peripartum care
- Maternal and fetal outcome
- Pharmacology, including adverse effects:
    - phenytoin, valproic acid, carbamazepine, lamotrigine
    - propranolol, tricyclic antidepressants
    - acetazolamide
    - pyridostigmine
- Contraception.

Acute and pregnancy-induced neurological disease (stroke, neuropathies – Bell's palsy, carpal tunnel syndrome, meralgia paresthetica):

- Pathogenesis, stroke (including cerebrovascular disease, cerebral venous thrombosis, subarachnoid haemorrhage), neuropathies
- Diagnosis, including differential diagnoses, headache, convulsions and altered consciousness and cerebral imaging, electrophysiology
- Management, including corticosteroids
- Maternal and fetal outcome.

Connective Tissue Disease

Systemic lupus erythematosus (SLE) and antiphospholipid syndrome (APS):

- Pathogenesis
- Prevalence
- Diagnosis, including classification criteria (Sapporo, American Rheumatoid Association), laboratory investigations)
- Functional impact of pregnancy
- Management, including:
    - Prepregnancy care
    - Maternal and fetal monitoring
- Maternal and fetal outcome
- Pharmacology, including adverse effects:
    - corticosteroids, azathioprine
    - aspirin, low-molecular-weight heparin

- Contraception
- Outcome, including management of neonatal lupus.

Other CTD, including scleroderma, rheumatoid arthritis, mixed CTD:

- Pathogenesis
- Diagnosis
- Functional impact of pregnancy.

Management, including:

- Pre-pregnancy care
- Maternal and fetal monitoring
- Maternal and fetal outcome
- Pharmacology, including adverse effects:
    - aspirin, nonsteroidal anti-inflammatory drugs,
    - corticosteroids
    - chloroquine
    - sulfasalazine
    - azathioprine
    - penicillamine.
- Contraception.

Haematological Disease

Haematological function in pregnancy:

- Red cell and plasma volume changes during pregnancy
- Changes in coagulation system during pregnancy
- Interpretation of haematological and clotting tests.

Anaemia:

- Pathogenesis (iron, folate and vitamin B12 deficiency)
- Prevalence
- Diagnosis
- Maternal and fetal outcome

- Pharmacology, including adverse effects:
    - iron (oral and parenteral)
    - folic acid
    - vitamin B12.

Haemoglobinopathies (sickle cell and thalassaemia syndromes):

- Genetic basis and pathogenesis
- Prevalence
- Prenatal diagnosis
- Fetal monitoring
- Functional impact of pregnancy
- Maternal and fetal outcome
- Management, including vaso-occlusive crisis in sickle cell disease, haematinic and transfusion therapy.

Thrombocytopenia:

- Prevalence
- Diagnosis, including differential diagnoses
- Pathogenesis, including gestational thrombocytopenia, idiopathic thrombocytopenic purpura, haemolytic uraemic syndrome and thrombotic thrombocytopenic purpura)
- Maternal and fetal outcome
- Management, including role of splenectomy
- Pharmacology, including adverse effects:
    - corticosteroids, azathioprine
    - intravenous immunoglobulin G.

Congenital coagulation disorders:

- Genetic basis and pathogenesis, Von Willebrand's disease, haemophilia
- Prevalence
- Refer, where appropriate, for further assessment and treatment.

Manage a case of congenital coagulation disorder in pregnancy:

- Counsel regarding fetal and maternal risks and prenatal diagnosis
- Arrange and interpret appropriate investigations
- Institute and modify therapy
- Plan delivery and postnatal care
- Refer, where appropriate, for further assessment and treatment.

Manage a case of DIC in pregnancy:

- Identify and treat underlying cause
- Arrange and interpret appropriate investigations
- Institute and modify resuscitative and replacement therapy.

Thromboembolic Disease

Venous thromboembolism (VTE) in pregnancy:

- Pathogenesis of deep-venous thrombosis (DVT), pulmonary embolism
- Prevalence
- Risk factors, including thrombophilias
- Diagnosis (clinical, D-dimer, ultrasound , Doppler, chest X-ray, ECG, blood gases, isotope scanning, spiral CT)
- Acute management
- Antithrombotic agents
- Laboratory monitoring
- Thrombolytic therapy and surgery
- Subsequent prophylaxis, including non-pharmacological methods
- Pharmacology, including adverse effects:
    - unfractionated heparin, low-molecular-weight heparin
    - warfarin
    - streptokinase
- Outcome, including postphlebitic syndrome
- Contraception.

Thrombophilia/previous VTE:

- Genetic basis and pathogenesis of congenital and acquired thrombophilias

- Diagnosis of thrombophilia (laboratory investigations and interpretation in pregnancy)
- Risk of VTE (based on thrombophilia, past history)
- Maternal and fetal risks (including fetal loss, pulmonary embolism, fetal growth restriction)
- Management, including;
    - non-pharmacological approaches
    - LMWH, aspirin
    - fetal monitoring
- Contraception.

Psychiatric Disease

Pre-existing psychiatric disease, including depression and bipolar disorders, anxiety disorders, schizophrenia:

- Prevalence
- Functional impact of pregnancy
- Pregnancy and postnatal management
- Role of specialist team, community liaison, mother and baby units
- Psychotherapy
- Pharmacological therapy and risks of withdrawal
- Mother and baby units
- Maternal and fetal risks
- Pharmacology, including adverse effects:
    - tricyclic, selective serotonin reuptake inhibitors
    - phenothiazines (e.g. trifluoperazine, chlorpromazine)
    - butyrophenones (e.g. haloperidol)
    - benzodiazepines
    - lithium, carbamazepine
- Neonatal management, including withdrawal and long-term risks
- Legal issues, including Mental Health Act and consent, child protection.

Pregnancy-induced and related psychiatric disease:

- Risk factors

- Diagnosis, including differential diagnosis of postnatal depression
- Management
- Role of specialist team, community liaison, mother and baby units
- Support and psychotherapy
- Pharmacological therapy and electroconvulsive therapy
- Maternal and neonatal outcome, including recurrence risks.

Substance Abuse

Maternal and fetal effects, including maternal psychosocial effects:

- Alcohol, including acute intoxication
- Cannabis
- Opiates
- Cocaine and crack
- Benzodiazepines
- Amphetamines
- Lysergic acid diethylamide (LSD), phencyclidine (angel dust)
- Toluene (glue sniffing)
- Smoking.

Management:

- Screening methods and diagnosis
- Structure and organisation of antenatal care
- Organisation of drug and alcohol dependency services and links with psychiatric and social services
- Prenatal diagnosis and fetal monitoring
- Overdose
- Detoxification
- Maintenance therapy
- Analgesia in labour
- Smoking cessation strategies (and their effectiveness).

Pharmacology, including adverse effects:

- Methadone
- Benzodiazepines
- Nicotine replacement.

Outcome:

- Neonatal management and outcome, including management of withdrawal
- Legal issues (child protection).

Skin Disease

Physiological changes of pregnancy:

- Skin
- Nails and hair.

Pre-existing skin disease (eczema, psoriasis, acne):

- Pathogenesis
- Prevalence
- Functional impact of pregnancy
- Pregnancy and postnatal management
- Pharmacology, including adverse effects:
    - Emollients
    - topical corticosteroids
    - topical benzoyl peroxide.

Pregnancy-induced skin disease (pemphigoid gestationis, polymorphic eruption of pregnancy, prurigo of pregnancy, pruritic folliculitis of pregnancy):

- Pathogenesis
- Prevalence
- Diagnosis, including skin histological and immunofluorescent findings
- Maternal and fetal outcome
- Management, including plasmapheresis, immunosuppressants
- Pharmacology, including adverse effects:
    - topical and systemic corticosteroids
    - antihistamines (e.g. diphenhydramine)

- Recurrence risks.

Malignant Disease

Maternal and fetal effects of cancer therapies:

- Radiotherapy
    - Fetal dose
    - Teratogenic and fetal risks
- Chemotherapy
    - Pharmacokinetics in pregnancy
    - Teratogenic and fetal risks.

Breast cancer:

- Pathology
- Prevalence
- Diagnosis in pregnancy, including examination, fine-needle aspiration, ultrasound
- Maternal and fetal risks
- Pregnancy and postnatal management
- Surgery
- Adjuvant chemo- and radiotherapy
- Indications for termination or preterm delivery
- Prognosis and recurrence risks
- Contraception.

Gynaecological and other cancer (cervical cancer, ovarian cancer, melanoma):

- Pathology
- Prevalence
- Diagnosis in pregnancy, including colposcopy and biopsy
- Maternal and fetal risks
- Pregnancy and postnatal management
- Surgery, including hysterectomy, salpingo-oophorectomy
- Adjuvant chemo- and radiotherapy
- Palliative care

- Prognosis and recurrence risks.

Clinical Scenarios

Presenting problems in pregnancy:

- Proteinuria
- Abnormal renal function
- Chest pain
- Palpitations
- Heart murmur
- Breathlessness
- Abdominal pain
- Vomiting
- Itching
- Abnormal liver function
- Convulsions
- Headache
- Altered consciousness
- Anaemia
- Thrombocytopenia

Causes (physiological and pathological).

Investigations:

- ECG
- Chest X-ray
- Echocardiogram
- Arterial blood gases
- Lung function tests.

OBG 957: Genetics (2 Credits)

Objectives:

At the end of this course the trainees should be able to carry out appropriate counseling, screening and management in families with a previous genetic disorder, families with previous chromosomal disorder or families with multiple anomalies or syndromic disorders. The trainees should have full knowledge of the following:

Genetics:

- Gene structure and function
- DNA as genetic material
- Replication, transcription and translation
- Mechanisms and effects of mutation
- Inheritance and susceptibility
- Patterns of inheritance of single genes
- Genetic heterogeneity (locus and allele)
- New mutations causing single-gene disorder
- Expression and penetrance
- Multifactorial inheritance (including summation and interaction gene effects, polymorphisms)
- Mitochondrial inheritance.

Service and laboratory aspects:

- Organization and role of clinical genetics services
- DNA testing in clinical practice
- Ethical, societal cultural and religious issues
- Diagnostic, predictive and carrier testing
- Uses and limitations of laboratory tests
- Indications, methods and limitations, including failure and error rates of:
    - cytogenetics
    - fluorescence in situ hybridization (FISH)
    - polymerase chain reaction (PCR)
    - Southern and Northern blotting
    - gene tracking using restriction fragment length and polymorphism
    - enzyme and biochemical analysis.

Methods of prenatal diagnosis, including indications, techniques, complications and proficiency at obtaining informed consent for the procedures:

- Ultrasound
- Amniocentesis
- Chorion villus sampling

- Fetal blood sampling
- Fetal tissue biopsy
- Fetal cells in maternal circulation
- Cell-free fetal DNA in maternal circulation

Single-gene defects:

- Epidemiology and inheritance
- Effects of mutation and associated pathology
- Clinical and pathological features
- Prognosis
- Recurrent risks, including offspring risks and sibling risks
- Prenatal diagnosis of the following defects:
    - Cystic fibrosis
    - Muscular dystrophy
    - Myotonic dystrophy
    - Fragile X
    - Haemoglobinopathies
    - Haemophilias
    - Common inborn errors of metabolism

Chromosomal Disorders

Chromosomes
Structure and function

- Cell division
- Types of abnormality, including structural rearrangements, trisomies, sex chromosome anomalies, extra markers, mosiacism.

Screening and diagnosis:

- Biochemical markers, including alpha-fetoprotein, unconjugated estriol, human chorionic gonadotropin, pregnancy associated plasma protein A, inhibin A
- Ultrasound markers:
    - 11–14 weeks (including nuchal translucency, nasal bone, ductus venosus, Doppler, tricuspid regurgitation, holoprosencephaly)
    - 18–21 weeks (including nuchal oedema/nuchal fold thickness, clinodactyly echogenic bowel, pyelectasis, choroid plexus cysts, nasal bone, short femur/humerus, exomphalus)
- Likelihood ratios and risk calculation
- Screening strategies

    - Accuracy (including detection rate, false positive rate)
    - Service and cost implications
- Laboratory diagnosis (including methods, failure and error rates)
    - cytogenetic analysis
    - FISH
    - PCR.

Mosaicism, including classification and management.

Principles and organization of screening and diagnostic programme for chromosomal anomalies:

- National Screening Committee
- Role of regional screening coordinators
- Quality control and audit.

Chromosomal anomalies:

- Epidemiology
- Pathology
- Clinical and pathological features
- Prognosis
- Recurrence risks
- Prenatal diagnosis of the following chromosomal anomalies:
    - trisomy 21
    - trisomy 18
    - trisomy 13
    - Turner syndrome
    - Klinefelter syndrome
    - XXX
    - Triploidy
    - structural rearrangement, including balanced and unbalanced translocation
    - marker chromosome
    - uniparental disomy
    - mosaicism.

Multiple Anomalies and Syndromic Disorders

Screening and diagnosis:

- Ultrasound features of common syndromes and associations.
- Use of databases to aid diagnosis.

Syndromic anomalies and associations:

- Epidemiology

- Pathology
- Clinical features
- Prognosis
- Inheritance and recurrence risks
- Prenatal diagnosis, including ultrasound features, laboratory diagnosis (where applicable)

Syndromic anomalies:

- DiGeorge
- Fryn's
- Beckwith–Wiedemann
- Meckel–Gruber
- Smith-Lemli-Opitz
- VATER (vertebral defects, imperforate anus, tracheo-oesophageal fistula, radial and renal dysplasia)/VACTERL (vertebral anomalies, anal atresia, cardiac abnormalities, tracheoesophageal fistula and/or oesophageal atresia, renal agenesis and dysplasia and limb defects).

OBG 958: Fetal Anomalies (6 Credits)

Objectives

At the end of this module the trainees should be able to carry out appropriate assessment counselling and management including management of complications and outcomes of a fetus with different anomalies.

Central Nervous System (CNS) Anomalies

Embryology:

- Brain and spinal cord, including postnatal development.

Pathology and epidemiology:

- Pathology of major CNS anomalies
- Incidence of CNS anomalies
- Risk factors
- Associated chromosomal, genetic and syndromic anomalies.

Screening and diagnosis:

- Ultrasound appearance of normal embryonic/fetal/neonatal CNS
- Biometric measurements, including transcerebellar diameter, ventricular size, cisterna magna, nuchal fold

- Ultrasound appearances of CNS anomalies, including differential diagnosis
- Role of antenatal and postnatal MRI.

Management and outcome:

- Acrania, exencephaly and anencephaly
- Spinal bifida
- Encephalocele
- Holoprosencephaly
- Ventriculomegaly
- Dandy Walker spectrum
- Microcephaly
- Intracranial mass
- Cerebellar vermis agenesis/hypoplasia
- Dilated 3rd ventricle

Recurrence risks and prevention

- CNS anomalies:
- Neural tube defects.

Pharmacology:

- Folic acid.

Cardiac Anomalies

Embryology:

- Heart and cardiovascular system
- Circulatory adaptations at birth.

Pathology and epidemiology:

- Pathology of major cardiac anomalies
- Incidence of cardiac anomalies
- Risk factors, including family history
- Associated chromosomal and genetic (including 22q deletions) syndromic anomalies
- Mechanisms of tachy- and brady-arrhymthmias.

Screening and diagnosis:

- Ultrasound appearance of normal fetal heart: 4-chamber view, Left ventricular outflow tract (LVOT), 3-vessel view (3VV), 3-vessel-trachea view (3VT), vascular cross-over, Ventricular septal view, demonstration of Pulmonary veins.
- Biometric measurements, including Chamber sizes, cardiothoracic circumference

- Ultrasound appearances of cardiac anomalies, including differential diagnosis
- Role of 3- and 4-D ultrasound (MPR,TUI, VCI, skeletal and inverse mode, STIC spatio-temporal image correlation)
- Role of M-mode and Doppler echocardiography, including normal transvalvular velocities.

Management and outcome:

- Septal defects
- Hypoplastic heart syndromes
- Outflow tract anomalies
- Cardiac tumours
- Arrhythmias.

Recurrence risks of cardiac anomalies.

Pharmacology, including adverse effects of drugs used to treat fetal arrhythmias:

- Digoxin
- Flecainide
- Amiodarone
- adenosine.

Genitourinary Anomalies

Embryology:

- Genitourinary (GU) system (including physiology of the fetal urinary system).
- Functional adaptations after birth.

Pathology and epidemiology:

- Pathology of major GU anomalies
- Incidence of GU anomalies
- Risk factors
- Associated chromosomal/genetic/syndromic anomalies.

Screening/diagnosis:

- Ultrasound appearance of normal embryonic/fetal/neonatal urinary tract
- Ultrasound appearances of GU anomalies, including differential diagnosis
- Biochemical measurement of fetal urine function
- Neonatal/paediatric investigations, including cystourethrography, MAG3/DMSA scanning.

Management/outcome:

- Renal agenesis

- Renal cystic disease
- Hydronephrosis (Trainees should be able to differentiate between multicystic kidneys and hydronephrosis)
- Duplex kidney, pelvic kidney, horse-shoe kidneys
- Lower urinary tract obstruction
- Bladder/cloacal exstrophy
- Indications for and risks of:
    - Amnioinfusion
    - Vesicocentesis
    - vesicoamniotic shunting.

Recurrence risks:

- GU anomalies.

Pulmonary Abnormalities

Embryology:

- Trachea, lungs and diaphragm
- Functional adaptations after birth.

Pathology and epidemiology:

- Pathology of pulmonary anomalies
- Incidence of pulmonary anomalies
- Risk factors
- Associated chromosomal and genetic/syndromic anomalies.

Screening and diagnosis:

- Ultrasound appearance of normal embryonic/fetal thorax
- Ultrasound appearances of pulmonary anomalies (including differential diagnosis)
- Role of antenatal and postnatal MRI/CT imaging.

Management/outcome:

- Laryngeal/tracheal atresia (including Principles of EXIT procedure)
- Cystic adenomatoid malformation of lung
- Pulmonary sequestration
- Diaphragmatic hernia
- Pleural effusion
- Indications for/risks of:
    - Thoracocentesis
    - pleuroamniotic shunting.

Recurrence risks of pulmonary anomalies.

Abdominal wall and Gastrointestinal Anomalies

Embryology:

- Abdominal wall
- Gastrointestinal tract.

Pathology and epidemiology:

- Pathology of abdominal wall and GI anomalies
- Incidence of abdominal wall and GI anomalies
- Risk factors
- Associated chromosomal/genetic anomalies.

Associated chromosomal/genetic anomalies.

- Associated chromosomal/genetic anomalies. and fetal abdominal wall and GI tract
- Ultrasound appearances of abdominal wall and GI anomalies, including differential diagnosis.

Management and outcome:

- Gastroschisis
- Umbilical hernia/exomphalos
- Oesophageal atresia/tracheo-oesophageal fistula
- Bowel atresia (small and large)
- Meconium ileus
- Hepatic calcification/mass
- Echogenic bowel
- Abdominal cyst
- Isolated ascites.

Recurrence risks of abdominal wall and GI anomalies.

Neck and Face Anomalies

Embryology:

- Fetal face
- Fetal neck
- Fetal thyroid.

Pathology and embryology:

- Pathology of neck and facial anomalies
- Incidence of neck and facial anomalies

- Risk factors
- Associated chromosomal/genetic/syndromic anomalies.

Screening and diagnosis:

- Ultrasound appearance of normal fetal neck and face
- Ultrasound appearances of neck and facial anomalies, including differential diagnosis
- Role of antenatal 3D ultrasound/MRI.

Management and outcome of:

- Cystic hygroma
- Micrognathia
- Macroglossia
- Anopthalmia
- Fetal goitre.

Recurrence risks of neck and facial anomalies.

Skeletal Anomalies

Embryology:

- Fetal skeleton and spine.

Pathology and embryology:

- Pathology of skeletal anomalies
- Incidence of skeletal anomalies
- Risk factors
- Associated chromosomal/genetic/syndromic anomalies.

Screening and diagnosis:

- Ultrasound appearance of normal fetal skeleton
- Ultrasound appearances of skeletal anomalies, including differential diagnosis
- Role of antenatal 3D ultrasound/MRI.

Management and outcome of:

- Thanatophoric dysplasia
- Achondroplasia
- Achondrogenesis
- Osteogenesis imperfecta
- Camptomelic dysplasia

- Talipes
- Polydactyly
- Limb reduction defect
- Sirenomelia
- Sacral agenesis
- Hemivertebra
- Fetal akinesia/hypokinesia sequence
- Fetal arthrogryposis.

Recurrence risks of skeletal anomalies.

Fetal Tumours

Embryology:
- Fetal lymphangiomas and teratomas.

Pathology and embryology:
- Pathology of fetal lymphangiomas and teratomas
- Incidence of fetal tumours.

Screening and diagnosis:
- Ultrasound appearances of fetal
- lymphangiomas/teratomas (including differential diagnosis of complex masses)
- Role of antenatal 3D ultrasound/MRI.

Management and outcome of:
- Cervical lymphangioma/teratoma
- Sacrococcygeal teratoma.

Recurrence risks of fetal teratomas.

Fetal Hydrops

Pathology and embryology:
- Pathology of fetal hydrops, including Immune and non-immune causes
- Incidence of fetal hydrops
- Risk factors
- Associated chromosomal, genetic and syndromic anomalies.

Diagnosis:
- Ultrasound appearance of fetal hydrops, including differential diagnosis

- Role of antenatal echocardiography, 3D ultrasound/MRI and fetal blood sampling.

Management and outcome:

- Red cell alloimmunisation
- Cardiac arrhythmias
- Other non-immune causes of hydrops

Recurrence risks of immune and non-immune hydrops.

Multiple Pregnancies

Embryology:

- Mono- and dizygous twinning
- Placentation: chorionicity/amnionicity

Pathology and embryology:

- Pathology of abnormalities related to twinning and twin placentation, including twin-to-twin and twin placentation, including twin-to-twin arterial perfusion (TRAP) and conjoining
- Incidence of abnormalities related to twinning
- Risk factors for twinning and related anomalies.

Screening and diagnosis:

- Ultrasound determination of zygosity/chorionicity
- Chorionicity and amnionicity
- Ultrasound appearances of abnormalities related to twinning, including differential diagnosis
- Invasive procedures in multiple pregnancies.

Management/outcome:

- Triplet and higher-order multiple pregnancy
- Reductive fetocide and fetal selection
- Discordant anomalies in multiple pregnancy
- TRAP sequence
- Twin Anaemia-Polycythaemia sequence (TAPS)
- Conjoined twins
- TTTS
- Discordant fetal growth (Selective Fetal Growth Restriction)

Disorders of Amniotic Fluid

Embryology and physiology:

- Placenta and membranes
- Formation and function of amniotic fluid.

Pathology and embryology:

- Pathology of disorders of amniotic fluid, including secondary effects of early amnion rupture and oligohydramnios
- Incidence of amniotic fluid disorders
- Risk factors
- Associated chromosomal, genetic and syndromic anomalies.

Diagnosis:

- Ultrasound measurement of amniotic fluid (MVPD & AFI)
- Diagnosis of oligohydramnios and hydramnios, including differential diagnosis
- Invasive procedures in multiple pregnancies, including risks and indications of amnioinfusion and amnioreduction.

Management/outcome:

- Oligo- and anhydramnios
- Hydramnios
- Indications and risks:
    - Amnioinfusion
    - Amnioreduction.
    - Serial reductive amniocentesis

Pharmacology:

- Prostaglandin synthase inhibitors.

Termination of Pregnancy

Law and ethics:

- Abortion law
- Ethics issues relating to termination of pregnancy for fetal anomaly
- Guidance on use of feticide.

Epidemiology:

- Incidence of and indications for termination of pregnancy for fetal anomaly
- Rates of termination of pregnancy for feta anomalies and factors influencing decision.

Pathology:

- Types of perinatal postmortem examination
- Consent for postmortem (and tissue retention)

- Conduct of postmortem examination.

Management (including methods, complications):

- Medical termination of pregnancy
- Surgical termination of pregnancy, including suction aspiration and dilatation and evacuation
- Feticide, including fetal selection, indications and techniques
- Impact of gestational age on complications (physical and psychological).

Pharmacology:

- Mifepristone
- Prostaglandin analogues, including gemeprost, misoprostol
- Potassium chloride.

Bereavement process and milestones; management, including patient counselling

Preconception Counselling

Preconception counselling.

Assessment of risk of fetal anomaly:

- Personal/family history of genetic disorder
- Prior chromosomal disorder/advanced age
- Prior structural anomaly
- Current medical disorder e.g. diabetes
- Teratogen exposure
- Investigations, including genetic testing
- Methods of screening and diagnosis
- Alternative options, including assisted conception and preimplantation diagnosis.

Teratogenicity:

- Mechanisms of teratogenicity
- Information sources, including National Teratology Centre
- Teratogenetic effects of commonly used drugs including:
    - Lithium
    - Warfarin
    - anti-epileptic drugs

    - ACE inhibitors
    - anti-neoplastic drugs
    - Antibiotics
    - Analgesics
- Teratogenic effects of radiological investigations.

OBG 959: Antenatal Complications (3 Credits)

Objectives:

At the end of this module the trainees should be able to carry out appropriate assessment and management of women presenting with or at risk of the following conditions:

Miscarriage and Fetal Death

Pathophysiology:
- Fetal death (early and late)
- Cervical weakness, screening and diagnosis.
- Trophoblastic disease.

Epidemiology:
- Incidence of miscarriage/fetal death
- Risk factors.

Screening:
- Cervical length

Diagnosis, management and outcome:
- Fetal death
- Cervical weakness, including cervical cerclage
- Trophoblastic disease, including registration and principles of follow-up.

Pharmacology:
- Including adverse effects of drugs used in miscarriage/fetal death:
    - Mifepristone
    - prostaglandin analogues.

Poor and Failed Placentation

Normal placental development:

- Vascular development, including mechanisms of spiral artery transformation
- Endocrine function.

Placental pathophysiology:

- Pre-eclampsia
- Fetal growth restriction
- Placental abruption
- Fetal death

Screening, Including Indications for and predictive abilities of:

- Biochemical screening (alphafetoprotein, human chorionic gonadotrophin and other Down syndrome markers)
- Uterine artery Doppler (CW, spectral)
- Placental morphology
- Thrombophilia screening.

Pharmacology, Including adverse effects of drugs used in prevention of poor placentation/fetal death:

- Aspirin
- Low-molecular-weight heparin
- Vitamins C and E.

Fetal Growth Disorders

Fetal growth:

- Pattern, including organ-specific growth
- Regulation, including insulin, IGF system
- Causes, including fetal, placental and maternal factors.

Definitions:

- SGA including constitutionally small and fetal growth restriction (FGR)
- Large-for-gestational age (LGA)/macrosomia.

Screening and diagnosis:

- Previous history
- Clinical examination, including symphysis fundal distance

- Ultrasound morphometry: basic and derived measurements, including estimated fetal weight
- Population-based and customized growth charts.

Tests of fetal wellbeing:

- Technique, indications for and interpretation of:
    - Fetal movement and relevance in hypoxia
    - Doppler (umbilical artery, middle cerebral artery, ductus venosus)
    - Amniotic fluid volume
    - Cardiotocography (including computerized analysis)
    - Biophysical profile including criticism and role in contemporary Obstetrics.

Management:

- Strategy for monitoring
- Timing/mode of delivery
- Management of FGR in previable/extremely preterm fetus and in multiple pregnancy.

Outcome:

- Neonatal complications of SGA/LGA infant
- Long-term health implications of fetal growth disorders.

Antepartum Haemorrhage

Pathophysiology:

- Placental abruption
- Placenta praevia
- Other causes, including vasa praevia
- Morbidly adherent placenta.

Epidemiology:

- Incidence
- Risk factors.

Screening and diagnosis:

- Risk factors, including previous caesarean section
- Ultrasound determination of placental site, including transvaginal ultrasound

Management:

- Clinical and laboratory assessment of:
    - Haemorrhage
    - Coagulation
- Assessment of fetal wellbeing
- Strategy for monitoring
- Timing and mode of delivery
- Appropriate use of blood and blood products

Preterm delivery

Pathophysiology and epidemiology:

- Preterm labour
- PPROM, including chorioamnionitis
- Maternal and fetal conditions leading to elective preterm delivery
- Epidemiology of preterm labour/PPROM.

Screening and diagnosis:

- Risk factors
- Clinical examination
- Fetal fibronectin
- Cervical length
- Vaginal infection, including bacterial vaginosis
- C-reactive protein.

Management:

- In-utero transfer (principles and process)
- Tocolysis, corticosteroid and antibiotic administration
- Mode of delivery
- Strategy for monitoring in PPROM, including laboratory investigations, ultrasound
- Chorioamnionitis

Pharmacology, including adverse effects:

- Corticosteroids (for lung maturity)
- Sympathomimetics, nifedipine, atosiban, indomethacin
- Progesterone
- Erythromycin

Outcome:

- Neonatal complications of preterm birth, including. jaundice, respiratory distress syndrome, retinopathy of prematurity, intraventricular haemorrhage, persistent fetal circulation)
- Long-term health implications of preterm birth (including chronic lung disease, cognitive and neurodevelopmental delay, cerebral palsy)

Multiple pregnancy

Embryology and epidemiology:

- Mono- and dizygous twinning
- Placentation: chorionicity and amnionicity
- Incidence of multiple pregnancy.

Maternal adaptation and antenatal care:

- Blood and cardiovascular system
- Other organ systems
- Organisation of antenatal care.

Screening and diagnosis:

- Ultrasound determination of zygosity/chorionicity
- Aneuploidy
- Structural anomaly
- Morphometry, including criteria for discordancy.

Management and outcome:

- Preterm delivery
- Discordant fetal anomaly
- Discordant growth/FGR
- Single fetal death
- Complications of monochorionic twinning
- Higher-order multiple pregnancy (including fetal reduction).

Malpresentation

Epidemiology and aetiology:

- Incidence
- Likelihood of spontaneous version

- Risk factors.

Screening and diagnosis:
- Clinical examination
- Ultrasound, including diagnosis of associated anomalies.

Management and outcome:
- External cephalic version, including Indications, technique, complications
- Management options in breech presentation, including Induction of labour/caesarean section/attempted vaginal breech delivery
- Management options in unstable lie (including Induction of labour/caesarean section
- Fetal/neonatal risks.

Red Cell Alloimmunisation

Blood group systems/pathophysiology:
- Rhesus, including gene structure and prediction of genotype
- Other red cell antibodies causing HDN, including Kell, Kidd, Duffy, MNS
- Fetal pathology in HDN

Epidemiology:
- Incidence (alloimmunisation and complications)
- Risk factors (sensitising events).

Laboratory methods:
- Antibody detection (antiglobulin tests)
- Kleihauer testing/flow cytometry/rosetting for fetomaternal haemorrhage
- DNA analysis, including use of cell- free fetal DNA in maternal plasma.

Prevention of fetomaternal haemorrhage.

Organisation and effectiveness of screening and prevention programmes.

Management:
- Screening and diagnosis fetal anaemia (including MCA Doppler)
- Fetal transfusion therapy
- Hydrops

Outcome:

- Neonatal complications of HDN, including Hyperbilirubinaemia, anaemia
- Management of complications, including Exchange transfusion
- Long term implications of HDN.

Pharmacology:

- Anti-D immunoglobulin.

Platelet Alloimmunisation

Platelet groups/pathophysiology:

- human platelet antigen system
- Fetal and neonatal pathology in AIT.

Epidemiology:

- Incidence (alloimmunisation and complications).

Laboratory methods:

- Antibody detection
- DNA analysis.

Management:

- Assessment of risk of fetal haemorrhage
- Diagnosis of fetal thrombocytopenia
- Therapy options (maternal immunoglobulin therapy/fetal transfusion therapy).

Outcome:

- Neonatal complications of AIT
- Management of AIT, including platelet transfusion
- Long-term implications of AIT.

Pharmacology:

- Intravenous immunoglobulin, including effectiveness and adverse effects.

Gynaecological Problems in Pregnancy

Pathology:

- Uterine fibroids
- Ovarian tumours (benign and malignant)
- Complications encountered during pregnancy

Epidemiology:

- Incidence of pelvic tumours and complications
- Acute abdomen in pregnancy.

Diagnosis:

- Ultrasound diagnosis, including assessment of risk of malignancy
- Complications, including differential diagnosis of acute abdomen in pregnancy

Management:

- Indications for surgical intervention
- Analgesia
- Anaesthesia
- Role of radiotherapy and chemotherapy in ovarian malignancies.

OBG 960: Intrapartum Complications (4 Credits)

Objective

At the end of this module the trainees should be able to understand the physiology of normal labour, the factors that can adversely affect progress of labour, the organization and management of the delivery suite and should also be able to carry out appropriate assessment and management of maternal and fetal complications that can occur in labour and the methods, indications for and complications of anaesthesia.

Labour Ward Management

Organisation and management of labour ward:

- Staffing structure
- Equipment
- Delivery suite forum
- Emergency skills and drills
- Guidelines
- Audit, including collection and analysis of delivery suite workload.

Risk management on the labour ward:

- Principles of risk management
- Critical incident reporting
- Review of serious adverse events on the labour ward

Failure to Progress in labour

Anatomy and physiology:

- Anatomy of pelvis and fetal skull
- Regulation of myometrial contractility
- Stages of labour.

Pathophysiology, including causes and consequences of poor progress in labour:

- Inefficient uterine action
- Malposition
- Relative and absolute cephalopelvic disproportion
- Fetal acid base status
- Postpartum uterine atony.

Management:

- Maternal support
- Amniotomy
- Mobilisation/position
- Analgesia
- Oxytocin
- Manual rotation
- Instrumental vaginal delivery including rotational and non-rotational deliveries.

- Caesarean section.

Pharmacology, including adverse effects:
- Oxytocin.

Non-reassuring Fetal Status in labour

Pathophysiology:
- Regulation of fetal heart rate
- Fetal acid base balance
- Hypoxic ischaemic encephalopathy (HIE).

Fetal monitoring in labour, including principles, interpretation and predictive value of fetal:
- Meconium-stained liqour
- Cardiotocography (CTG)
- ECG
- Pulse oximetry
- Ph, blood gases and lactate
- Oligohydramnios
- Doppler.

Management:
- Position/oxygen therapy
- Acute tocolysis
- Amnioinfusion
- Emergency operative delivery
- Neonatal cooling for birth asphyxia: indications and methods.

Pharmacology, including adverse effects:
- Terbutaline/ritodrine.

Outcome:
- Neonatal complications of HIE, including seizures, abnormal neurological function, organ failure
- Long-term health implications of HIE, including Cerebral palsy.

Non-Reassuring Fetal Status in labour

Epidemiology and aetiology:

- Incidence
- Predisposing factors.

Intrapartum care in twins:

- Physiology of labour
- Fetal monitoring
- Inter-twin interval
- Effects of chorionicity.

Diagnosis and management:

- Clinical exam
- Ultrasound
- Risks and benefits of caesarean section in:
    - breech presentation
    - transverse/oblique lie
    - twins and higher order multiple pregnancy
- Breech delivery:
    - manoeuvres (assisted breech delivery and breech extraction)
    - complications, including problems with after coming head
- Twin delivery:
    - external cephalic version (ECV) for second twin
    - artificial rupture of membranes/oxytocin in second stage
    - operative delivery of second twin.

Shoulder dystocia

Epidemiology and aetiology:

- Incidence
- Predisposing factors
- Risks of recurrence

Management:

- Clinical
- Documentation, including the use of an event scribe, checklist, and documentation of who was present, when, and which shoulder was anterior.

- Clinical drills and emergency preparedness protocols procedures, e.g. HELPERR
- Advanced manoeuvres, including indications, procedure and risks of:
    - Zavanelli manoeuvre
    - Symphysiotomy.

Outcome:

- Neonatal complications of birth trauma, including intraventricular haemorrhage, bone fractures, brachial plexus injury, hypoxic-ischaemic encephalopathy
- Management of complications
- Long-term outcome.

Genital Tract Trauma

Anatomy and physiology:

- Perineum and pelvic floor
- Anal sphincter function.

Epidemiology and aetiology:

- Incidence
- Predisposing factors.

Diagnosis and management:

- Clinical examination
- Ultrasound (endoanal)
- Surgical repair
- Anal sphincter
- Cervix/uterus
- Postpartum haemorrhage
- Immediate and long term management of Obsteric anal sphincter injury, including antibiotics, techniques of repair, sutures, laxative and pelvic floor exercise.

Outcome:

- Long-term health implications, including pain, incontinence
- Implications for future pregnancy and delivery options.

Postpartum Haemorrhage and Other Third-stage Problems

Anatomy:

- Pelvic anatomy and blood supply.

Epidemiology and aetiology of PPH

- Incidence
- Predisposing factors, including adherent placenta, uterine inversion.

Laboratory methods:

- Diagnosis and monitoring of disseminated intravascular coagulation
- Cross-matching

Management of massive PPH:

- Maternal resuscitation, including use of:
    - crystalloid/colloid iv fluids
    - blood and blood products
- Medical management
- Surgical management
- Intrauterine balloon tamponade
- Brace suture
- Systematic devascularization, including uterine artery and internal iliac artery ligation
- Hysterectomy
- Interventional radiology (vascular balloons and coils).

Pharmacology, including adverse effects of drugs used in PPH:

- Oxytocin, ergometrine
- 15 methyl prostaglandin F2
- Misoprostol
- Carbetocin
- Tranexamic acid
- Recombinant factor VIIa.

Caesarean Section

Epidemiology:

- Risks of caesarean section:
    - visceral damage

    - infection
    - venous thrombosis
    - Haemorrhage
    - Return to theatre
- Risks associated with previous caesarean section:
    - uterine rupture
    - abnormal placentation
- Vaginal birth after caesarean section (VBAC):
    - success rates
    - complication rates.

Diagnosis:

- Ultrasound determination of placental site

Management:

- CS
- Surgical technique, including abdominal wall and uterine entry/closure
- Prevention of complications, including thrombosis, infection
- Impact of following conditions:
    - placenta praevia
    - morbidly adherent placenta
    - fetal anomaly
    - extreme prematurity
    - prior abdominal surgery.
- VBAC, including:
    - use of oxytocics
    - role of induction of labour
    - fetal monitoring

Anaesthesia and Analgesia

Anatomy and physiology:

- Spinal cord
- Innervation of pelvic organs
- Pain.

Management:

- Pain management during labour:
    - nonpharmacological techniques
    - inhalational analgesia
    - systemic analgesia (opioids)
- Regional analgesia and anaesthesia, including Techniques and complications:

    - Pudendal
    - Epidural
    - Spinal
- General anaesthesia, including techniques and complications
- Analgesia and anaesthesia in women at high risk of complications, including hypertensive disease, cardiac disease and fetal growth restriction.

Pharmacology:

- Opioid analgesia
- Local anaesthesia
- General anaesthesia
- Phenylephrine/ephedrine.

Outcome:

- Effects of neuraxial anaesthesia on:
    - labour outcome
    - temperature
    - fetal wellbeing.

Resuscitation

Pathophysiology:

- Hypovolaemia
- Pulmonary embolism
- Amniotic fluid embolism
- Primary cardiac event
- Trauma
- Cerebrovascular event
- Electrocution
- Neonatal depression.

Epidemiology:

- Maternal collapse (causes and risk factors)
- Neonatal depression.

Management:

- Maternal resuscitation:

    - respiratory management, including basic airway management, indications for intubation, ventilation
    - circulatory management, including cardiac massage, defibrillation
    - fluid management
- Indications for perimortem caesarean section
- Principles neonatal resuscitation:
    - respiratory depression/apnoea
    - bradycardia/cardiac arrest
    - meconium aspiration.

Pharmacology:

- Oxygen
- Adrenaline (epinephrine)
- Sodium bicarbonate
- Atropine.

Medical Disorders on the Labour Ward

Pathophysiology, including the effect of labour and delivery on the following diseases:

- Diabetes
- Cardiac and respiratory abnormalities
- Haemoglobinopathies
- Thrombotic and haemostatic abnormalities
- Epilepsy
- Severe pre-eclampsia/eclampsia/HELLP syndrome
- Renal disease
- Hypertension
- HIV
- Sepsis.

Management:

- Maternal monitoring:
    - blood glucose
    - respiratory function, including respiratory rate, SaO2, blood gases
    - cardiovascular function, including blood pressure, heart rate, cardiac output

    - renal function, including urine output, creatinine
- Analgesia and anaesthesia

Pharmacology:

- Effects of drugs used to treat above conditions on course and outcome of labour
- Effects of drugs used in management of labour (e.g. oxytocin, Syntometrine) on above conditions
- Effects of analgesics and anaesthetics on the above conditions.

Intensive Care

Organisation:

- Structure and organisation of:
    - High-dependency unit care
    - intensive care unit
- Role of outreach teams
- Indications for high-dependency and intensive care in obstetrics.

Management:

- Methods of invasive monitoring:
    - oxygenation/acid base
    - arterial pressure
    - cardiac output, preload and contractility
- Organ failure, including principles and techniques of supportive therapy:
    - respiratory failure
    - cardiac failure
    - renal failure
    - hepatic coagulation
    - coagulation failure.

OBG 961 : INFECTIOUS DISEASES (4 Credits)

Objective

At the end of this module the trainees should be able to carry out appropriate assessment and management of women with the following infective conditions.

Human Immunodeficiency Virus (HIV)

Virology and epidemiology:

- HIV1 and 2
- Natural history and viral dynamics
- Pathophysiology of HIV infection/AIDS
- Mode and risk of transmission
- Epidemiology of infection in pregnancy.

Screening and diagnosis:

- Rationale and organisation of screening programme
- Laboratory tests
- Screening, e.g. enzyme-linked immunoassay
- Diagnostic, e.g. Western blot
- Referral pathways.

Management:

- Screening for coincident infection (genital infection, hepatitis)
- Laboratory monitoring: viral load/CD4 T lymphocyte count
- Strategies to eliminate/reduce mother–child transmission, including anti-retroviral therapy, mode of delivery, feeding
- Conduct of labour/caesarean section
- Advanced HIV
- Antenatal complications, including preterm birth
- Neonatal management and testing.

Pharmacology, including adverse effects:

- Zidovudine
- HAART.

Outcome:

- Neonatal infection (diagnosis and complications)
- Long-term outcome: chronic HIV infection.

Hepatitis

Virology and epidemiology:

- Hepatitis A,B,C (HAV, HBV, HCV)
- Natural history and viral dynamics
- Pathophysiology of acute and chronic hepatitis
- Mode and risk of transmission
- Epidemiology of infection in pregnancy

Screening and diagnosis:

- Differential diagnosis of jaundice/abnormal liver function tests
- Rationale and organisation of hepatitis B (HbsAG) screening programme
- Laboratory tests:
    - Serology including interpretation of Hepatitis B Panel (HBsAb, HBcAb (IgM and IgG), HBeAb e.g. enzyme immunoassay
    - diagnostic, e.g. Western blot, polymerase chain reaction
- Risk groups for HCV
- Neonatal testing.

Management:

- Supportive care
- Screening for coincident infection (HBC, HCV).

Prevention:

- HAV/HBV vaccination in pregnancy
- Prevention perinatal infection:
    - HA immunoglobulin
    - HBIG and vaccination
- Mode of delivery
- Breastfeeding.

Outcome:

- HBV/HCV-related disease (cirrhosis, hepatocellular carcinoma).

Pharmacology:

- HAV vaccine, HAIG

- HBV vaccine, HBIG.

Malaria

Parasitology and epidemiology:

- Plasmodium genus
- Pathophysiology of malaria, including severe disease and placental/fetal infection
- Mode and risk of transmission
- Epidemiology of malarial infection, including chloroquine resistance.

Management:

- Diagnosis (blood smears)
- Supportive care, including management of anaemia
- Anti-malarial treatment, including chloroquine, quinine, mefloquine, clindamycin
- Severe disease, including renal failure, pulmonary oedema, severe anaemia, hypoglycaemia
- Fetal complications (fetal growth restriction/preterm birth).

Prevention:

- Avoidance of travel to endemic areas
- Spray/nets
- Chemoprophylaxis

Pharmacology, including adverse effects:

- Chloroquine
- Mefloquine.

Cytomegalovirus

Virology and epidemiology:

- Cytomegalovirus
- Pathophysiology of primary infection (in adult and fetus)
- Mode and risk of transmission
- Epidemiology of infection in pregnancy (high-risk groups).

Screening and diagnosis:

- Laboratory tests:
    - maternal serology, immunofluorescent tests, enzyme immunoassay
    - fetal diagnosis, e.g. amniotic fluid polymerase chain reaction/culture, viral DNA, serology
- Ultrasound features of fetal infection
- Primary vs. recurrent infection.

Management:

- Supportive care
- Maternal and fetal risks
- CMV infection in immunocompromised women
- Fetal therapy (ganciclovir, CMV hyperimmune globulin)
- Termination of pregnancy.

Outcome:

- Sequelae of congenital CMV infection.

Herpes Simplex Virus

Virology and epidemiology:

- HSV 1 and 2
- Pathophysiology of primary and recurrent infection and congenital herpes
- Mode and risk of transmission
- Epidemiology of infection in pregnancy.

Management:

- Differential diagnosis oral/genital ulcers
- Screening: HSV serology
- Diagnosis: viral culture
- Maternal and fetal risks
- Acyclovir for active disease/prophylaxis
- Prevention of perinatal infection:
    - role of caesarean section
    - avoidance of scalp electrodes.

Outcome:

- Sequelae of congenital HSV infection.

Pharmacology, including adverse effects:

- Acyclovir (oral and intravenous).

Parvovirus

Virology and epidemiology:
- Parvovirus B19
- Pathophysiology of maternal and fetal infection, including anaemia/hydrops
- Mode and risk of transmission
- Epidemiology of infection in pregnancy.

Screening and diagnosis:
- Differential diagnosis fever, rash, arthropathy in pregnancy
- Laboratory tests:
    - maternal serology – ELISA
    - fetal diagnosis, e.g. amniotic fluid polymerase chain reaction/culture, viral DNA, serology
- Ultrasound features of fetal infection.

Management:
- Maternal and fetal risks
- Ultrasound monitoring in maternal infection
- Screening and diagnosis fetal anaemia, including MCA Doppler
- Differential diagnosis of fetal hydrops
- Fetal transfusion therapy

Outcome:
- Sequelae of congenital parvovirus HSV.

Rubella

Virology and epidemiology:
- Rubella virus
- Pathophysiology of maternal and fetal infection, including congenital rubella syndrome (CRS)
- Mode and risk of transmission
- Epidemiology of infection in pregnancy.

Screening and diagnosis:
- Rationale for and organisation of screening programme
- Laboratory tests

- Maternal serology (ELISA)
- Fetal diagnosis – amniotic fluid PCR, serology
- Ultrasound features of CRS

Management:
- Differential diagnosis rash/fever/arthralgia/lymphadenopathy in pregnancy
- Maternal and fetal risks
- Termination of pregnancy.

Prevention:
- Rubella vaccination programme
- Postnatal vaccination.

Outcome:
- Sequelae of congenital rubella syndrome, including eye disorders, heart defects, neurological defects.

Pharmacology, including adverse effects:
- Rubella vaccine.

Varicella

Virology and epidemiology:
- Varicella zoster virus
- Pathophysiology of varicella, zoster and congenital varicella syndrome (CVS) (Fetal varicella syndrome and Congenital Neonatal Varicella)
- Mode and risk of transmission
- Epidemiology of infection in pregnancy including assessment of significant exposure.

Management:
- Differential diagnosis vesicular rash
- Screening (HSV serology)
- Fetal diagnosis (ultrasound, serology, viral DNA)
- Maternal risks (lung/central nervous system involvement)
- Acyclovir, including maternal and neonatal indications.
- Fetal risks (CVS).

Outcome:

- Sequelae of congenital CVS.

Prevention:
- Varicella vaccination programme.

Pharmacology, including adverse effects:
- Varicella zoster immunoglobulin (VZIG).

Toxoplasmosis

Parasitology and epidemiology:
- *Toxoplasma gondii*
- Pathophysiology maternal and fetal infection
- Mode and risk of transmission
- Epidemiology of infection in pregnancy (high-risk groups, geographical variation).

Screening and diagnosis:
- Laboratory tests:
    - maternal serology (dye test, ELISA, agglutination assays)
    - immunoglobulin G avidity tests
    - fetal diagnosis (ultrasound, amniotic fluid PCR, viral DNA)
- Ultrasound features of fetal infection
- Distant vs. recent infection.

Management:
- Supportive care
- Maternal and fetal risks
- Toxoplasmosis infection in immunocompromised women
- Maternal therapy (spiramycin)
- Fetal therapy (pyrimethamine/sulfadiazine)
- Termination of pregnancy.

Outcome:
- Sequelae of congenital toxoplasmosis.

Pharmacology, including adverse effects:
- Spiramycin

- Pyrimethamine/sulfadiazine.

Tuberculosis

Microbiology and epidemiology:
- Mycobacterium tuberculosis
- Pathophysiology of TB, including infection vs. pulmonary/extrapulmonary disease
- Mode and risk of transmission
- Epidemiology of TB infection in pregnancy, including high-risk groups.

Management:
- Differential diagnosis fever/cough
- Diagnosis (tuberculin testing, direct identification bacilli, culture)
- Anti-tuberculous treatment, including isoniazid (+ pyridoxine), rifampicin, ethambutol
- Extrapulmonary disease.

Prevention:
- Procedures for prevention and control, including contact tracing
- BCG vaccination
- Isoniazid prophylaxis (in high-risk neonates)

Pharmacology, including adverse effects:
- Isoniazid
- Rifampicin
- Ethambutol.

Streptococcal Disease

Microbiology and epidemiology:
- Streptococcal species
- Pathophysiology of GAS disease, including toxic shock syndrome and other invasive infections
- Pathophysiology of GBS disease (adult and neonate)
- Mode and risk of transmission
- Epidemiology of streptococcal infection in pregnancy and the puerperium, including risk factors and colonisation rates

Screening and diagnosis:

- Differential diagnosis:
    - septic shock/fever
    - vaginitis/vaginal discharge
    - chorioamnionitis/postpartum endometritis
- Laboratory diagnosis (swabs/culture)
- Risks and benefits of GBS screening strategies:
    - routine bacteriological screening
    - risk-based screening.

Management:

- GAS infection (supportive care/antibiotics)
- GBS infection (intrapartum antibiotic prophylaxis)
    - GBS carrier
    - other groups (e.g. suspected chorioamnionitis)
- 'at risk' newborn infants.

Outcome:

- Early- and late-onset GBS infection in newborn

Pharmacology, including adverse effects:

- Penicillin G
- Clindamycin.

Syphilis

Microbiology and epidemiology:

- *Treponema pallidum*
- Pathophysiology of syphilis, including stages of adult disease and congenital infection
- Mode and risk transmission
- Epidemiology of syphilis infection in pregnancy.

Screening and diagnosis:

- Rationale and organisation of screening programme
- Serological tests, (including nonspecific and specific antibody tests
- Dark field visualization
- Differential diagnosis of genital ulcer
- Ultrasound features of fetal infection.

Management:

- Penicillin G, including management of Jarisch–-Herxheimer reaction
- Contact tracing.

Outcome:

- Congenital syphilis (early and late).

Other Sexually Transmitted Diseases in Pregnancy

Microbiology and epidemiology:

- *Neisseria gonorrhoea*, *Chlamydia trachomatis*, genital mycoplasma
- Pathophysiology of gonococcal, chlamydial and mycoplasmal disease, including chorioamnionitis and postpartum endometritis
- Epidemiology of STDs in pregnancy

Screening and diagnosis:

- Rationale and organisation of screening for chlamydia in pregnancy
- Differential diagnosis of vaginal discharge, cervicitis in pregnancy
- Laboratory diagnosis (swabs/culture, nucleic acid amplification techniques)

Management:

- Antibiotics:
    - Chlamydia – azithromycin
    - Gonorrhoea – ceftriaxone, cefixime
    - Mycoplasmas – erythromycin, clindamycin
- Contact tracing (where appropriate)
- Fetal risks, including preterm prelabour rupture of membranes, preterm birth
- Maternal risks (chorioamnionitis, endometritis).

Outcome:

- Neonatal infection (conjunctivitis, pneumonia)

Pharmacology, including adverse effects:

- Azithromycin
- Ceftriaxone.

Bacterial Vaginosis

Microbiology and epidemiology:

- *Garnerella vaginalis*, selected anaerobes, *Mycoplasma hominis*

- Pathophysiology of BV
- Epidemiology of BV in pregnancy.

Screening and diagnosis:
- Rationale for screening in high-risk groups, including previous preterm birth
- Differential diagnosis of vaginal discharge
- Clinical diagnosis (Amsel criteria), Gram stain, vaginal discharge.

Management:
- Treatment – metronidazole, clindamycin
- Fetal risks, including miscarriage, preterm birth

Pharmacology, including adverse effects:
- Metronidazole
- Clindamycin.

Asymptomatic Bacteriuria and Acute Symptomatic Urinary Tract Infection

Microbiology and epidemiology:
- *Escherichia coli*, Klebsiella/Proteus/Pseudomonas sp, coagulase negative staphylococci
- Pathophysiology of UTI/acute pyelonephritis
- Epidemiology of asymptomatic bacteriuria and UTI in pregnancy.

Screening and diagnosis:
- Rationale for and organisation of screening for AB during pregnancy
- Midstream urine culture (colony counts)
- Differential diagnosis of acute abdominal pain in pregnancy, antenatal pyrexia
- Diagnosis of relapse/reinfection.

Management:
- Antibiotic therapy:
    - AB – nitrofurantoin
    - UTI – ampicillin, cephalosporins/second line therapies
    - Duration of therapy
- Maternal risks, including acute pyelonephritis, Gram-negative sepsis, acute renal failure
- Fetal risks, including preterm birth

- Postnatal investigation (intravenous urogram)

Pharmacology, including adverse effects:
- Nitrofurantoin
- Broad-spectrum penicillins (e.g. ampicillin)
- Cephalosporins (e.g. cefalexin).

Other Infective Conditions

Microbiology and epidemiology:
- Common organisms implicated in chorioamnionitis and puerperal sepsis, including group A and group B streptococcus Gram-negative bacilli, anaerobes, genital mycoplasmas
- Pathophysiology of acute chorioamnionitis and puerperal sepsis, including endometritis, pelvic vein thrombophlebitis, urinary tract infection
- Epidemiology of chorioamnionitis and puerperal pyrexia/infection.

Diagnosis and management of chorioamnionitis:
- Differential diagnosis of acute abdominal pain in pregnancy, antenatal pyrexia
- Investigations (blood, cultures, ultrasound)
- Antibiotic therapy
- Fetal risks, including fetal death, preterm labour
- Maternal risks, including Gram-negative sepsis, acute renal failure.

Diagnosis and management of postnatal sepsis:
- Differential diagnosis of puerperal pyrexia
- Investigations (culture, ultrasound, CT/MRI)
- Antibiotic therapy, including clindamycin/gentamicin
- Maternal risks, including Gram-negative sepsis, acute renal failure.

Pharmacology, including adverse effects:
- Clindamycin
- Gentamicin.

OBG 962: Applied research skills (2 Credits)

To complete this module, the Trainee shall undertake the following:

1. Perform a critical appraisal of publications related to maternal fetal medicine.
2. Undertake presentations on the principles of handling and storage of human tissues.
3. Attend fetal medicine conferences (local/international) and present paper(s).
4. Attend at least a training programme and obtain a certificate in research methodology incorporating Epidemiology and Biostatistics. The trainee shall be able to plan and initiate a high quality research study and also able to analyse data on his own.
5. Conduct a high quality research in maternal/fetal medicine which he/she shall defend at his/her exit examination. In the conduct of this research, the Training Coordinator in liaison with the Faculty Board shall appoint Supervisor(s) for the research).

OBG 963: ETHICS, LAW, AND CULTURAL PRACTICE IN REPRODUCTIVE MEDICINE (1 Credit)

Detailed knowledge of ethical and national legal issues involved in maternal fetal medicine practice.

- Ethical issues and fetal medicine
    - Screening for fetal anomalies
    - Abortion for fetal anomalies
    - Selective fetocide
    - Perimortem caesarean section
    - Genetic disorders
    - Paternity issues

- Emerging ethical challenges, transgender issues
- Cultural practices
- Religion
- Law and Regulation in fetal medicine practice
- Counselling and communication in fetal medicine.

College /Faculty organized courses

The following are the recommended College/ faculty courses to be attended during the course of training. Trainees will be encouraged to attend any other relevant courses both locally and internationally.

A. Cardiotocography, Electrocardiograph and Obstetric Ultrasound scan (Twelve days comprising of 48 hours of lectures and 48 hours of practicals = 4 course credit units)
B. Update Course in Maternal and Fetal medicine (6 days comprising of 48 hours of lectures = 3 course credit units)

C. PMC: 951 Research Methodology Course. (I week three days comprising of 44 hours of lectures = 3 course credit units)

D. PMC 952 Health Resources Management Course (I week three days comprising of 44 hours of lectures = 3 course credit units)

E. PMC 953 Ethics in Clinical Practice

FLOW CHART OF THE RECOMMENDED CLINICAL ROTATIONS AND COMPULSORY COURSES WITH THEIR ASSOCIATED COURSE CREDIT COURSE CREDITS

1. POSTING IN GENERAL OBSTETRICS AND GYNAECOLOGY	
POSTING TYPE	COMPULSORY
CONTACT LECTURES/ SESSIONS PER WEEK	Early morning review [1Hr/day X 5days X 24 weeks = 120 hrs], Self-Directed Learning (SDL) / Tutorials [2Hr/day X 5days X 24 weeks = 240 hrs], Departmental scientific meeting [2Hr/week X 24 weeks = 48 hr] Total = 408 hours equivalent to 27.2 credit units

CONTACT CLINICAL/PRACTICAL SESSIONS PER WEEK	Antenatal clinics [6Hr/week X 24 weeks = 144 Hr] Gynaecological clinic[[6Hr/week X 24 weeks = 144 Hr] Ward rounds [2Hr/day X 5 days X 24 weeks = 240 hours] Theatre/Labour ward sessions [6Hr/week X 24 weeks = 144 Hr] Total = 672 hours equivalent to 14.9 credit units
TOTAL	**42.1 Credit units**
2. HIGH RISK PREGNANCY POSTING	
POSTING TYPE	COMPULSORY
DURATION	6 MONTHS (24 WEEKS)
CONTACT LECTURES/ SESSIONS PER WEEK	Early morning review [1Hr/day X 5days X 24 weeks = 120 hrs], Self-Directed Learning (SDL) / Tutorials [2Hr/day X 5days X 24 weeks = 240 hrs], Departmental scientific meeting [2Hr/week X 24 weeks = 48 hr] Total = 408 hours equivalent to 27.2 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS PER WEEK	Antenatal clinics [6Hr/week X 24 weeks = 144 Hr] Ward rounds [2Hr/day X 5 days X 24 weeks = 240 hours] Theatre/Labour ward sessions [6Hr/week X 24 weeks = 144 Hr] Total = 528 hours equivalent to 11.7 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS DURING CALL HOURS	Supervision of labour & Conduct of deliveries, Emergency Operating theatre sessions. Total call hours is 320/month. 2/3 of this is 213 hours/month X 6months = 1278hrs] Total = 1278 hours equivalent to 28 credit units
Total credit load for the posting = 66.9 credit units	

3. FETAL ULTRASOUND CLINIC POSTING	
POSTING TYPE	COMPULSORY
DURATION	6 MONTHS (24 WEEKS)
CONTACT LECTURES/ SESSIONS PER WEEK	Early morning review [1Hr/day X 5days X 24 weeks = 120 hrs], Self-Directed Learning (SDL) / Tutorials [2Hr/day X 5days X 24 weeks = 240 hrs], Departmental scientific meeting [2Hr/week X 24 weeks = 48 hr] Total = 408 hours equivalent to 27.2 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS PER WEEK	Ultrasound clinics [12Hr/week X 24 weeks = 288 Hr] Ward rounds [2Hr/day X 5 days X 24 weeks = 240 hours] Total = 528 hours equivalent to 11.7 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS DURING CALL HOURS	Supervision of labour & Conduct of deliveries, Emergency Operating theatre sessions. Total call hours is 320/month. 2/3 of this is 213 hours/month X 6months = 1278hrs] Total = 1278 hours equivalent to 28 credit units
Total credit load for the posting = 66.9 credit units	

4. INTRAUTERINE FETAL SURGICAL POSTING	
POSTING TYPE	COMPULSORY
DURATION	6 MONTHS (24 WEEKS)
CONTACT LECTURES/ SESSIONS PER WEEK	Early morning review [1Hr/day X 5days X 24 weeks = 120 hrs], Self-Directed Learning (SDL) / Tutorials [2Hr/day X 5days X 24 weeks = 240 hrs], Departmental scientific meeting [2Hr/week X 24 weeks = 48 hr] Total = 408 hours equivalent to 27.2 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS PER WEEK	Fetal Medicine/Surgery clinics [6Hr/week X 24 weeks = 144 Hr] Ward rounds [2Hr/day X 5 days X 24 weeks = 240 hours] Theatre sessions [6Hr/week X 24 weeks = 144 Hr] Total = 528 hours equivalent to 11.8 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS DURING CALL HOURS	Supervision of labour & Conduct of deliveries, Emergency Operating theatre sessions. Total call hours is 320/month. 2/3 of this is 213 hours/month X 6months = 1278hrs] Total = 639 hours equivalent to 28 credit units

Total credit load for the posting = 33.5 credit units

5. MANDATORY POSTING OVERSEAS	
POSTING TYPE	COMPULSORY
DURATION	3 MONTHS (12 WEEKS)
CONTACT LECTURES/ SESSIONS PER WEEK	Early morning review [1Hr/day X 5days X 12 weeks = 60 hrs], Self-Directed Learning (SDL) / Tutorials [2Hr/day X 5days X 12 weeks = 120 hrs], Departmental scientific meeting [2Hr/week X 12 weeks = 24 hr] Total = 204 hours equivalent to 13.6 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS PER WEEK	Maternal and Fetal clinics [6Hr/week X 12 weeks = 72 Hr] Ward rounds [2Hr/day X 5 days X 12 weeks = 120 hours]

	Theatre sessions [6Hr/week X 12 weeks = 72 Hr] Total = 264 hours equivalent to 5.9 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS DURING CALL HOURS	Supervision of labour & Conduct of deliveries, Emergency Operating theatre sessions. Total call hours is 320/month. 2/3 of this is 213 hours/month X 3months = 639hrs] Total = 639 hours equivalent to 14 credit units

Total credit load for the posting = 33.5 credit units

6. GENETICS LABORATORY POSTING	
POSTING TYPE	COMPULSORY
DURATION	2 MONTHS (8 WEEKS)
CONTACT LECTURES/ SESSIONS PER WEEK	Early morning review [1Hr/day X 5days X 8 weeks = 40 hrs], Self-Directed Learning (SDL) / Tutorials [2Hr/day X 5days X 8 weeks = 80 hrs], Departmental scientific meeting [2Hr/week X 8 weeks = 16 hr] Total = 136 hours equivalent to 9 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS PER WEEK	Fetal Medicine clinics [6Hr/week X 8 weeks = 48 Hr] Ward rounds [2Hr/day X 5 days X 8 weeks = 80 hours] Theatre sessions [6Hr/week X 8 weeks = 48 Hr] Total = 176 hours equivalent to 4 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS DURING CALL HOURS	Supervision of labour & Conduct of deliveries, Emergency Operating theatre sessions. [The call in the Labour ward is maintained during this posting] Total call hours is 320/month. 2/3 of this is 213 hours/month X 2months = 426hrs] Total = 426 hours equivalent to 9 credit units
Total credit load for the posting = 22 credit units	

Neonatology	**8 weeks**
Lecture hours	Early morning review [1Hr/day X 5days X 8 weeks = 40 hrs], Self-Directed Learning (SDL) / Tutorials [2Hr/day X 5days X 8 weeks = 80 hrs], Departmental scientific meeting [2Hr/week X 8 weeks = 16 hours hr] Total = 136 hours equivalent to 9.0 credit units
	Clinics [6Hr/week X 8 weeks = 48 Hr] Ward rounds [2Hr/day X 5 days X 8 weeks = 80 hours]] Total = 128 hours equivalent to 2.8 credit unit
Anaesthesia	4 WEEKS
LECTURE CONTACT HOURS	Early morning review [1Hr/day X 5days X 4 weeks = 20 hrs], Self-Directed Learning (SDL) / Tutorials [2Hr/day X 5days X 4 weeks = 80 hrs], Departmental scientific meeting [2Hr/week X 4 weeks = 8 hours hr] Total = 1O8 hours equivalent to 7.2 credit units
PRACTICAL/CLINICAL CONTACT HOURS	Clinics [6Hr/week X 4weeks = 24 Hr] Ward rounds [2Hr/day X 5 days X 4 weeks = 40 hours]] Total = 64 hours equivalent to 1.4 credit unit
	TOTAL=8.4Unt
Total for Pathology=8.4 units	
Total for the training = 293.5 Credit units	

CHAPTER FIVE: SENIOR RESIDENCY TRAINING IN REPRODUCTIVE MEDICINE

5.1 VISION

To train and produce highly competent Subspecialists in Reproductive medicine that will deliver high quality and safe health care to women and their families in Nigeria and internationally.

2.2 MISSION

The Faculty will achieve her vision by promoting excellence in competency-based training, faculty-based courses, maintain uniform standards in accreditation of training institutions, ensuring trainees achieve recommended training milestones and minimum Entrustable Professional Activities (EPAs), and provide opportunities for continuing professional development.

The Faculty will also maintain the culture of inter-faculty training collaborations within the National Postgraduate Medical College and with sister colleges regionally and internationally.

5.3 AIM of training: To produce subspecialists in reproductive medicine management.

5.4 Objectives of training

At the completion of the Senior residency training in Reproductive medicine , trainees should have acquired the knowledge and skill to enable them practice at the pinnacle of their career in Reproductive Medicine management. This will be attained through:

i. Acquisition of knowledge of the basic sciences relevant to reproductive medicine
j. Acquisition of knowledge of the pathophysiology, methods of evaluation and treatment of the reproductive medicine disorders.
k. Acquisition of competence in all the modalities of reproductive medicine diagnosis and therapy including diagnostic and therapeutic endoscopy.
l. Attainment of state-of-the-art skills and competence in the management of infertility.
m. Understanding of the concepts of investigative science and the development of skills in research methods
n. Understanding of the organisation of health services in the areas of Reproductive Medicine
o. Training in the methods of quality assurance and audit.
p. Provision of leadership in research and development in reproductive medicine.
q. Building of human capacity in Reproductive health care practice, teaching, research and audit.

5.5 ENTRY QUALIFICATION

A pass at the Part I fellowship examination of the National Postgraduate Medical College of Nigeria.

5.6: Training duration:

This shall be for a period of thirty six (36) months.

Clinical Rotations

a. General obstetrics and Gynaecology Unit/Clinics 6 months
b. Assisted Conception Unit including Clinical Embryology 12 months.
c. Gynaecologic Endoscopy Unit/Clinic 6 months
d. Family Planning Unit 6 months
e. Endocrine Unit of Medicine Department 2 months
f. Endocrine Unit of Paediatric Department 2 month
g. Rural posting 3 months

FLOW CHART OF THE RECOMMENDED CLINICAL ROTATIONS AND COMPULSORY COURSES WITH THEIR ASSOCIATED COURSE CREDITS FOR REPRODUCTIVE MEDICINE

GENERAL OBSTETRICS AND GYNAECOLOGY POSTING	DURATION: 24 WEEKS
POSTING TYPE: COMPULSORY	COMPULSORY
CONTACT LECTURES/ SESSIONS PER WEEK	Early morning review [1hr/day X 5days X 24 weeks = 120 hrs], Self-Directed Learning (SDL) / Tutorials [2hrs/day X 5days X 24 weeks = 240 hrs], Departmental scientific meeting [2hrs/week X 24 weeks = 48 hrs] Total = 408 hours equivalent to 27.2 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS PER WEEK	Antenatal clinics [6hrs/week X 24 weeks = 144 Hr] Gynaecological clinic[[6hrs/week X 24 weeks = 144 Hr] Ward rounds [2hrs/day X 5 days X 24 weeks = 240 hours] Ultrasound sessions [6hrs/week X 24 weeks = 144 hrs] Total = 672 hours equivalent to 14.9 credit units
TOTAL	**42.1 Credit units**

ART POSTING	
POSTING TYPE	COMPULSORY
DURATION	12 MONTHS (48 WEEKS)
CONTACT LECTURES/ SESSIONS PER WEEK	Early morning review [1hr/day X 5days X 48 weeks = 240 hours], Self-Directed Learning (SDL) / Tutorials [2hrs/day X 5days X 49 weeks = 480 hours], Departmental scientific meeting [2hrs/week X 48 weeks = 96 hours] Total = 816 hours equivalent to 54.4 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS PER WEEK	ART clinics [6hrs/week X 48 weeks = 288 hours] Ward rounds [2hrs/day X 5 days X 48 weeks = 480 hours] Theatre sessions [6hrs/week X 48 weeks = 288 hours] Total =1056 hours equivalent to 23.6 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS DURING CALL HOURS	Practical sessions in ART with theatre sessions. Total call hours is 320/month. 2/3 of this is 213 hours/month X 6months = 2556 hours] Total =1278 hours equivalent to 56 credit units

FAMILY PLANNING POSTING	
POSTING TYPE	COMPULSORY
DURATION	6 MONTHS (24 WEEKS)
CONTACT LECTURES/ SESSIONS PER WEEK	Early morning review [1hr/day X 5days X 24 weeks = 120 hrs], Self-Directed Learning (SDL) / Tutorials [2hrs/day X 5days X 24 weeks = 240 hrs], Departmental scientific meeting [2Hr/week X 24 weeks = 48 hrs] Total = 408 hours equivalent to 27.2 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS PER WEEK	Family Planning clinics [12hrs/week X 24 weeks = 288 hrs] Ward rounds [2hrs/day X 5 days X 24 weeks = 240 hours] Total = 528 hours equivalent to 11.7 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS DURING CALL HOURS	Contraception procedures, theatre sessions. Total call hours is 320/month. 2/3 of this is 213 hours/month X 6months = 1278hrs] Total = 1278 hours equivalent to 28 credit units
Total credit load for the posting = 66.9 credit units	

ENDOSCOPY POSTING	
POSTING TYPE	COMPULSORY
DURATION	6 MONTHS (24 WEEKS)
CONTACT LECTURES/ SESSIONS PER WEEK	Early morning review [1hr/day X 5days X 24 weeks = 120 hrs], Self-Directed Learning (SDL) / Tutorials [2hrs/day X 5days X 24 weeks = 240 hrs], Departmental scientific meeting [2hrs/week X 24 weeks = 48 hrs] Total = 408 hours equivalent to 27.2 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS PER WEEK	Preconception and ANC clinics [6hrs/week X 24 weeks = 144 hrs] Ward rounds [2Hr/day X 5 days X 24 weeks = 240 hours] Theatre sessions [6hrs/week X 24 weeks = 144 hrs] Total = 528 hours equivalent to 11.8 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS DURING CALL HOURS	Endoscopy theatre sessions (Laparoscopy, cystoscopy and Hysteroscopy). Total call hours is 320/month. 2/3 of this is 213 hours/month X 6months = 1278hrs] Total = 639 hours equivalent to 28 credit units

Total credit load for the posting = 33.5 credit units

6. ENDOCRINE UNIT OF MEDICINE	
POSTING TYPE	COMPULSORY
DURATION	MONTHS (8 WEEKS)
CONTACT LECTURES/ SESSIONS PER WEEK	Early morning review [1hr/day X 5days X 8 weeks = 40 hrs], Self-Directed Learning (SDL) / Tutorials [2hrs/day X 5days X 8 weeks = 80 hrs], Departmental scientific meeting [2hrs/week X 8 weeks = 16 hrs] Total = 136 hours equivalent to 9 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS PER WEEK	Paediatric Endocrine clinics [6hrs/week X 8 weeks = 48 hrs] Ward rounds [2hrs/day X 5 days X 8 weeks = 80 hours] Endocrine clinics [6hrs/week X 8 weeks = 48 hrs] Total = 176 hours equivalent to 4 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS DURING CALL HOURS	[The call in the Labour ward is maintained during this posting] Total call hours is 320/month. 2/3 of this is 213 hours/month X 2months = 426hrs] Total = 426 hours equivalent to 9 credit units

7. ENDOCRINE UNIT OF PAEDIATRICS DEPARTMENT	
POSTING TYPE	COMPULSORY
DURATION	2 MONTHS (8 WEEKS)
CONTACT LECTURES/ SESSIONS PER WEEK	Early morning review [1hr/day X 5days X 8 weeks = 40 hrs], Self-Directed Learning (SDL) / Tutorials [2hrs/day X 5days X 8 weeks = 80 hrs], Departmental scientific meeting [2hrs/week X 8 weeks = 16 hrs] Total = 136 hours equivalent to 9 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS PER WEEK	Adult Endocrine clinics [6hrs/week X 8 weeks = 48 hrs] Ward rounds [2hrs/day X 5 days X 8 weeks = 80 hours] Joint Endocrine clinics [6hrs/week X 8 weeks = 48 hrs] Total = 176 hours equivalent to 4 credit units
CONTACT CLINICAL/PRACTICAL SESSIONS DURING CALL HOURS	Emergency Operating theatre sessions. [The call in the Labour ward is maintained during this posting] Total call hours is 320/month. 2/3 of this is 213 hours/month X 2months = 426hrs] Total = 426 hours equivalent to 9 credit units

5.7. Nature of training

Training shall be structured and competency based. From the beginning of the programme, progress shall be monitored by means of the log book.

Resident doctors undergoing the training in Reproductive medicine shall participate in all relevant activities of the training unit, such as the care of outpatients and in-patients, on call duties, performing ultrasound examinations, intra-uterine procedures and participating in educational activities, including the teaching of medical students, resident doctors in the general Obstetrics and Gynaecology training and other health professionals and their students. The trainee shall also participate in audit and any ongoing basic or clinical research activities of the training unit.

At the recommendation of the National Training Coordinator/Supervisor and with approval of the College Registrar following consideration by the Board of the Faculty of Obstetrics & Gynaecology, NPMCN, the trainee may spend some of the training periods in other centres accredited by the National Postgraduate Medical College as well as recognized centres in other countries where such, in the opinion of the Training Coordinator or Supervisor, would enhance the quality of training and exposure of the Resident doctor.

5.8. Structure of the training

The Senior residency training in Reproductive Medicine shall be centrally regulated by the Senate of the National Postgraduate Medical College of Nigeria via recommendations from the Faculty board of Obstetrics and Gynaecology of the NPMCN. The College Senate shall approve the enrollment of all candidates into the

training programme as well as the accreditation of training centres following recommendation by the Faculty Board of Obstetrics and Gynaecology.

Each Trainee shall have at least one Supervisor in Reproductive medicine appointed by the Faculty Board of Obstetrics and Gynaecology of the NPMCN from the onset of the programme. The Supervisor shall facilitate communication between the Faculty/College and the Trainee when necessary, and conduct periodic evaluations of progress of the trainee. There shall be documented evidence of these evaluations.

The Faculty Board shall be responsible for the appointment of Specialists with requisite proficiencies in specific areas of Reproductive Medicine as accredited trainers and assessors for the programme .

The Executive Committee of the Faculty shall recommend for approval of the Faculty Board, a subspecialty training Chairman, for a tenure of two years renewable for another two years. The Subspecialty Chairman shall lead a Committee including two other senior academics in the subspecialty. They will oversee the training programme in the sub-specialty subject to the Faculty Board and ultimately to the College Senate. The members of this committee shall serve for a maximum of four years ,after which there must be an interval of at least two years before any fellow shall be eligible for re-appointment. The qualifications for appointment shall be the same for election of Faculty Secretary or Third member of Senate of the Faculty.

The Subspecialty Committee shall be responsible for collation of the academic and clinical activities of all trainees, in order to confirm that the recommended knowledge and competences for each stage of the training are successfully attained, subject to the Executive Committee of the Faculty and the Faculty Board.. The Committee shall achieve this by compiling the reports from the accredited specialists at the designated training centres and reviewing the log books.

Courses and course content in Reproductive Medicine

OBG 948: Reproductive Anatomy/Physiology/Endocrinology/Biochemistry (3 Credits)

Objectives:

At the end of this module the trainees should be able to understand the scientific basis of male and female reproductive system. The trainees should have full knowledge of the following:

- Anatomy of the male and female pelvis. Anatomy of the male and female perineum. Urogenital diaphragm. Female genital organs. External female genitalia. Applied anatomy; Pelvic support and prolapsed.
- Pharmacology of steroids and reproductive hormones.
- Gynaecological endocrinology
- Puberty: stages of pubertal development, thelarche, adrenarche, pubarche, menarche, growth spurts.
- Endocrine basis of menstruation. Control of menstruation and menstrual cycle.
- Definitions and endocrine basis of menopause. Climacteric.

- Systemic changes at menopause/andropause. Hormone replacement therapy. Psychotherapy

OBG 949: Pathology of male and female reproductive organs/tract as applied to Reproductive Medicine. (6 Credits)

Objectives:

At the end of this module the trainees should be able to carry out appropriate counselling, screening and management in couples with infertility and other conditions, families with previous chromosomal disorder or families with multiple anomalies or syndromic disorders. The trainees should have full knowledge of the following:

- Male and Female Infertility- Definition, causes and management
- Imaging Obstetrics and Gynecology (X-rays, Ultrasound, CT scan/MRI,
- Early Pregnancy (including implantation)
- Sexual dysfunction
- Amenorrhea. Dysfunctional uterine bleeding. Polycystic ovarian syndrome. Hyperprolactinaemia.
- Climateric and Menopausal problems.
- Genetics and genetic disorders
  - Gene structure and function
  - DNA as genetic material
  - Replication, transcription and translation
  - Mechanisms and effects of mutation
  - Inheritance and susceptibility
  - Patterns of inheritance of single genes
  - Genetic heterogeneity (locus and allele)

- New mutations causing single-gene disorder
- Expression and penetrance
- Multifactorial inheritance (including summation and interaction gene effects, polymorphisms)
- Mitochondrial inheritance.
- Service and laboratory aspects:
- Organisation and role of clinical genetics services
- DNA testing in clinical practice
- Ethical, societal cultural and religious issues
- Diagnostic, predictive and carrier testing
- Uses and limitations of laboratory tests
- Indications, methods and limitations, including failure and error rates of:
- cytogenetics
- fluorescence in situ hybridisation (FISH)
- polymerase chain reaction (PCR)
- Southern and Northern blotting
- gene tracking using restriction fragment length and polymorphism
- enzyme and biochemical analysis.

- Methods of prenatal diagnosis, including indications, techniques, complications and proficiency at obtaining informed consent for the procedures:
- Ultrasound
- Amniocentesis
- Chorion villus sampling
- Fetal blood sampling

- Fetal tissue biopsy
- Fetal cells in maternal circulation
- Cell-free fetal DNA in maternal circulation

- Single-gene defects:
- Epidemiology and inheritance
- Effects of mutation and associated pathology
- Clinical and pathological features
- Prognosis
- Recurrent risks, including offspring risks and sibling risks
- Prenatal diagnosis of the following defects:
    - Cystic fibrosis
    - Muscular dystrophy
    - Myotonic dystrophy
    - Fragile X
    - Haemoglobinopathies
    - Haemophilias
    - Common inborn errors of metabolism

- **Chromosomal Disorders**

- Chromosomes
- Structure and function
- Cell division

- Types of abnormality, including structural rearrangements, trisomies, sex chromosome anomalies, extra markers, mosiacism.
- Screening and diagnosis:
- Biochemical markers, including alpha-fetoprotein, unconjugated estriol, human chorionic gonadotrophin, pregnancy associated plasma protein A, inhibin A
- Ultrasound markers:
    - 11–14 weeks (including nuchal translucency, nasal bone, ductus venosus, Doppler, tricuspid regurgitation, holoprosencephaly)
    - 18–21 weeks (including nuchal oedema/nuchal fold thickness, clinodactyly echogenic bowel, pyelectasis, choroid plexus cysts, nasal bone, short femur/humerus, exomphalus)
- Likelihood ratios and risk calculation
- Screening strategies
    - Accuracy (including detection rate, false positive rate)
    - Service and cost implications
- Laboratory diagnosis (including methods, failure and error rates)
    - cytogenetic analysis
    - FISH
    - PCR.
- Mosaicism, including classification and management.
- Principles and organisation of screening and diagnostic programme for chromosomal anomalies:
- National Screening Committee
- Role of regional screening coordinators
- Quality control and audit.
- Chromosomal anomalies:

- Epidemiology
- Pathology
- Clinical and pathological features
- Prognosis
- Recurrence risks
- Prenatal diagnosis of the following chromosomal anomalies:
    - trisomy 21
    - trisomy 18
    - trisomy 13
    - Turner syndrome
    - Klinefelter syndrome
    - XXX
    - Triploidy
    - structural rearrangement, including balanced and unbalanced translocation
    - marker chromosome
    - uniparental disomy
    - mosaicism.

- **Multiple Anomalies and Syndromic Disorders**

- Screening and diagnosis:
- Ultrasound features of common syndromes and associations.
- Use of databases to aid diagnosis.
- Syndromic anomalies and associations:
- Epidemiology

- Pathology
- Clinical features
- Prognosis
- Inheritance and recurrence risks
- Prenatal diagnosis, including ultrasound features, laboratory diagnosis (where applicable)
- Syndromic anomalies:
- DiGeorge
- Fryn's
- Beckwith–Wiedemann
- Meckel–Gruber
- Smith-Lemli-Opitz
- VATER (vertebral defects, imperforate anus, tracheo-oesophageal fistula, radial and renal dysplasia)/VACTERL (vertebral anomalies, anal atresia, cardiac abnormalities, tracheoesophageal fistula and/or oesophageal atresia, renal agenesis and dysplasia and limb defects).

OBG 950: FERTILITY CONTROL (3 Credits)

Objectives:

At the end of this module the trainees should be able to carry out appropriate counselling, and offer different types of family planning services. The trainees should have full knowledge of the following:

- Nigeria population dynamics and development.
- Overview of family planning methods.
- Hormonal contraceptives.
- Long Acting Reversible Contraceptives

- IUCDs. Male and female surgical contraception. Barrier methods.
- Natural family planning methods.

OBG 951: PAEDIATRIC AND ADOLESCENT GYNAECOLOGY

(2 Credits)

Objectives:

At the end of this module the trainees should have detailed knowledge of normal and abnormal development and of specific disorders affecting young females and males and adolescence. The trainees should have full knowledge of the following:

- Embryology: the development of embryo and abnormalities which will have an influence on reproduction, in particular the development of genital tract
- Factors controlling male and female development of the gonadal primordia, internal duct system and external genitalia
- Developmental abnormalities of the genital tract, including ambiguous genitalia, imperforate hymen and vaginal septa, uterine anomalies, müllerian and Wolffian dysgenesis, Rokitansky syndrome and gonadal dysgenesis
- Embryology of hypothalamic–pituitary and other pertinent endocrine systems
- Developmental disorders:
    - Ambiguous genitalia
    - Disorders of sexual development
    - Complete androgen insensitivity syndrome
    - Endocrine disturbance

- Precocious puberty
- Delayed puberty
- Congenital Adrenal hyperplasia

Surgical management:

o Developmental disorders

o Ambiguous genitalia

o Disorders of sexual development

OBG 952: REPRODUCTIVE SURGERIES (I Credit)

Objectives:

At the end of this module the trainees should be able to perform an array of gynaecological surgeries including fertility enhancing surgeries. The trainees should be able to perform the following without supervision:

- Fertility enhancing surgeries
- Endoscopy in reproductive medicine-Laparoscopy; Hysteroscopy; Cystoscopy; Proctoscopy.
- Patients' preparation. Pre and post- operative management of patients.
- Imaging in reproductive medicine

OBG 953: ASSISTED REPRODUCTION TECHNIQUES(4 Credits)

Objectives:

At the end of this module the trainees should be able to carry out appropriate evaluation of infertile couple and be proficient in carrying out different assisted reproductive techniques.

- Male and Female Infertility- Etiology
- Anovulation
- Ovulation Induction for conventional Infertility treatment/IUI and IVF/ICSI-ET
- Stimulation Protocol
- Monitoring in stimulated cycles- conventional treatment and ART
- Ovum pick up and Embryo Transfer
- Luteal phase Support.
- Special conditions- Poor responders, PCO, Endometriosis and Recurrent implantation failure.
- Complications of ART.
- Natural cycle and Low cost IVF.
- Third party ART.
- Reproductive genetics (including gametogenesis)
- Semen analysis
- Sperm Preparation
- Media and Culture dishes in ART
- Handling of Equipment in the ART laboratory
- Gamete and Embryo freezing and thawing
- Embryo nutrition and development, and Embryo assessment.
- Immunology of Human reproduction
- Trouble shooting in ART

OBG 954: ETHICS, LAW, AND CULTURAL PRACTICE IN REPRODUCTIVE MEDICINE (I Credit)

Objectives:

At the end of this module the trainees should have ddetailed knowledge of ethical and national legal issues involved in reproductive medicine. The trainees should have full knowledge of the following:

- Ethical issues and reproductive medicine
    - Gamete donation
    - Surrogacy
    - Adoption
- Emerging ethical challenges, transgender issues
- Cultural practices
- Religion
- Law and Regulation in reproductive medicine practice
- Counselling and communication in Reproductive medicine.
- **Applied research skills**
    - Perform a critical appraisal of a publication related to reproductive medicine.
    - Undertake a presentation on the principles of handling and storage of human tissues.
    - Attend a reproductive medicine conference (local/international) and present paper(s).
    - Attend at least a training programme and obtain a certificate in research methodology incorporating Epidemiology and

Biostatistics. The trainee shall be able to plan and initiate a high quality research study and also able to analyse data on his own.

- Conduct a high quality research in reproductive medicine which he/she shall defend at his/her exit examination. In the conduct of this research, the Training Coordinator in liaison with the Faculty Board shall appoint Supervisor(s) for the research).

OBG 955: Faculty organized courses

(4.8 Credits)

The following are the recommended faculty courses to be attended during the course of training. Trainees will be encouraged to attend any other relevant courses both locally and internationally.

a. Pre-Part 2 Update Course (I week of 30 hours of lectures and 18 hours of practicals =2.4 credit units)
b. Communication and Genetic Counselling Course. (Six days comprising of 30 hours of lecture and 18 hours of practicals = 2.4 course credit units)
c. Research Methodology Course.
d. Health Resource and management course.
e. Ethics in Clinical Practice

CHAPTER 6: SENIOR RESIDENCY TRAINING IN UROGYNAECOLOGY

6.1 VISION

To train and produce highly competent Subspecialists in urogynaecology that will deliver high quality and safe health care to women and their families in Nigeria and internationally.

6.2 MISSION

The Faculty will achieve her vision by promoting excellence in competency-based training, faculty-based courses, maintain uniform standards in accreditation of training institutions, ensuring trainees achieve recommended training milestones and minimum Entrustable Professional Activities (EPAs), and provide opportunities for continuing professional development.

The Faculty will also maintain the culture of inter-faculty training collaborations within the National Postgraduate Medical College and with sister colleges regionally and internationally.

6.3 AIM of training: To produce subspecialists in urogynaecology .

6.4: Objectives

The senior residency training in Urogynaecology is designed to achieve the following objectives :

1. To produce highly qualified specialists who are clinical experts in the delivery of high-quality care in the practice of Urogynaecology in Nigeria and internationally.
2. To produce fellows who have demonstrable academic abilities in the science and practice of Urogynaecology.
3. To produce fellows who have professional qualities in the practice of Urogynaecology.

6.5. ENTRY QUALIFICATION

A pass at the Part I fellowship examination of the National Postgraduate Medical College of Nigeria.

6.6. REQUIRED FACILITIES FOR ADEQUATE TRAINING*:* Each training centre should be organized to provide and receive referral of patients with Urogynaecological conditions who would benefit from subspecialty facilities, expertise and experience of trained Urogynaecologist and fellows in training. The training centre should be equipped with a urodynamic laboratory that provides a range of diagnostic services such as:

- Cystometry
- Uroflowmetry
- Profilometry
- Radiography
- Ultrasound and nuclear medicine
- Endoscopy
- Pathology
- Cytology
- Organ imaging facilities

The training centre is expected to provide comprehensive care of Urogynaecology conditions including:

- Surgery
- Pharmacology

- Critical care
- Access to other subspecialties
- Community Education and liaison

5.6: Training duration:

This shall be for a period of thirty six (36) months.

Clinical Rotations

1. General obstetrics and Gynaecology Unit/Clinics 6 months
2. Rural posting 3 months
3. Advanced General Surgical posting 3 months
4. Advanced Urology posting 6 months
5. Radiology posting 2 months
6. Laboratory posting 2 months
7. Core Urogynaecology posting 1 3 months
8. Vesico-Vaginal Fistula posting 3 months
9. Core Urogynaecology posting 2 6 months
10. Others: faculty update courses/ college research methodology/management courses

a. Nature of training

Training shall be structured and competency based. From the beginning of the programme, progress shall be monitored by means of the log book.

Resident doctors undergoing the training in Urogynaecology shall participate in all relevant activities of the training unit, such as the care of outpatients and in-patients, on call duties, performing ultrasound examinations, intra-uterine procedures and participating in educational activities, including the teaching of

medical students, resident doctors in the general Obstetrics and Gynaecology training and other health professionals and their students. The trainee shall also participate in audit and any ongoing basic or clinical research activities of the training unit.

At the recommendation of the National Training Coordinator/Supervisor and with approval of the College Registrar following consideration by the Board of the Faculty of Obstetrics & Gynaecology, NPMCN, the trainee may spend some of the training periods in other centres accredited by the National Postgraduate Medical College as well as recognized centres in other countries where such, in the opinion of the Training Coordinator or Supervisor, would enhance the quality of training and exposure of the Resident doctor.

b. Structure of the training

The Senior residency training in Urogynaecology shall be centrally regulated by the Senate of the National Postgraduate Medical College of Nigeria via recommendations from the Faculty board of Obstetrics and Gynaecology of the NPMCN. The College Senate shall approve the enrollment of all candidates into the training programme as well as the accreditation of training centres following recommendation by the Faculty Board of Obstetrics and Gynaecology.

Each Trainee shall have at least one Supervisor in Reproductive medicine appointed by the Faculty Board of Obstetrics and Gynaecology of the NPMCN from the onset of the programme. The Supervisor shall facilitate communication between the Faculty/College and the Trainee when necessary, and conduct periodic evaluations of progress of the trainee. There shall be documented evidence of these evaluations.

The Faculty Board shall be responsible for the appointment of Specialists with requisite proficiencies in specific areas of Urogynaecology as accredited trainers and assessors for the programme .

The Executive Committee of the Faculty shall recommend for approval of the Faculty Board, a subspecialty training Chairman, for a tenure of two years renewable for another two years. The Subspecialty Chairman shall lead a Committee including two other senior academics in the subspecialty. They will oversee the training programme in the sub-specialty subject to the Faculty Board and ultimately to the College Senate. The members of this committee shall serve for a maximum of four years ,after which there must be an interval of at least two years before any fellow shall be eligible for re-appointment. The qualifications for appointment shall be the same for election of Faculty Secretary or Third member of Senate of the Faculty.

The Subspecialty Committee shall be responsible for collation of the academic and clinical activities of all trainees, in order to confirm that the recommended knowledge and competences for each stage of the training are successfully attained, subject to the Executive Committee of the Faculty and the Faculty Board.. The Committee shall achieve this by compiling the reports from the accredited specialists at the designated training centres and reviewing the log books.

COURSES AND COURSE CONTENT FOR THE RESIDENCY TRAINING IN UROGYNAECOLOGY

This section details areas of knowledge that underpin the training in Urogynaecology. The purpose is for the trainee to have a firm grasp of the underlying principles on which modern Urogynaecology practice is based, not

merely to memorize facts. Understanding of these principles will develop with regular clinical experience, it is the interaction between knowledge and practice that provides the basis for growth in clinical expertise.

The areas of knowledge presented in this section are categorized as follows:

• **Scientific knowledge** that forms the building blocks underpinning clinical practice

• **Clinical or applied knowledge** that links the science and the practice of Urogynaecology

• **Contextual knowledge** (for example, consultation processes, business and management principles, professional expectations) that acknowledges the service obligations implicit in the practice of Urogynaecology.

Relevant knowledge may be accessed in a variety of ways including formal lectures, clinical meetings, seminars and morning reviews within the department. Other sources are text books, refereed articles in journals and book series, evidence-based electronic databases and publications, academic discourse, conference papers and many informal means of communication. It is through these publications and interactions that a consensus on standards is established for the discipline. Through these means, trainees in Urogynaecological medicine learn accepted terminologies, appropriate vocabulary, levels of understanding expected of them and key applications for

their clinical work. As clinical professionals, they are expected to select, organize and test this knowledge through their own experience and in academic conversation with colleagues.

OBG 938 UROGYNAECOLOGIC ANATOMY (2 CREDITS)

General Aim

Understand and describe the normal anatomy of the female pelvis and lower urinary tract, and the normal embryonic development of the urinary system.

Learning Objectives

Anatomy

• Understand and describe:

- The bony pelvis
- The pelvic floor and innervation
- Structure of the urinary bladder and its central and peripheral innervation
- Structure of urethra and its central and peripheral innervation
- The uterus
- Endo-pelvic fascia
- The vagina
- The rectum and its innervation
- The internal and external anal sphincter

Embryology

• Understand and describe:

- The relationship of the urogenital ridge to the subsequent development of the three successive sets of excretory organs

- Development of position of the mature kidney and ureter

- Development of structural abnormalities

- Contributions of the urogenital sinus and the allantois to the normal and abnormal development of the bladder, urethra, vagina and vulva, including lymphatic drainage and blood supply

OBG 939: UROGYNAECOLOGIC PHYSIOLOGY (1 CREDIT)

General Aim

Understand and describe the normal physiology of the female lower urinary tract, and terminal gastrointestinal tract.

Learning Objectives

• Understand and describe:

- The physiology of urine storage and voiding

- Neuro-muscular transmission

- Hydrodynamics of the bladder and urethra

- Faecal control and defecation

Physiology of rectal action and the function of internal and external sphincter

OBG 940: UROGYNAECOLOGIC APPLICATIONS OF PHARMACOLOGY AND THERAPEUTICS (2 CREDITS)

General Aim

Candidates should understand and describe pharmacological properties of agents commonly used in Urogynaecology, and the principles underpinning non-pharmacological therapeutic techniques used in Urogynaecology.

Learning Objectives

• Understand and describe:

- The neuropharmacology of the lower urinary tract
- Drugs inhibiting bladder contractibility
- Therapy to facilitate bladder emptying
- Drugs decreasing outflow resistance
- Drugs increasing outflow resistance
- Effect of steroids on the lower urinary tract
- Adverse effects of drug therapies
- Adverse effects of therapy for other medical conditions
- Understand and describe the pharmacological basis, efficacy and adverse effects of drug therapies for the treatment of stress and urge incontinence and painful bladder conditions, including those available internationally

• Understand the principles underpinning:

- The efficacy of pelvic floor muscle training, biofeedback, electrical stimulation, bladder retraining techniques for the treatment of stress and urge incontinence and painful bladder
- The non-surgical management of voiding dysfunction
- Devices and pessaries for the treatment of incontinence and genito-urinary prolapse

- The management of nocturnal enuresis

OBG 941: UROGYNAECOLOGIC PATHOLOGY(2 CREDITS)

General Aim

Understand and describe the pathology of diseases and disorders of the female lower urinary tract.

Learning Objectives

• Understand and describe:

- The effect of pregnancy on renal function, urinary storage and voiding, changes in renal function, ureteric changes and postural effects
- The effect of parturition on the lower urinary tract and genital tract supports
- The effect of ageing on bladder and urethral function
- The effect of menopause on lower urinary tract function

-The relation of genital tract prolapse to urinary disorders

- Neurological disease as it affects the pelvic viscera
- Partial denervation of the pelvic floor
- Chronic urinary infection
- Chronic inflammatory disease of the lower urinary tract
- Sensory disorders
- Pelvic tumours, endometriosis and extensive pelvic surgery on bladder/sphincter function

- Emotional and psychosexual disorders

OBG 942: RESEARCH METHODS IN UROGYNAECOLOGY (1 CREDIT)

General Aim

Understand the principles and methods underpinning productive and ethical research, and the sharing of knowledge in the medical community.

Learning Objectives

Research

• Understand the principles and practice of research, including:

- Epidemiological techniques, e.g., cohort, studies and case control studies, cumulative calculation and assessment of bias

- Population parameters and sample techniques

- Computation and interpretation of comparison measures, such as means and variations

• Analysis of presented experiments and the construction of a hypothetical experiment with respect to the following:

- The question examined

- The hypothesis

- The sampling technique, including sampling bias and sample size

- Significance of results
- The conclusion
- The appropriate inferences which can be obtained

Publications

• Know the current guidelines in Urogynaecology

• Know the relevant Cochrane reviews

• Know significant published studies and trials in Urogynaecology

OBG 943: DIAGNOSTIC TECHNIQUES IN MODERN UROGYNAECOLOGY (4 CREDITS)

General Aim

Understand the principles of physics underpinning diagnostic techniques used in Urogynaecological practice, and the indications and methods used to diagnose diseases and disorders of the female lower urinary tract.

Learning Objectives

Biophysics

• Understand the principles and techniques of force and pressure measurements

• Understand and describe the following measurement techniques:

- Intravesical pressure by internal and external gauges

- Voiding studies

- Urethral closure pressure and forces

- Urethral competence

- Electromyographic techniques

Radiological Investigation

• Understand and describe:

- The indications for radiological examination of the upper urinary tract and x-ray cystography

- Micturating cystogram

- Ureteric reflux

- Voiding disorders

- Sphincter incompetence

- Appearances produced by genital tract prolapse

- Bead chain cysto-urethrography

Electromyography

• Understand and describe:

- Basic theory

- Choice of electrode

- Recording equipment

- Choice of site

- Patterns of response

- Partial denervation

Ultrasound

• Understand and describe the following diagnostic methods:

- Transvaginal

- Transrectal

- Tranperineal-translabial ultrasound

• Understand and describe the following principles:

- Transducer type and frequency

- Choice of transducers for given clinical situations

- Artefacts and their recognition

- Bioeffects of ultrasound

- Infection control issues

- Advantages/disadvantages of ultrasound versus radiological imaging

• Understand the indications for the use of ultrasound in Urogynaecology, including:

- Incontinence, including context of urodynamics assessment

- Prolapse assessment

- Levator function

- Assessment of the urethra and bladder wall

- Estimation of residual urine and testing of ureteric function

- Renal ultrasound to exclude hydronephrosis, gross distortion of anatomy and concrements

- Isotope renography

- Volume 3d ultrasound assessment of urethra, levator and paravaginal spaces

- Postoperative assessment after incontinence and prolapse surgery

Pelvic Floor Disorders

• Understand the principles underpinning the assessment of patients with pelvic floor disorders such as lower urinary tract symptoms, pelvic organ prolapse and anorectal disorders, including:

- Microbiological examination of urine

- Quantification of urine loss by bladder diary and pad tests

- Assessment of bladder function by subtracted multichannel cystometry

- Assessment of voiding by uroflowmetry, combined pressure/flow studies and residual urine volume by ultrasonography

- Assessment of intrinsic urethral function by urethral pressure profile studies (both static and dynamic) and abdominal and detrusor leak point pressures

- Ultrasonography imaging of the lower urinary tract

- Ambulatory urodynamics assessment

-Micturating cystourethrography and video-urodynamics (e.g., using fluoroscopy)

- Interpretation of urodynamics findings and ability to recognise artefacts

- Pelvic floor and sphincter function by electromyographic techniques

- Urethocystoscopy, including ureteric catheterisation

- Endorectal ultrasonography, anorectal manometry and defecating protogragraphy

- Specialised imaging techniques, e.g., IVP, CT scan, MRI and PET scan

- Perioneometry

- Perineal ultrasound

- MRI

OBG 944: COMMON UROGYNAECOLOGIC CLINICAL CONDITIONS, PROBLEMS AND MANAGEMENT (4 CREDITS)

General Aim

Understand and describe the aetiology, pathogenesis, pathology, epidemiology, clinical presentation, investigation, management, prognosis, prevention, and counselling of women with Urogynaecological problems and conditions and the role of community care organisations and other health professionals.

Learning Objectives

• Lower urinary tract and terminal gastrointestinal tract problems

• Understand and describe the principles underpinning the diagnosis, investigation, treatment and counselling of women with the following problems:

- Incontinence of urine
- Retention of urine
- Voiding disorders
- Urinary frequency and urgency
- Lower urinary tract pain
- Recurrent urinary infection
- Symptoms of prolapse
- Problems of defecation
- Faecal incontinence

- Sexual problems

• Understand and describe:

- The evaluation and care of the elderly and handicapped suffering from urinary problems

- Care of women with intractable incontinence

Lower Urinary Tract and Terminal Gastrointestinal Tract Conditions

• Understand the aetiology, pathogenesis, pathology, epidemiology, clinical presentation, investigation, management, and counselling of women with the following conditions:

- Urethral sphincter dysfunction

- Abnormalities of bladder function

- Fistulae of the lower urinary tract

- Lesions of the central nervous and autonomic systems affecting urinary and faecal control

- Genital prolapse

- Recurrent genital prolapse

- Acute and chronic urinary infection

- Chronic inflammatory lesions of the lower urinary tract

- Sensory disorders of the lower urinary tract

- Urethral lesions, e.g. diverticulae

- Urinary problems consequent on radical pelvic surgery and irradiation

- Urinary disorders in pregnancy

- Urologic problems associated with gynaecological pathology

- Disorders of sexual function

- Detrusor overactivity

• Understand the principles underpinning the following procedures:

- The repair of vesico-vaginal and urethro-vaginal fistulae

- Implantation of an artificial urinary sphincter

- Assessment and management of ureteric and bladder injury

- Urinary diversion and augmentation cystoplasty

- Sacral neuromodulation

- Urethral diverticular surgery

- Ureteric re-implantation and re-anastomosis

- Nephrostomy

- Anal sphincter repair

- Vaginal prolapse repair

- Apical support techniques

• Understand and describe the role of prosthetic materials in pelvic reconstructive surgery, e.g. synthetic mesh and fascia lata, biological grafts

• Understand indications for different types of catheters and pessaries and methods of insertion

Neoplasia

• Understand the significance and the principles underpinning the recognition of lower urinary tract neoplasia, including:

- Classification

- Presentation

- Indications for biopsy and referral

- Criteria for management

- Prognosis

Intraoperative Injuries and Complications

• Understand:

- Appropriate preoperative verbal and written communication required concerning intraoperative injuries and complications

- Prevention and recognition of operative and obstetrical injuries to the urinary tract

- Normal and abnormal and anatomical relationships of pelvic viscera

- Accepted precautions necessary to prevent injury

- Investigations to recognise injuries and techniques for immediate and delayed repair

- Appropriate communication and harm minimisation

- Adverse outcome reporting

Community Care

• Understand and describe:

- The organisation of schemes for the detection and management of urinary and faecal incontinence in the community

- The establishment of community programs for the planned management of the incontinent

- The role of the community nurse and general practitioners

- The role of nurse continence advisor:

  - Indications for hospital referral
  - Incontinence garments, relative costs and supply
  - Grants for the care of the disabled

OBG 945: PROFESSIONALISM AND MANAGEMENT IN UROGYNAECOLOGY (2 CREDITS)

General Aim

Understand and describe the organizational responsibilities inherent in the practice of Urogynaecology.

Learning Objectives

• Understand the organizational responsibilities inherent in the practice of Urogynaecology at a subspecialty level, including:

- Creating protocols for management

- Establishing and maintaining regional transport systems with appropriate patterns of referral

- Involvement in research advisory and ethics committees

- Organization and co-ordination of clinical meetings

Teaching

General Aim

Understand the principles and methods underpinning the teaching and assessment of practical and theoretical concepts.

Learning Objectives

• Understand the principles underpinning:

- Facilitation of learning of patients, trainees, students and other health professionals

- Apprenticeship learning

- Provision of constructive feedback

- Assessment of performance according to set performance criteria

• Understand the use of vocabulary that encourages and acknowledges learning

• Understand the learning needs of oneself and others

OBG 946: ETHICS AND THE LAW IN UROGYNAECOLOGY (1 CREDIT)

General Aim

Understand and discuss the ethical and legal aspects of Urogynaecology practice.

Learning Objectives

• Understand the Code of Ethical Practice as pertains to practice in Urogynaecology

• Understand and discuss the ethical and legal aspects of Urogynaecology practice, including:

- Refusal of treatment

- Health economics

- Inequalities of healthcare

- Ethics of pharmaceutical and device company sponsorship

Culture

General Aim

Understand and discuss the ethical and legal aspects of subspecialty practice in Urogynaecology.

Learning Objectives

• Understand special implications for women's health services with respect to women of diverse cultural backgrounds, including indigenous women and those with various spiritual beliefs, sexual orientations, lifestyles, beliefs, ages, social status and perceived economic worth

• Understand and respect the ways in which culture impacts on women's reaction to gynaecological disorders and recommended treatments

• Have an awareness of the general beliefs, values, behaviours and health practices of particular cultural groups and how these are applied in a clinical situation

OBG 947: CLINICAL AND MANAGEMENT SKILLS IN UROGYNAECOLOGY (4 CREDITS)

Clinical and Management Skills Fundamental to the Practice of Urogynaecology

Routine skill develops with practical experience. Subspecialists in Urogynaecology perform complex skills that require much more than practical experience. Their skill set draws on a rich and interrelated store of knowledge that underpins and informs their practice. Their practice is characterized by professional attitudes and behaviours, and they review and update their practice continually to ensure the highest possible standard of healthcare delivery.

Urogynaecology subspecialists possess:

• Advanced knowledge of the Urogynaecological disorders and complications

• Expertise in the most current approaches to diagnosis and treatment of patients with Urogynaecological disorders

All clinical skills and processes are underpinned by sensitive, appropriate and effective communication with the woman.

Urogynaecology

General Aim

Be able to investigate, diagnose, counsel, treat and manage women with diseases and disorders of the urogenital and terminal gastrointestinal tracts.

Learning Objectives

• Investigate, diagnose, manage and counsel women with problems of the urogenital tract, defecation and sexual function

• Investigate, diagnose, medically and surgically manage, and counsel women with conditions of the urogenital tract and neoplasia

• Manage intraoperative injuries and complications

Procedural and Surgical Skills

General Aim

Be able to perform surgical and ultrasound procedures relevant to diseases and disorders of the urogenital and terminal gastrointestinal tracts.

Learning Objectives

• Be able to perform a competent basic pelvic floor assessment by translabial or introital ultrasound including quantification of bladder neck descent and levator function and estimation of residual urine

• Be able to perform the following surgical procedures:

- Suprapubic cystostomy and / or suprapubic cystotomy

- Vaginal and abdominal repair of recurrent prolapse

- A range of abdominal and vaginal vault suspension procedures including; sacral colpopexy, sacrospinous ligament fixation, high uterosacral suspension and iliococcygeus fixation

Clinical Training Summary

Subspecialty trainees may include up to 25 per cent of directly supervised procedures (‘Supervised Others’) into their total number of ‘personally performed’ procedures, providing they supervised a FMCOG trainee.

Critical Care

• Understand critical care skills in the areas of:

- Toxic shock syndrome

- Septic shock
- Amniotic fluid embolism
- Adult respiratory distress syndrome
- Haemodynamic monitoring / hypovolaemic shock
- Cardiopulmonary resuscitation
- Allergic (or adverse) drug reactions
- Resuscitate an adult patient, including intubation

Management and Professional Skills

General Aim

Be able to apply sound management and administrative skills to their professional practice.

Learning Objectives

Management

• Apply:

- The basic principles of Human Resources Management

- The steps associated with recruiting staff

- Principles of good staff supervision

• Advocate on behalf of junior staff

• Counsel staff and mange conflict resolution in the workplace

Administration

• Create protocols for management

• Establish and maintaining regional transport systems with appropriate patterns of referral

• Be involved in research advisory and ethics committees

• Organize and co-ordinate clinical meetings

Clinical Service Delivery

• Take steps to minimise areas of potential complaint in the delivery of clinical services

• Ensure that staff communicate clearly, verbally and in writing, with the women in their care

• Discuss costs, where appropriate, before treatment

• Provide consistent information

• Apologise where you have inconvenienced a women in your care or made an error

• Personally discuss complaints with women in one's care

• Be able to convey bad news and sub-optimal outcomes compassionately, appropriately and in person

Business and Financial Management

• Apply the principles of effective bookkeeping

• Understand issues related to insurance, including professional indemnity and public liability

• Understand how income is affected by patient satisfaction and the ability to pay

Risk Management

• Understand the principles and importance of risk management

• Understand the importance of continuing professional development in both a risk management and service improvement context

• Understand the importance and functional basis of continuing professional development program in risk management and practice improvement

Teamwork

• Understand the principles and importance of:

- Good communication

- Defining areas of individual responsibility

- Collective goal setting

- Providing opportunities for all team members to contribute

Time Management

• Understand the principles and importance of time management

Research Skills

General Aim

Be able to undertake productive and ethical research and share knowledge in the medical community.

Learning Objectives

• Use electronic databases such as Medline and the Internet to conduct literature searches and to locate information

• Critically appraise / evaluate relevant literature, reviews and new techniques / technologies

• Use word processors, databases, spreadsheets and statistical packages to produce statistical analyses and research papers

• Conduct a literature review

• Develop a hypothesis to be tested

• Choose an appropriate research methodology and design a research study

• Write a grant application to fund a research project

• Apply for ethics Committee approval for a clinical or laboratory-based study

• Collect, collate and interpret data

• Apply basic statistical analysis to clinical data

• Develop an outline structure for a research paper

• Write a literature review for a research paper

• Apply the developed outline to write a research paper

CHAPTER 7: SENIOR RESIDENCY TRAINING IN GYNAECOLOGIC ONCOLOGY

7.1 VISION

To train and produce highly competent Subspecialists in Gynaecologic oncology that will deliver high quality and safe health care to women and their families in Nigeria and internationally.

7.2 MISSION

The Faculty will achieve her vision by promoting excellence in competency-based training, faculty-based courses, maintain uniform standards in accreditation of training institutions, ensuring trainees achieve recommended training milestones and minimum Entrustable Professional Activities (EPAs), and provide opportunities for continuing professional development.

The Faculty will also maintain the culture of inter-faculty training collaborations within the National Postgraduate Medical College and with sister colleges regionally and internationally.

7.3 AIM of training: To produce subspecialists in Gynaecologic oncology.

7.4. Objectives of training

At the completion of the Senior residency training in Gynaecologic oncology , trainees should have acquired the knowledge and skill to enable them practice at the pinnacle of their career in Gynaecologic oncology. This will be attained through:

c. Acquisition of knowledge of the basic sciences relevant to reproductive medicine
d. Acquisition of knowledge of the pathophysiology, methods of evaluation and treatment of the urogynaecologic disorders.
e. Acquisition of competence in all the modalities of urogynaecologic diagnosis and therapy including minimal access accessincluding diagnostic and therapeutic endoscopy.
f. Attainment of state-of-the-art skills and competence in the management of urgynaecologic disorders.
g. Understanding of the concepts of investigative science and the development of skills in research methods

11. Understanding of the organisation of health services in the areas of uroynaecology
12. Training in the methods of quality assurance and audit.

13. Provision of leadership in research and development in urogynaecology.
14. Building of human capacity in urogynaecoloc practice, teaching, research and audit.

5.6 ENTRY QUALIFICATION

A pass at the Part I fellowship examination of the National Postgraduate Medical College of Nigeria.

5.6: DURATION AND PROGRESSION OF TRAINING

A. DIVISION OF THE TRAINING

The training shall be for duration of three years. The first six months must be spent in General Obstetrics and Gynaecology while three months must be spent doing a posting in a rural area at a secondary health facility

At least two-years of training shall be spent in postings directly relevant to Gynaecologic oncology. The training shall be assessed at intervals of 6-months, followed by final assessment and examination.

Postings

General Obstetrics and gynaecology	6 months
Two years postings directly related to Gynaecologic oncology	
Detailed below	24 months
Overseas posting	3 months
Rural posting	3 months.

FIRST SIX MONTHS: Clinical Gynaecological Oncology*

This will include theoretical and clinical aspects of gynaecological oncology as spelt out in the curriculum. Must cover all aspects of clinical management. Each trainee

shall develop a relevant research proposal and submit an ethically approved version for external formative assessment by the end of this period under close supervision of the trainers. This must be returned within 4 weeks.

SECOND SIX MONTHS IN CLINICAL GYNAECOLOGIC ONCOLOGY

This involves one month external rotation each in urology and general surgery. Must involve theoretical and clinical aspects of general surgery and urology related to gynaecological oncology. Actual hands on involvement in surgery, patient preparation and post-operative management are mandatory and must be entered into the log book provided. The number of cases may be made up while undergoing gynaecological oncology postings.

1. One-month medical oncology (concurrently with gynaecological oncology).
2. One-month radiation oncology (concurrently with gynaecological oncology).
3. One-month palliative care (concurrently with gynaecological oncology).
4. One-month advanced imaging (concurrently with gynaecological oncology).
5. One-month urology
6. One-month general surgery**

THIRD SIX MONTHS IN CLINICAL GYNAECOLOGICAL ONCOLOGY

1. One-month gynaecological oncology research proposal on clinical trials.
2. One-month histocytopathology (concurrent with gynaecological oncology).
3. Four months clinical gynaecological oncology with conduct of and submission of research work.

FOURTH SIX MONTHS: CLINICAL GYNAECOLOGICAL ONCOLOGY

The competence at this level must be evaluated as ability to stand-alone in-patient management as well as theoretical basis.

Note

During each segment of training, trainees shall be engaged with the relevant theoretical and clinical aspects of the rotations in the form of lectures, tutorials, seminars, bedside presentations, theatre sessions and assessments.

* Gynaecologic oncology: Clinicopathological conferences, clinics (Pap/VIA, colposcopy, PMB clinic, combined oncology clinic, genetics) ward rounds, theatre session, MDT teaching with special investigations-radiology, histocytopathology.

**coloproctology, plastic surgery for apronectomy and vulvovaginal reconstructions.

5.9. Nature of training

Training shall be structured and competency based. From the beginning of the programme, progress shall be monitored by means of the log book.

Resident doctors undergoing the training in Reproductive medicine shall participate in all relevant activities of the training unit, such as the care of outpatients and in-patients, on call duties, performing ultrasound examinations, intra-uterine procedures and participating in educational activities, including the teaching of medical students, resident doctors in the general Obstetrics and Gynaecology training and other health professionals and their students. The trainee shall also participate in audit and any ongoing basic or clinical research activities of the training unit.

At the recommendation of the National Training Coordinator/Supervisor and with approval of the College Registrar following consideration by the Board of the Faculty of Obstetrics & Gynaecology, NPMCN, the trainee may spend some of the training periods in other centres accredited by the National Postgraduate Medical College as well as recognized centres in other countries where such, in the opinion

of the Training Coordinator or Supervisor, would enhance the quality of training and exposure of the Resident doctor.

5.10. Structure of the training

The Senior residency training in Reproductive Medicine shall be centrally regulated by the Senate of the National Postgraduate Medical College of Nigeria via recommendations from the Faculty board of Obstetrics and Gynaecology of the NPMCN. The College Senate shall approve the enrollment of all candidates into the training programme as well as the accreditation of training centres following recommendation by the Faculty Board of Obstetrics and Gynaecology.

Each Trainee shall have at least one Supervisor in Reproductive medicine appointed by the Faculty Board of Obstetrics and Gynaecology of the NPMCN from the onset of the programme. The Supervisor shall facilitate communication between the Faculty/College and the Trainee when necessary, and conduct periodic evaluations of progress of the trainee. There shall be documented evidence of these evaluations.

The Faculty Board shall be responsible for the appointment of Specialists with requisite proficiencies in specific areas of Reproductive Medicine as accredited trainers and assessors for the programme .

The Executive Committee of the Faculty shall recommend for approval of the Faculty Board, a subspecialty training Chairman, for a tenure of two years renewable for another two years. The Subspecialty Chairman shall lead a Committee including two other senior academics in the subspecialty. They will oversee the training programme in the sub-specialty subject to the Faculty Board and ultimately to the College Senate. The members of this committee shall serve for a maximum of four

years ,after which there must be an interval of at least two years before any fellow shall be eligible for re-appointment. The qualifications for appointment shall be the same for election of Faculty Secretary or Third member of Senate of the Faculty.

The Subspecialty Committee shall be responsible for collation of the academic and clinical activities of all trainees, in order to confirm that the recommended knowledge and competences for each stage of the training are successfully attained, subject to the Executive Committee of the Faculty and the Faculty Board.. The Committee shall achieve this by compiling the reports from the accredited specialists at the designated training centres and reviewing the log books.

CONTENT OF TRAINING

The training contents shall include an extensive and in-depth theoretical knowledge of the scientific basis and practice of gynaecological oncology. Training will be focused on gynaecological oncology, general surgery, urology, plastic surgery, medical oncology, radiotherapy, pathology, tumour board and research.

1. MOLECULAR BASIS CANCER

The molecular basis of cancer, with direct reference to each gynaecological cancer must be clearly understood, both from the research through the biological to the clinical basis. This will include, but not limited to:

1.1 Cell division and cell growth
1.2 Apostosis

2. AETIO-PATHOGENESIS AND EPIDEMIOLOGY OF GYNECOLOGICAL CANCERS

2.1 Cervical Cancer
2.2 Ovarian Cancer
2.3 Choriocarcinoma
2.4 Endometrial cancer
2.5 Cancer of Fallopian Tubes
2.6 Vulva and Vaginal Cancer

3. PREVENTION

3.1 PRIMARY
3.2 SECONDARY
3.3 TERTIARY
3.4 FUTURE

4. COLPOSCOPY

4.1 Principles
4.2 Parts and setting up services
4.3 Procedure
4.4 Interpretation and Classification
4.5 Colposcopically directed biopsy
4.6 LLETZ

5. SURGICAL ANATOMY

5.1 Bowel
5.2 Liver
5.3 Spleen
5.4 Diaphragm
5.5 Vascular pattern of abdomen and pelvis
5.6 Lymphatic drainage of abdomen and pelvis
5.7 Kidneys, ureters and urinary bladder
5.8 Pelvis and pelvic side wall
- 5.8.1 Uterus
- 5.8.2 Fallopian tube
- 5.8.3 Ovaries
- 5.8.4 Peritoneum
- 5.8.5 Cervix
- 5.8.6 Vagina
- 5.8.7 Lymphatic drainage and lymph nodes of pelvis, groin, vulva and vagina.
- 5.8.8 Urethers, urinary bladder and urethra

6. PRINCIPLES AND PHARMACOLOGY OF CHEMOTHERAPY

Indepth knowledge of principles and mechanisms of action of various cytoxic drugs and drug regimen used in gynaecological oncology.

7. CLINICAL MANIFESTATIONS

7.1 Cervical Cancer
7.2 Ovarian Cancer
7.3 Choriocarcinoma
7.4 Endometrial cancer
7.5 Cancer of Fallopian Tubes
7.6 Vulva and Vaginal Cancer

8. DIAGNOSTIC INVESTIGATIONS

Understanding of investigative procedures, cystoscopy, sigmoidoscocopy, thoracocentesis, parcentesis and biopsy procedures. Ability to interpret results of ultrasound, CT, MRI, PET, Lymphangiography etc.

8.1 General principles
8.2 Cancer specific investigations
8.3 Biomarkers
8.4 Diagnostic algorithm
8.5 Imaging
8.6 Staging

9. MULTIDISPLINARY TUMOUR BOARDS

Role and functions of multidisplinary tumour boards in the planning and management of gynaecological cancers.

10. SURGICAL TREATMENT

In addition to essential surgery for gynaecological cancers, this must include the relevant general bowel surgery, urology, wound care and plastic surgerg.

10.1 Laparoscopic oophorectomy
10.2 Laparoscopic assisted vaginal hysterectomy or total laparoscopic hysterectomy

10.3 Abdominal hysterectomy
10.4 Radical hysterectomy
10.5 Laparoscopic pelvic lymph node biopsy or dissection
10.6 Open pelvic lymph node biopsy or dissection
10.7 Laparoscopic para-aortic lymph node biopsy or dissection
10.8 Open para-aortic lymph node biopsy or dissection Prolonged adhesiolysis (open or laparoscopic) Anterior exenteration / urinary conduit
10.9 Posterior exenteration
10.10 Debulking surgery for ovarian cancer (stage III/IV) (other procedures may be marked as applicable)
10.11 Omentectomy
10.12 Insertion of intraperitoneal port and catheter
10.13 Cone biopsy
Wide local excision of vulva/simple vulvectomy
10.14 Wide radical excision / radical vulvectomy
10.15 Complete inguinofemoral lymph node biopsy Sentinel node biopsy
10.16 Vaginectomy (vaginal approach)
10.17 Vaginectomy (abdominal approach)
10.18 Ureteric stent insertion Repair of bladder
10.19 Repair of ureter including ureteric stent
10.20 Resection of small bowel + / - reanastomosis Resect large bowel + / - reanastomosis
10.21 Colostomy / ileostomy
10.22 Repair of wound dehiscence
10.23 Repair of incisional hernia, with and without mesh Rotational + / or myocutaneous flaps

11.CHEMOTHERAPY AND MEDICAL ONCOLOGY

It is mandatory that trainees are involved in the day-to-day management of patients on cytotoxic chemotherapy for their gynaecological malignancies, including the identification and management of complications arising from such treatments. It is desirable, where available to do a one month attachment in a medical oncology unit; it suffices to actively participate in management during gynaecological oncology rotation.

11.1 Principles
11.2 Calculation of dosing and different regimen
11.3 Cervical cancer
11.4 Ovarian cancer
11.5 Choriocarcinoma
11.6 Endometrial cancer
11.7 Vulva and vaginal cancers
11.8 Cancer of Fallopian Tubes

12.RADIOTHERAPY

It is mandatory for trainees to participate fully in the selection of patients for radiotherapy and for participate in the preparation of such patients for radiotherapy. Trainees must follow such patients through the course of radiotherapy, including identification and management of any complication arising from it. This should include both brachytherapy and teletherapy; including an in-depth knowledge of their roles in each type of gynaecological cancer. Arrangements should be made for trainees to spent one month in centres where this is not available and during that period shall participate in the activities of the gynaecological oncology unit of that institution. Where such is available, it suffices to participate in patient care while undergoing gynae-oncology rotation.

12.1 Principles
12.2 Cervical cancer
12.3 Ovarian cancer
12.4 Choriocarcinoma
12.5 Endometrial cancer
12.6 Vulva and vaginal cancers
12.7 Cancer of Fallopian Tubes

13.IMMUNOTHERAPY

Trainees should have in-depth knowledge and understanding of the theoretical basis of immunotherapy on gynaecological oncology.

14.TARGETED THERAPY

Trainees should have in-depth knowledge and understanding of the theoretical basis of targeted therapy on gynaecological oncology.

15.PALLITIVE CARE

Trainees should have in-depth knowledge and understanding of the theoretical basis of palliative on gynaecological oncology.

15.1 Pain management
15.2 Nutriton management
15.3 Anaemia/Haemorrhage

16.FOLLOW UP

Trainees must show a clear understanding of the importance of long-term follow up, five-year survival and quality of life in the continuum of care.

17.CONDUCT OF RESEARCH AND CLINICAL TRIALS IN GYNAECOLOGICAL ONCOLOGY

Trainers must acquaint trainees with the frontiers of research and clinical trials in gynaecological oncology.

COURSES

OBG 924: BIOLOGICAL BASES OF CANCER (I CREDIT)

1.1. Cell growth control.
1.2. Carcinogenesis and carcinogens.
1.3. Genetics of cancer.
1.4. Apoptosis and programmed cell death mechanics.
1.5. Cancer production and metastasis mechanics.
1.6. Origin of gene alterations.
1.7. Epigenetic changes and oncogenes.
1.8. Angiogenesis.

OBG 925: Endometrial cancer I (I CREDIT)

1.1. Epidemiology and etiopathogenesis.
1.2. Precancerous lesions.
1.3. Hereditary-familial carcinoma.
1.4. Anatomical pathology and variety of tumours.
1.5. Diagnostic process.

1.6. Imaging tests, tumour markers and possible screening.
1.7. Diagnostic molecular test.
1.8. FIGO Staging System and Other Classification Systems.

OBG 926: Endometrial cancer II (2 CREDITS)

3.1. Introduction.
3.2. Principles of the surgical treatment.
3.3. Low-risk tumours (stage I, grade 1).
3.4. High-risk Tumours (clear cell or serous carcinoma, grades 2-3).
3.5. Laparotomy vs. laparoscopy.
3.6. Introduction to robotic surgery.
3.7. Surgical technique for high-risk tumours.
3.8. Adjuvant treatment.

3.8.1 Medical supervision without further treatment.

3.8.1.1. Low-risk, early stage, low grade.

3.8.2. Adjuvant radiation therapy.

3.8.2.1. Early and medium stage and high-risk cancer.
3.8.2.2. Advances stages.

3.9. Hormonal treatment.
3.10. Recurrent endometrial cancer.

3.10.1. Surgical treatment.
3.10.2. Radiation therapy.
3.10.3. Chemotherapy.

3.11. Tracking of endometrial cancer.
3.12. Prognosis.

OBG 927 : Cervical cancer I (I CREDIT)

4.1. Epidemiology and etiopathogenesis.
4.2. Precancerous lesions and their development process.
4.3. Risk factors of cervical cancer.
4.4. Basic ideas about cervical pathology and HPV.
4.5. Normal colposcopy and vulvoscopy.

4.6. Abnormal colposcopy and vulvoscopy.
4.7. Cervical cancer screening.
4.8. Hereditary-familial cervical carcinoma.
4.9. Anatomical pathology appearance of the tumour.
4.10. Diagnostic process (imaging tests and tumour markers).
4.11. Role of new technologies, such as PET-CT.
4.12. FIGO and TRM staging systems for cervical carcinoma.

OBG 928: Cervical cancer II (2 CREDITS)

1.1. Treatment of Cervical Intra-epithelial Neoplasia (CIN).

5.1.1. Surgery for CIN.
5.1.2. Immunotherapy for CIN.

1.2. Invasive cervical cancer treatment.

5.2.1. Nerve-sparing radical hysterectomy.
5.2.2. Partial radical hysterectomy.
5.2.3. Endoscopic radical hysterectomy.
5.2.4. Selective lymph node biopsy.
5.2.5. Para-aortic lymphadenectomy for surgical staging of advanced stages.

1.3. Radiation therapy and chemotherapy.

5.3.1. Concurrent chemoradiotherapy.
5.3.2. Enhanced procedures of radiation therapy treatments.
5.3.3. Enhanced procedures of chemotherapy concurrent treatments.
5.3.4. Preoperative chemoradiotherapy.
5.3.5. Adjuvant therapy after radical histerectomy.
5.3.6. Neo-adjuvant chemotherapy.
5.3.7. Adjuvant therapy after neo-adjuvancy and previous surgery.

1.4. Treatment of metastatic disease (recurrent or persistent).

5.4.1. Surgical treatment.
5.4.2. Chemotherapy.

1.5. Management of cervical adenocarcinom.

5.5.1 Adenocarcinoma In Situ (AIS).
5.5.2 Comparison between squamous carcinomas and adenocarcinomas.
5.5.3 Surgery vs. radiation therapy in invasive adenocarcinoma.
5.5.4 Chemotherapy.

1.6. Tracking.

OBG 929: Ovarian cancer I (1 CREDIT)

6.1. Epidemiology of ovarian and fallopian tube cancer.
6.2. Etiopathogenesis and tubal origin. New trends.
6.3. Precancerous lesions in the fallopian tubes.
6.4. Ovarian cancer screening.
6.5. Hereditary-familial carcinoma and how to assess it.
6.6. Histological appearances and anatomical pathology.
6.7. Diagnostic process.

6.7.1. Clinical bases.
6.7.2. Ultrasound scan.
6.7.3. Computed Tomography (CT).
6.7.4. Magnetic resonance.
6.7.5. Positron Emission Tomography (PET).

6.8. Serum tumour markers

6.8.1. CA 125
6.8.2. HE4
6.8.3. CA 19.9
6.8.4. CEA
6.8.5. Other markers.

6.9. FIGO staging system of the disease.

OBG 930: Ovarian cancer II (I CREDIT)

1.1. General surgical treatment.
1.2. Primary and complete debulking surgery.
1.3. Neo-adjuvant treatment and when to choose it.
1.4. Treatment interval and second look.
1.5. Adjuvant therapy (carboplatine-taxol and other options).
1.6. Does radiation therapy play any role?
1.7. Chances of hormonal therapy for ovarian cancer.

1.8. Prognosis and disease-free interval.
1.9. Tracking and treatment of relapses.
1.10. Controversies surrounding ovarian cancer.
1.11. Peritoneal carcinomas. Hyperthermia therapy.
1.12. Intra-peritoneal chemotherapy, indications and results.

OBG 931: Vulvar cancer I (I CREDIT)

8.1. Epidemiology and relationship with HPV.
8.2. Etiopathogenesis and precancerous lesions.
8.3. VIN I, II, II. VAIN and other lesions.
8.4. Vulvar cancer screening.
8.5. Hereditary-familial carcinoma.
8.6. Pathological anatomy and histological types.
8.7. Imaging tests and extension studies.
8.8. Tumour Markers (SCC).

OBG 932: Vulvar cancer II (3 CREDITS)

9.1. Introduction.
9.2. Paget's disease of the vulva.

9.2.1. Basic principles.

9.2.2. Paget's disease of the vulva type I.

9.2.2.1. Incidence.
9.2.2.2. Clinical features.
9.2.2.3. Diagnosis.
9.2.2.4. Treatment.

9.2.3. Paget's disease of the vulva types 2 and 3.

9.3. Invasive Paget's disease.

9.3.1. Basic principles.
9.3.2. Prognosis.

9.4. Invasive vulvar carcinoma.

9.4.1. Squamous cell carcinoma.
9.4.2. Clinical features.
9.4.3. Diagnosis.

9.4.4. Spread routes.
9.4.5. Staging.
9.4.6. Treatment.

9.4.6.1. Treatment of the primary lesion.
9.4.6.2. Local management after the primary surgical treatment.
9.4.6.3. Management of lymph chains.
9.4.6.4. Postoperative management.

9.4.6.4.1. Early postoperative complications.
9.4.6.4.2. Late postoperative complications.

9.4.6.5. Sentinel lymph node use.
9.4.6.6. Advanced disease.

9.4.6.6.1. Basic principles.
9.4.6.6.2. Management of the primary tumour.

9.4.6.6.2.1. Surgery.
9.4.6.6.2.2. Radiation therapy.
9.4.6.6.2.3. Chemotherapy.

9.4.6.7. Role of radiation therapy in vulvar cancer.

9.4.7. Recurrent vulvar cancer.
9.4.8. Prognosis.
9.4.9. Tracking.

9.5. Vulvar melanoma.

9.5.1. Introduction.
9.5.2. Clinical features.
9.5.3. Anatomical pathology.
9.5.4. Staging.
9.5.5. Treatment.

9.5.5.1. Management of the primary lesion.
9.5.5.2. Management of lymph chains.

9.5.6. Prognosis.

9.6. Bartholin’s gland carcinoma

9.6.1. Basic principles.
9.6.2. Treatment.
9.6.3. Prognosis.

9.7. Basal cell carcinoma.
9.8. Verrucous carcinoma.
9.9. Vulvar sarcoma.

9.9.1. Introduction.
9.9.2. Leiomysarcoma.
9.9.3. Epitheloid sarcoma.
9.9.4. Rhabdomyosarcoma.
9.9.5. Merkel cell carcinoma.

OBG 933 : Uterine sarcoma I (I CREDIT)

10.1. Introduction.
10.2. Epidemiology.

10.2.1. Incidence.
10.2.2. Age.
10.2.3. Histological distribution.
10.2.4. Racial distribution.

10.3. Risk factors.

10.3.1. Heredity.
10.3.2. Hormonal therapy.
10.3.3. Radiation exposure.

10.4. Pathological anatomy.

10.4.1. Leiomysarcoma.
10.4.2. STUMP.
10.4.3. Benign metastasizing leiomyoma.
10.4.4. Carcinosarcoma.
10.4.5. Endometrial stromal neoplasias.
10.4.6. Stromal lymph node cells.
10.4.7. Endometrial stromal sarcoma.
10.4.8. Mullerian adenosarcoma.

10.5. Clinical features.
10.6. Imaging tests.

10.6.1. MRI scan.
10.6.2. Tumour markers.

10.7. FIGO staging system.
10.8. Conclusions.

OBG 934: Uterine sarcoma II (I CREDIT)

11.1. Introduction.
11.2. Uterine leiomysarcoma.

11.2.1. Early stages.

11.2.1.1. Surgery.
11.2.1.2. Adjuvant radiation therapy.
11.2.1.3. Chemotherapy.

11.2.2. Recurrent or metastatic disease.

11.2.2.1. Surgery.
11.2.2.2. Chemotherapy.
11.2.2.3. Hormonal therapy.

11.2.3. Prognostic factors.

11.3. Endometrial stromal sarcoma.

11.3.1. Early stages.

11.3.1.1. Surgery.
11.3.1.2. Pelvic radiation therapy.
11.3.1.3. Hormonal therapy.

11.3.2. Recurrent or metastatic disease.

11.3.2.1. Surgery.
11.3.2.2. Chemotherapy and radiation therapy.

11.3.3. Prognostic factors.

11.4. Undifferentiated endometrial sarcoma.

11.4.1. Early stages.

11.4.1.1. Surgery.
11.4.1.2. Adjuvant radiation therapy.
11.4.1.3. Chemotherapy.

11.4.2. Recurrent or metastatic disease.

11.4.2.1. Surgery.
11.4.2.2. Chemotherapy and radiation therapy.

11.4.3. Prognostic factors.

11.5. Conclusions.

OBG 935: Fertility preservation (I CREDIT)

12.1. Guidelines for fertility preservation.
12.2. Gamete preservation.
12.3. The function of assisted reproductive technologies.
12.4. Conservative surgical treatments.
12.5. Oncological prognosis after fertility preservation.
12.6. Reproductive results.
12.7. Management of pregnant patients with gynaecological cancer.
12.8. New paths of research and scientific literature update.
12.9. Preservation of ovarian tissue.
12.10. Uterine and gonadal tissue transplant.

OBG 936: Rare gynecological tumors (3 CREDITS)

13.1. Vaginal cancer.

13.1.1. Introduction.
13.1.2. Clinical features.
13.1.3. Diagnosis.
13.1.4. Anatomical pathology.

13.1.4.1. Squamous carcinoma.
13.1.4.2. Adenocarcinoma.
13.1.4.3. Sarcoma.
13.1.4.4. Melanoma.

13.1.5. Tumour staging.
13.1.6. Treatment of the disease.

13.1.6.1. Surgery.
13.1.6.2. Radiation therapy.
13.1.6.3. Medical complications related to the treatment.

13.1.7. Tracking.
13.1.8. Prognosis.

13.2. Gestational trophoblastic disease.

13.2.1. Introduction and epidemiology.
13.2.2. Clinical forms.

13.2.2.1. Hydatidiform mole.

13.2.2.1.1. Complete hydatidiform mole.
13.2.2.1.2. Partial hydatidiform mole.

13.2.2.2. Gestational trophoblastic neoplasia.

13.2.2.2.1. After molar pregnancy.

13.2.2.2.1.1. Persistent gestational trophobastic neoplasia.

13.2.2.2.2. After non-molar pregnancy.

13.2.2.2.2.1. Choriocarcinoma.
13.2.2.2.2.2. Placental site trophoblastic tumour.

13.2.3. Diagnosis.

13.2.3.1. Human chorionic gonadotropin.
13.2.3.2. Ultrasound scan.

13.2.3.2.1. Complete mole.
13.2.3.2.2. Partial mole.
13.2.3.2.3. Invasive mole.
13.2.3.2.4. Placental site carcinoma and placental site tumour.

13.2.3.3. Other imaging tests.

13.2.4. Anatomical pathology.

13.2.4.1. Hydatidiform mole.

13.2.4.1.1. Complete mole.
13.2.4.1.2. Partial mole.

13.2.4.2. Invasive mole.
13.2.4.3. Choriocarcinoma.
13.2.4.4. Placental site trophoblastic tumour.
13.2.4.5. Epithelioid trophoblastic tumour.

13.2.5. Staging.
13.2.6. Treatment.

13.2.6.1. Chemotherapy.

13.2.6.1.1. Low-risk disease.
13.2.6.1.2. High-risk or metastatic disease.
13.2.6.1.3. Chemotherapy-resistant disease.

13.2.6.2. Surgery.

13.2.6.2.1. Mole removal.
13.2.6.2.2. Hysterectomy.
13.2.6.2.3. Myometrial resection.
13.2.6.2.4. Pulmonary resection.
13.2.6.2.5. Craniotomy.
13.2.6.2.6. Other surgical procedures.
13.2.6.2.7. Selective arterial embolization.

13.2.7. Post-treatment tracking.

13.2.7.1. Tracking after mole removal.
13.2.7.2. Tracking after gestational neoplasia.

13.2.8. Prognosis.

13.3. Metastatic tumour in the genital tract.

13.3.1. Introduction.
13.3.2. Clinical features.

13.3.2.1. Secondary tumours in the uterine corpus or cervix.

13.3.2.1.1. Arising from genital or pelvic organs.
13.3.2.1.2. Arising from extra-genital or pelvic organs.

13.3.2.2. Secondary tumours in the vagina.
13.3.2.3. Secondary tumours in the vulva.
13.3.2.4. Secondary tumours in the ovary.

13.3.3. Diagnosis.
13.3.4. Anatomical pathology.

13.3.4.1. Gastrointestinal tumours.

13.3.4.1.1. Metastasis of intestinal cancer.
13.3.4.1.2. Krukenberg tumour.

13.3.4.2. Ovarian lymphoma.

13.3.5. Treatment and prognosis.

13.4. Neuroendocrine tumour.

13.4.1. Introduction.
13.4.2. Anatomical pathology.

13.4.2.1. Well differentiated tumours.
13.4.2.2. Poorly differentiated tumours.

13.4.3. Clinical features and diagnosis.

13.4.3.1. Small-cell carcinoma of the vulva and vagina.
13.4.3.2. Small-cell carcinoma of the uterus.
13.4.3.3. Small-cell carcinoma of the cervix.

13.4.3.3.1. Small-cell neuroendocrine carcinoma.
13.4.3.3.2. Large-cell neuroendocrine carcinoma.

13.4.3.4. Ovarian, fallopian tube and broad ligament tumours.

13.4.3.4.1. Ovarian carcinoid tumours.

13.4.3.4.1.1. Insular type.
13.4.3.4.1.2. Trabecular type.
13.4.3.4.1.3. Mucinous type.
13.4.3.4.1.4. Strumal type.

13.4.3.4.2. Small-cell pulmonary type.
13.4.3.4.3. Undifferentiated carcinoma and not small-cell.

13.4.4. Treatment.
13.4.5. Tracking.
13.4.6. Prognosis.

13.5. Tumours in the rectovaginal septum.

OBG 937: Palliative care concepts (2 CREDITS)

14.1. Introduction.

14.1.1. Symptomatology associated to gynaecological tumours.

14.2. Pain.
14.3. Gastrointestinal symptoms.

14.3.1. Diarrhoea.
14.3.2. Constipation.
14.3.3. Malignant bowel obstruction.

14.3.3.1. Conservative treatment.
14.3.3.2. Surgical treatment.

14.4. Ascites.
14.5. Respiratory symptoms.

14.5.1. Pleural effusion.

14.6. Oedema.
14.7. Anorexia and weight loss.
14.8. Deep vein thrombosis.
14.9. Progress of pelvic disease.

14.9.1. Vaginal bleeding.
14.9.2. Fistulae.

14.10. Palliative pelvic exenteration.
14.11. Metastasis spread to other organs.

14.11.1. Liver.
14.11.2. Brain.
14.11.3. Bone.

14.11.3.1. Hypercalcaemia.

14.12. Anxiety and depression.
14.13. Management of the dying patient.

MILESTONES THAT MUST BE ACHIEVED BEFORE PROGRESSION TO NEXT TRAINING LEVEL

The outlined milestones are aimed at ensuring that trainees achieve the competences associated with each milestone. Where a trainee is unable to get the required exposure in the centre where he/she is training, this must be acquired by doing postings in another accredited centre where this can be achieved. Alternatively, training institutions with a number of trainees can pool cases and invite trainers to put their trainees through.

Trainees must demonstrate surgical competence in the following procedures by the end of the **first** of six months of Gynaecologic oncology training:

1. Pelvic Side Wall (PSW) exploration and dissection / exposure (open)
2. PSW exploration and dissection / exposure (laparoscopic/minimal access)
3. PSW exploration/lymphadenectomy (laparoscopic/minimal access)
4. Ureteric tunnel dissection
5. Omentectomy
6. Radical hysterectomy
7. Vulvectomy and repair (primary or flap)
8. Hysterectomy (laparoscopic/minimal access)
9. Colposcopy

Trainees must demonstrate surgical competence in the following procedures by the end of **third** Six months of training:

1. Pelvic lymphadenectomy (open)
2. Pelvic lymphadenectomy (laparoscopic/minimal access)
3. Para-aortic exploration/lymphadenectomy

4. Groin node dissection
5. Extensive adhesiolysis > 45 minutes (laparotomy)
6. Pelvic peritonectomy – open or minimal access
7. Formation of a stoma
8. Resection and anastomosis of small bowel
9. Resection and anastomosis (any method) of large bowel
10. Extensive adhesiolysis > 45 minutes (laparoscopic/minimal access)

CHAPTER: SENIOR RESIDENCY COMPETENCES AND ASSESSMENT METHODS

a. **Competences**

Attributes such as professionalism and communication skills shall be mandatory in subspecialty senior residency programmes.. Besides these, the following core competencies shall also be required in the programme:

- Patient care
- Medical Knowledge
- Professionalism – To perform their duties and carry out patient care with integrity and ethical conduct.
- Interpersonal and Communication Skills – Ability to communicate with high-risk patients and their relatives and deliver sufficient details to them for informed choices. Ability to communicate with other members of the health team in the Obstetrics and Gynaecology department and to collaborate with other multidisciplinary teams.

- Leadership and Management – Ability to organize and direct a team of healthcare practitioners including nurses, fellow doctors and other members of the allied health team. The trainee should be able to manage and coordinate the continuous development of the subspecialty within a department of Obstetrics and Gynaecology.

All the competencies shall be achieved during the training programme, Trainees shall meet with their Preceptors at the beginning of the programme, and at regular intervals. There shall be documented evidence of these meetings and the cases discussed. For some rare conditions that are unlike to be readily seen, other learning tools such as simulators shall be utilized after discussion with the Supervisors.

All the cases seen and undertaken shall be signed by the Supervisors. The learning sessions shall be clearly stated and dated.

These core competencies shall be assessed during the programme both formatively and summatively.

b. Level of competence

This shall be graded into 5 levels as follows:

LEVEL OF COMPETENCY	**DEFINITION**
1	Learner only observe modelled behaviour, because they do not have the skills or knowledge to perform a specific activity, **even with full supervision**
2	Learner practice the activity **under controlled circumstances with full supervision**
3	Learner practice the activity **with supervision on demand**

4	Unsupervised practice is allowed, with the **caution** that learners will seek help when their capabilities are insufficient to competently complete the task
5	Able to supervise others and teach them through entrusting

The Trainee shall be signed off finally at level 5 for each of the competencies. The date of completion of each module shall be clearly documented.

c. ASSESSMENT METHODS

i. Aim

The aim of assessment in the of the senior residency training include .

- Drive the process of learning of the trainees
- Provide the trainees with a tool for self-assessment and improvement
- Have an objective evidence of the competencies achieved in the course of training
- Allow for comparison with allied programmes in other parts of the world.
- To be used as a tool for determining progression through the various stages of the programme
- To be a proof of formal training
- To act as the tool for decision making on certification of the trainee as a sub-specialist.

ii. Road view of the assessment methods

The assessment for the senior residency programme shall be divided into formative assessment and summative assessment.

The **formative assessments** shall be carried out on a 6-monthly basis during the course of the programme and at the end of any postings undertaken by the Trainee at the training institution. It shall provide evidence of the attainment of the required levels of competencies in the core areas of training as the candidate progresses in the programme. The tool that shall be used for this formative assessment shall be the log book and 6 monthly assessment reports by the supervising consultant. The log book shall document both the tasks done and at what level of competence performed. The individuals responsible for the formative assessment include the trainers and supervisors at the various accredited centres and the trainees themselves. All entries into the log book must be done and signed within one week of the performance of the procedure/surgery. The successful completion of this stage of the assessment is a necessary prerequisite for the progression to the summative assessment stage.

The **summative assessment** shall be carried out once during the course of training before the candidate comes for the exit examinations. The candidate must attain the required level of competence in all the areas.

iii. The exit examination

The candidate shall qualify for the exit examination when the summative assessment certifies that the candidate has successfully attained the levels of competence expected in all the areas, completed the prescribed duration of the training, attended all the required courses and completed the research thesis ready for its defense. There should also be evidence of attendance of at least one national or international conference or congress related to the sub-specialty during the course of training. Presentation of at least one scientific paper at a national or international conference/congress relevant to the sub-specialty of training shall be required of all trainees before the exit examinations.

The final assessment shall consist of three parts with each component examined and scored independently:

- Oral examination in General Obstetrics and Gynaecology lasting I hour (Assessed as Pass or Fail)
- Oral examination in the Subspecialty area of training lasting I hour (Assessed as Pass or Fail)
- Defense of the Dissertation lasting I hour (Assessed as Pass or Fail).

- **Oral examination in General Obstetrics and Gynaecology**

  This shall consist of a formal examination lasting I hour . The candidate shall be expected to answer Six tructured oral questions related to General Obstetrics and Gynaecology. Each question shall be assessed by a different team of at least two examiners. The pass mark for the individual oral questions and this part of the examination shall be determined by a court of judges using standard setting following the Angoff model or its modification.
- **Oral examination in Sub-specialty areas**

  This shall consist of a formal examination lasting I hour. The candidate shall be expected to answer Six structured oral questions related to the subspecialty area of training. The questions may take the format of modified OSCE, in the objective practical assessment of generic competencies (OPAGC). Each question shall be assessed by a different team of at least two examiners. The pass mark for the individual oral questions and this part of the examination shall be determined by a court of judges using standard setting following the Angoff model or its modification.

- **Defense of the dissertation**

It is expected that the Dissertation project approved for the candidate would be in the subspecialty area of interest. The Dissertation Defense shall be conducted by at least two senior academics in the sub-specialty, at least one of which participated in the peer formative assessment of the Proposal. The defense will last for one hour. A score of at least 50% in this section shall be mandatory to obtain a pass.

Candidates must pass each of the three parts of the examination to pass the Part 2 exit examination.

APPENDIX

ACKNOWLEDGEMENTS

The Faculty is indebted to the following fellows who have contributed, at different stages, to the development of the new specialty based Senior Residency training curriculum. The lists below outlines the names of distinguished fellows that worked at drawing up the first draft curricula in the respective subspecialties indicated.

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