



# CMSA

The Colleges of Medicine of South Africa NPC

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**ACADEMIC OFFICE**

**October 2021**

## **SPECIAL REGULATIONS**

### **OF THE**

## **SUB-SPECIALTY CERTIFICATE**

### **IN**

### **MATERNAL AND FETAL MEDICINE**

### **Cert Maternal and Fetal Medicine(SA)**

#### **1.0 BACKGROUND**

- 1.1 The Council of the College of Obstetricians and Gynaecologists (COG(CMSA)) has recommended the registration of subspecialties in Obstetrics and Gynaecology to the Health Professions Council of South Africa. In doing so the Council has decided to advise and keep under review:
  - 1.1.1 the development of subspecialisation in the field of maternal and fetal medicine including requirements and regulations for subspecialist training and accreditation
  - 1.1.2 the further development of training for special interest work within obstetrics and gynaecology
  - 1.1.3 criteria and procedures for approval of subspecialty trainees, training centres and training programmes, and for subspecialist accreditation on completion of training
- 1.2 The Special Regulations require modification due to the changes in the examination format as supported by the CMSA.

#### **2.0 DEFINITION**

- 2.1 Subspecialists are defined as obstetricians and gynaecologists who, having undertaken appropriate additional higher training, are recognised to have special expertise in the relevant field and who devote at least half, and probably more, of their working time to it. This higher degree of specialisation indicates intensive training, experience and expertise

The aims of subspecialisation are:-

- 2.1.1 to improve knowledge, practice, teaching and research
- 2.1.2 to promote the concentration of very specialised expertise, special facilities and clinical material that will be of considerable benefit to some patients
- 2.1.3 to establish a close understanding and working relationship with other disciplines involved in each of the subspecialty fields
- 2.1.4 to encourage co-ordinated management of relevant clinical services throughout a region
- 2.1.5 to accept a major regional responsibility for higher training, research and audit in the subspecialty fields
- 2.1.6 to improve the recruitment of talented graduates into the recognised subspecialties and into the specialty of obstetrics and gynaecology as a whole

**3.0 SUBSPECIALTY ACCREDITATION AND TRAINING**

- 3.1 Subspecialist training posts will be at subspecialty trainee level, and more than one centre may provide the programme provided each is recognised by the HPCSA and the COG(CMSA) as a subspecialty training centre. The programme must include theoretical instruction (including the relevant basic sciences), and intensive clinical experience in the subspecialty. Pre-FCOG(SA) experience may be taken into account in planning the content of a subspecialty training programme, but will not usually be credited towards the clinical part of the programme. Clinical experience as a specialist registrar in the subspecialty or a closely related field may also be counted towards a maximum of six months of the programme, if approved by the CMSA
- 3.2 The minimum requirements for entry into clinical subspecialty training are:
- Postgraduate degree (training) in Obstetrics and Gynaecology, eg MMed (O&G) or Part II FCOG(SA)
  - A year's relevant research training which could be undertaken during the elective year either before or during specialisation unless there is a research component, equivalent to one year's duration, incorporated into a three year subspecialty training programme
- 3.3 Accreditation should be based on existing or newly developed centres of excellence which have been recognised by the HPCSA. The trainees and their supervisors are required to submit an annual report and trainees will be expected to keep a record of their skills development and experience obtained
- 3.4 A certificate in a subspecialty of Obstetrics and Gynaecology will not be awarded until all aspects of general and subspecialist training has been completed and approved
- 3.5 **Trainees with obstetric and gynaecological training outside recognised HPCSA/COG(CMSA) training centres:**  
Most trainees will enter a subspecialty programme after obtaining the FCOG(SA) or a local MMed (O&G) degree. However, medical graduates who have obtained equivalent postgraduate training outside South Africa and who wish to undertake approved subspecialty training, will have this experience taken into account on application to the CMSA. Such trainees who complete subspecialty training will not be eligible for a certificate unless all the requirements for such a certificate have been completed.
- 3.6 **Trainees with obstetric and gynaecological training in recognised COG(CMSA) training centres overseas:**  
All trainees undertaking subspecialty training in a HPCSA/COG(CMSA) recognised subspecialty training centre outside South Africa must complete one year of clinical training in an approved subspecialty training programme in South Africa
- 3.7 **Examinations:**  
The training programme and the trainee's progress will usually be reviewed twice during the programme, usually on site, once half way through the programme and again at the end. The trainees and their supervisors are required to submit an annual report and trainees will be expected to keep a record of their skills development and experience obtained. This logbook/portfolio will be reviewed by the COG(CMSA) prior to admission to the certificate examination.  
Evaluation at the end of the training period: there will be two three-hour papers, one in maternal medicine and one in fetal medicine, as well as an oral examination. The latter will consist of an OSCE, OSPE, and a discussion on research methodology and portfolio. These two components of the clinical examination will include maternal and fetal medicine and will be equally weighted. A mark of 50% is required in each of the two written papers in order to be invited to the clinical examination. A mark of 50% is required to pass the clinical examination. **Practice:**  
After qualification, at least 50% of time should be spent in the subspecialty. Subspecialists will therefore be able to continue to work in general obstetrics and gynaecology as well as the subspecialty

**4.0 GENERAL REQUIREMENTS FOR SUBSPECIALTY TRAINING CENTRES**

- 4.1 To be eligible for subspecialty training, a centre must:
- Provide a service for the referral and transfer of patients who would benefit from subspecialty facilities, expertise and experience
  - Have established close collaboration with related disciplines to provide the high degree of teamwork and concentration of resources for the intensive investigation and management of such patients
  - Have established close collaboration with other obstetricians and gynaecologists working in the subspecialty within and outside the centre, including major regional role-players in continuing postgraduate education and training, research advice and co-ordination, and audit
  - Have an adequate workload providing a full range of experience in the subspecialty; alternatively two or more centres may combine to provide a programme with all the required experience
  - Have a programme director who will co-ordinate the training programme, accept the main responsibility for its supervision and be actively involved in it; when more than one centre provides the programme, there must be a supervisor at each centre, with one having overall responsibility as director. Directors and supervisors will be consultants with special experience in the relevant subspecialty field, and with the eventual development of subspecialisation the directors and supervisors will themselves be trained subspecialists
  - Have adequate medical staffing to enable the trainee to be engaged in his/her subspecialty field on a fulltime basis; participation in emergency and on-call work outside normal working hours is not excluded, subject to approval by the CMSA
  - Have adequate library, laboratory and other resources to support subspecialty work, training and research, over and above that required for the recognition of FCOG(SA) and higher training posts
  - Provide the resources for a research programme related to the subspecialty, if required.
  - Must provide sufficient clinical work, staffing, facilities and other support so that initiation of a subspecialty training post is not detrimental to the higher training or special interest training of other registrars, senior registrars or lecturers in recognised posts

**5.0 SPECIAL REQUIREMENTS FOR TRAINING CENTRES IN MATERNAL AND FETAL MEDICINE**

- 5.1 To be eligible for subspecialty training in maternal and fetal medicine, a centre must:
- Provide an integrated service for the referral and transfer of high-risk obstetric patients, in close collaboration with other obstetricians and disciplines within and outside the centre
  - Have an adequate clinical workload with a full range of high risk maternal and fetal problems, including a significant proportion of referred/transferred high perinatal risk patients
  - Be a referral centre for the specialised prenatal diagnosis of fetal abnormalities, of which there should be at least 40 diagnosed cases/year:
    - ultrasound facilities and expertise for detecting the majority of structural malformations in the fetus
    - a close working relationship with a medical genetics centre and clinical genetics consultant(s) and supporting staff, providing a specialised obstetric and pre-pregnancy service with appropriate laboratory support
  - Should provide a full range of fetal monitoring/assessment techniques, including fetal biometry, biophysical profile, Doppler and cardiotocography
  - Have a neonatal intensive care unit with consultant paediatricians and supporting staff whose major duties are in neonatal care; and an association with a neonatal surgical unit
  - Have an association with a neonatal surgical unit
  - Have a twenty-four hour anaesthetic service with consultant anaesthetists and supporting staff having major commitments to obstetric anaesthesia, analgesia and related work
  - Collaborate closely with consultant physicians and their supporting staff who have special interests in the management of medical disorders in pregnancy
  - Have a close collaboration with an adult intensive care unit which has a full range of diagnostic facilities and support, which is readily available to the obstetric unit
  - Have access to a pathology service, preferably one with an interest in perinatology
  - Have a research programme in the subspecialty field, with access for the trainee to support his/her own training programme; this should include facilities and support for the teaching of research methodology including statistics and epidemiology

**6.0 SUBSPECIALIST TRAINING IN MATERNAL AND FETAL MEDICINE****6.1 Definition:**

Subspecialists in maternal and fetal medicine should have a broad knowledge of the physiology and pathology of the pregnant woman and the fetus. They must be clinically competent in the investigation and management of both medical and surgical disorders of both patients. They should be involved in the organisation of the clinical service, in research, in postgraduate teaching and in providing a consultancy service to other obstetricians/gynaecologists

**6.2 Requirements:**

At the conclusion of subspecialty training, and as a prerequisite for obtaining a certificate, the following requirements are noted:

- a) two years in clinical training at subspecialist trainee level in maternal and fetal medicine  
OR

four years, in clinical training at subspecialist trainee level in maternal and fetal medicine\* during which time the understanding of research methodology was ensured. \* *The CMSA may approve up to six months of appropriate clinical experience in the subspecialty or in a closely related field (eg neonatal paediatrics or ultrasound) obtained as a specialist registrar before the approved programme starts, to be credited towards the required training period. Satisfactory completion of one year of special interest training in maternal or fetal medicine will usually allow six months exemption from the clinical training*

**7.0 TRAINING PROGRAMME**

7.1 The following advanced knowledge and skills are required:

**7.1.1 An advanced understanding of:**

- biochemistry, pharmacology and pathology relating to the pregnant women and the fetus
- embryology and teratology
- endocrinology of pregnancy
- fetal physiology
- genetics
- immunology
- maternal physiology
- placental physiology
- social and psychological aspects of pregnancy

**7.1.2 Clinical expertise in:**

- complicated obstetrics, including material resuscitation and intensive care
- fetal medicine including ultrasound examination and invasive procedures
- infectious diseases in pregnancy
- medical and surgical complications of pregnancy
- operative procedures and intrapartum management
- pre/post-pregnancy and bereavement counselling

**7.1.3 A detailed knowledge of the relevant aspects of related specialities and laboratory disciplines:**

- adult medicine, anaesthesia, resuscitation and intensive care
- clinical and laboratory genetics
- laboratory based subjects including:
  - microbiology, pathology, haematology, clinical chemistry, blood transfusion
- neonatal medicine and surgery

- 7.1.4 ***Experience and knowledge of:***
- administration and management
  - epidemiology, statistics, research methodology and audit
  - legal and ethical issues
  - teaching
  - confidential enquiries into maternal deaths
  - main causes of perinatal deaths

**8.0 GUIDELINES TO LEARNING (These are guidelines and not an exhaustive outline of the knowledge required in this subspeciality)**

**A) THEORETICAL ASPECTS**

**8.1 Maternal Physiology:**

**8.1.1 *Objectives:***

The trainee should understand and be able to discuss:

- Nutritional changes during pregnancy:
  - appropriate dietary intake for a metabolic disorder (eg diabetes)
  - management of dietary deficiencies
  - normal daily requirements
- Fluid and electrolyte balance:
  - amniotic fluid composition and exchange
  - in maternal and fetal intra-and extra-cellular spaces
- Pulmonary physiology:
  - blood gases and acid-base balance
  - change in physiology and function tests
- Cardiovascular physiology:
  - cardiac and circulatory changes in pregnancy
  - interpretation of central venous pressure and pulmonary wedge pressure
- Blood changes in:
  - coagulation mechanisms
  - composition
  - volume
- Gastrointestinal tract:
  - absorption and metabolism of iron, folate and other vitamins
  - changes in pregnancy
  - effects of sex hormones on liver functions
- Renal:
  - changes in ureters, bladder and urethra
  - glomerular and tubular function
  - interpretation of renal function tests
- Uterus:
  - abnormal labour
  - initiation of parturition
  - myometrial growth and activity
  - normal labour – uterine work
  - physical and chemical changes in the cervix
  - regulation of uterine blood flow

**8.2 Endocrinology of Pregnancy:****8.2.1 Objectives:**

The trainee should understand and be able to discuss the structure, function, metabolism, synthesis, principles of assay and management of disorders of the endocrine systems including:

- hypothalamus
- pituitary
- thyroid
- parathyroid
- pancreas
- adrenal cortex and medulla
- kidney (erythropoiesis)
- ovary and placenta

**8.3 Embryology and Teratology:****8.3.1 Objectives:**

The trainee should understand and be able to discuss:

- detailed knowledge of risk factors, aetiology and implications of common abnormalities such as neural tube defects
- effects of possible teratogens:
  - drugs
  - other environmental agents
  - radiation
  - viruses
- gametogenesis
- ovulation
- fertilisation
- implantation
- the normal development of the main organ systems and its timing
- background rates of fetal malformation
- mechanisms of teratogenesis

**8.4 Fetal Physiology:****8.4.1 Objectives:**

The trainee should understand and be able to discuss the following (including the changes associated with advancing gestational age):

- fetal endocrinology and metabolism
- fetal circulation and blood flow
- fetal heart rate
- fetal behaviour
- blood gases and acid-base status in umbilical artery and vein, scalp capillary blood
- fetal haematology

**8.5 Placental Physiology:****8.5.1 Objectives:**

The trainee should understand and be able to discuss:

- endocrine and enzymatic function
- feto-maternal respiratory exchange
- placental proteins (eg PPS, SP1, PAPP-A)
- placental transfer
- the development of the placenta and membranes

**8.6 Biochemistry and Cell Biology:****8.6.1 Objectives:**

The trainee should understand and be able to discuss:

- biochemistry of the nucleic acids
- general principles of cell biology
- maternal and fetal lipid, carbohydrate and amino acid metabolism
- metabolism of bilirubin in mother and fetus
- prostaglandin synthesis and metabolism in mother and fetus
- steroid synthesis and metabolism in mother and fetus
- synthesis and secretion of pulmonary surfactant

**8.7 Pharmacology:****8.7.1 Objectives:**

The trainee should understand and be able to discuss:

- agents affecting the sympathetic and the parasympathetic nervous system
- antibiotics in pregnancy
- antihypertensive drugs in pregnancy
- drug interactions
- drugs and lactation
- effects of drugs on the uterine and fetal circulation
- effects of tobacco, alcohol, cocaine and marijuana
- metabolism and excretion of drugs by mother and fetus
- pharmacological control of labour
- pharmacological effects of drugs on the mother and the fetus
- placental transfer of drugs
- teratogenic effects of drugs

**9.0 PATHOLOGY****9.1 Objectives:**

The trainee should understand and be able to discuss:

- Maternal pathology associated with:
  - amniotic fluid embolism
  - antepartum haemorrhage
  - hypertensive disorders
  - infection
  - nephritis
  - Sheehan's syndrome
  - thromboembolism
- Fetal and neonatal pathology:
  - bacterial and viral infections
  - birth asphyxia and meconium aspiration
  - birth trauma
  - congenital anomalies and dysmorphology
  - fetal macrosomia
  - haemolytic disease
  - hyaline membrane disease
  - intracranial haemorrhages
  - intrauterine growth retardation
  - postmaturity
  - postmortem examinations
  - spontaneous abortion

- Placental pathology:
  - abnormalities of shape and size
  - abruptio placentae
  - chorioamnionitis
  - chorioangioma
  - cord abnormalities
  - histology of placental “insufficiency”
  - infarction
  - multiple pregnancy
  - placenta accreta
  - trophoblastic disease
  - blood supply to the placenta

## 10.0 GENETICS

### 10.1 *Objectives:*

The trainee should understand and be able to discuss:-

- Chromosome abnormalities
- Cytogenetics
- Genetic counselling:
  - pedigree analysis
  - taking a genetic history
- Meiosis and mitosis
- Mendelian modes of inheritance
- Molecular genetics:
  - principles of gene tracking using RFLPs and direct gene identification
  - principles of special techniques in genetic diagnosis including Southern and Northern blotting and gene amplification (PCR); fluorescent in-situ hybridisation (FISH)
  - transcription and translation
- Multifactorial inheritance
- Phenotypes of common disorders: (chromosome 21, 18 and 13), fragile X, Beckwith Wiedemann syndrome, etc
- Population screening for genetic diseases and congenital malformations
- Prenatal diagnosis for:
  - chromosome defects
  - inborn errors of metabolism
  - neural tube defects and other congenital malformation
- Significance of translocation
- Spontaneous abortion

## 11.0 IMMUNOLOGY

### 11.1 *Objectives:*

The trainee should understand and be able to discuss:

- Active and passive immunisation
- Basic immunology
  - HLA system and graft rejection
  - mechanism of antibody production
  - monoclonal antibodies
  - origin and function of IgM, IgG, IgA, IgE
  - origin and function of T, B helper and suppressor lymphocytes
  - primary and secondary immune response
  - Changes in pregnancy, the fetus as a graft
- Fetal development of the immune system
- Immunological pregnancy tests
- Rhesus and other isoimmunisation
- Auto-immune disease



**12.0 SOCIAL AND PSYCHOSOCIAL ASPECTS OF PREGNANCY****12.1 Objectives:**

The trainee should understand and be able to discuss:

- Adoption procedures
- Bereavement counselling
- Case conferences
- Committal to psychiatric care
- Part-baby relationships and factors which promote and interfere with this
- Psychoneurosis and psychosis in pregnancy and after
- The influence of social and cultural factors on pregnancy outcome
- The problems of the single parent
- The problems of the teenage mother

**13.0 REQUIRED CLINICAL EXPERTISE**

13.1 All clinical experience should be documented in a portfolio. This will be regularly inspected by the trainee's supervisor and where necessary the programme can be adjusted. Clinical experience may be obtained at a single or multiple centres, depending how the programme is arranged (see 4.0 General requirements for subspecialty training centres). Training may either be full-time or part-time. Part-time training should be a minimum of 25 hours per week and will continue for 4 instead of 2 years

13.2 It is recognised that on call time may be spent in general gynaecology and obstetrics as well as the subspecialty

**13.3 Maternal Medicine:****13.3.1 Medical and Surgical Complications of Pregnancy:****Objectives:**

The trainee will be expected to acquire and practice a standard of medicine consistent with the best available guidelines derived from evidence-based medicine. A working knowledge of major randomised trials will be expected. In addition, the trainee should have a detailed knowledge of the modes of presentation, diagnosis and treatment of commonly occurring diseases in pregnancy and be capable of independent management with a high level of expertise in these conditions:

- Critical care obstetrics including haemorrhage, hypertensive crisis, sepsis
- *Auto-immune*: eg systemic lupus erythematosus, rheumatoid arthritis, systemic sclerosis
- Blood transfusion and the replacement of blood constituents, assessment prevention and prophylaxis of iso-immune disease
- *Blood*: eg anaemia, sickle cell disease, thalassaemia, coagulation defects, thrombocytopaenias, thromboembolism, thrombophilias (congenital and acquired)
- *CNS*: eg epilepsy, cerebral haemorrhage and thrombosis, myasthenia gravis, multiple sclerosis, migraine
- *Diabetes mellitus*: diagnosis, fetal, maternal and neonatal hazards, ketoacidosis, diet, insulin and other drugs, delivery – timing and mode
- Differential diagnosis of abdominal pain in pregnancy
- *Gastrointestinal*: eg hyperemesis gravidarum, appendicitis, inflammatory bowel disease
- *Heart*: eg rheumatic heart disease, cardiomyopathy, congenital heart disease, arrhythmias
- *Hypertension*: aetiology and pathophysiology, organ involvement in mother and fetus, diagnosis and definition, drug therapy
- *Kidney*: eg glomerulonephritis, pyelonephritis, nephrotic syndrome, tubular and cortical necrosis, renal transplantation
- *Liver*: eg cholestasis, hepatitis, acute fatty degeneration, cirrhosis, jaundice
- *Lungs*: eg asthma, infection, embolism, aspiration pneumonitis
- Neoplasms of the reproductive, endocrine and other organs, with emphasis on the cervix, ovary and breast
- Other endocrine disorders eg thyroid, adrenal, prolactinomas
- *Psychiatric*: eg puerperal depression and psychosis

13.3.2 **Infectious Diseases:****Objectives:**

- Principles and practise of detection, prevention and isolation;
- Principles and practise of therapy:
  - prophylaxis
  - immunisation
  - antibiotics and antiviral agents
- Principles of epidemiology and pathophysiology of disease developing in pregnancy (eg septic abortion, preterm labour and rupture of membranes, chorioamnionitis; puerperal sepsis, mastitis, septicaemic shock, sepsis in the neonate)
- Serological tests
- The microbiology of aerobes and anaerobes, Mycoplasma, and Chlamydia, fungi, viruses, protozoa, L-forms
- Transmissions and natural history of infection commonly affecting the fetus(herpes, rubella, cytomegalovirus, gonococci, hepatitis A, B and C, toxoplasmosis, varicella, parvovirus, HIV, listeria, haemophilus, streptococci)

13.3.3 **Complicated obstetrics:****Objectives:**

The trainee should have a knowledge of intensive care procedures and manage:

- Hypertensive crisis
- Obstetric haemorrhage
- Severe sepsis

13.3.4 **Fetal Medicine:****Objectives:**

The trainee should have a detailed knowledge of the modes of presentation, diagnosis and treatment of commonly occurring fetal diseases and be capable of independent management with a high level of expertise in these conditions:

- *Fetal growth restriction:* including the recognition that size is a physical sign rather than a diagnosis, classification by aetiology and assessment of well-being and delivery timing
- *Fetal hypoxia:* ability to detect the fetal adaptations to stress such as alterations in fetal behaviour and the relationship between blood flow, placental transfer and acid-base status
- *Fetal malformation:* including detection, assessment of severity and associated syndromic or karyotypic abnormalities, counselling and both prenatal and perinatal management
- *Genetic disease:* single gene defects, multifactorial conditions and chromosomal abnormalities including screening, diagnosis and management
- *Hydrops fetalis:* awareness of the diversity of causes and the ability to make a diagnosis urgently especially of the treatable cases such as anaemia, arrhythmias, increased thoracic pressure, etc
- *Liquor volume abnormality:* the causes, consequences and management of oligo- and polyhydramnios
- *Multiple pregnancy:* including the twin-to-twin transfusion syndrome, TRAP sequence, cases discordant for fetal abnormalities and management options
- *Rarities:* to have a systematic approach to investigating and managing fetal disease which cannot be diagnosed at initial presentation
- *Red cell isoimmunisation:* knowledge of the different disease types(eg D, Kell, Duffy, c, etc) and the experience required to manage these cases individually

13.3.5 **Ultrasound and invasive procedures:****Objectives:**

- Doppler ultrasound:
  - The trainee should have extensive experience of blood velocity scanning of all the major vessels of the fetus and placenta
- Imaging:
  - This should include expertise in all aspects of pregnancy ultrasound including early pregnancy, anomaly and fetal assessment scanning. The trainee should understand in detail:
    - alternative imaging techniques such as MRI
    - anomaly scanning
    - biometry to assess gestational age and fetal growth
    - biophysical profile
    - biophysics of ultrasound
- Ultrasound guided invasive procedures:
  - The trainee must have extensive experience of ultrasound guided needling and understanding of the difference between the free-hand and needle-guide techniques. Following being an assistant to the trainer and ideally after experience before termination of pregnancy, the trainee should as a minimum undertake at least 20 procedures directly supervised and then another 20 with help available. These should include about 10 transabdominal CVS or fetal blood sampling procedures. The level of skill attained must be such that the trainer can with confidence leave the trainee to undertake at least a transabdominal CVS without supervision
  - As a minimum the trainee should have assisted with fetal therapeutic operative procedures such as transfusion or feto-amniotic shunting and should have a detailed expert knowledge about how and when they should be done and the follow up required

13.3.6 **Complicated Obstetrics:  
Obstetric complications:****Objectives:**

The trainee must have a detailed knowledge of the epidemiology, pathogenesis, diagnosis, prevention and treatment of all conditions affecting the mother and fetus and be capable of independent obstetric practise with a high level of expertise in the management of:

- Early pregnancy complications:
  - miscarriage, ectopic pregnancy and initial diagnosis and management of trophoblastic disease
- Haemorrhage:
  - placental abruption, placenta praevia, vasa praevia, placenta accreta, trauma, ruptured uterus, atonic uterus, coagulation defects, abortion, trophoblastic tumours, ectopic pregnancy
- Malpresentation:
  - aetiology and prevention, diagnosis and risks, management
- Premature rupture of membranes:
  - diagnosis and management, evaluation of pulmonary maturity, timing of delivery, use of steroids, antibiotics and tocolytics, risks of infection
- Preterm labour:
  - aetiology and prevention, management (steroids and tocolytics), methods of delivery, neonatal consultation, in utero transfer, outcome and risks
- Prolonged gestation:
  - pathology, prognosis and risks, monitoring the fetus and indications and methods of delivery

- Recurrent pregnancy loss, early and late
- Red cell iso-immunisation and thrombocytopenia and allo-immune thrombocytopenia:
  - antigen – antibody systems causing fetal haemolysis, fetal haemolysis, fetal pathology, management -
    - prevention
    - assessment of severity, indications for and techniques of intrauterine transfusion, timing and mode of delivery
- Shock/collapse:
  - aetiology, diagnosis and treatment, hypovolaemic, haemorrhagic, septic, amniotic fluid embolism, traumatic, CNS, cardiac

### 13.3.7 **Operative Procedures:**

#### ***Objectives:***

The trainee should be expert in:

- Caesarean section (and hysterectomy)
- Cervical cerclage
- External cephalic version
- Management of postpartum and postoperative complications
- Medical and surgical first and second trimester abortion
- Operative vaginal delivery (ventouse and forceps)
- Sterilisation procedures
- Techniques for control of haemorrhage

### 13.3.8 **Intrapartum Management of High Risk Pregnancies:**

#### ***Objectives:***

The trainee should have a detailed knowledge and a high level of expertise in:

- Fetal heart monitoring
- Fluid balance and transfusion
- Induction of labour: indications, methods and risks
- Labour ward management and policy
- Management of emergencies eg abruption, fulminating pre-eclampsia, cord prolapse, shock, coagulopathy, shoulder dystocia
- *Prolonged labour*: aetiology, recognition of maternal and fetal effects and treatment
- Use of partograms
- Utilisation of oxytocin, prostaglandins and tocolytic drugs

### 13.3.9 **Pre-pregnancy, Intrapregnancy and Post-Pregnancy Counselling:**

#### ***Objectives:***

- The trainee should be experienced in advising couples who are planning a pregnancy. In particular, this applies to couples with a genetic risk and where the mother has any condition that may affect the development of the fetus, such as those at risk at having a malformed baby, a history of diabetes, hypertension, drugs, etc. In addition, they should have experience of counselling patients with problems such as fetal abnormality and recurrent pregnancy loss
- The trainee should be conversant with the complications of the puerperium, with the management of medical disorders after delivery and be able to advise women on the most suitable methods of fertility control

**13.3.10 Termination of Pregnancy:**

**Objectives:**

- The trainee must have a detailed knowledge of the various techniques of termination of pregnancy including:
  - medical techniques as misoprostol or prostoglandin administration at different stages of pregnancy
  - surgical techniques such as vacuum aspiration
- Intra-cardiac potassium injection for selective reduction or termination. Unless the trainee has a personal objection the trainee should also be expert at undertaking the full range of medical and surgical termination procedures. In the event of personal objections the trainee must have sufficient knowledge of the techniques and the availability of services to guide the patient and ensure the full range of options are available for her
- The trainee should be expert in pre and post termination counselling in a way that allows the patient to make her own informed choice and without judgemental pressures if the choice is different from that which the trainee would have made

**14.0 RELATED DISCIPLINES**

**14.1 Anaesthesia:**

**Objectives:**

The trainee should understand and be familiar with:

- *General anaesthesia:* agents used for induction and their complications
- *Regional anaesthesia:* sensory and motor innervation of abdomen and pelvis, indications, contraindications and complications of:
  - epidural anaesthesia (lumbar, caudal)
  - spinal anaesthesia
  - paracervical block
  - pudendal nerve block
  - ilio-inguinal/ilio-hypogastric nerve block
- System analgesia and sedation narcotics, tranquillisers, barbiturates, psychotropics
- Anaesthetic complications: eg cardiac arrest, respiratory arrest, aspiration pneumonitis, drug reactions
- Resuscitation and intensive care of the unconscious patient

**14.2 Neonatology Paediatric Medicine and Surgery:**

**Objectives:**

The trainee should be able to institute immediate resuscitation and intubation of the baby in the delivery room and demonstrate an understanding of:

- Short and long term sequelae of the antepartum and intrapartum complications, including cerebral palsy
- The clinical evaluation of the neonate, including assessment of gestational age
- Resuscitation of the newborn, drugs, ventilation, cardiac massage, umbilical catheterisation, volume replacement, temperature control, acid base and blood gas status;
- The aetiology, management and sequelae of:
  - cerebral palsy
  - congenital anomalies
  - heart disease
  - hyperbilirubinaemia
  - hypocalcaemia
  - hypoglycaemia
  - hypothermia
  - infection
  - intracranial haemorrhage
  - necrotising enterocolitis
  - respiratory distress
  - seizures

- the growth restricted.../

- the growth restricted infant
- the preterm infant
- The advantages and promotion of breastfeeding
- The role of paediatric surgery and patient follow-up
- The results of long term follow-up of very small babies and counselling of patients accordingly

**14.3 Clinical Genetics:**

**Objectives:**

The trainee should be able to offer accurate genetic counselling to patients in the following areas:

- The aetiology and recurrence risks of the common malformations including requesting appropriate genetic investigations when malformations are diagnosed (eg chromosome 22 deletions in cardiac malformations, etc)
- The differential diagnosis when malformations are found and if so what other dysmorphic features may be present, what additional information clinical geneticists will need and good communication of these issues to patients
- The nature of the genetic tests used for prenatal diagnosis of the common conditions and the certainty or otherwise of the results obtained
- The value of them seeing a clinical genetics colleague

**14.4 Laboratory Based Training:**

**Objective:**

The aim is for the trainee to understand the value, limitations and problems of laboratory investigation

**15.0 OTHER RELATED SKILLS AND EXPERTISE**

**15.1 Epidemiology, Research, Statistics and Audit:**

**Objectives:**

The trainee should be able to:

- Understand epidemiological techniques (eg cohort studies and case control studies; cumulative rates calculation and assessment of bias)
- Understand population parameters and sampling techniques
- Compute and interpret measures of comparisons of means and variations
- understand randomised controlled trials and techniques of meta-analysis
- Analyse a presented experiment and construct a hypothetical experiment with respect to the following:
  - significance of the results
  - the appropriate inferences which can be obtained
  - the conclusions
  - the expression and correlation of raw data and simple (eg log transformations)
  - the hypothesis
  - the question examined
  - the sampling technique (including sampling bias and sample calculations)
  - the selection and application of appropriate statistical tests
- Apply the following statistical test:
  - Chi-square analysis
  - correlation and regression
  - multi-variate analysis
  - non-parametric tests
  - parametric tests such as unpaired, paired, “t” tests, analysis of variance
  - receiver operator characteristics
- Define the terms “significance”, “confidence interval”, “Type 1 error” and “Type 11 error”; predictive value; sensitivity; specificity; absolute risk reduction
- Understand Bayes Theorem, likelihood ratio, probability and uncertainty, especially when requesting special investigations
- Perform statistical analysis of assay data and evaluation of quality control
- Understand the value of discussion and collaboration with statistical advisers

- Understand disease.../

- Understand disease surveillance systems and disease registries
- Understand the need for organisation of and implementation of screening programmes
- The trainee should be familiar with:
  - conducting clinical audit and feedback and be able to utilise data collection systems
  - data acquisition, storage, interpretation and statistical analysis
  - experimental design (eg laboratory, epidemiology)
  - scientific writing and presentational skills including the formulation of a grant application
- The trainee should be familiar with the principles of screening and the organisation / implementation and audit of screening programmes
- The trainee should have the opportunity to attend appropriate national (and where possible international) meetings relevant to their subspecialty annually

**15.2 Teaching:**

**15.2.1 Objective:**

The trainee should gain experience in teaching which will include:

- Some responsibility for teaching junior staff in their subspecialty area
- Full participation in the unit's postgraduate programme with some administrative responsibility for the organisation of teaching in their subspecialty
- Participation in the undergraduate teaching programme
- Gain experience of appraisal and assessment techniques

**15.3 Ethical and Legal Aspects:**

**15.3.1 Objective:**

The trainee should be able to discuss the ethical and legal aspects of the clinical practise of their subspecialty and should have particular knowledge of the relevant areas listed below:

- Legislation, particularly recent, relevant to their subspecialty practise
- Ethics of health care provision and resource allocation
- Medical confidentiality
- Consent:
  - Nature of consent:
    - capacity
    - knowledge
    - voluntary
  - Treatment of minors
  - Treatment of the incapacitated patient
- Medical negligence
- Role and relevance of ethic committees
- Maternal and fetal medicine
  - fetal reduction
  - gene therapy
  - pre-implantation diagnosis
  - research on embryo, fetus and neonate
  - rights of the fetus and neonate
  - screening for genetic/fetal abnormality
  - termination of pregnancy

**15.4 Administration:**

**Objective:**

The trainee should be given some administrative experience and responsibility to allow the development of skills relevant to the future provision and organisation of clinical services. Types of relevant knowledge and experience are listed below:

- Attendance at a management course
- An understanding of health service organisation and administrative and advisory structures
- An understanding of the mechanisms of health care purchasing, provision of care, resource allocation and contractual issues relevant to the clinical service

- Cognisance of the need for regional referral systems and role of tertiary service in health care provision
- The system for managing hospital complaints
- The know how to review a service and formulate a business plan

**16.0 REQUIRED CLINICAL EXPERIENCE**

16.1 All trainees will be qualified Obstetricians. However, certain important procedures and skills already learnt will be included together with new ones. The trainee will start doing all new procedures under the direct supervision of experienced trainers. The opinions of the trainers will be obtained when the logbook and list of procedures performed, are discussed

16.1.1 The following paragraphs should assist the candidate in obtaining the clinical experience in FETAL MEDICINE

16.1.1.1 **DEMONSTRATE KNOWLEDGE and CLINICAL COMPETENCE**

- Relevant History and examination
- Pathology and epidemiology of fetal anomaly
- Screening and diagnosis
- Management and outcome
- Recurrence risks and prevention
- Counselling the woman and partner
- Professional skills and attitudes

16.1.1.2 **GENETICS**

- Recognising multiple anomaly conditions and syndromes
- Cytological and molecular techniques for prenatal diagnosis

16.1.1.3 **ETHICS**

- Ethical conflicts in prenatal screening and diagnosis

16.1.1.4 **FIRST TRIMESTER**

- The first trimester scan: Screening and anatomy
- Prenatal diagnostic techniques

16.1.1.5 **FETAL MALFORMATIONS**

- CNS anomalies – imaging and surveillance: predicting fetal morbidity
- Spine anomalies
- Facial anomalies: Management
- Management of thoracic anomalies:
- Cardiac anomalies
- Gastrointestinal and ventral wall malformations: Management, prognosis, surveillance
- Surgery outcome for thoracic and abdominal anomalies
- Urogenital anomalies: Prenatal & Postnatal management
- Skeletal anomalies
- Markers of chromosomal disorders
- Multiple pregnancy complications and management
- Teratogens and fetal malformations
- The value of post mortem examination

16.1.1.6 **MISCELLANEOUS**

- Cervical length
- Placental abnormalities
- Umbilical cord abnormalities
- Disorders of liquor volume and management
- Maternal medical conditions affecting fetus

16.1.1.7 **COUNSELLING**

- Breaking bad news, bereavement support and aftercare
- Pregnancy management



16.1.1.8 **INVASIVE PROCEDURES**

- Amniocentesis
- CVS
- FBS
- Amniodrainage
- Fetal therapy
- Other investigations and limitations

16.2 **Recommended number of procedures to be included in logbook:**

16.2.1 **Fetal:**

- Ultrasound procedures according to a systematic evaluation sheet:
  - Doppler flow velocity waveforms in different vessels (50)
    - Umbilical artery (20)
    - Uterine artery (15)
    - Middle cerebral artery (10)
    - Ductus venosus (5)
  - Measurement of cervical length (20)
  - Evaluation of placenta, with diagnosis of praevia/placenta accreta spectrum (5)
  - Fetal abnormalities primarily diagnosed by the candidate (20)
  - Major different abnormalities seen (50)
  - Invasive procedures (Total = 75)
    - Fetal blood sampling (10)
    - Amniocentesis (50)
    - Chorionic villus sampling (5)
    - Other invasive procedures (10)

16.2.2 **Obstetric:**

- Complicated obstetric deliveries (e.g. twins, breech, assisted, shoulder dystocia) (10)
- Difficult surgical cases performed independently (e.g. CS for praevia/PAS, CS for higher order multiples, CS in morbidly obese patient, TAH for PPH and sepsis) (10)

16.2.3 **Maternal:**

- Endotracheal intubation (5)
- Insertion of CVP line (5)

16.2.4 **Neonatal:**

- Intubation of newborn at birth (5)

16.2.5 **Pathology:**

- Perinatal autopsy attended (2)

16.3 **Communication skills – as assessed under supervision:**

- Counselling about screening test (5)
- Counselling before invasive test (5)
- Counselling of mother with unwanted pregnancy (5)
- Transfer of bad news to mother/family (5)

16.4 **Ward Rounds and Discussions:**

In addition to the discussions and rounds during rotations through the different disciplines, the trainee will be expected to attend the following meetings regularly:

- Weekly high care ward rounds
- Weekly perinatal discussions
- Weekly perinatal mortality meetings
- Weekly departmental management meetings

**16.5 General:**

The trainee will be evaluated after the completion of each rotation. The results of the evaluation will be given to the director of the training. Immediate feedback to the director of training will be encouraged in case one of the trainers has any concern about the trainee. In addition, the regular contact between the director and the trainee will ensure that all potential problems are addressed promptly

**17.0 ASSESSMENT OF EXPERIENCE**

All clinical experience documented in the portfolio must be countersigned by one of the recognised supervisors. For this purpose a logbook is to be maintained and will include documentation of clinical experience. CONDUCT OF THE FINAL EXAMINATION – EFFECTIVE From FIRST AND SECOND SEMESTER EXAMINATION 2022

It is proposed that the exit assessment will include an OSCE, a number of objective structured practical examinations (OSPE) and a written paper. Admission to this examination will be permitted following the assessment of the portfolio.

**18.0 Written Examination**

There will be two three-hour papers, one in maternal medicine and one in fetal medicine, as well as a clinical examination. A mark of 50% is required in each of the two written papers in order to be invited to the clinical examination. A mark of 50% is required to pass the clinical examination

**18.1 Clinical/Practical/Oral Examination**

18.1.1 The Clinical/oral examination will comprise of a Structured Oral Examination (called an OSPE), an online written OSCE, and a discussion on research methodology and portfolio. These two components of the clinical examination will include maternal and fetal medicine and will be equally weighted.

**18.1.1.1 Written online OSCE:**

- Number of stations: 6-8 stations / questions
- Duration of stations: 10 minutes per station
- Examination material may include case histories with test results, still images, photos, digital histology and radiology imaging
- Examination will be conducted online using a digital form requiring typed responses

**18.1.1.2 Structured Oral Examination in the form of an OSPE**

- Number of stations: 4
- Duration of stations: 15-20 minutes preparation and 15-20 minutes oral examination for each station
- Examination materials may include case histories with test results, still images, photos, digital histology and radiology imaging
- Examination will be conducted electronically using the Zoom platform

**18.1.1.3 Portfolio and Research methodology**

- Number of stations: 1
- Duration of station: ±30 minutes

**18.2 WEIGHTING OF THE EXAMINATION FOR CERT MATERNAL AND FETAL MEDICINE(SA)****18.2.1 Total Examination Score (out of 100%)**

- Written examination: 40%
- Online written OSCE: 25%
- Structured Oral Examination (OSPE): 25%
- Portfolio and Research methodology: 10%

A score of 50% or more will be deemed a pass mark for the OSCE's and OSPE's, with an overall 50% pass mark for the entire examination.

**19.0 CARRY OVER OF WRITTEN EXAMINATIONS**

A candidate who has been invited to the clinical examination and fails the oral aspect of the examination, shall be allowed to re-do ONLY THE OSCE AND OSPE ASPECT AT THE NEXT EXAMINATION (without re-writing the written aspect of the examination)

The carry-over of the written examination is allowed only once ie for the next examination only. Should the candidate fail the OSCE and OSPE examination again, then the candidate must re-write the full examination at their next attempt.

Written examination carry-over applies with immediate effect according to the Colleges of Medicine of South Africa Senate meeting held on the 26 October 2017.