Curriculum for Subspecialty Training in Maternal and Fetal Medicine

Module 1 Medical complications of pregnancy

Module 2 Genetics

Module 3 Structural fetal abnormalities

Module 4 Antenatal complications

Module 5 Intrapartum complications

Module 6 Infectious diseases

Module 7 Generic (common to all subspecialties)

How to use Subspecialty Training Logbook

MODULE 1 MEDICAL COMPLICATIONS OF PREGNANCY

1.1 Hypertension

Objectives: 1. To be able to carry out appropriate assessment and management of women with chronic hypertension
2. To be able to carry out appropriate assessment and management of women with pregnancy induced hypertension, pre-eclampsia and associated complications

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Chronic hypertension (HT) **Definition / diagnosis** - measurement of BP in pregnancy (incl. validated devices) - impact of pregnancy on BP - superimposed pre-eclampsia (PE) - prevalence (primary & secondary causes) **Pathophysiology** - acute HT - chronic HT (including end organ damage) **Management** - screening for common causes secondary HT - pregnancy management (incl. fetal monitoring) - maternal and fetal risks - contraception **Pharmacology** (incl. adverse effects) - anti-adrenergics (e.g. propanolol, labetolol, oxprenolol) - calcium channel blockers (e.g. nifedipine) - vasodilators e.g. hydralazine - ACE inhibitors (e.g. lisonopril) **Outcome** - long term cardiovascular risks	Take an appropriate medical history from a woman with pre-existing HT • family history • secondary causes of chronic HT • complications of chronic HT • outcomes of previous pregnancies • drug therapy Perform an examination to screen for; • secondary causes of HT • complications of HT Manage a case of chronic HT including; • counsel regarding fetal and maternal risks (including long term health implications • arrange appropriate investigations • institute / modify drug therapy • plan delivery / postnatal care • refer, where appropriate, for further assessment / treatment	Ability to take an appropriate history & conduct an examination to screen for secondary causes and complications of chronic HT Ability to • perform and interpret appropriate investigations • formulate, implement and where appropriate modify a multi-disciplinary management plan • manage antihypertensive drug therapy in antenatal & postnatal periods • liaise with primary care & physicians in management of HT • counsel women accordingly - maternal and fetal risks - safety of antihypertensive therapy - contraception	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at: • maternal medicine clinic • HT clinic Attachments in: • obstetric anaesthesia • ITU / HDU Personal study	Log of experience and Competence Mini-CEX

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Preeclampsia (PE) **Definition / diagnosis** - pregnancy-induced HT (PIH) - proteinuria - prevalence **Pathophysiology** - placental pathology - endothelial dysfunction / systemic manifestations - oxidative stress **Prediction of PE (see 4.2)** **Management severe PE** - maternal and fetal risks - maternal monitoring (incl. indications for invasive monitoring) - fetal monitoring - management of complications • HELLP syndrome • eclampsia (incl. differential diagnosis convulsions, altered consciousness [see 1.18] • cerebrovascular accident [see 1.9] • pulmonary oedema, ARDS [see 1.5] - contraception **Pharmacology** (incl. adverse effects) - magnesium sulphate - frusemide **Outcome of PE** - Long term cardiovascular risks	Take an appropriate medical history from a woman with PE • family history • symptoms of severe disease Perform an examination to screen for complications in a woman with PE Manage a case of complex PE (or PIH) with (a) HELLP, (b) severe hypertension, (c) eclampsia and (d) pulmonary oedema • counsel regarding fetal and maternal risks • arrange and interpret appropriate investigations • institute / modify drug therapy • plan delivery and postnatal care • refer, where appropriate, for further assessment / treatment Manage a case of PE with acute renal failure; • counsel re fetal and maternal risks • arrange and interpret appropriate investigations • refer to for further assessment / treatment	Ability to take an appropriate history and conduct an examination to assess a woman with PE Ability to: • perform and interpret appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a multi-disciplinary management plan • manage antihypertensive drug therapy in antenatal & postnatal periods • liaise with primary care & physicians in management of HT • counsel women accordingly - maternal and fetal risks - safety of anti-hypertensive therapy - recurrence risks and future management (see 4.2) - contraception	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in: • obstetric anaesthesia • ITU / HDU Personal study RCOG guideline 'Management of severe pre-eclampsia and eclampsia'	Log of experience and Competence Mini-CEX

1.2 Renal Disease

Objectives: 1. To be able to carry out, under supervision, appropriate assessment and management of women with pre-existing renal disease & renal transplants
2.. To be able to carry out appropriate assessment and management of women with pregnancy induced renal disease

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Kidney in normal pregnancy - anatomical changes (incl. hydronephrosis) - functional changes - interpretation renal function tests - fluid and electrolyte balance **Pre-existing renal disease [CRD]** (reflux nephropathy, glomerulonephritis, PKD) - pathology - prevalence - pre-pregnancy assessment - pregnancy management - outcome (including genetic implications) **Renal transplant recipients** - pre-pregnancy assessment - diagnosis rejection - pregnancy management - long term considerations - pharmacology (including adverse effects) • cyclosporine, tacrolimus • azothiaprine (see 1.10) • corticosteroids (see 1.5,1.6,1.10) **Acute renal failure (ARF) in pregnancy & puerperium** - aetiology and diagnosis (incl. differential diagnosis abnormal renal function – see 1.18) - management and outcome - indications for and principles of renal support **Urinary Tract infection** (see 6.15) - differential diagnosis proteinuria (see 1.18)	Take an appropriate history from a woman with CRD • family history • complications of CRD • outcome of previous pregnancies • drug therapy Perform an examination to screen for complications of CRD Manage a case of CRD • counsel re fetal and maternal risks • arrange and interpret appropriate investigations • institute/modify drug treatment • plan delivery and postnatal care • refer where appropriate, for further assessment / treatment Manage a case of renal transplant or ARF; • counsel re fetal and maternal risks • arrange and interpret appropriate investigations • refer for further assessment / treatment	Ability to take an appropriate history and conduct an examination to assess a woman with CRD Ability to • perform and interpret appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a multi-disciplinary management plan • manage antihypertensive therapy in antenatal and postnatal periods • liaise with nephrologists and intensivists in management of acute and CRD • counsel women accordingly - maternal and fetal risks - inheritance - recurrence risks - contraception	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • renal medicine clinic Attachment in ITU/HDU Personal study	Log of experience & competence Mini-CEX

1.3 Cardiac Disease

Objectives: 1. To be able to carry out, under supervision, appropriate assessment and management of women with pre-existing cardiac disease
2. To be able to carry out, under supervision, appropriate assessment and management of women with pregnancy induced cardiac disease

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Heart in normal pregnancy - anatomical and functional changes (incl. differential diagnosis heart murmur [see 1.18]) - ECG, echocardiography and assessment of cardiac function **Congenital heart disease (HD)** - classification (cyanotic and acyanotic) & risks - prevalence - functional impact of pregnancy - pre-pregnancy assessment, indications for TOP - pregnancy management (incl. prevention / management of endocarditis, thromboembolism, arrhythmias, cardiac failure - maternal / fetal outcome (incl. genetic implications) - contraception **Acquired heart disease** (rheumatic HD, ischaemic HD, valve replacement, Marfan syndrome, arrythmias) - functional impact of pregnancy - pre-pregnancy assessment - diagnosis (incl. differential diagnosis chest pain, palpitations [see 1.18]) - pregnancy management (incl. management of CF) Pharmacology (including adverse effects) - diuretics / antihypertensives (see 1.2/1.3) - inotropes e.g. digoxin, ACEI - anti-arrhythmics (e.g. adenosine, mexiletine, lidocaine, procainamide) - anticoagulants (LMW heparin, warfarin – see 1.12, 4.2) **Peripartum cardiomyopathy** - diagnosis (incl. differential diagnosis breathlessness [see 1,18]) - management and outcome - recurrence risks	Take an appropriate history from a woman with cardiac disease • family history • previous operations/procedures • complications of cardiac disease • drug therapy Perform an examination to assess cardiac disease Manage a case of congenital and acquired HD in pregnancy • counsel re fetal and maternal risks • arrange and interpret appropriate investigations • refer to cardiologists, haematologists, anaesthetists for further assessment / treatment • plan delivery and postnatal care in liaison with cardiologists, intensivists and anaesthetists • counsel re contraception	Ability to take an appropriate history and conduct an examination to assess a woman with HD Ability to • perform and interpret appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a multi-disciplinary management plan in liaison with cardiologists, haematologists, intensivists and anaesthetists • counsel women accordingly - maternal and fetal risks - recurrence risks - contraception	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • adult cardiac clinic • 'Grown Up Congenital Heart Disease' clinic • Echocardiography session(s) Attachments in • Obstetric anaesthesia • ITU/HDU Personal study	Log of experience & competence Mini-CEX

1.4 Liver Disease

Objectives: 1. To be able to carry out, under supervision, appropriate assessment and management of women with pre-existing liver disease
2. To be able to carry out appropriate assessment and management of women with pregnancy induced liver disease

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
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 [see also 1.2]) - pathology - functional impact of pregnancy - pregnancy management - maternal and fetal outcome - contraception **Obstetric cholestasis (OC)** - pathogenesis - prevalence - diagnosis (incl. differential diagnosis of itching & altered liver function [see 1.18]) - pregnancy management (including fetal monitoring) - pharmacology (including adverse effects) • UDCA • Corticosteroids (see 1.2,1.5,1.6,1. **Acute fatty liver of pregnancy (AFLP)** - diagnosis (incl. differential diagnosis of overlap syndromes e.g. PE) - management and outcome (incl. management of liver failure) - recurrence risks **Viral hepatitis** (see 6.2)	Take an appropriate history from a woman with liver disease; • complications of liver disease • drug therapy Perform an examination to assess liver disease Manage a case of chronic liver disease in pregnancy • counsel re fetal and maternal risks • arrange and interpret appropriate investigations • refer to hepatologists for further assessment / treatment • plan delivery and postnatal care in liaison with hepatologists • counsel re contraception Manage a case of OC & AFLP • counsel re fetal and maternal risks • arrange and interpret appropriate investigations & fetal monitoring • institute/modify drug treatment • refer where appropriate for further assessment / treatment • plan delivery and postnatal care • counsel re contraception	Ability to take an appropriate history and conduct an examination to assess a woman with liver disease Ability to • perform and interpret appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a multi-disciplinary management plan • liaise with hepatologists where appropriate (e.g chronic liver diesase, AFLP) • counsel women accordingly - maternal and fetal risks - inheritance - recurrence risks - contraception	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at hepatology clinic RCOG Clinical Guideline (43) Personal study	Log of experience & competence Mini-CEX

1.5 Respiratory Disease

Objectives: 1. To be able to carry out, under supervision, appropriate assessment and management of women with pre-existing lung disease
2. To be able to carry out, under supervision, appropriate assessment and management of women with acute lung disease

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Lungs in normal pregnancy - anatomical and functional changes - interpretation of chest X-ray and pulmonary function tests (incl. blood gases) in pregnancy **Pre-existing lung disease** (asthma, sarcoidosis, cystic fibrosis [CF], restrictive lung disease) - pathogenesis - prevalence - functional impact of pregnancy - pregnancy management - maternal and fetal outcome - pharmacology (incl adverse effects) • β-sympathomimetcs (e.g. salbutamol, terbutaline) • theophyllines • disodium cromoglycate • corticosteroids (see 1,2,1.6, 1.9) - tuberculosis (see 6.10) **Acute lung disease in pregnancy** (ARDS, pneumothorax, pneumonia) - pathogenesis - diagnosis (incl. differential diagnosis of chest pain,, breathlessness [see 1.18], tachypnoea, acute hypoxamia) - oxygen therapy - management of respiratory failure (incl. indications for and principles of ventilatory support) - pharmacology (incl. adverse effects) • amoxicillin & other antibiotics (see 6)	Take an appropriate history from a woman with lung disease; • lung function results • drug therapy Perform an examination to assess lung disease Manage a case of chronic lung disease in pregnancy • counsel re fetal and maternal risks • arrange and interpret appropriate investigations • institute/modify drug therapy • plan delivery and postnatal care • refer, where appropriate, for further assessment, treatment Manage a case of acute lung disease in pregnancy • counsel re fetal and maternal risks • arrange and interpret appropriate investigations & fetal monitoring • refer to respiratory physicians / intensivists for further assessment / treatment • plan delivery and postnatal care in liaison with respiratory physicians	Ability to take an appropriate history and conduct an examination to assess a woman with respiratory disease Ability to • perform and interpret appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a multi-disciplinary management plan • liaise with respiratory physicians / intensivists where appropriate (e.g CF, ARDS) • counsel women accordingly - maternal and fetal risks - safety of asthma therapy in pregnancy - contraception	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • chest clinic • CF clinic • Pulmonary function lab Attachment in ITU/HDU Personal study BTS/SIGN guidelines: Management of asthma BTS guideline: Management of pneumonia	Log of experience & competence Mini-CEX

1.6 Gastrointestinal (GI) Disease

Objectives: 1. To be able to carry out, under supervision, appropriate assessment and management of women with pre-existing GI disease
2. To be able to carry out appropriate assessment and management of women with pregnancy induced GI disease

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
GI Tract in normal pregnancy - anatomical and functional changes **Pre-existing GI disease** (ulcerative colitis, Crohn's disease, coellac disease irritable bowel syndrome) - pathogenesis - - functional impact of pregnancy - pregnancy management - maternal and fetal outcome - pharmacology (incl. adverse effects) • sulphasalazine, 5-ASA • corticosteroids (see 1.2,1.5, 1.9) • bulking agents, lactulose • anti-spasmodics **Pregnancy-related GI disease** (hyperemesis gravidarum [HG], reflux oesophagitis, constipation) - pathogenesis - prevalence - diagnosis (incl. differential diagnosis of vomiting [see 1.18] and role of endoscopy - pregnancy management (incl. parenteral nutrition & steroids - pharmacology (incl. adverse effects) • anti-emetics e.g. cyclizine, metoclopramide, • antacids (e.g. magnesium trisilicate) • H2-receptor antagonists (e.g. ranitidine) Appendicitis - diagnosis (incl differential diagnosis abdominal pain [see 1.18, 6.15/6.16], & role of ultrasound - management (incl. antibiotics) - maternal and fetal outcome	Take an appropriate history from a woman with GI disease; • previous surgery / procedure • drug therapy Perform an examination to assess lung disease Manage a case of chronic GI disease in pregnancy and pregnancy-induced GI disease • counsel re fetal & maternal risks • arrange and interpret appropriate investigations • institute/modify drug therapy • plan delivery and postnatal care • refer, where appropriate, for further assessment / treatment Manage a case of appendicitis in pregnancy • counsel re fetal & maternal risks • arrange and interpret appropriate investigations • refer, for further assessment / surgery	Ability to take an appropriate history and conduct an examination to assess a woman with GI disease Ability to • perform and interpret appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a multi-disciplinary management plan • liaise with gastroenterologists, surgeons where appropriate • counsel women accordingly - maternal and fetal risks - safety of anti-emetic, anti-inflammatory therapy in pregnancy - contraception	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • GI clinic Personal study	Log of experience & competence Mini-CEX

1.7 Diabetes

Objectives: 1. To be able to carry out appropriate assessment and management of women with pre-gestational diabetes
2. To be able to carry out appropriate assessment and management of women with gestational diabetes

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Glucose homeostasis in pregnancy **Pre-existing diabetes** - pathogenesis & classification - prevalence - complications (metabolic, retinopathy, nephropathy, neuropathy, vascular disease) - pre-pregnancy assessment - functional impact of pregnancy in uncomplicated and complicated diabetes - pregnancy management • pre-pregnancy care • maternal monitoring (glycaemic control) • fetal monitoring • intrapartum care - maternal and fetal outcome (incl. fetal abnormality, macrosomia, FGR - pharmacology (incl adverse effects) • insulin • oral hypoglycaemics (e.g. metformin) - contraception **Gestational diabetes (GDM)** - pathophysiology and diagnosis - prevalence - pregnancy management (incl. diet, insulin & oral hypoglcaemic agents) - maternal and fetal outcome - long term risks & management - contraception Outcome - neonatal complications and management	Take an appropriate history from a woman with pre-existing diabetes; • diabetic control • presence / severity of complications • drug therapy Perform an examination to screen for diabetic complications Manage a case of pre-gestational diabetes • counsel re fetal and maternal risks • arrange and interpret appropriate investigations and monitoring • institute/modify drug therapy (incl management of hypoglycemia) • plan delivery and postnatal care • refer, where appropriate, for further assessment, treatment (e.g. in women with complications) Manage a case of GDM • counsel re fetal and maternal risks • arrange and interpret appropriate investigations & fetal monitoring • refer to dietician for further assessment • institute/modify drug therapy, where appropriate • plan delivery and postnatal care	Ability to take an appropriate history and conduct an examination to assess a woman with pre-existing diabetes Ability to • perform and interpret appropriate investigations • formulate, implement and where appropriate modify a multi-disciplinary management plan • liaise with diabetologists, diabetic nurse specialists, dieticians, and other specialists where appropriate (e.g complex diabetes) • counsel women accordingly - maternal and fetal risks - importance of good glycaemic control (incl. use of insulin in GDM) - contraception - long term risks & management	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • obstetric medicine clinic • diabetic clinic Attachment in; • Neonates • ITU/HDU Personal study	Log of experience & competence Mini-CEX

1.8 Other endocrine disease

Objectives: 1. To be able to carry out appropriate assessment and management of women with pre-existing thyroid disease
2. To be able to carry out, under supervision, appropriate assessment and management of women with other endocrine diseases

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
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 (incl. Graves disease) - diagnosis - maternal and fetal outcome (incl. fetal hypo/hyperthyroidism, developmental delay) - pregnancy management • maternal monitoring (FT4, TSH, TSH-receptor Igs) • fetal monitoring (ultrasound, blood sampling) - pharmacology (incl adverse effects) • thyroxine • thionamides (e.g. carbimazole, PTU) - outcome – management and outcome of neonatal hypo- & hyper-thyroidism **Pituitary and adrenal diseases** - pathophysiology (hyperprolactinomaemia, Cushing'syndrome, hypopituitarism, Addison's disease, diabetes insipidus) - maternal and fetal outcome - pregnancy management - pharmacolopgy (incl. adverse effects) • bromocriptine • DDAVP regnancy induced endocrine disease - pathophysiology (postpartum thyroiditis, lymphocytic hypophysitis, diabetes insipidus) - pregnancy / postnatal management	Take an appropriate history from a woman with thyroid/pituitary/adrenal disease • previous / current therapy Perform an examination to screen for endocrine dysfunction in pregnancy Manage a case of hyper/hypo thyroidism during / after pregnancy • counsel re fetal and maternal risks • arrange and interpret appropriate investigations and monitoring • institute/modify drug therapy • plan delivery and postnatal care • refer, where appropriate, for further assessment, treatment Manage a case pituitary / adrenal disease disease during / after pregnancy • counsel re fetal and maternal risks • arrange and interpret appropriate investigations & fetal monitoring • institute/modify drug therapy, where appropriate • refer, where appropriate, to endocrinologist for further assessment / therapy • plan delivery and postnatal care	Ability to take an appropriate history and conduct an examination to assess a woman with endocrine disease Ability to • perform and interpret appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a multi-disciplinary management plan • liaise with endocrinologist, and other specialists where appropriate • counsel women accordingly - maternal and fetal risks - contraception - long term risks & management	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • obstetric medicine clinic • endocrine clinic Attachment in; • Neonates • ITU/HDU Personal study	Log of experience & competence Mini-CEX

1.9 Neurological Disease

Objectives: 1. To be able to carry out, under supervision, appropriate assessment and management of women with pre-existing neurological disease
2. To be able to carry out appropriate assessment and management of women with pregnancy-induced neurological disease

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Neurological function in pregnancy **Pre-existing neurological disease** (epilepsy, migraine, multiple sclerosis, myasethenia gravis, myotonic dystrophy, idiopathic intracranial hypertension, spina bifida) - pathogenesis - prevalence - functional impact of pregnancy - pregnancy management incl; • pre-pregnancy care • prenatal diagnosis (see 3.1) • peripartum care - maternal and fetal outcome - pharmacology (incl adverse effects) • phenytoin, valproic acid, carbamezepine, lamotrigine • propanolol, tricyclic antidepressants (see 1.13) • acetazolamide • pyridostigmine - contraception **Acute / pregnancy-induced neurological disease** (stroke, neuropathies –Bell's palsy, carpal tunnel syndrome, meralgia parasthetica) - pathogenesis stroke (incl. cerebrovascular disease, cerebral venous thrombosis, SAH), neuropathies - diagnosis (incl. differential diagnosis headache, convulsions and altered consciousness [see 1,18] & cerebral imaging, electrophysiology) - management (incl. corticosteroids [see 1.5, 1.6] - maternal and fetal outcome	Take an appropriate history from a woman with neurological disease • previous / current therapy • previous procedures / operations • drug therapy Perform an examination in a woman with neurological disease. Manage a case of chronic neurological disease in pregnancy (including previous stroke) • counsel re fetal and maternal risks (incl. risks therapy) • arrange and interpret appropriate investigations • institute/modify drug therapy • plan delivery and postnatal care • refer, where appropriate, for further assessment, treatment Manage a case of neuropathy in pregnancy; • counsel re maternal risks / prognosis • institute/modify therapy (incl., where appropriate drug therapy) • refer, where appropriate, for further assessment / treatment	Ability to take an appropriate history and conduct an examination to assess a woman with neurological disease Ability to • perform and interpret appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a multi-disciplinary management plan • liaise with neurologists, physiotherapists, intensivists where appropriate (e.g CF, ARDS) • counsel women accordingly - maternal and fetal risks - risks of anti-epileptic therapies - postnatal care - contraception - long term outcome	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • obstetric medicine clinic • neurology clinic Attachment in ITU/HDU Personal study	Log of experience & competence Mini-CEX

1.10 Connective Tissue Disease

Objectives: 1. To be able to carry out, under supervision, appropriate assessment and management of women with pre-existing connective tissue disease (CTD)

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Systemic lupus erythematosis (SLE) & antiphospholipid syndrome (APS) - pathogenesis - prevalence - diagnosis (incl. classification criteria [Sapporo, American Rheumatoid Association] , laboratory investigations) - functional impact of pregnancy - management incl; • pre-pregnancy care • maternal and fetal monitoring - maternal and fetal outcome - pharmacology (incl adverse effects) • corticosteroids, azothiaprine (see 1.2,1.5,1.6) • aspirin, LMW heparin (see 1.12, 4.2) - contraception - outcome (incl. management of neonatal lupus) **Other CTDs (incl. scleroderma, rheumatoid arthritis, mixed CTD)** - pathogenesis - diagnosis - functional impact of pregnancy - Management incl; • pre-pregnancy care • maternal and fetal monitoring - maternal and fetal outcome - pharmacology (incl adverse effects) • aspirin (see 4.2), NSAIDs • corticosteroids (see 1.2,1.5,1.6) • chloroquine (see 6.9), sulphasalazine (see 1.6), azothiaprine (see 1.2), penicillamine - contraception	Take an appropriate history from a woman with CTD • previous obstetric history • drug therapy Manage a case of SLE and APS in pregnancy; • counsel re fetal and maternal risks (incl. risks therapy) • arrange and interpret appropriate investigations (incl. fetal monitoring) • institute/modify drug therapy • plan delivery and postnatal care • refer, where appropriate, for further assessment, treatment Manage a case of other CTD in pregnancy • counsel re fetal and maternal risks (incl. risks therapy) • arrange and interpret appropriate investigations (incl. fetal monitoring) • plan delivery and postnatal care • refer, where appropriate, for further assessment, treatment	Ability to take an appropriate history and conduct an examination to assess a woman with neurological disease Ability to • perform and interpret appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a multi-disciplinary management plan • liaise with immunologists, physicians, physiotherapists, s where appropriate • counsel women accordingly - maternal and fetal risks - contraception - long term outcome	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • obstetric medicine clinic • SLE / CTD clinic Attachment in ITU/HDU Personal study	Log of experience & competence Mini-CEX

1.11 Haematological Disease

Objectives: 1. To be able to carry out, under supervision, appropriate assessment and management of women with pre-existing haematological disease
2. To be able to carry out appropriate assessment and management of women with pregnancy-induced haematological disease

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Haematological function in pregnancy - red cell / plasma volume changes during pregnancy - changes in coagulation system during pregnancy - interpretation of haematological / clotting tests **Anaemia** - pathogenesis (iron, folate & vitamin B12 deficiency - prevalence - diagnosis - maternal and fetal outcome - pharmacology (incl adverse effects) • iron (oral & parenteral), folic acid, vitamin B12 Haemoglobinopathies (Sickle cell & Thalassemia syndromes) - genetic basis and pathogenesis - prevalence - prenatal diagnosis (see 2.1), fetal monitoring - functional impact of pregnancy - maternal and fetal outcome - management (incl. vaso-occlusive crisis in SCD, haematinic & transfusion therapy)	Take an appropriate history from a woman with haematological disease. • diagnosis • drug therapy Perform an examination to assess anaemia / thrombocytopenia Manage a case of anaemia during pregnancy; • counsel re fetal and maternal risks • arrange and interpret appropriate investigations • institute/modify drug therapy (incl. where appropriate parenteral iron, blood transfusion) • plan delivery and postnatal care • refer, where appropriate, for further assessment / treatment Manage a case of sickle cell and thalassemia syndromes; • counsel re fetal and maternal risks / prenatal diagnosis • arrange and interpret appropriate investigations (incl fetal monitoring in SCD) • institute/modify therapy (incl. vaso-occlusive crisis in SCD, blood transfusion) • plan delivery and postnatal care • refer, where appropriate, for further assessment / treatment	Ability to take an appropriate history and conduct an examination to assess a woman with haematological disease Ability to • perform and interpret appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a multi-disciplinary management plan • liaise with haematologists, geneticists where appropriate • counsel women accordingly - maternal and fetal risks - prenatal diagnosis (see 2.1) - contraception - long term outcome	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • obstetric medicine clinic • haematology clinic Personal study	Log of experience & competence Mini-CEX

Thrombocytopenia - prevalence - diagnosis (incl. differential diagnosis thrombocytopenia) - pathogenesis (incl. gestational thrombocytopenia, ITP, HUS and TTP) - maternal and fetal outcome - management (incl. role of splenectomy) - pharmacology (incl adverse effects) • corticosteroids, azathiaprine (see 1.2,1.10) • iv immunoglobulin G Congenital coagulation disorders - genetic basis / pathogenesis vWD, haemophilia - prevalence - prenatal diagnosis (see 2.1) - diagnosis / maternal monitoring (clotting factor levels / vWF antigen activity, vWF:RCo) - maternal and fetal outcome - management (incl pre-pregnancy counseling and intrapartum care) - pharmacology (incl adverse effects) ▪ DDAVP ▪ recombinant and plasma derived factor concentrates Disseminated intravascular coagulation [DIC] (see 5.7,5.10) - aetiology and pathogenesis - diagnosis - management • resuscitation [see 5.10] with volume replacement • platelet, fresh frozen plasma replacement • recombinant fVIIa (see 5.7)	Manage a case of immune thrombocytopenic purpura in pregnancy • counsel re fetal and maternal risks • arrange and interpret appropriate investigations • institute/modify therapy • plan delivery and postnatal care • refer, where appropriate, for further assessment / treatment Manage a case of congenital coagulation disorder in pregnancy • counsel re fetal and maternal risks / prenatal diagnosis • arrange and interpret appropriate investigations • institute/modify therapy • plan delivery and postnatal care • refer, where appropriate, for further assessment / treatment Manage a case of DIC in pregnancy • identify and treat underlying cause • arrange and interpret appropriate investigations • institute/modify resuscitative and replacement therapy			

1.12 Thromboembolic disease

Objectives: 1. To be able to carry out appropriate assessment and management of women at risk or with a history of thromboembolic disease (TED)
2. To be able to carry out appropriate assessment and management of a women with pregnancy-induced TED

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Venous thromboembolism (VTE) in pregnancy - pathogenesis of deep venous thrombosis (DVT), pulmonary embolism (PE) - prevalence - risk factors (incl. thrombophilias) - diagnosis (clinical, D-dimer, ultrasound , Doppler, CXR, ECG, blood gases, isotope scanning, spiral CT) - acute management • antithrombotic agents • laboratory monitoring • thrombolytic therapy / surgery - subsequent prophylaxis (incl. non-pharmacological methods) - pharmacology (incl adverse effects) • unfractioned heparin, LMWH • warfarin • streptokinase - outcome (jncl. postphlebitic syndrome) - contraception **Thrombophilia / previous VTE** - genetic basis and pathogenesis of congenital and acquired thrombophilias (see 1,10) - diagnosis of thrombophilia (lab investigations and interpretation in pregnancy) - risk of VTE (based on thrombophilia, past history) - maternal and fetal risks (incl.fetal loss, PE, FGR) - Management incl; • non-pharmacological approaches • LMWH, aspirin • fetal monitoring - contraception	Take an appropriate history from a woman with suspected VTE in pregnancy. • previous VTE • family history Perform an examination to assess suspected VTE in pregnancy Manage a case of VTE in pregnancy; • arrange and interpret appropriate investigations • counsel re maternal and fetal risks • plan subsequent care (incl. delivery and postnatal care) • refer, where appropriate, for further assessment, treatment Manage a case of thrombophilia and / or previous VTE in pregnancy • arrange and interpret appropriate investigations • counsel re risks of VTE in pregnancy/puerperium • institute/modify VTE prophylaxis where appropriate • plan delivery and postnatal care • refer, where appropriate, for further assessment, treatment	Ability to take an appropriate history and conduct an examination to assess a woman with suspected VTE in pregnancy Ability to • perform and interpret appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a multi-disciplinary management plan • liaise with physicians, radiologists, haematologists where appropriate • counsel women accordingly - maternal and fetal risks - risks / benefits of prophylactic antithrombotic therapy during pregnancy, labour and puerperium - long term outcome - contraception	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • obstetric medicine clinic • thrombophilia / haematology clinic RCOG Clinical Guideline (37) Personal study	Log of experience & competence Mini-CEX

1.13 Psychiatric disease

Objectives: 1. To be able to carry out, under supervision, appropriate assessment and management of women with pre-existing psychiatric disease
2. To be able to carry out, under supervision, appropriate assessment and management of a women with pregnancy-induced/related psychiatric disease

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Pre-existing psychiatric disease (incl. depression / bipolar disorders, anxiety disorders, schizophrenia) - prevalence - functional impact of pregnancy - pregnancy / postnatal management ▪ role of specialist team / community liaison / mother and baby units ▪ psychotherapy ▪ pharmacological therapy / risks of withdrawal ▪ mother and baby units - maternal and fetal risks - pharmacology (incl. adverse effects) • tricyclics, SSRIs • phenothiazines (e.g. trifluoperazine, chlorpromazine) • butyrophenones (e.g. haloperidol) • benzodiazepines • lithium, carbamezepine - neonatal management (incl. withdrawal and long term risks) - Legal issues (incl. Mental Health Act and consent, child protection) Pregnancy-induced / related psychiatric disease - risk factors - diagnosis (incl. differential diagnosis postnatal depression) - management • role of specialist team / community liaison / mother and baby units • support / psychotherapy • pharmacological therapy / ECT - maternal and neonatal outcome (incl. recurrence risks)	Take an appropriate history from a woman with psychiatric illness • previous history / drug history • risk factors Manage a case of chronic psychiatric disease in pregnancy; • refer for further assessment / treatment to psychiatric services • counsel re maternal, fetal and neonatal risks • institute/modify drug therapy, where appropriate • plan pregnancy, delivery and postnatal care Manage a case of postnatal depression / puerperal psychosis; • identify high risk women and refer for further assessment / treatment to psychiatric services • institute/modify therapy where appropriate • counsel re maternal and neonatal risks, long term outcome (incl risk of recurrence)	Ability to take an appropriate history to assess a woman with psychiatric disease Ability to • formulate, implement and where appropriate modify a multi-disciplinary management plan • formulate list of differential diagnoses • liaise with psychiatrists, community psychiatric nurses • counsel women accordingly - maternal risks - risks / benefits of therapy - long term outcome / recurrence risks - breast feeding / contraception	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • obstetric psychiatry clinic • psychiatry clinic Attachment in perinatal psychiatry Personal study	Log of experience & competence Mini-CEX

1.14 Substance abuse

Objectives: 1. To be able to carry out appropriate assessment and management of women with previous / current history of alcohol abuse
2. To be able to carry out appropriate assessment and management of a women with previous / current history of substance abuse / dependency

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Maternal and fetal effects (incl. maternal psychosocial effects) - alcohol (incl. acute intoxication) - cannabis - opiates - cocaine and crack - benzodiazepines - amphetamines - lysergic acid diethylamide (LSD), phencyclidine (angel dust) - toluene (glue sniffing) - smoking **Management** - screening methods / diagnosis - structure / organization of antenatal care - organization of drug/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** (incl. adverse effects) - methadone - benzodiazepines (see 1.13) - nicotine replacement **Outcome** - Neonatal management and outcome (incl. management of withdrawal) - Legal issues (child protection)	Take an appropriate history from a woman with alcohol / substance abuse / dependence • social problems / support • previous detoxification, methadone maintenance • complications Perform an examination to assess suspected alcohol / substance abuse Manage a case of alcohol abuse in pregnancy; • arrange and interpret appropriate maternal & fetal investigations • liaise with primary care, social services, alcohol dependency team and refer, where appropriate, for further assessment / treatment • counsel re maternal, fetal and neonatal risks • institute/modify supportive / drug therapy • plan pregnancy, delivery and postnatal care Manage a case of substance abuse in pregnancy; • arrange and interpret appropriate maternal & fetal investigations • liaise with primary care, social services, alcohol dependency team and refer, where appropriate, for further assessment / treatment • counsel re maternal, fetal and neonatal risks • institute/modify supportive / drug therapy • plan pregnancy, delivery and postnatal care	Ability to take an appropriate history and perform an examination to assess a woman with alcohol / substance abuse / dependency Ability to • provide sympathetic support (suppress any display of personal judgement) • formulate, implement and where appropriate modify a multi-disciplinary management plan • liaise with drug dependency team, psychiatrists, social services, pharmacists and neonatologists • counsel women accordingly - drinking / drug cessation - maternal, fetal and neonatal risks - long term health implications - breast feeding / contraception	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • drug / alcohol abuse clinic • psychiatry clinic Personal study RCOG Clinical Guideline (9)	Log of experience & competence Mini-CEX

1.15 Skin Disease

Objectives: 1. To be able to carry out, under supervision, appropriate assessment and management of women with pre-existing skin disease
2. To be able to carry out appropriate assessment and management of women with pregnancy-induced skin disease

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Physiological skin changes of pregnancy - Skin changes - Nail / hair changes **Pre-existing skin disease** (eczema, psoriasis, acne) - pathogenesis - prevalence - functional impact of pregnancy - pregnancy / postnatal management - pharmacology (incl adverse effects) • emollients • topical corticosteroids • topical benzoyl peroxide **Pregnancy-induced skin disease** (pemphigoid gestatuinis, polymorphic eruption of pregnancy [PEP], prurigo of pregnancy, pruritic folliculitis of pregnancy) - pathogenesis - prevalence - diagnosis (incl. skin histological and immunofluoresecnt findings) - maternal and fetal outcome - management (incl. plasmapheresis, immunosuppressants) - pharmacology (incl adverse effects) • topical / systemic corticosteroids [see 1.5, 1.6] • antihistamines (e.g. diphenhydramnine) - recurrence risks	Take an appropriate history from a woman with skin disease • diagnosis • drug therapy Perform an examination in a woman with skin disease. Manage a case of chronic skin disease in pregnancy • arrange and interpret appropriate investigations • institute/modify drug therapy • refer, where appropriate, for further assessment, treatment Manage a case of pregnancy-induced skin disease • arrange and interpret appropriate maternal & fetal investigations • counsel re maternal and fetal risks • institute/modify drug therapy • plan pregnancy, delivery and postnatal care • refer for further assessment / treatment	Ability to take an appropriate history and conduct an examination to assess a woman with skin disease Ability to • perform and interpret appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a management plan • liaise with dermatologists appropriate • counsel women accordingly - maternal and fetal risks - safety of topical therapies in pregnancy - recurrence risks	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • obstetric medicine clinic • dermatology clinic Personal study	Log of experience & competence Mini-CEX

1.16 Malignant Disease

Objectives: 1. To be able to carry out, under supervision, appropriate assessment and management of women with previous/current malignant disease

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Maternal & fetal effects of cancer therapies - Radiotherapy • fetal dose • teratogenic / fetal risks - Chemotherapy • pharmacokinetics in pregnancy • teratogenic / fetal risks **Breast cancer** - pathology - prevalence - diagnosis in pregnancy (incl. examination, FNA, ultrasound) - maternal and fetal risks - pregnancy / postnatal management • surgery • adjuvant chemo/radio-therapy • indications for termination / preterm delivery - prognosis and recurrence risks - contraception **Gynaecological and other cancer** (cervical cancer, ovarian cancer, melanoma) - pathology - prevalence - diagnosis in pregnancy (incl. colposcopy, biopsy) - maternal and fetal risks - pregnancy/postnatal management • surgery (incl. hysterectomy, salpingo-oophorectomy) • adjuvant chemo/radiotherapy • palliative care - prognosis and recurrence risks	Take an appropriate history from a woman with suspected / prior malignancy • diagnosis • previous procedures / operations • drug therapy Perform a breast examination in pregnancy Manage a case of breast cancer in pregnancy • arrange appropriate investigations • counsel re maternal and fetal risks (incl. management options e.g. termination of pregnancy, preterm delivery) • plan pregnancy, delivery and postnatal care • refer for further assessment / treatment Manage a case of gynaecological or other malignancy in pregnancy • arrange appropriate investigations • counsel re maternal and fetal risks (incl. management options e.g. termination of pregnancy / preterm delivery) • plan pregnancy, delivery and postnatal care • refer for further assessment / treatment	Ability to take an appropriate history and conduct an examination to assess a woman with malignant disease Ability to • perform appropriate investigations • formulate list of differential diagnoses • formulate, implement and where appropriate modify a management plan • liaise with primary care, palliative care, surgeons and oncologists • counsel women accordingly - maternal and fetal risks - management options - prognosis & recurrence risks - breastfeeding - contraception Ability to act with empathy, honesty and sensitivity when breaking bad news	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • obstetric medicine clinic • breast clinic • oncology clinic RCOG Clinical Guideline (12) Personal study	Log of experience & competence Mini-CEX

1.17 Clinical Scenarios

Objectives: 1. To be able to reach a diagnosis in women presenting with various clinical problems in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Presenting problems in pregnancy o proteinuria (see 1.2) o abnormal renal function (see 1.2) o chest pain (see 1.3, 1.4) o palpitations (see 1.3) o heart murmur (see 1.3) o breathlessness (see 1.3, 1.5) o abdominal pain (see 1.6) o vomiting (see 1.6) o itching (see 1.6, 1.15) o abnormal liver function (see 1.6) o convulsions (see 1.9) o headache (see 1.9) o altered consciousness (see 1.9) o anaemia (1.11) o thrombocytopenia (1.11) - causes (physiological and pathological) - investigations • ECG • chest X-Ray • echocardiogram • arterial blood gases • lung function tests	Take an appropriate history and conduct an examination in a woman presenting with the symptom / sign / abnormality Manage a case of gynaecological or other malignancy in pregnancy • arrange appropriate investigations • counsel re maternal and fetal risks (incl. management options e.g. termination of pregnancy / preterm delivery) • plan pregnancy, delivery and postnatal care • refer for further assessment / treatment	Ability to take an appropriate history and conduct an examination to assess a pregnant woman presenting with symptom / sign / abnormality Ability to • formulate list of differential diagnoses • arrange and interpret appropriate investigations • formulate a management plan • reassure women about the safety of radiological investigations in pregnancy	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine Attendance at • general medicine clinics Personal study	Log of experience & competence Mini-CEX

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MODULE 2 GENETICS

2.1 Genetic disorders

Objectives To be able to carry out appropriate counselling and management in families with a previous genetic disorder

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Genetics - gene structure & function • DNA as genetic material • replication, transcription & translation • mechanisms & effects of mutation - inheritance & susceptibility • patterns of inheritance of single genes • genetic heterogeneity (locus & allele) • new mutations causing single gene disorder • expression & penetrance • multifactorial inheritance (incl. summation / interaction gene effects, polymorphisms) • mitochondrial inheritance **Service & Laboratory aspects** - organisation & role of Clinical Genetics Services - DNA testing in clinical practice • ethical & societal issues • diagnostic, predictive & carrier testing • uses and limitations of laboratory tests - indications, methods and limitations (incl. failure / error rates) of: • cytogenetics • FISH • PCR • Southern / Northern blotting • Gene tracking using RFLPs • Enzyme/ biochemical analysis	Take an appropriate history and construct, where appropriate, a family tree in patients with or at risk of genetic disease. Manage a case with a personal / family history of: • genetic disease (incl. cystic fibrosis, myotonic dystrophy, muscular dystrophy, Fragile X, haemoglobinopathy, haemophilia, IEM) • syndromic anomaly (see 3.3) including: • counsel about: - risk and impact of disease - information sources & support groups - prenatal diagnostic options (incl. risks timing of tests / results, accuracy) - management options after testing (incl. termination of pregnancy) • arrange appropriate fetal & maternal investigations • refer where appropriate for further specialist and/or genetic counselling • plan care of ongoing pregnancy / delivery	Ability to identify patients with, or at risk of a genetic condition Ability to • formulate, implement and where appropriate modify management plan • liaise with clinical geneticist and associated laboratory disciplines (incl. cyto- and molecular genetics) and refer where appropriate. • counsel women and their partners about; - genetics in an understandable & non-directive way - fetal risks - prenatal screening / diagnostic options (incl. limitations of tests) - treatment, management - reproductive options • formulate management plan for ongoing and future pregnancies • support parent(s) • respect confidentiality Ability to use genetic testing appropriately	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attendance at: • specialist paediatric clinics Attachments in; • genetics • laboratory specialties (incl. cyto- / molecular genetics • neonatology • paediatric surgery • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Methods of prenatal diagnosis (incl. indications, techniques, complications) • ultrasound • amniocentesis • chorion villus sampling (CVS) • fetal blood sampling • fetal tissue biopsy **Single gene defects** - epidemiology & inheritance - effects of mutation & associated pathology - clinical / pathological features - prognosis - recurrence risks - prenatal diagnosis of the following defects: • cystic fibrosis • muscular dystrophy • myotonic dystrophy • fragile X • haemoglobinopathies (see also • haemophilias (see also • common inborn errors of metabolism	Perform: • detailed ultrasound: - at appropriate gestation - using appropriate technique (incl. transvaginal, Doppler, 3D/4D) • amniocentesis • chorion villus sampling • CVS • fetal blood sampling or refer, where appropriate, for same • skin/muscle biopsy or refer, where appropriate, for same			

2.2 Chromosomal disorders

Objectives
To be able to carry out appropriate counselling and management in families with a previous chromosomal disorder
To be able to understand and supervise a programme of screening for chromosomal anomaly during pregnancy
To be able to carry out appropriate counselling and management of fetal chromosome anomaly
To be able to carry to appropriate counselling and management of rarer cytogenetic anomalies including translocations, markers and mosacism.

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Chromosomes - structure & function (see 3.2/3.3) - cell division - types of abnormality (incl. structural rearrangements, trisomies, sex chromosome anomalies, extra markers, mosaicism) **Screening / diagnosis** - biochemical markers (incl. AFP, uE3, hCG, PAPP-A, inhibin-A) - ultrasound markers • 11-14 weeks (incl. nuchal translucency, nasal bone, ductus venosus Doppler, tricuspid regurgitation) • 18-21 weeks (incl. nuchal oedema, clinodactyly, echogenic bowel, pyelectasis, choroid plexus cysts, nasal bone, short femur/humerus) - Likelihood ratios & risk calculation - screening strategies • accuracy (incl. detection rate, false positive rate) • service / cost implications - laboratory diagnosis (incl. methods, failure / error rates) • cytogenetic analysis • FISH • PCR	Take an appropriate history Manage a case with a personal / family history of a chromosomal anomaly (incl. structural alterations) including: • counsel about: - risk and impact of anomaly - prenatal diagnostic options - management options after testing • arrange appropriate fetal & parental investigations • refer where appropriate for further specialist and/or genetic counselling • plan subsequent care of ongoing pregnancy Counsel women about screening for / diagnosis of chromosomal anomalies in pregnancy including: • screening options (biochemistry & ultrasound) • diagnostic tests (incl. laboratory methods, risks, accuracy and timing of results) Manage a case of chromosomal anomaly diagnosed in pregnancy including; • counsel about fetal / infant risks and long term outcome of the following anomalies: - trisomy 21 (Down syndrome) - trisomy 18 (Edward syndrome) - trisomy 13 (Patau syndrome) - 45X (Turner syndrome)	Ability to take an appropriate history Ability to; • counsel women and partners - before screening test - after positive result • formulate, implement and where appropriate modify management plan in a woman at 'higher' risk of chromosomal anomaly Ability to • formulate, implement and where appropriate modify management plan in a case with a chromosomal anomaly • liaise with clinical geneticist and cytogenetics and refer where appropriate. • counsel women and their partners about; - fetal risks - prenatal screening / diagnostic options (incl. limitations of tests)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attendance at: • specialist paediatric clinics Attachments in; • genetics • laboratory specialties (incl. cyto- / molecular genetics, serum screening) • neonatology • paediatric surgery • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
- mosaicism (incl. classification and management) - principles & organisation of screening / diagnostic programme for chromosomal anomalies • National Screening Committee • role of regional screening coordinators • quality control & audit **Chromosomal anomalies** - epidemiology - pathology - clinical / pathological features - prognosis - recurrence risks - prenatal diagnosis of the following chromosomal anomalies • trisomy 21 • trisomy 18 • trisomy 13 • Turner syndrome • Kleinfelter syndrome • XXX • triploidy • structural rearrangement (incl. balanced & unbalanced translocation) • marker chromosome • uniparental disomy • mosaicism	- triploidy - common sex chromosome anomalies (incl. 47XXY (Kleinfelter syndrome), 47XXX) - structural rearrangements - markers - mosaicism • counsel about management options (incl. TOP) • refer where appropriate for further counselling / support • plan care of ongoing pregnancy / delivery Perform: • Ultrasound screening for chromosomal anomaly at: - 10-14 wk including: • nuchal translucency • nasal bone • ductus venosus Doppler • tricuspid valve regurgitation - 18-21 wk including: • nuchal oedema • nasal bone • pyelectasis • short femur/humerus • echogenic bowel • echogenic intracardiac focus • ventriculomegaly • major structural defect • risk calculation for trisomy 21 based on ultrasound (+/- biochemical) markers • amniocentesis • chorion villus sampling • fetal blood sampling or refer, where appropriate, for same • skin biopsy or refer, where appropriate, for same	- reproductive options • formulate management plan for ongoing and future pregnancies • support parent(s) • respect confidentiality Ability to use chromosomal testing appropriately	National Screening Committee Guidance on Down syndrome screening	

2.3 Multiple anomalies and syndromic disorders

Objectives To be able to carry out appropriate counselling and management in families with a previous child with multiple anomalies / syndromic disorder
To be able to carry out appropriate counselling and prenatal diagnosis in a fetus with multiple anomalies

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Screening / diagnosis - Ultrasound features of common syndromes and associations - Use of databases to aid diagnosis **Syndromic anomalies and associations** - epidemiology - pathology - clinical features - prognosis - inheritance / recurrence risks - prenatal diagnosis (incl. ultrasound features, lab diagnosis [where applicable – see 3.1]] of the following syndromic anomalies • DiGeorge • Fryn's • Beckwith-Wiedemann • Meckel-Gruber • Smith-Lemli-Opitz • VATER / VACTERL	Take an appropriate history Manage a case with a personal / family history of syndromic anomaly including: • counsel about: - risk and impact of disease - information sources & support groups - prenatal diagnostic options (incl. risks timing of tests / results, accuracy) - management options after testing (incl. termination of pregnancy) • arrange appropriate fetal investigations • refer where appropriate for further specialist and/or genetic counselling • plan care of ongoing pregnancy / delivery Manage a case of with multiple fetal anomalies: • use computer database (e.g. London Dysmorphology Database, OMIM) to reach differential diagnosis • counsel about - possible diagnoses & implications - information sources and support groups - further prenatal diagnostic options where appropriate (incl. risks / accuracy) - management options (incl. termination of pregnancy) • arrange further fetal investigations where appropriate • refer where appropriate for further specialist and/or genetic counselling • plan care of ongoing pregnancy / delivery	Ability to take a history and identify patients with, or at risk of a genetic condition Ability to • diagnose fetal anomalies using ultrasound and formulate differential diagnosis • liaise with clinical geneticist and associated laboratory disciplines (incl. cyto- and molecular genetics) and refer where appropriate. • counsel women and their partners about; - possible diagnoses (incl. outcomes) - further investigations (incl. limitations of tests) - treatment, management - reproductive options • formulate management plan for ongoing and future pregnancies • support parent(s) • respect confidentiality	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attendance at: • specialist paediatric clinics Attachments in; • genetics • laboratory specialties (incl. cyto- / molecular genetics • neonatology • paediatric surgery • perinatal pathology Dysmorphology databases Personal study	Log of experience and competence Mini-CEX Case-based discussions

MODULE 3 STUCTURAL FETAL ANOMALIES

2.4 CNS anomalies

Objectives To be able to carry out appropriate assessment and management of a fetus with a CNS anomaly

To understand the management, complications and outcomes of neonates with CNS anomalies

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Embryology - brain & spinal cord (incl. postnatal development) **Pathology / Epidemiology** - pathology of major CNS anomalies - incidence of CNS anomalies - risk factors - associated chromosomal / genetic / syndromic anomalies **Screening / diagnosis** - ultrasound appearance of normal embryonic/fetal/neonatal CNS - biometric measurements (incl. transcerebellar diameter, ventricular size, cisternal magna) - ultrasound appearances of CNS anomalies (incl. differential diagnosis) - role of antenatal and postnatal MRI **Management / outcome** - acrania / exencephaly / anencephaly - spinal bifida - encephalocele - holoprosencepahly - ventriculomegaly - Dandy Walker spectrum - microcephaly - intracranial mass **Recurrence risks / prevention** - CNS anomalies - Prevention of neural tube defects **Pharmacology** - Folic acid	Take an appropriate history Perform an ultrasound scan to assess: • head shape, biometry • cavum, corpus callosum • thalami, cortex • ventricles, choroid plexus • cerebellum, cisterna magna • cerebral Doppler (see 4.8) Be able to diagnose and counsel about the following: • anencephaly / exencephaly • spina bifida, encephalocele • iniencephaly, microcephaly • ventriculomegaly (all degrees) • holoprosencephaly • Dandy Walker spectrum • tumours, cysts • intracranial haemorrhage (see also 4.9) Manage a case of CNS anomaly including: • counsel regarding fetal / infant risks (including long term health implications) • arrange / perform appropriate fetal & maternal investigations (+ MRI if appropriate) • refer where appropriate for further counselling • plan delivery / appropriate neonatal support	Ability to take an appropriate history Ability to • perform detailed ultrasound assessment of fetal CNS • reach a differential diagnosis • perform and interpret appropriate investigations Ability to • formulate, implement and where appropriate modify management plan • liaise with neonatologists, paediatric neurologists and paediatric surgeons where appropriate (including appropriate referral for second opinion) • counsel women and their partners accordingly - fetal (and maternal) risks - neonatal management - long term outcome - postnatal or post mortem findings - recurrence risks • formulate management plan for future pregnancy • support parent(s)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attendance at: • paediatric neurology clinics Attachments in; • neonatology • paediatric surgery • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

3.2 Cardiac anomalies

Objectives To be able to carry out appropriate assessment and management of a fetus with a cardiac anomaly
To understand the management, complications and outcome of neonates with cardiac anomalies

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Embryology - heart and cardiovascular system - circulatory adaptations at birth **Pathology / Epidemiology** - pathology of major cardiac anomalies - incidence of cardiac anomalies - risk factors (incl. family history) - associated chromosomal / genetic (incl. 22q deletions) / syndromic anomalies - mechanisms of tachy- & brady-arrhymthmias **Screening / diagnosis** - ultrasound appearance of normal fetal heart - biometric measurements (incl. chamber sizes) - ultrasound appearances of cardiac anomalies (incl. differential diagnosis) - role of 3D / 4D ultrasound (STIC) - role of M-mode & Doppler echocardiography (incl. normal transvalvular velocities) **Management / outcome** - septal defects - hypoplastic heart syndromes - outflow tract anomalies - cardiac tumours - arrhythmias **Recurrence risks** - cardiac anomalies **Pharmacology** Incl. adverse effects of drugs used to treat fetal arrhythmias: - digoxin - flecainide - amiodarone - adenosine	Take an appropriate history Perform echocardiography to assess: • cardiac size, position • venous system (incl. ductus venosus) • atria & ventricless • outflow tracts • arterial system (incl. ductus arteriosus) • heart rate and rhythm Be able to diagnose and counsel about the following: • septal defects • valvular abnormalities & hypoplastic heart: - mitral stenosis / atresia - aortic stenosis / atresia - tricuspid stenosis / atresia - pulmonary stenosis / atresia • outflow tract anomalies (coarctation , transposition, double outlet ventricle) • cardiac tumour • arrhythmia Manage a case of cardiac anomaly including: • counsel regarding fetal / infant risks (including long term health implications) • arrange / perform appropriate fetal & maternal investigations (incl. M-mode, Doppler echocardiography) • refer where appropriate for further • assessment / counselling • institute / modify anti-arrhythmic therapy • plan delivery / appropriate neonatal support	Ability to take an appropriate history Ability to • perform echocardiography (including Doppler and M-mode) • reach a differential diagnosis Ability to • formulate, implement and where appropriate modify management plan • liaise with paediatric cardiologists and neonatologists (including appropriate referral for second opinion) • counsel women and their partners accordingly - fetal risks - neonatal management - long term outcome - postnatal or post mortem findings - recurrence risks • formulate management plan for future pregnancy • support parent(s)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attendance at: • paediatric cardiology clinics Attachments in; • neonatology • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

3.3 Genitourinary (GU) anomalies

Learning outcomes To be able to carry out appropriate assessment, counselling and management of a fetus with a genitourinary anomaly

To understand the management, complications and outcomes of neonates with genitourinary anomalies

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Embryology - genitor-urinary system (incl. physiology of fetal urinary system) - functional adaptations after birth **Pathology / Epidemiology** - pathology of major GU anomalies - incidence of GU anomalies - risk factors - associated chromosomal / genetic / syndromiv anomalies **Screening / diagnosis** - ultrasound appearance of normal embryonic/fetal / neonatal urinary tract - ultrasound appearances of GU anomalies (incl. differential diagnosis) - biochemical measurement of fetal urine function - neonatal / paediatric investigations (incl. cystourethrography, MAG3 / DMSA scanning) **Management / outcome** - renal agenesis - renal cystic disease - hydronephrosis - duplex kidney - lower urinary tract obstruction - bladder/claocal exstrophy - indications for / risks of: • amnioinfusion (see 3.11) • vesicocentesis • vesicoamniotic shunting **Recurrence risks** - GU anomalies	Take an appropriate history Perform ultrasound scan to assess: • renal size • renal parenchyma & collecting system • ureters & bladder • genitalia • renal artery Doppler Be able to diagnose and counsel about the following: • renal agenesis • renal cystic disease (ADPKD, IPKD) • multicystic / dyspalstic kidney • renal cyst • pylectasis / hydronephrosis • megacystis ± megaureter • ambiguous genetalia Manage a case of GU anomaly including: • counsel regarding fetal / infant risks (including long term health implications) • arrange / perform appropriate fetal and maternal investigations (including amnioinfusion [see 3.11] and vesicocentesis) • perform vesicoamniotic shunting or refer, where appropriate, for same • refer where appropriate for further counselling • plan delivery / appropriate neonatal support	Ability to take an appropriate history Ability to • perform detailed ultrasound assessment of fetal GU system • reach a differential diagnosis • perform and interpret appropriate investigations (incl. vesicocentesis) Ability to • formulate, implement and where appropriate modify management plan • liaise with neonatologists, paediatric nephrologists, paediatric surgeons where appropriate (including appropriate referral for second opinion incl. vesicoamniotic shunting) • counsel women and their partners accordingly - fetal risks (incl. risks of diagnostic and therapeutic procedures) - neonatal management - long term outcome - postnatal or post mortem findings - recurrence risks • formulate management plan for future pregnancy • support parent(s)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attendance at: • paediatric nephrology clinics Attachments in; • neonatology • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

3.4 Pulmonary abnormalities

Objectives To be able to carry out appropriate assessment, counselling and management of a fetus with a pulmonary anomaly
To understand the management, complications and outcomes of neonates with pulmonary anomalies

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Embryology - Trachea, lungs & diaphragm - functional adaptations after birth **Pathology / Epidemiology** - pathology of pulmonary anomalies - incidence of pulmonary anomalies - risk factors - associated chromosomal / genetic / syndromic anomalies **Screening / diagnosis** - ultrasound appearance of normal embryonic/fetal thorax - ultrasound appearances of pulmonary anomalies (incl. differential diagnosis) - role of antenatal and postnatal MRI / CT imaging **Management / outcome** - laryngeal/tracheal atresia (incl. principles of EXIT procedure) - cystic adenomatoid malformation of lung (CAML) - pulmonary sequestration - diaphragmatic hernia - pleural effusion - indications for / risks of: • thoracocentesis • pleuroamniotic shunting **Recurrence risks** - pulmonary anomalies	Take an appropriate history Perform ultrasound scan to assess: • chest size and shape • mediastinal shift • ribs • lung parenchyma • diaphragm Be able to diagnose and counsel about the following: • Laryngeal atresia/ stenosis (CHAOS) • CAML • pulmonary sequestration • diaphragmatic hernia • pleural effusion Manage a case of thoracic anomaly including: • counsel regarding fetal / infant risks (including long term health implications) • arrange / perform appropriate fetal investigations (including thoracocentesis) • perform pleuroamniotic shunting or refer, where appropriate, for same • refer where appropriate for further counselling • plan delivery / appropriate neonatal support	Ability to take an appropriate history Ability to • perform detailed ultrasound assessment of fetal thorax • reach a differential diagnosis • perform and interpret appropriate investigations (incl. thoracocentesis) Ability to • formulate, implement and where appropriate modify management plan • liaise with neonatologists, paediatric chest physicians, paediatric surgeons where appropriate (including appropriate referral for second opinion incl. pleuroamniotic shunting) • counsel women and their partners accordingly - fetal risks (incl. risks of diagnostic and therapeutic procedures) - neonatal management - long term outcome - postnatal or post mortem findings - recurrence risks • formulate management plan for future pregnancy Support parent(s)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attendance at: • paediatric chest clinics Attachments in; • neonatology • paediatric surgery • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

3.5 Abdominal wall (AW) and gastrointestinal (GI) anomalies

Objectives To be able to carry out appropriate assessment, counselling and management of a fetus with an AW or GI anomaly

To understand the management, complications and outcomes of neonates with AW or GI anomalies

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Embryology - Abdominal wall - Gastrointestinal tract **Pathology / Epidemiology** - pathology of AW and GI anomalies - incidence of AW and GI anomalies - risk factors - associated chromosomal / genetic anomalies **Screening / diagnosis** - ultrasound appearance of normal embryonic/fetal AW and GI tract - ultrasound appearances of AW and GI anomalies (incl. differential diagnosis) **Management / outcome** - gastroschisis - umbilical hernia / exomphalos - oesophageal atresia / TOF - bowel atresia (small and large) - meconium ileus - hepatic calcification / mass - echogenic bowel - abdominal cyst - isolated ascites **Recurrence risks** - AW and GI anomalies	Take an appropriate history Perform ultrasound scan to assess: • abdominal shape & biometry • abdominal wall / cord insertion • stomach, small & large bowel • liver, gallbladder • intrahepatic vein & ductus venosus Be able to diagnose and counsel about the following: • gastroschisis / body wall defect • umbilical hernia / exomphalos • absent / enlarged stomach • duodenal, small & large bowel atresia • meconium ileus • hepatic calcification / mass • echogenic bowel • abdominal cyst • ascites Manage a case of AW /GI anomaly including: • counsel regarding fetal / infant risks (including long term health implications) • arrange / perform appropriate fetal investigations • refer where appropriate for further counselling • plan delivery / appropriate neonatal support	Ability to take an appropriate history Ability to • perform detailed ultrasound assessment of fetal AW and GI tract • reach a differential diagnosis • perform and interpret appropriate investigations Ability to • formulate, implement and where appropriate modify management plan • liaise with neonatologists, paediatric surgeons where appropriate (including appropriate referral for second opinion) • counsel women and their partners accordingly - fetal risks - neonatal management - long term outcome - postnatal or post mortem findings - recurrence risks • formulate management plan for future pregnancy • support parent(s)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attachments in; • neonatology • paediatric surgery • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

3.6 Neck and face anomalies

Objectives To be able to carry out appropriate assessment, counselling and management of a fetus with a neck or facial anomaly

To understand the management, complications and outcomes of neonates with neck or facial anomalies

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Embryology - fetal face - fetal neck - fetal thyroid **Pathology / Epidemiology** - pathology of neck and facial anomalies - incidence of neck and facial anomalies - risk factors - associated chromosomal / genetic / syndromic anomalies **Screening / diagnosis** - ultrasound appearance of normal fetal neck and face - ultrasound appearances of neck and facial anomalies (incl. differential diagnosis) - role of antenatal 3D ultrasound / MRI **Management / outcome** - cystic hygroma - facial cleft - micrognathia - macroglossia - anopthalmia - fetal goitre **Recurrence risks** - Neck and facial anomalies	Take an appropriate history Perform ultrasound scan to assess: • head shape & biometry (incl. orbital diameters) • face and palate • neck • thyroid Be able to diagnose and counsel about the following: • cystic hygroma • facial cleft • micrognathia • anopthalmia • macroglossia • fetal goitre • absent / hypoplastic nasal bone Manage a case of neck / facial anomaly including: • counsel regarding fetal / infant risks (including long term health implications) • arrange / perform appropriate fetal investigations • refer where appropriate for further counselling • plan delivery / appropriate neonatal support	Ability to take an appropriate history Ability to • perform detailed ultrasound assessment of fetal neck & face • reach a differential diagnosis • perform and interpret appropriate investigations Ability to • formulate, implement and where appropriate modify management plan • liaise with neonatologists, paediatric surgeons, facial cleft team where appropriate (including appropriate referral for second opinion) • counsel women and their partners accordingly - fetal risks - neonatal management - long term outcome - postnatal or post mortem findings - recurrence risks • formulate management plan for future pregnancy • support parent(s)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attendance at: • facial cleft clinics Attachments in; • neonatology • paediatric surgery • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

3.7 Skeletal anomalies

Objectives To be able to carry out appropriate assessment, counselling and management of a fetus with a skeletal anomaly

To understand the management, complications and outcomes of neonates with skeletal anomalies

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Embryology - Fetal skeleton and spine **Pathology / Epidemiology** - pathology of skeletal anomalies - incidence of skeletal anomalies - risk factors - associated chromosomal / genetic / syndromic anomalies **Screening / diagnosis** - ultrasound appearance of normal fetal skeleton - ultrasound appearances of skeletal anomalies (incl. differential diagnosis) - role of antenatal 3D ultrasound / MRI **Management / outcome** - thanatophoric dysplasia - acondroplasia - acondrogenesis - ostogenesis imperfeca - camptomelic dysplasia - talipes - polydactyly - limb reduction defect - sirenomelia - sacral agenesis - hemivertebra - fetal akinesia / hypokinesia sequence **Recurrence risks** - Skeletal anomalies	Take an appropriate history Perform ultrasound scan to assess: • long bone shape & biometry • ribs & spine • minerlisation of skeleton • feet and hands • joints • fetal tone and movements Be able to diagnose and counsel about the following: • micromelia (due to lethal and non-lethal dysplasias) • talipes • polydactyly • limb reduction defect • scoliosis • sirenomelia • sacral agenesis • scoliosis (due to hemivertebra) • fetal akinesia / hypokinesia sequence Manage a case of skeletal anomaly including: • counsel regarding fetal / infant risks (including long term health implications) • arrange / perform appropriate fetal investigations • refer where appropriate for further counselling • plan delivery / appropriate neonatal support	Ability to take an appropriate history Ability to • perform detailed ultrasound assessment of fetal skeleton • reach a differential diagnosis • perform and interpret appropriate investigations Ability to • formulate, implement and where appropriate modify management plan • liaise with geneticists, neonatologists, orthopaedic surgeons where appropriate (including appropriate referral for second opinion) • counsel women and their partners accordingly - fetal risks - neonatal management - long term outcome - postnatal or post mortem findings - recurrence risks • formulate management plan for future pregnancy • support parent(s)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attendance at: • paediatric orthopaedic lclinics Attachments in; • genetics • neonatology • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

3.8 Fetal tumours

Objectives To be able to carry out appropriate assessment, counselling and management of a fetus with a teratoma
To understand the management, complications and outcomes of neonates with teratoma

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Embryology - fetal lymphangiomas & teratomas **Pathology / Epidemiology** - pathology of fetal lymphangiomas & teratomas - incidence of fetal tumours **Screening / diagnosis** - ultrasound appearances of fetal lymphangiomas / teratomas (incl. differential diagnosis of complex masses) - role of antenatal 3D ultrasound / MRI **Management / outcome** - cervical lymphangioma / teratoma - sacrococcygeal teratoma **Recurrence risks** - fetal teratomas	Take an appropriate history Perform ultrasound scan of a teratoma to assess: • size, position and relationship to adjacent structures • structure (incl. blood flow) Be able to diagnose and counsel about the following: • cervical teratoma • Sacrococcygeal teratoma Manage a case of fetal teratoma including: • counsel regarding fetal / infant risks (including long term health implications) • arrange / perform appropriate fetal investigations • refer where appropriate for further counselling • plan delivery / appropriate neonatal support (incl. where appropriate EXIT procedure)	Ability to take an appropriate history Ability to • perform detailed ultrasound assessment of a fetal tumour • reach a differential diagnosis Ability to • formulate, implement and where appropriate modify management plan • liaise with neonatologists, paediatric and ENT surgeons and ENT where appropriate (including appropriate referral for second opinion) • counsel women and their partners accordingly - fetal risks - neonatal management - long term outcome - postnatal or post mortem findings - delivery (incl. EXIT procedure) • formulate management plan for future pregnancy • support parent(s)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attachments in; • neonatology • paediatric surgery • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

3.9 Fetal hydrops

Objectives To be able to carry out appropriate assessment, counselling and management of a fetus with hydrops fetalis

To understand the management, complications and outcomes of neonates with congenital hydrops

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Pathology / Epidemiology - pathology of fetal hydrops (incl. immune and non-immune causes – see also 4.8) - incidence of fetal hydrops - risk factors - associated chromosomal / genetic / syndromic anomalies **Diagnosis** - ultrasound appearance of fetal hydrops (incl. differential diagnosis) - role of, echocardiography (see 3.2), antenatal 3D ultrasound / MRI and fetal blood sampling **Management / outcome** - red cell alloimmunisation (see 4.8) - cardiac arrhymthmias (see 3.2) - other non-immune causes of hydrops **Recurrence risks** - immune and non-immune hydrops	Take an appropriate history Perform ultrasound scan to assess: cause of hydrops including: • cause of hydrops (incl. echocardiography [see 3.2] and middle cerebral artery Doppler [see 4.8]) • severity of hydrops (incl. amniotic fluid volume [see 3.10]) • fetal condition (see 4.3) Be able to diagnose and counsel about the following: • immune hydrops (see also 4.8) • non-immune hydrops Manage a case of fetal hydrops including: • counsel regarding fetal / infant risks (including long term health implications) • arrange / perform appropriate maternal investigations • perform fetal blood sampling (± transfusion or refer, where appropriate, for same • refer where appropriate for further counselling • plan delivery / appropriate neonatal support	Ability to take an appropriate history Ability to • perform detailed ultrasound assessment of fetal hydrops • reach a differential diagnosis • perform and interpret appropriate investigations Ability to • formulate, implement and where appropriate modify management plan • liaise with neonatologists, haematologists and geneticists where appropriate (including referral for second opinion) • counsel women and their partners accordingly - fetal risks - maternal risks - neonatal management - long term outcome - postnatal or post mortem findings - recurrence risks • formulate management plan for future pregnancy • support parent(s)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attachments in; • genetics • neonatology • haematology • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

3.10 Multiple pregnancies

Objectives To be able to carry out appropriate assessment, counselling and management of abnormalities in multiple pregnancies
To understand the management, complications and outcomes of abnormalities in twins

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Embryology - mono- & di-zygous twinning (see 4.6) - placentation – chorionicity / amnionicity (see 4.6) **Pathology / Epidemiology** - pathology of abnormalities related to twinning and twin placentation (incl. twin-to-twin transfusion syndrome [TTTS], twin reversed arterial perfusion [TRAP] and conjoining. - incidence of abnormalities related to twinning - risk factors for twinning and related anomalies **Screening / diagnosis** - ultrasound determination of zygosity / chorionicity - chorionicity and amnionicity - ultrasound appearances of abnormalities related to twinning (incl. differential diagnosis) - invasive procedures in multiple pregnancies **Management / outcome** - Triplet & higher order multiple pregnancy - Discordant anomalies in multiples - TRAP sequence - Conjoined twins - TTTS - Discordant fetal growth (see 4.3)	Take an appropriate history Perform ultrasound scan in multiple pregnancy to assess: • chorionicity and amnionicity • fetal anatomy • fetal growth (see 4.3) Be able to diagnose and counsel about the following: • Multiple pregnancy with discordant fetal abnormality • TRAP sequence • Conjoined twin • TTTS Manage a case of multiple pregnancy with fetal abnormality including: • counsel regarding fetal / infant risks (incl. selective feticide & laser ablation) • arrange / perform appropriate fetal and maternal investigations (incl. where appropriate fetal karyotyping) • refer where appropriate for further counselling / management • perform selective feticide or refer, where appropriate, for same • plan delivery / appropriate neonatal support	Ability to take an appropriate history Ability to • perform detailed ultrasound assessment of a multiple pregnancy with a fetal anomaly • reach a differential diagnosis Ability to • formulate, implement and where appropriate modify management plan • liaise with fetal medicine subspecialists, neonatologists and paediatric surgeons where appropriate (including appropriate referral for second opinion) • counsel women and their partners accordingly - fetal risks (incl. selective feticide and laser ablation) - neonatal management - long term outcome - postnatal or post mortem findings - delivery • formulate management plan for future pregnancy • support parent(s)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attachments in; • neonatology • paediatric surgery • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

3.11 Disorders of amniotic fluid (AF)

Objectives To be able to carry out appropriate assessment, counselling and management of a pregnancy with abnormal AF

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Embryology / Physiology - placenta and membranes - formation / function of amniotic fluid **Pathology / Epidemiology** - pathology of disorders of AF (incl. secondary effects of early amnion rupture & oligohydramnios) - incidence of AF disorders - risk factors - associated chromosomal / genetic / syndromic anomalies **Diagnosis** - ultrasound measurement of AF - diagnosis of oligohydramnios and hydramnios (incl. differential diagnosis) - invasive procedures in multiple pregnancies (incl. risks & indications of amnioinfusion / amnioreduction) **Management / outcome** - oligo/an-hydramnios - hydramnios - indications for / risks of: • amnioinfusion (see 3.3) • amnioreduction **Pharmacology** - prostaglandin synthase inhibitors	Take an appropriate history Perform ultrasound scan to assess AF volume Be able to diagnose and identify cause of: • oligo/an-hydramnios (incl. ROM [see 4.5], renal anomaly [see 3.3], FGR [see 4.3], postmaturity. • Hydramnios (incl. GI anomaly [see 3.5], neuromuscular anomaly, maternal diabetes [see 1.7], placental angioma) Manage a case of oligo/an-hydramnios including: • counsel regarding fetal / infant risks • arrange / perform appropriate fetal investigations (incl. amnioinfusion) • institute appropriate maternal and fetal monitoring • refer where appropriate for further counselling • plan delivery / appropriate neonatal support Manage a case of hydramnios including • counsel regarding fetal/infant risks (incl. preterm delivery) • arrange / perform appropriate fetal & maternal investigations • refer where appropriate for further counselling • institute appropriate maternal and fetal monitoring • institute, where appropriate, maternal medical therapy • perform, where appropriate, amnioreduction • plan delivery / appropriate neonatal support	Ability to take an appropriate history Ability to • perform detailed ultrasound assessment of AF • reach a differential diagnosis • perform and interpret appropriate investigations Ability to • formulate, implement and where appropriate modify management plan • liaise with neonatologists where appropriate (including appropriate referral for second opinion) • counsel women and their partners accordingly - fetal and neonatal risks - maternal risks - neonatal management - postnatal or post mortem findings - recurrence risks • support parent(s)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attachments in; • neonatology • genetics • paediatric surgery • perinatal pathology Personal study	Log of experience and competence Mini-CEX Case-based discussions

3.12 Termination of pregnancy

Objectives To be able to carry out counselling and management of families undergoing TOP for fetal anomaly

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Law / Ethics - abortion law - ethics issues relating to TOP for fetal anomaly - guidance on use of feticide **Epidemiology** - incidence of & indications for TOP for fetal anomaly - rates of TOP for fetal anomalies and factors influencing decision **Pathology** - consent for post-mortem (& tissue retention) - conduct of post-mortem examination **Management** (incl. methods, complications) - medical TOP - surgical TOP (incl. suction aspiration and dilatation & evacuation) - feticide - impact of gestational age on complications (physical and psychological) **Pharmacology** - mifepristone - prostaglandin analogues (incl. cervagem, misoprostol [see 4.1] - potassium chloride **Bereavement** - Process and milestones - Management	Manage a case of major fetal anomaly: • counsel regarding: - risk / impact of handicap associated with anomaly - feticide - methods of TOP (medical & surgical) - complications of TOP - post-mortem - aftercare • plan TOP and post-TOP care • arrange appropriate fetal (and maternal) investigations incl. post-mortem • refer, where appropriate, for further counselling • conduct post-TOP counselling Perform: • medical TOP or refer, where appropriate, for same • vacuum aspiration and dilatation / evacuation or refer, where appropriate, for same • feticide or refer, where appropriate for same • supportive counselling • post-TOP counselling incl: - postmorterm findings (where appropriate) - recurrence risks - management plan for future pregnancy	Ability to: • reach a definitive diagnosis of major fetal anomaly (where possible) • assess risks of death and/or handicap • counsel women and their partners regarding: - risks of death / handicap - option of TOP ± feticide Ability to • formulate, implement and where appropriate modify management plan for TOP (incl. post-TOP review) • liaise with midwives, neonatologists and pathologists where appropriate • counsel women and their partners accordingly; - procedure & risks of TOP - post-mortem • support women and their partners • refer, where appropriate, for further counselling / support	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Fetal Medicine Attendance at: • bereavement support Attachments in; • perinatal pathology • genetics RCOG Guidance of Late TOP for Fetal Anomaly Personal study	Log of experience and competence Mini-CEX Case-based discussions

3.13 Preconception counselling

Objectives: To be able to carry out preconception counselling in families at increased risk of fetal anomaly (including those with family history, prior anomaly, medical disorder or exposure to teratogenic drugs)

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
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 (incl. genetic testing) - methods of screening / diagnosis - alternative options (incl. assisted conception / preimplantation diagnosis) **Teratogenicity** - mechanisms of teratogenicity - information sources (including National Teratology Centre) - teratogenetic effects of commonly used drugs incl: • lithium • warfarin • anti-epileptic drugs • ACE inhibitors • anti-neoplastic drugs - teratogenic effects of radiological investigations	Take an appropriate history Counsel 'at risk' woman/family pre-conception • risks of fetal anomaly • screening / diagnostic options refer, where appropriate, to clinical geneticist or fetal medicine specialist	Ability to take an appropriate history Ability to • assess risks of fetal anomaly • liaise with clinical geneticists, fetal medicine specialists, physicians, teratologists and refer where appropriate • counsel women and their partners accordingly - screening / diagnostic options - management plan for future pregnancy	Observation of and discussion with senior medical staff Sessions in • clinical genetics Personal study	Log of experience and competence Mini-CEX Case-based discussions

MODULE 4 ANTENATAL COMPLICATIONS

4.1 Miscarriage and fetal death

Objectives: To be able to carry out appropriate assessment and management of women with fetal death before and after <24 weeks gestation
To be able to carry out assessment and management of women with trophoblastic disease
To be able to carry out assessment and management of women with suspected cervical weakness

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Pathophysiology - fetal death – early & late - cervical weakness - trophoblastic disease **Epidemiology** - incidence of miscarriage / fetal deth - risk factors **Screening** - cervical length (see 4.5) **Diagnosis, management and outcome** - fetal death - cervical weakness (including cervical cerclage) - trophoblastic disease (incl. registration and principles of follow up) **Pharmacology** Incl. adverse effects of drugs used in miscarriage / fetal death: - mifepristrone - prostaglandin analogues	Take an appropriate medical & obstetric history Manage a case of fetal death including; • ultrasound diagnosis • arrange appropriate investigations • plan delivery / postdelivery care [see 3.12] • indications for aspirin/LMWH Manage a case of suspected cervical weakness including; • perform and interpret ultrasound measurement of cervical length • appropriate selection of cases for surgical intervention • perform elective and emergency cervical cerclage Manage a case of trophoblastic disease including: • ultrasound diagnosis • arrange appropriate investigations, registration and follow up • perform uterine evacuation	Ability to take an appropriate history Ability to • perform and interpret ultrasound in women with suspected fetal death and cervical weakness • formulate, implement and where appropriate modify a management plan for fetal death and suspected cervical weakness • perform elective and emergency cervical cerclage • liaise with other services e.g. bereavement support • formulate, implement and where appropriate modify a management plan for women with trophoblastic disease • counsel women and their partners accordingly: - empathy in bereavement support - consent for post mortem - postmortem findings	Observation of and discussion with senior medical staff Appropriate postgraduate courses Personal study	Log of experience and competence Mini-CEX OSAT (cervical cerclage)

4.2 Poor / Failed placentation

Objectives: To be able to carry out appropriate assessment and management of women with previous placental disease
To be able to carry out appropriate assessment and management of women with biochemical / ultrasound markers of poor placentation

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Normal placental development - vascular development (incl. mechanisms of spiral artery transformation) - endocrine function **Placental pathophysiology** - pre-eclampsia (see 1.1) - fetal growth retardation - placental abruption (see 4.4) - fetal death (see 4.1) **Screening** Incl. indications for & predictive abilities of: - biochemical screening (AFP, hCG and other Down syndrome markers) - uterine artery Doppler - placental morphology - thrombophilia screening **Pharmacology** Incl. adverse effects of drugs used in prevention of poor placentation / fetal death - aspirin - low molecular weight eparin - vitamin C/E	Take an appropriate medical and obstetric history • family history • outcome of previous pregnancies Perform and interpret an ultrasound examination to screen for placental disease: • uterine artery Doppler • placental morphology Manage a case at risk of poor placentation based on previous history or positive screening: • arrange appropriate investigations • institute, where appropriate, prophylactic therapy	Ability to take an appropriate history Ability to • perform and interpret appropriate investigations (incl. uterine artery Doppler) • formulate, implement and where appropriate modify a multi-disciplinary management plan • liaise, where appropriate, with haematologists • counsel women and their partners accordingly - maternal and fetal risks - risks / benefits of prophylactic therapies - long term health implications	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. Maternal Medicine, Ultrasound Attendance at • thrombophilia clinics • serum screening lab Personal study	Log of experience & competence Mini-CEX

4.3 Fetal growth disorders

Objectives: To be able to carry out appropriate assessment and management of the SGA / growth restricted fetus
To be able to understand the management, complications and outcomes of growth restricted neonates
To be able to carry out appropriate assessment and management fetal macrosomia
To understand the management, complications and outcome of neonates with growth disorders

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Fetal growth - pattern (incl. organ-specific growth) - regulation (incl. insulin, IGF system) - causes (incl. fetal, placental & maternal factors) **Definitions** - small for gestational age (SGA) / fetal growth restriction (FGR) - large for gestational age (LGA) / macrosomia **Screening / diagnosis** - previous history - clinical exam (incl. symphysis fundal distance) - ultrasound morphometry – basic and derived measurements (incl. estimated fetal weight) - customised growth charts **Tests of fetal wellbeing** Technique, indications for & interpretation of; - Doppler (umbilical artery (UA), middle cerebral artery (MCA), ductus venosus (DV)) - amniotic fluid volume (AFV) - cardiotocography (incl. computerized analysis) - biophysical profile **Management** - strategy for monitoring - timing / mode of delivery - management of FGR in pre-viable/extremely preterm fetus & in multiple pregnancy **Outcome** - neonatal complications of SGA/LGA infant - long term health implications of fetal growth disorders	Take an appropriate history and p erform an exam to screen for fetal growth disorders (incl. use of customized growth chart) Perform and interpret the following; • ultrasound morphometry • umbilical artery Doppler • middle cerebral artery Doppler • ductus venosus Doppler • biophysical profile (incl. AFV, CTG) Manage a case of SGA /FGR • arrange appropriate investigations to identify cause • institute appropriate monitoring • plan time / mode of delivery (incl. TOP where appropriate) Manage a case of LGA/macrosomia • arrange appropriate investigations to identify cause • plan time / mode of delivery	Ability to take an appropriate history and conduct an examination to assess fetal size Ability to • perform and interpret ultrasound in fetus with suspected growth disorder • formulate, implement and where appropriate modify a management plan • liaise where appropriate with neonatologists • counsel women and their partners accordingly - fetal and neonatal risks (incl. consideration, where appropriate, of TOP) - long term health implications for infant - recurrence risks and management plan for future pregnancy	Observation of and discussion with senior medical staff Attachments in • Neonatology Attendance at • Paediatric follow up clinics (incl. neurodevelopment) Personal study	Log of experience & competence Mini-CEX OSAT (Arterial & venous Dopplers in FGR)

4.4 Antepartum haemorrhage (APH)

Objectives: To be able to carry out appropriate assessment and management of women at risk of and presenting with antepartum haemorrhage

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Pathophysiology - placental abruption - placenta praevia - other causes (incl vasa praevia) - morbidly adherent placenta **Epidemiology** - incidence - risk factors **Screening / diagnosis** - risk factors (incl. previous CS) - ultrasound determination of placental site (incl. transvaginal ultrasound) **Management** - clinical & laboratory assessment of; • haemorrhage • coagulation - assessment of fetal wellbeing (see 4.3) - strategy for monitoring - timing / mode of delivery - appropriate use of blood and blood products (see 5.7)	Take an appropriate history form a woman with APH Perform an examination to assess the cause and consequences of APH Perform an ultrasound examination to assess; • placental site • morphology (incl. retroplacental haemorrhage & abnormal implantation) Manage a case of APH including; • arrange and interpret appropriate laboratory investigations • plan mode and timing of delivery • appropriate use of blood and blood products Manage a case of suspected morbidly adherent placenta • arrange appropriate investigations • plan CS (see 5.7)	Ability to take an appropriate history and conduct an examination to assess APH Ability to • perform and interpret appropriate investigations to assess cause and consequences of APH • formulate, implement and where appropriate modify a management plan • liaise with anaesthetists, haematologists and radiologists where appropriate • counsel women and their partners accordingly - maternal and fetal risks - recurrence risks	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachment in • Haematology • Anaesthesia / ITU Personal study	Log of experience & competence Mini-CEX OSAT (CS for placenta praevia)

4.5 Preterm delivery

Objectives: To be able to carry out appropriate assessment and management of women with previous preterm birth / PPROM
To be able to carry out appropriate assessment and management of women with preterm labour / PPROM
To understand the management, complications and outcome of the preterm neonate

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Pathophysiology / Epidemiology - preterm labour (PTL) - preterm premature rupture of membranes (PPROM) – incl. acute chorioamnionitis (see 6.16) - maternal & fetal conditions leading to elective preterm delivery - epidemiology of PTL/PPROM **Screening / diagnosis** - risk factors - clinical exam - fetal fibronectin (fFN) - cervical length (CL) (see 4.1) - vaginal infection (incl. bacterial vaginosis – see 6.14) - C reactive protein **Management** - in-utero transfer (principles & process) - tocolysis, corticosteroid & antibiotic administration - mode of delivery - strategy for monitoring in PPROM (incl. lab investigations, ultrasound) - acute chorioamnionitis (see 6.16) **Pharmacology** (Incl. adverse effects; - corticosteroids (for lung maturity) - sympathomimetics, nifedipine, atosiban, indomethacin - progesterone - erythromycin (see also 6.16) **Outcome** - neonatal complications of preterm birth (incl.. jaundice, RDS, ROP, IVH, PFC) - long term health implications of preterm birth (incl. CLD, neurodevelopmental delay, CP)	Take an appropriate history from a woman at risk of, or presenting with, preterm labour / PPROM Manage a case of prior preterm birth / PPROM • arrange and interpret appropriate investigations Manage a case of PPROM • confirm diagnosis • arrange and interpret investigations & fetal monitoring • institute / modify antibiotic therapy Manage a case of PTL • assess likelihood of preterm birth (incl. where appropriate measurement of CL & fFN) • arrange and interpret appropriate investigations & fetal monitoring • institute corticosteroid ± tocolysis • arrange in-utero transfer • plan delivery	Ability to take an appropriate history Ability to • perform and interpret appropriate investigations • formulate, implement and where appropriate modify a management plan • manage corticosteroid, tocolytic and other therapy • arrange in-utero transfer • liaise with neonatologists • counsel women and their partners accordingly - maternal risks (incl. chorioamnionitis) - fetal and neonatal risks (incl. risks pulmonary hypoplasia & consideration, where appropriate, of TOP) - side effects of therapy - long term health implications for infant - recurrence risks and management plan for future pregnancy	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachment in • Neonatology Attendance at • Paediatric follow up clinics (incl. neurodevelopment) Personal study	Log of experience & competence Mini-CEX

4.6 Multiple pregnancy

Objectives: To be able to carry out appropriate assessment and management of women with a twin pregnancy
To be able to carry out appropriate assessment and management of a woman with a higher order multiple pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Embryology / Epidemiology - mono- & di-zygous twinning - placentation – chorionicity / amnionicity - incidence of multiple pregnancy **Maternal adaptation / Antenatal care** - blood & cardiovascular system - other organ systems - organization of antenatal care **Screening /diagnosis** - ultrasound determination of zygosity / chorionicity (see 3.7) - aneuploidy (see 3.X) - structural anomaly (see 3.7) - morphometry (incl. criteria for discordancy) **Management & outcome** - preterm delivery (see 4.5) - discordant fetal anomaly (see 3.7) - discordant growth / FGR (see 4.3) - single fetal death - complications of monochorionic (MC) twinning (see 3.7) - higher order multiple pregnancy (incl. fetal reduction)	Perform and interpret ultrasound screening / diagnosis in multiple pregnancy; • chorionicity / amnionicity • aneuploidy (incl. nuchal translucency) Manage a case of twin pregnancy complicated by; • discordant fetal anomaly (see 3.7) • fetal growth retardation / discordancy (see 4.3) • single fetal death • monoamniotic twinning including; • arrange appropriate investigations • institute appropriate monitoring • plan time/mode of delivery Manage a higher order multiple pregnancy including; • arrange appropriate investigations • perform fetal reduction or refer, where appropriate, for same	Ability to; • perform and interpret appropriate investigations • formulate, implement and where appropriate modify a management plan in MC and DC twin pregnancy • liaise, where appropriate, with colleagues in fetal medicine and neonatology • counsel women with multiple pregnancy and their partners accordingly - maternal & fetal risks in both MC & DC twins - prenatal diagnosis - selective feticide and fetal reduction - maternal and fetal risks of interventions in MC twins - fetal and neonatal risks of preterm birth - fetal death (including empathy in bereavement support, consent for post mortem)	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachment in • Neonatology Attendance at • Multiple pregnancy clinic • Fetal Medicine Unit (to witness interventions in MC twins) Personal study	Log of experience & competence Mini-CEX

4.7 Malpresentation

Objectives: To be able to carry out appropriate assessment and management of women with a breech presentation
To be able to carry out appropriate assessment and management of a woman with an unstable lie

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Epidemiology / aetiology - incidence - likelihood of spontaneous version - risk factors **Screening / diagnosis** - clinical exam - ultrasound (incl. diagnosis of associated anomalies) **Management / outcome** - external cephalic version (incl. indications, technique, complications) [See 4.5 re: tocolysis] - management options in breech presentation (incl. induction of labour / CS / attempted vaginal breech delivery (see 5.4) - management options in unstable lie (incl. induction of labour / CS - fetal / neonatal risks	Take an appropriate obstetric history Perform an exam to determine fetal lie Manage a case of breech presentation including; • ultrasound diagnosis (incl. exclusion of fetal, placental and extra-uterine anomalies) • appropriate selection and counseling of cases for ECV • perform ECV Manage a case of unstable lie including; • ultrasound diagnosis (incl. exclusion of fetal, placental and extra-uterine anomalies)	Ability to take an appropriate history and conduct an examination to assess fetal lie / presentation Ability to; • perform and interpret ultrasound in fetus with suspected breech presentation / unstable lie • formulate, implement and where appropriate modify a management plan (incl. timing and mode of delivery) • perform ECV • counsel women and their partners accordingly - risks and benefits of ECV - management options - mode of delivery	Observation of and discussion with senior medical staff Appropriate postgraduate courses Personal study	Log of experience & competence Mini-CEX OSAT (ECV)

4.8 Red cell alloimmunisation

Objectives: To understand the principles and practical aspects of screening for and prevention of red cell alloimmunisation
To be able to carry out appropriate assessment and management of a woman with an unstable lie
To understand the management, complications and outcome of a neonate with haemolytic disease of the newborn (HDN)

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Blood group systems / pathophysiology - rhesus (incl. gene structure and prediction of genotype) - other red cell antigens causing HDN - fetal pathology in HDN (see also 3.8) **Epidemiology** - incidence (alloimmunisation & complications) - risk factors (sensitizing events) **Laboratory methods** - Antibody detection (antiglobulin tests) - Kleihauer testing / flow cytometry for FMH fetomaternal haemorrhage (FMH) - DNA analysis (incl. use of free fetal DNA in maternal plasma) **Prevention** - FMH - organisation & effectiveness of screening and prevention programmes **Management** - screening and diagnosis fetal anaemia (incl. MCA Doppler) - fetal transfusion therapy - hydrops (see 3.8) **Outcome** - Neonatal complications of HDN (incl. hyper-bilirubinaemia, anaemia) - Management of complications (incl. exchange transfusion) - Long term implications of HDN **Pharmacology** - Anti-D immunoglobulin	Take an appropriate obstetric history • past obstetric history • timing / method of sensitisation Manage a case of red cell alloimmunisation • institute appropriate maternal and fetal monitoring • assess risk of fetal anaemia (incl. perform & interpret MCA Doppler) • perform fetal blood sampling and transfusion or refer, where appropriate, for same • plan mode / place / timing of delivery	Ability to take an appropriate history Ability to; • perform and interpret appropriate investigations in fetus at risk of haemolytic anaemia (incl. MCA Doppler) • formulate, implement and where appropriate modify a management plan for a woman with red cell antibodies • liaise with neonatologists and laboratory (haematology/blood transfusion) • counsel women and their partners accordingly - prevention of alloimmunisation - fetal / neonatal risks of red cell antibodies - fetal transfusion therapy - recurrence risks and management plan for future pregnancy	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments: • Neonatology • Haematology • Blood transfusion Attendance at: • Fetal Medicine Unit (to witness fetal blood sampling / transfusion) Personal study	Log of experience & competence Mini-CEX

4.9 Platelet alloimmunisation

Objectives: To be able to carry out appropriate assessment and management of a woman with an unstable lie
To understand the management, complications and outcome of a neonate with alloimmune thrombocytopenia (AIT)

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Platelet groups / pathophysiology - HPA system - fetal / neonatal pathology in AIT **Epidemiology** - Incidence (alloimmunisation & 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 (incl. platelet transfusion) - Long term implications of AIT **Pharmacology** - Intravenous immunoglobulin (iv Ig) incl. effectiveness and adverse effects)	Take an appropriate obstetric history • Past obstetric history Manage a case of platelet alloimmunisation • institute appropriate maternal and fetal monitoring • assess risk of fetal thrombocytopenia • institute, where appropriate, maternal iv Ig therapy • perform fetal blood sampling and platelet transfusion or refer, where appropriate, for same • plan mode / place / timing of delivery	Ability to take an appropriate history Ability to; • perform and interpret appropriate investigations in fetus at risk of thrombocytopenia • formulate, implement and where appropriate modify a management plan for a woman with anti-platelet cell antibodies • liaise with neonatologists and laboratory (haematology/blood transfusion) • counsel women and their partners accordingly - fetal / neonatal risks - maternal & fetal therapy - recurrence risks and management plan for future pregnancy	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments: • Neonatology • Haematology • Blood transfusion Attendance at: • Fetal Medicine Unit (to witness fetal blood sampling / transfusion) Personal study	Log of experience & competence Mini-CEX

4.10 Gynaecological problems in pregnancy

Objectives: To be able to carry out appropriate assessment and management of a woman with a pelvic tumour complicating pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Pathology - uterine fibroids - ovarian tumours (benign & malignant) - complications encountered during pregnancy (see 6.17) **Epidemiology** - incidence of pelvic tumours and complications - acute abdomen in pregnancy **Diagnosis** - ultrasound diagnosis (incl. assessment of risk of malignancy) - complications (incl. differential diagnosis of acute abdomen in pregnancy [see 6.17]) **Management** - indications for surgical intervention - analgesia (see 5.10) - anaesthesia (see 5.10) - role of radiotherapy and chemotherapy in ovarian malignancies	Take an appropriate obstetric and gynaecological history Manage a case of pelvic tumour in pregnancy • perform ultrasound assessment of uterus and ovaries / pelvic mass • institute appropriate maternal and fetal monitoring • institute, where appropriate, maternal supportive therapy • perform, under supervision, surgical management of ovarian cyst • plan mode / place / timing of delivery Manage a case of acute abdomen in pregnancy • arrange appropriate investigations to identify cause • refer, where appropriate, for further management	Ability to take an appropriate history and perform an examination in a women with a pelvic mass or abdominal pain in pregnancy Ability to; • perform and interpret ultrasound in women with a pelvic tumour • formulate, implement and where appropriate modify a management plan for a woman with a pelvic tumour in pregnancy • liaise where appropriate with gynaecologists, gynaecological oncologists and general surgeons • counsel women and their partners accordingly - maternal and fetal risks - management options - prognosis	Observation of and discussion with senior medical staff Appropriate postgraduate courses Personal study	Log of experience & competence Mini-CEX

MODULE 5 INTRAPARTUM COMPLICATIONS

5.1 Labour Ward Management

Objectives: To understand the organization and management of the delivery suite
To understand and apply the principles of risk management in the delivery suite

Knowledge criteria	Clinical competency	Professional skills and Attitudes	Training support	Evidence/ Assessment
Organization / Management of Labour ward (LW) - staffing structure - equipment - DS Forum - emergency skills / drills - guidelines - audit (incl. collection / analysis of DS workload) **Risk management on LW** - principles of risk management - critical incident reporting	Co-ordinate the clinical running of the LW at a daily level including; • staff allocation • appropriate triaging of clinical cases Write an evidence-based guideline relevant to LW Lead an emergency drill on LW • set up & running of drill • feed back to staff Investigate a critical incident • review the case • take appropriate statements • perform root cause analysis • write a report	Ability to • lead a multidisciplinary team effectively • co-ordinate the DS appropriately • write an evidence-based guidelines (relevant to DS) • set up, run and feedback on an emergency drill • investigate a critical incident appropriately and make recommendations Ability communicate effectively with: • junior medical staff • senior medical staff • midwifery staff • patients & relatives • obstetric anaesthetists • neonatologists	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Management of the Labour Ward • ALSO / MOET Attendance at: • Risk management forum • DS Forum Personal study	Log of experience and competence [OSAT]

5.2 Failure to progress in labour

Objectives: To understand the physiology of normal labour and the factors that can adversely affect progress
To be able to carry out appropriate assessment and management of women with failure to progress in first stage and second stage of labour

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Anatomy / Physiology - Anatomy of pelvis / fetal skull - Regulation of myometrial contractility - Stages of labour **Pathophysiology** Incl. causes and consequences of poor progress in labour: - inefficient uterine action - malposition - relative / absolute cephalopelvic disproportion - fetal acid base status - postpartum uterine atony **Management** - maternal support - amniotomy - mobilization / position - analgesia (see 5.10) - oxytocin - manual rotation - instrumental vaginal delivery - caesarean section **Pharmacology** (incl. adverse effects) - oxytocin	Take an appropriate history and perform an examination to assess progress in labour Manage a case of failure to progress in the first stage of labour; • perform exam to identify cause e.g. inefficient uterine activity / malposition / cephelopelvic disproportion (relative and absolute) • counsel regarding management • institute appropriate management (incl. delivery where appropriate) Manage a case of failure to progress in the second stage of labour; • perform exam to identify cause • counsel regarding management • institute appropriate management Perform: • manual rotation • ventouse (rotational and non-rotational) • forceps – outlet and mid-cavity • Kielland's forceps • caesarean secon	Ability to take an appropriate history Ability to • perform and interpret abdominal/pelvic examination • formulate, implement and where appropriate modify a management plan • liaise, where appropriate, with anaesthetists / neonatologists • counsel women and their partners accordingly - management - maternal and fetal risks	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Management of the Labour Ward • ALSO / MOET Attachments in • obstetric anaesthesia • neonataology RCOG Clinical Guideline (26) NCCWCH Guideline (Caesarean Section) Personal study	Log of experience & competence Mini-CEX

5.3 Non-reassuring fetal status in labour

Objectives: To be able to carry out appropriate assessment and management of fetal acideamia in labour
To understand the management, complications and outcomes of hypoxic ischaemic encephalopathy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Pathophysiology - regulation of fetal heart rate - fetal acid base balance - hypoxic ischaemic encephalopathy (HIE) **Fetal monitoring in labour** Incl. principles, interpretation and predictive value of fetal; - meconium - cardiotocography (CTG) - ECG - pulse oximetry - pH, blood gases and lactate - oligohydramnios **Management** - position / oxygen therapy - acute tocolysis - amnioinfusion - emergency operative delivery **Pharmacology** (incl. adverse effects) - terbutaline / ritodrine **Outcome** - neonatal complications of HIE (Incl. seizures, abnormal neurological function, organ failure) - Long term health implications of HIE (incl. cerebral palsy)	Take an appropriate history Manage a case of suspected and confirmed fetal acidaemia in labour: - arrange appropriate investigations to confirm fetal acidaemia - counsel regarding fetal / neonatal risks and management options - institute, where appropriate, in-utero resuscitation / emergency delivery Perform: • CTG interpretation • fetal blood sampling • ECG waveform analysis • ultrasound assessment of amniotic fluid volume (see 4.3) • intrapartum amnioinfusion	Ability to take an appropriate history Ability to • perform and interpret investigations to assess fetal status in labour • formulate, implement and where appropriate modify a management plan • liaise, where appropriate, with anaesthetists / neonatologists • counsel women and their partners accordingly - maternal and fetal risks - management options - long term health implications for infant	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Management of the Labour Ward • ALSO / MOET Attachments in • obstetric anaesthesia • neonataology Attendance at • neonatal follow up clinics RCOG / CESY Guideline (The Use of Electronic Fetal Monitoring) NCCWCH Guideline (Caesarean Section) Personal study	Log of experience & competence OSAT

5.4 Multiple pregnancy and malpresentation

Objectives: To be able to carry out appropriate assessment and management of women with multiple pregnancy in labour
To be able to carry appropriate assessment and management of women with breech and transverse lies diagnosed in labour

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Epidemiology / aetiology - incidence - predisposing factors **Intrapartum care in twins** - physiology of labour - fetal monitoring - inter-twin interval - effects of chorionicity **Diagnosis / management** - clinical exam - ultrasound - risks / benefits of caesarean section in: • breech presentation • transverse / oblique lie • twin and higher order multiple pregnancy (see 4.6) - breech delivery • manoeuvres (assisted breech delivery and breech extraction) • complications (incl. problems with after coming head) - twin delivery • ECV for second twin (see (4.7) • ARM / oxytocin in second stage • operative delivery second twin	Take an appropriate history Manage a case of twin pregnancy in labour; • arrange and interpret fetal monitoring • counsel regarding management • institute appropriate management Manage a case of breech presentation in labour: • arrange and interpret fetal monitoring • counsel regarding management incl. risks/benefits of CS • institute appropriate management Manage a case of transverse lie in labour: • counsel regarding management • institute appropriate management Perform: • ECV in labour (incl. breech, transverse lie and second twin) • vaginal breech delivery • breech extraction • internal podalic version	Ability to take an appropriate history Ability to • perform and interpret investigations to confirm fetal lie in labour • formulate, implement and where appropriate, modify a management plan • perform vaginal breech delivery & twin delivery • liaise, where appropriate, with anaesthetists / neonatologists • counsel women and their partners accordingly - maternal and fetal risks - management options incl. mode of delivery	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Management of the Labour Ward • ALSO / MOET Attachments in • obstetric anaesthesia • neonataology RCOG Clinical Guideline (20) Personal study	Log of experience & competence OSAT

5.5 Shoulder dystocia

Objectives: To be able to carry out appropriate assessment and management of women with shoulder dystocia
To understand the management, complications and outcomes of neonates with birth trauma

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Epidemiology / aetiology - incidence - predisposing factors - risks of recurrence **Management** - clinical - fire drill procedures e.g. HELPERR - advanced manoeuvres - incl. indications, procedure and risks of: • Zavanelli • Symphysiotomy **Outcome** - neonatal complications of birth trauma (incl. IVH, bone fractures, brachial plexus injury, HIE) - management of complications - long term outcome	Take an appropriate history Manage a case of shoulder dystocia • institute and document appropriate management • perform: - McRobert's manoeuvres and suprapubic pressure - internal rotation of shoulders - removal of posterior arm Manage a case of previous shoulder dystocia; • assess recurrence risk • arrange, where appropriate, appropriate investigations • counsel regarding maternal / fetal risks • plan mode / timing of delivery	Ability to take an appropriate history Ability to • formulate, implement and document a management plan for shoulder dystocia • perform manoeuvres to achieve delivery in shoulder dystocia • liaise, where appropriate, with anaesthetists / neonatologists • counsel women and their partners accordingly - maternal and fetal risks - long term health implications of birth trauma - recurrence risks and management plan for future pregnancy	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Management of the Labour Ward • ALSO / MOET Attachments in • obstetric anaesthesia • neonataology Attendance at • neonatal follow up clinics • paediatric orthopaedic clinics RCOG Clinical Guideline (42) Personal study	Log of experience & competence OSAT

5.6 Genital Tract Trauma

Objectives: To be able to carry out appropriate assessment and management of a women with a third or fourth degree perineal tear
To be able to carry out appropriate assessment and management of a women with a uterine rupture

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Anatomy / Physiology - perineum / pelvic floor - anal sphincter function **Epidemiology / aetiology** - incidence - predisposing factors **Diagnosis / management** - clinical examination - ultrasound (endoanal) - surgical repair • anal sphincter • cervix / uterus - postpartum haemorrhage (see 5.7) **Outcome** - long term health implications (incl. pain, incontinence) - implications for future pregnancy	Take an appropriate history Manage a case of third / fourth degree perineal tear (see also 5.7): • assess type of tear • counsel regarding management • institute appropriate management (incl. surgical repair) • plan appropriate follow up Manage a case of prior 3rd/4th degree perineal tear: • arrange and interpret appropriate investigations (incl. endoanal ultrasound) • counsel regarding management options • plan mode of delivery Manage a case of uterine rupture (see also 5.7): • assess maternal and fetal condition • counsel regarding management • institute appropriate management (incl. emergency CS, repair of uterus) Perform: • repair of 3rd / 4th degree perineal tear • repair of uterine rupture • hysterectomy (see 5.7)	Ability to take an appropriate history Ability to • diagnose presence and extent of genital tract trauma • formulate, implement and where appropriate, modify a management plan • perform appropriate surgical repair • liaise, where appropriate, with gynaecologists, surgeons • arrange appropriate follow up • counsel women and their partners accordingly - maternal and fetal risks - long term health implications - recurrence risks and management plan for future pregnancy	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Management of the Labour Ward • ALSO / MOET Attendance at • pelvic floor clinic RCOG Clinical Guideline (29) Personal study	Log of experience & competence OSAT

5.7 Postpartum haemorrhage and other third stage problems

Objectives: To be able to carry out appropriate assessment and management of a women with a massive postpartum haemorrhage (PPH)
To be able to recognise and manage complications of the third stage of labour

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Anatomy - pelvic anatomy and blood supply **Epidemiology / aetiology (PPH)** - incidence - predisposing factors (incl. adherent placenta, uterine inversion) **Laboratory methods** - diagnosis / monitoring DIC (see 1.11) - cross-matching **Management massive PPH** - maternal resuscitation (incl. use of: • crystalloid / colloid iv fluids • blood and blood products - medical management (see below) - surgical management • intrauterine balloon • brace suture • internal iliac ligation • hysterectomy - interventional radiology (vascular balloons and coils) **Pharmacology** Incl. adverse effects of drugs used in PPH - oxytocin, ergometrine - 15 methyl prostaglandin F2α - misoprostol - recombinant fVIIa	Manage a case of massive PPH • assess blood loss and consequences • undertake resuscitation (see 5.10) • ascertain cause of haemorrhage • arrange and interpret appropriate investigations • counsel regarding management options • institute /modify appropriate medical and/or surgical management for; - uterine atony - inverted uterus - adherent placenta Perform: • manual removal of placenta • correction of uterine inversion (manual and hydrostatic replacement) • insertion of uterine balloon catheter • insertion of brace suture • internal iliac ligation / hysterectomy (under supervision) or refer, where appropriate, for same	Ability to; • rapidly assess extent of haemorrhage and institute appropriate resuscitative measures • formulate, implement and where appropriate, modify a management plan • perform appropriate surgical intervention • liaise, where appropriate, with gynaecologists, haematologists and radiologists. • counsel women and their partners accordingly - management options and maternal risks - recurrence risks and management plan for future pregnancy • debrief family and staff	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Management of the Labour Ward • ALSO / MOET Attachment in • Anaesthesia • Intensive Care • Haematology • Blood transfusion Personal study	Log of experience & competence Fire drill

5.8 Caesarean section

Objectives: To be able to carry out appropriate assessment and management of a women with a previous caesarean section (CS)
To plan and perform caesarean section in special circumstances

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Epidemiology - Risks of CS • visceral damage • infection • venous thrombosis - Risks associated with previous CS • uterine rupture • abnormal placentation - vaginal birth after CS (VBAC) • success rates • complication rates **Diagnosis** - ultrasound determination of placental site (see 4.4) **Management** - CS • surgical technique (incl. abdominal wall & uterine entry/closure) • prevention of complications (incl. thrombosis, infection) • impact of following conditions; o placenta praevia o morbidly adherent placenta o fetal anomaly o extreme prematurity o prior abdominal surgery - VBAC - incl. • use of oxytocics • role of induction of labou • fetal monitoring (see 5.3)	Take an appropriate history Manage a case of previous CS; • arrange appropriate investigations • counsel regarding management options and fetal and maternal risks • plan mode / timing of delivery Perform CS using the appropriate surgical technique in the following circumstances; • major placental praevia • morbidly adherent placenta (see 4.4) • fetal anomaly likely to cause dystocia • extreme prematurity • extensive prior abdominal surgery Manage complications of CS (under supervision where appropriate): • extension of uterine incision • haemorrhage (see 5.7) • visceral damage • wound dehiscence • infection • venous thrombosis	Ability to take an appropriate history Ability to; • counsel women and their partners about the risks of emergency and elective CS • perform and interpret appropriate investigations in women undergoing CS • formulate, implement and where appropriate modify a management plan for a women undergoing CS • perform CS using the appropriate surgical technique • liaise with anaesthetists, haematologists, neonataologists and radiologists where appropriate Ability to ; • counsel women with a prior CS about options (CS vs VBAC)	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Management of the Labour Ward • ALSO / MOET Attachment in • Anaesthesia NCCWCH Guideline (Caesarean Section) Personal study	Log of experience & competence OSAT

5.9 Anaesthesia and analgesia

Objectives: To understand the methods, indications for and complications of anaesthesia
To understand the methods, indications for and complications of systemic analgesia and sedation

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Anantomy / Physiology - spinal cord - innervation of pelvic organs - pain **Management** - pain management during labour • nonpharmacological techniques • inhalational analgesia • systemic analgesia (opiods) - regional analgesia and anaesthesia (incl. techniques and complications) • pudendal • epidural • spinal - general anesthesia (incl. techniques and complications) - analgesia and anaesthesia in high risk women (incl. hypertensive disease, cardiac disease & FGR) **Pharmacology** - opiod analgesics - local anaesthetics - general anaesthetics - phenylephrine / ephedrine **Outcome** - effects of neuraxial anaesthesia on; • labour outcome • temperature • fetal wellbeing	Counsel women about the different forms of analegesia and anaesthesia (incl. efficacy and risks) Perform • pudendal nerve block	Ability to; • counsel women and their partners about efficacy and risks of different methods of analgesia for labou • counsel women and their partners about efficacy and risks of different methods of anaesthesia for assisted vaginal delivery & CS • formulate, implement and where appropriate modify a analgesic / anaesthetic management plan • liaise with anaesthetists	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Management of the Labour Ward • ALSO / MOET Attachment in • Anaesthesia Personal study	Log of experience & competence

5.10 Resuscitation

Objectives: To be able carry out appropriate assessment and management of maternal collapse (including cardiac arrest)
To be able to carry out appropriate assessment and management of the depressed neonate

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Pathophysiology - hypovolaemia - pulmonary embolism (see 1.12) - amniotic fluid embolism - primary cardiac event (see 1.3) - trauma - cerebrovascular event - electrocution - neonatal depression **Epidemiology** - maternal collapse (causes / risk factors) - neonatal depression **Management** - maternal resuscitation • respiratory management (incl. basic airway management, indications for intubation, ventilation) • circulatory management (incl. cardiac massage, defibrillation) • fluid management (see 5.7) - indications for perimortem CS - principles neonatal resuscitation • respiratory depression / apnea • bradycardia / cardiac arrest • meconiun aspiration **Pharmacology** - oxygen - epinephrine - sodium bicarbonate - atropine	Manage a case of maternal collapse • ascertain cause of collapse • undertake resuscitation (as part of a multidisciplinary team) • institute/modify appropriate medical management for; - pulmonary embolism - amniotic fluid embolism - cardiac arrhythmia • arrange appropriate investigations • perform (under supervision) perimortem CS or refer, whwre appropriate, for same Perform • neonatal resuscitation - mask ventilation - endotracheal intubation - cardiac massage	Ability to; • rapidly assess maternal collapse and institure resuscitative measures • work effectively as part of a multidisciplinary team • formulate, implement and where appropriate modify a management plan in maternal collapse / cardiac arrest • liaise with physicians, anaesthetists, neonatologists • debrief family and staff Ability to perform effective neonatal resuscitation	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Management of the Labour Ward • ALSO / MOET Attachment in • Anaesthesia • Neonatology Personal study	Log of experience & competence Fire drill

5.11 Medical disorders on the labour ward

Objectives: To be able carry out appropriate intrapartum and immediate postpartum assessment and management of women with medical disorders

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Pathophysiology Incl. the effect of labour and delivery on the following diseases; - diabetes - cardiac/respiratory abnormalities - haemoglobinopathies - thrombotic / haemostatic abnormalities - epilepsy - severe pre-eclampsia / eclampsia - renal disease - hypertension - HIV / sepsis **Management** - maternal monitoring • blood glucose • respiratory function (incl. respiratory rate, Sa02, , blood gases) • cardiovascular function (incl. blood pressure, heart rate, cardiac output) • renal function (incl. urine output, creatinine) - analgesia and anesthesia (see 5.9) **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	Take and appropriate history and perform an examination to assess medical disorder Manage a woman with a medical disorder in labour incl.; • monitor blood glucose and maintain euglycaemia (see 1.7) using intravenous glucose and insulin • monitor cardiorespiratory function and maintain oxygenation and cardiac output (see 5.11) • monitor abnormal blood clotting and respond accordingly, including therapeutic intervention • monitor blood pressure and, where appropriate, treat hypertension (see 1.1) • monitor renal function and respond where appropriate by adjusting fluid balance or with drugs • use anticonvulsants effectively Manage a case of sickle cell disease during labour (see 1.11); • counsel regarding management and risks • optimize hydration, oxygenation, analgesia • manage sickle crisis (incl. fluids, oxygen, antibiotics and analgesics) Manage a case of HIV in labour (see 6.2); • plan mode of delivery • institute iv zidovudine therapy	Ability to take an appropriate history and conduct an appropriate examination in a woman with a medical disorder Ability to; • formulate, implement and where appropriate modify a medical management plan ifor labour and delivery • liaise with physicians, anaesthetists, neonatologists • counsel women and their partners accordingly - management options in labour - risks of medical therapies	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Management of the Labour Ward • ALSO / MOET Attachment in • Anaesthesia • Neonatology Attendance at; • Medical clinics Personal study	Log of experience & competence

5.12 Intensive Care

Objectives: To understand the organization and role of high dependency and intensive care
To understand the indications for and methods of invasive monitoring
To understand the management of organ failure

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Organisation - structure and organization of • high dependency care • intensive care - 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 (incl. principles/techniques of supportive therapy) • respiratory failure • cardiac failure • renal failure • hepatic coagulation • coagulation failure	Take and appropriate history and perform an examination to assess critically ill woman Manage a woman with organ failure; • undertake resuscitation (see 5.10) • arrange and interpret appropriate investigations to confirm diagnosis / cause and monitor organ function • arrange transfer to HDU / ITU where appropriate arrange appropriate investigations Perform • insertion of CVP line • endotracheal intubation • insertion arterial line / PA catheter (under supervision) or refer, where appropriate, for same	Ability to take an appropriate history and conduct an appropriate examination in a critically ill woman Ability to; • perform and interpret investigations to diagnose / monitor organ failure • formulate, implement and where appropriate modify a management plan including transfer to HDU/ITU • liaise with intensivists, physicians, anaesthetists, neonatologists • counsel women and their partners accordingly - management options, including therapeutic interventions - maternal and fetal risks - debrief family and staff	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Management of the Labour Ward • ALSO / MOET Attachment in • Anaesthesia • Intensive Care Attendance at; • Medical clinics Personal study	Log of experience & competence

MODULE 6 INFECTIOUS DISEASES

6.1 Human immunodeficiency virus (HIV)

Objectives: To be able to carry out appropriate assessment and management of women with HIV infection in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Virology / Epidemiology - HIV1 & 2 - natural history / viral dynamics - pathophysiology HIV infection/AIDS - mode / risk of transmission - epidemiology of infection in pregnancy **Screening / diagnosis** - rationale & organization of screening programme - laboratory tests o screening e.g. enzyme immunoassay o 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 reduce mother-child transmission (incl. anti-retroviral therapy, mode of delivery, feeding) - conduct of labour / CS - advanced HIV - antenatal complications (incl. preterm birth) - neonatal management – testing, **Pharmacology** (incl. adverse effects) - zidovudine - HAART **Outcome** - neonatal infection (diagnosis / complications) - long term outcome - chronic HIV infection	Take an appropriate history Counsel women about screening for HIV in pregnancy Manage a case of HIV infection in pregnancy; • arrange and interpret appropriate investigations (incl. viral load / CD4) • counsel regarding maternal and fetal risks, strategies to reduce mother-child transmission and management options • institute, and where appropriate, modify anti-retroviral therapy (in collaboration with HIV expert) • plan mode of delivery • manage labour and delivery / CS Perform: • CS in a woman with HIV infection	Ability to take an appropriate history Ability to; • counsel women - before screening test - after positive result Ability to; • formulate, implement and where appropriate modify a management plan in HIV positive women • liaise with HIV expert, multidisciplinary team, neonatologists & GP • counsel women and their partners accordingly - management options - risks / benefits of anti-retroviral therapy - long term outcome for mother and infant Ability to respect patient confidentiality	Observation of and discussion with senior medical staff Appropriate postgraduate courses e.g. • Maternal medicine Attachments in • HIV clinic / multidisciplinary team • Neonatology RCOG Clinical Guideline (39) NCCWCH Guideline (Antenatal Care) Personal study	Log of experience & competence Mini-CEX

6.2 Hepatitis

Objectives: To be able to carry out appropriate assessment and management of women with hepatitis in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Virology / Epidemiology - hepatitis A,B.C (HAV, HBV, HCV) - natural history / viral dynamics - pathophysiology acute / chronic hepatitis - mode / risk of transmission - epidemiology of infection in pregnancy **Screening / diagnosis** - differential diagnosis of jaundice / abnormal LFTs - rationale & organization of Hepatitis B (HbsAg) screening programme - laboratory tests o serology e.g. enzyme immunoassay (EIA) o diagnostic e.g. Western blot, PCR - 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 (IG) • HBIG and vaccination - Mode of delivery / breastfeeding **Outcome** - HBV/HCV -related disease (cirrhosis, hepatocellular carcinoma) **Pharmacology** - HAV vaccine, HAIG - HBV vaccine, HBIG	Take an appropriate history Perform an examination to assess jaundice Counsel women about screening for HBV and HCV in pregnancy Manage a case of HAV infection in pregnancy; • arrange and interpret appropriate investigations • institute appropriate supportive care Manage a case of HBV infection in pregnancy • arrange and interpret appropriate investigations • counsel regarding maternal and fetal risks, strategies to reduce mother-child transmission and management options • manage labour and delivery / CS Manage a case of HCV infection in pregnancy • arrange and interpret appropriate investigations in high risk cases • counsel regarding maternal and fetal risks, strategies to reduce mother-child transmission and management options • manage labour and delivery / CS Counsel regarding HAV and HBV vaccination in pregnancy	Ability to take an appropriate history and conduct an examination to assess a woman with jaundice Ability to counsel women • before HBV/HCV screening test • after positive result • about HAV/HBV vaccination Ability to; • formulate, implement and where appropriate modify a management plan in acute HAV infection • formulate, implement and where appropriate modify a management plan in a women with HBV / HCV infection • liaise with hepatologists, virologists, neonatologists & GP • counsel HBV/HCV infected women and their partners accordingly - management options - risks of perinatal transmission and methods of prevention - long term outcome for mother and infant Ability to respect patient confidentiality	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Virology • Neonatology Attendance at • Hepatology clinic NCCWCH Guideline (Antenatal Care) Personal study	Log of experience & competence Mini-CEX

6.3 Cytomegalovirus

Objectives: To be able to carry out appropriate assessment and management of women with cytomegalovirus (CMV) infection in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Virology / Epidemiology - cytomegalovirus - pathophysiology primary infection (in adult and fetus) - mode / risk of transmission - epidemiology of infection in pregnancy – high risk groups **Screening / diagnosis** - laboratory tests • maternal serology - immunofluoresent tests, EIA • fetal diagnosis e.g. AF PCR/culture, viral DNA, serology - ultrasound features fetal infection - primary vs recurrent infection **Management** - supportive care - maternal and fetal risks - CMV infection in immunocompromised women - fetal therapy (ganciclovior, CMV hyperimmune globulin) - termination of pregnancy **Outcome** - sequelae of congenital CMV infection	Take an appropriate history Manage a case of CMV infection in pregnancy • arrange and interpret appropriate maternal and fetal investigations • perform an ultrasound scan to detect features of fetal CMV infection • institute appropriate supportive care and monitoring • counsel regarding maternal and fetal risks • institute where appropriate fetal therapy • arrange, where appropriate, termination of pregnancy	Ability to take an appropriate history Ability to; • perform and interpret appropriate investigations (incl. ultrasound) • formulate, implement and where appropriate modify a management plan in a women with CMV infection in pregnancy • liaise with virologists & neonatologists • counsel women and their partners accordingly - maternal and fetal risks - management options incl. fetal diagnostic testing - risks of perinatal transmission and methods of prevention - long term outcome for infants with congenital CMV infection	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Virology • Neonatology Personal study	Log of experience & competence Mini-CEX

6.4 Herpes simplex virus (HSV)

Objectives: To be able to carry out appropriate assessment and management of women with herpes simplex virus infection in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Virology / Epidemiology - HSV 1 & 2 - pathophysiology of primary and recurrent infection & congenital herpes - mode /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 CS ▪ avoidance scalp electrodes / **Outcome** - sequelae of congenital HSV infection **Pharmacology** (incl. adverse effects) - acyclovir (oral & iv)	Take an appropriate history Perform an examination for active HSV lesions Manage a case of HSV infection in pregnancy • arrange and interpret appropriate investigations • institute symptomatic treatment and acyclovir for active disease • counsel regarding maternal and fetal risks • institute, where appropriate, prophylactic acyclovir • plan time / mode of delivery	Ability to take an appropriate history and conduct an examination to screen for HSV infection in pregnancy Ability to; • formulate, implement and where appropriate modify a management plan in a women with HSV infection in pregnancy • liaise with virologists, neonatologists and GP • counsel women and their partners accordingly - methods of reducing sexual transmission - risks of perinatal transmission and methods of prevention - maternal and fetal risks - safety of acyclovir in pregnancy - management options Ability to respect patient confidentiality	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Virology • Neonatology Personal study RCOG Clinical Guideline (30)	Log of experience & competence Mini-CEX

6.5 Parvovirus

Objectives: To be able to carry out appropriate assessment and management of women with parvovirus infection in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Virology / Epidemiology - parvovirus B19 - pathophysiology of maternal and fetal infection (incl. anaemia / hydrops) - mode /risk of transmission - epidemiology of infection in pregnancy **Screening / diagnosis** - differential diagnosis fever, rash, arthropathy in pregnancy - laboratory tests • maternal serology – ELISA • fetal diagnosis e.g. AF PCR/culture, viral DNA, serology - ultrasound features of fetal infection **Management** - maternal and fetal risks - ultrasound monitoring in maternal infection - screening & diagnosis fetal anaemia (incl. MCA Doppler (see 4.8) - differential diagnosis fetal hydrops (see 3.7) - fetal transfusion therapy (see 4.8) **Outcome** - sequelae of congenital parvovirus HSV	Take an appropriate history Manage a case of parvovirus infection in pregnancy • arrange and interpret appropriate investigations • counsel regarding maternal and fetal risks • institute appropriate fetal monitoring (incl. perform and interpret MCA Doppler) • perform fetal blood sampling and transfusion or refer, where appropriate, for same (see 4.8) • plan mode / place / timing of delivery	Ability to take an appropriate history and conduct an examination to diagnose parvovirus infection Ability to; • perform and interpret appropriate investigations (incl. ultrasound) • formulate, implement and where appropriate modify a management plan in a women with parvovirus infection • liaise with virologists, neonatologists, haematology/blood transfusion • counsel women and their partners accordingly - risks of perinatal transmission - maternal and fetal risks - management options (incl. fetal transfusion)	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Virology • Neonatology Personal study	Log of experience & competence Mini-CEX

6.6 Rubella

Objectives: To be able to carry out appropriate assessment and management of women with rubella infection in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Virology / Epidemiology - Rubella virus - pathophysiology of maternal and fetal infection (incl. congenital rubella syndrome [CRS]) - mode /risk of transmission - epidemiology of infection in pregnancy **Screening / diagnosis** - rationale & organization of screening programme - laboratory tests • maternal serology (ELISA) • fetal diagnosis – AF PCR, serology - ultrasound features 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 (incl. eye disorders, heart defects, neurological defects) **Pharmacology** (incl. adverse effects) - rubella vaccine	Take an appropriate history Perform an examination to assess fever, lymphadenopathy, arthralgia Manage a pregnant woman found to be susceptible to rubella • arrange and interpret appropriate investigations if suspected exposure • arrange postnatal vaccination Manage a case of rubella in pregnancy • arrange and interpret appropriate investigations • counsel regarding maternal and fetal risks • arrange, where appropriate, termination of pregnancy	Ability to take an appropriate history and conduct an examination to diagnose rubella infection Ability to; • formulate and implement a management plan in a susceptible women exposed to rubella • counsel women accordingly - vaccination Ability to; • perform and interpret appropriate investigations (incl. ultrasound) • formulate, implement and where appropriate modify a management plan in women with rubella infection • liaise with virologists, neonatologists • counsel women and their partners accordingly - maternal and fetal risks - management options (incl termination of pregnancy)	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Virology • Neonatology NCCWCH Guideline (Antenatal Care) Personal study	Log of experience & competence Mini-CEX

6.7 Varicella

Objectives: To be able to carry out appropriate assessment and management of women with varicella-zoster infection in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Virology / Epidemiology - Varicella-zoster virus - pathophysiology of varicella, zoster & congenital varicella syndrome (CVS) - mode /risk of transmission - epidemiology of infection in pregnancy **Management** - differential diagnosis vesicular rash - screening – HSV serology - fetal diagnosis – ultrasound, serology, viral DNA - maternal risks (lung / CNS involvement) - acyclovir - fetal risks (CVS) **Outcome** - sequelae of congenital CVS **Prevention** - varicella vaccination programme **Pharmacology** (incl. adverse effects) - varicella zoster immunoglobulin (VZIG)	Take an appropriate history Perform an examination to assess vesicular rash Manage a pregnant woman found to be susceptible to varicella • arrange and interpret appropriate investigations if suspected exposure • institute VZIG • arrange postnatal vaccination Manage a case of varicella / zoster in pregnancy • arrange and interpret appropriate investigations • counsel regarding maternal and fetal risks • institute acyclovir where appropriate • institute appropriate maternal and fetal monitoring • perform ultrasound to screen for CVS	Ability to take an appropriate history and conduct an examination to diagnose varicella / zoster in fection Ability to; • formulate and implement a management plan in a susceptible women exposed to varicella/zoster • counsel women accordingly - vaccination Ability to; • perform and interpret appropriate investigations (incl. ultrasound) • formulate, implement and where appropriate modify a management plan in women with varicella / zoster • liaise with virologists, neonatologists • counsel women and their partners accordingly - maternal and fetal risks - benefits of acyclovir - management options (incl termination of pregnancy)	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Virology • Neonatology Personal study RCOG Clinical Guideline (13)	Log of experience & competence Min-CEX

6.8 Toxoplasmosis

Objectives: To be able to carry out appropriate assessment and management of women with toxoplasmosis infection in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Parasitology / Epidemiology - Toxoplasma gondii - pathophysiology maternal and fetal infection - mode / risk of transmission - epidemiology of infection in pregnancy – high risk groups / geographical variation **Screening / diagnosis** - laboratory tests • maternal serology – dye test, ELISA, agglutination assays • IgG avidity tests • fetal diagnosis - ultrasound, AF PCR, viral DNA - ultrasound features fetal infection - distant vs recent infection **Management** - supportive care - maternal and fetal risks - toxoplasmosis infection in immunocpmpromised women - maternal therapy (spiromycin) - fetal therapy (pyrimethamine / sulphadiazine) - termination of pregnancy **Outcome** - sequelae of congenital toxoplasmosis **Pharmacology** (incl. adverse effects) - spiromycin - pyrimethamine / sulphadiazine	Take an appropriate history Manage a pregnant woman found to be susceptible to toxoplasmosis • arrange and interpret appropriate investigations if suspected exposure • counsel regarding preventative strategies Manage a case of toxoplasmosis infection in pregnancy • arrange and interpret appropriate maternal and fetal investigations • perform an ultrasound scan to detect features of fetal toxoplasmosis • institute appropriate supportive care and monitoring • counsel regarding maternal and fetal risks • institute spiramycin and pyrimethamine / sulphadiazine where appropriate • arrange, where appropriate, termination of pregnancy	Ability to take an appropriate history Ability to; • formulate and implement a management plan in a susceptible women • counsel regarding prevention Ability to; • perform and interpret appropriate investigations (incl. ultrasound) • formulate, implement and where appropriate modify a management plan in women with toxoplasmosis • liaise with micobiologists, neonatologists • counsel women and their partners accordingly - maternal and fetal risks - management options (incl termination of pregnancy) - benefits / risks of spiromycin and pyrimethamine / sulphadiazine	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Virology • Neonatology Personal study	Log of experience & competence Mini-CEX

6.9 Malaria

Objectives: To be able to carry out appropriate assessment and management of women with malaria infection in pregnancy
To be able to advise women travelling abroad about prevention of malaria

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Parasitology/ Epidemiology - plasmodium genus - pathophysiology of malaria (incl. severe disease and placental/fetal infection) - mode / risk of transmission - epidemiology of malarial infection (incl. chloroquine resistance) **Management** - diagnosis – blood smears - supportive care (incl. management of anaemia) - anti-malarial treatment (incl. chloroquine, quinine, mefloquine, clindamycin) - severe disease (incl. renal failure, pulmonary oedema, severe anaemia, hypoglycaemia) - fetal complications (FGR/preterm birth) **Prevention** - avoidance of travel to endemic areas - spray / nets - chemoprophylaxis **Pharmacology** (incl. adverse effects) - chloroquine - mefloquine	Take an appropriate history Perform an examination to assess fever Manage women traveling to endemic areas; • counsel women about preventative measures • institute appropriate chemoprophylaxis Manage a case of malarial infection in pregnancy; • arrange and interpret appropriate investigations • counsel regarding maternal and fetal risks • institute anti-malarial treatment • refer, where appropriate, for further assessment / treatment	Ability to take an appropriate history Ability to; • counsel women traveling to endemic areas; - risks of infection - prevention (incl. chemoprophylaxis) Ability to; • formulate, implement and where appropriate modify a management plan in a women with malaria infection in pregnancy (with reference to risk of • liaise with microbiologists, consultants in infectious disease • counsel women and their partners accordingly - maternal and fetal risks - management options incl. anti-malarial treatment - risks of early onset GBS infection in the newborn - breastfeeding	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Microbiology Personal study	Log of experience & competence Mini-CEX

6.10 Tuberculosis

Objectives: To be able to carry out appropriate assessment and management of women with or at risk of tuberculosis (TB) infection in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Microbiology / Epidemiology - mycobaterium tuberculosis - pathophysiology of TB (incl. infection vs. pulmonary / extrapulmonary disease) - mode / risk of transmission - epidemiology of TB infection in pregnancy (incl. high risk groups) **Management** - differential diagnosis fever / cough - diagnosis – tuberculin testing, direct identification bacilli, culture - anti-tuberculous treatment (incl. isoniazid [+ pyridoxine], rifampicin, ethambutol - extrapulmonary disease **Prevention** - procedures for prevention & control (incl. contact tracing) - BCG vaccination - isoniazid prophylaxis (in high risk neonates) **Pharmacology** (incl. adverse effects) - isoniazid - rifampicin - ethambutol	Take an appropriate history Manage women with previous history of positive tuberculin test / TB; • arrange and interpret appropriate investigations and follow up • counsel regarding maternal / neonatal risks Manage a case of tuberculosis in pregnancy; • arrange and interpret appropriate investigations • counsel regarding maternal and neonatal risks • institute anti-TB treatment • refer, where appropriate, for further assessment / treatment	Ability to take an appropriate history Ability to; • formulate, implement and where appropriate modify a management plan in a women with previous positive tuberculin test / TB • formulate, implement and where appropriate modify a management plan in a women with TB during pregnancy • liaise with microbiologists, consultants in infectious disease, neonatologists • counsel women and their partners accordingly - maternal and neonatal risks - management options incl. anti-TB treatment - prevention of neonatal infection - breastfeeding	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Microbiolog • Neonatology Personal study	Log of experience & competence Min-CEX

6.11 Streptococcal disease

Objectives: To be able to carry out appropriate assessment and management of women with group A streptococcal (GAS) infection in pregnancy
To be able to carry out appropriate assessment and management of women with group B haemolytic streptococcus (GBS) infection in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Microbiology/ Epidemiology - streptococcal species - pathophysiology of GAS disease (incl. toxic shock syndrome and other invasive infections) - pathophysiology of GBS disease (adult and neonate) - mode / risk of transmission - epidemiology of streptococcal infection in pregnancy/puerperium (incl. risk factors and colonization rates) **Screening / diagnosis** - differential diagnosis • septic shock / fever • vaginitis / vaginal discharge (see 6.10) • chorioamnionitis / postpartum endometritis - laboratory diagnosis (swabs / culture) - risks / benefits of GBS screening strategies • routine bacteriological screening • risk based screening **Management** - GAS infection (supportive care / antibiotics) - GBS infection – intrapartum antibiotic prophylaxis (IAP) • GBS carrier • other groups (e.g. suspected chorioamnionitis) - 'at risk' newborn infants **Outcome** - early and late onset GBS infection in newborn **Pharmacology** (incl. adverse effects) - Penicillin G - Clindamycin	Take an appropriate history Perform an examination to assess puerperal fever / sepsis Counsel women about screening for GBS in pregnancy • routine screening • screening in high risk cases (e.g. PPROM, previous neonatal GBS) Manage a case of GBS infection in pregnancy; • arrange and interpret appropriate investigations • counsel regarding maternal and fetal risks • institute IAP	Ability to take an appropriate history Ability to; • counsel women - before screening for GBS - after positive result Ability to; • formulate, implement and where appropriate modify a management plan in a women with GBS infection in pregnancy • liaise with microbiologists & neonatologists • counsel women and their partners accordingly - maternal and fetal risks - management options incl. IAP - risks of early onset GBS infection in the newborn	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Microbiology • Neonatology Personal study RCOG Clinical Guideline (36)	Log of experience & competence Mini-CEX

6.12 Syphilis

Objectives: To be able to carry out appropriate assessment and management of women with syphilis infection in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Microbiology/ Epidemiology - treponema pallidum - pathophysiology of syphilis (incl. stages of adult disease and congenital infection) - mode / risk transmission - epidemiology of syphilis infection in pregnancy **Screening / diagnosis** - rationale & organization of screening programme - serological tests (incl. non-specific and specific antibody tests) - darkfield visualization - differential diagnosis genital ulcer - ultrasound features of fetal infection **Management** - penicillin G (see 6.11) incl. management Jarisch-Herxheimer reaction - contact tracing **Outcome** - congenital syphilis (early & late)	Take an appropriate history Perform an examination to assess genital ulcer Counsel women about screening for syphilis in pregnancy • routine screening • screening in high risk cases Manage a case of syphilis infection in pregnancy; • arrange and interpret appropriate investigations • counsel regarding maternal and fetal risks • institute treatment with penicillin • refer for further assessment / treatment / contact tracing	Ability to take an appropriate history Ability to; • counsel women - before screening for syphilis - after positive result Ability to; • formulate, implement and where appropriate modify a management plan in a women with syphilis infection in pregnancy • liaise with microbiologists, GUM consultants, neonatologists • counsel women and their partners accordingly - maternal and fetal risks - penicillin treatment	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Microbiology • Neonatology NCCWCH Guideline (Antenatal Care) Personal study	Log of experience & competence Mini-CEX

6.13 Other sexually transmitted diseases in pregnancy

Objectives: To be able to carry out appropriate assessment and management of women with a sexually transmitted disease in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Microbiology / Epidemiology - neisseria gonorrhoea, chlamydia trachomatis, genital mycoplasma - pathophysiology of gonococcal, chlamydial and mycoplasma disease (incl. chorioamnionitis and postpartum endometritis) - epidemiology of STDs in pregnancy **Screening / diagnosis** - rationale and organization 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 • gonorrhea – ceftriaxone, cefixime, spectinomycin • mycoplasmas – erythromycin, clindamycin - contact tracing (where appropriate) - fetal risks - incl. PPROM, preterm birth (see 4.5) - maternal risks (chorioamnionitis, endometritis) **Outcome** - neonatal infection (conjunctivitis, pneumonia) **Pharmacology** (incl. adverse effects) - azithromycin - ceftriaxone	Take an appropriate history Manage a case of gonorrhea in pregnancy; • arrange and interpret appropriate investigations (including screening for other STDs) • counsel regarding maternal, fetal and neonatal risks • institute antibiotic therapy • refer for further assessment / treatment / contact tracing Manage a case of chlamydia in pregnancy; • arrange and interpret appropriate investigations (incl. screening for other STDs) • counsel regarding maternal, fetal and neonatal risks • institute antibiotic therapy • refer for further assessment / treatment / contact tracing	Ability to take an appropriate history Ability to; • formulate, implement and where appropriate modify a management plan in a women with gonorrhea in pregnancy • formulate, implement and where appropriate modify a management plan in a women with Chlamydia pregnancy • liaise with microbiologists, GUM consultants, neonatologists • counsel women and their partners accordingly - maternal and fetal risks - antibiotic therapy - risks of neonatal infection and outcome	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Microbiology • Neonatology Personal study	Log of experience & competence Mini-CEX

6.14 Bacterial vaginosis

Objectives: To be able to carry out appropriate assessment and management of women with bacterial vaginosis (BV) in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Microbiology / Epidemiology - garnerella vaginalis, selected anaerobes, mycoplasma hominis - pathophysiology of BV - epidemiology of BV in pregnancy **Screening / Diagnosis** - rationale for screening in high risk groups (incl. previous preterm birth) - differential diagnosis vaginal discharge (see 6.11, 6.13) - clinical diagnosis (Amsel criteria), Gram stain vaginal discharge **Management** - treatment – metronidazole, clindamycin - fetal risks - incl. miscarriage, preterm birth (see 4.5) **Pharmacology** (incl. adverse effects) - metronidazole - clindamycin	Take an appropriate history Perform an examination to diagnose BV in pregnancy Manage a case of BV in pregnancy; • arrange and interpret appropriate investigations • counsel regarding maternal and fetal risks • institute antibiotic therapy	Ability to take an appropriate history and conduct an examination to diagnose BV in pregnancy Ability to; • formulate, implement and where appropriate modify a management plan in a women with BV in pregnancy • liaise with microbiologists • counsel women and their partners accordingly - maternal and fetal risks - antibiotic therapy	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Microbiology Personal study	Log of experience & competence Mini-CEX

6.15 Asymptomatic bacteruria and acute symptomatic urinary tract infection

Objectives: To be able to carry out appropriate assessment and management of women with asymptomatic bacteruria (AB) in pregnancy
To be able to carry out appropriate assessment and management of women with urinary tract infection (UTI) in pregnancy

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Microbiology / Epidemiology - E coli, Klebsiella / Proteus / Pseudomonas sp, cagulase-negative staphylococci, - pathophysiology of UTI / acute pyelnephritis - epidemiology of asymptomatic bacteruira and UTI in pregnancy **Screening / Diagnosis** - rationale / organization of screening for AB during pregnancy - MSU culture (colony counts) - Differential diagnosis acute abdominal pain in pregnancy, antenatal pyrexia (see 6.16) - diagnosis of relapse / reinfection **Management** - antibiotic therapy • AB – nitrofurantoin • UTI – ampicillin, cephalosporins / second line therapies • duration of therapy - maternal risks (incl. acute pyelonephritis, gram negative sepsis, acure renal failure) - fetal risks - incl. preterm birth (see 4.5) - postnatal investigation (IVU) **Pharmacology** (incl. adverse effects) - nitrofurnatoin - broad spectrum penicillins (e.g. ampicillin) - cephalosporins (e.g. cephalxin)	Take an appropriate history Counsel women about screening for AB in pregnancy Manage a case of AB in pregnancy; • arrange and interpret appropriate investigations • counsel regarding maternal risks • institute and where appropriate, modify antibiotic therapy • arrange, where appropriate, postnatal IVU Manage a case of symptomatic UTI in pregnancy; • arrange and interpret appropriate investigations • counsel regarding maternal and fetal risks • institute and where appropriate, modify antibiotic therapy • refer, where appropriate, for further assessment / treatment • arrange, where appropriate, postnatal IVU	Ability to take an appropriate history Ability to; • counsel women - before screening for AB - after positive result • formulate, implement and where appropriate modify a management plan in a women with AB detected during pregnancy Ability to; • formulate, implement and where appropriate modify a management plan in a women with symptomatic UTI in pregnancy • liaise with microbiologists and nephrologists (where appropriate) • counsel women and their partners accordingly - maternal and fetal risks - antibiotic therapy - postnatal investigation	Observation of and discussion with senior medical staff Appropriate postgraduate courses Attachments in • Maternal medicine • Microbiology NCCWCH Guideline (Antenatal Care) Personal study	Log of experience & competence Mini-CEX

6.16 Other infective conditions

Objectives: To be able to carry out appropriate assessment and management of women with acute chorioamnionitis
To be able to carry out appropriate assessment and management of women with puerperal sepsis

Knowledge criteria	Clinical competency	Professional skills and attitudes	Training support	Evidence / Assessment
Microbiology / Epidemiology - common organisms implicated in chorioamnionitis / puerperal sepsis (incl. GAS/GBS [see 6.11], gram negative bacilli, anaerobes, genital mycoplasmas [see 6.13]) - **pathophysiology of acute chorioamnionitis [see 4.5] and** puerperal sepsis (incl. endometritis, pelvic vein thrombophlebitis, UTI [see 6.15]) - epidemiology of chorioamnionitis and puerperal pyrexia / infection **Diagnosis / Management – chorioamnionitis** - differential diagnosis acute abdominal pain in pregnancy, antenatal pyrexia (see , vaginal discharge (see 6.11), - investigations (blood, cultures, US) - antibiotic therapy - fetal risks (incl. fetal death, preterm labour) - maternal risks (incl. gram negative sepsis, acure renal failure) **Diagnosis / Management – postnatal sepsis** - differential diagnosis puerperal pyrexia - investigations (culture, US, CT/MRI) - antibiotic therapy (incl. clindamycin / gentamicin) - maternal risks (incl. gram negative sepsis, acure renal failure) Pharmacology (incl adverse effects) - clindamycin - gentamicin	Take an appropriate history Perform an examination to assess acute abdominal pain in pregnancy Manage a case of acute chorioamnionitis; • arrange and interpret appropriate investigations • counsel regarding maternal and fetal risks • institute and where appropriate, modify antibiotic therapy • refer, where appropriate, for further assessment / treatment • mode / timing of delivery (incl., where appropriate, termination of pregnancy) Perform an examination to assess postnatal pyrexia Manage a case of puerperal pyrexia; • arrange and interpret appropriate investigations • counsel regarding maternal risks • institute and where appropriate, modify antibiotic therapy • refer, where appropriate, for further assessment / treatment	Ability to take an appropriate history and conduct an examination to assess a woman with acute abdominal pain in pregnancy Ability to; • formulate, implement and where appropriate modify a management plan in a women with acute chorioamnionitis • liaise with microbiologists / pathologists • counsel women and their partners accordingly - maternal and fetal risks - antibiotic therapy - delivery (incl. termination of pregnancy) Ability to take an appropriate history and conduct an examination to assess a woman with puerperal pyrexia Ability to; • formulate, implement and where appropriate modify a management plan in a women with puerperal sepsis • liaise with microbiologists / pathologists • counsel women and their partners accordingly - maternal and fetal risks - antibiotic therapy - breastfeeding	Observation of and discussion with senior medical staff Attachments in • Microbiology	Log of experience & competence Mini-CEX

MODULE 7 GENERIC

7.1 Communication, team working and leadership skills

Objectives: Demonstrate effective communication with patients and colleagues
Demonstrate good working relationships with colleagues
Demonstrate the ability to work in clinical teams and have the necessary leadership skills

Knowledge Criteria	Clinical Competency	Professional skills and attitudes	Training support	Evidence / Assessment
Communication - how to structure a patient interview to identify: ▪ concerns & priorities ▪ expectations ▪ understanding & acceptance - breaking bad news - bereavement process and behavior **Team working** - roles and responsibilities of team members - factors that influence & inhibit team development - ways of improving team working incl. • objective setting & planning • motivation and demotivation • organization • respect - contribution of mentoring and supervision **Leadership** - qualities and behaviors - styles - implementing change / change management (see 7.5)	Be able to communicate both verbally and in writing with patients & relatives including; • breaking bad news • appropriate use of interpreters Be able to communicate both verbally and in writing with colleagues	Ability to communicate effectively with: • colleagues • patients and relatives Ability to break bad news appropriately and support distress Ability to: • work effectively within a subspecialty team • lead a clinical team • respect other's opinions • deal with difficult colleagues	Observation of and discussion with senior medical staff	TPD report Team observations

7.2 Good Medical Practice and maintaining trust

Objectives: To inculcate the habit of life long learning and continued professional development

To ensure trainee has the knowledge, skills and attitudes to act in a professional manner at all times

Knowledge Criteria	Clinical Competency	Professional skills and attitudes	Training support	Evidence / Assessment
Continuing professional development Doctor-patient relationship Personal health Understand relevance of: • RCOG • GMC, Defence Unions, BMA • specialist societies • STC & postgraduate dean • Defence unions Ethical principles • respect for autonomy • beneficence & non maleficence • justice Informed consent Confidentiality Legal issues • death certification • mental illness • advance directives, living wills	Be able to recognize and use learning opportunities Be able to gain informed consent for: • patient care & procedures • research	Ability to recognize and use learning opportunities Ability to: • learn from: - colleagues - experience • work independently but seek advice appropriately • deal appropriately with challenging behavior Understand: • ethical issues relevant to subspecialty • legal responsibilities Recognize; ▪ own limitations ▪ when personal health takes priority over work pressure Ability to gain informed consent	Observation of and discussion with senior medical staff	TPD report Team observations

7.2 Teaching

Objectives: Understand and demonstrate appropriate skills and attitudes in relation to teaching

Knowledge Criteria	Clinical Competency	Professional skills and attitudes	Training support	Evidence / Assessment
Teaching strategies appropriate to adult learning RCOG core and advanced training relevant to subspecialty Identification of learning principles, needs and styles Principles of evaluation	Prepare and deliver a teaching session • small group (<10) • large group (>20) • at the bedside Teach practical procedures (incl. ultrasound)	Ability to communicate effectively Ability to teach postgraduates on topic(s) relevant to subspecialty using appropriate teaching resources Ability to organize a programme of postgraduate education e.g. short course or multidisciplinary meeting	Observation of and discussion with senior medical staff Appropriate postgraduate courses	Log of experience and competence

7.3 Research

Objectives Understand and demonstrate appropriate skills and attitudes in relation to research relevant to the subspecialty

Knowledge Criteria	Clinical Competency	Professional skills and attitudes	Training support	Evidence / Assessment
Epidemiological techniques, population parameters, sampling techniques and bias Randomised trials and meta-analysis Statistical tests • parametric tests • non-parametric tests • correlation & regression • multi-variate analysis • chi-squared analysis	Perform a scientific experiment: • review evidence • develop a hypothesis and design experiment to test hypothesis • define sample • conduct experiment • perform statistical analysis of data • draw appropriate conclusions from results	Ability to design and conduct a scientific experiment Ability to write up research (as evidenced by award of MD or PhD thesis or 2 first author papers in citable journals) Ability to present a piece of scientific research	Discussion with senior staff (clinicians, scientists, statisticians) Attendance at scientific meetings Personal study Appropriate postgraduate courses (e.g. research methods, statistics)	Peer-reviewed publications and or higher degree

7.4 Clinical governance (CG) and risk management

Objectives: Understand and demonstrate appropriate knowledge and skills in relation to CG and risk management

Knowledge Criteria	Clinical Competency	Professional skills and attitudes	Training support	Evidence / Assessment
Clinical Governance - organizational framework at local, SHA and national levels - standards e.g. NSF, NICE, RCOG guidelines - clinical effectiveness • principles of evidence based practice • types of clinical trial/evidence classification • grades of recommendation - guidelines and integrated care pathways • formulation • advantages and disadvantages - clinical audit - patient / user involvement **Risk management** - incidents/near miss reporting - complaints management - litigation and claims management **Appraisal and revalidation** - principles - process	Perform clinical audit • define standard based on evidence • prepare project & collate data • re-audit and close audit loop • formulate policy Develop and implement a clinical guideline • purpose and scope • identify and classify evidence • formulate recommendations • identify auditable standards Participate in risk management • investigate a critical incident • assess risk • formulate recommendations • debrief staff Perform appraisal	Ability to practice evidence based medicine Ability to perform a clinical audit relevant to subspecialty Ability to develop and implement a clinical guideline relevant to subspecialty Ability to report and investigate a critical incident Ability to respond to a complaint in a focused and constructive manner. Ability to perform appraisal	Observation of and discussion with senior medical staff and clinical governance team. Attendance at risk management meetings DH, RCOG and Trust publications	Log of experience and competence TPD report

7.5 Administration and service management

Objectives: Display knowledge of the structure and organization of the NHS nationally and locally
Understand and demonstrate appropriate skills and attitudes in relation to administration and management

Knowledge Criteria	Clinical Competency	Professional skills and attitudes	Training support	Evidence / Assessment
Organization of NHS services • Directorate, Trust • PCT, SHA Managed clinical network for subspecialty service Health and safety Management • strategy development • business planning • project management Financial resource management Human resources • team building • appointments procedures • disciplinary procedures Scrutiny of organization • Healthcare Commission • PMETB / educational inspection visits	Develop and implement organizational change • development of strategy • formulate a business plan • manage project Be able to participate in recruitment • job specification • interview and selection	Ability to develop and implement organizational change Ability to collaborate with: • other professions • other agencies Develop interviewing techniques and those required for performance review	Observation of and discussion with senior medical and management staff Attendance at Directorate management meetings / interviews Management course	Log of experience and competence TPD report

7.6 Information use and management

Objective Demonstrate competence in the use and management of health information

Knowledge Criteria	Clinical Competency	Professional skills and attitudes	Training support	Evidence / Assessment
Input, retrieval and utilization of data recorded on clinical systems relevant to subspecialty Main local and national projects and initiatives in IT and its applications • NPfIT and Connecting for Health Confidentiality of data • principles and implementation • role of Caldicott guardian	Be able to use relevant • software • databases • web sites	Ability to apply principles of confidentiality in context of IT	Observation and discussion with senior medical staff World wide web	TPD report

How to use the Subspecialty Training Logbook

The first section of the logbook provides a summary of your training. This includes a weekly timetable and a description of any modules you have completed and also information about your on-call commitments.

The next section records the experience, skills and competencies acquired during subspecialty training.

- The left hand columns (**Experience**) record your experience of a range of relevant clinical cases. You should complete the number of relevant cases you have: (a) Observed someone else manage
  (b) Managed under supervision
  (c) Managed independently
  Where a column is blanked out, you do not need to record your experience

- The right hand columns (**Competence**) record the level of competence you have achieved. This part of the logbook will be completed by your trainers who should sign and date the level of competence when this has been achieved.
  There are 3 levels: (1) **Observe or assist** a colleague perform a procedure or manage a case
  (2) Perform a procedure or manage a case **under direct supervision**
  (4) Perform a procedure or manage a case without the need for supervision
  Most skill / competence targets will either be at:
  - Level 1 - where the trainee needs to have observed a case managed by, or procedure undertaken by, a colleague (usually from another specialty) in order that they can counsel future patients more appropriately or
  - Level 3 - where the trainee needs to be able to manage a case or perform a procedure independently.

  Where a column is blanked out either you are expected to have achieved this level of competence during core training (usually Levels 1) or you are not expected to have achieved this level of competence during subspecialty training (usually Levels 3).

The final section records aspects of general training including evidence of communication, team working, teaching, research and clinical governance. Your trainers should sign relevant sections when these have been completed successfully.

Timetable – From …….. to ……..

	Monday	Tuesday	Wednesday	Thursday	Friday
AM					
AM					
PM					
PM					

Modules completed:

Module	Duration	Signature

Module 1 - Maternal Medicine	Number			Competence		
	Observed	Managed under supervision	Managed independently	1	2	3
Hypertension						
Chronic hypertension						
Pre-eclampsia with - HELLP						
- severe hypertension						
- eclampsia						
- pulmonary oedema						
- renal failure						
Renal disease						
Hydronephrosis						
Reflux nephropathy						
Glomerulonephritis						
Polycystic kidney disease						
Renal transplant recipient						
Acute renal failure (not related to PET)						
Cardiac disease						
Congenital heart disease - corrected						
- uncorrected						
Rheumatic heart disease						
Ischaemic heart disease						
Artificial heart valve						
Arrhythmia						
Marfan's syndrome						
Peripartum cardiomyopathy						
Liver disease						
Primary biliary cirrhosis						
Chronic active hepatitis						
Obstetric cholestasis						
Acute fatty liver of pregnancy						

	Number			Competence		
	Observed	Managed under supervision	Managed independently	1	2	3
Respiratory disease						
Asthma						

Sarcoidosis						
Cystic fibrosis						
Restrictive lung disease e.g. kyphoscoliosis						
ARDS / Respiratoty failure						
Pneumothorax						
Gastrointestinal disease						
Crohn's disease						
Ulcerative colitis						
Irritbale bowel disease						
Reflux oesophagitis						
Hyperemesis gravidarum						
Diabetes						
Pre-existing diabetes without complications						
Pre-existing diabetes with - retinopathy						
- nepthropathy						
- autonomic neuropathy						
- vascular disease						
Gestational DM						

	Number			Competence		
	Observed	**Managed under supervision**	**Managed independently**	**1**	**2**	**3**
Other endocrine disease						
Hypothyroidism						
Hyperthyroidism						
Microprolactinoma						
Macroprolactinoma						
Adrenal disease						
Diabetets insipidus						
Postpartum thyroiditis						
Neurological disease						
Epilepsy						
Migraine						
Multiple sclerosis						
Previous CVA						
Myaesthenia gravis						
Idiopathic intracranial hypertension						
Spina bifida						
Bell's palsy						
Carpal tunnel syndrome						

	Number			Competence		
	Observed	**Managed under supervision**	**Managed independently**	**1**	**2**	**3**
Connective tissue disease						
Systemic lupus erythematosis						
APS without complications						
APS with - thrombosis						
- fetal complications (FGR/SB/PET)						
Rheumatoid arthritis						
Mixed CT disease						
Scleroderma						
Haematological disease						
Sickle cell disease						
Other haemoglobinopathies						
Haemophilia						
von Willebrands disease						
Immune thrombocytopenic purpura						
Thromboembolic disease						
Previous VTE						
Thrombophilia - without previous VTE						
- with previous VTE						
Acute DVT						
Non-massive pulmonary embolism						

	Number			Competence		
	Observed	**Managed under supervision**	**Managed independently**	**1**	**2**	**3**
Psychiatric disease						
Anxiety						
Depression						
Bipolar affective disorder						

Schizophrenia						
Postnatal depression						
Puerperal psychosis						
Skin disease						
Eczema						
Psoriasis						
Prurigo/pruritic folliculitis						
Polymorphic eruption of pregnancy						
Pemphigoid gestationis						
Neoplastic disease						
Breast						
Substance abuse						
Alcohol						
Drug abuse - narcotics						
- cocaine & crack						

		Performed under	Performed			
Procedures	**Observed**	**supervision**	**independently**	**1**	**2**	**3**
ECG interpretation						
Chest X-ray interpretation						
Arterial blood gas interpretation						
Insertion CVP catheter						
Insertion PA catheter						
Section under Mental Health Act						

Module 2 - Genetics	Number			Competence		
	Observed	Managed under supervision	Managed independently	1	2	3
Chromosomal anomalies						
Previous history - trisomy 21						
- trisomy 13/18						
- translocation, deletion						
- sex chromosome aneuploidy						
Affected fetus - trisomy 21						
- trisomy 18						
- trisomy 13						
- 45 X						
- 47XXX, 47XXY						
- translocation / deletion						
- confined placental mosaicism						
Genetic anomalies (Previous/family history/current)						
Cystic fibrosis						
Muscular dystrophy						
Myotonic dystrophy						
Huntington's disease						
Fragile X						
Haemoglobinopathy						
Haemophilia / other bleeding disorder						
Inborn error of metabolism						

	Number			Competence		
	Observed	Managed under supervision	Managed independently	1	2	3
Syndromic anomalies (Previous/family history /current)						
DiGeorge						
Beckwith-Wiedemann						
Meckel-Gruber						
Smith-Lemli-Opitz						

VATER/VACTERL						
	Observed	**Performed under supervision**	**Performed independently**	**1**	**2**	**3**
Procedures						
Ultrasound screen for trisomy 21 - 1st trimester						
- 2nd trimester						
Construction of family tree						
Use of dysmorphology database						
Cytogenetics						
FISH						
Direct mutation detection						
Enzyme / biochemical analysis (IEM)						
Analyte analysis / interpretation (trisomy 21)						

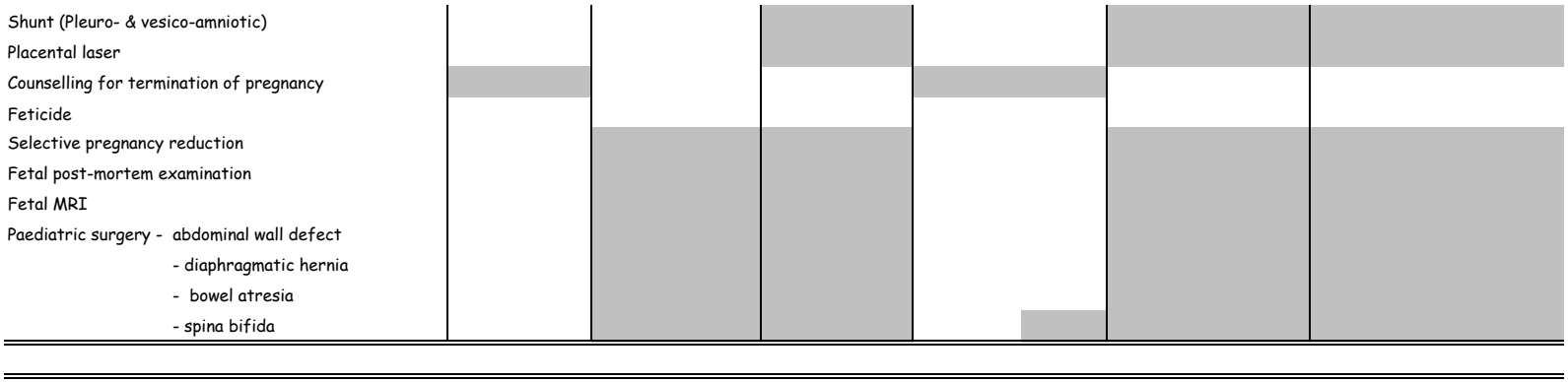
Module 3 - Fetal Anomalies	Number			Competence		
	Observed	Managed under supervision	Managed independently	1	2	3
CNS anomalies						
Anencephaly						
Spina bifida						
Ventriculomegaly						
Dandy Walker malformation / variant						
Holoprosecencephaly						
Choroid Plexus cyst						
Cardiac anomalies						
Septal defects						
Hypoplastic heart						
Outflow tract anomalies						
Arrhythmia						
Renal anomalies						
Renal agenesis						
Hydronephrosis - renal pelvis ≤ 15 mm						
- renal pelvis > 15 mm						
Multicystic kidney						
Polycystic kidney disease (AR/AD)						
Megacystis / LUTO						

	Number			Competence		
	Observed	Managed under supervision	Managed independently	1	2	3
Pulmonary anomalies						
Cystic adenomatoid malformation						
Sequestration						
Diaphragmatic hernia						
Pleural effusion						
Laryngeal atresia						
Abdominal wall and gastrointestinal anomalies						
Gastroschisis						

Exomphalos						
Echogenic bowel						
Oesophageal atresia						
Bowel atresia						
Abdominal cyst						
Ascites						
Face and neck anomalies						
Nuchal oedema / increased nuchal translucency						
Cystic hygroma						
Facial cleft						
Skeletal anomalies						
Lethal skeletal dysplasia						
Non-lethal skeletal dysplasia						
Talipes						
Limb reduction defect						
Fetal akinesia/hypokinesia sequence						
Sacral agenesis / syrenomelia						

	Number			Competence		
	Observed	**Managed under supervision**	**Managed independently**	**1**	**2**	**3**
Hydrops						
Immune hydrops						
Non-immune hydrops						
Muiltiple pregnancy						
Twin-twin transfusion syndrome						
Twins with discordant anamaly						
Twin reverse arterial perfusion sequence						

Procedures	**Observed**	**Performed under supervision**	**Performed independently**	**1**	**2**	**3**
Preconception counselling						
Fetal echocardiography						
Amniocentesis						
Twin amniocentesis						
Chorion villus sampling						
Amnioinfusion						
Amnioreduction						
Vesicocentesis						


Shunt (Pleuro- & vesico-amniotic)
Placental laser
Counselling for termination of pregnancy
Feticide
Selective pregnancy reduction
Fetal post-mortem examination
Fetal MRI
Paediatric surgery - abdominal wall defect
- diaphragmatic hernia
- bowel atresia
- spina bifida

Module 4 - Antenatal Complications	Number			Competence		
	Observed	Managed under supervision	Managed independently	1	2	3
Miscarriage/fetal death						
Recurrent first trimester miscarriage						
Intrauterine fetal death						
Trophoblastic disease						
Cervical weakness						
Poor / failed placentation						
Biochemical markers of poor placentation						
Previous history poor / failed placentation						
Fetal growth disorders						
Fetal growth restriction - singleton > 26 weeks						
- singleton ≤ 26 weeks						
Macrosomia						
Antepartum haemorrhage						
Placental abruption						
Placenta praevia						
Preterm birth						
Prior history of preterm birth / PROM						
Preterm PROM - < 24 weeks						
- > 24 weeks						
Elective preterm delivery						
In-utero transfer						

	Number			Competence		
	Observed	Managed under supervision	Managed independently	1	2	3
Multiple pregnancy						
Screening for trisomy (using NT)						
Monochorionic twin						
Monoamniotic twin						

Co-twin demise after 12 weeks'						
Twin with growth discordance						
Malpresentation						
Breech at term						
Alloimmunisation						
Red cell alloimmunisation - anti-D,c						
- anti-Kell						
- other						
Platelet alloimmunisation						
Abdominal / Gynaecological problems						
Acute abdomen						
Ovarian mass						
Fibroid uterus						

Procedures	Observed	Performed under supervision	Performed independently	1	2	3
Ultrasound screen for preterm birth (CL)						
Cervical cerclage - elective						
- rescue						
Uterine artery Doppler						
Umbilical artery Doppler						
Middle cerebral artery Doppler						
Ductus venosus Doppler						
Biophysical profile						
Ultrasound assessment placental site (TVS)						
Ultrasound assessment of chorionicity						
External cephalic version						
Ultrasound screen for fetal anaemia						
Fetal red cell intravascular transfusion						
Fetal platelet intravascular transfusion						
Ultrasound assessment of pelvic mass						

Module 5 - Intrapartum Care	Number			Competence		
	Observed	Managed under supervision	Managed independently	1	2	3
Failure to progress in labour						
First satge of labour						
Second stage of labour						
Non-reassuring fetal status						
Suspected fetal acidaemia						
Confirmed fetal acidaemia						
Multiple pregnancy and malpresentation						
Labour and delivery in multiple pregnancy						
Breech labour and delivery						
Shoulder dystocia						
Prior history of shoulder dystocia						
Shoulder dystocia						
Genital tract trauma						
Prior history of 3rd/4th degree perineal tear						
3rd/4th degree perineal tear						
Uterine scar rupture						
Third stage problems						
Massive PPH - without laparotomy						
- with laparotomy						
DIC						
Caesearean section						
Prior history of CS						
Complex CS (assessment/counselling/performance)						

	Number			Competence		
	Observed	Managed under supervision	Managed independently	1	2	3
Anaesthesia / analgesia						
Assessment / counselling high risk case						
Maternal collapse						
Massive haemorrhage - medical management						

- surgical management						
Amniotic fluid embolism						
Massive pulmonary embolism						
Cerebrovascular event						
Asseement and transfer critically ill woman to ITU						

Procedures	Observed	Performed under supervision	Performed independently	1	2	3
Assisted vaginal delivery - manual rotation						
- rotational ventouse						
- Keilland's forceps						
CTG Interpretation						
Fetal blood sampling						
Improving fetal acidaemia - physiological methods						
- pharmacological methods						
Intrapartum amnioinfusion						
Vaginal breech delivery						
Breech extraction						
Shoulder dystocia - McRobert's/suprapubic pressure						
- internal rotation of shoulders						
- removal posterior arm						
Repair of perineal tear - third degree						
- fourth degree						
Repair of uterine rupture						
Peripartum hysterectomy						
Correction of uterine inversion						
Insertion uterine balloon						
Insertion Brace suture						
Internal iliac artery ligation						
Caesarean section - major placental praevia						
- placenta accreta/percreta						
- fetal anomaly (likely dystocia)						
- classical incision						
- extensive abdominal surgery						
- large fibroids						
Maternal resuscitation						
Neonatal resuscitation						
Medical disorders - IDDM						
- seizures						
- clotting disorder						
- sickle cell disease						
- HIV infection						
Set up & running of an emergency drill						

Module 6 - Infection	Number			Competence		
	Observed	Managed under supervision	Managed independently	1	2	3
Human Immunodeficiency virus (HIV)						
Positive HIV result after screening						
HIV infection						
Hepatitis						
Positive hepatitis result after screening						
Hepatitis C infection						
Acute hepatitis B infection						
Chronic hepatitis B carrier						
Other viral infections in pregnancy						
Acute genital herpes simplex infection						
Acute CMV infection						
Acute parvovirus B19 infection						
Acute varicella infection						
Toxoplasmosis						
Acute toxoplasmosis infection						
Urinary tract infection						
Asymptomatic bacteruria						
Lower urinary tract infection						
Acute pyelonephritis						
Pulmonary infection						
Pneumonia						
Tuberculosis						

	Number			Competence		
	Observed	Managed under supervision	Managed independently	1	2	3
Genital tract infection						
Chlamydia						
Bacterial vaginosis						
Group B haemolytic streptococcus						
Acute chorioamnionitis						

Puerperal sepsis										
Other infectious conditions in pregnancy										
Malaria										
Acute appendicitis										
Acute cholecystitis										
Module 7 - Generic										
Communication, team working and leadership	Year 1					Year 2				
	Unable to	Un-	Improvement	Satisfactory	Good	Unable to	Un-	Improvement	Satisfactory	Good
Summary of team observations	comment	satisfactory	needed			comment	satisfactory	needed		
Treats patients politley and considerately										
Involves patient in decisions about their care										
Respects patients' privacy and dignity										
Respects confidentiality										
Responds when asked to review a patient										
Liaises with colleagues about continuing care of patient										
Works as a member of a team										
Accepts criticism and responds constructively										
Keeps records of acceptable quality										
Keeps up to date with administrative tasks										
Acts within own capability, seeks advice appropriately										
Delegates work/supervises junior staff approrpriately										
Manages time efficiently										
Comments										
Teaching		Signature of assessor		Date		Comments				
Prepare and deliver a teaching session - small group										
- large group										
Organise short course or multidisciplinary meeting										
Research		Full reference								
Papers published in citable journals during training										

Other publications during training										
Scientific presentations during training										

Clinical governance and risk management										
Audit(s)		Title(s)							Signature of assessor	Date
Guideline(s) developed		Title(s)							Signature of assessor	Date
		Details							Signature of assessor	Date
Report and investigation of a critical incident										
Respond to a complaint in focused and constructive manner										
Performance of appraisal										