



## **Curriculum for Subspecialty Training in Reproductive Medicine**

- 1 Female Reproductive Endocrinology**
  - 1a Female Endocrinology**
  - 1b Ovary and Polycystic Ovary Syndrome**
  - 1c Paediatric and Adolescent Gynaecology**
  - 1d Contraception and Termination**
  - 1e Menopause and Premature Menopause**
- 2 Endometriosis**
- 3 Reproductive Surgery**
- 4 Fertility and Assisted Reproduction**
- 5 Andrology**
- 6 Early Pregnancy Problems**

# Module 1 Female Reproductive Endocrinology

## 1a Female Endocrinology

### Objectives

To understand and demonstrate appropriate knowledge, skills and attitudes in relation to female reproductive endocrinology.

### Knowledge Criteria

Endocrinological measurement of hormones in biological fluids for evaluation of the various endocrine systems (Appendix 1a.1).

Neuroendocrine anatomy and physiology.

Hypothalamic–pituitary dysfunction:

- Hypogonadotrophic hypogonadism
- Kallman syndrome
- Pituitary adenoma
- Hyperprolactinaemia
- Disorders of growth hormone.

Adrenal dysfunction:

- Cushing syndrome
- Nelson syndrome
- Addison's disease
- Adrenal hyperplasia.

Thyroid disorders.

Polycystic ovary syndrome and disorders of androgen secretion (Appendix 1a.2).

Endocrinology of pregnancy (Appendix 1a.3).

Radiological investigations:

- Pituitary MRI/CT
- Pelvic MRI/CT
- CT abdomen, including adrenal glands.

### Clinical Competency

Take a history and perform an appropriate examination.

Perform and interpret dynamic endocrinological testing.

Discuss the diagnosis of causes of anovulation, such as syndromes of inappropriate prolactin secretion, central nervous system-hypothalamic-pituitary.

### Professional Skills And Attitudes

Ability to counsel patients sensitively about disease processes.

Ability to formulate management plan related to endocrinological findings.

Ability to implement plan of management and modify if necessary.

Ability to liaise effectively with colleagues in other disciplines, clinical and non-clinical.

Ability to counsel patients sensitively about options available.

Ability to explain openly treatments, complications and adverse effects of treatment.

### Training Support

- Gynaecological endocrine clinic attendance.

### Evidence

- Logbook of competence and experience
- Preceptor assessment of knowledge
- Mini-CEX
- Case-based discussions.

## Appendix 1a.1

Neuroendocrine function: central nervous system, hypothalamic–pituitary system and disease states:

- Anatomical and functional aspects of the hypothalamus, neurovascular relationships, hypothalamo-hypophyseal portal circulation and target cells of the pituitary.
- Suprahypothalamic structures and neuronal systems relevant to regulation of reproductive processes.
- Site of production, biological action and control of secretion of oxytocin, vasopressins and neurophysins.
- Biochemical basis of neuroendocrine action of neuropharmacology of agonists and antagonists.
- Pineal gland.
- Blood–brain barrier.
- Sex steroid-concentrating neurones.
- Distribution and cellular characteristics of pituitary hormone-producing cells with special reference to gonadotrophe and lactotrophe.
- Anatomical and functional aspects of the peptidergic and catecholaminergic system and their control of the pituitary hormone secretion.
- Structure and function of pituitary reproductive hormones and neuropeptides.
- Control of secretory activities of the pituitary hormones, including long- and short-term rhythms and their target organs and feedback systems.
- Neuroendocrine regulation of the menstrual cycle.
- Neuroendocrine function of the fetus and placenta.
- Hypothalamic and pituitary hypopituitarism and disorders of over secretion of pituitary hormones.
- Organic lesions and/or functional disorders of the hypothalamic–pituitary system.
- Ectopic hormone syndromes.

Thyroid function and disease states:

- thyrotrophin-releasing hormone, thyroid-stimulating hormone, thyroid physiology.
- Diagnostic value of thyroid-stimulating hormone, thyroid hormones total and free, thyroid-stimulating immunoglobulins and related diagnostic tests.
- Biosynthesis, control and metabolism of thyroid hormones.
- Clinical and pathophysiological correlates of hypo- and hyperthyroidism, particularly as related to menstrual disorders and fertility.
- Pregnancy- and hormone-induced changes of thyroid function in the mother and the effect of abnormal maternal thyroid function on the fetus.
- Thyroid physiology in the newborn and identification of cases at high risk of neonatal thyrotoxicosis.
- Effects of thyroid replacement and anti-thyroid drug therapy on the fetus.

- Pathophysiology of thyroiditis.
- Thyroid function in struma ovarii, molar pregnancy and choriocarcinoma.
- Medical and surgical management of non-toxic goitre, hypo- and hyperthyroidism.

Adrenal function and disease states:

- Regulation and secretion of adrenocortical hormones.
- Clinical and laboratory assessment of adrenocortical function.
- Pharmacology of naturally occurring and synthetic glucocorticoids and mineralocorticoids.
- Adrenocortical hypo- and hyperactivity (e.g. Cushing hyperplasia, adenoma, carcinoma).
- Congenital adrenal hyperplasia (see module 1C).
- Effects of aberrations of adrenocortical function on hypothalamopituitary-ovarian function, including Nelson syndrome.
- Aldosterone and disorders of the rennin–angiotensin system.
- Catecholamine disorders.

## Appendix 1a.2

Androgen disorders:

- Production, physiology and metabolism of androgens in normal women.
- Mechanisms of action of androgens.
- Symptoms and signs of androgen excess together with any causes based on pathophysiology of androgen excess.
- Physiology of normal and abnormal hair growth.
- Ovarian tumours, benign and malignant, which secrete androgens.
- Benign stromal changes in the ovary which may result in increased androgen production.
- Relate PCOS to abnormal hormone production.
- Androgen-resistant states.
- Congenital and acquired adrenal hyperplasia in terms of aetiology, genital morphology, general metabolic effects and differentiate action and treatment.
- Management of androgen excess and of hirsutism.
- Pharmacology of anti-androgens.

## Appendix 1a.3

Endocrinology of pregnancy:

- Fetoplacental unit: physiology and pathophysiology of steroid hormones (e.g. estrogen, progesterone, corticosteroids).
- Physiology of decidua-chorionic-placental peptide hormones (e.g. gonadotrophins, somatomammotrophin, thyrotrophin, adrenocorticotrophic hormone/opioid peptides and prolactin).
- Initiation of parturition, including physiology, pathophysiology and pharmacology of prostaglandins.
- Physiology of fetal adrenal gland.
- Endocrine and cytokine pathophysiology of pre-eclampsia and eclampsia.
- Pathophysiology of altered maternal thyroid, adrenal and pancreatic status during pregnancy.

## 1b The ovary and polycystic ovary syndrome

### Knowledge Criteria

Ovarian anatomy, physiology, pathophysiology and endocrinology (see Appendix 1b.1).

Diagnosis of polycystic ovary syndrome (PCOS):

- Imaging of PCOS
- Management of anovulation
- Management of hyperandrogenism (hirsutism, acne, alopecia)
- Management of obesity, including an understanding of long-term health risks, metabolic effects and cancer risks.

Management of ovulation induction in PCOS:

- Dietary advice
- Metformin/insulin sensitisers
- Anti-estrogens
- Gonadotrophin therapy
- Aromatase inhibitors
- Ovarian diathermy.

### Clinical Competency

Take a history and undertake appropriate clinical examination.

Organise the appropriate endocrine investigation of disordered ovulation.

Select and manage appropriate treatment for PCOS.

Prescribe and monitor response to clomifene citrate, metformin and gonadotrophin ovulation induction.

Competent laparoscopic ovarian diathermy in the management of polycystic ovaries.

Organise appropriate investigations of impaired glucose tolerance and discuss the use of insulin-lowering drugs.

Management of hyperandrogenism.

### Professional Skills And Attitudes

Ability to counsel patients sensitively about disease process.

Ability to formulate management plan related to pathological findings.

Ability to implement plan of management and modify if necessary.

Ability to liaise effectively with colleagues in other disciplines, clinical and non-clinical.

Ability to counsel patients sensitively about options available.

Ability to explain clearly and openly about treatments, complications and adverse effects of medical and surgical treatment.

### Training Support

- RCOG Basic Practical Skills in Obstetrics and Gynaecology Course.
- Gynaecological endocrine clinic attendance.

### Evidence

- Logbook of competence and experience
- Preceptor assessment of knowledge
- Mini-CEX
- Case-based discussions.

### Appendix 1b.1

Ovarian function and disease states:

- Cyclic changes in endocrine activities within the ovary.
- Synthesis and secretion of hormone substances by the various compartments and cell types of the ovary; intra- and extraovarian control mechanisms.
- Mechanism of protein/steroid hormone action in the ovary.
- Regulation of hormone receptors.
- Atresia and selection of the dominant follicle. luteolysis.
- Hormone-producing tumours of the ovary.
- Ovarian activity during gestation.
- Age-related changes in ovarian structure and function.
- Clinical and pathophysiological correlates of disorders of the human ovary (structure and function).

Ovarian pathology:

- Gross and microscopic findings: describe natural history of ovarian tumours in relation to reproductive function (e.g. follicular cysts, luteoma, corpus luteum, polycystic ovary syndrome, endometrioma, granulosa-theca cell tumour, Sertoli-Leydig cell tumour, gynandroblastoma, cystic teratoma, dysgerminoma, gonadoblastoma and mixed germ cell or gonadal tumours).
- Different compartments of the Graafian follicle (e.g. granulosa cells, theca and adjacent stroma) and the primordial, preantral, antral and Graafian follicles, including the dynamic changes which occur in the ovary from embryo to menopause.
- Specific staining techniques and cellular ultrastructure as related to function.
- Gross and microscopic findings and the development of gonadal structures found in various forms of gonadal dysgenesis and intersex conditions.

## 1c Paediatric and Adolescent Gynaecology

### Knowledge Criteria

Embryology: development of embryo and abnormalities which will have an influence on reproduction, in particular development of genital tract.

Factors controlling male and female development of the gonadal primordia, internal duct system and external genitalia.

Developmental abnormalities of the genital tract, including ambiguous genitalia, imperforate hymen and vaginal septa, uterine anomalies, müllerian and Wolffian dysgenesis, Rokitansky syndrome and gonadal dysgenesis.

Embryology of hypothalamic–pituitary and other pertinent endocrine systems.

Developmental disorders (Appendix 1c.1):

- Ambiguous genitalia
- Intersex disorders
- Complete androgen insensitivity syndrome
- Endocrine disturbance
- Precocious puberty
- Delayed puberty
- Adrenal hyperplasia.

Surgical management:

- Developmental disorders
- Ambiguous genitalia
- Intersex disorders.

### Clinical Competency

Take a history and perform an appropriate clinical examination.

Organise appropriate endocrine investigation of disordered ovulation.

Select and manage appropriate treatment for PCOS.

Prescribe and monitor response to clomifene citrate, metformin and gonadotrophin ovulation induction.

Competent laparoscopic ovarian diathermy in the management of polycystic ovaries.

Organise appropriate investigations of impaired glucose tolerance and discuss the use of insulin-lowering drugs.

Management of hyperandrogenism.

### Professional Skills And Attitudes

Ability to counsel patients sensitively about disease process.

Ability to formulate a management plan related to pathological findings.

Ability to implement a plan of management and modify if necessary.

Ability to liaise effectively with colleagues in other disciplines, clinical and non-clinical.

Ability to counsel patients sensitively about options available.

Ability to explain clearly and openly treatments, complications and adverse effects of medical and surgical treatment.

Ability to explain openly about treatments, complications and adverse effects of treatment.

### Training Support

- Gynaecological endocrine clinic attendance.

### Evidence

- Logbook of competence and experience
- Preceptor assessment of knowledge
- Mini-CEX
- Case-based discussions.

## Appendix 1c.1

Normal sequence of pubertal changes in the female and male and their chronology.

Effects of hormones on bone growth and epiphyseal closure.

Hormonal changes and gametogenesis relative to the reproductive cycle from intrauterine life to the development of normal reproductive cycles (e.g., gonadotrophin secretion in the fetus and the neonate, sensitivity of the feedback system during fetal and neonatal life and childhood; role of adrenal androgens).

Delayed puberty, indicating the differential diagnosis evaluation and appropriate therapy.

Sexual precocity, indicating the differential diagnosis, evaluation and appropriate therapy.

Developmental disorders, including those of:

- vagina: vaginal reconstruction by dilatation or surgery
- uterus: knowledge of müllerian anomalies with obstruction of drainage.

Ambiguous genitalia, including involvement in the assignment of sex of rearing for an infant with ambiguous genitalia, techniques for surgical construction of unambiguous functioning female external genitalia and vagina (e.g. vaginoplasty, clitoridectomy and clitoral resection), indications and techniques for gonadectomy.

Embryonic development of the genital tract, including the factors controlling male and female development of the gonadal primordia, internal duct system and external genitalia.

Diagnosis and management of patients with developmental abnormalities of the genital tract, including ambiguous genitalia, imperforate hymen and vaginal septa, uterine anomalies, müllerian agenesis and gonadal dysgenesis.

Embryology of the hypothalamic–pituitary and other pertinent endocrine systems.

Embryology of the urological system.

## 1d Contraception and Termination

### Knowledge Criteria

Effectiveness of fertility control.

Factors to take into consideration for fertility control.

Pharmacology of drugs used.

Risks and complication of methods used.

Reasons for unplanned pregnancy.

Methods of dealing with unplanned pregnancy.

Legal aspects of termination of pregnancy.

Contraceptive counselling:

- oral contraceptive pill
- Progesterone-only pill
- Depot injection
- Implants
- Intrauterine contraceptive device
- Intrauterine system.

Termination provision:

- First trimester
- Mid-trimester
- Late termination
- Selective fetal reduction.

### Clinical Competency

Take a history in relation to:

- Contraceptive techniques
- Unwanted pregnancy.

Counsel about:

- Contraception
- Unplanned pregnancy
- Sterilisation.

Manage the following clinical situations:

- Emergency contraception
- Medical termination of pregnancy
- Late termination of pregnancy.

Perform the following:

- Insertion of intrauterine contraceptive device
- Fitting of a diaphragm.

First-trimester termination of pregnancy.

### Professional Skills And Attitudes

Ability to counsel patients sensitively about options available.

Ability to understand legal issues with respect to termination of pregnancy.

Ability to understand issues of consent in the patient under the age of 16 years.

Ability to respect patient's confidentiality.

Ability to explain clearly and openly about treatments, complications and side effects of drug treatment.

Ability to formulate and implement a plan of management and modify if necessary.

Ability to liaise effectively with colleagues in other disciplines, clinical and non-clinical.

### Training Support

Task-specific on-the-job training.

Personal study.

Appropriate postgraduate education courses.

Tailored clinical experience:

- Family planning course
- Family planning sessions.

### Evidence

- Mini-CEX
- Preceptor assessment of knowledge.
- Case-based discussions.

## 1e Menopause and premature menopause

### Knowledge Criteria

Management of the post-menopausal woman:

- Choice of hormone replacement therapy (HRT)
- Adverse effects and risks of HRT.

Interpretation of tests used to evaluate amenorrhoea.

A rational diagnostic and therapeutic approach to patients with amenorrhoea.

Premature menopause:

- Causes of premature ovarian failure, congenital endocrine disorders (e.g. Turner syndrome, complete androgen insensitivity syndrome, ovarian agenesis, polyglandular endocrinopathy and fragile X syndrome) and acquired (e.g. post-surgery, chemo/radiotherapy)
- Treatment options for young women with ovarian failure, with particular regard to future fertility
- Advantages and disadvantages, risks and benefits of HRT.

### Clinical Competency

A rational diagnostic and therapeutic approach to patients with amenorrhoea.

Liaison with fertility services.

Immunological investigations.

Counselling.

Interpretation of dual-energy X-ray absorptiometry bone scans.

### Professional Skills And Attitudes

Ability to counsel patients sensitively about the options available.

Ability to respect patient confidentiality.

Ability to explain clearly and openly about treatments, complications and adverse effects of drug treatment.

Ability to formulate and implement a plan of management and modify if necessary.

Ability to liaise effectively with colleagues in other disciplines, clinical and non-clinical.

### Training Support

- Task-specific on-the-job training.
- Personal study.
- Appropriate postgraduate education courses.
- Tailored clinical experience, e.g. premature menopause clinic attendance.

### Evidence

- Mini-CEX
- Preceptor assessment of knowledge.

## Module 2 Endometriosis

### Objectives

To understand the diagnosis, management and treatment of patients with endometriosis.

### Knowledge Criteria

Pathogenesis and aetiology of endometriosis.

Mechanisms by which minimal and mild endometriosis may impair fertility, e.g. defective folliculogenesis, ovulatory dysfunction, hyperprolactinaemia, autoimmune disorders, disturbances in the peritoneal fluid environment.

Diagnosis, staging/grading of disease and prognosis.

Place of expectant management, medical and surgical treatment in the management of endometriosis.

Role, possible benefits and potential adverse effects of pharmacological agents, e.g. oral contraceptives, progestogens, danazol, gestrinone, gonadotrophin-releasing hormone (GnRH) analogues, in the management of endometriosis.

Place of assisted reproduction in the management of endometriosis.

Symptoms:

- Investigations
- Ultrasound/computed tomography/magnetic resonance imaging.

Effects on fertility:

- Pain management
- Pelvic MRI/CT.

### Clinical Competency

Surgical management:

- Diathermy to superficial disease
- Excision of endometriosis
- Removal of endometriomas
- Treatment of rectovaginal disease.

Medical management:

- Progestogen therapy
- Combined oral contraceptive pill
- GnRH analogues
- Danazol.

### Professional Skills And Attitudes

Ability to counsel patients sensitively about the options available.

Ability to respect patient confidentiality.

Ability to explain clearly and openly about treatments, complications and adverse effects of drug treatment.

Ability to formulate and implement plan of management and modify if necessary.

Ability to liaise effectively with colleagues in other disciplines, clinical and non-clinical, e.g. colorectal surgeons, chronic pain team and radiologists.

### Training Support

- Task specific in service training.
- Personal study.
- Appropriate postgraduate education courses.
- Tailored clinical experience, e.g. pain clinic.

### Evidence

- Mini-CEX
- Preceptor assessment of knowledge

## Module 3 Reproductive Surgery

### Objectives

To achieve surgical skills appropriate for a subspecialist in reproductive surgery.

### Knowledge Criteria

Anatomical systems in relation to human reproduction (Appendix 3.1)

Role of endoscopic and open surgery in the treatment of fertility-related conditions, e.g. fibroids, endometriosis, hydrosalpinges and tubal disease.

Sterilisation reversal.

### Clinical Competency

Laparoscopic surgery:

- Diagnostic laparoscopy
- Treatment of minimal/mild endometriosis
- Treatment of ovarian endometrioma
- Treatment of ovarian dermoid
- Division of adhesions
- Salpingectomy for hydrosalpinx
- Salpingostomy
- Salpingectomy for ectopic pregnancy
- Salpingostomy for ectopic pregnancy
- Laparoscopic myomectomy
- Ovarian diathermy.

Hysteroscopic surgery:

- Diagnostic hysteroscopy
- Outpatient hysteroscopy
- Resection of fibroid
- Resection of polyp
- Division of septum
- Division of adhesions.

Open fertility surgery:

- Reversal of sterilisation
- Myomectomy.

Other surgery:

- Excision of vaginal septum
- Imperforate hymen
- Excision of rudimentary horn of uterus
- Hysterectomy for severe endometriosis.
- Reversal of vasectomy
- Vasectomy
- Ligation of varicocele
- Percutaneous epididymal sperm aspiration
- Microsurgical epididymal sperm aspiration
- Open testicular biopsy

Male surgery.

### Professional Skills And Attitudes

Ability to counsel patients sensitively about options available.

Ability to respect patient confidentiality.

Ability to explain clearly and openly about treatments, complications and side effects of surgery.

Ability to formulate and implement plan of management and modify if necessary.

Ability to liaise effectively with colleagues in other disciplines, clinical and non-clinical.

### Training Support

- Task-specific on-the-job training.
- Personal study.
- Appropriate postgraduate education courses.
- Tailored clinical experience, e.g. pain clinic.
- Laparoscopic surgery course.
- Hysteroscopic surgery course.

### Evidence

- OSATS
- Case-based discussion
- Preceptor assessment of knowledge

## Appendix 3.1

### Uterine anatomy and histology:

- normal anatomy
- different types of congenital abnormalities, such as uterine septum, their impact on fertility and their management
- impact and management of intrauterine adhesions
- impact and management of fibroids, including both surgical and embolisation,

### Tubal anatomy and histology:

- normal anatomy
- different types of congenital abnormalities
- management of proximal, mid-tubal and distal tubal disease
- sterilisation and reversal of sterilisation
- gross and microscopic findings of diseases of the oviduct related to reproductive endocrinology (e.g. acute and chronic salpingitis, granulomatous salpingitis, endometriosis)
- natural history and clinical course of acute and chronic salpingitis and relate these to subsequent fertility.

### Vaginal and cervical anatomy and histology:

- gross and microscopic findings of endometriosis and adenosis
- possible consequences of antenatal hormone exposure
- effects of various hormones on the vagina and cervix.

### Endometrial histology:

- histological appearance of normal and abnormal endometrium
- current data relating estrogens with endometrial hyperplasia and adenocarcinoma
- acute and chronic endometritis
- developmental stages of the endometrium (dating)
- endometrial factors that affect implantation in early pregnancy.

### Myometrial histology:

- gross and microscopic findings of adenomyosis, leiomyoma and other myometrial lesions related to reproduction
- relationships of leiomyoma to infertility, including each of the different types (e.g. subserosal, intramural and submucosal)

### Ovarian anatomy and histology:

- gross and microscopic findings and natural history of ovarian tumours related to reproductive function (e.g. follicular cysts, luteoma, corpus luteum, polycystic ovary syndrome, endometrioma, granulosa-theca cell tumour, Sertoli-Leydig cell tumour, gynandroblastoma, cystic teratoma,

dysgerminoma, gonadoblastoma and mixed germ cell or gonadal tumours)

- different compartments of the Graafian follicle (e.g. granulosa cells, theca and adjacent stroma) and the primordial, preantral, antral and Graafian follicles, including the dynamic changes which occur in the ovary from embryo to menopause
- specific staining techniques and cellular ultrastructure as related to function
- gross and microscopic findings and the development of gonadal structures found in various forms of gonadal dysgenesis and intersex conditions.

### Testicular anatomy and histology:

- normal anatomy and development of the testis
- various stages of normal and abnormal spermatogenesis;
- gross and microscopic findings in testicular disease (e.g. teratoma, seminoma, Leydig and Sertoli cell tumours).

## Module 4 Subfertility and Assisted Reproduction

### 4a General Subfertility

#### Objectives

To demonstrate the knowledge, skills and attitudes relating to general subfertility problems.

#### Knowledge Criteria

Normal ranges in:

- semen analysis
- endocrine profile: female
- endocrine profile: male.

Ovulation induction:

- anti-estrogens
- gonadotrophins.

Intrauterine insemination.

In vitro fertilisation (IVF).

- intracytoplasmic sperm injection (ICSI)

Donation of:

- Oocytes
- Sperm.

Uterine and tubal imaging:

- Hysterosalpingography
- Hysterosalpingo-contrast-sonography
- Saline sonohysterography
- Computed tomography (CT)/magnetic resonance imaging (MRI)
- Laparoscopy.

#### Clinical Competency

Take a history from subfertile couple.

Examination of subfertile couple:

- Arrange investigations
- Interpret semen analysis
- Interpret endocrine profile: female
- Interpret endocrine profile: male.

Liaise with appropriate colleagues.

Organise and counsel towards appropriate treatment:

- Ovulation induction: anti-estrogens
- Ovulation induction: gonadotrophins
- Intrauterine insemination
- IVF
- IVF/ICSI
- Oocyte donation
- Sperm donation.

Critical awareness of the limitations of investigative techniques in the evaluation of infertility.

Uterine and tubal imaging:

- Hysterosalpingography
- Hysterosalpingo-contrast-sonography
- Saline sonohysterography
- CT/MRI.

#### Professional Skills And Attitudes

Ability to counsel patients sensitively about the options available.

Ability to respect patient confidentiality.

Ability to explain clearly and openly about treatments, complications and adverse effects of drug treatment.

Ability to formulate and implement plan of management and modify if necessary.

Ability to liaise effectively with colleagues in other disciplines, clinical and non-clinical (e.g. andrologists, endocrinologists, IVF centre team and urologists).

Ability to interpret:

- hysterosalpingography
- selective salpingography and HyCoSy
- sella turcica imaging by MRI
- arteriography
- CT scan
- arterial catheterisation, digital subtraction angiography, venous catheterisation
- intravenous and retrograde urography and isotope imaging methods.

Ability to perform visual field examination.

Ability to use and interpret chromosomal studies and karyotyping.

Ability to describe limitations of procedures.

Ability to diagnose and evaluate diagnostic procedures.

Ability to understand the validity of diagnostic tests, variability and reliability criteria.

Ability to recognise and distinguish the use of different modalities of ultrasonography.

Ability to perform abdominal and transvaginal ultrasonography and to interpret findings on ultrasonography, such as:

- appearance of normal and abnormal uterus including fibroids
- Endometrial assessment, including normal cyclical changes, changes associated with hormone replacement, hyperplasia and malignancy
- ovarian, para-ovarian and tubal masses.

Ability to perform and interpret follicular tracking, including the disappearance of corpus luteum.

Ability to use ultrasound for:

- Assessment of tubal patency using contrast media
- Confirmation of intrauterine gestational sac with embryo, yolk sac, cardiac pulsation and assessment of gestational age.

Ability to diagnose ectopic pregnancy.

Ability to make an assessment of cervical length and dilation using ultrasonography.

### **Training Support**

- Task-specific in-service training.
- Personal study.
- Appropriate postgraduate education courses.
- Tailored clinical experience, e.g. fertility clinic, endocrine clinic.

### **Evidence**

- Logbook of competences and experience
- Mini-CEX
- Preceptor assessment of knowledge
- Case-based discussions

## 4b IVF and Assisted Conception

### Objectives

To demonstrate knowledge and competency in relation to patients requiring in vitro fertilization (IVF) and assisted conception.

### Knowledge Criteria

Management options:

- Long gonadotrophin-releasing hormone (GnRH) protocol
- Short GnRH protocol
- GnRH antagonist cycles
- Frozen embryo replacement:
  - natural cycle
  - HRT cycle
- Donor–recipient cycle
- Sperm freezing
- Embryo freezing
- In vitro oocyte maturation
- Oocyte freezing.

Pharmacokinetics and pharmacodynamics of drugs used in reproductive medicine.

Clinical trial design.

Management of complications including ovarian hyperstimulation syndrome.

Ultrasound/imaging:

- Follicular tracking: natural/simulated cycles
- Tracking IVF endometrial development
- Uterine abnormalities
- Ovarian pathology
- Early pregnancy assessment
- Oocyte retrieval.

Embryo replacement.

Microsurgical epididymal sperm aspiration.

Percutaneous epididymal sperm aspiration.

Open testicular biopsy.

Counselling:

- Supportive
- Implications
- Therapeutic
- Legal aspects
- Psychosexual.

Basis of genetic inheritance and transmission of genetic disease:

- Single gene disorders: recessive and dominant
- Sex-linked disorders
- Late-onset disorders and disease susceptibilities
- Chromosome rearrangements: Robertsonian reciprocal translocations and their consequences
- Aneuploidy, sporadic aneuploidy and important aneuploidy syndromes (e.g. Edwards, Turner, Patau).

Genetics:

- Genetic history and counselling
- Cell cycle and biology
- Approach to chromosome analysis
- International System for Human Cytogenetic Nomenclature
- Normal variation
- Banding techniques
- Prenatal diagnosis
- Cell culture and processing
- Preimplantation genetic diagnosis
- Preimplantation genetic screening.

Laboratory techniques:

- Cell culture
- Embryo culture
- Assisted hatching
- Polymerase chain reaction
- DNA, RNA and protein amplification techniques.

Flowcytometry:

- Human Fertilisation and Embryology Authority (HFEA) laboratory inspection
- Clinical Pathology Accreditation laboratory inspection
- International Standards Office and quality management systems

HFEA:

- HFEA Code of Practice
- Adverse incident reporting
- Understand the 'person responsible' role.

Storage:

- Use of gametes
- Posthumous use of gametes.

### Clinical Competency

Take a history from a subfertile couple:

- Examination of subfertile couple
- Arrange investigations
- Interpret semen analysis
- Interpret endocrine profile: female
- Interpret endocrine profile: male.

Form appropriate management plan.

Counsel for donated gametes:

- Donated oocytes
- Donated sperm.

Manage treatment cycles:

- Long GnRH protocol
- Short GnRH protocol
- GnRH antagonist cycles
- Frozen embryo replacement:
  - natural cycle
  - HRT cycle
- Donor–recipient cycle
- Sperm freezing
- Embryo freezing.

Ultrasound/Imaging:

- Follicular tracking natural/stimulated
- Follicular tracking IVF
- Endometrial development
- Uterine abnormalities
- Ovarian pathology
- Early pregnancy assessment
- Oocyte retrieval
- Embryo replacement
- Microsurgical epididymal sperm aspiration
- Percutaneous epididymal sperm aspiration
- Open testicular biopsy.

Counselling:

- Supportive
- Implications
- Therapeutic
- Legal aspects of counselling
- Liaison with counsellors.

Genetics:

- Genetic history and counselling
- Cell cycle and biology
- Approach to chromosome analysis
- International System for Human Cytogenetic Nomenclature
- Normal variation
- Banding techniques
- Prenatal diagnosis
- Cell culture and processing
- Preimplantation genetic diagnosis
- Preimplantation genetic screening.

**Professional Skills And Attitudes**

Ability to counsel patients sensitively about options available.

Ability to formulate management plan related to pathological findings.

Ability to implement plan of management and modify if necessary.

Ability to liaise effectively with colleagues in other disciplines, clinical and non-clinical.

Ability to explain openly about treatments, complications and adverse effects of treatment.

**Training Support**

- Attend reproductive ethics committee.
- Attend HFEA inspection.
- Task-specific in-service training.
- Personal study.
- Appropriate postgraduate education courses.
- Tailored clinical experience (e.g. fertility clinic, endocrine clinic).

**Evidence**

- Mini-CEX
- OSATS
- Log of competences and experience
- Case-based discussion

## Module 5 Andrology

### Objectives

To demonstrate knowledge and competency in relation to men with fertility problems.

### Knowledge Criteria

Appropriate history and investigations:

- Semen analysis
- Endocrine profile: male.

Anatomy and physiology of the testis.

Investigation of azoospermia.

Hypothalamo-pituitary-thyroid axis function and assessment.

Assessment and management of impotence.

Human Fertilisation and Embryology Authority (HFEA):

- HFEA code of practice
- Adverse incident reporting
- Posthumous use of gametes.

Treatment:

- Endocrine therapy
- Gonadotrophin therapy.

### Clinical Competency

Take an appropriate history from a subfertile male:

- Examination of subfertile male
- Arrange investigations
- Interpret semen analysis
- Interpret endocrine profile: male
- Investigation of azoospermia
- Form appropriate management plan.

Counsel about sperm banking:

- pre-oncology treatment
- before vasectomy.

Treatment:

- Endocrine therapy
- Gonadotrophin therapy.

### Professional Skills And Attitudes

Ability to counsel patients sensitively about the disease process.

Ability to formulate management plan related to pathological findings.

Ability to implement plan of management and modify if necessary.

Ability to liaise with colleagues in other disciplines, clinical and non-clinical.

Ability to counsel patients sensitively about options available.

Ability to explain openly about treatments, complications and adverse effects of treatment.

### Training Support

- Laboratory sessions.
- Urology training.

### Evidence

- Attendance at relevant practical sessions and tutorials
- Preceptor assessment of knowledge
- Mini-CEX
- OSATS
- Case-based discussion

## Module 6 Early Pregnancy Problems

### Objectives

To understand the assessment and management of recurrent miscarriage.

To demonstrate the knowledge and skills for patients requiring emergency gynaecology.

### Knowledge Criteria

Ectopic pregnancy:

- Causes
- Investigations
- Medical management
- Surgical management.

Miscarriage:

- Causes
- Investigations
- Medical management
- Surgical management.

Molar pregnancy.

### Clinical Competency

Recurrent miscarriage:

- Take a history:
  - recurrent miscarriage
  - pregnancy history
  - medical history
- Organise appropriate investigations
- Interpret endocrine assessment
- Interpret immunological assessment
- Formulate management plan
- Liaise with colleagues in other disciplines.

Counsel about:

- Causes of miscarriage
- Treatments
- Implications following molar pregnancy.

Perform:

- Endocrine investigations
- Anatomical assessment
- Immunological investigations.

Manage clinical conditions:

- Antiphospholipid syndrome
- Uterine abnormalities.

Liaise with national screening centre for trophoblastic disease.

Emergency gynaecology:

- History and examination
- Organise appropriate investigations
- Interpret endocrine assessment
- Formulate management plan
- Liaise with colleagues in other disciplines.

Manage ectopic pregnancy:

- Medical management
- Surgical management.

Manage miscarriage:

- Medical management
- Surgical management.

### Professional Skills And Attitudes

Ability to counsel patients sensitively about the disease process.

Ability to formulate management plan related to pathological findings.

Ability to implement plan of management and modify if necessary.

Ability to liaise with colleagues in other disciplines, clinical and non-clinical.

Ability to counsel patients sensitively about options available.

Ability to explain openly about treatments, complications and adverse effects of treatment.

### Training Support

Attendance at:

- Recurrent miscarriage clinic
- Early pregnancy assessment unit.

### Evidence

- Mini-CEX
- Case-based discussion



# Reproductive Medicine Module 1: Female Reproductive Endocrinology

## 1a: Female endocrinology

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <span style="display: inline-block; width: 10px; height: 10px; background-color: #cccccc; margin-right: 5px;"></span> = Not required         </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Anatomy and physiology</b>						
Neuroendocrine anatomy and physiology						
<b>Screening</b>						
Pituitary magnetic resonance imaging (MRI)/computed tomography (CT)						
Pelvic MRI/CT						
Abdominal CT						
<b>Hypothalamic–pituitary disorders</b>						
Hypogonadotrophic hypogonadism						
<b>Hypothalamic disorders</b>						
Anorexia nervosa/exercise and lifestyle-related disorders						
Pituitary adenoma						
Kallman syndrome						
Hyperprolactinaemia						

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Adrenal dysfunction</b>						
Cushing syndrome						
Nelson syndrome						
Addison's disease						
Adrenal hyperplasia						
<b>Thyroid disorders</b>						
Hypothyroidism						
Hyperthyroidism						
<b>Other</b>						
Diabetes mellitus						

## 1b: The ovary and polycystic ovary syndrome

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Ovary and polycystic ovary syndrome (PCOS)</b>						
Ovarian anatomy and physiology						
Diagnosis of PCOS						
Ultrasound imaging of polycystic ovaries						
Management of obesity						
Dietary advice						
Management of anovulation/oligo-ovulation						
Ovulation induction in PCOS						
Antiestrogens						
Metformin/insulin sensitisers						
Gonadotrophin therapy						
Ovarian diathermy						
Aromatase inhibitors						
Management of hyperandrogenism (hirsutism/acne/alopecia)						

## 1c: Paediatric and adolescent gynaecology

	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required         </div>						
<b>Screening and diagnosis</b>						
Pelvic/abdominal MRI/CT						
<b>Developmental disorders</b>						
Normal growth and development/ambiguous genitalia/genital anomalies						
Intersex disorders/Turner syndrome						
<b>Endocrine disturbance</b>						
Precocious puberty						
Delayed puberty						
Late-onset congenital adrenal hyperplasia						
Primary amenorrhoea						
Management of survivors of childhood cancer						

### 1d: Contraception and termination of pregnancy

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Contraceptive counselling</b>						
Combined oral contraceptive pill						
Progesterone-only pill						
Depot						
Implants						
Intrauterine contraceptive devices <u>(including copper and levonorgestrel based systems)</u>						
<b>Termination of pregnancy</b>						
First trimester termination						
Mid-trimester termination						
Late termination						
Selective fetal reduction						

## 1e: Menopause and premature ovarian failure

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <span style="background-color: #cccccc; width: 10px; height: 10px; display: inline-block;"></span> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Management of menopause</b>						
Management of the postmenopausal woman						
Choice of hormone replacement therapy (HRT)						
Adverse effects and risks of HRT						
<b>Management of premature ovarian failure</b>						
Endocrine assessment						
<u>Fertility management</u>						
Immunological investigation						
Counselling						
HRT therapy						
Dual energy X-ray absorptiometry bone scanning						



## Reproductive Medicine Module 2: Endometriosis

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required         </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Diagnosis</b>						
Aetiological theories for endometriosis						
Signs and symptoms						
Focused physical examination for endometriosis						
<b>Investigations</b>						
Serum CA125 measurement						
MRI						
Laparoscopy						

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Management</b>						
Counselling						
<b>Surgical management</b>						
Destruction of superficial disease						
Excision of endometriosis						
Removal/ablation of endometriomas						
<b>Medical management</b>						
Progestogen therapy						
Combined oral contraceptive pill						
GnRH analogues ± addback therapy						
Danazol						
<b>Other aspects</b>						
Effects on fertility						
Pain management						



## Reproductive Medicine Module 3: Reproductive Surgery

<input type="checkbox"/> = Not required	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Laparoscopic surgery</b>						
Diagnostic laparoscopy						
Treatment of minimal/mild endometriosis						
Ovarian diathermy						
Treatment of ovarian endometrioma						
Treatment of ovarian dermoid						
Division of adhesions						
Salpingectomy for hydrosalpinx						
Salpingostomy						
Salpingostomy or salpingectomy for ectopic pregnancy						
Laparoscopic myomectomy						

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Hysteroscopic surgery</b>						
Diagnostic hysteroscopy						
Outpatient hysteroscopy						
Resection of fibroid						
Resection of polyp						
Division of septum						
Division of adhesions						
<b>Open fertility surgery</b>						
Reversal of sterilisation						
Myomectomy						
<b>Others</b>						
Excision of vaginal septum						
Imperforate hymen						
Excision of rudimentary horn of uterus						
Hysterectomy for endometriosis						

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Male surgery</b>						
Reversal of vasectomy						
Vasectomy						
Ligation of varicocele						
Percutaneous epididymal sperm aspiration						
Microscopic epididymal sperm aspiration						
Testicular sperm aspiration (specify technique)						
Open testicular biopsy						



# Reproductive Medicine Module 4: Subfertility and Assisted Conception

## 4a: General subfertility

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required         </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Pathology/immunology/anatomy</b>						
Uterus, tubes, ovaries						
Adrenal/thyroid						
Pituitary						
Testis						
<b>Investigation</b>						
History from subfertile couple						
Examination of subfertile couple						
Arrange appropriate, focused investigations						
Interpret semen analysis						
Interpret endocrine profile:						
Female						
Male						

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Uterine and tubal imaging</b>						
Hysterosalpingography (HSG)						
Hysterosalpingo contrast sonography (HyCoSy)						
Saline sonohysterography						
CT/MRI						
Diagnostic laparoscopy + methylene blue dye test						

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Discuss with couple and counsel towards appropriate treatment</b>						
Ovulation induction:						
antiestrogens						
gonadotrophins						
GnRH agonists						
GnRH antagonists						
Intrauterine insemination: natural cycle and superovulation						
In vitro fertilisation (IVF)						
IVF vs. intracytoplasmic sperm injection						
Use of donated oocytes						
Use of donated sperm						
Use of donated embryos						
Gamete storage in advance of chemo- or radiotherapy						
Psychosexual problems						

### 4b: IVF and assisted conception

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Counsel for donated gametes</b>						
Egg donation						
Sperm donation						
Embryo donation for clinical use						
Embryo donation for research						

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Manage treatment cycles</b>						
Pharmacokinetics of drugs used in reproductive medicine						
Long GnRH protocol						
Short GnRH protocol						
GnRH antagonist cycles						
Management of ovarian hyperstimulation syndrome						
Frozen embryo replacement: natural cycle						
Frozen embryo replacement: HRT cycle						
Donor-recipient cycle						
Sperm/oocyte freezing						
Embryo freezing						
Clinical drug trial design						

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Practical procedures</b>						
Ultrasound/imaging:						
Follicular tracking natural/stimulated						
Follicular tracking IVF						
Endometrial development						
Uterine abnormalities						
Ovarian pathology						
Oocyte retrieval						
Embryo replacement						
Early pregnancy assessment						
Pregnancy rate per embryo transfer (please give pregnancies/embryo transfer and then percentage)						
Microscopic epididymal sperm aspiration						
Percutaneous epididymal sperm aspiration						
Testicular sperm aspiration (specify technique): _____						
Open testicular biopsy						

	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Counselling</b>						
Supportive counselling						
Implication counselling						
Provide therapeutic counselling						
Liaise with counsellors						

■ = Not required

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Genetics</b>						
Genetic history and counselling						
Cell cycle/cell biology						
Chromosome analysis						
International System for Human Cytogenetic Nomenclature						
Normal variation						
Banding techniques						
Prenatal diagnosis						
Cell culture and processing						
Pre-implantation genetic diagnosis						
Preimplantation genetic screening						

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Laboratory techniques</b>						
Sperm preparation for assisted reproduction						
Oocyte culture						
Oocyte insemination						
Oocyte sperm injection						
Embryo culture						
Embryo freezing and thawing						
Assisted hatching						
Polymerase chain reaction						
Preimplantation genetic diagnosis						
DNA, RNA and protein amplification techniques						
Flow cytometry						
Human Fertilisation and Embryology Authority (HFEA) laboratory inspection						
Clinical Pathology Accreditation laboratory inspection						

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required                 </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>HFEA</b>						
Adverse incident reporting						
Storage of gametes						
Use of gametes						
Posthumous use of gametes						
Attend assisted reproduction ethics committee						
Attend HFEA inspection						



## Reproductive Medicine Module 5: Andrology

<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> = Not required         </div>	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
Anatomy/physiology of testis						
History from subfertile male						
Examination of subfertile male						
Arrange investigations						
Interpret semen analysis						
Interpret endocrine profile: male						
Investigation of azoospermia						
Form appropriate management plan based on findings and results						
<b>Counselling</b>						
Sperm banking pre-oncology treatment						
Sperm banking pre-vasectomy						
Sperm banking for sperm donation						
<b>Medical treatment</b>						
Endocrine therapy						



## Reproductive Medicine Module 6: Early Pregnancy Problems

<input type="checkbox"/> = Not required	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Recurrent miscarriage</b>						
History and examination						
Organise appropriate investigations						
Interpret endocrine assessment						
Interpret immunological assessment						
Formulate management plan						
Liaise with colleagues in other disciplines						

<input type="checkbox"/> = Not required	Level 1		Level 2		Level 3	
	Date	Signature	Date	Signature	Date	Signature
<b>Emergency gynaecology</b>						
History and examination						
Organise appropriate investigations						
Interpret endocrine assessment						
Formulate management plan						
Liaise with colleagues in other disciplines						
Medical management of ectopic pregnancy						
Surgical management of ectopic pregnancy						
Medical management of miscarriage						
Surgical management of miscarriage						
Conservative management of miscarriage						
Management of retained products of conception						
Management of septic miscarriage						