

SITM: Management of Subfertility (MoS)

SECTION 1: CAPABILITIES IN PRACTICE (CiP)

MoS CiP 1: The doctor recognises, assesses and investigates women experiencing infertility	
Key skills	Descriptors
The doctor can safely perform a transvaginal scan of the female genital tract	<ul style="list-style-type: none"> • Able to identify all key pelvic structures, recognises and describes normality and deviations from normality. • Able to construct a differential diagnosis using information obtained from ultrasound examination and understands how the findings may indicate contributions to subfertility. • Able to optimise image quality. • Can store images securely and constructs a clinically useful ultrasound examination report. • Recognises and adheres to infection control and chaperoning policies.
Assesses women with infertility	<ul style="list-style-type: none"> • Takes a detailed history, including: recording menarche, cycle regularity, past medical and obstetric history. • If cycle is irregular, asks additional questions about hirsutism, acne, alopecia, galactorrhoea, secondary sex characteristics, previous chemotherapy and pelvic radiotherapy. • Screens for associated conditions e.g. autoimmune factors, genetic causes, diabetes mellitus and late onset congenital adrenal hyperplasia. • Takes social and sexual history. • Screens for previous infections e.g. chlamydia and gonorrhoea. • Performs appropriate physical examination, including checking body mass index, secondary sex characteristics and rectovaginoassessment for endometriosis, if appropriate. • Understands how visual fields can affect fertility and carries out assessments, if appropriate.
Arranges appropriate endocrine, and other investigations, to make a diagnosis	<ul style="list-style-type: none"> • Arranges baseline investigations including luteal phase progesterone, follicle stimulating hormone (FSH) on day 2, luteinizing hormone (LH) and oestradiol, and rubella. • Arranges endocrine investigations, if appropriate, including a baseline hormone profile of FSH, LH, oestradiol, prolactin (PRL), thyroid function tests (TFTs), androgens (testosterone, sex hormone binding globulin (SHBG), free androgen index (FAI), dehydroepiandrosterone sulphate (DHEAS), androstenedione and 17α-hydroxyprogesterone) and is able to interpret results appropriately.

	<ul style="list-style-type: none"> ● Organises and interprets appropriate investigations of impaired glucose tolerance and hypercholesterolaemia. ● Takes vulvo-vaginal swabs. ● Discusses different techniques to diagnose tubal disease and uterine disease, and any associated risks and complications. ● Is able to carry out ultrasound scans of the pelvis to assess the shape and size of the uterus, ovarian size and morphology. ● Is able to diagnose an endometrioma on a pelvic ultrasound scan. ● Arranges and interprets hysterosalpingogram (HSG), Hysterosalpingo Contrast Sonography (HyCoSy) and saline infusion sonohysterography (SIS). ● Organises and reviews the results of computerised tomography (CT) scan and magnetic resonance imaging (MRI) scan, including MRI of the pituitary gland, if appropriate. ● Establishes the likely cause(s) of infertility. ● Records results appropriately, including the need for referral and/or additional imaging.
<p>Makes a diagnosis of unexplained infertility</p>	<ul style="list-style-type: none"> ● Understands that it is a diagnosis of exclusion. ● Explains diagnosis of unexplained fertility to patients.
<p>Demonstrates understanding of association of other medical conditions and practises a multidisciplinary approach</p>	<ul style="list-style-type: none"> ● Liaises with appropriate specialists for further management of associated medical conditions, such as diabetes with polycystic ovary syndrome (PCOS) and pituitary tumours with hypogonadotropic hypogonadism. ● Advises the patient on lifestyle factors and is sympathetic to the difficulties of overcoming issues such as obesity. ● Is able to discuss long-term effects and management of conditions such as PCOS and premature ovarian failure with patients. Arranges appropriate referral, when needed.
<p>Evidence to inform decision</p>	
<ul style="list-style-type: none"> ● CbD ● Mini-CEX: ● Local and deanery teaching ● RCOG Learning ● NOTSS ● Reflective practice ● TO2 (including SO) 	<ul style="list-style-type: none"> ● OSATS: <ul style="list-style-type: none"> ○ Ultrasound examination in gynaecology (non-pregnant patient), including variety of different pathologies ○ HyCoSy or SIS ○ HSG ○ hysteroscopic proximal tubal catheterisation ○ diagnostic laparoscopy and dye test ● Confirmed attendance at specialist clinics, such as menopause, endocrinology, reproductive endocrinology, assisted reproductive technology (ART) and weight loss clinics

- Attendance at RCOG and British Fertility Society (BFS) special interest training module course, and advanced hysteroscopy course

Knowledge criteria

- Physiology of ovulation and pathophysiology
- Female anatomy – abdomen and pelvis
- Scoring system for hirsutism
- Normal ultrasound appearance of uterus, ovaries and adnexae
- Standardised terms and definitions to describe sonographic features of normal pelvis and pelvic pathology
- Anatomical classification of ovulation disorders
- The association of other medical conditions with anovulation, such as diabetes with polycystic ovaries and pituitary tumours with hypogonadotropic hypogonadism
- The influence of lifestyle, including diet and weight, on anovulation
- The impact of psychiatric and psychological issues on anovulation
- The usefulness of initial screening investigations such as FSH, LH, anti-müllerian hormone (AMH), prolactin, androgens (testosterone, SHBG and FAI), thyroid function tests, pelvic ultrasound (ovarian volume and antral follicle count). Also follow-up investigations such as MRI and karyotype
- Aetiology of tubal factor infertility: infection, surgery, endometriosis and congenital abnormalities
- Classification of tubal disease relevant to natural and therapeutic prognosis
- Classification of uterine disease
- Aetiology of uterine factor infertility: infection, surgery, tumours, congenital abnormalities, intrauterine adhesions, fibroids and polyps
- Diagnostic techniques available for assessing uterine and tubal disease, any associated risks and complications
- Pathological features of acute and chronic inflammation associated with infertility
- Indications, pre-requisites and possible complications of HyCoSy, sonohysterography and HSG
- The hypotheses on the pathogenesis of endometriosis and mechanism by which endometriosis may have an impact on fertility
- Endometriosis classification systems, their usefulness and limitations
- The relationship between stages of endometriosis and infertility (defective folliculogenesis, ovulatory dysfunction, distorted pelvic anatomy, altered peritoneal function, autoimmune disorders and impaired implantation)
- The usefulness and limitations of MRI of the pelvis and abdomen
- The contribution of preoperative investigations, particularly a CA125 blood test and transvaginal ultrasound scan findings
- The epidemiology and natural history, including prognosis for unexplained infertility
- An understanding of other investigations that could be carried out to arrive at a diagnosis of unexplained infertility and the scientific basis for them
- Other suggested causes of infertility:
 - subtle ovulation defects
 - cervical mucus hostility
 - subclinical pregnancy loss

- endometriosis
- occult infection
- sperm dysfunction
- immunological causes
- Immunological screening
- Screening of high-risk groups

MoS CiP 2: The doctor recognises, assesses and investigates men experiencing infertility	
Key skills	Descriptors
Takes relevant history and arranges initial investigations to diagnose infertility in men	<ul style="list-style-type: none"> ● Arranges semen analysis and interprets results. ● Understands the reasons for and timing of a repeat semen analysis and arranges appropriately. ● Takes and interprets urethral swabs, and arranges for appropriate management of any abnormality, including referral to genitourinary medicine (GUM) clinics.
Performs physical examination to assess the male reproductive system	<ul style="list-style-type: none"> ● Uses an orchidometer to assess testicular volume. ● Assesses the epididymis to detect any abnormalities. ● Recognises varicocele, testicular tumours, undescended testicles, hypospadias, absence of vas deferens and inguinal hernia.
Arranges further investigations to identify the cause of severe infertility in men (azoospermia or severe oligospermia with a sperm density of < 5 million/ml)	<ul style="list-style-type: none"> ● Arranges relevant further investigations: repeat semen analysis, urine for retrograde ejaculation, endocrine, microbiological, genetic (karyotype, cystic fibrosis (CF) screening, y chromosome microdeletions), scrotal and testicular ultrasound and testicular biopsy. ● Reviews investigations and is able to differentiate between pre-testicular, testicular and post-testicular causes of severe sperm abnormality.
Evidence to inform decision	
<ul style="list-style-type: none"> ● CbD ● Mini-CEX ● Reflective practice ● TO2 (including SO) ● Attendance at RCOG/BFS SITM course ● Local and deanery teaching 	<ul style="list-style-type: none"> ● RCOG Learning ● Confirmed attendance at Assisted Reproductive Technology (ART) clinics and appropriate urology and andrology clinic ● Exposure to specialist clinics: urology, GUM, endocrinology, clinical genetics and oncology ● Observes surgical sperm retrieval (SSR) procedures ● Observes vasectomy reversal
Knowledge criteria	
<ul style="list-style-type: none"> ● The male reproductive system – anatomy, physiology and the process of spermatogenesis 	

- The impact of male factors in the genesis of infertility
- The environmental factors influencing male reproductive function
- The endocrine disorders affecting male fertility
- The effect of reproductive pathologies such as varicocele, undescended testicles, sexually transmitted infections such as chlamydia and gonorrhoea, previous orchitis and chemoradiotherapy
- The impact of previous surgery such as vasectomy, reversal of vasectomy, inguinal herniorrhaphy and orchidopexy
- Coital dysfunction associated infertility
- Y chromosome microdeletion and when to discuss sperm DNA damage and aneuploidy
- Idiopathic male infertility
- The availability of various advanced sperm function tests and their role in managing infertility in men
- When to carry out a vasectomy reversal
- The related aspects of male factor infertility, including the sequelae of long-term low testosterone levels and the association with testicular cancer
- Appropriate investigations for ejaculatory failure, impotence, retrograde ejaculation, genital infection, immunological causes, undescended testicles, chromosomal abnormality, chemotherapy, radiotherapy and toxins (including drug effects)
- The causes of severe oligozoospermia (<5 million per ml) and azoospermia (pretesticular, testicular and post testicular)

MoS CiP 3: The doctor manages infertility

Key skills	Descriptors
Communicates and formulates an appropriate plan to manage infertility	<ul style="list-style-type: none"> ● Explains the possible causes of infertility to patients. ● Formulates a management plan based on pathological findings, taking into account relevant moral and ethical considerations. ● Counsels people about the different treatment options available, taking into account their preferences and expectations. ● Discusses treatment-related complications and adverse effects. ● Implements management plan and modifies treatment, if necessary. ● Manages coital dysfunction related infertility. ● Arranges appropriate referrals to: urologist, endocrinologist, andrologist, clinical geneticist, psychosexual counsellor and IVF centre team.
Manages women with anovulatory dysfunction, including PCOS	<ul style="list-style-type: none"> ● Discusses potential consequences of expectant management. ● Able to diagnose and manage thyroid disorders and refer appropriately. ● Explains treatment regimes of ovulation induction (anti-oestrogens and aromatase inhibitors); success rates (pregnancy



	<p>rate and live birth rate); and potential side effects of drugs and complications of procedures, including the risk of multiple pregnancy and ovarian hyperstimulation syndrome (OHSS) and the link with ovarian cancer.</p> <ul style="list-style-type: none">● Prescribes ovulation induction agents and progestogens for withdrawal bleed appropriately.● Provides appropriate treatment for and monitoring of anovulatory dysfunction to assess effectiveness and minimise the risk of multiple pregnancy.● Provides appropriate advice for the management of a condition, including the risk of developing gestational diabetes in patients with polycystic ovary syndrome, and advises on the effects of medications in pregnancy.● Recognises the influence of lifestyle, including diet and weight, on anovulation and is able to advise the patient on lifestyle factors, being sympathetic to the difficulties of overcoming issues such as obesity and has an understanding of the long-term health risks of lifestyle issues, metabolic effects and cancer risks.
Manages women with tubal or uterine factor infertility	<ul style="list-style-type: none">● Discusses the impact of hydrosalpinx on natural fertility and assisted conception, including the role of salpingectomy.● Discusses the impact of proximal tubal disease on natural fertility and the role of selective salpingography.● Discusses with the patient where they can have their sterilisation reversed.● Performs effective and safe surgery, where appropriate and refers as necessary.● Is able to decide when to operate for diagnosis or surgical management.● Keeps accurate notes of operative procedures.● Recognises the limitations of their operative laparoscopic, open and hysteroscopic surgery skills and, when appropriate, refers on to colleagues who have advanced laparoscopic skills.
Manages people with endometriosis and infertility	<ul style="list-style-type: none">● Understands and is able to communicate which treatments for endometriosis will improve fertility, and refers when appropriate.● Able to decide when to operate for diagnosis or surgical management of endometriosis and infertility.● Keeps accurate notes of operative procedures.● Refers on to colleagues who have advanced laparoscopic skills, when appropriate.● Arranges referral to other specialists when appropriate (e.g. pain clinic or surgeons).

Manages male infertility	<ul style="list-style-type: none"> ● Explains the possible causes, treatment options, risks and benefits and the need for onward referral. ● Arranges appropriate referrals to: urologist, endocrinologist, clinical geneticist, psychosexual counsellor and assisted conception. ● Able to discuss the role of ART. ● Discusses role of donor sperm in ART.
Manages unexplained infertility	<ul style="list-style-type: none"> ● Explains the diagnosis to the patient or patients. ● Discusses options with the patient or patients – to continue to try to conceive naturally, or to move to ART and the timing of this. ● Advises on suitable therapeutic option, taking a patient's or patients' wishes into consideration. ● Devises a care plan with the different treatment options, explaining the risks, benefits and alternatives.
Evidence to inform decision	
<ul style="list-style-type: none"> ● CbD ● Mini-CEX ● NOTSS ● TO2 (including SO) ● OSATS: <ul style="list-style-type: none"> ○ Ultrasound examination in gynaecology (non-pregnant) ○ Hysteroscopic surgery – resection of polyp ○ Hysteroscopic surgery – division of adhesions ○ Hysteroscopic surgery – resection of fibroid ○ 	<ul style="list-style-type: none"> ○ Laparoscopic surgery – salpingostomy ○ Laparoscopic ovarian diathermy for anovulatory polycystic ovary syndrome ● Reflective practice ● Local and deanery teaching ● RCOG Learning ● Attendance at RCOG/BFS SITM course
Knowledge criteria	
<ul style="list-style-type: none"> ● Treatment strategies, including: <ul style="list-style-type: none"> ○ antiestrogens ○ aromatase inhibitors ○ antiandrogens ○ gonadotrophins ○ laparoscopic ovarian diathermy (LOD) ○ dopamine agonists ○ steroids ○ insulin sensitisers ○ glitazones ○ artificial insemination ○ in vitro fertilisation ○ intracytoplasmic sperm injection 	

- The range of treatments for anovulation, including risks of multiple pregnancy and OHSS
- The risks and sequelae of hypoestrogenism, and the risk and benefits of antiestrogens, steroids, gonadotrophin analogues, dopamine inhibitors and LOD
- Follicle tracking
- Hysteroscopic techniques, risks and the principles of safe use of energy sources
- The surgical options and alternatives for tubal and uterine factor infertility
- The place of adhesiolysis in the treatment of intrauterine adhesions
- The role of laparoscopy
- Treatment options for uterine fibroids
- When a myomectomy is appropriate and the most appropriate way to do this
- Excision or occlusion of hydrosalpinges prior to starting IVF
- The success rates, limitations and risks of salpingostomy, proximal tubal blockage, adhesiolysis and metroplasty
- Management of intra- and postoperative complications of salpingostomy, surgery for proximal tubal blockage, adhesiolysis and metroplasty
- Knowledge of reversal of sterilisation: patients at risk, pregnancy rates and the place of reversal of sterilisation
- The benefits, risks and alternatives of empirical, non-pharmacological, medical and surgical methods of treating endometriosis
- The limits of hormonal treatment and surgery for endometriosis on fertility outcomes
- The place of assisted conception in unexplained, uterine and tubal factor infertility
- Intrauterine insemination and in vitro fertilisation
- The indications for SSR and vasectomy reversal
- The prerequisites and arrangements for SSR
- The principles of various SSR techniques (Percutaneous epididymal sperm aspiration (PESA), Testicular sperm extraction (TESE), Microsurgical epididymal sperm aspiration (MESA) and Microscopic testicular sperm extraction (micro-TESE))
- Psychological factors in female infertility (e.g. amenorrhoea) and male infertility (e.g. erectile dysfunction)
- Effects of infertility on the family
- The importance of counselling for people experiencing infertility
- Local facilities for counselling, self-help groups and community networks
- Local facilities for adoption

MoS CiP 4: The doctor understands the principles of assisted reproduction techniques (ART) and their possible complications, and can counsel patients effectively

Key skills	Descriptors
Demonstrates understanding of psychological aspects of male and female factor subfertility and ART	<ul style="list-style-type: none"> ● Recognises psychological factors in female (e.g. amenorrhoea) and male infertility (e.g. erectile dysfunction). ● Demonstrates understanding of stress related to infertility, marital disharmony, and difficulties in having intercourse. ● Discusses the effects of infertility on the family. ● Explains about the stress associated with ART.



	<ul style="list-style-type: none">● Arranges appropriate referral to counsellors and psychosexual medicine.● Discusses the role and value of counselling for people experiencing infertility.● Have spoken to a fertility counsellor about their role; understand the different types of counselling (support, implications and welfare of the child). Preferably have attended a fertility ethics committee meeting.
Discusses pros and cons of different therapeutic options	<ul style="list-style-type: none">● Clearly explains results of investigations.● Informs people experiencing infertility of the chances of natural conception and with the different treatment options.
Decides when to proceed with therapeutic options	<ul style="list-style-type: none">● Provides support for people experiencing infertility if expectant treatment is the appropriate way forward.● Is aware of local fertility funding policies and variation in them nationally.
Preparation of patients for ART	<ul style="list-style-type: none">● Ensures appropriate assessments are undertaken to confirm suitability for ART.● Selects patients appropriately.● Where necessary, arranges relevant further investigations in preparation for ART and interprets the results:<ul style="list-style-type: none">○ endocrine including ovarian reserve tests○ virology screening to include HIV, hepatitis B and hepatitis C. Be aware of current guidance on timing (within three months of gamete donation)○ microbiological screening: chlamydia and gonorrhoea○ genetic screening (karyotype, CF)● Assesses welfare issues of the child.
Decides and communicates the timing of assisted conception and recommends an appropriate ART procedure	<ul style="list-style-type: none">● Discusses suitable ART options.● Explains the role of ART and what an ART programme entails.● Discusses and recommends the most appropriate ART treatment according to the cause of infertility, the results of the investigations and prognostic factors.● Explains the need for onward referral to an ART centre.● Discusses the benefits, risks, success and limitations of ART.● Able to discuss the potential complications of ART, including OHSS, poor response, failed fertilisation, low fertilisation, multiple pregnancy, ectopic pregnancy, risk of infection and bleeding with oocyte retrieval procedure and the risk of genetic disorders after IVF/intracytoplasmic sperm injection (ICSI).

	<ul style="list-style-type: none"> ● Explains the benefits of treating hydrosalpinx, fibroid and ovarian cysts (if any) prior to assisted conception and associated risks. ● Liaises with tertiary centres to arrange appropriate referrals for ART. ● Undertakes transvaginal ultrasound scan for monitoring ovarian stimulation. ● Discusses the role of pre-implantation testing. ● Is able to discuss fertility preservation for people undergoing medical/surgical treatment that affects fertility and arranges appropriate referrals. ● Is aware of local arrangements for fertility preservation categories (e.g. oncology and transitioning).
Diagnoses and manages OHSS	<ul style="list-style-type: none"> ● Discusses the risk factors for developing OHSS and strategies to minimise the risk of OHSS in an ART cycle. ● Assesses someone who is presenting with symptoms of OHSS, classifying according to severity. ● Formulates a management plan for OHSS (outpatient and inpatient). ● Understands the complications of severe OHSS and the importance of multidisciplinary team management. ● Advises how to manage pregnancy for women who have had severe OHSS. ● Able to discuss subsequent treatment for women who have previously had severe OHSS.
Directs patients to information sites and patient support groups	<ul style="list-style-type: none"> ● Discusses the role and value of self-help groups and community networks of support and arranges appropriate referrals. ● Arranges appropriate referral to social services for adoption/fostering and local independent adoption societies.
Human Fertilisation & Embryology Authority (HFEA) Code of Practice	<ul style="list-style-type: none"> ● Has read and understood the HFEA Code of Practice.
Evidence to inform decision	
<ul style="list-style-type: none"> ● CbD to assess application of knowledge ● Mini-CEX ● Attend ART clinics ● TO2 (including SO) ● Reflective practice ● Local and deanery teaching 	<ul style="list-style-type: none"> ● Observe psychosexual medicine clinics or equivalent ● RCOG Learning ● Attendance at RCOG/BFS SITM course ● OSATS: <ul style="list-style-type: none"> ○ Ultrasound examination in gynaecology (non-pregnant) for follicular assessment
Knowledge criteria	

- The UK legal and regulatory aspects of fertility treatment
- Clinical prognostic factors that should be considered when selecting appropriate patients for ART i.e. gender, age, duration of infertility, ovarian reserve, past reproductive history and pelvic organ abnormalities
- Stress associated with assisted conception treatment
- Preparation of patients for assisted reproduction: treating or managing hydrosalpinx and fibroids; screening for HIV, hepatitis B and hepatitis C, and the place of counselling
- How to assess the welfare of the child, including communication and consent
- The HFEA and its role

SECTION 2: PROCEDURES

Procedures marked with * require three summative competent OSATS

<i>Procedures</i>	<i>Level by end of training</i>	<i>CIP 1</i>	<i>CIP 3</i>	<i>CIP 4</i>
Ultrasound examination in gynaecology (non-pregnant patient), including variety of different pathologies*	5	X	X	
Ultrasound examination in gynaecology (non-pregnant) for follicular assessment*	5		X	X
Hysterosalpingography (HSG)	2	X		
HyCoSy or saline infusion sonohysterography (SIS)	5	X		
Hysteroscopic surgery – resection of polyp*	5		X	
Hysteroscopic proximal tubal catheterisation	3	X		
Hysteroscopic surgery – resection of fibroid	3		X	
Hysteroscopic surgery – division of adhesions	3		X	
Laparoscopic surgery – salpingostomy*	5		X	
Laparoscopic ovarian diathermy for anovulatory polycystic ovary syndrome*	5		X	

Subspecialty trainees in Reproductive Medicine will be expected to achieve the procedural competencies in this table, as well as those in the SST-specific procedures table.

SECTION 3: GMC GENERIC PROFESSIONAL CAPABILITIES (GPCs)

Mapping to GPCs

- Domain 1: Professional values and behaviours
- Domain 2: Professional skills
 - Practical skills
 - Communication and interpersonal skills
 - Communication and interpersonal skills
 - Dealing with complexity and uncertainty
- Domain 3: Professional knowledge
 - Professional requirements

- National legislative structure
- The health service and healthcare system in the four countries

Domain 5: Capabilities in leadership and team working

Domain 6: Capabilities in patient safety and quality improvement

Domain 8: Capabilities in education and training

Domain 9: Capabilities in research and scholarship

SECTION 4: MAPPING OF ASSESSMENTS TO MoS CiPs

MoS CiP	OSATS	Mini-CEX	CbD	NOTSS	TO1/ TO2	Reflective practice
1: The doctor recognises, assesses and investigates women experiencing infertility	X	X	X	X	X	X
2: The doctor recognises, assesses and investigates men experiencing infertility		X	X		X	X
3: The doctor manages infertility	X	X	X	X	X	X
4: The doctor understands the principles of assisted reproduction techniques (ART) and their possible complications, and can counsel patients effectively	X	X	X		X	X

SECTION 5: RESOURCES (OPTIONAL)

1. British Infertility Counselling Association [www.bica.net].
2. European Society of Human Reproduction and Embryology guidelines [www.eshre.eu].
3. Fertility Network UK [www.fertilitynetworkuk.org].

4. Human Fertilisation & Embryology Authority documents [www.hfea.gov.uk].
5. Royal College of Obstetricians & Gynaecologists guidelines [www.rcog.org.uk].
6. The National Institute for Health and Care Excellence. *Fertility problems: assessment and treatment. Clinical guideline [CG156]*. London: NICE; 2013
[<https://www.nice.org.uk/guidance/cg156>].
7. British Fertility Society. *Human Fertility* Milton Keynes: Taylor & Francis Online
8. *Human Reproduction* Oxford: Oxford Academic
9. American Society for Reproductive Medicine. *Fertility and Sterility* Amsterdam: Elsevier.
10. American Society of Andrology. *Journal of Andrology* New York City: Wiley Online Library