Royal College of Obstetricians & Gynaecologists

Curriculum 2024 Guide for Special Interest Training Module (SITM): Prenatal Diagnosis (PD)

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1. The Prenatal Diagnosis SITM

This SITM is aimed at learners who have an interest in prenatal diagnosis. It provides training on how to use ultrasound to recognise where fetal anatomy is not normal, investigate pregnancies where there are concerns about the fetus, and provide support to pregnant people with fetal complications. This is a 'Contingent' SITM and is paired with the Fetal Care SITM. This means that if a learner is interested in specialising in fetal medicine with a prenatal diagnostic component, they must have started the Fetal Care SITM, and demonstrated appropriate ultrasound scanning aptitude, before they can register for the Prenatal Diagnosis SITM.

This SITM is one of four that contribute to the subspecialty training (SST) curriculum for Maternal and Fetal Medicine. Learners who have completed part, or all, of this SITM will not need to evidence these key skills and competencies again if they go on to take the Maternal and Fetal Medicine SST.

As the learner progresses through the SITM, they will obtain the knowledge and skills to diagnose a wide range of fetal complications. Learners will learn how to provide initial counselling to patients when a fetal anomaly is suspected or identified. They will work closely with the local tertiary unit and as part of a regional Fetal Medicine network. They will learn when tertiary subspecialty input is required for more complex cases, and assist with the surveillance of complex pregnancies managed primarily by the subspecialty team in the tertiary referral unit. This approach allows local scanning expertise to be used where appropriate.

Learners will have the opportunity to establish and maintain close liaison with their own neonatal services, and recognise which babies should be born in a tertiary unit. Learners will develop a high level of ultrasound scanning skill for anomaly and fetal echocardiography, but will be able to recognise their limitations with this, and know when and how to refer to tertiary subspecialty services. Although not a mandatory part of the SITM, Learners may enhance their skills in prenatal diagnosis by also learning how to perform amniocentesis.

After completing this SITM, learners will need to work closely with local prenatal screening services, and be prepared to lead in the audit of local services and quality management.

As a learner progresses through the SITM, they will learn how to handle a variety of complicated fetal scenarios. Learners will also participate in educational events to further develop their training. Throughout training, learners will need to reflect on whether a project has gone well, learn from positive and negative experiences, and use this to improve their own skills.

Before signing off on this SITM, the Educational Supervisor will decide the level of supervision required for each Prenatal Diagnosis Capability in Practice (CiP), and whether this has been met. More detail is provided in Section 5 of the Special Interest Training Definitive Document.

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2. Design of the SITM

The Prenatal Diagnosis 2024 SITM is made up of three Prenatal Diagnosis (PD) CiPs. If undertaking the module full time, it is expected to take 12-18 months. However, this timeframe is indicative as training is entirely competency based.

The Prenatal Diagnosis SITM is the contingent SITM for the Fetal Care SITM. The Fetal Care SITM must have been commenced and good progress must be demonstrated before undertaking the Prenatal Diagnosis SITM (see above).

Here is the GMC-approved Prenatal Diagnosis SITM:

3. Capabilities in Practice (CiPs)

<table>
<tr><th colspan="2">Prenatal Diagnosis CiP 1: The doctor can use ultrasound to recognise where fetal anatomy is not normal.</th></tr>
<tr><th>Key skills</th><th>Descriptors</th></tr>
<tr><td>Demonstrates normal structural findings in all trimesters and recognises when they cannot be demonstrated</td><td>• Performs and records a detailed, systematic ultrasound of the fetus in line with NHS Fetal Anomaly Screening Programme (FASP) guidance.
• Understands the strengths and limitations of ultrasound for each organ system within each trimester.
• Explains normal anatomical views to the pregnant person.
• Documents and records normal anatomical views.
• Recognises when image quality is technically poor.
• Can explain next steps to the pregnant person if normal views cannot be obtained.</td></tr>
<tr><th colspan="2">Evidence to inform decision – examples of evidence (not mandatory requirements)</th></tr>
<tr><td colspan="2">• Reflective practice
• NOTSS
• TO2
• CbD
• Mini-CEX
• RCOG Learning
• FASP online training
• Local and deanery teaching
• Attendance at relevant courses and conferences
• Log of cases and outcomes
• Attendance at fetal medicine clinics
• Attendance at multidisciplinary team (MDT) meetings
• Attendance at specialist neonatal and paediatric clinics
• Examples of anonymised birth plans</td></tr>
<tr><th colspan="2">Mandatory requirements</th></tr>
<tr><td colspan="2">• OSATS
  ○ Fetal anomaly scan</td></tr>
</table>

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- Fetal echo

Knowledge criteria

- The normal appearance on ultrasound scans, in all trimesters, of the fetal central nervous system (CNS), face and neck, thorax, cardiovascular system, abdominal wall and gastrointestinal tract, urogenital system, and the fetal skeleton and extremities
- Local protocols for follow up, if any, after an incomplete anatomy scan
- Normal embryology of all body systems, and the common fetal anomalies that can happen when they do not develop in the way they should, as identified by FASP.
- Normal fetal behaviour and activity, and abnormalities of this
- Fetal circulation, and how it adapts at birth
- Diagnostic features of each condition targeted by FASP, their differential diagnosis and chance of structural, chromosomal and syndromic associations. These conditions are Trisomy 21, 18 and 13, anencephaly, spina bifida, congenital diaphragmatic hernia, gastroschisis, exomphalos, renal agenesis, facial cleft, hypoplastic right or left heart and lethal skeletal dysplasia
- The thresholds for diagnosing mild, moderate and severe ventriculomegaly measurements, and the potential implications of the different severities of ventriculomegaly
- The role of magnetic resonance imaging (MRI) for CNS lesions
- The difference between Dandy-Walker malformation, Dandy-Walker Variant and mega cisterna magna, the implications of each and the pitfalls in prenatal diagnosis
- The common fetal tachycardia and bradycardia arrhythmias and the role of the paediatric cardiologist in their management
- The different types of ventricular septal defect (VSD) and their association with cardiac, extracardiac and chromosomal anomalies. Understand the role of the paediatric cardiologist in their management
- The ultrasound features of transposition of the great arteries, atresia of either outflow tract, stenosis of either outflow tract, double outlet right ventricle or a common outflow tract (truncus arteriosus)
- The association of these conditions with further cardiac, extracardiac and chromosomal anomalies
- The role of the paediatric cardiologist in the management of fetal cardiac problems
- The ultrasound features of gastrointestinal (GI) atresia, associations and surgical options following birth
- The spectrum of ultrasound findings of echogenic bowel and its association with chromosomal anomalies, cystic fibrosis, growth restriction and viral infections
- Urinary tract obstruction and multi cystic dysplastic kidney (MCDK): aetiology, spectrum of severity, postnatal investigation and the likely short- and long-term impact of these conditions
- The local pathway for postnatal referral for talipes and the Ponseti approach to treatment
- Limb reduction defects: associations and aetiology
- Findings suggestive of lethal skeletal dysplasia and the features of the more common

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non- lethal dysplasias, particularly certain types of osteogenesis imperfecta and achondroplasia • A differential diagnosis for non-immune hydrops, the need for tertiary referral and the range of investigations likely to be offered

Prenatal Diagnosis CiP 2: The doctor can assess and investigate a pregnancy where there are concerns about the fetus.	
Key skills	**Descriptors**
Can provide genetic counselling in common prenatal situations	• Takes medical history and constructs, where appropriate, a family tree for people who are pregnant, or have a chance of, genetic conditions. • Explains common modes of Mendelian and multifactorial inheritance, and recurrence risks. • Counsels for previous trisomy and monosomy X. • Counsels for previous neural tube defect.
Provides initial counselling for common fetal structural anomalies and manages people in partnership with tertiary fetal medicine services	• Is experienced in carrying out ultrasound diagnosis and managing pregnancies complicated by fetal anomalies that are covered by the FASP. • Discusses other potential prenatal tests such as fetal karyotyping. • Recognises when to refer the person who is pregnant to a tertiary centre and how best to share care and monitoring. • Liaises with the tertiary centre and the MDT to manage pregnant people with fetal anomalies. • Formulates, implements and, where appropriate, modifies management plan, in collaboration with subspecialists. • Counsels pregnant people and their partners about the fetal risks, implications for the pregnancy and the long-term outcome. • Signposts pregnant people to external sources of information and support. • Constructs a follow-up plan for the pregnancy to support the pregnant person and plan next steps. • Plans birth and appropriate neonatal support with a fetal medicine specialist.
Counsels and manages pregnancies at risk of fetal infection	• Investigates common fetal infections. • Works with virology to interpret laboratory results for each infection.

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	• Explains the potential long-term effects of fetal infections on fetuses and newborns. • Recognises when to involve other specialists in the care of a pregnant person with a suspected or confirmed fetal infection and plans for the sharing of care and monitoring. • Liaises appropriately with the tertiary centre and the MDT to manage fetal infection.
Counsels and manages severe early fetal growth restriction (FGR)	• Is able to produce a differential diagnosis for severe early FGR. • Knows when and which further investigations should be offered for severe early FGR. • Liaises with the fetal medicine tertiary referral centre about diagnosis of severe early FGR and to manage it.
Counsels pregnant person about prenatal investigations	• Understands both the non-invasive and invasive options and is able to discuss the risks and benefits, facilitating choice. • Understands the different levels of resolution of genetic testing and can communicate the importance of this to parents. • Explains the risks and benefits of each procedure to the pregnant person and any alternatives. • Communicates the scope and limitations of these tests. • Describes how prenatal samples are processed and when, and how, the results are given. • Offers genetic counselling where appropriate.

Evidence to inform decision – examples of evidence (not mandatory requirements)	
• Reflective practice • NOTSS • TO2 • CbD • Mini-CEX • RCOG Learning • Local and deanery teaching • Attendance at relevant courses and conferences	• Attendance at clinical genetics clinics • Log of cases and outcomes • Attendance at fetal medicine clinics • Attendance at MDT meetings • Attendance at specialist neonatal and paediatric clinics • Examples of anonymised birth plans

Mandatory requirements
No mandatory evidence
Knowledge criteria
• The genetic basis for trisomy 21, 18 and 13 and the ultrasound features associated with them

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- The range of tests available for screening and testing for the common fetal trisomies and the organisation and quality control of the screening service
- Other aneuploidies: the implications of Turner syndrome (45,XO), Klinefelter syndrome (47,XXY) and Triple X syndrome (47,XXX) and appreciate the approach to managing pregnancies complicated by much rarer and unique chromosomal anomalies
- The underlying genetic inheritance patterns and prenatal testing for cystic fibrosis, muscular dystrophy and Fragile X syndrome, and the need for liaison with clinical genetics
- When it is appropriate to offer invasive testing, and when not to
- The role of non-invasive testing
- The implications for the current pregnancy and the long-term prognosis for each condition, and recurrence risks for future pregnancies
- The limitations of ultrasound in detecting and diagnosing congenital anomalies (e.g. cleft palate) or predicting prognosis (e.g. diaphragmatic hernia)
- Triggers and diagnoses that need to be referred to tertiary services
- Diagnostic features of each condition, their differential diagnosis and the chance of associated structural, chromosomal and syndromic associations
- The role of DNA analysis from maternal plasma

Prenatal Diagnosis CiP 3: The doctor demonstrates the skills and attributes required to provide ongoing support and care to people who have had a problem identified with their pregnancy.	
Key skills	**Descriptors**
Counsels on and organises, or refers onwards for, termination of pregnancy for fetal anomaly	• Raises the option of termination of pregnancy for fetal anomaly appropriately and sensitively. • Counsels pregnant person about the different methods of termination, explaining when termination is offered and when feticide is legally mandated. • Organises termination of pregnancy for fetal anomaly (or refers appropriately where there is conscientious objection or the need for tertiary involvement). • Supports the parent journey from diagnosis to follow up with planning for future pregnancies. • Adjusts care around termination of pregnancy in high-risk situations. • Manages complications of termination of pregnancy. • Is aware of and can signpost to appropriate organisations that provide support.
Supports a pregnant person who wants to continue with their pregnancy where the fetus will not survive to birth,	• Supports and empowers the parent or parents in their decision. • Plans for delivery with the parent or parents and paediatric team to give them the best experience possible

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or the baby is expected to die in the neonatal period	in the circumstances, with clarity on intervention and non-intervention in labour. • Plans an appropriate end of life pathway with the family and paediatric team.
Provides follow up and counselling after a pregnancy complicated by fetal anomaly	• Explains the role of the post-mortem and any other relevant post-birth tests (e.g. genetic testing, post-mortem MRI). • Explains the findings and implications of any additional post-birth investigations. • Refers, where appropriate, to the wider MDT, including clinical genetics. • Counsels the parent or parents about the chance of recurrence across the range of conditions targeted by FASP, and arranges genetic counselling where appropriate. • Proposes a plan to manage future pregnancies. • Recognises when tertiary service involvement is appropriate for more complex cases.

Evidence to inform decision – examples of evidence (not mandatory requirements)

• Reflective practice • NOTSS • TO2 • CbD • Mini-CEX • RCOG Learning • Local and deanery teaching • Attendance at relevant courses and conferences	• Attendance at neonatal unit ward rounds • Log of cases and outcomes • Attendance at fetal medicine clinics • Attendance at MDT meetings • Attendance at specialist neonatal and paediatric clinics • Examples of anonymised birth plans

Mandatory requirements

No mandatory evidence

Knowledge criteria

- The antenatal management, intrapartum care and immediate postnatal management of each condition
- The impact of the diagnosis and individual circumstances on the timing, location and mode of birth
- The local prenatal, birth and post-birth pathways for care of the fetus and newborn with these conditions
- The legal framework under which termination of pregnancy by feticide may be offered
- Recognise which conditions are amenable to prenatal treatment (e.g. diaphragmatic hernia and spina bifida)
- The recurrence risk and management plan for future pregnancies for each condition

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4. GMC Generic Professional Capabilities (GMCs)

The key skills in the Prenatal Diagnosis CiPs also map to a variety of generic professional capabilities (GPCs). When providing evidence of their progress in this SITM, learners should make sure that it also displays progress/capability in the GMC GPCs, such as dealing with complexity, teamwork and leadership, and knowledge of patient safety issues.

Mapping to the GPCs
Domain 1: Professional values and behaviours
Domain 2: Professional skills
Domain 3: Professional knowledge
Domain 4: Capabilities in health promotion and illness prevention
Domain 5: Capabilities in leadership and team-working
Domain 6: Capabilities in patient safety and quality improvement
Domain 7: Capabilities in safeguarding vulnerable groups
Domain 8: Capabilities in education and training
Domain 9: Capabilities in research and scholarship

Learners can expect to be assessed on their wider skills as a medical professional, their skills in leadership and teamwork, and their level of clinical competence. Evidence showing progress in these areas will result in the learner progressing through the SITM.

To help learners and Educational Supervisors determine what acceptable progress looks like, there is a Statement of Expectations for each Prenatal Diagnosis CiP.

	Statement of Expectations for the Prenatal Diagnosis SITM
Meeting expectations for the Prenatal Diagnosis CiP1	Learners are meeting expectations and are able to complete a fetal anomaly scan and confirm normal views. Learners can recognise when fetal anatomy deviates from normal.
Meeting expectations for the Prenatal Diagnosis CiP2	Learners are meeting expectations and understand genetic inheritance and can apply this knowledge to counselling of parents where an anomaly has been found. Learners can discuss abnormalities and prepare parents for the next steps in diagnosis. Learners understand the implications of abnormal findings on the anomaly scan, and can recognise significant fetal infections and initiate

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	management or referral. Learners are able to monitor and intervene appropriately in severe early onset growth restriction. Learners use a good working knowledge of other tests that may be offered to parents where there is a risk of prenatal problem, or where an anomaly has been found.
Meeting expectations for the Prenatal Diagnosis CiP3	Learners are meeting expectations and are able to continue to provide high-quality care after a diagnosis has been reached, including providing counselling about termination of pregnancy. Learners are able to continue to provide high-quality care for parents who continue with their pregnancy after an anomaly has been found, can support parents after an affected pregnancy and provide information to help them make decisions for the future.

The CiP knowledge criteria show the processes/frameworks a learner should understand and the clinical knowledge they must have if they want to specialise in fetal medicine. This is more in-depth than the knowledge base expected for the MRCOG. The key skills and descriptors outline the expected learning outcomes for the SITM. However, learners will not experience the entire range of possible scenarios during their training for this SITM; therefore, after completing the module they should continue their learning and skill development through their independent practice as a fetal medicine special interest doctor and at MDT meetings.

5. Procedures associated with the Prenatal Diagnosis CiPs

The procedures required to complete this SITM are listed below. A learner can show progress in these procedures through OSATS, procedure logs and other forms of evidence.

Each procedural skill requires three summative OSATS assessed as being competent before a learner is considered able to perform the practical procedure independently with support (level 4).

If a learner chooses to have an OSATS evidencing their assessment of a single fetal system, they still need to be able to demonstrate that they have knowledge of all of the fetal systems to the standard ofNHS Fetal Anomaly Screening Programme (FASP)

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If a procedure is marked with *, the learner will require three summative competent OSATS to demonstrate the level of competency needed to complete the SITM.

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Procedures	Level by end of training	CiP1	CiP2	CiP3
Fetal anomaly scan*	4	X		
Fetal echo*	4	X		
Amniocentesis	1		X	
CVS	1		X	
Therapeutic amniodrainage	1		X	
Feticide	1			X

The 'level by end of training' corresponds to the levels of entrustability defined in Section 5.4 of the Special Interest Training Definitive Document. Level 5 indicates that a learner should be able to perform the procedure independently.

OSATS are not assigned a level of entrustability, rather they are assessed as being *competent* or *working toward competence.* The entrustability levels here are given to guide the assessor in judging whether the learner has reached the required degree of independence at the end of training.

Subspecialty trainees in Maternal and Fetal Medicine will be expected to acquire the procedural skills listed in this table as well as the subspecialty-specific procedures listed in the Maternal and Fetal Medicine SST Curriculum.

6. Evidence required

As learners progress through SITM training, they are expected to collect evidence that demonstrates development and acquisition of the key skills, procedures and knowledge. This evidence will be reviewed by the SITM Educational Supervisor when they are making their assessment for each CiP. Examples of types of evidence a learner may use to show progress in the SITM are given below. **Please note that this list shows possible, not mandatory, types of evidence** (see Section 5.6 in the Special Interest Training Definitive Document for more detail).

If workplace-based assessments are listed, then at least one must be presented as evidence. The emphasis should be firmly on the **quality** of evidence, not the quantity.

• Objective Structured Assessment of Technical Skills (OSATS)	• Case presentations
• Case-based discussions	• Log of cases and outcomes
• Mini-Clinical Evaluation Exercise (Mini-CEX)	• Quality improvement activity
• NOTSS	• Certification of training courses

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• Reflective practice	• Attendance at relevant courses and conferences
• Team observation (TO2), including self-observation	• Participation at QA visits
• Local, Deanery and National Teaching	• FASP online training
• RCOG (and other) eLearning	• Attendance at fetal medicine clinics, specialist neonatal and paediatric clinics and clinical genetics clinics
• Procedural log	• Examples of anonymised birth plans
• Attendance at MDT meetings	

The table below may be useful for learners to see whether a specific workplace-based assessment can be used as evidence of progress in a specific Prenatal Diagnosis CiP:

Prenatal Diagnosis CiP	OSATS	Mini-CEX	CbD	NOTSS	TO1/TO2	Reflective practice
1: The doctor can use ultrasound to recognise where fetal anatomy is not normal.	X	X	X	X	X	X
2: The doctor can assess and investigate a pregnancy where there are concerns about the fetus.		X	X	X	X	X
3: The doctor demonstrates the skills and attributes required to provide ongoing support and care to people who have had a problem identified with their pregnancy.		X	X	X	X	X

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7. Career guidance

Learners can only undertake two SITMs at any one time, and a minimum of two SITMs are required to obtain a CCT in obstetrics and gynaecology.

The Prenatal Diagnosis SITM is the contingent SITM for the Fetal Care SITM. The latter must have been commenced and good progress be demonstrated before starting the Prenatal Diagnosis SITM, so that suitable aptitude with ultrasound scanning has already been demonstrated. This combination is recommended if a learner aspires to a special interest post in fetal medicine.

If the learner wants to become a subspecialist in Maternal and Fetal Medicine, both the Fetal Care and Prenatal Diagnosis SITMs are suitable to undertake before appointment to a maternal and fetal medicine SST training programme. The subspecialty curriculum builds on these SITMs, and they are both included in the subspecialty curriculum for Maternal and Fetal Medicine. Any evidence collected during SITM training and/or completed CiPs will count toward completion of SST. This will make the learner more competitive to succeed at subspecialty interview.

For further career advice, learners should have a discussion with their SITM Director.

8. Further resources

The further resources listed below can be found on the RCOG Curriculum 2024 webpages:

- Essential Curriculum Guide
- Special Interest Training Definitive Document (containing the 2024 curricula for SITMs and SIPMs)
- British Maternal and Fetal Medicine Society (BMFMS)
- NHS Fetal Anomaly Screening Programme (FASP)

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