

3 **GASTROINTESTINAL AND ABDOMINAL RADIOLOGY**

3.1 **Introduction**

- 3.1.1 This curriculum outlines the subspecialty training requirements for specialist registrar training in gastrointestinal (GI) and abdominal radiology.
- 3.1.2 Specialist registrars in clinical radiology should have undergone limited training during core training and will already have acquired the basic skills.
- 3.1.3 The period spent in training will vary according to the needs of the trainee. For a person wishing to specialise primarily in GI and abdominal radiology, the equivalent of around 12 months substantially devoted to the subject is recommended.
- 3.1.4 The aim of subspecialty training in GI and abdominal radiology is to enable the trainee to become clinically competent and to consistently interpret the results of GI and abdominal investigations accurately and reliably. Where appropriate, trainees should also be capable of providing a safe interventional diagnostic and therapeutic service.
- 3.1.5 Those clinical radiologists who plan to practise GI and abdominal radiology as one of a mixture of activities (albeit that GI and abdominal radiology will be a particular responsibility within those activities) should normally undertake around 6 months of subspecialty training in GI and abdominal radiology.
- 3.1.6 GI and abdominal radiology is a broad subspecialty. Trained radiologists in GI and abdominal radiology have a wide and varied practice ranging from the undertaking of fluoroscopic examinations of the GI tract through complex cross-sectional imaging to interventional procedures. Some radiologists may wish to add GI endoscopy to their skills, including complex hybrid radiological/endoscopic procedures such as endoscopic retrograde cholangiopancreatography (ERCP) and endoscopic ultrasound (US).
- 3.1.7 The curriculum recognises this varied and wide range of practice. It also recognises that it is unlikely that any one radiologist will cover, in training or in practice, the whole breadth of the subspecialty.
- 3.1.8 The curriculum outlines a modular approach to subspecialty training in GI and abdominal radiology. Training modules can be selected in order to allow each individual radiologist to define his/her own training and practice needs within the subspecialty.
- 3.1.9 It is appropriate for the practice of a GI and abdominal radiologist to be trained in both a technique-based (eg cross-sectional imaging) and a system based (eg hepatobiliary radiology) manner.
- 3.1.10 The curriculum recognises the overlap between GI and abdominal radiology and other subspecialties with other established training curricula (interventional radiology, GI endoscopy, genitourinary etc).
- 3.1.11 Some training modules may be undertaken concurrently (eg interventional GI radiology and endoscopy).

3.2 **Objectives**

- 3.2.1 The aim of establishing a curriculum for subspecialty training in GI and abdominal radiology is to ensure that trainees acquire:
- knowledge of the relevant embryological, anatomical, pathophysiological, biochemical and clinical aspects of GI and abdominal disease
 - an in-depth understanding of the major imaging techniques relevant to GI and abdominal disease
 - an in-depth knowledge of the indications, contra-indications, complications and limitations of surgical, medical and radiological interventions and procedures
 - clinical knowledge relevant to medical and surgical gastroenterology and hepatology so that the trainee may confidently discuss the appropriate imaging strategy for the clinical problem with the referring clinician
 - a detailed knowledge of current developments in the specialty
 - direct practical exposure with appropriate graded supervision in all forms of GI and abdominal imaging and intervention
 - knowledge and skills to enable safe practice of analgesia and sedation
- 3.2.2 The trainee should be fully competent in intermediate life-support. Formal ALS certification should be considered.
- 3.2.3 Those practising GI and abdominal radiology must acquire and maintain an integral knowledge of diseases and their management in non-GI systems, especially genitourinary and gynaecological disease.
- 3.2.4 Experience will be documented in the Royal College of Radiologists (RCR) Trainee Personal Portfolio (TPP) and procedural numbers recorded in a log book.
- 3.2.5 The training scheme should arrange an attachment(s) that fulfil the requirements of the subspecialty curriculum.
- 3.2.6 If the experience to fulfil the requirements of subspecialty training cannot be gained in one training centre, it will be necessary for the trainee to have a period of attachment(s) to other training centres. There are, in any case, advantages for trainees in visiting other departments in the UK or abroad to follow particular interests in greater depth.
- 3.2.7 The expected outcome at the end of this subspecialty training will be that the trainee can select the appropriate imaging strategy for GI and abdominal problems, supervise (and perform where appropriate) the relevant examinations and accurately report on the findings. The trainee should become competent in appropriate GI and abdominal imaging and relevant intervention.

3.3 **Overview of training**

- 3.3.1 The main document, to which this section should be regarded as an attachment, *Structured Training in Clinical Radiology*, outlines the core knowledge, skills and experience acquired during core training, together with optional experience, in which practical experience is not essential but a theoretical knowledge is required. The trainee undergoing subspecialty training should ideally be actively involved in GI and abdominal imaging within an educational environment with graduated supervision.

- 3.3.2 A training scheme responsible for providing subspecialty training in GI and abdominal radiology should provide access to appropriate fluoroscopy, computed tomography (CT), magnetic resonance imaging (MRI), US, endoscopy, radionuclide imaging and digital angiography.

For those who wish to undertake complex procedural and interventional GI and abdominal radiology tasks, it is essential that trainees are:

- exposed to an appropriate range of such procedures
- the first or sole operator in around 50% of these

This will ensure that the necessary skills, manual dexterity and experience of the most common complications (including their management) are acquired.

- 3.3.4 Clinical knowledge will be acquired by a variety of means, including close liaison with the appropriate surgical and medical teams, together with participation in combined clinical and radiological meetings. Attendance at appropriate multidisciplinary meetings should be facilitated.
- 3.3.5 It may be appropriate for the trainee to have a regular clinical attachment to outpatient clinics, ward rounds and surgical procedures in order to further clinical knowledge relevant to the subspecialty.
- 3.3.6 The trainee should be encouraged and given the opportunity to attend and lead appropriate clinicoradiological meetings.
- 3.3.7 The trainee should be encouraged and funded to attend appropriate educational meetings and courses.
- 3.3.8 The trainee should participate in relevant clinical audit, management, and clinical governance, and have a good working knowledge of local and national guidelines in relation to radiological practice.
- 3.3.9 Trainees will be expected to be familiar with current GI and abdominal radiology literature.
- 3.3.10 The trainee should be encouraged to participate in research, and to pursue one or more projects up to and including publication. An understanding of the principles and techniques used in research, including the value of clinical trials and basic biostatistics, should be acquired. Presentation of research and audit results at national and international meetings should be encouraged.
- 3.3.11 The trainee should continue to participate in the specialist registrar general on-call rota, with appropriate consultant back-up.

3.4 **Requirements of subspecialty training**

- 3.4.1 A trainee should have a comprehensive knowledge of normal GI and hepatobiliary function and diseases, including:
- the embryology, anatomy, normal variants and pathophysiology relevant to GI and hepatobiliary function
 - the pathology of benign and malignant GI and hepatobiliary and pancreatic conditions
 - the epidemiology of GI and hepatobiliary and pancreatic diseases
 - the principles of population screening for colorectal cancer

- local, national and where appropriate, international imaging guidelines

3.4.2 Knowledge of the full range of radiological diagnostic techniques available, in particular:

- the indications, contra-indications and complications of each imaging method
- the factors affecting the choice of contrast media and radiopharmaceuticals
- the effects and side effects of these agents

Particular emphasis should be placed on the strengths and weaknesses of the different imaging methods in various pathological conditions. The appropriate choice of imaging techniques and/or the appropriate sequence of imaging techniques in the investigation of specific clinical problems should be emphasised.

3.4.3 Acquisition of specific skills to enable:

- the conduct, supervision and accurate interpretation of all imaging techniques used in
- the investigation of GI and hepatobiliary diseases, to a high professional standard
- the accurate localisation and biopsy of hepatic, abdominal, pelvic and lymph node masses
- good communication with patients and professional colleagues
- obtaining accurate and informed consent
- continuing accreditation of life-support status

3.4.4 A clear understanding of the role of multidisciplinary meetings, including:

- planning of investigations including the selection of appropriate tests and imaging techniques for the diagnosis of benign and malignant disease
- staging of malignant disease
- planning and outcomes of treatment
- the detection of errors in diagnosis and complications of treatment
- an understanding of relevant GI and abdominal pathology

3.4.5 All subspecialty trainees, irrespective of the components of their modular training, should have an understanding of the total breadth of this subspecialty.

3.4.6 Knowledge of the techniques involved in all imaging and interventional procedures used in evaluating and treating GI and hepatobiliary diseases, including managing the complications of these procedures.

3.4.7 Procedural competence will need to be reviewed at intervals, this regular review should also assess the number of cases required to ensure competence. During the training period it is recommended that the trainee obtains experience in the following:

Plain radiography and fluoroscopic contrast studies including:

- primary care examinations
- intubation techniques for small bowel studies
- intensive care and high dependency unit examinations
- the acute abdomen
- abdominal trauma
- ERCP
- intra-operative examinations
- proctography and related studies

US, CT and MRI of the abdomen and GI system including the relevant role of each in:

- the staging of GI and hepatobiliary cancers
- the investigation of hepatobiliary and abdominal trauma
- other hepatobiliary abnormalities
- oesophageal abnormalities
- gastric abnormalities
- small bowel abnormalities
- large bowel abnormalities
- pancreatic abnormalities
- identification and categorisation of diffuse liver disease
- staging of pelvic malignancy
- pelvic floor disorders
- renal and adrenal abnormalities

Radionuclide radiology including:

- localisation of GI bleeding
- localisation of tumours and metastases

Optional radionuclide studies:

- positron emission tomography (PET)

3.4.8 A trainee will keep abreast of all other imaging techniques relevant to their practice.

Interventional techniques:

All trainees should acquire experience in the following procedures:

- biopsy of hepatic, abdominal and pelvic lesions and lymph node masses
- drainage of hepatobiliary, intra-abdominal and intra-pelvic collections

Depending on the long-term aims of the trainee, experience should also be acquired in a range of the following optional procedures:

- percutaneous transhepatic cholangiography
- biliary stenting
- endoscopy, endoscopic biopsy and ERCP
- colonoscopy and biopsy
- endoscopic US
- oesophageal and colonic stenting
- TIPSS procedures
- angiographic techniques in relation to GI and hepatobiliary disease
- radiofrequency ablation of tumours

3.4.10 Trainees should acquire experience in a selection of the practical procedures listed above, depending on their career pathway, and the number of cases undertaken should be recorded in their log book.

3.4.11 The duration of each training module can be variable. It will be necessary for the trainee to demonstrate that he/she has trained to a level of competence that will comply with the standards set out in the training portfolio. Some training curricula suggest a minimum number of procedures to be completed (eg GI endoscopy, interventional radiology). For individuals who will undertake full time GI and abdominal radiology work, a guide to the recommended numbers of interventional procedures is provided in the gastrointestinal section of the interventional curriculum (5.4.14). This section also indicates the numbers that might be expected for someone training in more than one subspecialty.

- 3.4.12 Regardless of the imaging technique concerned, the consultant trainer must be satisfied that the trainee is clinically competent, as determined by an in-training performance assessment, and can consistently interpret the results of investigations accurately and reliably.
- 3.4.13 The techniques listed and the time devoted to each will be reviewed at intervals. It is recognised that some studies will become obsolete, and new imaging techniques will be developed.
- 3.4.14 The trainee should become familiar with providing analgesia and/or sedation where required, as well as the necessary continuous monitoring required to perform this safely.
- 3.4.15 The trainee should be aware of local and national guidelines on consent, and be capable of obtaining informed patient consent for practical procedures.

3.5 **Appraisal and assessment**

- 3.5.1 Regular appraisal of the trainee will occur as described in the RCR TPP.
- 3.5.2 Methods of trainee assessment will include:
- regular direct observation of clinical techniques (including communication skills, ability to obtain informed consent and sedation skills) by the trainer and/or external observer
 - regular formal review of the trainee's skills in the accurate interpretation of investigations for GI and abdominal diseases
 - a final assessment of overall professional competence prior to the final record of in-training assessment (RITA) review
- 3.5.3 **Review of training programme**
- It is expected that trainees will complete a feedback form (RCR TPP) for each subspecialty training period undertaken.
 - It is expected that the training committee responsible for organising subspecialty training will review and analyse these feedback forms and act appropriately to ensure that training complies with the relevant subspecialty curriculum. The analysis and subsequent actions should be formally recorded.
 - The RCR Training Accreditation Committee (TAC) will regularly review these records to ensure that subspecialty training complies with the appropriate subspecialty curriculum.
- 3.5.4 **Review of subspecialty curriculum**
- The Education Board of the RCR will regularly review this subspecialty curriculum to ensure that it complies with current GI and abdominal radiological practice.