Structured Training Curriculum
for
Clinical Oncology

Education Board of the Faculty of Clinical Oncology
The Royal College of Radiologists

The Royal College of Radiologists
38 Portland Place
London W1B 1JQ

Telephone 020 7636 4432
Fax 020 7323 3100
Email: enquiries@rcr.ac.uk

Citation details:
Education Board of the Faculty of Clinical Oncology
The Royal College of Radiologists (January 2007)
Structured Training Curriculum for Clinical Oncology
The Royal College of Radiologists, London

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Foreword

The new curriculum is the product of extensive consultation and collaboration between the Fellows in Clinical Oncology, largely through the medium of the e-networks. It reflects the natural division in our training formed by the FRCR Examination, which marks the end of Intermediate specialist Training, following which trainees are encouraged to develop site specialised interests. Intermediate specialist training covers the main tumour sites. A thorough knowledge of the management of common tumours is expected; however, only basic principles of management of the less common tumours is expected and this is clearly laid out for the first time in the curriculum. Advanced specialist training allows the trainee Clinical Oncologist to broaden and deepen their knowledge of the management of common tumours and to acquire new skills and knowledge used in the management of less common tumours.

There have been considerable recent changes in postgraduate medical training in the UK. Under *Modernising Medical Careers*[1] the medical graduate will complete Foundation training and then compete for entry to Core Medical Training (CMT). Trainees entering the clinical oncology training programme are required to have completed two years of core medical training (CMT) or acute care common stem training (ACCS). During CMT and ACCS, graduates will acquire the necessary skills required for managing the acutely ill medical patient so essential to the practice of Clinical Oncology. Trainees will take the examination for Membership of the Royal College of Physicians by the end of ST3.

There have been major changes to the way in which medicine is practised and amongst these the need for team working and good communication skills is of paramount importance. Many of these changes are alluded to in the GMC publication *Good Medical Practice*[2] and will be taught during Medical School, Foundation Years 1& 2 and CMT. There are, however, more specialised skills required by a practising Clinical Oncologist and these are included in this new curriculum.

Finally, the institution of the Postgraduate Medical Education and Training Board (PMETB)[3] brought with it clear educational goals and standards with an emphasis on competence based training, formalised educational goals and formalised methods of assessment. Furthermore, there was a need to create uniformity amongst specialties so that the curriculum in clinical oncology is in an approximately similar format to those for other medical specialties.

Dr David Spooner
Warden of the Faculty of Clinical Oncology

1 Introduction

1.1 The purpose of this document is to define the present curriculum for each phase of training for the benefit of the trainee, the trainers and those responsible for training. Training is delivered in a modular fashion and training objectives are identified for all the constituent tumour sites. The successful completion of training leads to the award of the Certificate of Completion of Training (CCT) by the Postgraduate Medical Education and Training Board (PMETB).

1.2 The training objectives identified in this document are listed on the modular training objectives forms, which are included in the trainee personal portfolio (TPP).

1.3 These training objectives are used to assist trainee appraisal and assessment during specialist training and when achieved can verify that training has taken place to the required standard for a CCT to be awarded.

1.4 Training for the CCT must take place in approved posts. Training schemes are centred on teaching and specialist hospitals and include rotations to general hospitals. All training schemes are approved by the PMETB in conjunction with the RCR for the purpose of specialist training.

1.5 The curriculum has been developed following wide consultation with the Fellows in Clinical Oncology of the Royal College of Radiologists who have all been given the opportunity to comment on the specialist modules in which they are expert. The Oncology Registrars' Forum and the Clinical Oncology Patient Liaison Group have been consulted and have commented on the document, which has been approved by the Education Board of the Faculty of Clinical Oncology of the RCR.

1.6 Clinical Oncology

1.6.1 The specialty of clinical oncology involves all aspects of the management of patients with malignant disease, from diagnosis through treatment with both radiotherapy and systemic therapies to management and symptom control in advanced and recurrent disease.

1.6.2 A clinical oncologist requires excellent clinical skills, and should be demonstrably conversant with the basic sciences relevant to both radiotherapy and the systemic therapy of malignant disease, the pathological and functional aspects of disease as indicated in this document, the administration, management and medicolegal aspects of oncological practice and the basic elements of research in clinical oncology. A sound knowledge of clinical radiology is required, both for diagnosis and intervention, and, in particular, cross-sectional imaging, which is central to the ability to delineate tumours for radiotherapy treatment.

1.6.3 Communication skills are crucially important to the practising Clinical Oncologist. As training progresses trainees will acquire specialised skills necessary for supporting patients with cancer, explaining and negotiating treatments and understanding the progression of their disease. Multidisciplinary team working is central to the practice of Clinical Oncology and the ability to communicate clearly and appropriately with colleagues in many disciplines is essential.

1.6.4 Selection into specialist training is organised by Deaneries against strict agreed selection criteria on the basis of the application form, portfolio and structured interviews, taking into account training and proof of training in clinical medicine and communication skills.

1.7 Outline of training programmes in Clinical Oncology

1.7.1 Each trainee in clinical oncology will undertake a programme of structured training in order to achieve a level of competence in all aspects of clinical oncology that will enable him/her to practise as a specialist. The training will also instil those values, behaviours and relationships that underpin the trust the public has in doctors (medical professionalism).

1.7.2 Intermediate Specialist Training**:** Fundamental sciences (physics as applied to radiotherapy, radiobiology, clinical pharmacology, molecular biology and medical statistics) and radiation safety relevant to clinical oncology will be taught in structured courses during the first year.

Intermediate Specialist Training - Oncology: The skills and knowledge required for managing patients with common malignancies and basic principles of managing less common malignant diseases will be taught through structured courses and in clinical practice.

The indicative length of intermediate specialist training is three years but trainees may progress faster and acquire the necessary competencies in a shorter time.

1.7.3 Advanced specialist training is required to allow for:

- achieving further competencies in at least two site specialties where the principles of site specialisation will be taught
- consolidation of those skills learnt during intermediate specialist training

The indicative period for advanced specialist training is two years. Trainees may progress faster and acquire the necessary competencies in a shorter time but it is unlikely that trainees will be able to acquire the necessary advanced competencies in less than one year after FRCR.

1.7.4 The current examination structure is as follows:

- The First FRCR Examination comprises Cancer Biology and Radiobiology, Clinical Pharmacology, Medical Statistics and Physics
- The Final FRCR Examination, which covers all site specialties within Clinical Oncology comprises two papers of single best answer (SBA) questions, a clinical examination and a structured oral examination. The examination is clinically based and is a test of daily clinical practice

The syllabus for the First FRCR Examination is attached to this document as Appendix 1. It is an integral part of this curriculum and must be covered by all trainees,. The syllabus for the Final FRCR Examination is incorporated into this curriculum, designated as Intermediate Specialist Training (I). Both syllabuses and the Examination Regulations are available on the RCR website. Trainees are advised to check this website regularly as the examination will change in time as newer educational models for examinations are acquired.

1.7.5 Trainees entering the clinical oncology training programme are required to have completed two years of core medical training (CMT) or acute care common stem training (ACCS). If the MRCP (UK) is not completed at this time, it must be completed before the end of ST3 so that trainees can focus on other specialty assessments including the First FRCR Examination. Failure to gain MRCP by the end of ST3 may lead to recommendations for additional training (RITA D).

1.7.6 A period of research during training is encouraged. Up to one year of full-time research in any aspect of oncology is allowed as part of specialist training, some or all of which may be recognised for the CCT at the discretion of the Warden.

1.7.7 Trainees who have demonstrated their knowledge and competence by passing the Final FRCR Examination and have achieved the necessary competencies as laid down in the curriculum may apply for a CCT in Clinical Oncology.

1.7.8 Trainers are expected to:

- have substantial expertise in their site specialties
- be up-to-date with the requirements of the RCR continuing professional development scheme and be in possession of appropriate supporting certificates
- have demonstrated an interest in training
- have access to appropriate treatment and planning facilities
- have a sufficiently large throughput of cases
- have appropriate teaching resources

1.8 This document should be read in conjunction with the most up-to-date version of the following documents issued by the RCR. The dates of the current versions are provided in the reference list.

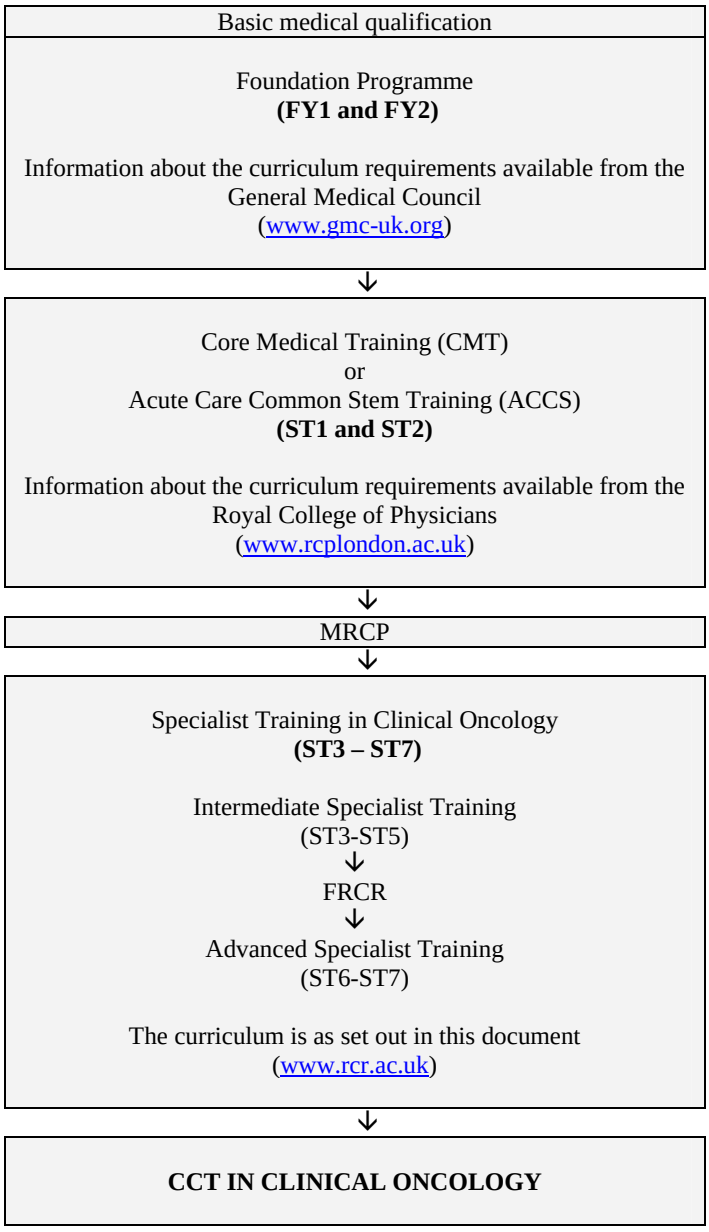
- *First Examination for the Fellowship in Clinical Oncology: Examination Syllabus*[4]
- *Final Examination for the Fellowship in Clinical Oncology: Examination Syllabus*[5]
- *Regulations for Training in Clinical Oncology and Clinical Radiology*[6]
- *Regulations for the Examinations for the Fellowship of the Royal College of Radiologists in Clinical Oncology*[7]
- *Royal College of Radiologists. Training Accreditation in Clinical Oncology, Guidance Notes for Training Schemes*[8]

1.9 Summary of key points on training and curriculum implementation

1.9.1 Summary of Standard Training for a CCT in Clinical Oncology:

1 Primary Medical Qualification
2 Two years of Foundation Years Training (F1&2)
3 Two years of Core Medical Training or ACCS and MRCP examination
4 Intermediate Specialist Training in clinical oncology as a specialist registrar (indicative period three years)
5 Advanced specialist training in clinical oncology (indicative period two years)

The diagram below indicates the stages to be followed a trainee wishing to acquire a CCT in clinical oncology. Award of the CCT requires completion of the curricula elements of the Foundation Programmes, Core Medical Training/Acute Care Common Stem Training, as well as the clinical oncology specialty curriculum as set out in this document.



1.9.2 Summary of management of curriculum implementation

1 New curriculum has already been discussed with all Regional Advisers who meet twice yearly on a national basis
2 Local training schemes develop rotations that deliver the curriculum, which is checked by:
3 Regional Advisers at the workplace, during RITAs and further checked during:
4 The training accreditation process supervised by the RCR and the PMETB.
5 A final check that the curriculum has been delivered for each trainee is carried out by the RCR before recommendation to the PMETB for the award of a CCT.

1.9.3 Learning methods

1 Clinics under Consultant supervision where cases can be discussed
2 Clinics conducted independently where senior advice is available if required
3 Ward rounds under Consultant supervision
4 Ward rounds conducted by the trainee
5 Simulator planning sessions supervised by the Consultant
6 Simulator planning sessions conducted independently but where senior advice is available if required
7 Cross-sectional imaging/voluming sessions supervised by the Consultant
8 Cross-sectional imaging/voluming sessions conducted independently but where senior advice is available if required
9 Structured training courses for the First and Final FRCR Examinations
10 Lectures
11 Tutorials
12 Journal Clubs
13 Multidisciplinary groups
14 Independent study
15 Audit
16 Clinical research
17 Web-based research and use of the internet for clinical information retrieval
18 Attendance at national and international courses and conferences
19 Teaching specialist registrars, nurses and radiographers

1.9.4 Assessment methods

Examinations and certificates

- The MRCP(UK) Examination: Part 2 Clinical (PACES) if not attained prior to entry into the specialty.
- The First FRCR Examination assesses knowledge of the sciences that underpin clinical oncology practice, i.e. physics, medical statistics, clinical pharmacology, cancer biology and radiobiology. Each subject is assessed by a paper of 180 single best answer (SBA) questions. Candidates may enter the examination at any four consecutive sittings and may enter for any combination of subjects at each sitting. There is no requirement to retake a subject once a pass in that subject has been achieved. The syllabus for this examination is available on the RCR website www.rcr.uk. As the knowledge assessed in this examination is essential to clinical oncology practice, this examination must be completed during Core Clinical Oncology Training (ST3 and 4).
- The Final FRCR Examination focuses on how to manage patients with cancer and assesses the knowledge, skills and some of the behaviours required to complete Intermediate Clinical Oncology Training. It comprises three components – a SBA examination (two papers of 120 questions each), a clinical examination and an oral examination. There is no limit on the number of attempts that a trainee may make at this examination. The syllabus for the Final FRCR Examination covers all areas of oncology covered in Intermediate Clinical Oncology Training as defined by the 2010 Curriculum (see 2010 Curriculum, Appendix 1). As the knowledge, skills and behaviours assessed in this examination are essential as a basis for developing advanced tumour site-specialist expertise, the examination must be completed before the trainee progresses to Advanced Clinical Oncology Training.

Information about the FRCR examinations, including guidance for candidates, is available on the RCR website www.rcr.uk.

Workplace-based assessments (WpBAs)

- mini-Clinical Evaluation Exercise (mini-CEX)
- Direct Observation of Radiotherapy Planning Skills (DORPS)
- Direct Observation of Systemic Therapy (DOST)
- Multi-Source Feedback (MSF)
- Case-based Discussion (CbD)
- Patient Survey (PS)
- Audit Assessment Tool (AA)
- Teaching Observation (TO)

These methods are described briefly in this section. More information about these methods including guidance for trainees and assessors is available in the ePortfolio and on the RCR website www.rcr.ac.uk. Workplace-based assessments should be recorded in the trainee's ePortfolio. The workplace-based assessment methods include feedback opportunities as an integral part of the assessment process. This is explained in the guidance notes provided for the techniques.

mini-Clinical Evaluation Exercise (mini-CEX)
This tool evaluates a clinical encounter with a patient to provide an indication of competence in skills essential for good clinical care such as history taking, examination and clinical reasoning. The trainee receives immediate feedback to aid learning. The mini-CEX can be used at any time and in any setting when there is a trainee and patient interaction and an assessor is available.

Direct Observation of Radiotherapy Planning Skills (DORPS)
The DORPS is an assessment tool designed to assess the performance of a trainee in undertaking radiotherapy planning, against a structured checklist. The trainee receives immediate feedback to identify strengths and areas for development.

Direct Observation of Systemic Therapy (DOST)
The DOST is an assessment tool designed to assess the performance of a trainee in undertaking, authorising, prescribing and taking consent for chemotherapy, against a structured checklist. The trainee receives immediate feedback to identify strengths and areas for development.

Multi-Source Feedback (MSF)
This tool is a method of assessing generic skills such as communication, leadership, team working and reliability, across the domains of GMP. It provides objective systematic collection and feedback of performance data on a trainee, derived from a number of colleagues. 'Raters' are individuals with whom the trainee works, and include doctors, administration staff, and other allied professionals. The trainee will not see the individual responses by raters; feedback is given to the trainee by the Educational Supervisor.

Case-based Discussion (CbD)
The CbD assesses the performance of a trainee in his or her management of a patient, and it provides an indication of competence in areas such as clinical reasoning, decision-making and application of medical knowledge in relation to patient care. It also serves as a method to document conversations about, and presentations of, cases by trainees. The CbD should include discussion about a written record (such as written case notes, outpatient letters or discharge summaries). A typical encounter might be when presenting newly-referred patients in the outpatient department.

Patient Survey (PS)
The PS addresses issues which are important to patients including behaviour of the trainee and effectiveness of the consultation. It is intended to assess the trainee's performance in areas such as interpersonal skills, communication skills and professionalism, by concentrating solely on their performance during one consultation.

Audit Assessment Tool (AA)
The AA is designed to assess a trainee's competence in completing an audit. The AA can be based on a review of audit documentation or a presentation of an audit at a meeting. If possible the trainee should be assessed on the same audit by more than one assessor.

Teaching Observation (TO)
The TO form is designed to provide structured, formative feedback to trainees about their competence at teaching. The TO can be based on any instance of teaching undertaken by the trainee that has been observed by the assessor.

Decisions on progress
The Annual Review of Competence Progression (ARCP) is the formal method by which a trainee's progression through his or her training programme is monitored and recorded. The ARCP is not an assessment; it is a review of the evidence of training and assessment. The ARCP process is described in 'A Reference Guide for Postgraduate Specialty Training in the UK' (the 'Gold Guide', which is available from the website www.mmc.nhs.uk). Deaneries are responsible for organising and conducting ARCPs. The evidence to be reviewed by ARCP panels should be collected in the trainee's ePortfolio.

The WpBAs will be spread throughout each clinical attachment to ensure that progress is being made and to allow trainees' development needs to be identified. The required WpBAs will be reviewed with the trainee's Educational and Clinical Supervisor(s) at each appraisal meeting. As trainees progress through training, the complexity of the clinical problems addressed during WpBAs should increase.

The First FRCR Examination assesses the trainee's knowledge of the sciences that underpin clinical oncology. The Final FRCR Examination assesses the trainee's knowledge and skills in managing patients with cancer.

The ARCP Decision Aid is included in Section 5.5, and it gives details of the evidence required of trainees for submission to the ARCP panels. This identifies the minimum requirements for trainees to progress and it may be helpful or appropriate for trainees to undertake additional assessments during a given period of training.

The RCR will provide externality for the ARCP process in the form of peer review by an External Advisor. The External Advisor, a clinical oncology RSA from a different region, will liaise with the Deanery to ensure that College and Deanery processes are fulfilled. The guiding principle is that the clinical oncology External Advisor is independent and from a different Deanery, and that reciprocal arrangements should not exist. The External Advisor should review at least 10% of the ARCP outcomes and any recommendations from the panel about trainees for whom there is concern over progress. Educational Supervisors will be required to undertake a detailed assessment of their trainees' portfolios in preparation for the annual Educational Supervisor's Structured Report for each trainee. The External Adviser should ensure that curriculum delivery across a training programme is of an acceptable standard on the basis of the Educational Supervisors Structured Reports, evidence of work-place based assessments being performed in a timely manner, interviews with trainees in difficulties and the results of Fellowship examinations. The External Advisor should produce a summary report on the ARCP process to be forwarded to the Chairperson of the Deanery STC, and which can be used as an evidence source for the Deanery Annual Specialty Report. The summary report will also form part of the evidence used to compile an annual report on each training programme for the RCR STAC of the Faculty of Clinical Oncology. Clinical oncology External Advisors require formal training in appraisal and assessment, equality and diversity, requirements of the Gold Guide, and PMETB's Standards for Trainers. Full details are available on the RCR website.

Table 1. The minimum requirements for progression from year ST3 to ST4.

Progression point	ST3 to ST4
Curriculum coverage and competencies achieved	30% of intermediate clinical oncology tumour site specific and generic competencies completed
Satisfactory workplace-based assessments	2 CbD 2 DORPS 2 DOST 2 mini-CEX MSF
Examinations	Complete MRCP (UK) Part 2 PACES if not completed prior to entry into ST3.
Clinical Trials and GCP	Current GCP certificate

Table 2. The minimum requirements for progression from year ST4 to ST5.

Progression point	ST4 to ST5
Curriculum coverage and competencies achieved	30% of intermediate clinical oncology tumour site specific and generic competencies completed
Satisfactory workplace-based assessments	4 CbD 4 DORPS 4 DOST 4 mini-CEX Patient Survey Audit Assessment Tool Teaching Observation
Examinations	First FRCR
Clinical Trials and GCP	Current GCP certificate

Table 3. The minimum requirements for progression from year ST5 to ST6.

Progression point	ST5 to ST6
Curriculum coverage and competencies achieved	Intermediate clinical oncology tumour site-specific and generic competencies completed
Satisfactory workplace-based assessments[1]	4 CbD 4 DORPS 4 DOST 4 mini-CEX Patient Survey MSF
Examinations	
Clinical Trials and GCP	Current GCP certificate

Table 4. The minimum requirements for progression from year ST6 to ST7.

Progression point	**ST6 to ST7**
Curriculum coverage and competencies achieved	Started to acquire advanced clinical oncology generic and tumour site specific competencies
Satisfactory workplace-based assessments[1]	6 CbD 4 DORPS 4 DOST 2 mini-CEX Audit Assessment Tool Patient Survey Teaching Observation
Examinations	Final FRCR
Clinical Trials and GCP	Current GCP certificate

Table 5. The minimum requirements for progression from year ST7 to CCT.

Progression point	**ST7 to CCT**
Curriculum coverage and competencies achieved	Advanced clinical oncology generic and tumour site-specific competencies completed for at least two cancer sites
Satisfactory workplace based assessments[1]	6 CbD 4 DORPS 4 DOST 2 mini-CEX Audit Assessment Teaching Observation MSF
Examinations	
Clinical Trials and GCP	Current GCP certificate

1.9.5 The trainee's progress is assessed by:

1 Regular RITA assessments at which the training record, Log Book, and portfolio of achievements and Educational Supervisors' comments are reviewed

2 FRCR examination. Trainees will not normally be able to commence ST7 without having demonstrated competence in the knowledge and skills tests of the Final FRCR Examination.

2 Aims and Principles

2.1 The aim of the curriculum is to produce well trained, competent clinical oncologists capable of being appointed as, and to undertake the duties of, a National Health Service (NHS) consultant clinical oncologist. The training should ensure that newly appointed consultants understand the values, behaviours and relationships that underpin the trust the public has in doctors (medical professionalism).

2.2 These standards have to be achieved before the award of a CCT in clinical oncology and entry onto the Specialist Register.

2.3 A major component of training in clinical oncology is achieved by the apprenticeship system with the trainee undertaking increasing responsibility in the management of patients. Each component of the training programme should have a clearly defined structure with supervision of the trainee by senior colleagues (trainers). A named consultant(s) will assume overall responsibility for each site specialty module of training. Training in more than one site specialty may take place during a rotational attachment.

2.4 Each module of training will define all of the basic training objectives. The basic training objectives will detail the knowledge and skills to be achieved and the experience to be acquired by the trainee during training.

2.4.1 Basic knowledge is the knowledge required by an oncologist at the start of their training. In this document, basic knowledge has been defined in terms of clinical systems, incorporating elements of anatomy and radiotherapeutic/oncological techniques.

Basic skills include:

- clinical knowledge, that is anatomical, radiological, medical, surgical and pathological, relating to the specific body systems
- knowledge of evidence based clinical practice
- knowledge of the indications, contraindications and potential complications of radiotherapy and systemic therapy in order to plan and prescribe appropriate treatment for common malignancies
- knowledge of the management of complications of disease processes and of treatment

2.4.2 Basic skills and experience are necessary for the trainee to be capable of performing independently but will be supervised during the training period until the necessary level of competence is achieved. Basic skills will be assessed at a local level and in the FRCR Examinations.

2.4.3 The skills that must be acquired and assessed for each module of structured training as well as the knowledge and experience appropriate to that module are listed in this document and on the modular training objective forms included in the TPP.

2.4.4 Log books should be used for documenting the skills and experience attained.

2.4.5 Trainee appraisal is mandatory within each module of training. The purpose of appraisal is to review the progress of the trainee through each module to anticipate and correct any deficiencies in training at an early stage, and to inform the assessment process.

2.4.6 The First FRCR and Final FRCR Examinations currently test knowledge through single best answer questions. The Final FRCR Examination also assesses competence (diagnostic, therapeutic and communication skills).

2.5 The trainee will be required to develop skills in research methodology that are necessary to structure and perform research under appropriate guidance. These skills will include the ability to review published articles critically and to perform effective literature searches on a given topic. An appreciation of the effective application of research findings in everyday practice will also be required.

2.6 The Trainee Personal Portfolio (TPP) will be used to document that training is progressing satisfactorily through to the award of the CCT. The TPP, in addition to the logbook, will be reviewed at each regular assessment. The portfolio is also used throughout training to assess that the trainee can practise in accordance with the relevant aspects of the GMC's *Good Medical Practice* which are:

Good Clinical Care
Maintaining Good Medical Practice
Teaching and Training, Appraising and Assessing
Relationships with Patients
Working with colleagues
Probity
Health

2.7 Individual progress will be recorded by regular review (RITA: Record of In-Training Assessment). The RCR recommends that the regional postgraduate dean should collaborate with the head of the training scheme and the regional postgraduate education adviser when overseeing these reviews. College tutors should also be involved in the process. The RCR also encourages the inclusion of an external assessor (such as a consultant clinical oncologist from another training scheme) in the regular review of trainees. Logbooks and copies of clinical tutors' assessments will be made available to RITA panels.

3 Intermediate Specialist Training

3.1. Overview

At the end of intermediate specialist training trainees should:

- feel confident in their choice of clinical oncology as a career
- have mastered the basic radiation physics, radiobiology, cancer biology and therapeutics required in clinical oncology to the level of the First FRCR Examination (see Section 3.2)
- be familiar with the concepts and terminology of clinical oncology (radiotherapy and systemic therapy)
- understand use of the various methods of cross sectional imaging which contribute to the localisation of tumours for diagnosis, treatment planning and assessment of response
- understand the responsibilities of a clinical oncologist to the patient including the legal framework and the necessity for informed consent
- be familiar with the various therapeutic tools used in day to day oncological practice, and be aware of indications, contraindications, normal tissue tolerances (adult and paediatric) and the management of reactions and complications
- be competent in cardiopulmonary resuscitation
- understand the principles of radiation protection and be familiar with the legal framework for protection against ionising radiation. Trainees should also be able to demonstrate that they are capable of safe radiotherapy practice
- have a sound understanding of basic radiotherapeutic and radiographic procedures (see Section 3.2)
- have developed, under supervision, the ability to plan and prescribe radiotherapeutic and systemic treatment according to evidence based practice and understand and practise clinical audit and risk management
- have mastered and been assessed in basic communication skills and relationships with patients, especially issues around respecting confidentiality and obtaining consent.
- have reviewed their knowledge of the relevant points in the GMC guide to *Good Medical Practice*, in particular those relating to good clinical care, maintaining good medical practice, working with colleagues, probity and health.

3.2. Basic sciences

The knowledge required for the First FRCR Examination has been defined by the RCR (*First Examination for the Fellowship in Clinical Oncology: Examination Syllabus*).[4] ;attached as Appendix 1. The RCR recommends that trainees should receive a minimum of 160 hours of formal instruction covering the examination syllabus. Candidates for the First FRCR Examination will also be expected to supplement this tuition by a substantial amount of self-directed learning.

3.2.1 Physics

Formal tuition in basic radiation physics and radiation safety, including the current ionising radiation regulations and statutory obligations related to ionising radiation, is delivered before attempting the First FRCR Examination. This teaching is given primarily by medical physicists supplemented by clinical oncologists.

3.2.2 Cancer Biology and Radiobiology

Formal tuition in basic cancer biology and radiobiology is delivered before attempting the First FRCR examination. This should include an understanding of carcinogenesis, cellular and molecular features of malignancy, tumour development, growth kinetics, micro-environmental changes, metastasis and immune response; a knowledge of the cellular and molecular basis for the response of cells, tissues and tumours to ionising radiation and chemotherapy; a knowledge of current models of radiation response and the biological principles underlying the application of radiotherapy to the treatment of disease, including normal tissue responses.

3.2.3 Clinical Pharmacology

Formal tuition in clinical pharmacology is delivered before attempting the First FRCR examination. The emphasis is on cytotoxic drugs, hormones and biological therapies

used in clinical practice, their mode of action and side-effects. The syllabus also includes the basic principles of pharmacokinetics and pharmacodynamics, clinical trials and the basic pharmacology of drugs used in the supportive care of patients with cancer.

3.2.4 **Medical Statistics**

Formal tuition in medical statistics is delivered before attempting the First FRCR examination. Trainees should have sufficient knowledge of the principles of the subject to enable them to study critically the statistical validity of published investigations and enable them to appreciate the requirements needed to design, monitor and assess clinical trials and epidemiological studies.

3.3 Supervision and Feedback

The initial months of training in clinical oncology can be a difficult period of transition for trainees. Heads of training schemes and College tutors are encouraged to offer advice, a mentor system and a counselling service during this time. The following milestones should be acknowledged:

3.3.1 The trainee must meet with the College tutor and/or the head of the training scheme at the beginning of and after three months in post, to identify any difficulties and suggest solutions.

3.3.2 The trainee's practice must be closely supervised and the safety of the patient is of paramount importance. Such aspects are checked in the formal portfolio sign ups from the consultant responsible for each rotation. However, the head of the training scheme should establish clear methods for more immediate feedback to the tutor and individual trainee if problems are perceived.

3.3.3 Candidates failing the First FRCR Examination should be counselled by the head of the training scheme and/or the College tutor on each occasion.

3.3.4 All trainees should be assessed at the end of ST3 by the local training scheme before the annual RITA process (defined in Section 2.7). The possible outcomes of this assessment and the RITA process are listed below:

- **Progress** into the next period of training (RITA C form completed)
- **Conditional progress** into the next phase of training (RITA D form completed). A specific action plan will be formulated with the trainee to redress deficiencies in performance. Progress will be re-assessed as appropriate within the second year of training.
- **Directed training without progression** (RITA E form completed). If the trainee is so far short of the objectives from ST3 such as to prevent them continuing into the next phase of training, directed training is recommended to achieve those objectives.

3.4 Intermediate specialist training in Clinical Oncology

During this period trainees should receive structured training in all the constituent site specialties of clinical oncology.

By the end of ST5 a trainee will usually have had the opportunity to pass the Final FRCR Examination. The basic knowledge required to pass the Final FRCR Examination has been defined by the RCR and is incorporated into this curriculum, designated as Intermediate Specialist Training (I). (*Final Examination for the Fellowship in Clinical Oncology*: *Examination Syllabus)*.[5]

During this initial period of training, individual trainees will have had the opportunity to assess their aptitude for, and interest in, the various site specialties, so that they are in a position to decide the most appropriate areas on which to focus during ST6 and ST7 (advanced specialist training).

By the end of ST5 the trainee will have achieved the level of competence of intermediate knowledge and skills defined for each site specialty.

3.4.1 Overview

3.4.1.1 The framework for Intermediate specialist training will consist of rotations, which should give appropriate experience in the areas identified below.

Generic modules:
- Prescription and administration of cytotoxic chemotherapy
- Professional attitudes
- Communication skills

System-based site specialties:
- breast
- thoracic malignancy
- upper and lower gastrointestinal (GI)
- head and neck
- sarcomas
- gynaecological oncology
- urological malignancy and germ cell tumours
- neuro-oncology
- skin
- lymphomas
- paediatric oncology

Technique-based specialties:
- brachytherapy

3.4.1.2 In many training schemes trainees will receive intermediate specialist training in more than one site specialty at the same time. Because of the complexities of rotations and the inherent differences between training schemes, the RCR leaves it to individual training schemes to determine the order of rotations and their duration.

3.4.1.3 Training schemes must ensure that their trainees are able to achieve all or almost all of the intermediate specialist training objectives for each site specialty.

3.4.1.4 On-call. When competence for such work has been established, each trainee will participate in an appropriate on-call rota, or other schemes of exposure to acute and emergency oncology, in which he/she will be responsible to a named consultant(s).

3.4.2 Clinical skills

3.4.2.1 Section 10 of the curriculum delineates the training objectives (knowledge and skills) that will be acquired at intermediate and advanced levels.

3.4.2.2 Each component of the training programme will have a clearly defined structure for the supervision of the trainee by senior colleagues (trainers). There will be a named consultant(s) who will assume overall responsibility for the training given during that period.

3.4.2.3 The trainer will also be responsible for undertaking appraisal of the trainee at the beginning, during and at the end of the rotation and may be involved in the end of rotation assessment.

4 Advanced Specialist Training in Clinical Oncology

4.1 Overview

Advanced specialist training in site specialties will normally be undertaken after achieving FRCR but may be undertaken in a modular or continuous fashion throughout training. Trainees will not normally be able to commence ST7 without having demonstrated competence in the knowledge and skills tests of the Final FRCR Examination. Site specialised training contains elements of choice to reflect the requirements and interests of the trainee. These include:

- continued training in the intermediate competencies to a higher professional level
- development of two or more site specialised interests

4.2 The elements of general professional development, as outlined in Section 4.4, will also be pursued during advanced specialist training to a level sufficient to demonstrate professional competence.

4.3 Regular reviews, as defined in Sections 2.7 and 3.3, will continue during advanced specialist training with an emphasis on guidance as to future career choices. Accurate logbooks will continue to be essential in documenting the progress of the trainee towards the completion of his/her training, and the award of a CCT.

4.4 The trainee will develop skills, as part of his/her general professional development, in:

- teaching
- clinical audit
  - clinical effectiveness
  - clinical risk management including discrepancy review
  - quality standards
- research
- management (see Section 4.4.1)
- health informatics (See Section 4.4.2)

Some of these aspects of training will require attendance at in-house and/or external meetings and courses at appropriate periods during training.

4.4.1 The following management skills should be acquired:

- contextual awareness: understanding the bigger picture and developing an ability to operate effectively at all appropriate levels in the NHS
- strategic thinking
- functional and operational skills, and knowledge of the day-to-day operation of oncology departments and other health care units
- clinical governance including clinical effectiveness, quality assurance and clinical risk management
- human resources/people management, team building, complaints procedures, professional development

4.4.2 Health informatics

The trainee should:

- develop core skills in information technology, especially the ability to perform basic word-processing, and to access computerised medical databases, electronic mail systems and the internet
- keep abreast of developments in information management relevant to clinical oncology departments
- strive for best practice in patient record keeping and the transfer of clinical data
- comply with the Acts and Directives concerning data protection in clinical practice, and when using patient data for research, audit or teaching
- understand the principles and practice of evidence-based medicine
- understand how clinical information is used in clinical governance

4.4.3 The trainee should develop the following personal attributes as part of his/her general professional development:

- self-awareness
- time management

- teamwork
- handling uncertainty

4.5 There will be regular RITA reviews of all trainees as outlined in Section 3.3.4. These will aim to:

- verify experience and competence gained during the preceding time period by reviewing the in-training assessments
- ensure that set targets have been met
- review clinical, technical and general professional development

The use of the TPP (Section 2.6) and standardised log books (Section 2.4.4) will facilitate this review and help the review panel to:

- identify any deficiencies in expected knowledge, practical skills or experience so that these may be remedied in the following months
- set targets for the forthcoming period of training
- offer career guidance and counselling as appropriate

The review of in-training assessments should be formalised and completed jointly by the trainee and reviewers with a copy of the review result being sent to the regional dean and the RCR regional postgraduate education adviser.

4.6 Where the desired advanced specialist training in a particular site specialty cannot be provided on-site, the RCR recommends that training schemes should make every effort to assist the trainee to obtain an attachment or fellowship at another institution if this is appropriate to his/her career needs. It is recognised that this will require consultation and agreement between the head of the training scheme, the RCR Regional Postgraduate Education Adviser, the Regional Dean, the Clinical Director of the department to which the trainee is attached and where relevant, the head of the site specialty training or Fellowship. Other forms of attachment, such as a day- or week-release, may provide a suitable alternative for some trainees.

5 Special circumstances

5.1 Absences from training**:** Absence on sick leave or maternity leave reduces the time spent in training. In appropriate circumstances, an absence for sick or maternity leave of up to three months may occur without necessarily affecting the expected date for completion of specialist training. Such absences must be notified to the Royal College of Radiologists in advance, or as soon as training is recommenced.

5.2 Less than full time training**:** All periods of time specified in this document are whole time equivalent. Less than full time training may not be undertaken on the basis of fewer than five sessions per week (i.e. not less than half that of the whole time equivalent). Less than full time trainees should be involved in an on-call rota on a pro-rata basis.

5.3 Acting-Up**:** A trainee who has obtained the Fellowship of the Royal College of Radiologists may spend up to three months, during the final year of specialist training, "acting-up" as a consultant without affecting his/her expected CCT date, provided that a consultant supervisor is identified for the post, prospective approval has been obtained from the RCR, and satisfactory progress is made.

5.4 Out of Programme Experience (OOPE). The RCR recognises that training is enriched by experiencing clinical oncology practice in more than one clinical environment and because of this has encouraged all training schemes within the United Kingdom to develop rotations to at least one other centre during the training period. Trainees may choose to extend their experience by travelling to training centres elsewhere in the UK or overseas to gain further experience in new techniques or ways of working for up to one year. The aims of this period of training must be agreed beforehand with the Warden of the RCR, the Post-Graduate Dean, the head of the training rotation in the UK and the nominated training supervisor in the host department. At the discretion of the Warden all or part of this OOPE may be recognised as appropriate for recognition as training for the Clinical Oncology CCT in the UK.

5.5 Academic Training. A period of research during the indicative five years of specialist training is encouraged for all trainees. Six months of full-time research in any aspect of clinical oncology or basic cancer sciences is allowed as part of the five years of specialist training. At the discretion of the Warden, up to 12 months of the five years of accredited training may be spent in clinically-based research. However, there are now increasing opportunities for those who wish to pursue even more research orientated careers and new posts have been set up to facilitate such academic training. Individual trainees and individual training schemes will establish their own method of mixing academic work and oncological training; much may depend on how the research activities are funded. From a training perspective, it is ideal if some routine training and service work continues throughout any period of research training (ie one day per week). However, it is acknowledged that some research endeavours require full-time commitment. As a basic guide, one year away from any clinical work would be the maximum that would be permitted to allow a trainee to continue to CCT without the need for a period for refreshing clinical skills.

6 Appeals

There are formal mechanisms for appealing against decisions taken at all stages of training. Appeals against decisions of the Deanery Specialist Training Committee are conducted locally under the supervision of the Postgraduate Dean. Appeals against examination results are conducted by the RCR; information can be obtained from the Examinations Office. Appeals against a failure to award a CCT may be made to PMETB. It is important to be aware that the relevant regulations specify strict time limits within which appeals must be lodged.

7 Curriculum Review and Updating

The way in which this curriculum has evolved is set out in the Foreword and in Section 1. The Education Board of the Royal College of Radiologists is responsible for review of the curriculum. Formal review will take place every two years. Clinical oncology is a rapidly evolving specialty and it is important that a swift response to continuing developments in specialist training can be facilitated. Revisions to other curricula outside the UK may also prompt a review. The regular meetings of the Faculty Board and the Education Board allow opportunities for the curriculum to be discussed and amendments to be proposed and approved in advance of formal review.

Curriculum evaluation should establish how trainees have responded to the curriculum and that the curriculum facilitates practical delivery of the required training. The curriculum will be evaluated by means of trainee questionnaires and formal meetings of Regional Postgraduate Educational Advisers and Heads of Training.

Trainees and lay representatives have been involved in the preparation of this curriculum and will continue to be involved in reviews, through representation from the College's Oncology Registrars' Forum and the Patient Liaison Group. Trainers, Tutors, Regional Advisers and Programme Directors will also continue to be involved in reviews through their membership of relevant working parties and committees.

8 Glossary of Terms

A training programme/training scheme
A training programme/scheme provides a comprehensive training programme matching the requirements of the RCR structured training curriculum (indicative period five years). The training may be delivered by a single or a number of departments of clinical oncology. Training programmes/schemes are approved for training on a regular cycle by the PMETB.

A training department
A department of clinical oncology, which is part of an approved training programme/scheme. The training department may contribute to one or more parts of the curriculum.

Certificate of Completion of Training (CCT)
This certificate is issued by the PMETB on the recommendation of the RCR after:
(i) satisfactory completion of the curriculum within an approved training scheme; and
(ii) admission to the Fellowship of the RCR following success in the Final FRCR Examination; and
(iii) completion of at least two of the site specialty curricula at advanced level; the indicative period of training for this component is at least one year of post FRCR training

Record of in-training assessment (RITA)
The RITA form provides a record of the regular review at which a specialist registrar's progress through training is evaluated. The review is undertaken by a small specialty-based panel accountable to the deanery-based committee but taking advice from the RCR.

Fellowship appointment
An attachment, usually of 6–12 months, spent in a specialist unit, which may be away from the main training centre, designed to provide particular experience in one (or more) oncological site specialty.

Head of training scheme
In each training scheme there will be one clearly identifiable person who has overall responsibility for the organisation and delivery of the training. This should be a separate post from that of the clinical director to avoid potential conflict of interest, but may on occasion be the same individual where this arrangement can be shown to be advantageous to the scheme as a whole. In all circumstances the line of accountability must be clearly understood by all.

Regional Postgraduate Education Adviser
This post is jointly appointed and approved by the RCR and the Regional Post-Graduate Dean. For the RCR aspects of the post, the holder is accountable to the Warden. He/she is primarily responsible for ensuring that the RCR's aims in regard to postgraduate education are adopted throughout the region. He/she is normally chairman of the regional oncology training committee.

College Tutor
This is a locally appointed consultant who is responsible for supervising the needs of individual trainees. There will be at least one College tutor in each training department.

Trainee Personal Portfolio (TPP)
This is the tool that trainers and trainees use to monitor the rotations undertaken and the competencies achieved throughout the whole training period. The portfolio is available on the RCR website.

9 References

1 Modernising Medical Careers: The next steps. The future shape of foundation, specialist, and general practice training programmes.2004 Department of Health. London.

2 Good medical practice. General Medical Council, GMC, London 2001. www.gmc-uk.org

3 Postgraduate Medical Education and Training Board. Standards for curriculum development. PMETB, London 2004. www.pmetb.org.uk

4 The Royal College of Radiologists (2005) *First Examination for the Fellowship in Clinical Oncology:Examination Syllabus.* London: The Royal College of Radiologists

5 The Royal College of Radiologists (2005) *Final Examination for the Fellowship in Clinical Oncology: Examination Syllabus.* London: The Royal College of Radiologists

6 The Royal College of Radiologists (2001) *Regulations for Training in Clinical Oncology and Clinical Radiology.* London: The Royal College of Radiologists

7 The Royal College of Radiologists (2004) *Regulations for the Examinations for the Fellowship of The Royal College of Radiologists in Clinical Oncology.* London: The Royal College of Radiologists

8 The Royal College of Radiologists (2003) *Training Accreditation in Clinical Oncology Guidance Notes for Training Schemes.* London: The Royal College of Radiologists

Readers are advised to regularly check the RCR website for the latest versions of relevant documents

Other Useful Information

Department of Health (1993) *Hospital Doctors: Training for the Future (The Calman Report).* Report of the Working Group on Specialist training for Hospital Doctors. London: Health Publications Unit

RCR Training in Clinical Oncology
www.rcr.ac.uk

Modernising Medical Careers, Specialty Training. London, 2005.
http://www.mmc.nhs.uk/download_files/Overview-of-proposed-specialty-training-framework1.doc

10. Site specialised curriculum modules

Assessment
The workplace-based assessment (WpBA) methods shown are those that are appropriate as possible methods that could be used to assess each competency. It is expected that competencies will be sampled for assessment and that a variety assessment methods will be used, i.e. it is not expected that all competencies will be assessed nor that where they are assessed, every method will be used. WpBAs should sample across the entire curriculum and be conducted in a timely manner throughout each clinical attachment (i.e. generally spread evenly through training and not all completed in the final weeks of an attachment).

Key to possible assessment methods

1. Mini-Clinical Evaluation Exercise (mini-CEX)
2. Case-based Discussion (CbD)
3. Directly Observed Assessment of Radiotherapy Planning Skills (DORPS) and Directly Observed Assessment of Systemic Therapy skills (DOST)
4. Multi-Source Feedback (MSF), Patient Survey
5. FRCR examination
6. Audit Assessment, Teaching Observation

Descriptors: These define the levels of competence expected by the end of intermediate specialist training (I) or advanced specialist training (A).

I: corresponds to competence achieved during intermediate specialist training, usually associated with supervision level 1 (moderate supervision) noted in the log book.

A: corresponds to competence achieved during advanced specialist training, usually associated with supervision level 2 (minimal supervision) noted in the log book.

10.1 Prescribing and administering cytotoxic chemotherapy and biological agents

It is assumed that this module is to be studied at the same time as the syllabus in Clinical Pharmacology for the First FRCR examination, The First FRCR examination is normally taken at the end of ST3..

1. Protocols and Prescriptions

Objective	Knowledge	Skills	Assessment
Be able to use local protocols for prescribing and administering chemotherapy (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation. Understands the action of chemotherapeutic agents, their limitations and interactions	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with electronic prescribing where appropriate (I)			1,2
Be able to calculate doses of drugs for individual patients(I)	Understands the use of Surface Area calculations, maximum doses, Calvert's (or other equivalent formula) for estimating renal function, patient parameters affecting dose	Calculates doses of drugs for patients	1,2
Understands assessment of patient's fitness the receive the chemotherapy prescribed (I)	Knows the biological activity of commonly used drugs and their effect on the patient	Takes part in chemotherapy review clinics	1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of commonly used drugs.	Able to prescribe growth factors and other support drugs	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities	Able to prescribe less common cytotoxic regimes	1,2,3,5

(A)			
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research. Undertakes GCP training.	Consents for Phase 2 and 3 trials and randomises patients.	1
Able to care for patients having routine curative and palliative chemotherapy (I)	Understands the acute side effects of chemotherapy and their biological basis.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

2. Adverse Reactions

Objective	Knowledge	Skills	Assessment
Able to recognise and manage extravasation (I)	Knows the chemical properties of commonly used drugs. Knows how to recognise and treat extravasation.	Treats extravasation according to local guidelines.	1,3,4,5
Able to recognise and manage hypersensitivity reactions (I)	Knows which drugs commonly cause hypersensitivity reactions, and can recognise them. Knows the local guidelines for managing hypersensitivity.	Treats hypersensitivity reactions.	1,3,4,5
Able to modify future chemotherapy treatment in the light of hypersensitivity reaction (I).	Knows which drugs show cross-reactivity and which drugs can be substituted in the case of hypersensitivity. Understands implications for future treatment.		1,3,5

3. Handling and Administration of drugs

Objective	Knowledge	Skills	Assessment
Able to handle cytotoxic drugs safely (I)	Knows local guidelines for storage and handling of cytotoxic drugs. Knows how to deal with contamination of skin or eyes.	Explains to patient about appropriate precautions to be taken at home where indicated including treatment with oral, intra-vesical and trans-cutaneous drugs.	1,3,4
Able to administer cytotoxic drugs safely via oral and intravenous routes including permanent and semi-permanent venous access (I)		Can administer drugs intravenously and orally	2,3,4
Understands how to administer drugs via intra-thecal, intra-peritoneal and intra-vesical routes (A)	Knows local guidelines for administering drugs via intra-thecal, intra-vesical and intra-peritoneal routes Attended local Intra-Thecal awareness course	Can administer drugs intra-vesically, intratthecally, intra-peritoneally.	3,4
Able to assess patient and blood results and know when to administer or withhold chemotherapy (I)	Knows local guidelines and protocols for proceeding with chemotherapy or withholding it.	Takes part in treatment review clinics.	2,3,4,5

4. Information and Consent

Objective	Knowledge	Skills	Assessment
Understands	Knows local guidelines regarding prescription		1,2

professional responsibilities and competence in prescribing cytotoxic drugs and is able to recognise limits of personal competence(I)	of cytotoxic drugs		
Able to understand information needs of patients and discuss treatment using cytotoxic drugs including activity and side effects (I)	Knows how to explain activity and side effects to patients and relatives. Knows local guidelines for obtaining informed consent. Knows how to advise on acute complications of treatment including neutropaenic sepsis.	Takes informed consent for routine treatment using chemotherapy	1,2,4
Understands the role of clinical trials in the management of cancer patients (I)	Knows the guidelines for accrual , randomisation and obtaining consent for current trials used in the department	Takes informed consent for clinical trials	2,5,6

10.2 Communication Skills

All trainees will have completed CMT or ACCS and will have demonstrated their knowledge and skills in PACES examinations.. They will already be competent in important generic communication skills and will be able to demonstrate that they are able to:

- Take an accurate and reliable history
- Listen carefully and check understanding
- Establish rapport with patients and obtain mutual understanding
- Explain disease processes and treatment details honestly in language appropriate to patients and carers
- Break bad news showing sensitivity and consideration of the patient and carers
- Undertake patient education as part of a consultation
- Communicate clearly and efficiently both orally and in writing with medical colleagues and colleagues in other disciplines
- Maintain accurate records of consultations and other interactions with patients and their carers

The discipline of Clinical Oncology requires additional specialist communication skills which the trainee will acquire incrementally during the indicative five years of training and the trainee will be expected to demonstrate increasing capability as he/she gains experience and skills. It is anticipated that the trainee will undertake very few of these skills unsupervised during the first phases of training but by the time that he/she is ready to take the Final FRCR examination, will have gained some experience in all domains listed and will have successfully negotiated the majority of situations at least once with minimal supervision.

Objective	Knowledge	Skills	Assessment
Be able to communicate the change from curative to palliative treatment (I)	Knows the risks and benefits of treatment and the effects of treatment on prognosis	Communicates risk in a clear and comprehensible manner	1,2,4,5
Be able to communicate confidently and appropriately with the 'expert patient' (I)	Is familiar with resources available to patients	Listens carefully, actively and appropriately. Shows respect and consideration. Enhances and encourages mutual understanding.	1,2,4,5
Be able to deal sympathetically and appropriately with angry patients and carers (I)	Understand patient's perspective. Knows how to impart knowledge sensitively and effectively.	Able to select the correct environment and setting. Listens carefully, actively and appropriately. Explains clearly, honestly and using language effectively and appropriately.	1,2,4,5
Be able to explain highly technical and complex treatments in such a way that the patient is able to become involved in	Knows details of treatment alternatives including the option of best supportive care where appropriate	Able to accurately assess the needs of patients and provide appropriate information.	1,2,4,5

treatment decisions (I)			
Be able to explain prognosis accurately and honestly (B/H)	Knows prognosis of different stages of disease and the effects of treatment	Able to accurately assess the needs of patients and provide appropriate information**.**	1,2,4,5
Be able to handle complaints about treatment (A)	Understands how the hospital's complaints system works	Able to mediate, negotiate and deal appropriately with complaints	1,2,4,5
Is able obtain informed consent for randomised trials (A)	Knows the ethical and statistical issues associated with clinical trials and how they are performed. Has excellent knowledge of the Data Protection Act and codes of conduct governing clinical research	Explains clearly, honestly and using language effectively and appropriately	1,2,4,5
Is able to obtain consent for novel drugs and treatments in a Phase 1 and Phase 2 setting (A)	Understands the ethics and statistics involved in Phase 1 and Phase 2 studies	Explains clearly, honestly and using language effectively and appropriately	1,2,4,5
Is able to participate effectively in a multidisciplinary team (A)	Understands the role of other members of the team. Has an understanding of group dynamics.	Listens carefully, actively and appropriately. Considerate, polite and thoughtful of patients and colleagues. Explains clearly, honestly and effectively.	

10.3 Breast Cancer

1. Selection and assessment of patients with male and female breast cancer.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage invasive adenocarcinoma of the breast (I)	Understands epidemiology and aetiology of breast cancer. Understands the importance of screening and its limitations Knows the TNM staging for breast cancer and Nottingham Prognostic Index. Understands common benign breast diseases and their importance in patients with breast cancer or suspected breast cancer. Can recommend appropriate diagnostic and staging investigations for women presenting with suspected breast cancer	Examination of the female breast and axilla	1,2,3,5
Be familiar with the main histological types of breast cancer and their management (I) **Is familiar with less common malignancies affecting the breast eg sarcomas and lymphomas (A)**	Understands the management of all stages of breast cancer and how its management differs according to the main histological types and grades of malignancy. Understands the importance of immuno-histochemical testing.	Able to recognise the main histological types of cancer presenting in the breast	1,5
Is familiar with male breast cancer and its management (I)	Understands the ways in which male breast cancer behaves and how it differs from female breast cancer		1,2,5
Able to assess prognosis for patients with breast cancer(I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of different treatment modalities in both curative and palliative treatment of breast cancer in patients presenting in all stages of disease. Understands the importance of ensuring seamless transition of care between colleagues.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of external beam radiotherapy and their relation to dose and volume in both the intact breast, and the chest wall after surgery, and draining lymphatic regions.. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to determine the target volume for planning for radiotherapy to the breast or chest wall and regional lymphatics(I)	Understands the clinical and radiological parameters associated with planning radiotherapy to the breast and lymphatics including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume for treatment of the whole breast, partial breast and boost to tumour bed.. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for different stages of breast cancer	1,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Knows how to judge the relative risks and benefits of dose gradients in the breast, chest wall and regional lymphatic areas.		1,3,5
Be able to use special planning modalities including CT planning (and BEV planning) (A)	Understands the use of cross-sectional imaging in planning breast radiotherapy	Able to use CT planning (and IMRT) in the treatment of breast cancer	1,2,3,4,5
Be able to care for patients undergoing radiotherapy for breast cancer (I)	Understands early reactions to breast radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4,5
Be able to modify course of treatment for individual patients according to severity of reactions including adjustments for gaps in treatment (I)	Understands the radiobiology associated with radical radiotherapy for breast cancer		
Be able to participate in protocol development in radiotherapy for breast cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy (chemotherapy, hormone therapy, biological agents)

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate systemic therapy used as neoadjuvant, concomitant or adjuvant treatment(I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for breast cancer (A)	Understands the action of chemotherapeutic agents, hormones and biological agents, their limitations and interactions with radiotherapy		1,2
Be able to modify systemic therapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of breast cancer	Able to prescribe growth factors and other support drugs	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients	Able to prescribe less common cytotoxic regimes	1,2,3
Be able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1,6
Be able to care for patients having routine neo-adjuvant, con-comitant, adjuvant and palliative systemic therapy (I)	Understands the acute and long term side effects of systemic therapies and their interaction with radiotherapy and other drugs.	Able to prescribe chemotherapy and biological agents according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

4. Brachytherapy

Objective	Knowledge	Skills	Assessment
Understand the indications for brachytherapy in the management of breast cancer (I)	Radiobiological and physical aspects of interstitial brachytherapy in breast cancer.		1,2,5
Be familiar with the planning and modification of brachytherapy treatment and prescriptions in the light of normal tissue tolerance (A)	Quality assurance of brachytherapy for breast cancer	Perform straightforward single plane brachytherapy insertions.	1,2,3

Be able to participate in planning departmental brachytherapy workload and use of LDR, MDR and HDR afterloading equipment (A)	Understanding of the organisation of a brachytherapy service		1,2,3

5. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform clinical examination in patients who have been previously treated for breast cancer	1,2,3,4,5
Be able to recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Be able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated breast cancer	Perform full physical examination.	1,2,5
Understand how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(I)	Understands the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands the importance of involving palliative care team in management.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4,5
Understand common breast cancer genetics, how to assess risk and give advice on risk (I)	Knows how to advise on family risk. Knows the indications for referral for specialist genetic advice.		1,2,4,5

Breast Cancer: Pre-invasive disease

1. Selection and assessment of patients with carcinoma in situ for radiotherapy.

Objective	Knowledge	Skills	Assessment
Understand how to diagnose ductal and lobular carcinoma in situ(I)	Understands epidemiology and aetiology of DCIS and LCIS. Can recommend appropriate diagnostic investigations for women presenting with suspected DCIS and LCIS	Examination of the breast Interprets simple imaging	1,2,3,5
Be familiar with DCIS/LCIS and its management (I)	Understands the management of DCIS/LCIS	Able to recognise the main histological types of CIS	1,5
Be able to assess patients for adjuvant postoperative radiotherapy (I)			

Be able to discuss treatment options in the light of understanding of prognosis for patients with DCIS and LCIS (A)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4
Be able to take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy, surgery and systemic therapy in patients presenting with DCIS/LCIS.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of breast radiotherapy and their relation to dose and volume. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to determine the target volume for planning field for radiotherapy to the breast for pre-invasive disease (I)	Understands the clinical and radiological parameters associated with planning radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for radiotherapy for pre-invasive carcinoma of the breast	1,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Knows how to judge the relative risks and benefits of dose gradients in the pelvis		1,3,5
Be able to use special planning modalities including CT planning and BEV planning(A)	Understands the use of cross-sectional imaging in planning radiotherapy to the breast	Able to use CT planning and IMRT in the treatment of pre-invasive breast cancer	1,2,3,4,5
Be able to care for patients undergoing radiotherapy for pre-invasive breast cancer (I)	Understands early reactions to radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4
Be able to modify course of treatment for individual patients according to severity of reactions (I)	Understands the radiobiological basis of radical radiotherapy for pre-invasive breast cancer		

Be able to participate in protocol development in radiotherapy for pre-invasive breast cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform examination of the breast and regional lymphatics in patients who have been previously treated for pre-invasive breast cancer	1,2,3,4,5
Recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated pre-invasive breast cancer	Perform full physical examination including breast examination	1,2,5
Know how to manage recurrent disease and it symptoms.(A)	Understand the roles of radiotherapy, and surgery in the management of recurrence	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

Breast Cancer : advanced and metastatic disease

1. Selection and assessment of patients with advanced and metastatic breast cancer for treatment.

Objective	Knowledge	Skills	Assessment
Be able to diagnose common presentations of metastatic breast cancer (I)	Understands epidemiology and aetiology of breast cancer. Can recommend appropriate diagnostic and staging investigations for women presenting with suspected advanced or metastatic breast cancer	Physical examination in out-patients clinic.	1,2,3,5
Able to assess prognosis for patients with advanced and metastatic disease (I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of chemotherapy, radiotherapy and surgery in palliative treatment of advanced or metastatic breast cancer. Understands the importance of involving palliative care team in management.		1,4

2. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate systemic therapy for advanced and metastatic disease (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for advanced and metastatic disease (A)	Understands the action of chemotherapeutic, hormonal or biological agents, their limitations and interactions		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of advanced and metastatic disease	Able to prescribe growth factors and other support drugs	1,2,3,5
Be able to advise on less common therapeutic regimes in palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities	Able to prescribe less common cytotoxic regimes	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1,6
Able to care for patients having routine palliative chemotherapy (I)	Understands the acute side effects of chemotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5
Able to use supportive treatments eg bisphosphonates (I)	Understands the action of various supportive interventions and their indications		1,2,3,5

3. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of radiotherapy and their relation to dose and volume in the different organs. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for palliative treatment	1,3,4,5
Be able to determine the target volume for planning field for palliative radiotherapy (I)	Understands the clinical and radiological parameters associated with planning palliative radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition.	Able to define a planning target volume for palliative radiotherapy in a patient with advanced breast cancer	1,3,5

Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Knows how to judge the relative risks and benefits of dose gradients in the radiation field Is able to judge how to modify treatment plans based on morbidity.		1,3,5
Be able to care for patients undergoing palliative radiotherapy for metastatic breast cancer (I)	Understands early reactions to radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4,5
Be able to modify course of treatment for individual patients according to severity of reactions (I)	Understands the radiobiology associated with palliative radiotherapy for advanced breast cancer		
Be able to participate in protocol development in radiotherapy for advanced or metastatic breast cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform physical examination in patients who have been previously treated for advanced breast cancer	1,2,3,4,5
Recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of l treatment and how to differentiate them from disease progression.		1,2,3,4
Able to diagnose and investigate further disease progression (I)	Knowledge of natural history of treated advanced breast cancer	Perform full physical examination	1,2,5
Knows how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(I)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4,5

10.4 Thoracic Oncology/Lung Cancer: NSCLC

1. NSCLC: Selection and assessment of patients for treatment.

Objective	Knowledge	Skills	Assessment
To relate clinical and radiological anatomy to diagnosis and therapy (I)	Understand clinical and radiological anatomy of thorax	Be able to identify thoracic anatomical landmarks, key structures including vessels, lymph nodes and airways on CT	1, 3, 5
Be able to diagnose and stage NSCLC (I)	Understands epidemiology and aetiology of NSCLC. Knows the indications for urgent referral for chest X-ray and respiratory opinion from primary or secondary care. Aware of the risks associated with CT guided biopsy. Knows the TNM staging for NSCLC. Understands technique and limitations of mediastinoscopy and node sampling Is able to recognise common para-neoplastic syndromes and recognise their importance	Respiratory and cardiovascular examination in out-patients clinic. Able to interpret X-ray, CT, MRI and PET imaging Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected NSCLC including indications for PET scanning and mediastinal lymph node sampling Attendance at bronchoscopy session	1,2,3,5
Be able to assess patients for radical radiotherapy (I) **Be able to assess patients for post-operative treatment (A)** **Be able to assess patients for palliative treatment (I)**	Understands the indications for radical radiotherapy in early NSCLC and its side effects Understands indications for surgery , different types of operation: wedge resection, lobectomy, pneumonectomy and risks associated Aware of the role of CHART (Continuous Hyperfractionated Accelerated Radiotherapy) in early NSCLC Understands literature on post operative radiotherapy and the circumstances in which this might be considered Understands evidence for adjuvant chemotherapy following surgery Understands benefits and toxicity of palliative treatment for both radiotherapy and chemotherapy Knows the importance of smoking cessation Understands the importance of involving palliative care team in management.	Able to assess performance state (WHO or Karnofsky) Able to interpret pulmonary function tests but also how they relate to the patient's functional status Able to discuss post operative treatment options and risk/benefit with individual patients Able to discuss palliative treatment appropriate to stage and fitness of patient Able to advise on appropriate agencies for helping smoking cessation.	1,2,4,5
Able to assess prognosis for patients with NSCLC (I)	Knows the effect of performance state, stage, age, co-morbidity and histological type on prognosis		1,2,3,5

Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis	Able to inform patients on treatment options and discuss individual risk/benefit	1,2,3,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications for treatment of NSCLC, and the risks and benefits of different treatment options	Can contribute to MDT discussions	1,3,4

2. NSCLC: Radiotherapy treatment

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of thoracic radiotherapy and their relation to dose and volume irradiated and to whether single or multifraction regimens used. Understands the potential response rates with palliative therapy for symptom control such as cough, haemoptysis Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to assess performance status of patient and elicit symptoms and their severity Able to take informed consent for radical and for palliative treatment	1,3,4,5
Be able to determine the target volume for planning palliative and radical radiotherapy (I)	Is competent in the interpretation of diagnostic imaging (including CT, PET and MR) for determination of target volume. Understands the clinical and radiological parameters associated with planning 2D conventional and 3D conformal lung radiotherapy. Is competent in assessing tumour motion using X-ray fluoroscopy. Understands current literature relating DVH values to tolerance of normal tissue Understands the issues in defining target volume for those patients who have received neo-adjuvant chemotherapy which has debulked tumour	Able to define a planning target volume for NSCLC. Can define DVH (dose volume histogram) based 3D conformal planning constraints.	1,2,3,5
Be able to prescribe appropriate dose and fractionation schedule for palliative and radical radiotherapy (I)	Understands evidence base for dose/fractionation schedules commonly used in lung cancer	Is able to define appropriate treatment schedule according to stage of disease, performance status of patients and concomitant systemic therapy	1,2,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Aware of normal tissue morbidity and its impact on target volume definition. Understands risks of retreatment with radiation based on normal tissue tolerance limits	Is able to judge how to modify treatment plans based on patient co-morbidity. Able to assess when retreatment is acceptable and prescribe appropriate dose and fractionation	1,3,5

Be able to use special planning modalities including CT planning and BEV planning (A)	Understands the use of cross-sectional imaging in planning lung radiotherapy (I) Aware of the evolving role of stereotactic radiotherapy, 4D CT planning and respiratory gating in radical lung radiotherapy (A)	Able to use CT planning in the treatment of NSCLC	1,2,3,5
Be able to verify treatment plan (A)	Understands use of digitally reconstructed radiographs and beam's eye views Understands use of portal imaging	Able to assess accuracy of patient set-up and recommend adjustments	
Be able to care for patients undergoing radiotherapy for NSCLC (I)	Understands early reactions to thoracic radiotherapy and their management Understands increased risks of toxicity associated with combination chemoradiotherapy	Able to conduct radiotherapy review and manage early reactions	1,2,3,5
Be able to modify course of treatment for individual patients according to severity of reactions including adjustments for gaps in treatment (I)	Understands the radiobiology associated with radical radiotherapy NSCLC		
Be able to participate in protocol development in radiotherapy for NSCLC (A)	Understands developments in radiotherapy research and their application to local protocols		1,4,6
Be able to use external beam radiotherapy as a palliative modality for pain relief from bony metastases (I) **Able to assess the underlying mechanism for pain and refer suitable patients for surgical approach (A)**	Understand the mechanism of radiation induced pain relief Have knowledge of bone metastases palliative radiotherapy trials with emphasis on symptom control and quality of life Be aware of potential for acute pain flare Able to pre-empt radiation induced nausea/diarrhoeas if field is relevant to these symptoms Knowledge of role of surgical fixation for lytic metastases in long bones and unstable vertebral column	Able to take informed consent for palliative RT to a bony metastasis and advise patient on side effects Able to assess underlying mechanism for pain and refer appropriate patients for surgical intervention	1,3,4,5
Be able to assess patients for endobronchial therapy (A)	Understands potential role of endobronchial brachytherapy relative to laser treatment and photodynamic therapy	Able to identify suitable patients who may benefit from these treatments for referral to appropriate centre	

3. NSCLC: Systemic Therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy (I) **Able to adjust choice of chemotherapy regimen according to patient fitness (A)**	Is familiar with commonly used drug protocols and their side effects. Understands principles of palliative chemotherapy and potential benefit to patient (BMJ meta-analysis). Understand different patient motives (coping, survival enhancement, quality of life improvement) for receiving chemotherapy (A)	Able to prescribe common therapeutic regimes. Able to assess patient's fitness eg by ECOG performance status Able to assess and discuss whether	1,2,4,5

	Knows which regimes are appropriate for use in the clinical situation. This should include knowledge of appropriate regimes in the elderly, those with comorbidity and the PS2 patient	outcomes of therapy are meeting patients' needs (A)	
Be familiar with research developments in drug therapy for non-small cell lung cancer (A)	Is aware of recent literature and licensing status of new agents to allow a full discussion of options Knowledge of reliable sources of information for patients to access eg BACUP, NCI website.	Able to discuss developments in treatment knowledgeably, or know where to direct patients to find information.	1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of non-small cell lung cancer Understands when it is inappropriate to prescribe chemotherapy due to risk of toxicity.	Able to prescribe growth factors and other support drugs and able to dose reduce if appropriate. Able to organise and interpret investigations such as EDTA.	1,2,3,5
Be able to advise on 2nd line chemotherapy (I)	Understands the use of cytotoxic agents in pre-treated patients. Familiar with second line treatment options.	Able to prescribe second line treatment appropriate to patient	1,2,3,5
Be able to participate in Phase I, Phase 2 and Phase 3 clinical trials (A)	Understands the principles of clinical research. Understands the risk/benefit ratio to individual patient.	Able to obtain informed consent for a clinical trial. Able to record toxicity and response accurately.	1,6
Be able to assess response to chemotherapy (I).	Understands the aim of treatment and is able to assess response according to recognised criteria Understands the palliative care options available to a patient who is not responding to/tolerating chemotherapy	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

4. NSCLC: Assessment of response and follow up

Objective	Knowledge	Skills	Assessment
Be able to assess response to chemo and radiotherapy (I)	Imaging interpretation using RECIST criteria	Discuss response and current disease status with patients in clinic	1,2,5
Be able to advise on follow-up schedule and appropriate investigations (I)	Knowledge of patterns of relapse		1,2,5
Be able to diagnose recurrent disease (I)	Knowledge of natural history of lung cancer and ability to differentiate late effects of treatment from recurrence	Clinical assessment and selecting appropriate investigations, eg imaging or brochoscopy	1,2,5
Be able to recognise and manage acute and long-term toxicity (A)	Knowledge of acute and late effects of treatment	Able to detect and treat acute pneumonitis and oesophagitis Able to detect late effects at follow-up	1,2
Be able to manage recurrent disease (A)	Understanding the roles of chemotherapy, radiotherapy and supportive measures in the management of recurrence. Understands the importance of involving palliative care team in management.	Breaking bad news. Integration of palliative, supportive care. Ability to discuss roles of alternative therapies	1,2,4

Lung Cancer: Small Cell Lung Cancer (SCLC)

1. Assessment of patients with SCLC for treatment

Objective	Knowledge	Skills	Assessment
Be able to diagnose and Stage SCLC (I)	Understands epidemiology and aetiology of SCLC Knows staging system Understands prognostic factors Knows the importance of smoking cessation	Interpretation of x-rays and CT scan images Can recommend appropriate diagnostic and staging Investigations Attendance at bronchoscopy session Able to advise on appropriate agencies for helping smoking cessation. Able to advise on appropriate agencies for helping smoking cessation.	1,2,5
Be able to assess patients for appropriate therapy (I)	Understands the management of the condition Understands potential toxicity of therapy (systemic and radiotherapy) Understands the role of early chemo-radiotherapy against sequential chemotherapy with consolidation radiotherapy	Clinical assessment, including assessing co-morbidity and its affect on outcome	1,2,5
Be able to discuss treatment options (I)	Understands prognosis and how treatment affects this	Advise patient on appropriate management	1,2,3,4,5
Take part in MDM discussions(A)	Understands indications for and limitations of treatment for SCLC	MDM interaction	1,2,3,4

2. Systemic Therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for chemotherapy (I)	Knowledge of common drug protocols for SCLC and their toxicity Understand which regimes are appropriate in the clinical situation	Clinical Examination and Assessment	1,2,5
Look after patients undergoing radical and palliative treatment regimes (I)	Understands the acute side-effects of chemotherapy	Able to prescribe common chemo protocols, modify prescriptions, judge when to stop or continue treatment, and prescribe supportive treatment	1,2,3,5
Be able to modify prescription in the light of major organ dysfunction (I)	Understands the pharmacology of drugs used in the treatment of SCLC	Able to prescribe growth factors, supportive agents and dose reduce as appropriate	1,2,4,5
Be able to advise on second line therapeutic regimes (A)	Understands the use of cytotoxics in pre-treated patients	Able to prescribe and manage second line cytotoxic regimes	2,3
Be familiar with research developments in SCLC (A)	Knows details of recently published and ongoing trials	Able to discuss involvement in clinical trials	2,4,5
Be able to participate in ph I, II and III trials and maintain appropriate research records (A)	Understands the principles of clinical research		2,3,6

3. Radiotherapy Treatment

Objective	Knowledge	Skills	Assessment
Be able to assess patients suitability for consolidation or palliative RT (I)	Understand benefits side effects and risks of radiotherapy including PCI	Obtain informed consent	1,2,3,5
Be able to determine planning target volume for thoracic RT or palliative treatment (I)	Aware of normal tissue toxicity and its impact on target volume definition. Understand how respiratory movement affects PTV	Plan thoracic radiotherapy, including CT planning Plan PCI including blocks Plan palliative radiotherapy	1,2,3,5
Be able to manage and care for patients undergoing thoracic RT and PCI (I)	Understands radiobiology of thoracic RT and PCI. Understands early reactions to thoracic RT and PCI and their management	Clinic review of on-treatment patients and management of early reactions	1,2,5
Be able to enter patients into clinical trials of RT in limited stage SCLC (A)	Good knowledge of rationale for on-going clinical trials	Obtain consent for entry into clinical trials	1,2,3
Be able to modify treatment plans according to patients individual needs pre-morbid conditions etc (I)	Judge relative risks and benefits	Prescribe and review radical treatment	1,2,3,5

4. Assessment of response and follow up

Objective	Knowledge	Skills	Assessment
Be able to assess response to chemo and radiotherapy (I)	Imaging interpretation using RECIST criteria	Discuss response and current disease status with patients in clinic	1,2,5
Be able to advise on follow-up schedule and appropriate investigations (I)	Knowledge of patterns of relapse of SCLC		1,2,5
Be able to diagnose recurrent disease (I)	Knowledge of likely symptoms and signs of recurrent metastatic disease	Clinical assessment and selecting appropriate investigations, eg imaging/ bronchoscopy	1,2,5
Be able to recognise and manage long-term toxicity (A)	Knowledge of late effects of treatment	Detect at follow-up	1,2
Be able to manage recurrent disease (A)	Understanding the roles of chemotherapy, radiotherapy and supportive measures in the management of recurrence	Breaking bad news. Integration of palliative, supportive care. Ability to discuss roles of alternative therapies	1,2,4

Thoracic Oncology: Mesothelioma

1. Selection and assessment of patients with mesothelioma for treatment.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage mesothelioma (I)	Understands the epidemiology and aetiology of mesothelioma. Knows the IMIG staging for mesothelioma and is aware of its limitations. Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected mesothelioma. Is aware of the legal implications and support issues of a diagnosis of mesothelioma.	Respiratory examination in the out patient clinic. Interpretation of CT scanning, understanding of the limits of plain chest radiology, ability to suggest appropriate diagnostic methods eg pleural biopsy, VAT	1,2,3,5
Be familiar with the main histological types of mesothelioma (I)	Understands the difficulties of establishing a definite histological diagnosis in suspected mesothelioma. Knows the main histological types of mesothelioma Understands the management of all stages of mesothelioma and how its management may differ according to the histological type	Able to discuss relevant histological markers.	1,5
Be able to assess patients for radiotherapy (I)	Understands the indications for radiotherapy and its side effects.		1,2,3
Able to assess prognosis for patients with mesothelioma (I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis.		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (A)	Understands potential roles of radiotherapy and surgery and the limitations of evidence base on both Understands the indications for chemotherapy, the evidence base, contentious issues and side effects.	Can inform patient of treatment options and discuss as required.	1,2,3,4
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of treatment in both curative and palliative setting of mesothelioma in patients presenting in all stages. Understands the importance of involving palliative care team in management.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(B/H) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of prophylactic (I) / palliative (I) / post operative (A) radiotherapy and their relation to dose and volume in the different organs in the chest and abdomen. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical (A) and palliative (I) treatment.	1,3,4,5

Be able to determine the target volume for planning field for post operative radiotherapy (A)	Understands the clinical and radiological parameters associated with planning radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume in palliative setting, but have an understanding of the issues in planning post EPP.	1,3
Be able to use special planning modalities including CT planning (A)	Understands the use of cross-sectional imaging (CT and MRI) in planning thoracic radiotherapy.	Able to use CT planning in the treatment of mesothelioma.	1,2,3,4
Be able to care for patients undergoing thoracic radiotherapy for mesothelioma (I)	Understands early reactions thoracic radiotherapy and their management.	Able to conduct radiotherapy review and manage early reactions.	1,2,3,4
Be able to participate in protocol development in thoracic radiotherapy for mesothelioma (A)	Understands developments in radiotherapy research and their application to local protocols.		1,4

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy (I)	Is familiar with commonly used drug protocols and their side effects and potential interactions. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes with vitamin supplements as required	1,2,3,4,5
Be familiar with research developments in drug therapy for mesothelioma (A)	Understands the action of chemotherapeutic agents, their limitations and interactions.		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of mesothelioma.	Able to prescribe growth factors and other support drugs.	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients.	Able to prescribe less common cytotoxic regimes.	1,2,3
Be able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research.		1
Be able to care for patients having routine neo-adjuvant and palliative chemotherapy (I)	Understands the acute side effects of chemotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment.	1,2,3,5

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately.	Able to interpret CT scans and Chest x rays in patients who have been previously treated for mesothelioma	1,2,3,4,5
Be able to recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Be able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated mesothelioma	Perform full physical examination.	1,2,5
Understand how to manage recurrent disease and it symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands the importance of involving palliative care team in management.	Able to break news of recurrence to patients and discuss appropriate management options.	1,2,4

Thoracic Oncology: Thymic Tumours

1. Selection and assessment of patients with thymic tumours for radiotherapy.

Objective	Knowledge	Skills	Assessment
To relate clinical and radiological anatomy to diagnosis and therapy (I)	Understand clinical and radiological anatomy of thorax	Be able to identify thoracic anatomical landmarks, key structures including vessels, lymph nodes, thymic remnant and airways on CT	1, 3, 5
Be able to diagnose and stage thymic tumours (A)	Understands presentations of thymic tumours including neurological, haematological and immunological manifestations . Knows the staging classifications for thymic tumours.	History and examination in outpatients clinic Able to interpret X-ray, CT, MRI and PET imaging of thymic tumours Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected thymic tumours	1,2,3
Be able to assess patients for radiotherapy (A)	Understands the indications for adjuvant radiotherapy in thymic tumours Understands the role of palliative radiotherapy in thymic tumours	Able to assess performance state (WHO or Karnofsky) Able to discuss surgical findings with surgery and pathology colleagues	1,2,3
Able to assess prognosis for patients with thymic tumours (A)	Knows the effect of performance state, stage, age, co-morbidity and histological type on prognosis		1,2,3

Able to discuss treatment options in the light of understanding of prognosis (A)	Understands the effects of treatment on prognosis	Informs patient and discusses treatment options	1,2,3,4
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy and chemotherapy in the management of thymic tumours	Can contribute to MDT discussions (A)]	1,3,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(A) **Be able to seek informed consent for a course of treatment.(A)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of lung radiotherapy and their relation to dose and volume irradiated. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical treatment	1,3,4
Be able to determine the target volume for planning radical radiotherapy (A)	Is competent in the interpretation of diagnostic imaging (including CT, PET and MR) for determination of target volume. Understands the clinical and radiological parameters associated with planning 3D conformal thoracic radiotherapy.	Able to define a planning target volume for thymic tumours. Can define DVH (dose volume histogram) based 3D conformal planning constraints.	1,2,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(A)	Aware of normal tissue morbidity and its impact on target volume definition.	Is able to judge how to modify treatment plans based on morbidity.	1,3
Be able to care for patients undergoing radical radiotherapy for thymic tumours(I)	Understands early reactions to thoracic radiotherapy and their management Understands verification and correction procedures for radical radiotherapy	Able to conduct radiotherapy review and manage early reactions Able to supervise correction protocols for set-up errors	1,2,3,4,5
Be able to modify course of treatment for individual patients according to severity of reactions including adjustments for gaps in treatment (A)	Understands the radiobiology associated with radical radiotherapy		
Be able to participate in protocol development in radiotherapy for thymic tumours (A)	Understands developments in radiotherapy and chemotherapy research and their application to local protocols		1,4
Be able to participate in follow-up for patients with thymic tumours (I)	Understand presentation of relapse of thymic tumours and of late complications of therapy		1,3,4,5

10.5. Upper Gastro-intestinal Cancer: Cancer of the Oesophagus

1. Selection and assessment of patients with all stages of oesophageal cancer for treatment.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage oesophageal cancer (I)	Understands epidemiology and aetiology of oesophageal cancer. Understands the importance of screening and its limitations Knows the TNM staging for oesophageal cancer Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected oesophageal cancer	Perform full examination including chest and abdomen and interpret diagnostic information including CT imaging, ultrasound scanning and PET	1,2,5
Be familiar with the main histological types of oesophageal cancer and their management (I)	Understands the management of all stages of oesophageal cancer and how its management differs according to the main histological types which present in this country	Able to recognise the main histological types of cancer presenting in the oesophagus	1,5
Be able to assess patients for radical therapy (I)	Understands the indications for treatment (surgery, radiotherapy and/or chemotherapy), including combined modality therapy, and its side effects. Understand the main surgical procedures undertaken and associated morbidities		1,2,5
Able to assess prognosis for patients with oesophageal cancer (I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis Understand investigations employed to assess for response to therapy and their limitations		1,2,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of chemotherapy, radiotherapy, surgery and endoscopic therapy in both curative and palliative treatment of oesophageal cancer in patients presenting in all stages. Understands specialist contribution from SALT and nutritional therapists, clinical nurse specialists and palliative care team.		1,4,5

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of mediastinal radiotherapy and their relation to dose and volume in the different organs in the chest and upper abdomen. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to determine the target volume for planning field for mediastinal radiotherapy (I)	Understands the clinical and radiological parameters associated with planning mediastinal radiotherapy including CT planning.	Able to define a planning target volume for different stages of oesophageal cancer	1,3,5

	Is competent in the interpretation of diagnostic imaging (including CT) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.		
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Knows how to judge the relative risks and benefits of dose gradients in the chest and upper abdomen	Able to review treatment plans including DVH data	1,3,5
Be able to use special planning modalities including CT planning (A)	Understands the use of cross-sectional imaging in planning mediastinal radiotherapy	Able to use conventional and CT planning in the treatment of oesophageal cancer	1,2,3,4,5
Be able to care for patients undergoing mediastinal radiotherapy for oesophageal cancer (I)	Understands early reactions to mediastinal radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions Able to modify radiotherapy and chemo-radiation prescriptions including dose-fractionation schedules to compensate for treatment delays/gaps	1,2,3,4,5
Be able to modify course of treatment for individual patients according to severity of reactions including adjustments for gaps in treatment (I)	Understands the radiobiology associated with radical mediastinal radiotherapy for oesophageal cancer		
Be able to participate in protocol development in mediastinal radiotherapy for oesophageal cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for oesophageal cancer (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy		1,2,5
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of oesophageal cancer	Able to prescribe growth factors and other support drugs	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients	Able to prescribe less common cytotoxic regimes	1,2,3
Be able to care for patients having routine neo-adjuvant, con-comitant, adjuvant and palliative chemotherapy (I)	Understands the acute side effects of chemotherapy and its interaction with radiotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,5

4. Brachytherapy

Objective	Knowledge	Skills	Assessment
Understand the indications for brachytherapy in the management of oesophageal cancer (I)	Radiobiological and physical aspects of intraluminal brachytherapy in oesophageal cancer.		1,2,5
Be able to administer, plan and modify brachytherapy treatment and prescriptions in the light of normal tissue tolerance (A)	Quality assurance of intraluminal brachytherapy	Perform straightforward brachytherapy insertions	1,2,3
Be able to participate in planning departmental brachytherapy workload and use of HDR afterloading equipment (A)	Understanding of the organisation of a brachytherapy service		1,2,3

5. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately		1,2,4,5
Be able to recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment, how to differentiate them from recurrence and how to manage them		1,2,4
Be able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated oesophageal cancer	Perform full physical examination including chest and abdominal examination	1,2,5
Understand how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated (I)	Understand the roles of radiotherapy, chemotherapy, surgery and endoscopic therapy in the management of recurrence	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4,5

Upper GI Cancer: Cancer of the Stomach

1. Selection and assessment of patients with all stages of gastric cancer for treatment

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage gastric cancer (I)	Understands epidemiology and aetiology of gastric cancer. Knows the TNM staging for gastric cancer Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected gastric cancer	Perform full examination including chest and abdomen and interpret diagnostic information including CT imaging, ultrasound scanning and PET	1,2,3,5
Be familiar with the main histological types of gastric cancer and their management (I)	Understands the management of all stages of gastric cancer and how its management differs according to the main histological types which present in this country	Able to recognise the main histological types of cancer presenting in the stomach	1,5

Be able to assess prognosis for patients with gastric cancer(I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Be able to discuss treatment options in the light of understanding of prognosis for patients with common (I) and uncommon (A) types of gastric cancer	Understands the effects of radiotherapy, chemotherapy, surgery and endoscopic therapy on prognosis Understand the main surgical procedures undertaken and associated morbidities	Advises patients on treatment options	1,2,3,4,5
Be able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research	Able to discuss, enter and review patients in appropriate clinical trials	1,5,6
Be able to take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy, chemotherapy, surgery and endoscopic therapy in both curative and palliative treatment of gastric cancer in patients presenting in all stages. Understands specialist contribution from SALT and nutritional therapists and the importance of nutritional support. Understands the importance of involving palliative care team in management.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of abdominal radiotherapy and their relation to dose and volume in the different organs in the abdomen. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to determine the target volume for planning field for radical and palliative radiotherapy (I)	Understands the clinical, anatomical and radiological parameters associated with planning abdominal radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT) and surgical findings for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for palliative primary and radical postoperative radiotherapy for gastric cancer	1,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Knows how to judge the relative risks and benefits of dose gradients in the abdomen	Able to review treatment plans including DVH data	1,3,5
Be able to use special planning modalities including CT planning (A)	Understands the use of cross-sectional imaging in planning abdominal radiotherapy	Able to use conventional and CT planning in the treatment of gastric cancer	1,2,3,4,5
Be able to care for patients undergoing abdominal radiotherapy for gastric cancer (I)	Understands early reactions to abdominal radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions Able to modify	1,2,3,4,5

Be able to modify course of treatment for individual patients according to severity of reactions (I)	Understands the radiobiological basis of abdominal radiotherapy for gastric cancer	radiotherapy and chemo-radiation prescriptions including dose-fractionation schedules to compensate for treatment delays/gaps	
Be able to participate in protocol development in abdominal radiotherapy for gastric cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for gastric cancer (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of gastric cancer	Able to prescribe growth factors and other support drugs	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities	Able to prescribe less common cytotoxic regimes	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research	Able to discuss, enter and review patients in appropriate clinical trials	1,6
Able to care for patients having routine neo-adjuvant, con-comitant, adjuvant and palliative chemotherapy (I)	Understands the acute side effects of chemotherapy and its interaction with radiotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform abdominal examination in patients who have been previously treated for gastric cancer	1,2,3,4,5
Recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated gastric cancer	Perform full physical examination including abdominal examination	1,2,5

Know how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(A)	Understands the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands the importance of involving palliative care team in management.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

Upper Gastro-Intestinal Cancer : Hepatobiliary and Pancreatic Cancer

1. Selection and assessment of patients with all stages of hepatobiliary and pancreatic cancer for treatment.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage hepatobiliary and pancreatic cancer (I)	Understands epidemiology and aetiology of hepatobiliary and pancreatic cancer. Knows the TNM staging for hepatobiliary and pancreatic cancer Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected hepatobiliary and pancreatic cancer	Perform full examination including chest and abdomen and interpret diagnostic information including CT imaging, ultrasound scanning and PET	1,2,3,5
Be familiar with the main histological types of hepatobiliary and pancreatic cancer and their management (I)	Understands the management of all stages of hepatobiliary and pancreatic cancer and how its management differs according to the main histological types which present in this country	Able to recognise the main histological types of hepatobiliary and pancreatic cancer	1,5
Able to assess prognosis for patients with hepatobiliary and pancreatic, cancer(I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (A)	Understands the effects of treatment on prognosis Understand the principal surgical, endoscopic and ablative procedures used and the associated morbidities	Advises patients on treatment options	1,2,3,4
Be able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research	Able to discuss, enter and review patients in appropriate clinical trials	1,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of chemotherapy, radiotherapy, surgery and endoscopic therapy in both curative and palliative treatment of hepatobiliary and pancreatic in patients presenting in all stages of disease.		1,4,5

2. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy for hepatobiliary and pancreatic cancer (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5

Be familiar with research developments in drug therapy for hepatobiliary and pancreatic cancer (A)	Understands the action of chemotherapeutic agents, their limitations and interactions		1,2,5
Be able to modify chemotherapy prescription in the light of major organ dysfunction (A)	Understands pharmacology of drugs used in treatment of hepatobiliary and pancreatic, cancer	Able to prescribe growth factors and other support drugs	1,2,3
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities	Able to prescribe less common cytotoxic regimes	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research	Able to discuss, enter and review patients in appropriate clinical trials	1,5,6
Able to care for patients having routine curative and palliative chemotherapy (I)	Understands the acute side effects of chemotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

3. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(A) **Be able to seek informed consent for a course of treatment.(A)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of abdominal radiotherapy and their relation to dose and volume in the different organs in the abdomen. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4
Be able to determine the target volume for planning field for pancreatic radiotherapy (A)	Understands the clinical and radiological parameters associated with planning pancreatic radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for radiotherapy for pancreatic cancer	1,3
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(A)	Knows how to judge the relative risks and benefits of dose gradients in the abdomen	Able to review treatment plans including DVH data	1,3
Be able to use special planning modalities including CT planning and BEV planning(A)	Understands the use of cross-sectional imaging in planning pancreatic radiotherapy	Able to use CT planning in the treatment of cancer of the pancreas	1,2,3,4
Be able to care for patients undergoing abdominal radiotherapy for pancreatic cancer (A)	Understands early reactions to abdominal radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4

Be able to modify course of treatment for individual patients according to severity of reactions (A)	Understands the radiobiology associated with palliative and radical abdominal radiotherapy for pancreatic cancer		
Be able to participate in protocol development in abdominal radiotherapy for pancreatic cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform physical examination in patients who have been previously treated for hepatobiliary and pancreatic cancer	1,2,3,4,5
Recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4,5
Able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated hepatobiliary and pancreatic cancer	Perform full physical examination including chest and abdominal examination	1,2,5
Knows how to manage recurrent disease and it symptoms including palliative treatment and symptom control where indicated.(I)	Understand the roles of radiotherapy, chemotherapy and endoscopic therapy in the management of recurrence. Understands the importance of involving palliative care team in management.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4,5

10.6 Lower gastro-intestinal cancer: Cancer of the caecum and colon

1. Selection and assessment of patients with all stages of colon cancer for radiotherapy.

Objective	Knowledge	Skills	Assessment
Know how to diagnose and stage cancer of the caecum and colon (I)	Understands epidemiology and aetiology of cancer of the caecum and colon. Understands the value of population screening programmes and how they are applied. Understands appropriate endoscopic procedures and can explain them to patients. Knows TNM and Dukes'staging for caecal and colonic cancer Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected cancer of the caecum and colon	Physical examination in out-patients clinic.	1,2,3,5
Be familiar with the main histological types of cancer of the caecum and colon and their management (I)	Understands the management of all stages of cancer of the caecum and colon and how its management differs according to stage and histology.	Able to recognise the main histological types of cancer presenting in the caecum and colon	1,5
Be able to assess and advise patients of the relative merits of and indications for surgery and adjuvant therapy. (A)	Understands the indications for surgery, radiotherapy and systemic therapy and their side effects Understands the main surgical procedures for colonic cancer and their indications		1,2,3
Be able to assess patients for postoperative radiotherapy (I)	Understands the indications for radiotherapy and its side effects		1,2,3
Able to assess prognosis for patients with cancer of the caecum and colon (I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis.	Advising patients on treatment options	1,2,3,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy and surgery in both curative and palliative treatment of cancer of the caecum and colon in patients presenting in all stages. Understands the importance of involving palliative care team in management.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of pelvic and abdominal radiotherapy and their relation to dose and volume in the different organs in the abdomen and pelvis. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical postoperative and palliative treatment	1,3,4,5
Be able to determine the target volume for planning field for postoperative or palliative radiotherapy to the caecum and colon (A)	Understands the clinical and radiological parameters associated with planning abdominal and pelvic radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for different stages of cancer of the caecum and colon Able to interpret dose volume histograms.	1,3
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Knows how to judge the relative risks and benefits of dose gradients in the abdomen and pelvis.		1,3,5
Be able to use special planning modalities including CT planning and BEV planning (A)	Understands the use of cross-sectional imaging in planning radiotherapy to the caecum and colon	Able to use CT planning and be aware of the role of IMRT in the treatment of cancer of the caecum and colon	1,2,3,4
Be able to care for patients undergoing radiotherapy for cancer of the caecum and colon (I)	Understands early reactions to abdominal and pelvic radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4,5
Be able to modify course of treatment for individual patients according to severity of reactions (I)	Understands the radiobiology associated with radical radiotherapy for cancer of the caecum and colon		
Be able to participate in protocol development in radiotherapy for cancer of the caecum and colon (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate neo-adjuvant, concomitant and adjuvant chemo-therapy and biological therapy (I)	Is familiar with commonly used systemic therapy and its side effects. Knows which regimes are appropriate for use in the clinical situation. Understands the acute side effects of chemotherapy and its interaction with radiotherapy.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for cancer of the caecum and colon (A)	Understands the action of chemotherapeutic agents and potential side effects.		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of cancer of the caecum and colon	Able to prescribe growth factors and other support drugs	1,2,3,5

Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and biological therapy and the use of cytotoxic agents in heavily pre-treated patients	Able to prescribe common cytotoxic regimes and biological agents	1,2,3
Be able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1
Be able to care for patients having routine neo-adjuvant, adjuvant and palliative chemotherapy. (I)	Understands the acute side effects of chemotherapy and its interaction with radiotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform appropriate clinical examination in patients who have been previously treated for cancer of the caecum and colon	1,2,3,4,5
Be able to recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Be able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated cancer of the caecum and colon		1,2,5
Understand how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(I)	Understand the roles of radiotherapy chemotherapy and surgery in the management of recurrence. Understands the importance of involving palliative care team in management.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4,5

Lower gastro-intestinal cancer: Cancer of the rectum

1. Selection and assessment of patients with all stages of rectal cancer for treatment.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage rectal cancer (I)	Understands epidemiology and aetiology of rectal cancer. Knows the TNM and Dukes' staging for rectal cancer Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected rectal cancer	Attendance at an endoscopy session	1,2,3,5
Be familiar with the main histological types of rectal cancer and their management (I)	Understands the management of all stages of rectal cancer and how its management differs according to the main histological types which present in this country	Able to recognise the main histological types of cancer presenting in the rectum.	1,5

Be able to assess and advise patients of the relative merits of and indications for radical radiotherapy and surgery. (A)	Understands the indications for radiotherapy and surgery and their side effects		1,2,3
Be able to assess prognosis for patients with rectal cancer(I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Be able to discuss treatment options in the light of understanding of prognosis for patients with common types of rectal cancer (I)	Understands the effects of treatment on prognosis.	Advises patients on treatment options	1,2,3,4,5
Be able to take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy and surgery in both curative and palliative treatment of rectal cancer in patients presenting in all stages. Understands the importance of involving palliative care team in management.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of pelvic radiotherapy and their relation to dose and volume in the different organs in the abdomen. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to determine the target volume for planning field for radiotherapy for rectal cancer(I) Be aware of the treatment options for cancer of the rectum (I)	Understands the clinical and radiological parameters associated with planning pelvic radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for radiotherapy for rectal cancer.	1,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Knows how to judge the relative risks and benefits of dose gradients in the pelvis		1,3,5
Be able to use planning modalities including CT planning and conformal techniques(I)	Understands the use of cross-sectional imaging in planning pelvic radiotherapy	Able to use CT planning and have knowledge of IMRT in the treatment of rectal cancer.	1,2,3,4,5
Be able to care for patients undergoing pelvic radiotherapy for rectal cancer (I)	Understands early reactions to pelvic radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4

Be able to modify course of treatment for individual patients according to severity of reactions (I)	Understands the radiobiological basis of radical pelvic radiotherapy for rectal cancer		
Be able to participate in protocol development in radiotherapy for rectal cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate adjuvant, neo-adjuvant and palliative systemic therapy (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for rectal cancer (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of stomach cancer	Able to prescribe growth factors and other support drugs	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities	Able to prescribe less common cytotoxic regimes	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform clinical examination in patients who have been previously treated for stomach cancer	1,2,3,4,5
Recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated stomach cancer	Perform full physical examination	1,2,5
Know how to manage recurrent disease and it symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands the importance of involving palliative care team in management.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

Lower gastro-intestinal cancer: Cancer of the anal canal and anal margin

1. Selection and assessment of patients with all stages of anal cancer for treatment.

Objective	Knowledge	Skills	Assessment
Be able to diagnose anal cancer (I)	Understands epidemiology and aetiology of anal cancer Knows the TNM staging for anal cancer Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected anal cancer	Examination of the abdomen, pelvis and regional lymphatic areas in out-patients clinic.	1,2,3,5
Be familiar with the main histological types of anal tumours and their management (I)	Understands the management of all stages of anal cancer and how its management differs according to the main histological types which present in this country	Able to recognise the main histological types of cancer presenting in the anus	1,5
Able to assess prognosis for patients with anal cancer(I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of chemotherapy, radiotherapy biological therapy and surgery in both curative and palliative treatment of anal cancer in patients presenting in all stages of disease.		1,4

2. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate concomitant, neo-adjuvant, adjuvant and palliative chemotherapy for anal cancer (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for anal cancer (A)	Understands the action of systemic agents, their limitations and interactions		1,2
Be able to modify systemic therapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of anal cancer	Able to prescribe growth factors and other support drugs	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of systemic treatments used in the palliation of symptoms from anal cancer.	Able to prescribe systemic therapies.	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research and the currently extant studies available for patients with anal cancer.		1

Able to care for patients having routine curative and palliative chemotherapy (I)	Understands the acute side effects of commonly used chemotherapy agents.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

3. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of radiotherapy to the perineum and pelvis and their relation to dose and volume in the different organs in the pelvis Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to determine the target volume for planning field for radiotherapy for anal cancer (A) Be aware of the treatment options for cancer of the anus (I)	Understands the clinical and radiological parameters associated with planning pelvic radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for radiotherapy for anal cancer.	1,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc (A)	Knows how to judge the relative risks and benefits of dose gradients in the pelvis		1,3
Be able to use planning modalities including CT planning and conformal techniques(A)	Understands the use of cross-sectional imaging in planning pelvic radiotherapy	Able to use CT planning and have knowledge of IMRT in the treatment of anal cancer.	1,2,3,4
Be able to care for patients undergoing pelvic and perineal radiotherapy for anal cancer (I)	Understands early reactions to pelvic radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4,5
Be able to modify course of treatment for individual patients according to severity of reactions (A)	Understands the radiobiological basis of radical upper abdominal radiotherapy for anal cancer		1,2,3,4
Be able to seek informed consent for clinical trials (A)	Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment and clinical trials	1,3,4,5

4. Brachytherapy

Objective	Knowledge	Skills	Assessment
Understand the indications for and principles of brachytherapy in the management of anal cancer (A)	Radiobiological and physical aspects of brachytherapy in anal cancer.		1,2,5

5. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform clinical examinations in patients who have been previously treated for anal cancer	1,2,3,4,5
Recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated anal cancer	Perform full physical examination .	1,2,5
Knows how to manage recurrent disease and it symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands the importance of involving palliative care team in management.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

10.5/6 Upper and Lower Gastro-intestinal cancer: Management of primary and secondary liver cancer (limited numbers of metastases)

Objective	Knowledge	Skills	Assessment
Be able to diagnose secondary liver cancer (I) and to diagnose and stage primary liver cancer (A)	Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected hepatic cancer including appropriate imaging techniques	Examination in out-patients clinic	1,2,3,5
Be familiar with the main histological types and grading of liver cancer and their management. (I)	Knows the common histological types of hepatic cancer	Able to recognise the main histological types of cancer presenting in the liver.	1,5
Be able to take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy and surgery and systemic therapy in both curative and palliative treatment of hepatic cancer		1,4
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(A) **Be able to seek informed consent for a course of treatment.(A)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of radiotherapy to the liver and their relation to dose and volume in the different organs in the upper abdomen Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4
Be able to assess patients for appropriate chemotherapy for secondary cancer (I) and primary liver cancer (A)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Able to assess prognosis for patients with primary and secondary liver cancer. (A)	Knows the effect of stage, smoking and co-morbidity on prognosis.		1,2,3
Knows how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands the importance of involving palliative care team in management.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

10.7 Head & Neck Cancer.

1. Generic skills and knowledge in Head and Neck Cancer

Objective	Knowledge	Skills	Assessment
Can assess patients with head and neck tumours (I)	Understands the anatomy of Head and Neck cancers and their aetiology and epidemiology Knows the TNM staging for Head and Neck cancers	Is able to perform clinical examination of patients with H&N cancer, including use of head mirror and fibroptic nasendoscope	1,2,3,5
Understands the anatomical distribution of lymph nodes in the Head and Neck (I)	Understands the distribution of lymph nodes in the H&N and recognises the tumours which drain to them. Knows the anatomical groupings of lymph nodes according to the international consensus	Is able to examine lymph nodes in the neck and knows their anatomical distribution on CT imaging and MRI	2,3,5
Understands the different types of immobilisation shells in use (I)	Knows the different head immobilisation positions and different types of immobilisation device. Understands the use of tongue depressors and mouth bites		1,2,4,5
Understands the importance of dental health and oral hygiene in patients with H&N cancer (I)	Knows how to advise appropriate dental care before and after radiotherapy		1,2,4,5
Understands the importance of maintaining nutrition throughout treatment and afterwards (I)	Knows different methods of maintaining nutrition including naso-gastric tube and gastrostomy.	Is able to insert and care for naso-gastric tubes. Is able to care for gastrostomy sites	1,2,4,5
Understands the importance of smoking cessation in all patients (I)	Can advise on different techniques available to aid smoking cessation**.**		1,2,5
Understands the importance of second (synchronous and metachronous) malignancies in H&N cancer (I)	Knows the epidemiology of second malignancies and possible prevention measures.	Is able to diagnose second malignancies in previously treated patients	1,2,5
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy. **Be able to seek informed consent for a course of treatment. (I)** **Be able to seek informed consent for clinical trials. (A)**	Understands the acute and long term complications of head and neck radiotherapy and their relation to dose and volume in the different organs in the head and neck. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to care for patients undergoing Head and Neck radiotherapy (I)	Understands early reactions to head and neck radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions.	1,2,3,4
Be able to modify course of treatment for individual patients according to severity of reactions including adjustments for gaps in treatment (I).	Understands the radiobiology associated with radical head and neck radiotherapy for H&N cancer.		1,2,4,5

Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc (A).	Knows how to judge the relative risks and benefits of dose gradients in the head and neck.		1,2,4
Be able to care for patients having routine concomitant, adjuvant and palliative chemotherapy for Head and Neck tumours (I)	Understands the acute side effects of chemotherapy and its interaction with radiotherapy. Knows the importance of contributions from SALT, nutritionists, clinical nurse specialists and the palliative care team.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment.	1,2,3,5

Head & Neck Cancer : Cancer of the larynx/pharynx

1 Selection and assessment of patients with all stages of laryngeal/pharyngeal cancer for radiotherapy.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage laryngeal/pharyngeal cancer (I)	Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected laryngeal/pharyngeal cancer	Examination in out-patients clinic using indirect mirror and fibreoptic techniques.	1,2,3,5
Be familiar with the main histological types and grading of laryngeal/pharyngeal cancer and their management. (I)	Knows the common histological types of H&N cancer	Able to recognise the main histological types of cancer presenting in the larynx/pharynx.	1,5
Be able to assess patients for radical radiotherapy. (I)	Understands the indications for definitive and post op radiotherapy and its side effects.		1,2,3,5
Able to assess prognosis for patients with laryngeal/pharyngeal cancer. (I)	Knows the effect of stage, smoking and co-morbidity on prognosis.		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis. (I)	Understands the effects of treatment on prognosis. Understands the main surgical alternative treatments for primary tumours and neck nodes and their acute and long term morbidity.	Advises patients on treatment options.	1,2,3,4,5
Understands the indications for surgery in the management of larynx/pharynx cancer. (I)	Understanding of general principles of laser surgery, open partial and total laryngectomy, open partial and total pharyngectomy as well as rehabilitative and reconstructive principles and tracheostomy care.		1,2,3,5
Understands the indications for neck dissection in the management of larynx/pharynx cancer. (I)	Familiarity with modifications of neck dissection with regards to nodal groups excised and sparing of non lymphatic structures.		1,2,3,5
Take part in discussions in multi-disciplinary meetings. (A)	Understands the indications, functional impact and limitations of radiotherapy and surgery in both curative and palliative treatment of larynx/pharynx cancer in patients presenting in all stages. Understands the contribution and role of specialised Speech and Language Therapists, Nutritional Advisors, clinical nurse specialists and palliative care team.		1,2,3

2. Radiotherapy treatment (external beam radiotherapy).

Objective	Knowledge	Skills	Assessment
Be able to determine the target volumes for planning laryngeal/pharyngeal/neck radiotherapy (I).	Understands the clinical and radiological parameters associated with planning head and neck radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Understands when and how to treat lymph node areas electively. Aware of normal tissue morbidity and its impact on target volume definition.. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for different stages of larynx/pharynx cancer	1,3,5
Be able to use special planning modalities including CT planning and Beams Eye View planning (A).	Understands the use of cross-sectional imaging (CT, MRI, PET-CT) in planning head and neck radiotherapy.	Able to use CT/3-D conformal treatment planning in Head and Neck cancer.	1,2,3,4,5
Understands the use of IMRT in laryngeal/pharyngeal cancer (A)	Understands the principles of IMRT treatment planning	Able to plan IMRT treatment of larynx/pharynx cancer.	1,2

3 Systemic Therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate concomitant, neo-adjuvant and palliative chemotherapy (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes.	1,2,3,4,5
Be familiar with research developments in drug therapy for laryngeal/pharyngeal cancer (A).	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy. Understands developments in molecular targeting agents and their interaction with radiotherapy and commonly used cytotoxics.		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction. (I)	Understands pharmacology of drugs used in treatment of laryngeal/pharyngeal cancer.	Able to prescribe growth factors and other support drugs.	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease. (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients.	Able to prescribe less common cytotoxic regimes. Explains benefit and disadvantages of treatment clearly to patients	1,2
Be able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records. (A)	Understands the principles of clinical research.		1,2

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment (I). **Be able to advise on appropriate investigations during follow-up.(I)**	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately.	Able to perform head and neck examination in patients who have been previously treated for larynx/pharynx cancer.	1,2,3,4,5
Be able to recognise less common complications of treatment and how to manage them. (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Be able to diagnose and investigate recurrent disease. (I)	Knowledge of natural history of treated laryngeal/pharyngeal cancer.	Perform full physical examination including fibreoptic examination of the larynx and pharynx	1,2,5
Understand how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated. (A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Knows the importance of contributions from SALT, nutritionists, clinical nurse specialists and palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options.	1,2,4

Head & Neck Cancer: Cancer of the Oropharynx and Oral Cavity

1. Selection and assessment of patients with all stages of cancer of the oral cavity and oropharynx for radiotherapy.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage cancer of the oral cavity and oropharynx. (I)	Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected cancer of the oral cavity and oropharynx. .	Oral and neck examination in out-patients clinic including use of head mirror and fibreoptic equipment.	1,2,3,5
Be able to assess patients for radical radiotherapy (I)	Understands the indications for radiotherapy and its side effects.		1,2,3,5
Be able to assess patients for adjuvant postoperative radiotherapy. (I)	Understands the clinical and surgical histological parameters which determine level of risk of recurrence.		1,2,5
Be able to assess prognosis for patients with cancer of the oral cavity and oropharynx. (I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis.		1,2,3,5
Understand the indications for surgery in the management of cancer of the oral cavity and oropharynx. . (I)	Principles of laser surgery, pedicled and free flaps as well as dental rehabilitation.		1,2,5
Understands the indications for neck dissection in the management of cancer of the oral cavity and oropharynx. (I)	Familiarity with modifications of neck dissection with regards to nodal groups excised and sparing of non lymphatic structures.		1,2,5

Be able to discuss treatment options in the light of understanding of prognosis for patients with common (I) and uncommon (A) types of cancer of the oral cavity and oropharynx.	Understands the effects of treatment on prognosis.	Advises patients on treatment options.	1,2,3,4,5
Be able to take part in discussions in multi-disciplinary meetings. (A)	Understands the indications, functional impact and limitations of radiotherapy and surgery in both curative and palliative treatment of cancer of the oral cavity and oropharynx in patients presenting in all stages. Understands the contribution and role of specialised Speech and Language Therapists, Nutritional Advisors, clinical nurse specialists and palliative care team.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to determine the target volumes for planning oral cavity radiotherapy (I).	Understands the clinical and radiological parameters associated with planning head and neck radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Understands when and how to treat lymph node areas electively. Aware of normal tissue morbidity and its impact on target volume definition.. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for different stages of oral cancer	1,3,5
Be able to use special planning modalities including CT planning and BEV planning. (A)	Understands the use of cross-sectional imaging in planning head and neck radiotherapy.	Able to use CT planning and IMRT in the treatment of oral cancer.	1,2,3,4,5
Is familiar with the use of IMRT in cancer of the oral cavity (A)	Understands the principles of IMRT treatment planning	Able to plan IMRT treatment of oral cancer.	
Be able to participate in protocol development in head and neck radiotherapy for oral cancer. (A)	Understands developments in radiotherapy research and their application to local protocols.		1,4

3. Brachytherapy

Objective	Knowledge	Skills	Assessment
Understands the indications for brachytherapy in the management of oral cancer. (I)	Radiobiological and physical aspects of interstitial brachytherapy in oral cancer using Paris system.		1,2,5

4. Systemic Therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate neo-adjuvant, concomitant or palliative chemotherapy. (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes.	1,2,3,4,5
Be familiar with research developments in drug therapy for oral cancer. (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy. Understands developments in molecular targeted drugs and their interactions with radiotherapy and commonly used cytotoxics.		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction. (A)	Understands pharmacology of drugs used in treatment of oral cancer.	Able to prescribe growth factors and other support drugs.	1,2,3
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease. (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities. Knows the importance of contributions from SALT, nutritionists, clinical nurse specialists and palliative care team.	Able to prescribe less common cytotoxic regimes.	1,2,3

5. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. **Be able to advise on appropriate investigations during follow-up. (I)**	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately.	Able to perform head and neck examination in patients who have been previously treated for oral cancer	1,2,3,4,5
Recognise less common complications of treatment and how to manage them. (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Able to diagnose and investigate recurrent disease. (I)	Knowledge of natural history of treated oral cancer.		1,2,5
Know how to manage recurrent disease and it's symptoms including palliative treatment and symptom control where indicated. (A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Knows the importance of contributions from SALT, nutritionists, clinical nurse specialists and palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options.	1,2,4

Head & Neck Cancer: Cancer of the nasal passages, paranasal sinuses, and nasopharynx

1. Selection and assessment of patients with all stages of cancer of the nasal passages, paranasal sinuses and nasopharynx

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage cancer of the nasal passages, paranasal sinuses and nasopharynx. (I)	Can recommend appropriate diagnostic and staging investigations for patients presenting with these cancers.	Auroscopy and fibreoptic techniques.	1,2,3,5
Be familiar with the main histological types of cancer of the nasal passages, paranasal sinuses and nasopharynx and their management. (I)	Understands the management of all stages of cancer of the nasal passages, paranasal sinuses and nasopharynx and how management differs according to the commonly occurring histological types.	Able to recognise the main histological types of cancer presenting in these cancer of the nasal passages, paranasal sinuses and nasopharynx.	1,5
Be able to assess patients for radical radiotherapy. (I)	Understands the indications for definitive and post op radiotherapy and side effects.		1,2,4,5
Able to assess prognosis for patients with cancer of the nasal passages, paranasal sinuses and nasopharynx . (I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Understand the indications for surgery in the management of cancer of the nasal passages, paranasal sinuses and nasopharynx. (I)	Understanding of general principles of extracranial and craniofacial nasal/sinus resections.	Understand the indications for surgery in the management of cancer of the nasal passages, paranasal sinuses and nasopharynx. (I)	1,2,4,5
Able to discuss treatment options in the light of understanding of prognosis. (I)	Understands the effects of treatment on prognosis.	Advises patients on treatment options.	1,2,3,4
Take part in discussions in multi-disciplinary meetings. (A)	Understands the indications, functional impact and limitations of chemotherapy, radiotherapy and surgery in both curative and palliative treatment of miscellaneous cancers. Understands the contribution and role of specialised Speech and Language Therapists, Nutritional Advisors, prosthetists, clinical nurse specialists and palliative care team.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to determine the target volumes for planning radiotherapy for cancer of the nasal passages, paranasal sinuses and nasopharynx.. (I)	Understands the clinical and radiological parameters associated with planning head and neck radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Understands when and how to treat lymph node areas electively.	Able to define a planning target volume for definitive and postoperative radiotherapy for cancer of the nasal passages, paranasal sinuses and nasopharynx.	1,3,5

	Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.		
Be able to use special planning modalities including CT planning and BEV planning. (A)	Understands the use of cross-sectional imaging in planning head and neck radiotherapy.	Able to use CT planning and IMRT in the treatment of cancer of the nasal passages, paranasal sinuses and nasopharynx. .	1,2,3,4
Be able to use IMRT in planning radiotherapy to cancer of the nasal passages, paranasal sinuses and nasopharynx as appropriate (A)	Understands the principles of IMRT treatment planning	Able to plan IMRT treatment of different sites of H&N cancer.	1,2
Be able to participate in protocol development in head and neck radiotherapy for cancer of the nasal passages, paranasal sinuses and nasopharynx. (A)	Understands developments in radiotherapy research and their application to local protocols.		1,4

3. Systemic Therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy for cancer of the nasal passages, paranasal sinuses and nasopharynx. (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes.	1,2,3,4,5
Be familiar with research developments in drug therapy for cancer of the nasal passages, paranasal sinuses and nasopharynx . (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy. Understands developments in molecular targeted drugs and their interactions with radiotherapy and commonly used cytotoxics.		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction. (I)	Understands pharmacology of drugs used in treatment of cancer of the nasal passages, paranasal sinuses and nasopharynx.	Able to prescribe growth factors and other support drugs.	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease. (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities.	Able to prescribe less common cytotoxic regimes.	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records. (A)	Understands the principles of clinical research.		1,6

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. (I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately.	Able to perform head and neck examination in patients who have been previously treated for cancer of cancer of the nasal passages,	1,2,3,4,5

Be able to advise on appropriate investigations during follow-up. (I)		paranasal sinuses and nasopharynx including fibroptic nasendoscopy and indirect examination with a mirror. .	
Recognise less common complications of treatment and how to manage them. (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Able to diagnose and investigate recurrent disease. (I)	Knowledge of natural history of treated cancer of the nasal passages, paranasal sinuses and nasopharynx	Perform full physical examination including fibreoptic examination.	1,2,5
Knows how to manage recurrent disease and it symptoms including palliative treatment and symptom control where indicated. (A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Knows the importance of contributions from SALT, nutritionists, clinical nurse specialists and palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options.	1,2,4

Head & Neck Cancer: Cancer of the temporal bone, salivary glands and unknown primary herein labelled as: miscellaneous sites of cancer.

1. Selection and assessment of patients with all stages of cancer of "miscellaneous sites" in the head and neck.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage "miscellaneous" head and neck cancer. (I)	Can recommend appropriate diagnostic and staging investigations for patients presenting with these cancers.	Auroscopy and fibreoptic techniques.	1,2,3,5
Be familiar with the main histological types of these miscellaneous cancers and their management. (I)	Understands the management of all stages of "miscellaneous" cancer and how management differs according to the commonly occurring histological types.	Able to recognise the diversity and main histological types of cancer presenting in these miscellaneous sites.	1,5
Be able to assess patients for radical radiotherapy. (A)	Understands the indications for definitive and post op radiotherapy and side effects.		1,2
Able to assess prognosis for patients with these miscellaneous cancers. (A)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3
Understand the indications for surgery in the management of miscellaneous cancer. (A)	Understanding of general principles of surgical resection, salivary and temporal bone resections and "blind biopsies".	Understand the indications for surgery in the management of miscellaneous cancer.	1,2
Understands the indications for neck dissection in the management of miscellaneous cancer. (A)	Familiarity with modification of neck dissections with regards to nodal groups excised and sparing of non lymphatic structures.	Understands the indications for neck dissection in the management of miscellaneous cancer.	1,2,3.
Able to discuss treatment options in the light of understanding of prognosis. (A)	Understands the effects of treatment on prognosis.	Advises patients on treatment options.	1,2,3,4
Take part in discussions in multi-disciplinary meetings. (A)	Understands the indications, functional impact and limitations of chemotherapy, radiotherapy and surgery in both curative and palliative treatment of miscellaneous cancers. Understands the contribution and role of specialised Speech and Language Therapists,Nutritional Advisors, clinical nurse specialists and palliative care team.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to determine the target volumes for planning field for miscellaneous sites radiotherapy. (B/H)	Understands the clinical and radiological parameters associated with planning head and neck radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Understands when and how to treat lymph node areas electively. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for definitive and postoperative radiotherapy for miscellaneous cancer.	1,3,5
Be able to use special planning modalities including CT planning and BEV planning. (A)	Understands the use of cross-sectional imaging in planning head and neck radiotherapy.	Able to use CT planning and IMRT in the treatment of miscellaneous cancers.	1,2,3
Understands the use of IMRT in planning radiotherapy to 'miscellaneous sites' as appropriate (A)	Understands the principles of IMRT treatment planning	Able to plan IMRT treatment of different sites of H&N cancer.	1,2

3. Systemic Therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy for miscellaneous cancer. (A)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes.	1,2,3,4
Be familiar with research developments in drug therapy for miscellaneous cancer. (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy. Understands developments in molecular targeted drugs and their interactions with radiotherapy and commonly used cytotoxics.		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction. (A)	Understands pharmacology of drugs used in treatment of miscellaneous cancer.	Able to prescribe growth factors and other support drugs.	1,2,3
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease. (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities.	Able to prescribe less common cytotoxic regimes.	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records. (A)	Understands the principles of clinical research.		1,6

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment.(I) **Be able to advise on appropriate investigations during follow-up. (I)**	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately.	Able to perform head and neck examination in patients who have been previously treated for cancer of miscellaneous sites.	1,2,3,4,5
Recognise less common complications of treatment and how to manage them. (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Able to diagnose and investigate recurrent disease. (I)	Knowledge of natural history of treated miscellaneous cancer.	Perform full physical examination including fibreoptic examination.	1,2,5
Knows how to manage recurrent disease and it symptoms including palliative treatment and symptom control where indicated. (A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Knows the importance of contributions from SALT, nutritionists, clinical nurse specialists and palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options.	1,2,4

Head and Neck Cancer – Thyroid cancer

1. Selection and assessment of patients with thyroid cancer.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage thyroid cancer (I)	Understands epidemiology and aetiology of thyroid cancer. Understands the importance of clinical and pathological assessment. Can recommend appropriate diagnostic and staging investigations for patients presenting with a possible thyroid cancer.	Appropriate clinical examination in out-patients clinic.	1,2,3,5
Be familiar with the main histological sub types of thyroid cancer and their management (I)	Understands the management of all stages of thyroid cancer and how its management differs according to the histological type and grade.	Able to recognise the main histological sub types of thyroid cancer.	1,5
Able to discuss treatment options in the light of understanding of prognosis (A)	Understands the effects of treatment on prognosis.	Advises patients on treatment options.	1,2,3,4
Able to assess prognosis for patients with thyroid cancer (I)	Knows the effect of stage, age, co-morbidity, previous treatment and histological type on prognosis.		1,2,3,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of external beam radiotherapy as primary and adjuvant postoperative treatment, radio-iodine therapy and surgery in both curative and palliative treatment of thyroid cancer in patients presenting in all stages. Understands the indications for lymph node dissection in thyroid cancer		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to determine the target volume for planning thyroid radiotherapy (A)	Understands the clinical and radiological parameters associated with planning radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition.	Able to define a planning target volume for different stages of thyroid cancer including the intact organ and post operative volumes.	1,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(A)	Knows how to judge the relative risks and benefits of dose gradients in the appropriate soft tissue and organs at risk (OAR) Is able to judge how to modify treatment plans based on morbidity..		1,3,5
Be able to use special planning modalities including CT planning (A)	Understands the use of cross-sectional imaging in appropriate planning.	Able to use CT planning in the treatment of thyroid cancer.	1,2,3,4,5
Be able to care for patients undergoing radiotherapy for thyroid cancer (I)	Understands early reactions and their management.	Able to conduct radiotherapy review and manage appropriate reactions.	1,2,3,4,5
Be able to modify course of treatment for individual patients according to severity of reactions including adjustments for gaps in treatment (A)	Understands the radiobiology associated with radical radiotherapy for thyroid cancer		1,4
Be able to participate in protocol development in radiotherapy for thyroid cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy (Radio-active iodine)

Objective	Knowledge	Skills	Assessment
Be able to assess patients for radio-iodine therapy (A)	Is familiar with radio-iodine treatment and its side effects. .		1,2
Understand the indications for radio-iodine in the management of thyroid cancer (I)	Radiobiological and physical aspects of radio-iodine therapy in thyroid cancer, both for thyroid ablation and therapy for thyroid cancer .		1,2,5
Have a working knowledge of planning departmental radio-iodine workload and the legal requirements of treatment – IRMER regulations and radiation protection (I)	Understanding of the organisation of a radio-iodine service		1,2,3,5
Be able to prepare a patients for radio-iodine therapy for thyroid cancer (I)	Knows about cessation of thyroid replacement and use of thyroid stimulation		1,2,3,5

Be able to care for patients having radio-iodine therapy (A)	Understands the acute side effects of radio-iodine including effects on fertility. Can advise on thyroid replacement therapy Knows how to manage acute complications of treatment.		1,2,3

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform appropriate clinical examination in patients who have been previously treated for thyroid cancer.	1,2,3,4,5
Be able to recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Be able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated thyroid cancer	Perform full physical examination and appropriate site examination	1,2,5
Understand how to manage recurrent disease and it symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Knows the importance of contributions from SALT, nutritionists, clinical nurse specialists and palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

10.8 Soft tissue and bone sarcoma - Soft tissue sarcoma.

1. Selection and assessment of patients with soft tissue sarcoma for radiotherapy.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage malignant soft tissue sarcoma (I)	Understands epidemiology and aetiology of soft tissue sarcoma. Understands the importance of clinical and pathological assessment. Can recommend appropriate diagnostic and staging investigations for patients presenting with a possible soft tissue sarcoma.	Appropriate clinical examination in out-patients clinic. Soft tissue sarcoma may occur at any site in the body, usually head and neck, thorax, abdomen, pelvis and therefore clinical skills are required at assessing tumours at these sites as well as the commonest site, i.e. limb.	1,2,3,5
Be familiar with the main histological sub types of soft tissue sarcoma and their management (I)	Understands the management of all stages of soft tissue sarcoma and how its management differs according to the histological sub type and grade and surgical operability.	Able to recognise the main histological sub types of soft tissue sarcoma.	1,5
Be able to assess patients for radical radiotherapy (I)	Understands the indications for radiotherapy and its side effects.		1,2,3
Able to assess prognosis for patients with soft tissue sarcoma (I)	Knows the effect of stage, age, co-morbidity, previous surgical intervention and histological sub type on prognosis.		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (A)	Understands the effects of treatment on prognosis. Able to understand the potential role for pre as well as post operative radiotherapy and radical and palliative radiotherapy in the absence of surgical options. Understand potential integration of radiotherapy into programme of care using chemotherapy and surgery.	Advises patients on treatment options.	1,2,3,4
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy, chemotherapy and surgery in both curative and palliative treatment of soft tissue sarcoma in patients presenting in all stages.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to determine the target volume for planning field for soft tissue sarcoma radiotherapy (I)	Understands the clinical and radiological parameters associated with planning radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition.	Able to define a planning target volume for different stages of soft tissue sarcoma especially pre and post operative volumes.	1,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(A)	Knows how to judge the relative risks and benefits of dose gradients in the appropriate soft tissue and organs at risk (OAR) Is able to judge how to modify treatment plans based on morbidity.		1,3,5

Be able to use special planning modalities including CT planning (A)	Understands the use of cross-sectional imaging in appropriate planning.	Able to use CT planning in the treatment of soft tissue sarcomas.	1,2,3,4,5
Be able to care for patients undergoing radiotherapy for soft tissue sarcoma (I)	Understands early reactions and their management.	Able to conduct radiotherapy review and manage appropriate reactions.	1,2,3,4,5
Be able to modify course of treatment for individual patients according to severity of reactions including adjustments for gaps in treatment (I)	Understands the radiobiology associated with radical radiotherapy for soft tissue sarcoma		
Be able to participate in protocol development in radiotherapy for soft tissue (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for soft tissue (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy.		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of soft tissue sarcoma.	Able to prescribe growth factors and other support drugs	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients	Able to prescribe less common cytotoxic regimes	1,2,3
Be able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1
Be able to care for patients having routine neo-adjuvant, con-comitant, adjuvant and palliative chemotherapy (I)	Understands the acute side effects of chemotherapy and its interaction with radiotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform appropriate clinical examination in patients who have been previously treated for soft tissue sarcoma.	1,2,3,4,5
Be able to recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4

Be able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated soft tissue sarcoma	Perform full physical examination and appropriate site examination	1,2,5
Understand how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands the contribution from the palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

Soft tissue and bone sarcoma: Gastro Intestinal Stromal Tumour.

1. Selection and assessment of patients with GIST for radiotherapy.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage gastro intestinal stromal tumour (I)	Understands epidemiology and aetiology and differential diagnosis of gastro intestinal stromal tumour.	To be able to perform the appropriate clinical examination in out-patients clinic and examination.	1,2,3,5
Be familiar with the diagnostic, molecular, biological markers of gastro intestinal tract tumour (I)	Understands the management of all stages of GIST and how its management will differs according to the main molecular biology profile.		1,5
Be able to assess patients for adjuvant radiotherapy (I)			
Be able to assess prognosis for patients with GIST (I)	Knows the effect of stage, age, co-morbidity and mutational status on prognosis		1,2,3
Be able to take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of surgery, radiotherapy and systemic therapy in both curative and palliative treatment of GIST in patients presenting in all stages.		1,4

2. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate systemic therapy (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be able to care for patients having routine systemic therapy (I)	Understands the acute side effects of systemic therapy and its interaction with radiotherapy.	Able to prescribe systemic therapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3
Be familiar with research developments in drug therapy for GIST (A)	Understands the action of systemic agents, their limitations and interactions with radiotherapy.		1,2
Be able to modify prescription for systemic therapy in the light of major organ dysfunction (A)	Understands pharmacology of drugs used in treatment of soft tissue sarcoma.	Able to prescribe growth factors and other support drugs	1,2,3

Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative therapy and the use of systemic agents in heavily pre-treated patients	Able to prescribe less common syatemic regimes	1,2,3
Be able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1

Soft tissue and bone sarcoma: Primary malignant tumours of bone

1. Selection and assessment of patients with all stages of primary bone tumours

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage primary malignant bone tumours (I)	Understands epidemiology and aetiology of primary malignant bone tumours. Can recommend appropriate diagnostic and staging investigations for people presenting with primary malignant bone tumours.		1,2,3,5
Be familiar with the main histological types of primary malignant bone tumours (I)	Understands the management of all stages of primary malignant bone tumours and how its management differs according to the main histological types.	Able to recognise the main histological types of cancer presenting.	1,5
Able to assess prognosis for patients with primary malignant bone tumours(I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (A)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of chemotherapy, radiotherapy and surgery in both curative and palliative treatment of primary malignant bone tumours in patients presenting in all stages of disease.		1,4

2. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy for primary malignant bone tumours (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for primary malignant bone tumours (A)	Understands the action of chemotherapeutic agents, their limitations and interactions		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (A)	Understands pharmacology of drugs used in treatment of primary malignant bone tumours.	Able to prescribe growth factors and other support drugs	1,2,3
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities	Able to prescribe less common cytotoxic regimes	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials	Understands the principles of clinical research		1

and maintain appropriate research records (A)			
Able to care for patients having routine curative and palliative chemotherapy (I)	Understands the acute side effects of chemotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

3. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(A) **Be able to seek informed consent for a course of treatment.(A)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of radiotherapy and their relation to dose and volume in the different parts of the body. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4
Be able to determine the target volume for planning field for primary malignant bone tumour radiotherapy (A)	Understands the clinical and radiological parameters associated with planning bone radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for radiotherapy for primary malignant bone tumours.	1,3
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(A)	Knows how to judge the relative risks and benefits of dose gradients in normal tissues when treating bone tumours.		1,3,5
Be able to use special planning modalities including CT planning and BEV planning(A)	Understands the use of cross-sectional imaging in planning bone radiotherapy	Able to use CT planning and IMRT in the treatment of primary malignant bone tumours	1,2,3,4,5
Be able to care for patients undergoing radiotherapy for primary bone tumours(A)	Understands early reactions to radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4
Be able to modify course of treatment for individual patients according to severity of reactions (A)	Understands the radiobiology associated with radiotherapy for primary malignant bone tumours.		

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform appropriate examinations in patients who have been previously treated for primary malignant bone tumours.	1,2,3,4,5
Recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated primary malignant bone tumours.	Perform appropriate physical examination.	1,2,5

Knows how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands contribution from palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

Soft tissue and Bone Sarcoma: Metastatic Skeletal Disease.

1. Selection and assessment of patients with solitary skeletal metastases for radiotherapy.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and knowledge and understands the usual imaging and modes and the limitation in the diagnosis	Understands the appropriateness, limitation and value of confirmatory biopsy.	Appropriate clinical examination	1,2,3,5
Able to assess patients for radiotherapy with skeletal metastasis (I)	Understand the indications for a single fraction and more prolonged fractionation and its side effects. Ability to assess prognosis. To know the effect of age, co-morbidity and mobility.		1,2,3,5
Able to assess patients for surgical intervention. Knows indications for surgery in patients with bone metastases (I)	Knows clinical and radiological indications for surgical intervention and when to refer for surgical opinion Knowledge of role of surgical fixation for lytic metastases in long bones and unstable vertebral column		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of, radiotherapy and other modalities, e.g. vertebroplasty, vertebral body fixation, use of unsealed sources, e.g. Samarium and Strontium in patients with metastatic skeletal disease.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to use external beam radiotherapy as a palliative modality for pain relief from bone metastases (I) **Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I)** **Be able to seek informed consent for a course of treatment.(I)**	Understands the acute and long term complications of radiotherapy and their relation to dose and volume in the different parts of the body. Understand the mechanism of radiation induced pain relief Be aware of potential for acute pain flare Able to pre-empt radiation induced nausea/diarrhoea if field is relevant to these symptoms Understand the legal aspects and ethics of	Able to take informed consent for radical and palliative treatment	1,3,4,5

Be able to seek informed consent for clinical trials (A)	informed consent for treatment and for clinical trials.		
Be able to determine the target volume for planning field of skeletal metastases radiotherapy (I)	Understands the clinical and radiological parameters associated with planning skeletal radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for radiotherapy for skeletal metastasis.	1,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Knows how to judge the relative risks and benefits of dose gradients in adjacent normal tissues		1,3,5
Be able to use special planning modalities including CT planning and BEV planning(A)	Understands the use of cross-sectional imaging in planning skeletal radiotherapy	Able to use CT planning in the treatment of skeletal metastases	1,2,3,4,5
Be able to care for patients undergoing radiotherapy for skeletal metastases (I)	Understands acute reactions to radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4
Be able to modify course of treatment for individual patients according to severity of reactions (I)	Understands the radiobiology associated with radiotherapy for skeletal metastasis.		1,2,5
Able to assess patients for Bisphosphonate Therapy (I).	Understand the action of Bisphosphonate therapy, limitations, interactions and toxicity with other therapies.		1,2,5

3.Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform appropriate examination in patients who have been previously treated for skeletal metastases.	1,2,3,4,5
Recognise less common complications of treatment and how to manage them. (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Able to diagnose and investigate recurrent disease. (I)	Knowledge of natural history of skeletal metastases.	Perform appropriate examination	1,2,5
Knows how to manage progressive disease and symptom control. (I)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of progressive disease. Understands the contribution from palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4,5

10.9 Gynaecological Cancer : Cancer of the Cervix

1. Selection and assessment of patients with all stages of cervical cancer for radiotherapy.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage cervical cancer (I)	Understands epidemiology and aetiology of cervical cancer. Understands the importance of screening and its limitations Knows the FIGO and TNM staging for cervical cancer Can recommend appropriate diagnostic and staging investigations for women presenting with suspected cervical cancer	Pelvic examination in out-patients clinic and examination of the female pelvis under anaesthetic. Use vaginal speculae. Take cervical smear test.	1,2,3,5
Be familiar with the main histological types of cervical cancer and their management (I)	Understands the management of all stages of cervical cancer and how its management differs according to the main histological types which present in this country	Able to recognise the main histological types of cancer presenting in the cervix	1,5
Be able to assess patients for radical radiotherapy (I)	Understands the indications for radiotherapy and its side effects		1,2,3,5
Able to assess prognosis for patients with cervical cancer(I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (A)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4
Knows the importance of smoking cessation	Able to advise on appropriate agencies for helping smoking cessation.		1,2,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy and surgery in both curative and palliative treatment of cervical cancer in patients presenting in all stages.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of pelvic radiotherapy and their relation to dose and volume in the different organs in the pelvis. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to determine the target volume for planning for pelvic radiotherapy (I)	Understands the clinical and radiological parameters associated with planning pelvic radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for different stages of cervical cancer	1,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Knows how to judge the relative risks and benefits of dose gradients in the pelvis		1,3,5

Be able to use special planning modalities including CT planning and BEV planning (A)	Understands the use of cross-sectional imaging in planning pelvic radiotherapy	Able to use CT planning and IMRT in the treatment of cervical cancer	1,2,3,4
Be able to care for patients undergoing pelvic radiotherapy for cervical cancer (I)	Understands early reactions to pelvic radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4,5
Be able to modify course of treatment for individual patients according to severity of reactions including adjustments for gaps in treatment (I)	Understands the radiobiology associated with radical pelvic radiotherapy for cervical cancer		
Be able to participate in protocol development in pelvic radiotherapy for cervical cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for cervical cancer (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of cervical cancer	Able to prescribe growth factors and other support drugs	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients	Able to prescribe less common cytotoxic regimes	1,2,3
Be able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1,6
Be able to care for patients having routine neo-adjuvant, con-comitant, adjuvant and palliative chemotherapy (I)	Understands the acute side effects of chemotherapy and its interaction with radiotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

4. Brachytherapy

Objective	Knowledge	Skills	Assessment
Understand the indications for brachytherapy in the management of cervical cancer (I)	Radiobiological and physical aspects of intracavity brachytherapy in cervical cancer.		1,2,5

Be able to administer, plan and modify brachytherapy treatment and prescriptions in the light of normal tissue tolerance (A)	Quality assurance of intracavity brachytherapy	Perform straightforward brachytherapy insertions using tube and ovoids or vaginal ovoids for cervical cancer	1,2,3
Be familiar with rarer indications for intracavity and interstitial brachytherapy (A)	Planning and physical aspects of interstitial brachytherapy	Assist with interstitial brachytherapy implants	1,2,3
Be able to participate in planning departmental brachytherapy workload and use of LDR, MDR and HDR afterloading equipment (A)	Understanding of the organisation of a brachytherapy service		1,2,3

5. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform pelvic examination in patients who have been previously treated for cervical cancer	1,2,3,4,5
Be able to recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Be able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated cervical cancer	Perform full physical examination including pelvic examination	1,2,5
Understand how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands contribution from palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

Gynaecological Cancer : Cancer of the Body of the Uterus

1. Selection and assessment of patients with all stages of uterine cancer for radiotherapy.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage endometrial cancer (I)	Understands epidemiology and aetiology of endometrial cancer. Knows the FIGO and TNM staging for uterine cancer Can recommend appropriate diagnostic and staging investigations for women presenting with suspected uterine cancer	Pelvic examination in out-patients clinic and examination of the female pelvis under anaesthetic. Use vaginal speculum.	1,2,3,5
Be familiar with the main histological types of uterine cancer and their management (I)	Understands the management of all stages of uterine cancer and how its management differs according to the main histological types which present in this country	Able to recognise the main histological types of cancer presenting in the body of the uterus	1,5
Be able to assess patients for radical radiotherapy for patients unfit for surgery (A)	Understands the indications for radiotherapy and its side effects		1,2,3

Be able to assess patients for adjuvant postoperative radiotherapy (I)			1,2,5
Be able to assess prognosis for patients with uterine cancer(I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Be able to discuss treatment options in the light of understanding of prognosis for patients with common and uncommon types of uterine cancer (A)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4
Be able to take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy and surgery in both curative and palliative treatment of uterine cancer in patients presenting in all stages.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of pelvic radiotherapy and their relation to dose and volume in the different organs in the pelvis. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to determine the target volume for planning for pelvic radiotherapy (I)	Understands the clinical and radiological parameters associated with planning pelvic radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for postoperative radiotherapy for uterine cancer	1,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Knows how to judge the relative risks and benefits of dose gradients in the pelvis		1,3,5
Be able to use special planning modalities including CT planning and BEV planning(A)	Understands the use of cross-sectional imaging in planning pelvic radiotherapy	Able to use CT planning and IMRT in the treatment of uterine cancer	1,2,3,4
Be able to care for patients undergoing pelvic radiotherapy for uterine cancer (I)	Understands early reactions to pelvic radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4,5
Be able to modify course of treatment for individual patients according to severity of reactions (I)	Understands the radiobiological basis of radical pelvic radiotherapy for uterine cancer		1,2,5
Be able to participate in protocol development in pelvic radiotherapy for uterine cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for uterine cancer (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (A)	Understands pharmacology of drugs used in treatment of uterine cancer	Able to prescribe growth factors and other support drugs	1,2,3
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities	Able to prescribe less common cytotoxic regimes	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1
Able to care for patients having routine neo-adjuvant, con-comitant, adjuvant and palliative chemotherapy (I)	Understands the acute side effects of chemotherapy and its interaction with radiotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

4. Brachytherapy

Objective	Knowledge	Skills	Assessment
Understand the indications for brachytherapy in the management of uterine cancer (I)	Radiobiological and physical aspects of intracavity brachytherapy.		1,2,5
Be able to administer, plan and modify brachytherapy treatment and prescriptions in the light of normal tissue tolerance (A)	Quality assurance of intracavity brachytherapy	Perform straightforward brachytherapy insertions using tube and ovoids ,vaginal ovoids or vaginal applicators for endometrial cancer	1,2,3
Be familiar with rarer indications for intracavity and interstitial brachytherapy (A)	Planning and physical aspects of interstitial brachytherapy	Assist with interstitial brachytherapy implants	1,2,3
Be able to participate in planning departmental brachytherapy workload and use of LDR, MDR and HDR afterloading equipment (A)	Understanding of the organisation of a brachytherapy service		1,2,3

5. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform pelvic examination in patients who have been previously treated for uterine cancer	1,2,3,4,5
Recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Know how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(I)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands contribution from palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4,5

Gynaecological Cancer : Cancer of the Ovaries, Fallopian tubes and Primary Peritoneal Cancer

1. Selection and assessment of patients with all stages of ovarian, fallopian tube and primary peritoneal cancer for treatment.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage ovarian, fallopian tube and primary peritoneal cancer (I)	Understands epidemiology and aetiology of ovarian cancer. Knows the FIGO and TNM staging for ovarian cancer Can recommend appropriate diagnostic and staging investigations for women presenting with suspected ovarian cancer	Abdominal and pelvic examination in out-patients clinic. Use vaginal speculum.	1,2,3,5
Be familiar with the main histological types of ovarian cancer and their management (I)	Understands the management of all stages of ovarian cancer and how its management differs according to the main histological types which present in this country	Able to recognise the main histological types of cancer presenting in the ovaries, fallopian tubes and peritoneum	1,5
Able to assess prognosis for patients with ovarian, fallopian tube and primary peritoneal cancer(I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of chemotherapy, radiotherapy and surgery in both curative and palliative treatment of ovarian, primary peritoneal and fallopian tube cancer in patients presenting in all stages of disease.		1,4

2. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy for ovarian, fallopian tube and primary peritoneal cancer (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for ovarian and primary peritoneal cancer (A)	Understands the action of chemotherapeutic agents, their limitations and interactions		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of ovarian, primary peritoneal and fallopian tube cancer	Able to prescribe growth factors and other support drugs	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities	Able to prescribe less common cytotoxic regimes	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1
Able to care for patients having routine curative and palliative chemotherapy (I)	Understands the acute side effects of chemotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

3. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(A) **Be able to seek informed consent for a course of treatment.(A)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of abdominal and pelvic radiotherapy and their relation to dose and volume in the different organs in the pelvis. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4
Be able to determine the target volume for planning pelvic or abdominal radiotherapy (A)	Understands the clinical and radiological parameters associated with planning pelvic and abdominal radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for radiotherapy for ovarian cancer	1,3

Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(A)	Knows how to judge the relative risks and benefits of dose gradients in the abdomen and pelvis		1,3
Be able to use special planning modalities including CT planning and BEV planning(A)	Understands the use of cross-sectional imaging in planning pelvic and abdominal radiotherapy	Able to use CT planning and IMRT in the treatment of cancer of the ovaries, or fallopian tubes	1,2,3,4
Be able to care for patients undergoing pelvic radiotherapy for ovarian or fallopian tube cancer (A)	Understands early reactions to pelvic radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4
Be able to modify course of treatment for individual patients according to severity of reactions (A)	Understands the radiobiology associated with radical pelvic radiotherapy for ovarian, primary peritoneal and fallopian tube cancer		1,2
Be able to participate in protocol development in pelvic radiotherapy for uterine cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform pelvic examination in patients who have been previously treated for ovarian cancer	1,2,3,4,5
Recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated ovarian, primary peritoneal and fallopian tube cancer	Perform full physical examination including pelvic examination	1,2,5
Knows how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands contribution from palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

Gynaecological Cancer : Cancer of the Vulva

1. Selection and assessment of patients with all stages of vulval cancer for treatment.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage vulval cancer (I)	Understands epidemiology and aetiology of vulval cancer. Knows the TNM staging for vulval cancer Can recommend appropriate diagnostic and staging investigations for women presenting with suspected vulval cancer	Pelvic examination in out-patients clinic. Assessment of regional lymph nodes.	1,2,3,5

Be familiar with the main histological types of vulval malignancy and their management (I)	Understands the management of all stages of vulval cancer and how its management differs according to the main histological types.	Able to recognise the main histological types of cancer presenting in the vulva	1,5
Be able to assess patients for radical radiotherapy for patients unfit for surgery (A)	Understands the indications for radiotherapy and its side effects		1,2,3
Be able to assess patients for adjuvant postoperative radiotherapy (I)			1,2,5
Be able to assess prognosis for patients with vulval cancer(A)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3
Be able to discuss treatment options in the light of understanding of prognosis for patients with common and uncommon types of vulval cancer (A)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4
Be able to take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy and surgery in both curative and palliative treatment of vulval cancer in patients presenting in all stages.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(A) **Be able to seek informed consent for a course of treatment.(A)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of pelvic radiotherapy and their relation to dose and volume in the different organs in the pelvis. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to determine the target volume for planning for pelvic radiotherapy for vulval cancer(A)	Understands the clinical and radiological parameters associated with planning pelvic radiotherapy including CT and conformal planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for radiotherapy both to the primary site and regional lymph nodes for vulval cancer	1,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(A)	Knows how to judge the relative risks and benefits of dose gradients in the pelvis		1,3
Be able to use special planning modalities including CT planning and BEV planning(A)	Understands the use of cross-sectional imaging in planning pelvic radiotherapy	Able to use CT planning and IMRT where appropriate in the treatment of vulval cancer	1,2,3,4
Be able to care for patients undergoing radiotherapy for vulval cancer (I)	Understands early reactions to pelvic radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4,5
Be able to modify course of treatment for individual patients according to severity of reactions (I)	Understands the radiobiological basis of radical pelvic radiotherapy for vulval cancer		

Be able to participate in protocol development in pelvic radiotherapy for vulval cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate neoadjuvant, concomitant and palliative chemotherapy (A)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4
Be familiar with research developments in drug therapy for vulval cancer (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (A)	Understands pharmacology of drugs used in treatment of vulval cancer	Able to prescribe growth factors and other support drugs	1,2,3
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities	Able to prescribe less common cytotoxic regimes	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1
Able to care for patients having routine neo-adjuvant, con-commitant, adjuvant and palliative chemotherapy (I)	Understands the acute side effects of chemotherapy and its interaction with radiotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3

4. Brachytherapy

Objective	Knowledge	Skills	Assessment
Understand the indications for brachytherapy in the management of vulval cancer (A)	Radiobiological and physical aspects of interstitial brachytherapy.		1,2

5. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform physical examination in patients who have been previously treated for vulval cancer	1,2,3,4,5
Recognise less common complications of	Understand the variety of rarer complications of radical treatment and		1,2,3,4

treatment and how to manage them (A)	how to differentiate them from recurrence.		
Know how to manage recurrent disease and it symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands contribution from palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

10.10 Urological Cancer : Cancer of the Prostate

1. Selection and assessment of patients with all stages of prostate cancer for radiotherapy.

Objective	Knowledge	Skills	Assessment
Know how to diagnose and stage cancer of the prostate(I)	Understands epidemiology and aetiology of prostate cancer. Understands the principle of screening and its limitations Knows TNM staging for prostate cancer Can recommend appropriate diagnostic and staging investigations for men presenting with suspected prostate cancer	Rectal examination in out-patients clinic.	1,2,3,5
Be familiar with the main histological types of prostate cancer and their management (I)	Understands the management of all stages of prostate cancer and how its management differs according to stage and histology. Understands Gleason scoring	Able to recognise the main histological types of cancer presenting in the prostate	1,5
Be able to assess patients for radical radiotherapy (I)	Understands the indications for radiotherapy and its side effects		1,2,3
Able to assess prognosis for patients with prostate cancer(I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis	Advising patients on treatment options	1,2,3,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy and surgery in both curative and palliative treatment of prostate cancer in patients presenting in all stages.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of pelvic radiotherapy and their relation to dose and volume in the different organs in the pelvis. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to determine the target volume for planning radiotherapy to the prostate (I)	Understands the clinical and radiological parameters associated with planning pelvic radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for different stages of prostate cancer Able to interpret dose volume histograms.	1,3,5

Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Knows how to judge the relative risks and benefits of dose gradients in the pelvis		1,3,5
Be able to use special planning modalities including CT planning and BEV planning (A)	Understands the use of cross-sectional imaging in planning radiotherapy to the prostate	Able to use CT planning and be aware of the role of IMRT in the treatment of prostate cancer	1,2,3,4
Be able to care for patients undergoing pelvic radiotherapy for prostate cancer (I)	Understands early reactions to pelvic radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4
Be able to modify course of treatment for individual patients according to severity of reactions (I)	Understands the radiobiology associated with radical pelvic radiotherapy for prostate cancer		
Be able to participate in protocol development in pelvic radiotherapy for prostate cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate hormone therapy (I)	Is familiar with commonly used hormonal agents and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for prostate cancer (A)	Understands the action of chemotherapeutic agents and potential side effects.		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of prostate cancer	Able to prescribe growth factors and other support drugs	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and hormone therapy and the use of cytotoxic agents in heavily pre-treated patients	Able to prescribe common cytotoxic regimes and hormones	1,2,3
Be able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1,4
Be able to care for patients having routine neo-adjuvant, adjuvant and palliative chemotherapy and hormone therapy (I)	Understands the acute side effects of chemotherapy and hormone therapy and its interaction with radiotherapy.	Able to prescribe chemotherapy and hormone therapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

4. Brachytherapy

Objective	Knowledge	Skills	Assessment
Understand the indications for brachytherapy in the management of prostate cancer (I)	Radiobiological and physical aspects of interstitial brachytherapy in prostate cancer.		1,2,5
Have a working knowledge of planning departmental brachytherapy workload and the relative merits of LDR implants, and HDR afterloading equipment (A)	Understanding of the organisation of a brachytherapy service		1,2,3
Understand how to administer, plan and modify brachytherapy treatment and prescriptions in the light of normal tissue tolerance (A)	Quality assurance of intracavity brachytherapy	Assist at straightforward brachytherapy insertions for prostate cancer	1,2,3

5. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform rectal examination in patients who have been previously treated for prostate cancer	1,2,3,4,5
Be able to recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Be able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated prostate cancer	Perform full physical examination including rectal examination	1,2,5
Understand how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, including hemibody radiotherapy and the role of Sr89, chemotherapy and surgery in the management of recurrence. Understands contribution from palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

Urological Cancer : Urothelial Cancer

1. Selection and assessment of patients with all stages of urothelial cancer for radiotherapy.

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage bladder cancer (I), cancer of the ureter and urethra (A)	Understands epidemiology and aetiology of bladder cancer. Knows the TNM staging for urothelial cancer Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected bladder cancer	Attendance at a cystoscopy including examination of the pelvis under anaesthetic.	1,2,3,5

Be familiar with the main histological types of urothelial cancer and their management (I)	Understands the management of all stages of urothelial cancer and how its management differs according to the main histological types which present in this country	Able to recognise the main histological types of cancer presenting in the bladder, ureter or urethra.	1,5
Be able to assess and advise patients of the relative merits of and indications for radical radiotherapy and surgery. (A)	Understands the indications for radiotherapy and surgery and their side effects		1,2,3
Be able to assess prognosis for patients with bladder cancer(I) or cancer of the ureter or urethra (A)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Be able to discuss treatment options in the light of understanding of prognosis for patients with common and uncommon types of bladder cancer, urethral or ureteric cancer (A)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4,5
Be able to take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy and surgery in both curative and palliative treatment of urothelial cancer in patients presenting in all stages.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of pelvic radiotherapy and their relation to dose and volume in the different organs in the pelvis. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to determine the target volume for planning radiotherapy for bladder cancer(I) **Be aware of the treatment options for cancer of the ureter or urethra (A)**	Understands the clinical and radiological parameters associated with planning pelvic radiotherapy including CT planning. Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for radiotherapy for bladder cancer.	1,3,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(I)	Knows how to judge the relative risks and benefits of dose gradients in the pelvis		1,3,5
Be able to use planning modalities including CT planning and conformal techniques(I)	Understands the use of cross-sectional imaging in planning pelvic radiotherapy	Able to use CT planning and have knowledge of IMRT in the treatment of bladder cancer.	1,2,3,4,5
Be able to care for patients undergoing pelvic radiotherapy for bladder cancer (I)	Understands early reactions to pelvic radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4,5

Be able to modify course of treatment for individual patients according to severity of reactions (I)	Understands the radiobiological basis of radical pelvic radiotherapy for bladder cancer		
Be able to participate in protocol development in radiotherapy for bladder cancer or cancer of the ureter or urethra (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for urothelial cancer (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (I)	Understands pharmacology of drugs used in treatment of urothelial cancer	Able to prescribe growth factors and other support drugs	1,2,3,5
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities	Able to prescribe less common cytotoxic regimes	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform rectal examination in patients who have been previously treated for bladder cancer	1,2,3,4,5
Recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated bladder cancer	Perform full physical examination including rectal examination	1,2,5
Know how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands contribution from palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

Urological Cancer : Renal Cell Carcinoma

1. Selection and assessment of patients with all stages of renal cancer for treatment.

Objective	Knowledge	Skills	Assessment
Be able to diagnose renal cancer (I)	Understands epidemiology and aetiology of renal cancer. Knows the TNM staging for renal cancer Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected renal cancer	Abdominal examination in out-patients clinic.	1,2,3,5
Be familiar with the main histological types of renal cancer and their management (I)	Understands the management of all stages of renal cancer and how its management differs according to the main histological types which present in this country	Able to recognise the main histological types of cancer presenting in the kidney	1,5
Able to assess prognosis for patients with renal cancer(I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of chemotherapy, radiotherapy immunotherapy and surgery in both curative and palliative treatment of renal cancer in patients presenting in all stages of disease.		1,4

2. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate hormone therapy, biological therapy or chemotherapy for renal cancer (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for renal cancer (A)	Understands the action of systemic agents, their limitations and interactions		1,2
Be able to modify systemic therapy prescription in the light of major organ dysfunction (A)	Understands pharmacology of drugs used in treatment of renal cancer	Able to prescribe growth factors and other support drugs	1,2,3
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of systemic treatments used in the palliation of symptoms from renal cancer.	Able to prescribe systemic therapies.	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research and the currently extant studies available for patients with renal cancer.		1

Able to care for patients having routine curative and palliative immunotherapy(I)	Understands the acute side effects of commonly used immunotherapy agents.	Able to prescribe immunotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

3. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Understand the indications for radiotherapy to the renal bed and palliative radiotherapy(I)	Knows the advantages and disadvantages of radiotherapy in renal cancer		1,2,3,5
Be able to seek informed consent for clinical trials (A)	Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment and clinical trials	1,3,4,5

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform clinical examinations in patients who have been previously treated for renal cancer	1,2,3,4,5
Recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated renal cancer	Perform full physical examination .	1,2,5
Knows how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy immunotherapy and surgery in the management of recurrence. Understands contribution from palliative care team	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

Urological Cancer : Carcinoma of the penis

1. Selection and assessment of patients with all stages of penile cancer for radiotherapy.

Objective	Knowledge	Skills	Assessment
Know how to diagnose and stage cancer of the penis(I)	Understands epidemiology and aetiology of penile cancer. Knows TNM staging for penile cancer Can recommend appropriate diagnostic and staging investigations for men presenting with suspected penile cancer	Competent examination of the male genitalia lymph node drainage regions and abdomen	1,2,3,5
Be familiar with the main histological types of penile cancer and their management (I)	Understands the management of all stages of penile cancer and how its management differs according to stage and histology.	Able to recognise the main histological types of cancer presenting in the penis	1,5

Be able to assess patients for radical radiotherapy (A)	Understands the indications for radiotherapy and its side effects		1,2,3
Able to assess prognosis for patients with penile cancer(A)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3
Able to discuss treatment options in the light of understanding of prognosis (A)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy and surgery in both curative and palliative treatment of penile cancer in patients presenting in all stages.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(A) **Be able to seek informed consent for a course of treatment.(A)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of radiotherapy to the penis. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4
Be able to determine the target volume for planning radiotherapy to the penis (A)	Understands the clinical and radiological parameters associated with planning radiotherapy . Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for different stages of penile cancer	1,3
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(A)	Knows how to judge the relative risks and benefits of dose gradients in the pelvis		1,3
Be able to use special planning modalities including CT planning and BEV planning (A)	Understands the use of cross-sectional imaging in planning radiotherapy to the penis	Able to use CT planning and be aware of the potential for IMRT in the treatment of penile cancer	1,2,3,4
Be able to care for patients undergoing radiotherapy for penile cancer (I)	Understands early reactions to radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4
Be able to modify course of treatment for individual patients according to severity of reactions including gaps in treatment (A)	Understands the radiobiology associated with radical radiotherapy for penile cancer		
Be able to participate in protocol development in radiotherapy for penile cancer (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy (A)	Is familiar with commonly used systemic agents and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4
Be familiar with research developments in drug therapy for penile cancer (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (A)	Understands pharmacology of drugs used in treatment of penile cancer	Able to prescribe growth factors and other support drugs	1,2,3
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients	Able to prescribe less common cytotoxic regimes and hormones	1,2,3
Be able to care for patients having routine adjuvant, concomitant, and palliative chemotherapy (A)	Understands the acute side effects of chemotherapy and its interaction with radiotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3

4. Brachytherapy

Objective	Knowledge	Skills	Assessment
Understand the indications for and principles of brachytherapy in the management of penile cancer (I)	Radiobiological and physical aspects of interstitial brachytherapy in penile cancer.		1,2,5

5. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform clinical examination in patients who have been previously treated for penile cancer	1,2,3,4,5
Be able to recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Be able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated penile cancer	Perform full physical examination.	1,2,5
Understand how to manage recurrent disease and it symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands contribution from palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

Urological Cancer : Testicular tumours

1. Selection and assessment of patients with all stages of testicular cancer for treatment

Objective	Knowledge	Skills	Assessment
Know how to diagnose and stage cancer of the testes(I)	Understands epidemiology and aetiology of testis cancer. Knows TNM RMH staging and prognostic groupings for testis cancer Can recommend appropriate diagnostic and staging investigations for men presenting with suspected testis cancer	Competence in examination of the male genitalia ,nodal drainage regions and abdomen.	1,2,3,5
Be familiar with the main histological types of testis cancer and their management (I)	Understands the management of all stages of testis cancer and how its management differs according to stage and histology.	Able to recognise the main histological types of cancer presenting in the testis	1,5
Be able to assess patients for treatment including radiotherapy or chemotherapy (I)	Understands the indications for surveillance, radiotherapy and chemotherapy and their side effects		1,2,3,5
Able to assess prognosis for patients with testis cancer(I)	Knows the effect of stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis and the influence of tumour stage on choice of therapy	Advises patients on treatment options	1,2,3,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy chemotherapy and surgery at presentation, at relapse and the role of surgery for post chemotherapy residual masses.		1,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of adjuvant radiotherapy and chemotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of radiotherapy. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radical and palliative treatment	1,3,4,5
Be able to determine the target volume for planning field for radiotherapy in testicular cancer (I)	Understands the clinical and radiological parameters associated with planning abdomino-pelvic radiotherapy including CT planning.	Able to define a planning target volume for adjuvant radiotherapy to a PA	1,3,5

	Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	strip and dog-leg field.	
Be able to care for patients undergoing radiotherapy for testis cancer (I)	Understands early reactions and their management.	Able to conduct radiotherapy review and manage early reactions	1,2,3,4,5

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy (I)	Is familiar with commonly used cytotoxic regimens.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for testicular cancer (A)	Understands the action of chemotherapeutic agents and their side effects.	Able to take informed consent for cytotoxic chemotherapy	1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (A)	Understands pharmacology of drugs used in treatment of testicular cancer	Able to prescribe growth factors and other support drugs	1,2,3
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of monitoring response and adjusting chemotherapy depending on prognostic group and response to treatment both primary and at relapse. Understand the principles and potential role of high dose chemotherapy with PBSC support.	Able to prescribe less common cytotoxic regimes and hormones	1,2,3
Be able to participate in Phase 2 and Phase 3 clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1
Be able to care for patients having curative and palliative chemotherapy (I)	Understands the acute side effects of chemotherapy .	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Ability to interpret results of imaging techniques and tumour markers.	1,2,3,4,5
Be able to recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Be able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated testicular cancer	Perform full physical examination.	1,2,5

Understand how to manage recurrent disease and it symptoms including palliative treatment and symptom control where indicated.(A)	Understand the roles of radiotherapy, chemotherapy and surgery in the management of recurrence. Understands contribution from palliative care team	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

10.11 CNS tumours

1. Generic neuro-oncology skills

Objective	Knowledge	Skills	Assessment
Can assess patients with brain and spinal tumours (I)	Potential impact of brain and spinal lesions on patients neurological function	Can perform neurological examination of a patient with a brain tumour or spinal cord tumour	1,2,3,4,5
Be familiar with the types of surgery for brain and spinal tumours(I)	Understands the different surgical options for patients with these lesions and the more common potential morbidities	Able, in broad terms, explain surgery to a patient	1,2,4,5
Be able to optimise patients' performance status and quality of life by adjusting steroid dosage (I)	Understands the principals of optimisation of steroid dosage, the acute and long term side-effects of these drugs	Manages patients' steroid dosage effectively	1,2,4,5
Be able to manage patients with seizures (I)	Has knowledge of the indications, pharmacology and side-effects of the commonly used anticonvulsants. Knows when to refer patient for specialist neurology opinion	Manages anticonvulsant therapy	1,2,4,5
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy. Be able to seek informed consent for a course of treatment. (I)	Knows the process involved in the planning of radiotherapy for tumours of brain and spinal cord (patient positioning and immobilisation, image acquisition etc) Understands the acute and long term complications of cranial radiotherapy and their relation to dose and volume.	Able to take informed consent for radical and palliative treatment of intracranial and spinal tumours	1,2,3,4,5
Be able to care for patients undergoing cranial and spinal radiotherapy (I)	Understands early reactions to cranial and spinal radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4,5
Be able to care for patients having routine concomitant, adjuvant and palliative chemotherapy for brain and spinal cord tumours (I)	Understands the acute and long-term side effects of chemotherapy	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,4,5

CNS tumours: Gliomas

1. Selection of patients for treatment

Objective	Knowledge	Skills	Assessment
Basic features of glioma (I)	Understands epidemiology, aetiology and presenting features of the common gliomas of brain and spinal cord (glioblastoma multiforme, anaplastic astrocytoma, grade II glioma, grade I glioma, oligodendroglioma, anaplastic oligodendroglioma).	Able to assess patients with glioma	1,2,5
Be familiar with radiology of glioma (I)	Knows the radiological appearances of the common gliomas on CT and MRI imaging	Able to distinguish the features of the common gliomas	1,2,3,5
Be familiar with the histology of glioma (I)	Knows the histological features of the common types of glioma and how management differs according to these histological types. Knows the common genetic changes seen in glioma and their impact on prognosis and treatment	Able to recognise the main histological features of these lesions Appreciates the different biology and behaviour of these tumours	1,2,5

Be able to assess patients with a glioma for radiotherapy (I)	Understands the indications for radiotherapy for glioma and the evidence underlying the selection of the different fractionation schedules	Able to select optimal treatment for patient	1,2,3,5
Able to assess prognosis for patients with glioma (I)	Knows the effect of age, performance status and histological type on prognosis	Advises patients on prognosis	1,2,3,4,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of surgery, radiotherapy and chemotherapy in the treatment of glioma	Able to participate in meetings	3

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to determine the target volume for planning field for radiotherapy for gliomas (I)	Understands the clinical, pathological and radiological features which dictate the planning target volumes (GTV,CTV, PTV) for cranial and spinal glioma Be conversant with the commonly used radiotherapy techniques e.g. conventional simulation, virtual simulation and 3D conformal planning Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue dose constraints and their impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to plan treatment for cranial (I) and spinal cord glioma (A)	2,3,5

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy (I)	Is familiar with commonly used drug protocols for glioma and their side effects. Knows the indications for the different chemotherapy protocols used. Has knowledge of the potential benefits and side-effects of intra-operatively placed chemotherapy wafers Understands pharmacology of drugs used in treatment of glioma	Able to prescribe common therapeutic regimes and modify doses where appropriate	1,2,3,4,5
Be familiar with research developments in drug therapy for gliomas (A)	Understands biological premise on which these agents have been / are being developed		3
Be able to participate in clinical trials and maintain appropriate research records (A)	Understands the principles of clinical research		1,2,3

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up. (I)	Understands the natural history of the different types of glioma. Knows the common complications of treatment and how to manage them appropriately		1,2,3,5
Be able to recognise less common complications of treatment and how to manage them (A)	Understand the variety of rarer complications of radical treatment and how to differentiate them from recurrence.		1,2,3,4
Be able to diagnose and investigate recurrent disease (I)	Knowledge of natural history of treated glioma		1,2,5
Understand how to manage recurrent disease and it symptoms including palliative treatment and symptom control where indicated. (I)	Understand the roles of chemotherapy, surgery and palliative care in the management of recurrent glioma. Understands contribution from palliative care team.	Able to break news of recurrence to patients and discuss appropriate management options	1,2,3,4,5

CNS tumours: Meningiomas and Vestibular Schwannoma (VS)

1. Selection of patients for treatment

Objective	Knowledge	Skills	Assessment
Basic features of meningiomas and VS (I)	Understands epidemiology, aetiology and presenting features of meningiomas and VS		1,2,5
Be familiar with radiology of meningiomas (A)	Knows the radiological appearances of meningiomas and VS on CT and MRI imaging	Able to distinguish the features of meningioma and VS	1,2,3,5
Be familiar with the histological features of meningiomas (A)	Knows the histological features of the common types of meningiomas and how management differs according to these histological types	Able to recognise the main histological features of these lesions Appreciate the different biology and behaviour of these tumours	1,2
Be able to assess patients for radiotherapy (A)	Understands the indications for radiotherapy and the common radiotherapy schedules used. Understands the role of stereotactic radiotherapy for these lesions.	Able to select optimal treatment for patient	1,2,3,4
Able to assess prognosis for patients with meningiomas and VS (A)	Knows the effect of histological type, age, performance status and co-morbidity on prognosis and treatment selection	Advises patient on prognosis and treatment	1,2,3,4
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of surgery and radiotherapy in the treatment of meningioma and VS	Able to participate in meetings	2,3

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to determine the target volume for planning field for radiotherapy for meningioma (A)	Understands the clinical, histological and radiological parameters used to determine the target volumes (GTV,CTV,PTV) for meningiomas Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volumes. Aware of normal tissue tolerance doses, morbidity and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity. Knows how to judge the relative risks of injury to critical structures	Able to define a treatment volume for meningioma Able to use CT planning in the treatment of meningioma	2,3

3. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up. (A)	Understands the natural history of meningiomas and VSs. Knows the common complications of treatment and how to manage them appropriately		1,2
Be able to diagnose and investigate recurrent disease (A)	Knowledge of natural history of treated and untreated meningioma and VS		1,2
Understand how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated. (A)	Understand the roles of surgery, stereotactic radiotherapy and palliative care in the management of recurrence. Understands contribution from palliative care team	Able to break news of recurrence to patients and discuss appropriate management options	1,2,3,4

CNS tumours: pituitary adenoma and craniopharyngiomas

1. Selection of patients for treatment

Objective	Knowledge	Skills	Assessment
Basic features of pituitary adenoma and craniopharyngiomas (I)	Understands epidemiology and presenting features of pituitary adenoma and craniopharyngiomas	Able to assess a patient presenting with a pituitary adenoma or craniopharyngioma	1,2,3,5
Be familiar with radiology of pituitary adenoma and craniopharyngiomas (I)	Knows the radiological appearances of pituitary adenoma and craniopharyngiomas on CT and MRI imaging	Able to distinguish the common features of pituitary adenoma and craniopharyngiomas	1,2,3,5
Be familiar with the main histological features of pituitary adenoma and craniopharyngiomas (I)	Knows the main histological features of secreting and non-secreting pituitary adenoma and of craniopharyngiomas	Able to recognise the main histological features of these lesions Appreciate the different biology and behaviour of these tumours	1,2,5
Be able to assess patients for radiotherapy (I)	Understands the indications for radiotherapy and the acute and long-term side effects Knows commonly used radiotherapy schedules for these lesions	Able to select optimal treatment for patient	1,2,3,4,5
Able to discuss treatment options in the light of understanding of side-effects (I)	Understands the benefits and potential toxicities of radiotherapy	Advises patients on treatment options	1,2,3,4,5

Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of surgery, radiotherapy and drug treatment in the management of pituitary adenoma and craniopharyngiomas	Able to participate in meetings	3,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to determine the target volume for planning field for radiotherapy for pituitary adenomas and craniopharyngiomas (I)	Understands the clinical and radiological parameters associated with planning of radiotherapy for pituitary adenomas and craniopharyngiomas Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume.	Able to define a treatment volume for pituitary adenoma and craniopharyngiomas	2,3,5

3. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up.(I)	Understands the natural history of pituitary adenomas and craniopharyngiomas. Knows the common complications of treatment and how to manage them appropriately Able to monitor routine hormone replacement but knows when to refer for specialist endocrinology opinion.		2,3,4,5

CNS tumours: ependymomas

1. Selection of patients for treatment

Objective	Knowledge	Skills	Assessment
Basic features and diagnosis of ependymomas (I)	Understands epidemiology and basic clinical features of supra-tentorial, infra-tentorial and spinal Grade I, II and III ependymomas Knows the staging procedures required for ependymomas	Knows how to assess a patient with an ependymoma	1,2,5
Be familiar with radiology of ependymomas (A)	Knows the radiological appearances of the ependymomas on CT and MRI imaging	Able to distinguish the features of ependymomas	1,2
Be familiar with the histological features of ependymomas (A)	Knows the histological features of ependymoma	Able to recognise the main histological features of these lesions Appreciate the different biology and behaviour of these tumours	1,2
Be able to assess patients for radiotherapy (A)	Understands the indications for radiotherapy and the evidence underlying the selection of the treatment volume	Able to select optimal treatment for patient	1,2
Able to assess prognosis for patients with ependymomas (A)	Knows the effect of age, performance status, extent of surgery and histological type on prognosis	Advises patients on prognosis	1,2,4
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy, chemotherapy and surgery in the treatment of ependymoma	Able to participate in meetings	3

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to determine the target volume for planning radiotherapy for ependymomas (A)	Understands the clinical, pathological and radiological features which dictate the radiotherapy volume Be conversant with the commonly used techniques e.g. cranial, spinal and cranio-spinal radiotherapy Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue dose constraints and morbidity, and its impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to define a planning target volume for the various grades and locations of ependymomas Able to use CT planning in the treatment of ependymomas	1,2

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Use of chemotherapy in ependymomas (A)	Be aware of the limitations of chemotherapy in the treatment of ependymoma		1,2

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up. (A)	Understands the natural history of ependymoma. Knows the common complications of treatment and how to manage them appropriately		1,2
Be able to diagnose and investigate recurrent disease (A)	Knowledge of natural history of treated ependymoma		1,2
Understand how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated. (A)	Understand the roles of chemotherapy, surgery, stereotactic radiotherapy and palliative care in the management of recurrence	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

CNS tumours: pineal lesions

1. Selection of patients for treatment

Objective	Knowledge	Skills	Assessment
Basic features and diagnosis of pineal lesions (I)	Understands epidemiology and presenting features of pineal tumours (germinomas, teratomas pineocytomas and pineoblastoma) Knows the staging procedures required for these lesions	Able to clinically assess patient with a pineal tumour	1,2,5

Be familiar with radiology of pineal lesions (A)	Knows the radiological appearances of these lesions on CT and MRI imaging	Able to distinguish the features of the pineal lesions	1,2
Be familiar with the histological features of pineal lesions (A)	Knows the main histological features of pineal lesions	Able to recognise the main histological features of these lesions Appreciate the different biology and behaviour of these tumours	1,2
Be able to assess patients for chemotherapy and radiotherapy (A)	Understands the indications for chemotherapy and/or radiotherapy for germ cell lesions.	Able to select optimal treatment for patient	1,2
Able to assess prognosis for patients with pineal lesion (A)	Knows the effect of histological type on prognosis	Advises patients on prognosis	1,2,3,4
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications for chemotherapy and/ or radiotherapy in the treatment of pineal lesions	Able to participate in meetings	3

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to determine the target volume for planning field for radiotherapy for intra-cranial germ cell lesions (A)	Understands the clinical, pathological and radiological features which dictate the choice of radiotherapy volume Be conversant with the commonly used techniques craniospinal, ventricular and involved field radiotherapy Is competent in the interpretation of diagnostic imaging (including CT and MR) for determination of target volume. Aware of normal tissue dose constraints and their impact on target volume definition. Is able to judge how to modify treatment plans based on morbidity.	Able to plan cranio-spinal , ventricular and involved field radiotherapy	2,3

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy (A)	Is familiar with commonly used drug protocols for intra-cerebral germ cell lesions and their side effects. Understands pharmacology of drugs used in treatment of germ cell lesions	Able to prescribe common therapeutic regimes Able to modify regimens appropriately	1,2,3,4

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients with pineal lesions attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up. (A)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to perform neurological examination in patients with pineal lesion	1,2,3,4

CNS tumours: Primitive neuro-ectodermal tumours of the CNS

1. Selection of patients for treatment

Objective	Knowledge	Skills	Assessment
Basic features and diagnosis of CNS PNET (A)	Understands epidemiology and clinical features of the common types of CNS primitive neuro-ectodermal (CNS PNET) lesions (medulloblastoma, pineoblastoma and supra-tentorial PNET)	Able to assess a patient presenting with a CNS PNET	1,2
Be familiar with radiology of CNS PNET(A)	Knows the radiological appearances of CNS PNET on CT and MRI imaging	Able to distinguish the features of medulloblastoma	1,2
Be familiar with the histological features of CNS PNET (A)	Knows histological features of medulloblastoma and the other CNS PNETs and the indications for the different treatment options. Understands the staging procedures required for medulloblastoma	Able to recognise the main histological features of PNETs Appreciate the different biology and behaviour of these tumours	1,2
Be able to assess patients with CNS PNET for radiotherapy +/- chemotherapy (A)	Understands the indications for radiotherapy and the possible role for chemotherapy.	Able to select optimal treatment for patient	1,2
Able to assess prognosis for patients with CNS PNET (A)	Knows the effect of age, performance status and extent of resection on prognosis		1,2,3
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy, chemotherapy and surgery in the treatment of CNS PNETS	Able to participate in meetings	3

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to determine the target volume for planning field for radiotherapy for CNS PNETS (A)	Understands the clinical and radiological parameters associated with planning radiotherapy for medulloblastoma and other CNS PNETS	Able to plan cranio-spinal radiotherapy and define a posterior fossa boost for medulloblastoma	2

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients with CNS PNET for chemotherapy	Is familiar with the issues regarding the use of chemotherapy in the treatment of adult and paediatric medulloblastoma		1,2

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients with CNS PNET attending for follow-up after completion of treatment. Be able to	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately		1,2,4

advise on appropriate investigations during follow-up. (A)			
Be able to diagnose and investigate recurrent disease (A)	Knowledge of natural history of treated CNS PNETs		1,2
Understand how to manage recurrent disease and its symptoms including palliative treatment and symptom control where indicated. (A)	Understand the roles of surgery, chemotherapy, stereotactic radiotherapy and palliative care in the management of recurrence	Able to break news of recurrence to patients and discuss appropriate management options	1,2,4

CNS tumours: primary cerebral lymphoma

1. Selection of patients for treatment

Objective	Knowledge	Skills	Assessment
Be able to diagnose primary cerebral lymphoma (A)	Understands epidemiology and aetiology of primary cerebral lymphoma (PCNSL)	Able to assess a newly diagnosed patient with PCNSL	1,2,3
Be familiar with radiology of PCNSL (A)	Knows the radiological appearances of PCNSL on CT and MRI imaging	Able to distinguish the features of the common PCNSL	1,2
Be familiar with the histological of PCNSL (A)	Knows histological features of primary cerebral lymphoma Understands the staging procedures required for PCNSL	Able to recognise the main histological features of PCNSL Appreciate the different biology and behaviour of these tumours	1,2
Be able to assess patients for chemotherapy and/or radiotherapy for PCNSL (A)	Understands the indications for chemotherapy and the different protocols used. Understands the indications for primary and post-chemotherapy radiotherapy in PCNSL	Able to select optimal treatment for patient	1,2,3,4
Able to assess prognosis for patients with PCNSL (A)	Knows the effect of age, performance status and immune status on prognosis	Advises patient on prognosis	1,2,3,4
Able to discuss treatment options in the light of understanding of prognosis in PCNSL (A)	Understands the effects of treatment on prognosis Understands the issues of potential long term morbidity of cranial radiotherapy in PCNSL	Advises patients on treatment options	1,2,3,4
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy, chemotherapy and surgery in the treatment of PCNSL	Able to participate in meetings	3

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to determine the target volume for planning field for radiotherapy for PCNSL (A)	Understands the clinical and radiological parameters associated with planning radiotherapy for PCNSL	Able to define a treatment volume for PCNSL	2,3

3. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients with PCNSL for chemotherapy (A)	Is familiar with commonly used drug protocols and their side effects. Understands pharmacology of drugs used in treatment of PCNSL Is familiar with the management of patients receiving intrathecal treatment	Able to prescribe common therapeutic regimes	2,3

4. Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients with PCNSL attending for follow-up after completion of treatment. Be able to advise on appropriate investigations during follow-up. (A)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately		1,2,4
Be able to diagnose and investigate recurrent PCNSL (A)	Knowledge of natural history of treated PCNSL		1,2

CNS tumours: solitary and multiple brain metastases

1. Selection of patients for treatment

Objective	Knowledge	Skills	Assessment
Basic features of brain metastases (I)	Understands epidemiology, aetiology and presenting features of the common disease sites that metastasize to the brain.	Can perform neurological examination of a patient with a brain metastases	1,2,3,4,5
Be familiar with radiology of metastases (I)	Knows the radiological appearances of metastases and the importance of MRI in establishing if lesions are solitary	Able to distinguish the features of brain metastases	1,2,5
Be familiar with the presentation of solitary and multiple metastases (I)	Knows the histological features of the common types of metastases. Understands how management is influenced by the time interval from primary disease, performance status of the patient and absence (or stability) of systemic disease and the importance of restaging for systemic disease	Able to recognise the main features of these lesions Appreciates the different biology and behaviour of different tumour sites. Understands the restaging assessments needed prior to considering treatment	1,2,3,5
Be familiar with the types of surgery for metastases (I)	Understands the different surgical options for patients with solitary and multiple metastases and the common potential morbidities	Able, in broad terms, explain surgery for patients with metastases	1,2,3,5
Be able to assess patients for radiotherapy (I) and to understand the principles of stereotactic radiotherapy (A)	Understands the indications for stereotactic radiotherapy and the role of whole brain radiotherapy Understands the principles of stereotactic localisation Understands the use of steroid in preparation for radiosurgery Aware of the differences between LiNAC based SRT and the gamma knife	Able to select optimal treatment for patient	1,2
Able to assess prognosis for patients with solitary and multiple metastases (I)	Knows the effect of age, performance status and status of systemic disease on prognosis	Advises patients on prognosis	1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis	Advises patients on treatment options	1,2,3,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of surgery, radiotherapy in the management of solitary and multiple metastases. Understands contribution from palliative care team.	Able to participate in meetings	3

10.12 Skin Cancer : Basal cell carcinoma and squamous carcinoma (Non-Melanoma Skin Cancer - NMSC)

1. Selection and assessment of patients for radiotherapy.

Objective	Knowledge	Skills	Assessment
Be able to diagnose primary NMSC (I)	Understands epidemiology and risk factors for non-melanoma skin cancer Is able to recognise a typical NMSC and distinguish it from common benign skin lesions.	Able to recognise a typical basal cell carcinoma and distinguish it from common benign skin lesions	1,2,5
Be familiar with the main variants of NMSC (I)	Understands the different appearances of basal cell carcinoma and squamous cancer of the skin Understands the role of histological assessment	Requests biopsy appropriately and correctly interprets the results of histology	1,2,5
Be able to assess patients for radical radiotherapy (I)	Understands the indications and contraindications for radiotherapy Takes into account age, skin type, co-morbidity, tumour site and size	Advises patient appropriately on the role of radiotherapy	1,2,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications for and limitations of radiotherapy, plastic surgery and dermatological techniques in the management of basal cell carcinoma	Advises patient on treatment options	1,2

2 Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I) **Be able to seek informed consent for a course of treatment.(I)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute radiation reaction and the long term cosmetic effects of treatment Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radiation treatment	1,2,5
Be able to determine the target volume and treatment margins for radiotherapy(I)	Understands how to plan external beam radiotherapy using photons and electrons Is able to judge how to modify treatment plans based on patient and tumour factors Chooses appropriate machine energy, modality, dose, fractionation, shielding	Able to plan treatment appropriately	1,2,5
Be able to care for patients undergoing radiotherapy for NMSC (I)	Understands early reactions to skin irradiation, and their management	Able to conduct radiotherapy review and manage early reactions	1,2,5

3 Assessment of response and follow-up

Objective	Knowledge	Skills	Assessment
Be able to assess and advise patients attending for follow-up after the completion of treatment(I)	Understands the natural history of the illness. Knows the common complications of treatment and how to manage them appropriately	Able to recognise complete response Able to recognise the normal cosmetic results of treatment	1,2,5
Be able to diagnose and manage recurrent disease (I)	Knowledge of risk or recurrence of necrosis	Able to recognise possible recurrence or necrosis	1,2,5
Understand how to manage recurrent disease (A)	Understand the roles of alternative modalities of treatment in recurrent/persistent disease, and the role of the MDT	Able to break news of recurrence to patients and discuss appropriate management options	1,2,

Skin Cancer : Malignant Melanoma

1. Selection and assessment of patients for treatment

Objective	Knowledge	Skills	Assessment
Be able to diagnose primary malignant melanoma (I)	Understands epidemiology and risk factors for malignant melanoma Is able to recognise a typical malignant melanoma and distinguish it from common benign skin lesions.	Able to recognise a typical malignant melanoma and distinguish it from common benign skin lesions	1,2,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications for and limitations of surgical techniques in the management of malignant melanoma including management of the primary tumour and regional nodes eg node dissection, sentinal node biopsy.	Advises patient on treatment options	1,2

2. Systemic therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for appropriate chemotherapy, biological therapy and immuno-therapy in both adjuvant setting and metastaticdisease (I)	Is familiar with commonly used drug protocols and their side effects. Knows which regimes are appropriate for use in the clinical situation.	Able to prescribe common therapeutic regimes	1,2,3,4,5
Be familiar with research developments in drug therapy for melanoma (A)	Understands the action of chemotherapeutic agents, their limitations and interactions with radiotherapy		1,2
Be able to modify chemotherapy prescription in the light of major organ dysfunction (A)	Understands pharmacology of drugs used in treatment of melanoma	Able to prescribe growth factors and other support drugs	1,2,3
Be able to advise on less common therapeutic regimes in particular palliative treatment for recurrent disease (A)	Understands the principles of palliative chemotherapy and the use of cytotoxic agents in heavily pre-treated patients and patients with significant co-morbidities	Able to prescribe less common cytotoxic regimes	1,2,3
Able to participate in Phase 2 and Phase 3 clinical trials and	Understands the principles of clinical research		1

maintain appropriate research records (A)			
Able to care for patients having chemotherapy (I)	Understands the acute side effects of chemotherapy and its interaction with radiotherapy.	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5

Skin cancer :Cutaneous Lymphoma

1. Assessment of patients with Cutaneous Lymphoma

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage Cutaneous Lymphoma (A)	Understands histopathological classification of Cutaneous Lymphoma. Understands epidemiology. Knows the staging systems for both B and T cell cutaneous lymphomas. Understands prognostic factors	Able to examine and accurately document the full extent of skin involvement. Able to examine other relevant organs including the lymphatic system Interpretation of x-rays and CT scan images Can recommend appropriate diagnostic and staging investigations	1,2,5
Be able to assess patients for appropriate therapy (I)	Understands the management of the both B and T cell cutaneous lymphomas Understands potential toxicity of therapy including skin directed, (including PUVA and radiotherapy) and systemic therapy. Understands the role of multidisciplinary working with dermatology and haematology.	Clinical assessment, including assessing co-morbidity and its effect on outcome	1,2,5
Be able to discuss treatment options (A)	Understands prognosis and how treatment affects this	Advise patient on appropriate management	1,2,3,4
Take part in MDM discussions(A)	Understands indications for and limitations of treatment for cutaneous lymphomas	MDM interaction	1,2,3,4

2. Systemic Therapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients for systemic treatment including chemotherapy, steroids, interferon and retinoids (A)	Knowledge of common drug protocols for cutaneous lymphomas, B and T cell, low and high grade, and their toxicity Understand which regimes are appropriate in which clinical situation	Clinical Assessment	1,2
Look after patients undergoing radical and palliative treatment regimes (A)	Understands the acute side-effects of systemic treatments used including chemotherapy	Able to prescribe common chemo protocols, interferon and retinoids (in cooperation with a dermatologist) modify	1,2,3

		prescriptions, judge when to stop or continue treatment, and prescribe supportive treatment eg. Antibiotics	
Be able to modify drug prescription in the light of response and side effects (A)	Understands the pharmacology of drugs used in the treatment of cutaneous lymphomas	Able to adjust dose as appropriate	1,2,4
Be familiar with research developments in cutaneous lymphomas (A)	Knows details of recently published and ongoing research	Able to discuss involvement in clinical trials	2,4
Be able to participate in ph I, II and III trials and maintain appropriate research records (A)	Understands the principles of clinical research		2,3,6

3. Skin Directed Treatment, including Radiotherapy

Objective	Knowledge	Skills	Assessment
Be able to assess patients suitability for skin directed treatments including topical medication, PUVA and radiotherapy(A)	Understand benefits, side effects and risks of topical medication (including steroids and chemotherapy), PUVA and radiotherapy.	Multidisciplinary team working with dermatology Obtain informed consent	1,2,3
Be able to plan radiotherapy treatment, including use of SXT, electrons and total skin electron treatment (A)	Aware of indications for SXT and electrons and mould room preparation required. Aware of appropriate dose/fractionation regimes Aware of acute and late normal tissue reactions.	Plan radiotherapy using electrons or SXT with appropriate shielding of normal tissues.	1,2,3
Be able to manage and care for patients undergoing Total Skin electron treatment (A)	Understands physics and radiobiology of Total skin electrons. Understands early reactions to total skin electrons and their management	Clinic review of on-treatment patients and management of early reactions	1,2
Be able to enter patients into clinical trials (A)	Good knowledge of rationale for on-going clinical trials	Obtain consent for entry into clinical trials	1,2,3
Be able to modify treatment plans according to patients individual needs pre-morbid conditions etc (A)	Judge relative risks and benefits	Prescribe and review treatment	1,2,3

4. Assessment of response and follow up

Objective	Knowledge	Skills	Assessment
Be able to assess response to systemic and skin directed treatments (A)	Knowledge of clinical features of cutaneous lymphoma related to stage and histological subtype.	Discuss response and current disease status with patients in clinic	1,2
Be able to advise on follow-up schedule and appropriate investigations (A)	Understanding of natural history of cutaneous lymphoma related to stage and histological subtype.	Able to clinically assess cutaneous lymphoma and distinguish from other skin conditions	1,2

Objective	Knowledge	Skills	Assessment
Be able to recognise and manage long-term toxicity (A)	Knowledge of late effects of treatment	Detect at follow-up	1,2
Be able to manage advanced disease (A)	Understanding the roles of chemotherapy, radiotherapy and supportive measures in the management of advanced disease	Breaking bad news. Integration of palliative, supportive care.	1,2,4

10.13 Lymphomas and leukaemias including myeloma. Hodgkin's and non-Hodgkin's Lymphoma

1. Selection and assessment of patients with NHL and Hodgkin's Lymphoma for treatment.

Objective	Knowledge	Skills	Assessment
To relate clinical and radiological anatomy to diagnosis and therapy (I)	Understand clinical and radiological anatomy	Be able to identify anatomical landmarks, key structures including vessels, lymph nodes on CT and MRI	1, 3, 5
Be able to diagnose and stage NHL and Hodgkin's Lymphoma (I)	Understands epidemiology and aetiology of NHL and HL. Knows the indications for urgent referral by GP. Knows the staging and prognostic indices used in the management of NHL and HL. Understands the technique and limitations of histology- and of immuno-histo-chemistry and other specialist techniques in lymphoma diagnosis.	Examination in out-patients clinic with particular attention to lymph nodes sites. Able to interpret X-ray, CT, MRI and PET imaging Can recommend appropriate diagnostic and staging investigations for patients presenting with suspected NHL and HL.	1,2,3,5
Be able to assess patients for radical radiotherapy (I) **Be able to assess patients for combined modality therapy (A)** **Be able to assess patients for palliative treatment (I)**	Understands the indications for radical radiotherapy in NHL and HL and its side effects Understands literature on combined modality therapy in NHL and HL and the circumstances in which this might be considered Knows stage and scoring systems and their value in predicting prognosis Understands benefits and toxicity of palliative treatment with both radiotherapy and chemotherapy	Able to assess performance state (WHO or Karnofsky) Able to discuss the role of radiotherapy and risk/benefit with individual patients	1,2,3,5
Able to assess prognosis for patients with NHL and Hodgkins Lymphoma (I)	Knows the effect of performance state, stage, age, co-morbidity and histological type on prognosis		1,2,3,5
Able to discuss treatment options in the light of understanding of prognosis (I)	Understands the effects of treatment on prognosis	Able to inform patients on treatment options and discuss individual risk/benefit	1,2,3,4,5
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications for treatment of HL, and the risks and benefits of different treatment options	Can contribute to MDT discussions	1,3,4

2. Systemic therapy in the management of NHL and Hodgkin's Lymphoma

Objective	Knowledge	Skills	Assessment
Be able to assess patients for chemotherapy (I)	Knowledge of common drug protocols for NHL and HL and their toxicity Understand which regimes are appropriate in the clinical situation	Clinical Assessment	1,2,5

Look after patients undergoing radical and palliative treatment regimes (I)	Understands the acute side-effects of chemotherapy	Able to prescribe common chemo protocols, modify prescriptions, judge when to stop or continue treatment, and prescribe supportive treatment eg. Antibiotics	1,2,3
Be familiar with research developments in NHL and HL (A)	Knows details of recently published and ongoing trials	Able to discuss involvement in clinical trials	2,4
Be able to participate in phase I, II and III trials and maintain appropriate research records (A)	Understands the principles of clinical research		2,3,6

3. Radiotherapy treatment in the management of NHL and Hodgkin's Lymphoma

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(I)	Understands the acute and long term risks complications of radiotherapy and their relation to dose and volume irradiated	Able to communicate about these issues with the patient. Able to take informed consent.	1,3,4,5
Be able to determine the target volume for radiotherapy in NHL and HL (I)	Is competent in the interpretation of diagnostic imaging (including CT, PET and MR) for determination of target volume. Understands the clinical and radiological parameters associated with planning 2D conventional and 3D conformal radiotherapy. Understands the issues in defining target volume for those patients who have received initial chemotherapy which has resulted in tumour response	Able to define a treatment volume for NHL and HL. Can define DVH (dose volume histogram) based 3D conformal planning constraints.	1,2,3,5
Be able to advise on and prescribe palliative radiotherapy in NHL and HL (A)	Understand that wide field radiotherapy may rarely be an appropriate second line therapy which in rare cases does cure NHL and HL patients Understands the palliative role of radiotherapy in NHL and HL	Able to define the appropriate treatment volume for second line therapy or for palliation	1,2
Be able to prescribe appropriate dose and fractionation schedule for palliative and radical radiotherapy (I)	Understands evidence base for dose/fractionation schedules commonly used in NHL and HL	Is able to define appropriate treatment schedule according to stage of disease, performance status of patients and concomitant systemic therapy	1,3,4,5
Be able to modify treatment plans according to patient's individual needs, pre-morbid conditions etc(A)	Aware of normal tissue morbidity and its impact on target volume definition. Understands risks of re-treatment with radiation based on normal tissue tolerance limits	Is able to judge how to modify treatment plans based on patient co-morbidity. Able to assess when re-treatment is acceptable and prescribe appropriate dose and fractionation	1,3

Be able to use special planning modalities including CT planning and BEV planning (A)	Understands the use of cross-sectional imaging in planning NHL and HL radiotherapy (I)	Able to use CT planning in the treatment of NHL and HL	1,2,3,4
Be able to verify treatment plan (A)	Understands use of digitally reconstructed radiographs and beam's eye views Understands use of portal imaging	Able to assess accuracy of patient set-up and recommend adjustments	1,2,3
Be able to care for patients undergoing radiotherapy for NHL and HL (I)	Understands early reactions to radiotherapy and their management	Able to conduct radiotherapy review and manage early reactions	1,2,3,4,5
Be able to modify course of treatment for individual patients according to severity of reactions including adjustments for gaps in treatment (I)	Understands the radiobiology associated with radical radiotherapy and its importance in the management of NHL and HL		
Be able to participate in protocol development in radiotherapy for NHL and HL (A)	Understands developments in radiotherapy research and their application to local protocols		1,4

4. Management of relapsed Hodgkin's and Non-Hodgkin's Lymphoma

Objective	Knowledge	Skills	Assessment
To be able to diagnose relapse of Hodgkin's and NHL	Knowledge of signs and symptoms of relapse, markers and imaging. To understand the indications for node/tissue biopsy where appropriate and restaging	Examination in out-patient clinics Able to interpret imaging (CT, MRI, PET, US) Can recommend appropriate diagnostic and staging investigations for patients suspected of having relapsed Hodgkin's and NHL	1,2,3,5
Take part in treatment discussions in multi-disciplinary meetings (A)	Understands the indications for 2nd line treatments in relapsed Hodgkin's and NHL and the risks and benefits of different treatment options	Can contribute to MDT discussions	1,3,4
Be able to assess patients for appropriate 2nd line chemotherapy (I) **Able to adjust choice of chemotherapy regimen according to patient fitness (A)**	Is familiar with 2nd line drug protocols and their side effects. Including antibody therapy, high dose chemotherapy and bone-marrow transplant, and mini-allograft. Understand different patient motives (coping, survival enhancement, quality of life improvement) for receiving chemotherapy (A) Understand the literature of which regimes are appropriate for use in relapsed lymphoma. This should include knowledge of appropriate regimes in pre-treated patients, the elderly, those with comorbidity and the PS2 patient	Able to prescribe common therapeutic regimes. Able to assess patient's fitness eg by ECOG performance status Able to assess and discuss whether outcomes of therapy are meeting patients' needs (A)	1,2,3,5 1,2
Be able to assess patients for radical	Understands the indications for radiotherapy in relapsed Hodgkin's and NHL and its side effects	Able to assess performance status	1,2,3,5

or palliative radiotherapy in relapsed Hodgkin's and NHL (I)	Understands the radiobiological consequences of retreatment if appropriate	Able to discuss the role of radiotherapy and risk/benefit with individual patients	
Be familiar with research developments in drug therapy for relapsed Hodgkin's and NHL (A)	Is aware of recent literature and licensing status of new agents to allow a full discussion of options Knowledge of reliable sources of information for patients to access eg BACUP, NCI website.	Able to discuss developments in treatment knowledgeably, or know where to direct patients to find information.	1,2,6
Be able to modify chemotherapy prescription in the light of toxicity (I)	Understands pharmacology of drugs used in treatment of NHL and Hodgkin's lymphoma Understands when it is inappropriate to prescribe chemotherapy due to risk of toxicity.	Able to prescribe growth factors and other support drugs and able to dose reduce if appropriate. Able to organise and interpret investigations such as EDTA/MUGA	1,2,3,5
Be able to identify when patients with relapsed lymphoma require referral to a tertiary centre (A)	Understand the indications for super-specialist intervention or advice for patients with relapsed lymphoma, eg high dose chemotherapy with ASCT, or radiolabelled monoclonal therapy	Able to discuss indications and procedure from knowledge of literature and protocols	1,2,3,5
Be able to participate in Phase I, Phase 2 and Phase 3 clinical trials (A)	Understands the principles of clinical research. Understands the risk/benefit ratio to individual patient.	Able to obtain informed consent for a clinical trial. Able to record toxicity and response accurately.	1,2,6
Be able to assess response to chemotherapy (I).	Understands the aim of treatment and is able to assess response according to recognised criteria	Able to prescribe chemotherapy according to protocol and modify schedules for patients based on individual needs and judge when to continue or stop treatment	1,2,3,5
Be able to recognise when further/continuing chemotherapy is inappropriate (A)	Understands the palliative care options available to a patient who is not responding to/tolerating chemotherapy	Breaking bad news. Integration of palliative, supportive care.	1,2,4

Plasma cell tumours – Plasmacytoma and multiple myeloma

1. Assessment of patients with Plasma cell tumours – Solitary Plasmacytoma of Bone (SPB), Solitary Extramedullary Plasmacytoma (SEP) and multiple myeloma (MM)

Objective	Knowledge	Skills	Assessment
Be able to diagnose and stage plasma cell tumours (I)	Understands histological features of plasma cell tumours and biochemical markers Knows staging system required to distinguish Solitary Plasmacytoma of Bone (SPB) and Solitary Extramedullary Plasmacytoma (SEP) from multiple myeloma (MM) Understands natural history of plasma cell tumours and prognostic factors	Interpretation of x-rays and CT scan images Can recommend appropriate diagnostic and staging Investigations	1,2,5

Be able to assess patients for appropriate therapy (I)	Understands the management SBP, SEP and MM Understands potential toxicity of therapy (systemic and radiotherapy)	Clinical assessment, including assessing co-morbidity and its effect on outcome	1,2,5
Be able to discuss treatment options (A)	Understands prognosis and how treatment affects this	Advise patient on appropriate management	1,2,3,4
Take part in MDM discussions(A)	Understands indications for and limitations of treatment of SBP, SEP, and MM.	MDM interaction	1,2,3,4

2. Systemic Therapy – Usually supervised by a consultant haematologist within the multidisciplinary team.

Objective	Knowledge	Skills	Assessment
Be able to assess patients for chemotherapy (I)	Knowledge of common drug protocols for plasma cell tumours and their toxicity Understand which regimes are appropriate in the clinical situation	Clinical Assessment	1,2,5
Look after patients undergoing radical and palliative treatment regimes (I)	Understands the acute side-effects of chemotherapy	Able to prescribe common chemo protocols, modify prescriptions, judge when to stop or continue treatment, and prescribe supportive treatment eg. Antibiotics	1,2,3,5
Be familiar with research developments in plasma cell tumours (A)	Knows details of recently published and ongoing trials	Able to discuss involvement in clinical trials	2,4,5
Be able to participate in ph I, II and III trials and maintain appropriate research records (A)	Understands the principles of clinical research		2,3,6

3. Radiotherapy Treatment

Objective	Knowledge	Skills	Assessment
Be able to assess patients' suitability for radical or palliative RT (I)	Understands principles of radical radiotherapy for SBP and SEP. Understands principles of palliative radiotherapy for MM	Obtain informed consent	1,2,3,5
Be able to determine planning target volume for radical RT for SPB and SEP and palliative treatment for MM (I)	Aware of optimal dose/fractionation for radical RT for SPB and SEP and of palliative RT for MM. Aware of normal tissue toxicity and its impact on target volume definition.	Plan radical radiotherapy for SPB and SEP including CT planning Plan palliative radiotherapy	1,2,3,5
Be able to manage and care for patients undergoing radical or palliative RT (I)	Understands early and late reactions to RT and their management	Clinic review of on-treatment patients and management of early reactions	1,2,5
Be able to modify treatment plans according to patients individual needs pre-morbid conditions etc (I)	Judge relative risks and benefits	Prescribe and review radical treatment	1,2,3,5

Objective	Knowledge	Skills	Assessment
Be able to verify radical treatment plan (I)	Understands verification options and use of portal imaging	Able to assess accuracy of patient set-up and recommend adjustment as required	1,2,3,5

4. Assessment of response and follow up

Objective	Knowledge	Skills	Assessment
Be able to assess response to chemo and radiotherapy (I)	Imaging interpretation Interpretation of biochemical markers	Discuss response and current disease status with patients in clinic	1,2,5
Be able to advise on follow-up schedule and appropriate investigations (I)	Knowledge of patterns of relapse of SPB, SEP and MM		1,2,5
Be able to diagnose recurrent disease (I)	Knowledge of likely symptoms and signs of relapse.	Clinical assessment and selecting appropriate investigations, eg imaging . biochemical markers.	1,2,5
Be able to recognise and manage long-term toxicity (A)	Knowledge of late effects of treatment	Detect at follow-up	1,2
Be able to manage recurrent disease (A)	Understanding the roles of chemotherapy, radiotherapy and supportive measures in the management of recurrence	Breaking bad news. Integration of palliative, supportive care. Ability to discuss roles of alternative therapies	1,2,4

Lymphomas and leukaemias including myeloma. Radiotherapy in the treatment of leukaemia, including Total Body Irradiation.

Systemic treatment of leukaemia is the responsibility of haematologists and is not included in this curriculum.

1. Selection and assessment of patients with leukaemia for radiotherapy.

Objective	Knowledge	Skills	Assessment
Be able to assess patients for radiotherapy (A)	Understands the indications for radiotherapy in leukaemia (including involvement of CNS or testis, splenic RT, Total Body Irradiation (TBI) for Bone Marrow Transplantation) Understands the role of palliative radiotherapy in leukaemia	Able to discuss role of radiotherapy with haematologist/multidisciplinary team.	1,2,3
Able to discuss treatment options in the light of understanding of prognosis (A)	Understands the effects of treatment on prognosis	Informs patient and discusses treatment options	1,2,3,4
Take part in discussions in multi-disciplinary meetings (A)	Understands the indications and limitations of radiotherapy in the management of leukaemia Understands the long term effects of radiotherapy	Can contribute to MDT discussions (A)]	1,3,4

2. Radiotherapy treatment (external beam radiotherapy)

Objective	Knowledge	Skills	Assessment
Be able to explain clearly the benefits, side effects and risks of a course of radiotherapy.(A) **Be able to seek informed consent for a course of treatment.(A)** **Be able to seek informed consent for clinical trials (A)**	Understands the acute and long term complications of radiotherapy and their relation to dose and volume irradiated. Understands the need for long term surveillance following TBI to minimise late effects by early detection and treatment. Understands the legal aspects and ethics of informed consent for treatment and for clinical trials.	Able to take informed consent for radiotherapy, including TBI	1,3,4
Be able to determine the target volume for planning radical radiotherapy to CNS, testes, spleen or other sites(A)	Is competent in the interpretation of clinical findings, diagnostic imaging (including CT, PET and MR) and laboratory results for determination of target volume for planning.	Able to define a treatment volume for relevant site(s).	1,2,3
Be able to plan a patient for TBI in cooperation with physicists(A)	Aware of need for dose homogeneity. Able to select appropriate dose/fractionation. Understands effects on normal tissue morbidity.	Able to judge how to modify treatment parameters to achieve optimal dose homogeneity.	1,3
Be able to care for patients undergoing radiotherapy for leukaemia (A)	Understands early reactions to radiotherapy and their management Understands verification and correction procedures for radical radiotherapy	Able to conduct radiotherapy review and manage early reactions	1,2,3,4
Be able to participate in protocol development in radiotherapy for leukaemia(A)	Understands developments in radiotherapy research and their application to local protocols		1,4
Be able to participate in follow-up for patients who have had TBI (A)	Understand late complications of therapy, including endocrine effects and increased risk of 2nd tumours and the need for surveillance policies for early detection and treatment to minimise late complications.		

10.14 Paediatric and Adolescent Oncology

Childhood and adolescent cancer is rare, and its management is centralised to relatively few cancer networks. It is not necessary or indeed practicable for all trainees in clinical oncology to get practical experience in the management of children and adolescents with cancer.

Nonetheless all trainees should have a basic understanding of childhood and adolescent cancer management This should include the range of cancers encountered in children and young people, how the diseases may present and are diagnosed, how and why individual cases are assigned to risk groups, the principles of multidisciplinary management including surgery, chemotherapy and radiotherapy. Knowledge of radiotherapy should include principles of target volume definition and recognition of the importance of normal tissue tolerance including the avoidance of organs at risk. Basic knowledge of the interactions between different treatments, the acute and late treatment related morbidity including the development of second malignant neoplasms, likely outcome and the importance of long term follow-up is required. There needs to be an understanding of the organisation of children's and young people's cancer services at local, regional, national and international levels. There needs to be some knowledge of how the evidence base relating to children's and young people's cancers has been accrued and is expanded, together with its limitations.

A minority of trainees will have an opportunity during higher training to gain experience through a clinical attachment with a consultant or consultants specialising in paediatric and adolescent clinical oncology, and will build on the basic knowledge base outlined above, and develop practical skills in childhood cancer management. These individuals will be well equipped to become consultants with an interest in paediatric and adolescent oncology.

Paediatric and adolescent oncology is a site specialty defined by the age of the patient, not by the anatomical site of the tumour or the histological variety of the cancer. There is therefore significant overlap between the curriculum for paediatric and adolescent oncology and those for some other areas including neuro-oncology, sarcomas and haematological malignancy.

1. Basic principles of radiotherapy

Objective	Knowledge	Skills	Assessment
To understand the various childhood and adolescent cancer types, their incidence and epidemiology (I)	The various types of cancer including leukaemia and lymphoma, brain tumours and extracranial solid tumours which occur in children and young people. The relative incidence of cancer in childhood and adolescence compared with in adults, and how the incidence of different cancer types varies with age, sex, race and geography. The causes, where known, of cancer in childhood and young people, including the genetic basis of some cancers and the association with congenital syndromes.		5
To understand the presentation and principles of diagnosis and initial assessment of cancer in childhood and adolescents (I)	The symptoms and signs which may indicate the presence of cancers of different types in a child or young person, especially those which should trigger referral for specialist assessment, and the principal differential diagnosis associated with these clinical features. The diagnostic pathway following specialist referral, including multidisciplinary discussion, and appropriate imaging and collection of tumour tissue, blood, bone marrow, cerebrospinal fluid and urine necessary for diagnosis and assessment of different tumour types.		5

To understand at a basic level the imaging appearances of the common childhood and adolescent tumour types, and their significance (I)	The indications for, information revealed by and limitations of different imaging modalities including plain radiographs, computed tomography, magnetic resonance, ultrasound and nuclear medicine scans for the common tumours. This includes their roles in diagnosis, staging, response assessment, target volume definition and follow-up.		5
To understand at a basic level the pathology of the common childhood and adolescent tumour types (I)	This includes macroscopic appearances and microscopic appearances including immunohistochemistry and molecular biology where clinically relevant.		5
To understand in principle the reasons for and requirements of risk stratification of the common childhood and adolescent tumour types (I)	How factors such as pathological type, stage, age, molecular features and other factors are combined to allocate patients into risk groups which are both of prognostic significance and indicate appropriate levels of intensity of treatment Examples including medulloblastoma, acute lymphoblastic leukaemia, Hodgkin's lymphoma, neuroblastoma, rhabdomyosarcoma, hepatoblastoma, Wilms' tumour, Ewing's tumour and osteosarcoma		5
To understand in principle the standard treatments used for the common tumours of childhood and adolescence in different risk groups (I)	How surgery, radiotherapy, chemotherapy and biological treatments are scheduled in different tumours and different risk groups		5
To understand in principle normal tissue tolerance in children, the potential acute and late toxicities of these treatments, and how they may be minimised (I)	Normal tissue tolerance to cancer treatments in children and young people varies with age and development, and the differences with adults. The likely acute side effects of different treatments. What types of supportive care may be required. The likely late side effects of different treatments. How different treatments may interact adversely. How scheduling may reduce side effects. How careful follow-up may minimise sequelae in the long term.		5
To understand the principles of radiotherapy treatment planning for children and adolescents with the more common types of childhood and adolescent cancer (I)	How patients are immobilised. How target volumes are defined. How organs at risk are identified. How treatment related morbidity is minimised. Examples include craniospinal radiotherapy for brain tumours, involved field radiotherapy for Hodgkin's lymphoma, total body irradiation prior to bone marrow transplantation, treatment of tumours affecting abdominal viscera, treatment of extremity sarcomas.		5
To understand in principle the organisation of cancer services for children and young people	The organisation of services into specialist paediatric oncology centres and paediatric oncology shared care units. The requirement for specialised medical		5

(I)	multidisciplinary teams for diagnosis and treatment. The requirement for multiprofessional involvement including specialist nurses, outreach nurses, pharmacists, play specialists, social workers, radiographers, psychologists and others in addition to medical professionals. The role of long-term follow-up. The role of the Children's Cancer and Leukaemia Group in treatment.		
To understand in principle how national guidance affects service delivery for children and young people with cancer (I)	The role of the National Service Framework for Children NICE Improving Outcomes Guidance Recommendations of the Royal College of Radiologists		5
To understand how the evidence base for treatment has been gathered and how it is improved (I)	The role of national research organisations such as the UKCCSG. The role of international research organisations such as SIOP. The types of questions being addressed in current clinical research protocols.		5

Cancer in children and adolescents: Brain and spinal cord tumours

Objective	Knowledge	Skills	Assessment
Understand normal neuroanatomy and physiology and development of function throughout childhood (A)	Know normal brain anatomy as demonstrated by clinical imaging, CT and MRI Know normal neurological function and how it changes with age	Able to recognise MR and CT brain and spine images as normal. Able to take a history, and perform a physical examination of, neurological function appropriate to the patient's age.	1, 2, 3
Understand the presentation, evaluation, and initial surgical management of paediatric and adolescent brain and spinal tumours and their complications (A)	Typical and less common symptoms associated with brain and spinal tumours at presentation Indications for surgery to relieve raised intracranial pressure, obtain tissue for histology, remove tumour	Able to recognise raised intracranial pressure, convulsions, altered consciousness, and focal neurological deficits Able to access urgent neurosurgical opinion as necessary	1, 2, 3
Understand the need to classify brain and spine tumours in children and adolescents by site, extent of disease and pathology (A)	Know the main histological types of brain and spinal tumours in children and adolescents, and their common locations Know staging and grading systems for tumours where relevant	Able to give a provisional differential diagnosis of a tumour from imaging Able to understand a neuropathology report	1, 2, 3
Formulate a management plan with colleagues in a multi-disciplinary team meeting (A)	Know how tumour related factors including grade, stage and pathology of CNS tumours are combined with patient related factors including age and co-morbidity are combined to allocate a risk stratification.	Able to allocate patients to a risk group to guide management Able to discuss treatments and	1, 2, 3, 4

	Know that surgery, chemotherapy and radiotherapy may all be indicated in childhood brain and spine tumour management	sequencing of combined modality therapy with colleagues	
Know standard management of more common tumour types by age, site, grade and stage (A)	Know standard treatment approaches for: 1 medulloblastoma and intracranial primitive neuroectodermal tumours 2 gliomas including brain stem gliomas, optic pathway gliomas, low grade cerebellar and optic pathway gliomas and high grade glial tumours 3 ependymomas 4 craniopharyngioma 5 intracranial germ cell tumours	Able to decide when surgery, chemotherapy or radiotherapy are indicated	1, 2, 3, 6
Assessment of a paediatric patient with a brain or spinal tumour for radiotherapy (A)	Know when radiotherapy is indicated Know whether anaesthesia will be required Know about duration and extent of radiotherapy indicated Know about likely acute and late side effects of treatment Know risks and benefits of treatment Know likely prognosis	Able to have a consultation with patient and family, explain principles and practicalities of treatment and seek informed consent for treatment	1, 2, 3, 6
Know current clinical trials in paediatric neuro-oncology (A)	Know portfolio of open trials, principal eligibility criteria and key questions	Able to decide eligibility of an individual patient Able to seek informed consent for trials	1, 2, 3, 6
Plan and prescribe radiotherapy for brain tumours (A)	Know patient positioning, immobilisation, image co-registration, target volume definition, dose and fractionation, beam modification and arrangement, tolerance doses and avoidance of organs at risk, plan approval and verification for commonly used techniques including craniospinal radiotherapy, boost to primary tumour site, and treatment of smaller volumes	Able to work with radiographers, physicists, play specialists, anaesthetists and other professionals to design and deliver a safe and effective radiotherapy plan for more common tumour types	1, 2, 3, 4, 6
Support a patient and family through a course of treatment in conjunction with colleagues (A)	Know expected acute side effects of radiotherapy Know medical management of side affects and associated symptoms including nausea and vomiting, headache, convulsions	Able to manage steroid therapy, anticonvulsants, antiemetics and analgesia. Able to recognise possible complications which may need urgent referral to colleagues such as shunt blockage.	1, 2, 3, 4, 6
Understand follow-up for brain and spinal tumours in children and adolescents (A)	Know when scans are indicated and the likely findings Know how to recognise symptoms of possible relapse Know when to refer to colleagues for endocrine, neuropsychometric, neurological or other specialist care Know when to bring back to multidisciplinary team meeting for further discussion	Able to do follow-up consultations, in conjunction with colleagues Able to allay anxieties while recognising complications which require intervention	1, 2, 3, 4, 6

Understand neuro-rehabilitation, living with disability, management of relapsed disease, palliative and terminal care (A)	Know the importance of functional outcome and how it may be optimised. Know the importance of symptom control and palliative treatments Know the importance of psychosocial and physical supportive care	Able to recognise patients' and families' needs in these areas, and interact with other health care professionals to meet patients' needs	1, 2, 3, 6

Cancer in children and adolescents. **Leukaemia, lymphoma and bone marrow transplantation**

Objective	Knowledge	Skills	Assessment
Understand the pathology, imaging and management of haematological malignancy in children and adolescents (A)	Know the main types of leukaemia, their natural history, standard treatment and indications for radiotherapy Know the main types of lymphoma, their pathology and risk stratification, and indications for radiotherapy Know the indications for radiotherapy in bone marrow transplantation for non-malignant disease	Able to recognise when radiotherapy is required in the management of haematological malignancy	1, 2, 3
Understand the effects of age and co-morbidity on radiotherapy and its side effects (A)	Know when radiotherapy should be avoided or modified because of age or co-morbidity	Able to discuss radiotherapy in the management of haematological malignancy in the multidisciplinary team setting	1, 2, 3
Assessment of a paediatric patient with haematological disease for radiotherapy (A)	Know when radiotherapy is indicated Know whether anaesthesia will be required Know about duration and extent of radiotherapy indicated Know about likely acute and late side effects of treatment Know risks and benefits of treatment Know likely prognosis	Able to have a consultation with patient and family, explain principles and practicalities of treatment and seek informed consent for treatment	1, 2, 3, 6
Know current clinical trials in paediatric haematological disease (A)	Know portfolio of open trials, principal eligibility criteria and key questions	Able to decide eligibility of an individual patient Able to seek informed consent for trials	1, 2, 3, 6
Plan and prescribe radiotherapy for haematological disease (A)	Know patient positioning, immobilisation, interpretation of cross sectional and functional imaging, target volume definition, dose and fractionation, beam modification and arrangement, tolerance doses and avoidance of organs at risk, plan approval and verification for commonly used techniques including cranial radiotherapy, total body irradiation, testicular irradiation, involved field radiotherapy for Hodgkin's lymphoma	Able to work with radiographers, physicists, play specialists, anaesthetists and other professionals to design and deliver a safe and effective radiotherapy plan for more common tumour types	1, 2, 3, 4, 6
Support a patient and family through a course of treatment in conjunction with colleagues (A)	Know expected acute side effects of radiotherapy Know medical management of side effects and associated complications including myelosuppression	Able to manage side effects of treatment Able to recognise possible complications which may need urgent referral to colleagues such as line infection.	1, 2, 3, 4, 6

Understand follow-up for haematological disease in children and adolescents (A)	Know when scans are indicated and the likely findings Know how to recognise symptoms of possible relapse Know when to refer to colleagues for endocrine, or other assessment Know when to bring back to multidisciplinary team meeting for further discussion	Able to do follow-up consultations, in conjunction with colleagues Able to allay anxieties while recognising complications which require intervention	1, 2, 3, 4, 6

Cancer in children and adolescents. **Extracranial solid tumours**

Objective	Knowledge	Skills	Assessment
Understand normal anatomy and physiology and development of function throughout childhood (A)	Know normal anatomy as demonstrated by clinical imaging, CT, MRI and nuclear medicine imaging Know normal organ function and how it changes with age Know normal somatic growth and development	Able to recognise MR and CT images as normal. Able to take a history, and perform a physical examination of, children as appropriate to the patient's age.	1, 2, 3
Understand the presentation and diagnostic evaluation of extracranial solid tumours in childhood and adolescence (A)	Typical and less common symptoms of these tumours, and imaging, pathological and other assessments required to make a diagnosis	Able to recognise whether all relevant information is available	1, 2, 3
Understand the need to classify extracranial solid tumours in children and adolescents by site, extent of disease and pathology (A)	Know the main histological types of extracranial solid tumours in children and adolescents, and their common locations Know staging and grading systems for tumours where relevant	Able to give a provisional differential diagnosis of a tumour from imaging Able to understand a pathology report	1, 2, 3
Formulate a management plan with colleagues in a multi-disciplinary team meeting (A)	Know how tumour related factors including pathology, histological subtype, molecular characteristic, and stage of extracranial solid tumours are combined with patient related factors including age and co-morbidity are combined to allocate a risk stratification. Know that surgery, chemotherapy, biological treatments and radiotherapy may all be indicated in their management	Able to allocate patients to a risk group to guide management Able to discuss treatments and sequencing of combined modality therapy with colleagues	1, 2, 3, 4
Know standard management of more common tumour types by age, site, pathology and stage (A)	Know standard treatment approaches for different risk stratifications of: 1 childhood and adolescent renal tumours 2 neuroblastoma 3 rhabdomyosarcoma and other soft tissue sarcomas 4 Ewing's sarcoma, osteosarcoma, peripheral primitive neuro-ectodermal tumours 5 germ cell tumours 6 retinoblastoma 7 liver tumours 8 the histiocytoses 9 epithelial cancers including thyroid and nasopharyngeal carcinomas	Able to decide when surgery, chemotherapy, radiotherapy or other treatments are indicated	1, 2, 3, 6

Assessment of a paediatric patient with an extracranial solid tumour for radiotherapy (A)	Know when radiotherapy is indicated Know whether anaesthesia will be required Know about duration and extent of radiotherapy indicated Know about likely acute and late side effects of treatment Know risks and benefits of treatment Know likely prognosis	Able to have a consultation with patient and family, explain principles and practicalities of treatment and seek informed consent for treatment	1, 2, 3, 6
Know current clinical trials in paediatric oncology (A)	Know portfolio of major open trials, principal eligibility criteria and key questions	Able to decide eligibility of an individual patient Able to seek informed consent for trials	1, 2, 3, 6
Plan and prescribe radiotherapy for extracranial solid tumours (A)	Know patient positioning, immobilisation, image co-registration, target volume definition, dose and fractionation, beam modification and arrangement, tolerance doses and avoidance of organs at risk, plan approval and verification for commonly used techniques including flank radiotherapy for renal tumours, whole abdominal and pelvic radiotherapy for renal tumours, whole lung irradiation for pulmonary metastases, tumour bed irradiation for neuroblastoma, primary tumour irradiation for soft tissue and bone sarcomas at common sites. Know acceptable compromises to dose or volume which may be required when critical organs at risk must be irradiated or co-morbidity is a factor	Able to work with radiographers, physicists, play specialists, anaesthetists and other professionals to design and deliver a safe and effective radiotherapy plan for more common tumour types	1, 2, 3, 4, 6
Support a patient and family through a course of treatment in conjunction with colleagues (A)	Know expected acute side effects of radiotherapy Know medical management of side affects and associated symptoms	Able to manage symptom control and supportive care Able to recognise possible complications which may need urgent referral to colleagues	1, 2, 3, 4, 6
Understand follow-up for extracranial solid tumours in children and adolescents (A)	Know when scans are indicated and the likely findings Know how to recognise symptoms of possible relapse Know when to refer to colleagues for other specialist care Know when to bring back to multidisciplinary team meeting for further discussion	Able to do follow-up consultations, in conjunction with colleagues Able to allay anxieties while recognising complications which require intervention	1, 2, 3, 4, 6
Understand rehabilitation, living with disability, management of relapsed disease, palliative and terminal care (A)	Know the importance of late effects on functional outcome and how it may be optimised. Know the importance of symptom control and palliative treatments Know the importance of psychosocial and physical supportive care	Able to recognise patients' and families' needs in these areas, and interact with other health care professionals to meet patients' needs	1, 2, 3, 6

Cancer in children and adolescents. Other aspects of care

Objective	Knowledge	Skills	Assessment
Understand need for referral to other centres (A)	Know the indications for treatments which are not available at most paediatric radiotherapy centres including paediatric brachtherapy, paediatric radionuclide therapy, proton beam therapy, radiotherapy for retinoblastoma Know when patients and their families have a need or desire for broader consultation including second opinions within or outside the UK	Able to discuss unusual treatments with local multidisciplinary team and with quaternary specialist team Able to gather together all necessary information to make a referral to a quaternary centre for treatment Able to discuss with multidisciplinary team colleagues the need for referral to another centre for a second opinion	1, 2, 6
Understand the interactions between tertiary paediatric oncology centres and local care at primary or secondary level (A)	Knowledge of what treatments and care need to be delivered in a specialist centre, and what can reasonably be delivered close to the patient's home	Able to liaise effectively with community and paediatric oncology shared care centre health care professionals Able to explain the roles of different health care providers to patients and their families	1, 2, 6
Understand the role of national and international organisations in setting standards, evidence based medicine and protocol development (A)	Knowledge of Children's Cancer and Leukaemia Group and international clinical trials groups	Use of CCLG website and protocols Able to contribute constructively at national and international meetings Able to participate in clinical research	1, 6