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# BASIC SCIENCES OF ONCOLOGY COURSE (BSOC)

## **Course Guidelines and Study Guide**

2022

**Cancer Institute NSW**

## FOREWORD

I am delighted to welcome the participants in the 2022 Basic Sciences of Oncology Program (BSOC).

BSOC remains as popular as ever and continues to attract participants who are seeking to pursue careers in providing care for people living with cancer. The range of participants is increasingly diverse and includes nurse practitioners, pharmacists, pharmaceutical representatives, medical oncology registrars, radiation oncology registrars, dental students, palliative care registrars, surgical trainees, radiation therapists and physicists from all parts of New South Wales.

BSOC is a platform for lifelong learning in cancer medicine and it is underpinned by a belief that patient care is improved by teamwork. BSOC is unique in that it presents opportunities for interdisciplinary professional networking and learning that is not available for trainees at any other forum. Past participants of BSOC frequently relate that the people they attended BSOC with have since become their professional colleagues. We have consciously tried to reinforce this by introducing new workshops and topics that emphasize the team based nature of cancer care.

Another feature of BSOC is the diverse volunteer faculty from cancer services all around NSW. Participants have the opportunity to meet teachers who are leaders in their field and to see the range of workplace options for their future.

As the convener of BSOC I hope that the program meets your expectations but more importantly I hope that you will give us feedback to help continuing to improve the course.

Associate Professor Winston Liauw  
Oncology Program Chair, HETI  
Convener, Basic Sciences of Oncology



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## INTRODUCTION AND BACKGROUND

The Basic Sciences of Oncology Course (BSOC) is a state-based training program that has been run annually for the last two decades. BSOC is supported by the Cancer Institute New South Wales (CINSW) and coordinated by the Health Education and Training Institute (HETI). Teaching in BSOC is delivered by volunteers from the NSW oncology community.

BSOC has been undergoing continuous review with the aim of delivering the program with contemporary educational methods and ensuring the alignment of the course content with the training needs of future oncology service providers. The program is designed to serve the needs of two main stakeholder groups: medical and radiation oncology trainees. In addition attendees have included nurses, pharmacists, palliative care trainees, and radiation therapists. Substantive changes to the course content over the past few years include reducing duplication of teaching also received through radiation oncology networks, increased emphasis on interdisciplinary learning, and updating content to reflect new understanding of the basic sciences as well as changing clinical practice. In 2020, due to COVID-19, BSOC was moved online and has worked well in this format. There will be a blended delivery model for BSOC in 2022.

The aim of the Cancer Institute NSW is to reduce the incidence of cancer, to increase survival from cancer and to improve the quality of life of people living with cancer and their carers. Considering these goals the revision of the BSOC program has taken into account a framework consisting of 5 principles including:

1. Basic sciences (BS)
2. Clinical Competencies (CC)
3. Professional Skills (PS)
4. Working in oncology teams (WT)
5. Research and evidence based practice (RE)

The Basic Sciences of Oncology Program consists of 8 Domains of Study encompassing a broad range of topics:

1. Professional Skills including communication skills
2. Anatomy & Imaging
3. Tumour Biology
4. Research and Evidence Based Oncology
5. Physics

6. Radiobiology
7. Palliative and Supportive Care and Survivorship
8. Clinical Pharmacology and Therapeutics

The topics in each domain may be suitable for either the medical or radiation oncology stream or both.

The content of BSOC changes from year to year as we try to maintain currency of the course both with respect to emerging basic and clinical sciences but also through incorporation of emerging practice trends such survivorship care. For example, in 2019, there was a focus on restructuring the content related to Research and Evidence Based Oncology.

## Using the Domain and Topic Outlines

This document outlines the Topics to be delivered over the course of the year. Each topic description describes the key knowledge or skill objective to be covered in the lecture or workshop. These objectives, where relevant, have been mapped against the relevant section of either the medical oncology or radiation oncology curriculum and are currently under review. These objectives should form the basis of any pre-reading prior to attending the program, to assist with revision and to guide self-directed learning. Each topic is flagged as to whether the attendance of the teaching session is for medical oncology trainees, radiation oncology trainees or all attendees.

### “HELP! I don’t know where to start”

Regardless of whether you are a medical oncology or radiation oncology registrar or from another professional discipline getting started in the field of cancer it can be daunting to know where to begin studying as there is so much to know.

BSOC can start to fill some of the gaps by presenting the broad range of topics that senior cancer care providers think are important. BSOC is however just a platform to build on and should be considered an introduction to the relevant topics. BSOC can be used as a study guide rather than the definitive reference. Additional self-directed learning is required to achieve depth of understanding.

The following tips are suggested to help you on your learning journey:

- As you encounter new problems in your clinical work make a note of the issue to study or look them up in real time.
- Learn to perform literature reviews and search for evidence using Medline, Pubmed and other databases. NSW Health employees can find free online training at the Clinical Information Access Portal (CIAP) <http://www.ciap.health.nsw.gov.au>
- You can access journals through CIAP or for a more comprehensive range obtain library access through your university affiliation. Many hospitals also provide access to UpToDate.
- Don't try and remember everything but have a place you can find the information you are going to need. Cloud based storage apps are a great way to organize your information in the way you like and in a way which is portable. Such apps include Evernote, Microsoft OneNote, Google Docs, and Dropbox. Most platforms offer free and premium versions.
- For medical references use a citation manager such as Zotero, Mendeley, Endnote or RefWorks.
- Have tables of contents (ToC) emailed to you from major journals or use an app like Read by QxMD to create your own journal review collections <http://www.qxmd.com/apps/read-by-qxmd-app>
- Join professional societies like the American Society of Clinical Oncology to receive their journal as part of your subscription.
- Keep evidence that you've done the study. Many websites offer certificates of participation for continuing medical education (CME). These can be used as part of your learning portfolio as evidence you've done the study. Some of the websites listed under additional resources offer this service. Remember that you will need to undertake CME for the rest of your career and keeping documentation is important as a record in case you are audited. This is also a requirement for AHPRA.
- Use the curriculum of your professional society.

## ASSESSMENT

There is no final exam at the end of BSOC. Course completion is based on attendance and submission of course evaluations.

### **Attendance**

Participants are required to attend a minimum 80% of all workshops in order to pass the course. Please note that late attendance and early workshop departure will be recorded and will count towards your overall attendance. Only participants who have completed at least 80% of the course will be awarded a BSOC Certificate of Completion.

The presenters appreciate audience participation and you should feel free to ask questions either during the sessions or in the breaks.

### **Evaluations**

Workshop evaluations are a mandatory requirement. Evaluations for all workshops attended must be submitted in order to pass the course.

The BSOC program is additionally piloting forms of assessment and you may be asked to participate in these projects during the course of the year. Examples of such activities include audience participation devices and Q-stream activities. The conveners may also conduct electronic surveys and polling as part of educational and work-force assessments.

## ADDITIONAL RESOURCES

American Association for Cancer Research	< <a href="http://www.aacr.org/Pages/Home.aspx">http://www.aacr.org/Pages/Home.aspx</a> >
American Society of Clinical Oncology	< <a href="http://www.asco.org">http://www.asco.org</a> >
American Society for Radiation Oncology	< <a href="https://www.astro.org">https://www.astro.org</a> >
Cancer Institute NSW	< <a href="https://www.cancer.nsw.gov.au/">https://www.cancer.nsw.gov.au/</a> >
Clinical Care Options Oncology	< <a href="http://www.clinicaloptions.com/Oncology.aspx">http://www.clinicaloptions.com/Oncology.aspx</a> >
European Society of Medical Oncology	< <a href="http://www.esmo.org">http://www.esmo.org</a> >
	< <a href="http://www.esmo.org/Guidelines">http://www.esmo.org/Guidelines</a> >
European Society for Radiotherapy and Oncology	< <a href="http://www.estro.org">http://www.estro.org</a> >
EviQ / EviQ-Ed	< <a href="https://www.eviq.org.au">https://www.eviq.org.au</a> >
HETI	< <a href="http://www.heti.nsw.gov.au">http://www.heti.nsw.gov.au</a> >
inPractice Oncology	< <a href="http://www.inpractice.com">http://www.inpractice.com</a> >
Medscape Oncology	< <a href="http://www.medscape.com/oncology">http://www.medscape.com/oncology</a> >
National Comprehensive Cancer Network	< <a href="http://www.nccn.org">http://www.nccn.org</a> >
Society for Translational Oncology CME Page	< <a href="https://cme.alphamedpress.org/s/catalog">https://cme.alphamedpress.org/s/catalog</a> >
Vital Talk	< <a href="http://www.vitaltalk.org">http://www.vitaltalk.org</a> >

## COURSE CONTENT DISCLAIMER

The following topic lists and outlines represent content that may be delivered over the course of the 10 days allocated to BSOC. Due to the time limitations it is not possible to present all of the listed topics. Some of the topics have been superseded or given new titles and there may be very new topics that don't appear in the list and outlines that follow.

The BSOC presenters are volunteers and we must accommodate busy schedules that are apt to change frequently. Consequently we have limited capacity to present topics in groups over one or two days so content is spread out over the course of the year. We make effort to try and include what participants have requested for early in the year but it is also not possible to do everything. We cannot control for illness and life events so we occasionally have unintended gaps in our programmed days: wherever possible we will try to organize alternative tutors or activities for the sessions.

Different participants have different learning needs with some requiring greater depth and others less depth of information. It isn't possible to cater for all needs. Participants are encouraged to ask questions if they don't understand a concept or if they need additional information.

In the following list some topics may be retired in the calendar year or alternately new topics may be added.

## DOMAIN AND TOPIC LISTS

Basic Sciences (BS)                      Working in Oncology Teams (WT)  
 Clinical Competencies (CC)              Research and Evidence Based Practice (RE)  
 Professional Skills (PS)

CODE	TOPIC	GROUP	DOMAIN				
			B S	C C	P S	W T	R E
<b>Professional Skills</b>							
CO1	Working with the Psycho-Oncology Team	All		✓	✓	✓	✓
CO2	Communication Skills Workshop (1/2 day)	All		✓	✓		✓
CO3	Survivorship	All	✓	✓	✓		
CO4	Working in Oncology Teams Workshop (1/2 day)	All		✓	✓	✓	
<b>Anatomy and Imaging</b>							
AN01	Anatomy: Genito-urinary	Radiation	✓	✓			
AN02	Anatomy: Head and Neck 1	Radiation	✓	✓			
AN03	Anatomy: Head and Neck 2	Radiation	✓	✓			
AN04	Anatomy: Lung	Radiation	✓	✓			
AN05	Anatomy: CNS	Radiation	✓	✓			
AN06	Anatomy: Gynaecological	Radiation	✓	✓			
AN07	Anatomy: The Importance of Lymphatics in Radiotherapy Planning	Radiation	✓	✓			✓
AN08	Anatomy: GIT	Radiation	✓	✓			
AN09	Diagnostic Imaging 1	All	✓	✓			
AN10	Diagnostic Imaging 2	All	✓	✓			
TB8	Functional Imaging PET	All	✓	✓			
AN11	Surgical Oncology	All	✓	✓		✓	

## DOMAIN AND TOPIC LISTS (Continued)

Basic Sciences (BS)

Clinical Competencies (CC)

Professional Skills (PS)

Working in Oncology Teams (WT)

Research and Evidence Based Practice (RE)

CODE	TOPIC	GROUP	DOMAIN				
			B S	C C	P S	W T	R E
<b>Tumour Biology</b>							
TB1	Molecular biology of malignant transformation	All	✓				
TB2	Molecular biology	All	✓				
TB3	Hereditary Cancer 1	All	✓				
TB4	Hereditary Cancer 2	All	✓				
TB9	Tumour Immunology	All	✓				
TB6	Etiology of cancer	All	✓				
TB7	How to read a pathology report	All	✓			✓	
<b>Research and Evidence Based Oncology</b>							
RE01	Basic Statistical Concepts in Common Cancer Studies	All	✓				✓
RE02	Clinical Decision Analysis	All	✓				✓
RE03	Critical Appraisal of Systematic Reviews	All	✓				✓
RE04	Patient-based Endpoints in Clinical Trials	All	✓				✓
RE05	Design Concepts and Appraisal Techniques 1	All	✓				✓
RE06	Design Concepts and Appraisal Techniques 2	All	✓				✓
RE07	Informed Consent	All	✓	✓	✓		✓
RE08	Concepts of Analysis and Interpretation 1 (Comparing Groups)	All	✓				✓
RE09	Concepts of Analysis and Interpretation 2 (Multiplicity)	All	✓				✓
RE10	Cancer Screening, Cancer Epidemiology and the Cancer Registry	All	✓				✓

## DOMAIN AND TOPIC LISTS (Continued)

Basic Sciences (BS)

Clinical Competencies (CC)

Professional Skills (PS)

Working in Oncology Teams (WT)

Research and Evidence Based Practice (RE)

CODE	TOPIC	GROUP	DOMAIN				
			B S	C C	P S	W T	R E
<b>Physics</b>							
PH01	Introduction to Physics	All	✓				
PH02	Modalities of radiotherapy 1	Radiation	✓				
PH03	Modalities of radiotherapy 2	Radiation	✓				
PH04	Treatment planning and delivery 1	Radiation	✓				
PH05	Treatment planning and delivery 2	Radiation	✓				
PH06	Recent Technological advances	Radiation	✓				
PH07	Radiation safety and protection	All	✓			✓	
<b>Radiobiology</b>							
RB01	How and why cells die after radiotherapy?	Radiation	✓				
RB02	Clinical application of radiobiology	Radiation	✓				
RB03	Dose response relationships in radiotherapy	Radiation	✓				
RB04	Volume effect and dose-rate effects	Radiation	✓				
RB05	Oxygen effect and tumour hypoxia	Radiation	✓				
RB06	Combination radiotherapy and chemotherapy	All	✓	✓		✓	
RB07	Normal tissue side effects and retreatment tolerance of normal tissues	All	✓				



## DOMAIN AND TOPIC LISTS (Continued)

Basic Sciences	(BS)	Working in Oncology Teams	(WT)
Clinical Competencies	(CC)	Research and Evidence Based Practice	(RE)
Professional Skills	(PS)		

CODE	TOPIC	GROUP	DOMAIN				
			B S	C C	P S	W T	R E
<b>Clinical Pharmacology &amp; Therapeutics (Continued)</b>							
CP13	Chemotherapy: Acute Toxicity 1	All	✓	✓		✓	
CP14	Chemotherapy: Acute Toxicity 2	All	✓	✓		✓	
CP15	Chemotherapy: Late Side Effects 1	Medical	✓	✓		✓	
CP17	Principles and evidence based management of chemotherapy induced nausea and vomiting	All	✓	✓		✓	
CP18	Bones, Biphosphonates, Hypercalcaemia	All	✓	✓		✓	
CP19	Endocrine Therapy (Female)	All	✓	✓		✓	
CP34	Radiation Oncology Emergencies	All	✓	✓		✓	
CP28	Locoregional Therapy	Medical	✓				
CP29	Venous Thromboembolism in Cancer	All	✓	✓		✓	
CP32	Pharmacogenetics	Medical	✓				
CP33	Handling cytotoxic and other oncology drugs	Medical	✓	✓	✓		
CP22	Endocrine Therapy (Male) & Therapy of Prostate Cancer	All	✓	✓		✓	
CP21	Molecular Therapy of Breast Cancer (her2/3 +/- mTOR)	Medical Oncology	✓	✓			
CP24	Molecular Therapy of Lung Cancer (EGFR, ALK/ROS)	Medical Oncology	✓	✓			
CP26	Molecular Therapy of Ovarian Cancer (BRCA,parp inhibition, synthetic lethality)	Medical Oncology	✓	✓		✓	
CP23	Molecular Therapy of Renal Cancer and GIST	Medical Oncology	✓	✓		✓	
CP25	Molecular Therapy of Melanoma (braf/MEK)	Medical Oncology	✓	✓		✓	
CP20	Molecular Therapy of Colorectal Cancer	Medical Oncology	✓	✓		✓	

## DOMAIN & TOPIC OUTLINES

### Domain 1: Professional Skills

<b>Domain</b>	Professional Skills	
<b>Topic Code</b>	PS1	
<b>Topic Title</b>	Working with the psycho-oncology team	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Be able to work with the psycho-oncology team in a cancer service (2) Understand the evidence-based services offered by the psycho-oncology team (3) Recognise and use the NHMRC Psycho-social guidelines for the treatment of adults with cancer	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 3.1.1
	<b>Radiation Oncology</b>	1.6, p39 and 5.9, p.41 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Professional Skills	
<b>Topic Code</b>	PS2	
<b>Topic Title</b>	Communication Skills Workshop	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Effective communication with patients and their families (2) Be able to break bad news (3) To facilitate shared decision making	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Formal communication skills is mandatory
	<b>Radiation Oncology</b>	Formal communication skills is mandatory
	<b>Other</b>	-

<b>Domain</b>	Professional Skills	
<b>Topic Code</b>	PS3	
<b>Topic Title</b>	Survivorship	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Explain what is meant by survivorship (2) Understand the personal and population health aspects of survivorship (3) Be able to develop and communicate a survivorship plan (4) Understand when to prescribe evidence based survivorship interventions	
<b>Comments</b>	Could run in conjunction with late/chronic effects sessions for both radiation and medical oncology	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.2
	<b>Radiation Oncology</b>	p.110 Survivorship issues in relationship to pediatric oncology is particularly noted
	<b>Other</b>	-

<b>Domain</b>	Professional Skills	
<b>Topic Code</b>	PS4	
<b>Topic Title</b>	Working in Multidisciplinary Teams	
<b>Audience</b>	All	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Interact with medical subspecialists and allied health practitioners in all disciplines relevant to cancer treatment</li> <li>• Formulate multidisciplinary treatment plans</li> </ul>	

<b>Comments</b>	Could be a communication skills workshop	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 4.2.1
	<b>Radiation Oncology</b>	General theme throughout RO Curriculum
	<b>Other</b>	

## Domain 2. Anatomy and Imaging

<b>Domain</b>	Anatomy and Imaging	
<b>Topic Code</b>	AN1	
<b>Topic Title</b>	Genitourinary	
<b>Audience</b>	Radiation Oncology	
<b>Background</b>	Radiation oncology trainees are expected to be able to demonstrate an oncological approach to anatomy and apply anatomical principles to the management of the cancer patient	
<b>Objectives</b>	<p>(1) Discuss and demonstrate on standard cross-sectional imaging modalities the normal anatomy of the genitourinary system including vascular, lymphatic and neural relationships</p> <p>(2) Describe normal anatomical structures and the relationships of the landmarks of the genitourinary system</p> <p>(3) Discuss the anatomical considerations related to radiation planning in the genitourinary system including gross tumour volume (GTV), clinical target volume (CTV) and planning target volume (PTV) and relevant tolerance of organs at risk</p>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	p.32-34 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Anatomy and Imaging	
<b>Topic Code</b>	AN2	
<b>Topic Title</b>	Head and Neck Anatomy Part 1	
<b>Audience</b>	Radiation Oncology	
<b>Background</b>	Radiation oncology trainees are expected to be able to demonstrate an oncological approach to anatomy and apply anatomical principles to the management of the cancer patient	
<b>Objectives</b>	<p>(1) Discuss and demonstrate on standard cross-sectional imaging modalities the normal anatomy of the head and neck including vascular, lymphatic and neural relationships</p> <p>(2) Describe normal anatomical structures and the relationships of the landmarks of the head and neck</p> <p>(3) Discuss the anatomical considerations related to radiation planning in the head and neck including gross tumour volume (GTV), clinical target volume (CTV) and planning target volume (PTV) and relevant tolerance of organs at risk</p>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	p.32-34 RO Curriculum
	<b>Other</b>	-
<b>Domain</b>	Anatomy and Imaging	
<b>Topic Code</b>	AN3	
<b>Topic Title</b>	Head and Neck Anatomy Part 2	
<b>Audience</b>	Radiation Oncology	
<b>Background</b>	Radiation oncology trainees are expected to be able to demonstrate an oncological approach to anatomy and apply anatomical principles to the management of the cancer patient	
<b>Objectives</b>	(1) Discuss and demonstrate on standard cross-sectional imaging modalities the normal anatomy of the head and neck including vascular, lymphatic and neural	

	relationships (2) Describe normal anatomical structures and the relationships of the landmarks of the head and neck (3) Discuss the anatomical considerations related to radiation planning in the head and neck including gross tumour volume (GTV), clinical target volume (CTV) and planning target volume (PTV) and relevant tolerance of organs at risk	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	p.32-34 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Anatomy and Imaging	
<b>Topic Code</b>	AN4	
<b>Topic Title</b>	Thoracic Anatomy	
<b>Audience</b>	Radiation oncology	
<b>Background</b>	Radiation oncology trainees are expected to be able to demonstrate an oncological approach to anatomy and apply anatomical principles to the management of the cancer patient	
<b>Objectives</b>	(1) Discuss and demonstrate on standard cross-sectional imaging modalities the normal anatomy of the thorax including vascular, lymphatic and neural relationships (2) Describe normal anatomical structures and the relationships of the landmarks of the thorax (3) Discuss the anatomical considerations related to radiation planning in the thorax including gross tumour volume (GTV), clinical target volume (CTV) and planning target volume (PTV) and relevant tolerance of organs at risk	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	p.32-34 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Anatomy and Imaging	
<b>Topic Code</b>	AN5	
<b>Topic Title</b>	Central Nervous System (CNS) Anatomy	
<b>Audience</b>	Radiation Oncology	
<b>Background</b>	Radiation oncology trainees are expected to be able to demonstrate an oncological approach to anatomy and apply anatomical principles to the management of the cancer patient	
<b>Objectives</b>	(1) Discuss and demonstrate on standard cross-sectional imaging modalities the normal anatomy of the central nervous system including vascular, lymphatic and neural relationships (2) Describe normal anatomical structures and the relationships of the landmarks of the central nervous system (3) Discuss the anatomical considerations related to radiation planning in the central nervous system including gross tumour volume (GTV), clinical target volume (CTV) and planning target volume (PTV) and relevant tolerance of organs at risk	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	p.32-34 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Anatomy and Imaging	
<b>Topic Code</b>	AN6	
<b>Topic Title</b>	Gynaecological Anatomy	
<b>Audience</b>	Radiation Oncology	

<b>Background</b>	Radiation oncology trainees are expected to be able to demonstrate an oncological approach to anatomy and apply anatomical principles to the management of the cancer patient	
<b>Objectives</b>	(1) Discuss and demonstrate on standard cross-sectional imaging modalities the normal anatomy of the gynaecological system including vascular, lymphatic and neural relationships (2) Describe normal anatomical structures and the relationships of the landmarks of the gynaecological system (3) Discuss the anatomical considerations related to radiation planning in the gynaecological system including gross tumour volume (GTV), clinical target volume (CTV) and planning target volume (PTV) and relevant tolerance of organs at risk	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	p.32-34 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Anatomy and Imaging	
<b>Topic Code</b>	AN7	
<b>Topic Title</b>	Anatomy of the Lymphatic System – Importance in Radiation Planning	
<b>Audience</b>	Radiation Oncology	
<b>Background</b>	Radiation oncology trainees are expected to be able to demonstrate an oncological approach to anatomy and apply anatomical principles to the management of the cancer patient	
<b>Objectives</b>	(1) Discuss and demonstrate on standard cross-sectional imaging modalities the normal anatomy of the lymphatic system (2) Describe normal anatomical structures and the relationships of the landmarks of the lymphatic system (3) Discuss the anatomical considerations related to radiation planning in the lymphatic system including gross tumour volume (GTV), clinical target volume (CTV) and planning target volume (PTV) and relevant tolerance of organs at risk	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	p.32-34 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Anatomy and Imaging	
<b>Topic Code</b>	AN8	
<b>Topic Title</b>	Gastrointestinal Anatomy	
<b>Audience</b>	Radiation Oncology	
<b>Background</b>	Radiation oncology trainees are expected to be able to demonstrate an oncological approach to anatomy and apply anatomical principles to the management of the cancer patient	
<b>Objectives</b>	(1) Discuss and demonstrate on standard cross-sectional imaging modalities the normal anatomy of the gastrointestinal system including vascular, lymphatic and neural relationships (2) Describe normal anatomical structures and the relationships of the landmarks of the gastrointestinal system (3) Discuss the anatomical considerations related to radiation planning in the gastrointestinal system including gross tumour volume (GTV), clinical target volume (CTV) and planning target volume (PTV) and relevant tolerance of organs at risk	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	p.32-34 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Anatomy and Imaging
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<b>Topic Code</b>	AN9	
<b>Topic Title</b>	Diagnostic Imaging Part 1	
<b>Audience</b>	All	
<b>Background</b>	Radiation oncology trainees are expected to be able to demonstrate an oncological approach to anatomy and apply anatomical principles to the management of the cancer patient	
<b>Objectives</b>	(1) Describe the characteristics of different imaging modalities (ultrasound, x-ray, CT, and MRI) and their relevance to the diagnosis and staging of malignancy (2) Select appropriate imaging modalities for diagnosis and staging of malignancy (3) Explain safety issues related to imaging (e.g. cumulative radiation exposure related to CT scanning)	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Trainees expected to understand anatomy for purposes of staging
	<b>Radiation Oncology</b>	p.32-34 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Anatomy and Imaging	
<b>Topic Code</b>	AN10	
<b>Topic Title</b>	Diagnostic Imaging Part 2	
<b>Audience</b>	All	
<b>Background</b>	Radiation oncology trainees are expected to be able to demonstrate an oncological approach to anatomy and apply anatomical principles to the management of the cancer patient	
<b>Objectives</b>	(1) Explain the use of radio-isotopes for imaging (2) Describe the utility of function imaging for diagnosis, staging and monitoring outcome of treatment including use of gallium scanning, FDG-PET, DOTATOC-PET and other modalities	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Trainees expected to understand anatomy for purposes of staging
	<b>Radiation Oncology</b>	p.32-34 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Anatomy and Imaging	
<b>Topic Code</b>	AN11	
<b>Topic Title</b>	Surgical Oncology	
<b>Audience</b>	All	
<b>Background</b>	Despite the majority of cancer patients having surgery the discipline of surgical oncology has a lower profile in Australia than Europe and North America. The principles of surgical oncology need to be understood as part of multi-disciplinary care.	
<b>Objectives</b>	(1) Understand the role of the surgical oncologist or sub-speciality cancer surgeon (2) Explain the principles of adequate cancer surgery e.g considerations related to surgical margin, resection of involved lymphatics, organ preservation (3) Explain issues related to surgical volume and quality control (4) Be able to work in multidisciplinary teams	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.6 & 5.1.1 plus cancer specific knowledge
	<b>Radiation Oncology</b>	Section 3, p.41 RO Curriculum plus cancer specific knowledge
	<b>Other</b>	-

## Domain 3: Tumour Biology

<b>Domain</b>	Tumour Biology	
<b>Topic Code</b>	TB1 & 2	
<b>Topic Title</b>	Molecular Biology of Malignant Transformation	
<b>Audience</b>	All	
<b>Background</b>	Medical oncology trainees are expected to understand the molecular pathogenesis of cancer and apply this knowledge in the use of targeted therapies. Separate sessions are provided on individual targeted therapies.	
<b>Objectives</b>	(1) Understand different pathways to malignant transformation including concepts such as carcinogenesis, the hyperplasia/dysplasia/neoplasia sequence, oncogenes and tumour suppressors, epigenetics and the Hallmarks of Cancer	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 1.1.1 & 2.1.1
	<b>Radiation Oncology</b>	Section 2 & 3, p.27-28 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Tumour Biology	
<b>Topic Code</b>	TB3	
<b>Topic Title</b>	Hereditary Cancer Part 1	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Appropriately refer patients and their families to familial cancer services (when & how) (2) Understand the methods for studying the human genome (3) Understand the types of genetics 'errors' that can occur	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 2.1.3 and several disease specific references
	<b>Radiation Oncology</b>	Section 5.8 p.41 and several disease specific references
	<b>Other</b>	-

<b>Domain</b>	Tumour Biology	
<b>Topic Code</b>	TB4	
<b>Topic Title</b>	Hereditary Cancer Part 2	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Describe the common hereditary syndromes including their genetic basis (genotype), their clinical presentation (phenotype) and where relevant management (2) Take a family history and use standard systems to represent their kindred	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	
	<b>Radiation Oncology</b>	Section 5.8 p.41 and several disease specific references
	<b>Other</b>	-

<b>Domain</b>	Tumour Biology	
<b>Topic Code</b>	TB6	
<b>Topic Title</b>	Aetiology of Cancer	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Explain the relationship between lifestyle, environmental and occupational exposures and the development of malignancy	
<b>Comments</b>		
<b>Assessment</b>		
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 2.1.1
	<b>Radiation Oncology</b>	Several disease specific references

	<b>Other</b>	CINSW Tobacco Control Program
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<b>Domain</b>	Tumour Biology	
<b>Topic Code</b>	TB7	
<b>Topic Title</b>	How to read a pathology report	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Recognise the importance of and limitations of cytology and histopathology (2) Understand basic pathology techniques (e.g. immunohistochemistry) (3) Understand the importance of synoptic reporting and the relation to registries and quality cancer care (4) Appreciate the changing role of the pathologist	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	
	<b>Radiation Oncology</b>	
	<b>Other</b>	All disciplines expected to be able to interpret a pathology report to inform the staffing of a patient and to allow selection of therapeutic modalities

<b>Domain</b>	Tumour Biology	
<b>Topic Code</b>	TB8	
<b>Topic Title</b>	Functional Imaging PET	
<b>Audience</b>	All	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Explain how PET imaging works</li> <li>• Describe the role of PET imaging for diagnosis, staging and monitoring of response to cancer therapy</li> <li>• Describe the use of PET for planning radiotherapy</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.1.1
	<b>Radiation Oncology</b>	3.1.2, p.21
	<b>Other</b>	-

## Domain 4: Research and Evidence Based Oncology

<b>Domain</b>	Research and Evidence Based Oncology	
<b>Topic Code</b>	RE1	
<b>Topic Title</b>	Basic Statistical Concepts in Common Cancer Studies	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Understand the components of statistical analysis e.g. point estimates, confidence intervals and hypothesis testing (2) Describe the distinction between clinical and statistical significance (3) Appreciate the importance of interpreting and appraising results	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 3.2.1
	<b>Radiation Oncology</b>	Section 2, 149-150
	<b>Other</b>	-

<b>Domain</b>	Research and Evidence Based Oncology	
<b>Topic Code</b>	RE2	
<b>Topic Title</b>	Clinical Decision Analysis	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Understand the rationale for decision analysis (2) Describe the process of building and analyzing decision trees (3) Understand the application of, and interpret decision trees	
<b>Comments</b>	This is a fairly technical talk but it is a good framework in general for critical thinking around decision analysis	

<b>Assessment</b>		
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 3.2.1
	<b>Radiation Oncology</b>	Section 2, 149-150
	<b>Other</b>	-

<b>Domain</b>	Research and Evidence Based Oncology	
<b>Topic Code</b>	RE3	
<b>Topic Title</b>	Critical Appraisal of Systematic Reviews	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Describe features of systematic reviews and meta-analyses (2) Critically appraise systematic reviews and meta-analyses	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 3.2.1
	<b>Radiation Oncology</b>	Section 2, 149-150
	<b>Other</b>	-

<b>Domain</b>	Research and Evidence Based Oncology	
<b>Topic Code</b>	RE4	
<b>Topic Title</b>	Patient based endpoints in clinical trials	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Be able to make sense of studies assessing patient-based endpoints (2) Define patient-based endpoints and the reason for studying them (3) Describe how to collect and interpret patient based endpoints (4) Be able to critically appraise publications of patient based endpoints	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 3.2.1
	<b>Radiation Oncology</b>	Section 2, 149-150
	<b>Other</b>	-

<b>Domain</b>	Research and Evidence Based Oncology	
<b>Topic Code</b>	RE5	
<b>Topic Title</b>	Design Concepts and Appraisal Techniques Part 1	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Understand and describe the principles of study design and critical appraisal including bias, confounding and random error (2) Describe the advantages and disadvantages of different study designs (3) Be able to critically appraise a study of a new treatment	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 3.2.1
	<b>Radiation Oncology</b>	Section 2, 149-150
	<b>Other</b>	-

<b>Domain</b>	Research and Evidence Based Oncology	
<b>Topic Code</b>	RE6	
<b>Topic Title</b>	Design Concepts and Appraisal Techniques Part 2	
<b>Audience</b>	All	
<b>Objectives</b>	As for Part 1	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 3.2.1
	<b>Radiation Oncology</b>	Section 2, 149-150
	<b>Other</b>	-

<b>Domain</b>	Research and Evidence Based Medicine	
<b>Topic Code</b>	RE7	

<b>Topic Title</b>	Informed Consent	
<b>Audience</b>	All	
<b>Background</b>	Informed consent in routine practice and clinical trials is critical for good patient care	
<b>Objectives</b>	(1) Understand the basic principles of ethical conduct of clinical trials and informed consent (2) Describe some of the barriers associated with obtaining informed consent (3) Be able to use and describe tool that can aid informed consent and decision making	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 3.2.1
	<b>Radiation Oncology</b>	Section 2, 149-150
	<b>Other</b>	-

<b>Domain</b>	Research and Evidence Based Oncology	
<b>Topic Code</b>	RE8	
<b>Topic Title</b>	Concepts of Analysis and Interpretation Part 1 (Comparing Groups)	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Understand methods for comparing groups in statistical analyses	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 3.2.1
	<b>Radiation Oncology</b>	Section 2, 149-150
	<b>Other</b>	-

<b>Domain</b>	Research and Evidence Based Oncology	
<b>Topic Code</b>	RE9	
<b>Topic Title</b>	Concepts of Analysis and Interpretation Part 2 (Multiplicity)	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Understand issues of multiplicity in statistical analyses	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 3.2.1
	<b>Radiation Oncology</b>	Section 2, 149-150
	<b>Other</b>	-

<b>Domain</b>	Research and Evidence Based Oncology	
<b>Topic Code</b>	RE10	
<b>Topic Title</b>	Cancer Screening, Cancer Epidemiology and the Cancer Registry	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Understand basic principles of cancer epidemiology (2) Describe the principles of screening for cancer (3) Describe the role of Cancer Registries	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 2.1.1, 2.2.1, 2.3.1, 5.1.1 plus disease specific aspects of screening
	<b>Radiation Oncology</b>	Addressed throughout RO Curriculum under specific cancer sites
	<b>Other</b>	-

## Domain 5: Physics

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH1	
<b>Topic Title</b>	Introduction to Physics	
<b>Audience</b>	All	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Understand the importance of physics</li> <li>• Understand how radiation works and why it can be a therapy</li> <li>• Introduction to radiation safety</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	General introductory talk
	<b>Radiation Oncology</b>	General introductory talk
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH2	
<b>Topic Title</b>	Radioactivity	
<b>Audience</b>	All	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Describe radioactivity in terms of radionuclide decay processes</li> <li>• Describe exponential radioactive decay</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 4.2.6
	<b>Radiation Oncology</b>	Section 8, p.24
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH3	
<b>Topic Title</b>	Radiation Interactions: Theory	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Describe the fundamentals of an atom in terms of structure, particles, description and energy</li> <li>• Described the processes involved in photon absorption, scattering processes and electron interactions in terms of photon interactions, processes of attenuation, interaction coefficients and electron interactions.</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 1, p.21 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH4	
<b>Topic Title</b>	Radiation Interactions: Practical	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<ol style="list-style-type: none"> <li>(1) To understand the processes of translating patient simulation information to treatment including quality assurance methods.</li> <li>(2) To understand the logistics of treatment and treatment verification procedures.</li> </ol>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH5	
<b>Topic Title</b>	Radiation Generation	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Describe the principles of x-ray production</li> <li>Describe the construction of a linear accelerator, an orthovoltage unit and superficial therapy unit and how a photon beam can be generated from each of these units</li> <li>Describe the construction of a Cobalt-60 unit and how a useful radiation beam can be generated from it</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 1.3, p.21 and 4.1-4.2 p.22 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH6	
<b>Topic Title</b>	Radiation Safety	
<b>Audience</b>	All	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Describe units of measurement for radiation</li> <li>Describe radiation dose limits</li> <li>Describe measures to protect against radiation exposure</li> <li>Comply with legal requirements concerning radiation safety</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	OH&S is a requirement but no specific reference to radiation
	<b>Radiation Oncology</b>	3.1-3.2 p.153 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH7	
<b>Topic Title</b>	Brachytherapy: Theory	
<b>Audience</b>	Radiation Oncology	
<b>Background</b>		
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Explain the meaning of the term “brachytherapy”.</li> <li>Explain why brachytherapy is considered highly “conformal” how high dose conformance is achieved.</li> <li>Discuss the three types of loading – manual, manual after-loading, and remote after-loading and discuss the advantages and disadvantages of each.</li> <li>Identify at least three radioisotopes typically used in brachytherapy and state their half-life and HVL and discuss the comparative advantages of these radioisotopes.</li> <li>Explain how the half-life, dose rate &amp; loading techniques may influence the procedures used in planning and delivering the treatment.</li> <li>Be aware of the character of spectra and radiation type (gamma, beta) and how this affects the dose distribution and application of the source.</li> <li>Be able to sketch and compare the radial dose distribution for Ir-192 and I-125 seeds and explain how this influences their use in delivering dose to tumours. Be able to explain the advantage of removing the inverse square law dose variation when comparing the radial dose distribution for radioisotopes.</li> <li>Discuss source construction - seed, line &amp; surface.</li> <li>Describe the three basic source configurations – seeds, line, surface.</li> <li>Explain how a seed source could be used to replicate a line source dose distribution through the cumulative effect of dose delivered.</li> <li>Describe the purpose of applicators.</li> </ul>	

	<ul style="list-style-type: none"> <li>Discuss the advantages and disadvantages of the types of dose rate used in delivery, LDR, MDR, and HDR. What is PDR ?</li> <li>Cover the basic principles of surface, interstitial, intracavitary, intravascular and intraluminal techniques. Briefly explain and give one example of each.</li> <li>Outline the basic components in the planning and treatment delivery using brachytherapy.</li> <li>With knowledge obtained in other lectures contrast brachytherapy and external beam radiotherapy in the dosimetric, geometric, clinical and operational aspects.</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 9, p.24 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH8	
<b>Topic Title</b>	Brachytherapy Practical	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	See above	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 9, p.24 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH9	
<b>Topic Title</b>	Dosimetry	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Describe the principles for quantifying ionizing radiation and the relevance to determining dose delivered to the patient</li> <li>Recognize and describe the principles of operation of radiation measuring devices</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 7 p.24 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH10	
<b>Topic Title</b>	Photon Planning	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Discuss the advantages and disadvantages of intensity modulated radiation therapy</li> <li>Discuss the issues associated with planning including dose calculation, inverse planning, tumour localization and 3D-planning</li> <li>Discussion the commissioning of planning</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 1. p25-26 and Section 6, p.26
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH12	
<b>Topic Title</b>	Electrons: Theory	

<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Explain electron generation and commissioning of electron beam radiotherapy</li> <li>• Select, compare and describe simple and complex radiation techniques employing electrons</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 2 & 6, p.26 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH13	
<b>Topic Title</b>	Electrons: Planning	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Discuss the planning requirements when using electron beam radiotherapy</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 2 & 6, p.26 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH14	
<b>Topic Title</b>	Treatment Verification	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Explain what treatment verification is</li> <li>• Describe the reason for treatment verification</li> <li>• Describe the methods and equipment required for treatment verification</li> <li>• Discuss emerging technologies and the future challenges they present for treatment verification</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	2.2.3.1, p.40 & 5.7, p.129 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH15	
<b>Topic Title</b>	Quality Management in Radiation Oncology	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Define quality assurance, quality control and quality standards with respect to delivery of radiotherapy</li> <li>• Describe why, where, when and how quality management is undertaken in the radiation oncology department</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 6, p.26, 2.1.2, p.39 and general reference to participation in quality assurance RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Physics	
<b>Topic Code</b>	PH16	
<b>Topic Title</b>	Conformal RT, IMRT and IGRT	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Explain the rationale for, advantages and disadvantages of, and practical issues related to implementing complex radiation techniques</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	-

	Other	-
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## Domain 6: Radiobiology

<b>Domain</b>	Radiobiology	
<b>Topic Code</b>	RB1	
<b>Topic Title</b>	How and why cells die after radiotherapy	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	Understand the mechanisms of cell death including: <ul style="list-style-type: none"> <li>• Apoptosis (in normal and tumour cells, morphological and biochemical features, molecular pathway leading to apoptosis e.g. Bcl-2, p53-dependent and independent pathways, ceramide) [G]</li> <li>• Mitotic death (types, cell division post radiation and timing) [D]</li> <li>• Necrotic death and radiation-induced senescence</li> <li>• Other modes of death e.g. autophagy, entosis</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 1, p.36 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Radiobiology	
<b>Topic Code</b>	RB2	
<b>Topic Title</b>	Clinical application of radiobiology	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Describe the early empirical observations of the effects of ionizing radiation</li> <li>• Describe the developments leading to the understanding of the therapeutic ratio</li> <li>• Describe the evolution of fractionated treatment</li> <li>• Explain the rationale for fractionation with reference to radiosensitivity, repair, reoxygenation, redistribution and repopulation</li> <li>• Understand models for fractionation including the linear quadratic model and its' application</li> <li>• Explain altered fractionation schedules</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	
	<b>Radiation Oncology</b>	Section 1 p.27 & Section 8 & 9 p.29 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Radiobiology	
<b>Topic Code</b>	RB3	
<b>Topic Title</b>	Dose response relationships in radiotherapy	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	The trainee is able to discuss: <ul style="list-style-type: none"> <li>• Shape of the dose-response curve</li> <li>• The determinants of the steepness of the dose-response curve</li> <li>• The concept and significance of the Therapeutic Ratio</li> <li>• Concepts of radiocurability and radiation responsiveness</li> <li>• Major factors influencing tumour control</li> <li>• Tumour control probability curves</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	
	<b>Radiation Oncology</b>	Section 12 p.30 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Radiobiology	
<b>Topic Code</b>	RB4	
<b>Topic Title</b>	Volume effect and dose-rate effects	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<p>The trainee is able to discuss:</p> <ul style="list-style-type: none"> <li>• Types of ionising radiation</li> <li>• Linear energy transfer (LET) and its relationship to direct and indirect DNA damage, free radicals and free radical scavengers</li> <li>• Relative biological effectiveness (RBE)</li> <li>• The relationship between LET and OER</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 11 p.30 RO Curriculum

<b>Domain</b>	Radiobiology	
<b>Topic Code</b>	RB5	
<b>Topic Title</b>	Oxygen effect and tumour hypoxia	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<p>The trainee is able to discuss:</p> <ul style="list-style-type: none"> <li>• Modification of radiation-induced DNA damage by oxygen</li> <li>• The Oxygen Enhancement Ratio (OER)</li> <li>• Evidence supporting the clinical significance of tumour hypoxia</li> <li>• Methods used to overcome the effect of tumour hypoxia including their rationale</li> <li>• Tumour responses to hypoxia occurring at the molecular level</li> <li>• Consequences of molecular responses to hypoxia including: angiogenesis, increased propensity for metastasis and genetic instability (G)</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 10 p.29 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Radiobiology	
<b>Topic Code</b>	RB6	
<b>Topic Title</b>	Combination radiotherapy and chemotherapy	
<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	<p>The trainee is able to discuss:</p> <ul style="list-style-type: none"> <li>• The radiobiological basis and rationale for combining surgery and radiation in the preoperative, postoperative and intra-operative settings</li> <li>• Combining systemic therapies with radiation</li> <li>• Mechanisms of cytotoxic enhancement by chemotherapy eg, independent action, additive and synergistic interactions</li> <li>• Biological cooperation e.g. hypoxic cell sensitisers and cytotoxins</li> <li>• Temporal modulation e.g. EGFR blockade, endocrine agents</li> <li>• Spatial cooperation including the concept of 'sanctuary sites'</li> <li>• Normal tissue protection</li> <li>• The impact on acute and late side effects arising from combining radiation with other treatments</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 17 p.31 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Radiobiology	
<b>Topic Code</b>	RB7	
<b>Topic Title</b>	Normal tissue side effects and retreatment tolerance of normal tissues	

<b>Audience</b>	Radiation Oncology	
<b>Objectives</b>	The trainee is able to discuss: <ul style="list-style-type: none"> <li>• Acute, sub-acute and late toxicity from radiation</li> <li>• The meaning of latency with regard to normal tissue effects</li> <li>• Functional sub units and the volume effect on:             <ul style="list-style-type: none"> <li>• Parallel arrangement of functional sub units</li> <li>• Series arrangement of functional sub units</li> </ul> </li> <li>• Flexible and hierarchical kinetic models (G)</li> <li>• The abscopal effect (G)</li> <li>• Post radiation regeneration of normal tissues</li> <li>• The concept of normal tissue/organ tolerance</li> <li>• How the relationship between tolerance dose and irradiated volume was determined</li> <li>• The mechanism of effect and consequences of radiation</li> <li>• Acute syndromes following high doses of total body radiation</li> <li>• Methods of biological dosimetry for unplanned / uncontrolled radiation exposure</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	Section 13 p.30 RO Curriculum
	<b>Other</b>	-

## Domain 7: Palliative and Supportive Care

<b>Domain</b>	Palliative and Supportive Care	
<b>Topic Code</b>	PC1	
<b>Topic Title</b>	Interface of Oncology and Palliative Care	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Describe and define palliative care and supportive care (2) Explain the role of the oncologist (medical and radiation) in delivering palliative care (3) Identify when an individual would benefit from specialist palliative care input (4) Describe different models of palliative care delivery	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objectives 4.2.1 and 4.2.7
	<b>Radiation Oncology</b>	ROCKSS 1.5 p.39 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Palliative and Supportive Care	
<b>Topic Code</b>	PC2	
<b>Topic Title</b>	Analgesia	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Describe the pathophysiology of pain (2) Describe the general approach to pain management (3) Describe the pharmacological management of pain with and demonstrating the effects and side effects of opioid and non-opioid analgesics (4) Safely prescribe opioid and non-opioid analgesics	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 4.2.7
	<b>Radiation Oncology</b>	Cancer Pain, Page 124 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Palliative and Supportive Care	
<b>Topic Code</b>	PC3	
<b>Topic Title</b>	Symptom Control in Advanced Cancer Part 1	

<b>Audience</b>	All	
<b>Objectives</b>	(1) To understand the impact of symptom control for palliative care patients (2) To recognize and address common gastrointestinal system within the framework of an evolving evidence base	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objectives 4.2.1 and 4.2.7
	<b>Radiation Oncology</b>	Generic palliative care skills
	<b>Other</b>	-

<b>Domain</b>	Palliative and Supportive Care	
<b>Topic Code</b>	PC4	
<b>Topic Title</b>	Symptom Control in Advanced Cancer Part 2	
<b>Audience</b>	All	
<b>Objectives</b>	(1) Understand the pathophysiology of delirium and dyspnoea in advanced cancer. (2) Understand the pharmacological and non-pharmacological management of delirium and dyspnoea in advanced cancer; and the evidence base which guides these interventions	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objectives 4.2.1 and 4.2.7
	<b>Radiation Oncology</b>	Dyspnea, p.124 MO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Palliative and Supportive Care	
<b>Topic Code</b>	PC5	
<b>Topic Title</b>	Optimal Care Delivery for Patients with Advanced Cancer: Prognostication	
<b>Audience</b>	All	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Understand the evidence concerning physicians' accuracy at prognostication</li> <li>Use clinical information and prognostic scores to determine prognosis</li> <li>Effectively communicate prognosis to patients and their families</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.1.1
	<b>Radiation Oncology</b>	Section 1 p.39 & p.133
	<b>Other</b>	-

## Domain 8: Clinical Pharmacology

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP1	
<b>Topic Title</b>	Principles of Cytotoxic Drugs and Treatment	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Explain the concepts of cytotoxic chemotherapy effects in relationship to traditional models of cell kinetics</li> <li>Explain principles of dose intensity and density</li> <li>Describe the paradigm described by the Hallmarks of Cancer</li> </ul>	
<b>Comments</b>	Run as hands-on Workshop with CP2	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objectives 4.2.2
	<b>Radiation Oncology</b>	-
	<b>Other</b>	CINSW EviQ

<b>Domain</b>	Clinical Pharmacology
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<b>Topic Code</b>	CP2	
<b>Topic Title</b>	Clinical Pharmacology and Cytotoxic Prescribing	
<b>Audience</b>	Medical Oncology	
<b>Background</b>		
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Identify sources of intra- and inter-individual variability in pharmacokinetics and pharmacodynamics of anticancer drugs</li> <li>Safely prescribe chemotherapy and other anticancer drugs using principles of quality use of medicines</li> <li>Use relevant references for prescribing such as EviQ</li> </ul>	
<b>Comments</b>	Run as hands-on Workshop with CP1	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.2
	<b>Radiation Oncology</b>	-
	<b>Other</b>	CINSW EviQ

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP3	
<b>Topic Title</b>	Pre-clinical Drug Development	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Understand the history, regulation and phases of drug development</li> <li>Understand the principles of anti-cancer drug development</li> <li>Recognise the role of the new technologies and molecular biology in anti-cancer drug development</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.2
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP4	
<b>Topic Title</b>	Anti-metabolites	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Explain the mechanism of action, indications for, dosing considerations and toxicities of the anti-metabolite chemotherapeutic agents</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.2
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP5	
<b>Topic Title</b>	Alkylators	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Explain the mechanism of action, indications for, dosing considerations and toxicities of the alkylating chemotherapeutic agents (non-platinum)</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.2
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP6	
<b>Topic Title</b>	Dosing Cytotoxic Drugs - Platinums	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Explain the mechanism of action, indications for, dosing considerations and toxicities of the platinum-based chemotherapeutic agents</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-

	<b>Radiation Oncology</b>	Learning Objective 4.2.2
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP8	
<b>Topic Title</b>	Topoisomerase inhibitors	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	Explain the mechanism of action, indications for, dosing considerations and toxicities of the topoisomerase inhibiting chemotherapeutic agents	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.2
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP9	
<b>Topic Title</b>	Decision Making in Systemic Adjuvant Therapy	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Explain the principles of adjuvant chemotherapy taking into account baseline risk, potential benefit and potential harms of therapy</li> <li>Understand the difference between relative and absolute risk</li> </ul>	
<b>Comments</b>	The presenter can use examples from whichever tumour type is their preference	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Multiple tumour specific sections of curriculum
	<b>Radiation Oncology</b>	Multiple tumour specific sections of curriculum
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP10	
<b>Topic Title</b>	Non-anti-angiogenic Targeted Therapies	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Explain the mechanism of action, indications for, and toxicities of targeted therapies not associated with angiogenesis e.g. PARP, EGFR, mTOR, etc</li> <li>Understand the relevant underlying molecular biology e.g. oncogene addiction, synthetic lethality, etc.</li> <li>Distinguish between small molecule and monoclonal antibodies as therapeutic agents</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objectives 4.2.2
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP11	
<b>Topic Title</b>	Anti-angiogenic Targeted Therapies	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Explain the mechanism of action, indications for, and toxicities of targeted therapies associated with angiogenesis inhibition</li> <li>Understand the cellular and molecular biology of angiogenesis</li> <li>Distinguish between small molecule and monoclonal antibodies as therapeutic agents</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objectives 4.2.2
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP12	
<b>Topic Title</b>	Spindle Poisons	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Explain the mechanism of action, indications for, dosing considerations and toxicities of the spindle-poison chemotherapeutic agents (e.g. taxanes, vinca alkaloids)</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.2
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP13	
<b>Topic Title</b>	Chemotherapy: Acute Toxicity Part 1	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Recognize the importance of toxicity to quality of life and delivery of effective therapy</li> <li>Understand the mechanisms of toxicity of anti-cancer therapy (on target and off target effects)</li> <li>Recognize, grade and manage the major types of acute toxicity including haematological toxicity, mucositis, neurological toxicity, pulmonary toxicity, cardiac toxicity</li> </ul>	
<b>Comments</b>	CINV covered in separate lecture	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.2 & 4.2.3
	<b>Radiation Oncology</b>	-
	<b>Other</b>	CINSW EviQ

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP14	
<b>Topic Title</b>	Chemotherapy: Acute Toxicity Part 2	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	As Per Acute Toxicity Part 1	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.2 & 4.2.3
	<b>Radiation Oncology</b>	-
	<b>Other</b>	CINSW EviQ
<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP15	
<b>Topic Title</b>	Chemotherapy: Late Toxicity	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Understand the mechanisms of toxicity of anti-cancer therapy (on target and off target effects)</li> <li>Recognize, grade and manage the major types of late toxicity including cardiac toxicity, metabolic syndrome, neurotoxicity, post-cancer fatigue, cognitive impairment, psychological distress and mood disorders, premature menopause/fertility, and bone health</li> <li>Describe the risk of second malignancy</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 4.2.4
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP17	
<b>Topic Title</b>	Principles and Evidence Based Management of Chemotherapy Induced Nausea and Vomiting	

<b>Audience</b>	All	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>To understand the neurophysiology of chemotherapy-induced nausea and vomiting (CINV)</li> <li>To classify the emetogenic potential of chemotherapy agents and combinations</li> <li>Be aware of the key evidence supporting the guidelines for the control of CINV, including 5HT<sub>3</sub> antagonists, corticosteroids and NK-1 receptor antagonists</li> <li>To complete a patient anti-emetic prescription specific to the emetogenic potential of a chemotherapy regimen</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.2 & 4.2.3
	<b>Radiation Oncology</b>	Section 1 & 2, p.124 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP18	
<b>Topic Title</b>	Bones, hypercalcemia and targeted agents	
<b>Audience</b>	All	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Understand the biology of bone metastases and its treatment</li> <li>Understand the clinical issues associated with bone metastases</li> <li>Appreciate the evidence in support of treatments for bone metastases</li> <li>Be aware of the gaps in current knowledge and current status of key ongoing trials</li> <li>Understand the pathophysiology and treatment of hypercalcemia associated with malignancy</li> </ul>	
<b>Comments</b>	Topic already renamed by presenter	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.5
	<b>Radiation Oncology</b>	p.125 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP19	
<b>Topic Title</b>	Endocrine Therapy (female)	
<b>Audience</b>	All	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Explain the benefits and harms of the various types of hormonal therapy to treat breast cancer in the adjuvant and recurrent setting</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 4.2.2, Breast cancer specific sections
	<b>Radiation Oncology</b>	Breast cancer specific sections
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP20	
<b>Topic Title</b>	Molecular Therapy of Colorectal Cancer (EGFR, kras, braf, VEGF, VEGFR2-TIE2)	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Describe the role of ras/raf and EGFR pathways in the molecular pathogenesis of colorectal cancer and its prognostic significance</li> <li>Explain the rationale for anti-EGFR therapy in colorectal cancer</li> <li>Describe the use of anti-EGFR therapy in colorectal cancer including benefits and toxicities</li> <li>Describe the role of angiogenesis of colorectal cancer and its prognostic significance: include the role of VEGF &amp; VEGFR2-TIE2)</li> <li>Explain the rationale for anti-angiogenic therapy in colorectal cancer</li> </ul>	

	<ul style="list-style-type: none"> <li>Describe the use of anti-angiogenic therapy in colorectal cancer including benefits and toxicities</li> </ul>	
<b>Comments</b>	There are separate sessions on angiogenesis. The lecturer may choose to focus on EGFR/kras/braf.	
<b>Assessment</b>		
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 4.2.2, Relevant disease specific sections
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP21	
<b>Topic Title</b>	Molecular Therapy of Breast Cancer (her2/3 +/- mTOR)	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	(1) Understand the role of amplified or over-expressed human epidermal growth factor receptor 2 in determining the biology and prognosis of breast cancer (2) Explain the rationale for anti-her2 therapy (3) Describe the use of monoclonal antibodies and small molecules as targeted therapies against her2 including benefits and toxicities (4) Understand the role of mTOR determining the biology and prognosis of breast cancer including the interdependence between ER signaling and mTOR (5) Explain the rationale for anti-mTOR therapy (6) Describe the use of anti-mTOR therapy in breast cancer including benefits and toxicities	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 4.2.2, Relevant disease specific sections
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP22	
<b>Topic Title</b>	Hormonal Therapy of Prostate Cancer	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	(1) Describe the biology of hormone dependence of prostate carcinoma (2) Describe the mechanism of action of androgen deprivation therapy (ADT) and explain the benefits and toxicities of ADT (3) Describe the mechanism of action of agents targeting the androgen pathway e.g. abiraterone & enzalutamide, and explain the benefits and toxicities of these agents	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 4.2.2 , Relevant disease specific sections
	<b>Radiation Oncology</b>	Relevant disease specific sections
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP23	
<b>Topic Title</b>	Molecular Therapy of Renal Cancer and GIST (c-kit, mTOR)	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	(1) Describe the molecular pathogenesis of renal cancer and the rationale for use of mTOR inhibitors and multikinase inhibitors (2) Describe the molecular basis of GIST and the rationale for use of agents targeting c-kit (3) Describe the benefits and toxicities of the relevant agents	

	<b>Radiation Oncology</b>	Learning objective 4.2.2 , Relevant disease specific sections
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP24	
<b>Topic Title</b>	Molecular Therapy of Lung Cancer (EGFR, ALK/ROS)	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Describe the molecular pathogenesis of lung cancer including dysregulation of EGFR and the role of ALK/ROS</li> <li>Describe pharmacological interventions against the EGFR and ALK/ROS in NSCLC including the benefits and toxicities</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 4.2.2, Relevant disease specific sections
	<b>Radiation Oncology</b>	Relevant disease specific sections
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP25	
<b>Topic Title</b>	Molecular Therapy of Melanoma (braf, MEK)	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Describe the significance of the ras/raf/MEK/ERK pathway in biology and melanoma and its' prognostic significance</li> <li>Discuss the rationale for targeting the ras/raf/MEK/ERK pathway</li> <li>Describe pharmacological interventions against the ras/raf/MEK/ERK pathway for melanoma including the benefits and toxicities</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 4.2.2, Relevant disease specific sections
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP26	
<b>Topic Title</b>	Molecular Therapy of Ovarian Cancer (BRCA, parp inhibition, synthetic lethality)	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	<p>(1) Describe the importance of the Fanconi Anemia/BRCA pathway in ovarian (and related) cancer and the role of PARP</p> <p>(2) Explain the concept of synthetic lethality</p> <p>(3) Describe pharmacological interventions against PARP including their benefits and toxicity</p>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP27	
<b>Topic Title</b>	Systemic Therapy - Chemoradiation	
<b>Audience</b>	All	
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Understand the rationale for the use of chemoradiation (CRT)</li> <li>Understand the mechanism of chemotherapy / radiation interactions</li> <li>Be aware of other radiation sensitizers</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 4.2.2 and 4.2.6 and disease specific sections

	<b>Radiation Oncology</b>	Section 17, p.31 RO Curriculum and disease specific sections
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP28	
<b>Topic Title</b>	Locoregional Therapies	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	(1) Understand the pharmacological basis of a therapeutic advantage for regional chemotherapy (2) Understand the concept of schedule dependence and the impact on regional chemotherapy (3) Understand the limitations on the evidence around regional chemotherapy (4) Be aware of safe practice around prescribing regional chemotherapy particularly - intrathecal	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	-
	<b>Other</b>	Intrathecal Training is a local priority. CINSW EviQ.

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP29	
<b>Topic Title</b>	Venous Thromboembolism in Cancer	
<b>Audience</b>	Medical Oncology	
<b>Background</b>		
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Explain the aetiology and risk factors for venous thromboembolism in the cancer patient</li> <li>Prescribe appropriate, evidence-based interventions for prophylaxis and treatment of VTE in cancer patients</li> </ul>	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	-
	<b>Radiation Oncology</b>	-
	<b>Other</b>	CINSW EviQ

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	TB9	
<b>Topic Title</b>	Tumour Immunology	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	(1) Explain basic terminology related to cancer immunology and cancer immunotherapy (2) Understand principles related to immunosurveillance and its' circumvention (3) Understand immunotherapy via blockade of co-stimulatory molecules (CTLA-4, PD-1/L) with clinical examples (4) Understand cancer prevention through vaccination	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning objective 1.1.1 & 4.2.2
	<b>Radiation Oncology</b>	1.4, p.36 RO Curriculum
	<b>Other</b>	-

<b>Domain</b>	Clinical Pharmacology	
<b>Topic Code</b>	CP32	
<b>Topic Title</b>	Pharmacogenetics	
<b>Audience</b>	Medical Oncology	
<b>Objectives</b>	(1) Understand the terms pharmacogenetics and pharmacogenomics	

	(2) Explain the importance of pharmacogenetics for explaining inter-individual variation in drug response (3) Describe the clinical application of pharmacogenetics in oncology (e.g. TPMT, etc)	
<b>Curriculum Map</b>	<b>Medical Oncology</b>	Learning Objective 4.2.2
	<b>Radiation Oncology</b>	-
	<b>Other</b>	-

## ACKNOWLEDGEMENTS AND FACULTY

BSOC wishes to acknowledge the membership of the Steering Committee:

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Dr Yaw Chin (Co-Chair)  
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BSOC wishes to express thanks to the following list of faculty who have presented in recent years.

A/Prof Elizabeth Salisbury	Dr Gerald Fogarty	Dr Regina Tse
A/Prof Kerwyn Foo	Dr Ghauri Aggarwal	Dr Stephen Thompson
A/Prof Martin Stockler	Dr Haryana Dhillon	Dr Tim Brighton
A/Prof Meera Agar	Dr Henry Ko	Dr Viive Howell
A/Prof Rina Hui	Dr Ivan Ho-Shon	Georgina Long
A/Prof Robert Smee	Dr Jeanette Vardy	Mr Gary Goozee
A/Prof Winston Liauw	Dr Kathy Tucker	Mr Phil Vial
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Dr Andrew Broadbent	Dr Mark Donoghoe	Ms Liz Barnes
Dr Andrew Martin	Dr Matthew Links	Ms Lucy Davies
Dr Anthony Ashton	Dr May Whitaker	Ms Sarah Magill
Dr Catherine Mason	Dr Michael McKay	Ms Wendy Thomson
Dr Chee Lee	Dr Nahar Najmun	Professor Bernard Stewart
Dr Clare Suttie	Dr Nataalka Suchowerska	Professor Fran Boyle
Dr Craig Lewis	Dr Nitya Patanjali	Professor Katy Clark
Dr Daniel Moses	Dr Peter Grimison	Professor Paul Keall
Dr Eric Hau	Dr Prunella Blinman	Professor Peter Metcalfe
Dr Eva Wong	Dr Rachel Dear	Professor Stephen Ackland
Dr Frank Brennan	Dr Rajesh Aggarwal	Professor Stewart Dunn

