

Module Overview

Please note: This module must be read in conjunction with the [Fundamentals of the Framework](#) (including glossary and acronym list), [Cancer Services - Preamble](#) and [Radiation Oncology Services Children's](#) module. This module should also be read in conjunction with the following South Australian standards, plans and care pathways:

- > South Australian Statewide Cancer Control Plan 2011-15
- > Standards for Chemotherapy Services in South Australia 2010
- > South Australian Radiotherapy Service Plan 2014-2015
- > SA Health Cancer Care Pathways

Radiation oncology plays a major role in cancer treatment. Radiation therapy is either used alone or combined with surgery, chemotherapy, hormonal therapy and newer biological therapies in curative or palliative treatment of cancer. The significance of radiation treatment to cancer service delivery is indicated by the number of cancer patients requiring treatment and by the benefit for long-term survival and quality of life. Evidence suggests that in Australia around 48% of newly diagnosed cancer patients should undergo radiotherapy at some point during their treatment.¹

A primary goal for cancer care is to provide optimal care and management for people affected by cancer. This should be delivered within a coordinated, integrated and collaborative framework and be underpinned by evidence-based practice. There is also a need for collaborative and effective working relationships between the private and public sectors, particularly in relation to planning future services, data collection and reporting.

The South Australian Radiotherapy Service Plan 2014-2015 identifies the future needs in South Australia to ensure optimal quality and accessibility of radiation treatment. It proposes the following planning principles for radiotherapy services in South Australia:

1. Radiotherapy services operate within a sound safety and quality agenda to ensure patient and staff safety is maintained and optimal patient outcomes are achieved.
2. Radiotherapy services follow national guidelines where they are available.
3. Radiotherapy is offered to all patients who would benefit from it and is provided to all who choose to receive it.
4. Equitable access to radiotherapy occurs within agreed benchmarks or timeframes.
5. Radiotherapy is part of a continuum of care that includes primary care providers.
6. Radiotherapy is part of a comprehensive and multidisciplinary approach to cancer care.
7. Radiotherapy services are integrated with a number of linked subspecialty disciplines (for example, surgery, palliative care, rehabilitation) as part of a quality-driven, comprehensive cancer service. This can include on-site or networked support services (for example, pharmacy, psychology).
8. Sites for radiotherapy services have a sufficient level of clinical support services including diagnostic imaging, pathology and nuclear medicine.
9. Appropriate outreach services for rural and remote residents are provided.
10. Appropriate provision is made to ensure regular and appropriate upgrading or replacement of treatment equipment.
11. Services are based upon achieving a balance of increasing geographical access, workforce supply and critical mass, subspecialisation treatment access and increasing treatment rates.
12. Effective collaboration between the public and private radiotherapy sectors is achieved.
13. Service planning includes the capacity to respond to new technologies that improve delivery of radiotherapy and patient outcomes.

The CSCF recognises two levels of complexity for radiation oncology service provision: Levels 5 and 6. In addition, consultative radiation oncology services may be provided by a Level 5 or 6 radiation oncology service either on-site or off-site at a health service providing a Level 3, 4, 5 and/or 6 medical oncology and/or haematological malignancy service.

The levels of complexity for radiation oncology services, including provision of multidisciplinary-focused consultative services and their relationship to other cancer services, are illustrated in Table 1.

Table 1: Levels of complexity for radiation oncology services

	Level 3	Level 4	Level 5	Level 6
Radiation oncology services	Not applicable	Not applicable	Consultative service (provider) consulting with Level 6, as required	Consultative service (provider)
Medical oncology and haematological malignancy services	Level 3	Level 4	Level 5	Level 6
	May host a consultative / outreach service from the same or higher level radiation oncology service			

Service Networks

In addition to the requirements outlined in the [Fundamentals of the Framework](#), specific service network requirements include:

- > documented referral pathways for complications associated with radiation therapy
- > document referral pathways for paediatric/AYA patients
- > documented processes with psychology / psychiatric services
- > access to other components of cancer treatment, such as systemic therapy and/or surgery
- > documented processes with [Medical Oncology Services](#), [Haematological Malignancy Services](#), diagnostic services (including high-quality [Medical Imaging Services](#), [Nuclear Medicine Services](#) and [Pathology Services](#)), surgical and medical subspecialties, and allied health and [Palliative Care Services](#)⁴
- > access to a lymphoedema service
- > access to appropriate allied health professionals including play therapists for paediatric patients
- > access to paediatric anaesthetic services for young children receiving radiation oncology services
- > participation in international quality assurance activities and reviews as required by membership of international study groups
- > access to pastoral care, rehabilitation and psychosocial support services (including assistance with organising transport and accommodation)
- > documented processes for access to a brachytherapy service
- > documented processes with community support services
- > some radiation planning workup, such as computed tomography, which may be undertaken off-site at another health service
- > outreach services—including consultative radiation oncology services, which may be provided by a Level 5 or 6 radiation oncology service to a health service providing a Level 3, 4 and/or 5 medical oncology / haematological malignancy service.

Service Requirements

In addition to the requirements outlined in the [Fundamentals of the Framework](#), specific service requirements include:

- > adequate radiation safety measures must be observed and the service must comply with the Radiation Protection and Control Act 1982.
- > certificates of compliance are required for any radiation apparatus, some radiation sources, and the rooms in which they are housed
- > supporting infrastructure, including information management, scientific, biomedical and technical services
- > policies and procedures for special-case patients, such as pregnant patients and those with an intracardiac defibrillator or pacemaker
- > assessment, treatment, evaluation and risk management, and approved treatment protocols for the radiotherapeutic management of specific tumours and/or tumour sites (both radical and palliative radiotherapy)
- > possession of an approved radiation safety and protection plan
- > management of clinical information supporting clinical audit, clinical trials, outcome analysis and cancer registry requirements (e.g. diagnosis and staging)
- > service participation in dosimetric intercomparisons of at least one photon beam
- > equipment requirements including, but not limited to:
 - dual-modality linear accelerators equipped with a multileaf collimator, electronic portal imaging and internal wedging system
 - a three-dimensional planning system
 - access to a digital imaging service for patient image acquisition suitable for planning
 - appropriate immobilisation and shielding requirements (e.g. blocks or a multileaf collimator)
 - access to a dosimeter calibrated by the Australian Radiation Protection and Nuclear Safety Agency or equivalent primary-standard dosimetry laboratory
 - access to a three-dimensional, water-phantom scanning system
 - access to ion chambers and dosimetry phantoms
 - beam modification devices
 - access to an in vivo dose monitoring system
- > may have access to a superficial / orthovoltage x-ray machine
- > provide relevant clinical indicator data to satisfy accreditation and other statutory reporting obligations.

Workforce Requirements

The CSCF does not prescribe staffing ratios, absolute skill mix, or clerical and/or administration workforce requirements for a team providing a service, as these are best determined locally and in accordance with relevant industrial instruments. Where minimum standards, guidelines or benchmarks are available, the requirements outlined in this module should be considered as a guide only. All staffing requirements should be read in conjunction with the *Health Care Act 2008*, Awards and relevant Enterprise Agreements including, but not limited to:

- > SA Health Salaried Medical Officers Enterprise Agreement 2013
- > SA Health Visiting Medical Specialists Enterprise Agreement 2012
- > SA Health Clinical Academics Enterprise Agreement 2014
- > Nursing/Midwifery (South Australian Public Sector) Enterprise Agreement 2013
- > SA Ambulance Service Enterprise Agreement 2011
- > SA Public Sector Wages Parity Enterprise Agreement Salaried 2014

The core radiotherapy workforce is comprised of three main groups: radiation therapists who deliver the radiotherapy, radiation oncology medical physicists (ROMPs) who oversee the technical planning and treatment and radiation oncologists, who make decisions about treatment strategies. In addition, nurses and allied health professionals provide essential expertise in supporting people undergoing radiotherapy, while technical support staff including biomedical engineers, are primarily responsible for equipment maintenance. Billing and administration staff also support the delivery of radiotherapy services. The workforce requirements for paediatric radiotherapy is outlined in the [Cancer Services – Radiation Oncology Services Children's](#) module.

Radiation Oncology Services	Level 5	Level 6
<p>Service description</p>	<ul style="list-style-type: none"> > provides radiation oncology consultative services plus a range of radiation oncology treatment services, primarily for adult patients. > treatment services include external beam therapy, but exclude specialist radiation oncology services, such as brachytherapy. > range of radiation oncology treatment services depends on caseload considerations, available expertise, equipment and infrastructure and may include access to Intensity Modulated Radiation Therapy (IMRT). > access to inpatient beds, and participates in multidisciplinary clinics including but not limited to breast, colorectal, gynaecology, lung, melanoma and skin cancer clinics. > may provide short course of palliative radiation therapy to children for symptom relief under supervision of Level 6 radiation oncology service specialising in children. > services may be limited by need to have a critical mass of expertise to ensure quality care. > may be colocated with health service or stand-alone. 	<ul style="list-style-type: none"> > provides a comprehensive range of specialised and highly specialised radiation oncology services, including external beam and brachytherapy services, at regional and statewide levels. > radiation treatment may include IMRT and rotational techniques. > oncology services restricted to limited number of sites due to need to have critical mass of expertise to ensure quality care. > provides one or more of the following services: <ul style="list-style-type: none"> – intensive chemoradiation schedules for head and neck cancer – prostate brachytherapy – gynaecological brachytherapy – intraluminal brachytherapy – ocular brachytherapy – brachytherapy for rare tumours. – Paediatrics > provides specialised radiation treatment services for rare tumours, including Wilm’s tumours, sarcomas, bone tumours and germ cell tumours. > other areas requiring recognised volume of highly specialised work include total body irradiation, stereotactic radiosurgery, total skin electron beam treatment, intensive chemoradiation schedules for head and neck cancer, and children’s radiotherapy services. > additional special treatments and techniques may include: <ul style="list-style-type: none"> – remote-control intra-cavity equipment with after-loading technique – brachytherapy using eye plaques – intraluminal brachytherapy for bronchus and oesophagus – intravascular brachytherapy for coronary artery stenosis – total body irradiation – stereotactic radiosurgery – intraoperative radiotherapy. > some highly specialised radiation oncology services, such as treatment for retinoblastomas, may be available only at a specialised centre. > provides post-anaesthetic care services (refer to Anaesthetic Services module for adult care and Anaesthetic Services - Children’s module)

Radiation Oncology Services	Level 5	Level 6
<p>Service requirements</p>	<p>As per module overview, plus:</p> <ul style="list-style-type: none"> > access to specialised positron emission tomography (PET) service. > on-site, or documented process for, access to palliative care services supporting participation in patient assessment, management and/or referral by a palliative care team. > on-site, or documented processes for, access to renal dialysis, respiratory, cardiology and infectious diseases services within 24 hours. > inclusion in service network with higher level services ensuring access to information related to latest evidence-based care and treatments. > may provide consultative services (visiting or telehealth) by radiation oncologists, including initial assessment and long-term follow-up of patients within lower level medical oncology and haematological malignancy services. 	<p>As per Level 5, plus:</p> <ul style="list-style-type: none"> > acute inpatient beds on-site for specialised procedures, such as brachytherapy and administration of radioactive iodine, and for supportive care (e.g. for acute radiation reactions) and insertion of percutaneous gastrostomy feeding tubes. > nominal chairperson for each multidisciplinary clinic, responsible for ensuring patient's cancer is staged and appropriate evidence-based treatment recommendations are recorded (with clinic core members usually including surgeons, medical oncologists, radiation oncologists, radiologists and pathologists). > documented processes with children's superspecialist facilities where children are treated. > documented processes with adolescent and young adult specialty services when these become available. > documented processes with clinical genetics / medical genetics service, including genetic counselling. > capacity to support at least one radiation oncology fellow. > appropriate linear accelerator bunker and equipment to deliver total body irradiation and total skin electron beam therapy. > appropriate inverse planning system and independent Intensity Modulated Radiation Therapy dose verification system. > provision of appropriate anaesthetic equipment and expertise where anaesthetic procedures undertaken (refer to Anaesthetic Services module for adult care and Anaesthetic Services - Children's module) > fully integrated, computer-assisted, networked planning and treatment system with system for verifying precision, planning and treatment modalities. > capacity for safe delivery of sealed and unsealed radioisotopes / radiopharmaceuticals.

Radiation Oncology Services	Level 5	Level 6
Workforce requirements	<p>As per module overview, plus:</p> <p>Medical</p> <ul style="list-style-type: none"> > access—24 hour/s—to registered medical specialist with credentials in radiation oncology. > access to registered medical specialist with credentials in radiation oncology for consultation services, including telephone consultation for complications of treatment and admission for complications within 24 hours. <p>Nursing</p> <ul style="list-style-type: none"> > staffing levels in accordance with relevant industrial instruments <p>Allied health</p> <ul style="list-style-type: none"> > radiation therapists to meet planning and treatment capacity requirements and clinical need. > suitably qualified radiation oncology medical physicists (or equivalent support) on-site during business hours and accessible after hours, as required. 	<p>As per Level 5, plus:</p> <p>Medical</p> <ul style="list-style-type: none"> > treatment regimens developed and supervised by registered medical specialist with credentials in radiation oncology. <p>Allied health</p> <ul style="list-style-type: none"> > radiation oncology staff to adequately provide special services (e.g. total body irradiation, stereotactic radiosurgery, stereotactic radiotherapy and brachytherapy).
Specific risk considerations	<ul style="list-style-type: none"> > Nil 	<ul style="list-style-type: none"> > Nil

Support services requirements for radiation oncology services	Level 5		Level 6	
	On-site	Accessible	On-site	Accessible
Anaesthetic				3
Cardiac (relevant section/s)		4		5
Children's anaesthetic				3
Haematological malignancy		4		5
Medical		4		5
Medical imaging		5		5
Medical oncology		4		5
Medication		5		5
Nuclear medicine		5		5
Palliative care		4		5
Pathology		3		3
Renal		4		5
Surgical		4		5
Surgical oncology		4		5

Legislation, regulations and legislative standards	Non-mandatory standards, guidelines, benchmarks, policies and frameworks (not exhaustive & hyperlinks current at date of release of CSCF)
<p>Refer to the Fundamentals of the Framework and Cancer Services - Preamble for details.</p>	<p>In addition to what is outlined in the Fundamentals of the Framework and Cancer Services - Preamble, the following are relevant to radiation oncology services:</p> <ul style="list-style-type: none"> > Australasian College of Physical Scientists and Engineers in Medicine. www.acpsem.org.au > International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use: Guideline for Good Clinical Practice. > www.ich.org/fileadmin/Public_Web_Site/ICH_Products/Guidelines/Efficacy/E6_R1/Step4/E6_R1_Guideline.pdf > National Health Service (UK). Manual for Cancer Services. London: NHS Executive; 2004. www.gov.uk/government/organisations/department-of-health > Radiation Oncology Practice Standards, A Tripartite Initiative; 2011. http://www.ranzcr.edu.au/quality-a-safety/radiation-oncology/tripartite-radiation-oncology-practice-standards

Reference List

1. Barton M, Jacob S, Shafiq J, Wong KHW, Thompson S, Delaney G, Hanna T. Review of Radiotherapy Optimal Utilisation Rates, March 2013
2. Baume P (chair). A Vision for Radiotherapy: Report of the Radiation Oncology Inquiry. Canberra: Australian Government Department of Health and Ageing; 2002.
3. National Health Service (UK). Manual of Cancer Services Standards. London: NHS Executive; 2001. (Superseded by Manual for Cancer Services, 2004).
4. Oliver L, Fitchew R, Drew J. Requirements for radiation oncology physics in Australia and New Zealand: Australasian College of Physical Scientists and Engineers in Medicine Position Paper. Australas Phys Eng Sci Med 2001;24 (1):1–18.

For more information

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Public I1-1A



Acknowledgement: Used and adapted with the permission of Queensland Health



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