

# Service capability framework

**A guide for Victorian health services providing  
primary treatment and shared care to children  
and adolescents with cancer**

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# Part 1: Service capability framework for paediatric cancer

# 1. Overview of the service capability framework

## 1.1 Objectives

The objectives of this framework are to:

- describe a coordinated system of statewide paediatric and adolescent cancer care
- support a sustainable model of care with an efficient use of resources across health services
- support and advocate for patient safety through describing minimum recommended capability while providing care as close to home as possible
- provide a clear and consistent language across statewide services.

## 1.2 Context

Treating a child or adolescent with cancer comes with a high degree of risk. Despite overall survival rates of greater than 80 per cent,<sup>1</sup> treatment modalities for paediatric cancer are often prolonged and complicated and have a narrow therapeutic index. Side effects of systemic therapy for treating cancer can be severe, including acute organ toxicities, prolonged immunodeficiency and infection. Providing therapy and managing toxicities can be extremely demanding on health services that do not have the capability to accept and manage these. High-quality evidence-based care is required not only to deliver therapy and supportive care but is essential in the diagnosis phase, post-treatment surveillance and long-term follow-up care.

The rarity and complexity of child and adolescent cancer provides a real challenge in delivering optimal care. As a result of this, care is managed and directed from specialised health services to ensure higher case volumes under a 'shared care' model to provide supportive care closer to home when it is safe to do so. Because of the challenges it presents, shared care services need to have a defined scope of practice in caring for this patient population. This field also demands a high degree of participation in clinical trials to meet research targets both nationally and internationally. Clinical trials promote collaboration but also increase demands on health services to remain compliant in the conduct of trials. Paediatric cancer services need to meet the needs of the child, delivering a family-centred model of care in

an environment that is safe and appropriate for children and adolescents.

Evidence shows that best outcomes demand a well-coordinated, timely, multidisciplinary approach requiring effective collaboration of health services working together as a team.<sup>2,3</sup> Integrated care is fundamental to paediatric cancer care and service delivery.

## 1.3 Developing the service capability framework

Each year in Victoria approximately 190 children are diagnosed with cancer.<sup>1</sup> Approximately 30 per cent of these children are from regional Victoria and have the ability to participate in a shared care model.

The Victorian Paediatric Integrated Cancer Service (PICS) is a partnership between the health services that deliver care and treatment to children and adolescents with cancer in Victoria.

Developing a service capability framework that describes minimum standards for health services providing care and treatment to children and adolescents with cancer has been highlighted as a priority in the *PICS Strategic Plan 2013–16*.

The PICS supports the development of an integrated, coordinated, multidisciplinary approach to providing paediatric cancer services that draws on the best available evidence and builds on state, national and international experience of success. This framework has been developed, in consultation with PICS partners, to support this integrated approach.

## 1.4 The function of the service capability framework

The emphasis of this framework is to define the level of paediatric cancer care and oncology services provided at various health services across different time points in a child's care.

The framework will support health services to plan, develop and deliver a high level of safe and effective paediatric cancer care within an agreed scope of practice. By documenting minimum service requirements, health

services will be assisted to deliver services that meet the local needs of the community and build confidence in shared care referrals between health services.

The six levels of complexity for service provisions used within other capability frameworks in Victorian health services were considered when developing this framework. However, levels 1 and 2 (generally defined as low-complexity ambulatory care such as primary practice) have not been incorporated into this framework due to the complexity of delivering paediatric cancer care.



*“An essential first step to providing high quality health care is to define it.”<sup>5</sup>*

## 2. Factors influencing the level of services required

Definitive diagnosis and risk stratification for paediatric and adolescent cancers should only be conducted at a level 5 service (with access to a level 6 service) or at a level 6 service.

The appropriateness of shared care will be considered by a level 5 or 6 service at the time of the multidisciplinary treatment planning meeting.

Factors influencing service requirements in paediatric cancer include:

- any child requiring stem cell therapy as part of their treatment plan
- any child receiving radiotherapy as part of a multimodal treatment plan
- the degree of perceived toxicities and level of supportive care interventions, defined by treatment protocols and discussions at the multidisciplinary meeting
- place of residence and distance from a level 5 or 6 service

- family social situation and level of cultural and linguistic diversity
- age of the child, particularly if aged under 12 months
- distinct supportive care considerations for adolescent patients
- concurrent morbidities and pre-existing medical conditions
- mandatory competency requirements for delivering specialised therapy such as clinical trial demands
- critical mass in the health service delivering paediatric cancer care
- unmet minimum service level requirements in a health service delivering paediatric cancer care.

## 3. Description of the service capability framework

### 3.1 Preamble

For the purposes of this framework, the definition of paediatrics is a child or adolescent under the age of 16 years.

The combination of two medical specialties – paediatrics and oncology – may be considered a ‘super specialty’ service. The risks associated with delivering therapy to children can result in significant side effects such as sepsis and organ toxicities, which may be compounded when health services providing care do not meet the minimum clinical requirements to support that service.

Childhood cancer is rare. This means that the diagnosis, staging, treatment and surveillance of childhood cancer requires the leadership of a specialised paediatric oncology tertiary referral centre throughout the patient journey with a formalised, shared care model for patients that do not live near a level 5 or 6 service. The ‘high-volume effect’ in tertiary treatment centres has been shown to improve survival outcomes in the paediatric oncology population.<sup>6</sup>

Each service level within this framework is described in terms of the following dimensions:

- time points and level of complexity of care
- infrastructure
- speciality services
- workforce
- education and research
- quality and clinical governance
- service links and networks.

The appendices provides more information about specialty services that are essential to paediatric cancer care.

Health services providing or intending to provide treatment or supportive care to children and adolescents with cancer in Victoria are advised to review the levels within this framework, engaging their treating teams with health service executives to work together to build a system within their service that provides safe care to children and adolescents with cancer.

### 3.2 Level 3 service: description and total activity

A level 3 service will provide a shared care service that delivers supportive care to children and adolescents with cancer, under the guidance of a level 5 or 6 service. The main aim of a level 3 service is to provide safe and coordinated shared care closer to home, in collaboration with a level 5 or 6 service.

Time points	Complexity of care
<b>Diagnosis</b>	Communication and consultation with a level 5 or 6 service for all pre-diagnosis tests and investigations undertaken. Definitive diagnosis, staging and/or risk assessment will be provided at a level 5 or 6 service.
<b>Treatment and supportive care</b>	Provides supportive care measures along the paediatric oncology treatment pathway for patients and their families within a shared care model with a level 5 or 6 service. A level 3 service does not provide chemotherapy or radiotherapy.
<b>Surveillance</b>	Provides limited tests, investigations and appointments in collaboration with a level 5 or 6 service during surveillance.
<b>Survivorship</b>	Provides limited tests, investigations and appointments in collaboration with a level 5 or 6 service in the long-term follow-up of children following treatment for cancer.
<b>Palliative care</b>	Support, as guided by the level 5 or 6 service, for managing the care of children with cancer where there is no longer a curative or control regimen.
Infrastructure	
<b>Emergency care</b>	An emergency department with paediatric trauma and resuscitation facilities with the ability to stabilise acutely unwell children and adolescents, with appropriate escalation and transfer guidelines to a level 5 or 6 service. Immediate availability of staff on site who are competent in accessing a central venous access device to ensure timely administration of fluid, blood products, antibiotics and other life-saving interventions.
<b>Environment</b>	Child- and family-friendly inpatient and outpatient environment in line with the Royal Australasian College of Physicians <i>Standards of care for children and adolescents in health services</i> . <sup>7</sup>
<b>Intensive care</b>	Documented processes for inter-hospital transfers of acutely unwell patients to a level 5 or 6 paediatric intensive care centre.
<b>Information technology</b>	Access to pathology, radiology and hospital patient records available to all staff collocated in the clinical areas. Dedicated IT support personnel on site. Systems in place to support the communication of shared paediatric oncology care across services.  Videoconference systems to support telehealth opportunities with a level 5 or 6 service. Ability to access multidisciplinary meetings hosted by a level 5 or 6 service.
<b>Inpatient services</b>	Paediatric inpatient service with appropriate isolation room for caring for the immunocompromised child.
<b>Outpatient services</b>	Dedicated paediatric ambulatory service with capacity to deliver supportive care and outreach oncology clinics.

Specialty services		
<b>Multidisciplinary meeting</b>		Access to a multidisciplinary meeting structure hosted by a level 5 or 6 service to enable discussions about new diagnoses within its catchment area. As necessary, be able to access centralised discussions across critical time points in the patient's care (see Appendix 5 for level 3 service requirements).
<b>Homecare</b>		Home-based healthcare program for children and adolescents, with referrals from the cancer service to local services. Homecare staff have access to paediatric oncology education programs and clinical governance.
<b>Laboratory</b>		Access to real-time laboratory services for managing the supportive care and surveillance of paediatric cancer patients (see Appendix 2 for level 3 service requirements).
<b>Medical imaging</b>		Provides timely access to paediatric radiologists and radiographers with paediatric experience, as well as access to an anaesthetic service to deliver these interventions in real time to younger children or infants (see Appendix 4 for level 3 service requirements).
<b>Pharmacy</b>		On-site pharmacy with designated staff to provide a paediatric service (see Appendix 7 for level 3 service requirements).
<b>Palliative care</b>		Provision of, or access to, a paediatric palliative care program.
<b>Procedural pain</b>		Staff with demonstrated evidence of learning to support children and adolescents with cancer during medical procedures.
<b>Telehealth</b>		Dedicated resources to participate in telehealth consultations with level 5 and 6 services.
<b>Translation services</b>		Timely access to translation services to ensure effective communication of care and education for linguistically diverse children and their families.
Workforce		
<b>Medical</b>	<b>Paediatrics</b>	A paediatrician is appointed as medical head of the department. Consultant paediatrician available on-call 24 hours a day.
	<b>Anaesthetics</b>	Timely access to consultant anaesthetist with paediatric subspecialty. Consultant anaesthetist available on-call 24 hours a day. Anaesthetic registrar on site 24 hours a day.
	<b>Medical imaging</b>	Timely access to a paediatric radiologist available 24 hours a day.
<b>Nursing</b>	<b>Paediatrics</b>	Identified nursing lead in paediatric services. Paediatric nursing staff across all shifts in the inpatient setting. (See Appendix 6 for level 3 service requirements.)
<b>Pharmacy</b>		Pharmacist with paediatric responsibilities available during business hours. Pharmacist available on-call after hours.
<b>Infection control</b>		Timely access to staff responsible for infection control. Compliance with national hand hygiene initiative and access to a staff vaccination program.

<b>Allied health</b>	<b>Allied health</b>	Timely access to allied health services including speech pathology and physiotherapy.
	<b>Nutrition</b>	Dietitian with paediatric responsibilities available during business hours.
	<b>Social work</b>	Social worker with paediatric responsibilities available during business hours and on-call social work service 24 hours a day.
<b>Administrative support</b>	Secretarial support available during business hours in both inpatient and outpatient settings to support coordination of care between services and to support documentation relating to patient care.	
<b>Education and research</b>		
<b>Education</b>	<b>Medical</b>	Access to a level 5 or 6 service to support mentoring of consultant paediatricians managing children and adolescents with cancer.
	<b>Nursing</b>	Access to an education program for nursing staff in caring for children with cancer (see Appendix 6 for level 3 service requirements).
	<b>Allied health</b>	Access to an allied health education program that supports caring for children and adolescents with cancer.
	<b>Patient and family</b>	Access to education materials for patients and families provided by level 5 and 6 services.
<b>Quality and clinical governance</b>		
<b>Guidelines</b>	Access to level 5 or 6 clinical guidelines for providing supportive care to children with cancer.	
<b>Patient review</b>	Access to a multidisciplinary meeting structure coordinated and hosted by a level 5 or 6 service to be able to contribute to and discuss patients within the service catchment, as required. Demonstrated process for morbidity and mortality review (as necessary) as part of a quality process, with demonstrated communication channels to the level 5 or 6 service for adverse event reporting.	
<b>Quality activity</b>	Demonstrated health service quality or clinical governance unit to support any quality initiatives in paediatric oncology.	
<b>Service links and networks</b>		
<b>Community engagement</b>	Relationships with relevant local community support groups for children and families with cancer and/or chronic/acute illness.	
<b>Consumer engagement</b>	Evidence of the use of consumer engagement in the local health service.	
<b>Inter-hospital linkages</b>	Demonstrated linkages with other service levels, including referral mechanisms both in and out of the hospital.	
<b>PICS</b>	Integration of services into the PICS model in Victoria to strengthen quality, consistency and integration of cancer care.	
<b>Medical imaging</b>	Access to image-sharing software for communicating medical images between sites.	

### 3.3 Level 4 service: description and total activity

A level 4 service will provide a shared care service that delivers supportive care to children and adolescents with cancer. A level 4 service may also provide a low-complexity chemotherapy service to children and adolescents with cancer, under the guidance of a level 5 or 6 service. The main aim of a level 4 service is to provide safe and coordinated shared care closer to home, in collaboration with a level 5 or 6 service.

Time points	Complexity of care
<b>Diagnosis</b>	Communication and consultation with a level 5 or 6 service for all pre-diagnosis tests and investigations undertaken. Definitive diagnosis, staging and/or risk assessment will be provided at a level 5 or 6 service.
<b>Treatment and supportive care</b>	Provides a low-complexity day case paediatric chemotherapy service, as required, within a shared care model with a level 5 or 6 service.
	Provides supportive care measures along the paediatric oncology treatment pathway for patients and their families, defined within a shared care model with a level 5 or 6 service.
<b>Surveillance</b>	Provides limited tests, investigations and appointments in collaboration with a level 5 or 6 service during surveillance.
<b>Survivorship</b>	Provides limited tests, investigations and appointments in collaboration with a level 5 or 6 service in the long-term follow-up of children following treatment for cancer.
<b>Palliative care</b>	Support, as guided by the level 5 or 6 service, for managing the care of children with cancer closer to home where there is no longer a curative or control regimen.
<b>Infrastructure</b>	
<b>Emergency care</b>	An emergency department with paediatric trauma and resuscitation facilities with the ability to stabilise acutely unwell children or adolescents, with appropriate escalation and transfer guidelines to a level 5 or 6 service. Immediate availability of staff on site who are competent in accessing a central venous access device to ensure timely administration of fluid, blood products, antibiotics and other life-saving interventions.
<b>Environment</b>	Child- and family-friendly inpatient and outpatient environment in line with the Royal Australasian College of Physicians <i>Standards of care for children and adolescents in health services</i> . <sup>7</sup>
<b>Intensive care</b>	Documented processes for inter-hospital transfers of acutely unwell patients to a level 5 or 6 paediatric intensive care centre.
<b>Information technology</b>	Access to pathology, radiology and hospital patient records available to all staff collocated in the clinical areas. Dedicated IT support personnel on site. Systems in place to support the communication of shared paediatric oncology care across services, including the communication of the care of children in clinical trials. Videoconference systems to support telehealth opportunities with a level 5 or 6 service. Ability to access multidisciplinary meetings hosted by a level 5 or 6 service.
<b>Inpatient services</b>	Dedicated paediatric ward with an appropriate isolation room for caring for an immunocompromised child.
<b>Outpatient services</b>	Dedicated paediatric ambulatory department with capacity to deliver a low-complexity chemotherapy and supportive care service for children and adolescents with cancer. Area available to host regional outreach paediatric oncology clinics.

Specialty services	
<b>Multidisciplinary meeting</b>	Access to a multidisciplinary meeting structure hosted by a level 5 or 6 service, to enable discussions about new diagnoses within its catchment area. As necessary, be able to access centralised discussions across critical time points in the patient's care (see Appendix 5 for level 4 service requirements).
<b>Chemotherapy and biotherapy</b>	Provides a low-complexity paediatric chemotherapy service including (in collaboration with the level 5 or 6 service) the necessary governance, education and infrastructure.
<b>Clinical trials</b>	Established pathways to communicate any therapies, clinical incidents or other requirements to the level 5 or 6 service, as required by the study group, for children enrolled in clinical trials.
<b>Homecare</b>	Home-based healthcare program for children and adolescents, with referrals from the cancer service to local services. Homecare staff have access to paediatric oncology education programs and clinical governance.
<b>Laboratory</b>	Access to real-time laboratory services for managing supportive care and surveillance for the paediatric oncology patient (see Appendix 2 for level 4 service requirements).
<b>Medical imaging</b>	Provision of, or timely access to, paediatric radiologists and radiographers with paediatric experience, as well as access to an anaesthetic service to deliver these interventions in real time to younger children or infants (see Appendix 4 for level 4 service requirements).
<b>Pharmacy</b>	On-site pharmacy with designated staff to provide paediatric services, with access to local oncology pharmacy and established links to a level 5 or 6 service for providing low-complexity chemotherapy (see Appendix 7 for level 4 service requirements).
<b>Palliative care</b>	Provision of, or access to a paediatric palliative care program.
<b>Procedural pain</b>	Staff with demonstrated evidence of learning to support children and adolescents with cancer during medical procedures.
<b>Telehealth</b>	Dedicated resources to participate in telehealth consultations with level 5 and 6 services.
<b>Translation services</b>	Timely access to translation services to ensure effective communication of care and education for linguistically diverse children and their families.

Workforce		
<b>Medical</b>	<b>Paediatrics</b>	A paediatrician is appointed as medical head of the department. Consultant paediatrician available on-call 24 hours a day. Designated paediatric registrar.
	<b>Anaesthetics</b>	Timely access to a consultant anaesthetist with paediatric subspecialty. Consultant anaesthetist available on-call 24 hours a day. Anaesthetic registrar on site 24 hours a day.
	<b>Medical imaging</b>	Timely access to a paediatric radiologist available 24 hours a day.
<b>Nursing</b>	<b>Paediatrics</b>	Identified nursing lead in paediatric services. Paediatric nursing staff with low-complexity chemotherapy competency as defined by the level 5 or 6 service rostered for outpatient episodes of chemotherapy. Paediatric nursing staff across all shifts in the inpatient setting. (See Appendix 6 for level 4 service requirements.)
	<b>Pharmacy</b>	Pharmacist with paediatric responsibilities available during business hours. Pharmacist available on-call after hours. Pharmacy available for preparing (or demonstrated process for outsourcing) chemotherapy.
<b>Infection control</b>	Timely access to staff responsible for infection control. Compliance with national hand hygiene initiative and access to staff vaccination programs.	
<b>Allied health</b>	<b>Allied health</b>	Timely access to specific allied health services on site including speech pathology and physiotherapy.
	<b>Nutrition</b>	Dietitian with paediatric responsibilities available during business hours.
	<b>Social work</b>	Social worker with paediatric portfolio available during business hours and on-call social work service available after hours.
<b>Administrative support</b>	Secretarial support available during business hours in both inpatient and outpatient settings to support coordination of care between services and to support documentation relating to patient care.	

Education and research		
<b>Education</b>	<b>Medical</b>	Access to a level 5 or 6 service to support mentoring of consultant paediatricians in managing children and adolescents with cancer.
	<b>Nursing</b>	Access to an orientation, training and credentialing program for senior nursing staff caring for children with cancer and providing a low-complexity chemotherapy service.
	<b>Allied health</b>	Access to an allied health education program for staff caring for children and adolescents with cancer.
	<b>Patient and family</b>	Access to education materials for patients and families, provided by level 5 and 6 services.

**Quality and clinical governance**

<b>Guidelines</b>	Access to level 5 or 6 clinical guidelines for providing low-complexity chemotherapy and supportive care management for children and adolescents with cancer.
<b>Patient review</b>	Access to a multidisciplinary meeting structure coordinated and hosted by a level 5 or 6 service to discuss, as required, patients within the local service catchment.  Demonstrated process for morbidity and mortality review as part of a quality process (as necessary), with collaboration and communication with the level 5 or 6 service for adverse event reporting.
<b>Quality activity</b>	Demonstrated health service quality or clinical governance unit to support any quality initiatives in paediatric oncology.

**Service links and networks**

<b>Clinical trials</b>	Mechanisms in place for reporting any local chemotherapy encounters to the level 5 or 6 service for patients enrolled in clinical trials.
<b>Community engagement</b>	Relationships with relevant local community support groups for children and families with cancer and/or chronic/acute illness.
<b>Consumer engagement</b>	Evidence of the use of consumer engagement in the local health service.
<b>Inter-hospital linkages</b>	Demonstrated linkages with other service levels, including referral mechanisms both in and out of the hospital.
<b>PICS</b>	Integrated of services into the PICS model in Victoria to strengthen quality, consistency and integration of cancer care.
<b>Medical imaging</b>	Access to image-sharing software for communicating medical imaging between sites.

**3.4 Level 5 service: description and total activity**

A level 5 service will provide comprehensive care for the majority of paediatric oncology presentations within its catchment area, with direct links to a level 6 service. A level 5 service is recognised as a primary treatment centre and will provide diagnostic services and/or management of at least 30 new patients per year.

**Time points      Complexity of care**

<b>Diagnosis</b>	Provision of, or timely referral pathways for all tests and investigations to complete the definitive diagnosis and risk assessment of all malignancies in children and adolescents, including participation at diagnosis with a centralised multidisciplinary meeting hosted by a level 6 service.
<b>Treatment and supportive care</b>	Provision of, or timely referral pathways for all therapeutic interventions in the management of paediatric cancer including chemotherapy, biotherapy, radiotherapy and surgery, in both the inpatient and outpatient setting. New and investigative therapies and supportive care interventions may be initially introduced within a shared care collaborative model with a level 6 service.  All care requiring the use of a haematopoietic stem cell transplant (HSCT) service as an adjunct to treatment for cancer in children will be either referred to or shared with a level 6 service.  Enrolment and coordination of paediatric oncology patients in clinical trials.  Provides all supportive care measures along the paediatric oncology treatment pathway for patients and their families.  Adolescents with 'adult-type' malignancies should have links to or advice from adult oncology and the relevant multidisciplinary team, where appropriate.
<b>Surveillance</b>	Provides all tests, investigations and appointments according to relevant protocols and, for children following HSCT, in collaboration with the level 6 service.  Established referral pathways for the shared care of children undergoing surveillance with other level centres.
<b>Survivorship</b>	Provides services required for long-term follow-up of children following treatment for cancer. Takes responsibility to develop treatment pathways in survivorship.
<b>Palliative care</b>	Provision of, or timely access to services required for managing cancer in children and adolescents where there is no longer a curative or control regimen.

**Infrastructure**

<b>Emergency care</b>	A paediatric emergency department with paediatric trauma and resuscitation facilities with the ability to diagnose and stabilise acutely unwell children or adolescents. Immediate availability of staff on site who are competent in accessing a central venous access device to ensure timely administration of fluid, blood products, antibiotics and other life-saving interventions.
<b>Environment</b>	Child- and family-friendly inpatient and outpatient environment in line with the Royal Australasian College of Physicians <i>Standards of care for children and adolescents in health services</i> . <sup>7</sup>
<b>Intensive care</b>	Paediatric intensive care unit providing comprehensive care including complex multi-system life support for an indefinite period to children younger than 16 years of age, in line with the College of Intensive Care Medicine minimum standards. <sup>8</sup>

<b>Information technology</b>	Electronic access to tests, investigations, policies, procedures and patient records (as applicable). Dedicated IT support personnel on site. Systems in place to support the electronic communication of shared care across services. Videoconference systems to support the delivery of telehealth as well as the hosting of multidisciplinary meetings across health services. Data systems integrated with relevant cancer registries and clinical trial partners to facilitate information sharing.
<b>Inpatient services</b>	Dedicated paediatric oncology ward environment with appropriate facilities to provide sufficient isolation of patients from airborne pathogens (such as HEPA filtration and positive/negative pressure rooms), delivering comprehensive paediatric cancer care across each of the time points.
<b>Outpatient services</b>	Dedicated paediatric oncology outpatient department with the capacity to deliver comprehensive chemotherapy and supportive care across each of the time points. Dedicated procedure rooms and isolation rooms for managing infectious ambulatory patients with an identified waiting area located away from the general population.
<b>Family accommodation</b>	Suitable access to accommodation options for caregivers available within or close to the institution.
<b>Specialty services</b>	
<b>Multidisciplinary meeting</b>	Supports and contributes to a multidisciplinary meeting structure presenting all new patients at diagnosis and, as necessary, across critical time points in their care (see Appendix 5 for level 5 service requirements).
<b>Chemotherapy and biotherapy</b>	Provides a paediatric chemotherapy and biotherapy service to meet the demands of all treatment protocols delivered in the service, with demonstrated referral pathways and collaboration with a level 6 service for new investigative therapies or haematopoietic stem cell transplantation, that falls outside scope. Provides the necessary governance, education and infrastructure to deliver local chemotherapy and biotherapy, as well as having resources to support the introduction of any new agents, in collaboration with a level 6 service.
<b>Clinical trials</b>	Provides a service to coordinate paediatric oncology clinical trials, including ethics submission processes, maintenance of membership with participating study groups and support of the clinical team in clinical trial enrolment and governance compliance.
<b>Homecare</b>	Timely access to home-based healthcare, with direct links and referrals from the cancer service to local and statewide services, including access for homecare staff to paediatric oncology education programs and clinical governance documentation.
<b>Laboratory</b>	Provides 'real-time' referral pathways to the diagnostic testing, clinical and consultative laboratory services required in to deliver paediatric oncology care (see Appendix 2 for level 5 service requirements).
<b>Medical imaging</b>	Provides a medical imaging service, including a paediatric radiologist and anaesthetist, to meet the needs of paediatric oncology care (see Appendix 4 for level 5 service requirements).
<b>Pharmacy</b>	On-site pharmacy with paediatric expertise and established linkages with a level 6 paediatric oncology pharmacy (see Appendix 7 for level 5 service requirements).
<b>Palliative care</b>	Provides a paediatric palliative care service supporting both inpatient and community-based care.
<b>Psychosocial</b>	Provides services to meet the practical, social and mental health needs of children with cancer and their families (see Appendix 8 for level 5 service requirements).

<b>Procedural pain</b>	Paediatric therapist(s) with training and expertise to provide a comprehensive procedural pain management program.														
<b>Radiation oncology</b>	Provides timely referral pathways to and specialised treatments for paediatric radiation oncology that meets the demands of providing care to children (see Appendix 9 for level 5 service requirements).														
<b>Telehealth</b>	Dedicated resources to participate in telehealth consultation with level 3, 4 and 6 services.														
<b>Translation services</b>	Timely access to translation services to ensure effective communication and education of care to linguistically diverse children and their families, as required.														
<b>Transition</b>	Timely referral pathways to adult health services for transitioning adolescent patients.														
<b>Workforce</b>															
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<b>Surgery</b>	Nursing staff with postoperative paediatric surgical experience, including neurosurgery.														

<b>Pharmacy</b>	Paediatric pharmacists with a dedicated oncology portfolio available during business hours and on-call after hours.	
<b>Infection control</b>	Timely access to staff responsible for infection control. Compliance with national hand hygiene initiative and access to staff vaccination.	
<b>Clinical trials</b>	Dedicated staff responsible for the enrolment, coordination and management of paediatric oncology clinical trials, including an identified lead responsible for governance and reporting compliance.	
<b>Mental health</b>	Paediatric psychologist responsible for providing a mental health service to children and adolescents with cancer and their families.	
<b>Allied health</b>	<b>Allied health</b>	Timely access to paediatric specific allied health services on site including speech pathology, occupational therapy, prosthetics, physiotherapy.
	<b>Nutrition</b>	Dietitian responsible for paediatric oncology available during business hours.
	<b>Procedural pain</b>	Timely access to experienced, on-site staff to teach and deliver procedural pain management strategies.
	<b>Social work</b>	Social workers with experience in paediatric oncology available during business hours and on-call 24 hours a day.
<b>Administrative support</b>	Secretarial support available during business hours in both inpatient and outpatient settings to support coordination of care between services and support documentation relating to patient care.	
<b>Education and research</b>		
<b>Education</b>	<b>Medical</b>	Collaborates with the level 6 service in developing and delivering a paediatric oncology education agenda to medical staff. Demonstrated orientation, training and credentialling program for junior medical staff. Provides professional development opportunities for all medical staff.
	<b>Nursing</b>	Collaborates with the level 6 service in developing and delivering a paediatric oncology education program to nursing staff. Demonstrated orientation, training and credentialling program for junior nursing staff. Engagement at both the state and the national level in improving nursing education in paediatric oncology. Professional development opportunities for all nursing staff.
	<b>Allied health</b>	Collaborates with a level 6 service in delivering support and education to allied health staff in paediatric oncology. Professional development opportunities for allied health staff.
	<b>Patient and family</b>	Provides leadership and support in the review and development of an education program tailored for patients and their families.
<b>Research</b>	Actively supports innovations in research in paediatric oncology. Works with the level 6 service and national and international bodies in the development and translation of research into the clinical setting.	

<b>Quality and clinical governance</b>	
<b>Guidelines</b>	Collaborates with the level 6 service in developing and implementing evidence-based clinical guidelines addressing the management of key interventions and supportive care in paediatric oncology, ensuring consistency of care across service levels.
<b>Patient review</b>	Active participation in a multidisciplinary meeting structure, to discuss all new patients and along critical time points in their care, as required.
	Provides a locally hosted comprehensive care multidisciplinary meeting structure to discuss ongoing care of patients, including their psychosocial care and interventions.
	Demonstrated process for morbidity and mortality review as part of a quality improvement process.
<b>Quality activity</b>	Participation in quality initiatives, including documented, regular quality meetings with key stakeholders, with reportable actions and outcomes.
	Staff on site who are responsible for quality coordination, collaborating with a level 6 service in establishing quality measures for paediatric oncology services, as well as measuring compliance to quality initiatives.
<b>Service links and networks</b>	
<b>Clinical trials</b>	Active membership and accreditation with national and international study groups, with established referral mechanisms for the conduct and coordination of paediatric oncology clinical trials.
<b>Community engagement</b>	Demonstrated relationships with established community support groups for children and families with cancer.
<b>Consumer engagement</b>	Evidence of consumer engagement in the cancer service with attendance on relevant steering groups and committees.
<b>Inter-hospital linkages</b>	Demonstrated linkages with other service levels and reporting bodies, including referral mechanisms both in and out of the hospital.
<b>PICS</b>	Integration of services into the PICS model in Victoria to strengthen quality, consistency and integration of cancer care.
<b>Medical imaging</b>	Access to electronic image sharing software for the communication of medical images between sites.

### 3.5 Level 6 service: description and total activity

A level 6 service is a statewide referral centre for paediatric oncology. A level 6 service is recognised as a primary treatment centre and will provide diagnostic services and/or management of at least 100 diagnoses per year from the local catchment as well as referrals from other geographical regions. A level 6 service provides statewide, national and international leadership in paediatric oncology, including research, clinical guidance, education and policy development. A level 6 service will also assess and manage risk in new therapies and supportive care interventions, providing leadership and planning for other service levels.

Time points	Complexity of care
<b>Diagnosis</b>	Provision of, or timely referral pathways for all tests and investigations to complete the definitive diagnosis and risk assessment of all malignancies in children and adolescents.
<b>Treatment and supportive care</b>	<p>Provision of, or timely referral pathways for all therapeutic interventions in managing paediatric cancer, including chemotherapy, biotherapy, radiotherapy and surgery, in both the inpatient and outpatient settings.</p> <p>Provides a paediatric haematopoietic stem cell transplant (HSCT) service.</p> <p>Enrolment and coordination of paediatric oncology patients on clinical trials, including phase 1 and 2 clinical trials.</p> <p>Provides all supportive care measures along the paediatric oncology treatment pathway for patients and their families.</p> <p>Adolescents with 'adult-type' malignancies should have links to or advice from adult oncology and the relevant multidisciplinary team, where appropriate.</p>
<b>Surveillance</b>	<p>Provides all tests, investigations and appointments according to the respective protocol delivery map for all paediatric malignancies and following HSCT.</p> <p>Established referral pathways for the shared care of children undergoing surveillance with other level centres.</p>
<b>Survivorship</b>	Provides all services required for ongoing long-term follow-up of children following treatment for cancer. Takes responsibility in developing treatment pathways in survivorship.
<b>Palliative care</b>	Provision of, or timely access to referral pathways for all services required for managing cancer in children and adolescents where there is no longer a curative or control regimen.
Infrastructure	
<b>Emergency care</b>	A paediatric emergency department with paediatric trauma and resuscitation facilities with the ability to diagnose and stabilise acutely unwell children or adolescents. Immediate availability of staff on site who are competent in accessing a central venous access device to ensure timely administration of fluid, blood products, antibiotics and other life-saving interventions.
<b>Environment</b>	Child- and family-friendly inpatient and outpatient environment in line with the Royal Australasian College of Physicians <i>Standards of care for children and adolescents in health services</i> . <sup>7</sup>
<b>Intensive care</b>	Paediatric intensive care unit providing comprehensive care including complex multi-system life support for an indefinite period to children younger than 16 years of age, in line with the College of Intensive Care Medicine minimum standards. <sup>8</sup>

<b>Information technology</b>	Electronic access to tests, investigations, policies, procedures and patient records (as applicable). Dedicated IT support personnel on site. Systems in place to support the electronic communication of shared care across services. Videoconference systems to support the delivery of telehealth as well as the hosting of multidisciplinary meetings between health services. Data systems integrated with relevant cancer registries and clinical trial partners to facilitate information sharing.
<b>Inpatient services</b>	Dedicated paediatric oncology ward with appropriate facilities to provide sufficient isolation of patients from airborne pathogens (such as HEPA filtration and positive/negative pressure rooms), delivering comprehensive paediatric oncology care across each of the time points.
<b>Outpatient services</b>	Dedicated paediatric oncology outpatient department with capacity to deliver a comprehensive ambulatory chemotherapy and supportive care service across each of the time points, with dedicated procedure rooms, isolation rooms for managing infectious ambulatory patients as well as an identified waiting area separately located from the rest of the population for patients following a bone marrow transplant.
<b>Family accommodation</b>	Suitable access to accommodation options for caregivers available within or close to the institution.
Specialty services	
<b>Multidisciplinary meeting</b>	Provides leadership in hosting and coordinating a multidisciplinary meeting structure to discuss all new malignant cancer diagnoses and, as necessary, across critical time points in their care as required, across all service levels (see Appendix 5 for level 6 service requirements).
<b>Chemotherapy and biotherapy</b>	Provides a comprehensive paediatric chemotherapy and biotherapy service to meet the demands of all treatment plans across all paediatric oncology diagnoses, including necessary governance, education and infrastructure, in both the inpatient and the outpatient setting, as well as having resources to introduce new therapies.
<b>Clinical trials</b>	Provides a service to coordinate paediatric oncology clinical trials (including phase 1, 2 and 3). Statewide leadership in generating ethics submission processes, maintenance of membership with participating study groups and supporting the clinical team in their delivery. A level 6 service will also provide leadership in paediatric oncology clinical trials, at both the statewide and the national level, supporting enrolment and governance compliance (see Appendix 1 for level 6 service requirements).
<b>Homecare</b>	Timely access to home-based healthcare, with direct links and referrals from the cancer service to local and statewide services, as well as providing homecare staff access to paediatric oncology education programs, policies and procedures.
<b>Laboratory</b>	Provides 'real-time' referral pathways to the diagnostic testing, clinical and consultative laboratory services required to deliver paediatric oncology care (see Appendix 2 for level 6 service requirements).
<b>Medical imaging</b>	Provides a medical imaging service, including a paediatric radiologist and anaesthetist to meet the needs of paediatric oncology care (see Appendix 4 for level 6 service requirements).
<b>Pharmacy</b>	Provides a paediatric oncology pharmacy service that offers guidance and leadership for all service levels in chemotherapy and biotherapy (see Appendix 7 for level 6 service requirements).
<b>Palliative care</b>	Provides an on-site dedicated paediatric palliative care service for both inpatient and community-based care.
<b>Psychosocial</b>	Provides services to meet the practical, social and mental health needs of children with cancer and their families (see Appendix 8 for level 6 service requirements).

<b>Procedural pain</b>	Paediatric therapist(s) with training and expertise to provide a comprehensive procedural pain and management program.
<b>Radiation oncology</b>	Provides timely referral pathways to specialised treatments for paediatric radiation oncology that meets the demands of providing care to children (see Appendix 9 for level 6 service requirements).
<b>Telehealth</b>	Timely access to a service to support telehealth consultations with other level services in Victoria.
<b>Translation services</b>	Timely access to translation services to ensure effective communication of care and education for culturally and linguistically diverse children and their families.
<b>Transition</b>	Timely referral pathways to adult health services for transitioning adolescent patients.

**Workforce**

<b>Medical</b>	<b>Paediatric oncology</b>	A specialist paediatric oncologist is appointed as head of the department. Specialist paediatric oncologist available on-call 24 hours a day. Paediatric HSCT speciality consultant available on-call 24 hours a day.
	<b>Radiation oncology</b>	Timely access to a radiation oncologist with a paediatric subspecialty during business hours. Access to a radiation oncologist 24 hours a day and to phone consultations with a radiation oncologist with a paediatric subspecialty.
	<b>Surgery</b>	Timely access to on-site paediatric specialty surgical services including orthopaedics, neurosurgery, cardiothoracic, ophthalmology, otolaryngology, plastics, urology, maxillofacial and general paediatric surgery expertise.
	<b>Anaesthetics</b>	Paediatric anaesthetic consultant available on-call 24 hours a day. Paediatric anaesthetic registrar available on site 24 hours a day.
	<b>Medical specialties</b>	Timely access to on-site paediatric consultant physicians including neurology, cardiology, nephrology, respiratory, ophthalmology, endocrinology, genetics, infectious diseases, psychiatry, rehabilitation, pathology, haematology, immunology, fertility and transfusion.
	<b>Medical imaging</b>	Paediatric radiologist available on site during business hours and on-call 24 hours a day.
	<b>Oral health</b>	Timely access to an on-site paediatric dentist.
	<b>Nursing</b>	<b>Paediatric oncology</b>
<b>Radiation oncology</b>		Timely access to an experienced paediatric oncology nurse responsible for radiation oncology.
<b>Surgery</b>		Nursing staff with postoperative paediatric surgery experience, including neurosurgery.

<b>Pharmacy</b>	Paediatric pharmacist with dedicated oncology portfolio available during business hours and on-call after hours.
<b>Infection control</b>	Timely access to staff responsible for infection control. Compliance with national hand hygiene initiative and access to staff vaccination.
<b>Clinical trials</b>	Dedicated staff responsible for the enrolment, coordination and management of paediatric oncology clinical trials, including an identified lead responsible for governance and reporting compliance.
<b>Mental health</b>	Paediatric psychologist for providing a mental health service to children and adolescents with cancer and their families.
<b>Allied health</b>	<b>Allied health</b> Timely access to paediatric specific allied health services on site including speech pathology, occupational therapy, prosthetics, physiotherapy.
	<b>Nutrition</b> Dietitian responsible for paediatric oncology available during business hours.
	<b>Procedural pain</b> Timely access to experienced, on-site staff to teach and deliver procedural pain management strategies.
	<b>Social work</b> Social workers with experience in paediatric oncology available during business hours and on-call 24 hours a day.

<b>Administrative support</b>	Secretarial support available during business hours in both the inpatient and the outpatient settings to support coordination of care between services and support documentation relating to patient care .
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**Education and research**

<b>Education</b>	<b>Medical</b> Provides leadership to all levels of service in developing and delivering an up-to-date paediatric oncology education program to medical staff. Provides an orientation, training and credentialling program for junior medical staff. Provides professional development opportunities for all medical staff.
	<b>Nursing</b> Provides leadership to all levels of service in developing and delivering an up-to-date paediatric oncology education program to nursing staff. Provides an orientation, training and credentialling program for junior nursing staff. Engagement at both the state and the national level in improving nursing education in paediatric oncology. Provides professional development opportunities for all nursing staff.
	<b>Allied health</b> Provides leadership to all levels in supporting education to allied health staff in paediatric oncology. Provides professional development opportunities for allied health staff.
	<b>Patient and family</b> Provides leadership and support in the review and development of an education program tailored for patients and their families.

<b>Research</b>	Provides leadership at a statewide level in supporting innovations in research in paediatric oncology. Works with national and international bodies to develop and translate research into the clinical setting.
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**Quality and clinical governance**

<b>Guidelines</b>	Provides leadership in developing evidence-based clinical guidelines addressing the management of key interventions and supportive care in paediatric oncology for all service levels.
<b>Transplant</b>	Provides leadership in developing clinical governance and standards to meet national and international regulations for a Haematopoietic Stem Cell Transplant (HSCT) program.
<b>Patient review</b>	Provides a dedicated multidisciplinary meeting structure (including administrative support), coordinated and hosted by the service, to discuss all new patients at diagnosis and, as necessary, at critical timepoints during their treatment, with the ability for external access to these meetings for other primary treating and shared care services.  Demonstrated process for morbidity and mortality review as part of a quality improvement process.
<b>Quality activity</b>	Participation in quality initiatives, including documented, regular quality meetings with key stakeholders, with reportable actions and outcomes.  Staff on site who are responsible for quality coordination, establishing quality measures for paediatric oncology services and measuring compliance with quality initiatives.

**Service links and networks**

<b>Clinical trials</b>	Active participation and accreditation with national and international study groups, with established communication pathways in the conduct and coordination of paediatric oncology clinical trials.
<b>Community engagement</b>	Demonstrate relationships and referral pathways with community support groups for children with cancer and their families.
<b>Consumer engagement</b>	Evidence of consumer engagement in the cancer service, with attendance on relevant steering groups and committees.
<b>Inter-hospital linkages</b>	Demonstrated linkages with other service levels, including referral mechanisms both in and out of the hospital.
<b>PICS</b>	Integration of services into the PICS model in Victoria to strengthen quality, consistency and integration of cancer care.
<b>Medical imaging</b>	Access to image-sharing software for communicating medical images between sites.

# Appendices:

## Minimum specialty service requirements

### Appendix 1: Minimum clinical trial requirements for Victorian health services providing paediatric cancer care

**Rationale**

The low incidence of cancer in children highlights the need for active participation in national and international trials to achieve significant enrolment numbers in research. The dramatic decrease in mortality in childhood cancer has been a result of cooperative group research<sup>9,10</sup> As targeted therapies and tailored therapies become the new paradigm of care, trials will focus on smaller groups, making the need to collaborate internationally more important. Developing local infrastructure to support the conduct of international trials, and in turn improve outcomes for all children, is an essential task for health services. Level 5 and 6 services must have an active clinical trials unit/service. Shared care facilities must be able to demonstrate linkages to a level 5 or 6 clinical trials service.

Minimum requirements	Service level			
	6	5	4	3
Maintenance of active membership with cooperative study groups in paediatric oncology	•	•		
Affiliation with cooperative study groups via primary treatment centre (chemotherapy delivery)			•	
Dedicated staff trained in data management to support cooperative research	•	•		
Oncology pharmacy staff available to support clinical trials	•	•	•	
Identified lead of the clinical trials unit/service with experience in cooperative research	•	•		
Trained nursing staff on site to support clinical trials in phase one and two studies	•			
Active institutional ethics or governance review committee with oversight of chemotherapy	•	•		
Consultant oncologist identified as principal investigator for cooperative study groups	•	•		
Capability to transfer information for communication and documentation of care between primary treatment centre and shared care services	•	•	•	•
Demonstrated online linkages to cooperative study groups	•	•		
IT infrastructure (or access to) to manage and record the treatment plan electronically	•	•	•	
Standard operating procedures to ensure good clinical practice, including ethics submission processes, adverse event reporting and specimen procurement	•	•		
Resources for the clinical trials unit/service to provide a mentoring and educational role to disseminate trials information to the health service, in particular the introduction of novel therapies	•	•		
Active participation of clinical trials unit/service staff in the multidisciplinary structure of the department, with a mechanism to discuss trials enrolment	•	•		
Procedure for documenting and communicating key adverse events/incidents of those on clinical trials	•	•	•	•

**Benefits**

A well-resourced, active clinical trials unit/service will support the delivery of cooperative trials in paediatric oncology and support study adherence. Participation within a multidisciplinary meeting structure will ensure opportunities for enrolment are available for all Victorian children. Ongoing commitment to ensure collaboration with cooperative study groups nationally and internationally will support improving outcomes and survival rates of childhood cancer within the paediatric oncology community as a whole. IT linkages and shared databases will ensure real-time communication of trials and promote the shared care of patients across health services in Victoria.

## Appendix 2: Minimum laboratory requirements for Victorian health services providing paediatric cancer care

### Rationale

Specialised laboratory services are required to provide a timely diagnosis and support risk stratification for delivering appropriate therapy as soon as possible in the diagnostic phase. Treatment interventions, such as chemotherapy, place children at risk of immunodeficiency, sepsis and acute side effects. Health services need to ensure their laboratory services meet the needs of unwell children. Ongoing surveillance of disease and therapies provided by specialist techniques are often required throughout the treatment plan. A specialised, accredited laboratory service is also a key part of a stem cell transplant service.

Minimum requirements	Service level			
	6	5	4	3
NATA/RCPA accreditation to ISO 15189 for all participating laboratory facilities	•	•	•	•
On-site access to services for managing critically ill children, including immediate interpretation of blood gases, clinical chemistry, haematology and coagulation assays performed on paediatric samples	•	•	•	•
Processing of diagnostic specimens from oncology patients (particularly blood cultures, cerebrospinal fluid and other sterile site specimens) and immediate access to a microbiology scientist to perform cell count and gram stains to aid in patient management	•	•	•	•
Timely access to viral diagnostic services including microbial serology and molecular microbiology	•	•	•	•
Up-to-date paediatric reference ranges for all analytes and cellular parameters	•	•	•	•
On-site anatomic pathology services for the immediate handling and storage of tumour specimens	•	•		
Escalation procedures in place to provide opinions and transportation of tissue samples urgently to other national and international experts, with staff trained in safe transport according to International Air Transport Association (IATA) standards	•	•		
Timely access to antibiotic-level monitoring to safely manage paediatric oncology patients	•	•	•	•
Timely access to anti-neoplastic drug-level monitoring to safely manage children on chemotherapy	•	•		
Transfusion service compliant to national standards providing timely access to leucodepleted, irradiated blood products for an immunocompromised child	•	•	•	•
Apheresis service for collecting and storing haematopoietic progenitor cells for transplant	•			
Apheresis service for therapeutic apheresis	•	•		
Timely access to specialist techniques related to tumour samples such as immunohistochemistry, molecular diagnosis, cytogenetic analysis, polymerase chain reaction, flow cytometry and spinal fluid cytology	•	•		
On-site laboratory services required to deliver a Haematopoietic Stem Cell Transplant (HSCT) program, in line with Foundation for Accreditation for Cellular Therapy (FACT) requirements	•			
Timely access to ongoing disease surveillance such as Minimum Residual Disease monitoring by Flow Cytometry or Molecular techniques	•	•		
Timely access to post-allogeneic HSCT DNA chimerism monitoring techniques	•			
Immediate transfusion support for patients undergoing allogeneic stem cell transplantation	•			

### Benefits

Access to timely, specialised accurate laboratory services concentrated within primary treatment centres to increase patient volumes, will effectively reduce delays to diagnosis, support treatment and improve outcomes. Timely access to laboratory services to manage the side effects of cancer therapy will promote safe care and reduce morbidity and mortality.

## Appendix 3: Minimum requirements for managing late effects in Victorian health services providing paediatric cancer care

### Rationale

Eighty per cent of children diagnosed with cancer survive their disease;<sup>1</sup> however, it is important to monitor the risk of long-term effects. Studies have reported that three-quarters of childhood survivors experience at least one chronic medical condition in adulthood.<sup>11,12</sup> Late effects of cancer may include (but are not limited to) organ dysfunction, impaired growth/development, impaired cognitive function, fertility issues and reduced quality of life.<sup>11,12</sup> Early detection and intervention of late effects is necessary to preserve long-term health. Many childhood survivors are unaware of their past medical treatment, complicating their health management as adults. No single approach is appropriate for all survivors; however, it is recommended that a risk-stratified approach to care with responsibility for high-risk patients be available within the level 5 or 6 service and low to standard risk patients, shared, as required, with a level 3 or 4 service.

Minimum requirements	Service level			
	6	5	4	3
Identified 'late effects' service	•	•		
Identified paediatric oncologist engaged in late-effects/long-term follow-up	•	•		
Identified specialist nurse engaged in late-effects/long-term follow-up	•	•		
Demonstrated access to, and relationships with, other medical specialties (adult and paediatrics) including endocrinology, neurology, audiology, cardiology, respiratory, renal, reproductive medicine and radiation oncology	•	•		
Demonstrated referral pathways to and relationships with adult survivorship services	•	•		
Demonstrated access to social work services	•	•	•	•
Demonstrated access to mental health services	•	•	•	•
Demonstrated access to dietetic services	•	•	•	•
Demonstrated access to educational/links to school services	•	•		
Demonstrated access to physiotherapy and occupational therapy services	•	•	•	•
Access to appropriate diagnostic monitoring including (but not limited to) ECG, basic laboratory, pulmonary functioning, audiometry, medical imaging, hormone levels and bone mineral density monitoring	•	•	•	•
Treatment summaries are developed for all patients entering long-term follow-up	•	•		
Demonstrated access to a long-term follow-up service			•	•

### Benefits

Early identification and interventions for patients at high risk of late effects will improve health outcomes for childhood cancer survivors. Educational resources and treatment summaries will assist adult survivors of childhood cancer to better manage their health and communicate their care needs. Early psychological, educational, dietetic and social interventions will contribute to improved quality of life for survivors, and their families.

## Appendix 4: Minimum medical imaging requirements for Victorian health services providing paediatric cancer care

### Rationale

A medical imaging service provides critical diagnostic and staging information, as well as evaluating response to therapy. Timely access to medical imaging at critical time points in a child's treatment plan is crucial. Medical imaging is also important beyond therapy for monitoring disease recurrence. Timely access to an appropriately skilled paediatric medical imaging service is also crucial in supportive care, particularly in evaluating infection. Maintaining close relationships with the oncology department in adopting new techniques and approaches to care through clinical trials may reduce the frequency and type of imaging, reducing cumulative radiation exposure and psychological distress.

Minimum requirements	Service level			
	6	5	4	3
On-site paediatric radiologist with specific expertise in the reporting of diagnostic imaging of infants, children and adolescents available during business hours and on-call after hours	•	•		
Timely access to a paediatric radiologist during business hours and on-call after hours			•	•
On-site radiographers with paediatric experience available during business hours and after hours	•	•	•	•
Access to anaesthetic resources to meet the sedation and general anaesthetic needs of younger paediatric patients undergoing medical imaging	•	•	•	
Access to a picture archiving and communication system (PACS) for the real-time transfer of images between health services	•	•	•	•
Access to support for calibration, dosimetry and quality assurance of imaging systems including expertise in the ALARA (as low as reasonably achievable) principle of dose reduction	•	•	•	•
Availability or timely access to imaging equipment for rapid diagnosis, including plain radiography, magnetic resonance imaging, ultrasonography, angiography and computed tomography	•	•	•	•
Availability or timely access nuclear medicine services including positron emission tomography, metaiodobenzylguanidine (MIBG) scanning, bone scanning and glomerular filtration rate (GFR) tests	•	•		
On-site access and expertise for insertion/replacement of PICC lines including appropriate fluoroscopy either in the operating theatre or the medical imaging department	•	•		

### Benefits

An up-to-date paediatric medical imaging service will support prompt diagnosis and staging of all paediatric cancers by the level 5 or 6 service. Medical imaging is crucial in managing supportive care by providing diagnostic information to support prompt interventions in managing an unwell child. Using a PACS will help ensure rapid communication of clinical information between health services. A PACS may also reduce the cumulative radiation dosage by reducing the duplication of images taken across health services.

## Appendix 5: Minimum requirements for a multidisciplinary meeting structure for Victorian health services providing paediatric cancer care

### Rationale

A multidisciplinary meeting (MDM) offers a consistent and collaborative approach to paediatric oncology treatment planning. A multidisciplinary approach to paediatric oncology plays an important role in providing high-quality healthcare<sup>13</sup> and forms the basis of leading institutional recommendations<sup>14,15</sup>. A MDM provides a platform to bring together experts from all medical disciplines irrespective of their location, and has been shown to improve the quality of care provided.<sup>3,16</sup>

Minimum requirements	Service level			
	6	5	4	3
The MDM will have a central theme of prospective treatment planning at the point of diagnosis	•	•		
All Victorian children with a new malignant cancer diagnosis will be discussed at a MDM	•	•		
A peer leader identified within the MDM with strong leadership and facilitation skills will chair the meeting	•	•		
A meeting coordinator will be identified to support meeting interface, attendance and documentation of outcomes	•	•		
Level 3 or 4 treating teams will have access to the MDM			•	•
Resources are allocated for support to gather relevant materials prior to the meeting	•	•		
A MDM inter-hospital structure is acknowledged and supported by hospital executive	•	•	•	•
A room within the health service is suitable for conducting MDMs	•	•	•	•
Access to video/teleconference facilities, including high-speed internet, is available within the meeting room	•	•	•	•
Standards for managing and hosting inter-hospital video/teleconferencing are agreed across health services	•	•	•	•
Resources are allocated for the ability to project and share data across the internet including patient records, pathology slides, medical images and shared databases	•	•		
A MDM will supplement the disease-specific and comprehensive supportive care multidisciplinary meeting structure of the level 5 and 6 centres	•	•		
Communication of MDM outcomes are communicated to the wider multidisciplinary team and to the patient/family and their general practitioner	•	•		

### Benefits

Every child diagnosed with cancer will be considered from a range of viewpoints at diagnosis from the leading experts in paediatric oncology in Victoria. Timely, equitable and effective best practice will be delivered in the right place at the right time – supporting best outcomes. The multidisciplinary meeting provides for promotion of shared learning and professional development opportunities for all health services involved.

## Appendix 6: Minimum nursing competencies for Victorian health services providing paediatric cancer care

### Rationale

Paediatric oncology nurses require a comprehensive educational foundation in how to best care for their patients' complex needs and demonstrate the ability to apply this knowledge rapidly into clinical practice. To ensure the safe administration of therapeutic agents and the assessment and management of therapy-related complications minimum nursing requirements are essential. Inadequate education and experience of nursing staff can contribute to high levels of risk when administering medicines that have a low therapeutic index. Providing education and support built on expert knowledge of paediatric oncology is a core responsibility of nurses. It is an important factor in reducing distress, facilitating coping and promoting resilience and wellbeing in patients and their families.

Recommendations	Service level			
	6	5	4	3
All nurses should complete an education and competency program before administering anti-cancer therapy A competency program should include (but not limited to) safe handling, cell biology, overview of specific therapies, side effects of treatment, clinical trials and managing toxicities, all defined within the health service scope of practice	•	•	•	
All nurses should complete an education and training program for caring for children with cancer Minimum training should include cancer types, side effects, treatments and supportive cares	•	•	•	•
Demonstrate an understanding of dosage calculation and administration of medications to children, including methods to achieve compliance	•	•	•	•
Demonstrate competency in basic paediatric life support and be aware of the normal observation ranges of children based on age and act appropriately on the findings that fall outside these ranges	•	•	•	•
Be able to recognise the growth and development patterns in children and how they impact on clinical care	•	•	•	•
Be able to communicate with children at an age-appropriate level, including the use of assessment tools to evaluate symptoms	•	•	•	•
Be able to demonstrate the process of consent in children and adolescents, and be aware of the need to advocate and assist in communicating needs	•	•	•	•
Recognise procedural pain management principles in children and demonstrate methods to mitigate distress and promote patient self-management	•	•	•	•
Demonstrate competency in managing central venous access devices	•	•	•	•
Facilitate and support family-centred care, recognising the impact of hospital, home, family and community on children and families	•	•	•	•

### Benefits

Appropriately trained and experienced nurses will provide optimal care to paediatric oncology patients, reduce the risk of adverse events and contribute to improved outcomes. Experienced oncology nurses will facilitate timely assessment and management of treatment-related toxicities. Quality of life for patients and families will be maximised through support and interventions provided by appropriately trained and experienced nurses.

## Appendix 7: Minimum pharmacy requirements for Victorian health services providing paediatric cancer care

### Rationale

Chemotherapy is one of the main treatment modalities in paediatric oncology. Many regimens are complex and intensive, associated with a high risk of morbidity and mortality due to their narrow therapeutic index, demanding support from staff who are appropriately trained in the ordering, preparation, transport, delivery and education of chemotherapy. There is a need to educate and support families in the home administration of many chemotherapy agents to children, often administered over long periods of time. In an era of new targeted therapies, staff responsible for the care of children and adolescents with cancer require a thorough understanding of both conventional and novel agents. Fluctuating weight-based dosing and issues of patient compliance with medication (particularly in young children) drive the demand for an on-site paediatric oncology pharmacy to lead interventions to mitigate risk and promote good outcomes.

Minimum requirements	Service level			
	6	5	4	3
Pharmacy offers a clinical service to inpatients and outpatients in the oncology unit or paediatric service	•	•	•	•
There is an identified lead pharmacist with expertise in paediatric oncology	•	•		
There is an identified pharmacist to support low-complexity chemotherapy			•	
The pharmacy service is available during business hours with on-call support after hours	•	•	•	•
The pharmacy service must meet the institutional needs defined by any cooperative study groups delivering clinical trials that the health service enrolls patients into	•	•	•	
The oncology pharmacy team will provide statewide leadership, including quality initiatives related to chemotherapy and biotherapy, prescribing and clinical trials, and the development of clinical governance for consistency of practice	•	•		
Pharmacists provide education to children with cancer and their families within the health services defined scope of practice	•	•	•	
Pharmacists provide education to staff within the hospital as required, within the health services defined scope of practice	•	•	•	•
Oncology pharmacists are available for participation in multidisciplinary meetings (on site or via telehealth)	•	•		
Dedicated areas for storage of chemotherapy, including refrigeration	•	•	•	
The pharmacy can facilitate preparation of cytotoxic medications	•	•	•	
A pharmacist with trained expertise in preparing chemotherapy is available during business hours and is on-call after hours	•	•	•	
Access provided to drug reference libraries, including access to cooperative study groups (either directly or via a level 5 or 6 service)	•	•	•	
Infrastructure in place to support safe management practices, from prescribing, ordering, preparation and validation, through to recording of administration by inpatient/outpatient staff as well as community healthcare providers and patient/carer/family.	•	•	•	
Demonstrated access to a level 5 or 6 oncology pharmacy, including established standard operating procedures for ordering, preparation and delivery of chemotherapy and pathway for risk escalation embedded in local hospital clinical governance			•	

### Benefits

Consistent and safe care within and across health services in managing chemotherapy mitigates risk, avoids delays to treatment and promotes compliance to the treatment plan. This will support reductions in morbidity and mortality, lead to better clinical outcomes, promote better symptom control and contribute to a better health-related quality of life for patients and families during treatment.

## Appendix 8: Minimum psychosocial requirements for Victorian health services providing paediatric cancer care

### Rationale

The diagnosis of a child with cancer is a stressful experience that can potentially disrupt the family system. Literature demonstrates the emotional, financial, social, physical and mental vulnerability of patients, parents and caregivers of children with cancer<sup>17,18</sup> Providing psychosocial services to children and adolescents with cancer and their caregivers ensures the greatest quality of life for patients and their families during treatment and through survivorship.

Minimum requirements	Service level			
	6	5	4	3
On-site paediatric psychologist(s)/mental health clinicians with experience in managing children with cancer	•	•		
On-site neuropsychologist(s) with experience in managing children with cancer	•	•		
On-site paediatric social workers with experience in managing children with cancer	•	•		
On-site social worker responsible for paediatric patients			•	•
Child and adolescent psychiatry services available to actively participate in caring for children with cancer	•	•	•	
Therapists with training and expertise to provide a comprehensive procedural pain and management program	•	•		
Staff trained in supporting the child and family to cope with medical procedures	•	•	•	•
Participation in education and training programs for health professionals to support the psychosocial needs of patients and their families	•	•	•	
Evidence of educational materials within the service to support children and their families to manage the psychosocial impacts of cancer	•	•		
Capability and resources to provide parent, caregiver and patient education within the health service scope of practice	•	•	•	•
Psychosocial staff attendance at multidisciplinary meetings, with a dedicated agenda to discuss psychosocial issues	•	•		
Access to family support group services	•	•	•	•
Policies for referral to psychological or mental healthcare	•	•	•	•
Evidence of the use of psychosocial assessment screening tools for all new diagnoses	•	•		

### Benefits

Early identification of psychological stressors in patients and their families enables health services to provide more effective therapeutic interventions. An on-site social work service ensures patients and their families have access to financial and practical assistance, counselling and community and peer support programs. Interventions will reduce psychological distress and promote quality of life in patients with a cancer diagnosis, and their families.

## Appendix 9: Minimum radiation oncology requirements for Victorian health services providing paediatric cancer care

### Rationale

Radiotherapy (RT) is an essential part of paediatric oncology care. New methods of delivery, completion of the first generation of paediatric clinical trials involving 3D conformal RT and intensity-modulated RT, and the emergence of proton beam therapy have bolstered the use of RT by decreasing side effects and total dosage without affecting local control of disease. Individualised treatment, concurrent chemotherapy 'sensitisation' and reduction of RT target volumes have been tested in clinical trials with emerging success, arguing its case as a continuing standard of treatment in paediatric oncology. Many centres have a shared agreement between adult and paediatric services for providing RT services, thus the importance of documenting minimal requirements in service and infrastructure is amplified.

### Minimum requirements

Identified radiation oncologist with specific expertise in treating children and adolescents with cancer
Radiation therapist(s) with clinical experience in the delivery of RT to children and adolescents with cancer
Paediatric oncology nursing staff with experience in radiation oncology
Access to child play specialist (or equivalent distractive therapist)
Identified paediatric radiation oncologist lead for cooperative clinical trials purposes
Appropriate technical staff, state-of-the-art equipment and facilities to provide high-quality, ultra-conformal RT, including moulding, 3D-computerised planning and treatment delivery systems
On-site or timely access to paediatric anaesthetic services for providing sedation/general anaesthesia to infants and younger children receiving RT
Child-friendly environment that meets with the RACP standards for the care of children and adolescents in health services, spatially and temporally separated from adult services <sup>7</sup>
On-site access to paediatric emergency and resuscitation guidelines, with appropriate training of staff in paediatric advanced life support
Attendance of the RT team at paediatric cancer service multidisciplinary meetings, as well as established relationships with paediatric medical imaging and palliative care
Compliance with all national legislative requirements for an RT service
All palliative radiation delivered to children remains under the leadership of the level 6 medical multidisciplinary team

### Benefits

Providing optimal RT interventions for each patient reduces treatment-related morbidity and improves outcomes. Improved compliance with, and timely access to, therapy with improved linkages with children's cancer services is also of benefit. Full documentation of interventions for late-effects support and meeting the demands of patients enrolled on clinical trials is a priority.

This is a high level summary of the minimum radiation oncology requirements. A comprehensive service capability framework for Victorian health services providing radiation oncology for children and adolescents with cancer is under development.

# Glossary

## Appendix 10: Minimum surgical requirements for Victorian health services providing paediatric cancer care

### Rationale

Nearly all children with a cancer diagnosis will require some degree of surgical intervention in their treatment, such as biopsy and diagnostics, nutritional support, line access and surgical resection. Timed surgical interventions are often part of the planned treatment protocol. Surgery is also often used to support staging and diagnosis. The level of expertise in paediatric neurosurgery has been demonstrated as an important determinant factor in outcomes for children with central nervous system (CNS) tumours.<sup>19</sup> The volume effect in paediatric oncology has also been demonstrated to improve patient outcomes, particularly where surgery is part of a larger multidisciplinary structure, encouraging subspecialty surgical disciplines to be centralised within tertiary referral centres.<sup>6</sup> In lower risk cases, surgery that is protocol-driven may still be a predictive factor in ensuring good outcomes across both high and low volume centres.<sup>20</sup>

Minimum requirements	Service level			
	6	5	4	3
Emergency theatre available 24/7 on site	•	•	•	•
Timely access to urgent operating sessions	•	•		
Dedicated anaesthetic list for bone marrow biopsy and intrathecal therapy	•	•		
Paediatric surgeons and other surgical staff providing care to children with cancer should be part of a paediatric oncology multidisciplinary team meeting structure	•	•		
Definitive surgery and early diagnostic biopsy of children with a suspected or known malignancy should be undertaken by surgeons trained in the paediatric oncology field or other appropriate surgical specialities as defined by the location of the disease	•	•		
Neurosurgical facilities must have access to paediatric intensive care, as well as experienced paediatric anaesthetic staff	•	•		
All planned surgical interventions in solid and CNS tumours should be discussed within a paediatric oncology multidisciplinary team meeting structure and ideally be protocol driven	•	•		
Timely access to surgeons (FRACS or equivalent) with experience in managing children and adolescents with cancer in orthopaedics, urology, neurosurgery, ophthalmology, ENT, plastics and general surgery	•	•		
Postoperative care should be supported by properly trained and experienced paediatric nursing staff, in line with the level of care they are providing	•	•	•	•
Timely access to postoperative support (such as physiotherapy and rehabilitation services), particularly when surgery involves the limbs, head, neck and CNS	•	•		

### Benefits

Children with cancer that have protocol-driven surgery that is discussed within a paediatric oncology multidisciplinary team will have improved outcomes and reduced long-term side effects. These benefits are of particular importance in tumours with a volume effect, such as CNS, bone tumours and sarcomas.

### Biotherapy

'A type of treatment that uses substances made from living organisms to treat disease. These substances may occur naturally in the body or may be made in the laboratory.<sup>21</sup>

### CALD

'Culturally and Linguistically Diverse: refers to the range of different cultures and language groups represented in the population who identify as having particular cultural or linguistic affiliations by virtue of their place of birth, ancestry or ethnic origin, religion, preferred language or language spoken at home.<sup>22</sup>

### Chemotherapy

'A drug or combination of drugs used to destroy malignant cells. It can cure some types of cancer and in some cases it is used to slow the growth of cancer cells or to keep the cancer from spreading to other parts of the body.<sup>23</sup>

### Clinical trials

'Research investigations in which people volunteer to test new treatments, interventions or tests as a means to prevent, detect, treat or manage various diseases or medical conditions.<sup>24</sup>

### Consumer

'A term that can refer to people affected by cancer; patients and potential patients; carers; organisations representing cancer consumer interests; members of the public who are targets of cancer promotion programs; and groups affected in a specific way as a result of cancer policy, treatment or services.<sup>25</sup>

### Critical mass

A minimum number of patients required to sustain a specific healthcare service.

### FACT

Foundation of Accredited Cellular Therapies. A corporation that establishes high-quality standards for using cellular therapies in laboratory and clinical practice.

### FRACS

Fellow of the Royal Australasian College of Surgeons.

### HSCT

Haematopoietic Stem Cell Transplantation. The transplantation of stem cells, derived from bone marrow, peripheral or cord blood, to be used in the treatment of cancer and other diseases.

### Multidisciplinary meeting

'A regularly scheduled meeting of core and invited team members for the purpose of prospective treatment and care planning of newly diagnosed cancer patients as well as those requiring review of treatment plans or palliative care.<sup>26</sup>

### NATA

National Association of Testing Authorities: Authority for ensuring adherence to national standards, with particular reference to compliance in laboratory accreditation.

### On site

'Services located within the institution or adjacent campus.<sup>27</sup>

### PACS

Picture archiving and communication system: Availability to share medical images across sites electronically via a host.

### Paediatric

Within the context of this document, a child or adolescent under the age of 16 years.

### PICS

Paediatric Integrated Cancer Service

### Psychosocial

'Treatment that is intended to address psychological, social and some spiritual needs.<sup>25</sup>

# References

## Referral pathway

'Provide the process or the series of steps to be taken to enable timely referral of individuals to services that will best meet their needs. The referral pathway is ideally developed through a comprehensive and inclusive approach involving all local health services.'<sup>28</sup>

## ROSCP

Regional Outreach and Shared Care Program

## Shared care

'The establishment of pathways through which clients and health professionals in hospital and community settings can collaborate in developing a therapeutic plan that meets the clinical and functional needs of the client.'<sup>29</sup>

## Surveillance

Period of time the healthcare team is looking for signs of relapse and monitoring side effects of treatment for cancer.

## Survivorship

Period beyond surveillance where the healthcare team is looking at the potential late effects of treatment for cancer.

## Telehealth

'The use of telecommunications and information technology to provide access to health assessment, diagnosis, intervention, consultation, supervision and information across distance.'<sup>27</sup>

## Timely access

'Ability to utilise a service or the skills of a suitably qualified person – without difficulty or delay – via a variety of communication mediums. Access may be provided via documented processes with an off-site provider on an inpatient or ambulatory basis.'<sup>27</sup>

1. Thursfield V, Farrugia H 2012, *Cancer in Victoria: childhood cancer 2010*. Cancer Council Victoria, Melbourne.
2. Cantrell, M.A. & Ruble, K 2011, Multidisciplinary care in paediatric oncology, *Journal of Multidisciplinary Healthcare* 1, 4, 171–181.
3. Howard, S., Pedrosa, M., Lins, M., Pedrosa, A., Pui, C., Ribeiro, R.C. & Pedrosa, F. 2004, Establishment of a pediatric oncology program and outcomes of childhood acute lymphoblastic leukemia in a resource poor area, *Journal of the American Medical Association* 291, 20, 2471.
4. Department of Health 2010, *Capability framework for Victorian maternity and newborn services*, State Government of Victoria, Melbourne.
5. Knops, R.R.G., Hulscher, M.E.J.L., Hermens, R.P.M.G., Hilbink-Smolanders, M., Loeffen, J.L., Kollen, W.J.W., Kaspers, G.J.L., Caron, H.N. & Kremer, L.C. 2012, High-quality care for all children with cancer. *Annals of Oncology*. doi:10.1093/annonc/mdl601.
6. Knops, R.R.G., van Dalen, E.C., Mulder, R.L., Leclercq, E., Knijnenburg, S.L., Kaspers, G.J.L., Pieters, R., Caron, H.N. & Kremer, L.C.M. 2013, The volume effect in paediatric oncology: a systematic review. *The Annals of Oncology*. 24, 1749–1753.
7. Royal Australasian College of Physicians 2008, *Standards for the care of children and adolescents in health services*, RACP.
8. College of Intensive Care Medicine of Australia and New Zealand 2011, *Minimum standards for intensive care units*, CICMANZ.
9. Smith, M.A., Siebel, N.L., Altekruze, S.F., Ries, L.A.G., Melbert, D.L., O'Leary, M., Smith, F.O. & Reaman, G.H. 2010, Outcomes for children and adolescents with cancer: challenges for the twenty-first century, *Journal of Clinical Oncology* 28, 15, 2625–2634.
10. O'Leary, M., Krailo, M.O., Anderson, J.R. & Reaman, G.H. 2008, Progress in childhood cancer: 50 years of research collaboration: a report from the Children's Oncology Group. *Seminars in Oncology* 35, 5, 484–493.
11. Hudson, M.M., Ness, K.K., Gurney, J.G., Mulrooney, D.A., Chematilliy, W., Krull, K.R., Green, D.M. & Armstrong, G.T. 2013, Clinical ascertainment of health outcomes among adults treated for childhood cancer, *Journal of the American Medical Association* 309, 22, 2371–2381.
12. Oeffinger, K.C., Mertens, A.C., Sklar, C.A., Kawashima, T., Hudson, M.M., Meadows, A.T., Friedman, D.L., Marina, N., Hobbie, W., Kadan-Lottick, N.S., Schwartz, M.D., Leisenring, S.D. & Robinson, L.L. 2006, Chronic health conditions in adult survivors of childhood cancer, *The New England Journal of Medicine* 355, 1572–1582.
13. Cantrell, M.A. & Ruble, K. 2011. Multidisciplinary care in paediatric oncology. *Journal of Multidisciplinary Healthcare*. 1, 4, 171–181.
14. National Institute for Health and Clinical Excellence 2005, *Guidance on cancer services: improving outcomes in children and young people with cancer: the manual*, NHS, UK.
15. Corrigan, J.J. & Fieg, S.A. 2004, Guidelines for pediatric cancer centres, American Academy of Paediatrics policy statement, *Pediatrics* 113, 1833.
16. Stevens, W.B.C., van Krieken, J.H., Mus, R.D.M., Arens, A.I.J., Mattijssen, V., Oosterveld, M., de Kruijf, F.M., de Vries, F., Koster, A., van der Maazen, R. & Raemaekers, J. 2012, Centralised multi-disciplinary re-evaluation of diagnostic procedures in patients with newly diagnosed hodgkin lymphoma, *Annals of Oncology*. 23, 2676–2681.
17. Gibbins, J., Steinhardt, K. & Beinart, H. 2012, A systematic review of qualitative studies exploring the experience of parents whose child is diagnosed and treated for cancer, *Journal of Pediatric Oncology Nursing* 29, 253–257.
18. Schultz, K.P., Ness, K.K., Whitton, J., Recklitis, C., Zebrack, B., Robinson, L.L., Zeltzer, L. & Mertens, A.C. 2007, Behavioural and social outcomes in adolescent survivors of childhood cancer: a report from the Childhood Cancer Survivor Study, *Journal of Clinical Oncology* 25, 24, 3649–3656.
19. Albright, A.L., Spotsis, R., Homes, E., Zeltzer, P.M., Finaly, J.L., Wisoff, J.H., Berger, M.S., Packer, R.J. & Pollack, I.F. 2000 Correlation of neurosurgical subspecialization with outcomes in children with malignant brain tumours, *Neurosurgery* 47, 4, 879–887.
20. Guitierrez, J.C., Koniaris, L.G., Cheung, M.C., Byrne, M.M., Fischer, A.C. & Sola, J.E. 2009, Cancer care in the pediatric surgical patient: a paradigm to abolish volume outcome disparities in surgery, *Surgery* January, 76–85.
21. National Cancer Institute 2013, NCI dictionary of cancer terms: biotherapy. National Cancer Institute at the National Institute of Health. Online: [www.cancer.gov/dictionary?cdrid=44483](http://www.cancer.gov/dictionary?cdrid=44483), accessed 10 Feb 2014.
22. Department of Human Services 2009, *Cultural responsiveness framework – guidelines for Victorian health services*, State Government of Victoria, Melbourne.
23. Department of Human Services 2008, *Victoria's cancer action plan*, State Government of Victoria, Melbourne.
24. Australian Clinical Trials. 2013. *What is a clinical trial?* Australian Clinical Trials. Online: [www.australianclinicaltrials.gov.au/what-clinical-trial/](http://www.australianclinicaltrials.gov.au/what-clinical-trial/), accessed 10 Feb 2014.
25. Cancer Australia 2013, Annual report 2012–13. Cancer Australia, Government of Australia.
26. Department of Human Services 2006, *Multidisciplinary meeting toolkit*, State Government of Victoria, Melbourne.
27. Queensland Health. 2012. *Clinical services capability framework for public and licensed private health facilities (v3.1)*, Queensland Health, the State of Queensland, Brisbane.
28. General Practice Queensland 2009, *Chronic disease matrix*. General Practice Queensland. Online: [www.gpqld.com.au/page/Programs/Chronic\\_Disease/Division\\_Profile\\_Map/Matrix/](http://www.gpqld.com.au/page/Programs/Chronic_Disease/Division_Profile_Map/Matrix/), accessed 10 Feb 2014.
29. Queensland Government 2009, *Queensland statewide children's health service strategic plan 2010–20*, Queensland Health, Brisbane.

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**Part 2:**  
Evidence guide  
for the service  
capability  
framework

# 1.0 Introduction

This guide provides a summary of the evidence reviewed in the development of this service capability framework for Victorian health services that provide primary treatment and shared care to children with

cancer. The purpose of this review was to gather evidence to support the rationale and recommendations made within the framework.

# 2.0 Contributing evidence in developing the service capability framework

Seven published guidelines supported paediatric oncology service capability as a whole.<sup>1-7</sup> In addition, there is evidence and research that documents the rationale underpinning service recommendations for individual disciplines in paediatric oncology, and these are included in this evidence guide. Collectively, they support and inform the final structure of the framework.

- (i) Developed by the UK National Health Service's National Institute for Health and Clinical Excellence (NICE) in 2005, titled *Guidance on cancer services: Improving outcomes in children and young people with cancer: The manual*.<sup>1</sup> This comprehensive evidence-based guide encompasses all areas of paediatric oncology. This guide has been used to implement a service delivery framework across the UK, and remains the most current version to date.
- (ii) Published in 2004, a policy statement from the American Academy of Pediatrics (AAP) entitled *Guidelines for pediatric cancer centres*.<sup>2</sup> The purpose of this statement was to 'delineate the personnel and facilities that are required to provide state of the art care' in paediatric oncology.
- (iii) The Children's Oncology Group's (COG) personnel and service requirements for COG member institutions.<sup>3</sup> This guideline was based on the 2004 guidelines from the AAP, and was revised in 2012.

- (iv) Standards of treatment and care guideline from the International Confederation of Childhood Cancer Parent Organizations,<sup>4</sup> sponsored by the International Society of Paediatric Oncology (SIOP). This guideline was developed to guide services in providing family-centred care in paediatric oncology.
- (v) Developed by SIOP Europe,<sup>5</sup> this guideline defines the minimum standards of care recommended for paediatric oncology in targeted EU member states but acknowledged that it had potential for widespread use.
- (vi) A service capability framework published by the Queensland Paediatric Haematology Oncology Network (QPHON).<sup>6</sup> The children's cancer services 'module' was designed to describe service requirements for the overall care of children with cancer, and focused on the model of shared care. The Victorian SCF closely reflects this module.
- (vii) A Dutch paper offering a list of recommendations for providing high-quality care to children with cancer, prioritised by a panel of paediatric oncology experts from all centres in the Netherlands.<sup>7</sup> The recommendations were developed from an extensive search of the literature.

# 3.0 Evidence for rationale and requirements in specialised services

## 3.1 Service requirements for oncology pharmacy

The minimum requirements for a paediatric oncology pharmacy service were drawn from several position statements and guidelines, including NICE,<sup>1</sup> AAP<sup>2</sup> and COG,<sup>2</sup> as well as the work from organisations such as the American Society of Clinical Oncology, The Clinical Oncological Society of Australia, the UK National Chemotherapy Advisory Group and the Society of Hospital Pharmacists of Australia.<sup>8-17</sup>

## 3.2 Service requirements for managing the late effects of cancer therapy

There is high-quality work published by the Childhood Cancer Survivor Study Group in North America supporting the need for a late effects service.<sup>18-23</sup> The minimum requirements for providing a late effects service, including the measurement of interventions, has been derived from literature such as research into the outcomes of the COG late effects guidelines and national guidelines from the UK and North America.<sup>24-30</sup> Also utilised is the Livestrong 'Essential Elements of Survivorship Care Meeting', held in Washington DC in 2011, comprising 150 leaders in the field (including Australian representation) who, together, documented a consensus on the requirements of a late effects service, under a 'must', 'should' and 'strive' model.<sup>31</sup>

## 3.3 Service requirements for laboratory

The published guidelines from centres including COG, NICE and AAP were used to outline the minimum laboratory services. Pathology services are also accredited through national bodies such as the National Association of Testing Authorities Australia (NATA)<sup>32</sup> and the Royal College of Pathologists of Australasia (RCPA).<sup>33</sup> Some papers recommended the majority of these services be collocated in the primary treatment centre, enabling rapid diagnosis and avoiding delays to treatment.<sup>1-3, 5, 34, 35</sup>

## 3.4 Service requirements for medical imaging

Support for minimum recommendations for a medical imaging service were adopted from the main published guidelines, as well as a joint taskforce report from COG, and a feature article from the Radiology Clinics of North America.<sup>1-3, 5, 36-38</sup>

## 3.5 Service requirements for radiation oncology

In addition to the major guidelines, the Royal College of Radiologists (UK) and the QPHON have defined the minimum needs of a radiation oncology service for children.<sup>1-3, 5, 39-41</sup> The COG also produced a five-year blueprint for radiation oncology, published as a series of articles in 2013.<sup>40</sup> Because of the nature of most services being collocated in adult hospitals, it is important for the service to adhere to guiding principles of caring for children in healthcare settings.<sup>42</sup>

## 3.6 Service requirements for multidisciplinary meeting structure

The rationale for using a multidisciplinary meeting in cancer care has been well documented.<sup>1-5, 43-48</sup> Further definition of a multidisciplinary meeting to discuss care of all patients at a central meeting has also been shown to improve outcomes.<sup>46</sup> Minimum requirements for establishing a multidisciplinary meeting have also been extensively published to support its use in paediatric oncology care.<sup>47-53</sup>

## 3.7 Service requirements for nursing

Through the work of collaborative groups such as the Association of Pediatric Hematology Oncology Nurses, the COG, NICE guidelines and the Australian New Zealand Haematology Oncology Group (ANZCHOG), there is evidence to support defining the service requirements for paediatric oncology nursing.<sup>1-5, 54-62</sup>

# References

## 3.8 Service requirements for clinical trials

The COG defines the minimum requirements for a clinical trials unit in paediatric oncology.<sup>63</sup> The COG also has a defined five-year blueprint for clinical trials.<sup>64</sup> NICE, AAP and the Australian Therapeutic Goods and Administration service have listed demands for a trials service.<sup>1–3, 5, 65–67</sup> Clinical trials in Victoria are required to adhere to the requirements of the Victorian Health Consultative Council for clinical trials.<sup>68</sup>

## 3.9 Service requirements for psychosocial services

There is published work examining the psychosocial impact of a cancer diagnosis on the lives of patients, siblings, parents and caregivers, identifying the need for a service to provide early identification and interventions.<sup>69–77</sup> Minimum requirements for psychosocial services are defined within the COG, NICE and AAP<sup>1–3</sup> guidelines, in addition to SIOP.<sup>4,5</sup>

## 3.10 Minimum service requirements for surgical services

Data outlining outcomes for high-volume centres following cancer surgery is well documented,<sup>78</sup> although not well translated to the paediatric model.<sup>79</sup> However, the case for similar outcomes across low- and high-volume centres may be attributed to increased use of protocol-based therapy in the paediatric setting versus the adult setting.<sup>80</sup> High-volume centres also provide a more multidisciplinary team approach to management with greater overall outcomes.<sup>34</sup> High-volume centres have been shown to correlate with improved outcomes in neurosurgical interventions for paediatric central nervous system tumours.<sup>81</sup> Minimum requirements for surgical services are defined in the COG and AAP guidance, as well as work from the Society of British Neurological Surgeons<sup>82, 83</sup> for neurosurgery requirements.

## 3.11 Miscellaneous

Other elements of service capability are addressed by Department of Health and Royal Australasian College of Physicians papers and policies such as managing palliative care,<sup>84</sup> intensive care recommendations<sup>85</sup> and further work on the care of children in hospital.<sup>86</sup> Infection control guidelines and recommendations are also nationally based and included in this evidence guide.<sup>87,88</sup> The rationale for the benefits of shared care arrangements has also been addressed.<sup>89</sup> Accreditation guidelines for transplant care under the Foundation for the Accreditation of Cellular Therapy (FACT) are used to define a stem cell transplant service.<sup>90</sup>

1. National Institute for Health and Clinical Excellence 2005, Guidance on cancer services: improving outcomes in children and young people with cancer: the manual. NHS.
2. Corrigan, JJ & Fieg, S.A. 2004, Guidelines for pediatric cancer centres, American Academy of Paediatrics Policy Statement. *Pediatrics*. 113, 1833.
3. Children's Oncology Group. 2012. Personnel and service requirements for member institutions. Online: [https://members.childrensoncologygroup.org/files/admin/MI\\_PersonServiceRequirementsFINAL.pdf](https://members.childrensoncologygroup.org/files/admin/MI_PersonServiceRequirementsFINAL.pdf), accessed 3 Oct 2013.
4. International Society of Pediatric Oncology (SIOP) 2002, ICCPCO childhood cancer guidelines for standards of treatment and care, SIOP.
5. The European Society for Pediatric Oncology 2009, *European standards of care for children with cancer*. Online: [www.siope.eu/01/MyDocuments/European\\_Standards\\_final\\_2011.pdf](http://www.siope.eu/01/MyDocuments/European_Standards_final_2011.pdf) <accessed 24.09.2013>.
6. Queensland Health 2011, *Children's Cancer Services: Clinical services capability framework (v.3.1)*. [www.health.qld.gov.au/cscf/docs/19-childcancer.pdf](http://www.health.qld.gov.au/cscf/docs/19-childcancer.pdf), accessed 2 Aug 2013.
7. Knops, R.R.G., Hulscher, M.E.J.L., Hermens, R.P.M.G., Hilbink-Smolters, M., Loeffen, J.L., Kollen, W.J.W., Kaspers, G.J.L., Caron, H.N. & Kremer, L.C. 2012, High-quality care for all children with cancer. *Annals of Oncology*. Doi:10.1093/annonc/mdr601.
8. Baggot, C., Fochtmann, D., Foley, G.V. & Kelly, K.P. 2011, *Nursing care of children and adolescents with cancer and blood disorders*. Association of Pediatric Hematology/Oncology Nurses (4th edn). Glenview, IL.
9. American Society of Health-System Pharmacists 2002, ASHP guidelines on preventing medication errors with antineoplastic agents, *American Journal of Health System Pharmacy* 59, 1648–1668.
10. American Society of Clinical Oncology 2004, Criteria for facilities and personnel for the administration of parenteral systemic antineoplastic therapy, *Journal of Clinical Oncology* 22, 4613–4615.
11. Carrington, C., Stone, L., Koczwara, B., Searle, C., Siderov, J., Stevenson, B., Michael, M., Hyde, S., Booth, A. & Rushton, S. 2010, The Clinical Oncological Society of Australia (COSA) Guidelines for the safe prescribing, dispensing and administration of cancer chemotherapy, *Asia-Pacific Journal of Clinical Oncology* 6, 220–237.
12. National Chemotherapy Advisory Group 2009, *Chemotherapy Services in England: Ensuring Quality and Safety*. A report from the National Chemotherapy Advisory Group.
13. WorkSafe Victoria 2003, *Handling cytotoxic drugs in the workplace*, Victorian Workcover Authority, Melbourne.
14. The Society of Hospital Pharmacists of Australia 2002, Standards of practice for the provision of clinical oncology pharmacy services, *Journal of Pharmacy Practice and Research* 32, 2, 115–118.
15. The Society of Hospital Pharmacists of Australia 2007, Standards of practice for the provision of oral chemotherapy for the treatment of cancer, *Journal of Pharmacy Practice and Research* 32, 2, 149–152.
16. The Society of Hospital Pharmacists of Australia 2005, Standards of practice for the safe handling of cytotoxic drugs in pharmacy departments, *Journal of Pharmacy Practice and Research* 35, 1, 44–52.
17. The Society of Hospital Pharmacists of Australia 2002, SHPA Standards of practice for the provision of clinical oncology pharmacy services, *Journal of Pharmacy Practice and Research* 32, 2, 115–118.
18. Robison, L.L., Armstrong, G.T., Boice, J.D., Chow, E.J., Davies, S., Donaldson, S.S., Green, D.M., Hammond, S., Meadows, A.T., Mertens, A.C., Mulvihill, J.J., Nathan, P.C., Neglia, J.P., Packer, R.J., Rajaraman, P., Sklar, C.A., Stovall, M., Strong, L.C., Yasui, Y. & Zeltzer, L.K. 2009, The Childhood Cancer Survivor study: A National Cancer Institute-supported resource for outcome and intervention research, *Journal of Clinical Oncology* 27, 14, 2308–2318.
19. Prasad, P.K., Bowles, T. & Friedman, D.L. 2010, Is there a role for a specialized follow-up clinic for survivors of pediatric cancer? *Cancer Treatment Reviews* 36, 372–376.
20. Armenian, S.H., Landier, W., Hudson, M.M., Robison, L.L. & Bhatia, S. 2013, Children Oncology Group's 2013 Blueprint for research: survivorship and outcomes, *Pediatric Blood and Cancer* 60, 1063–1068.
21. Hudson, M.M., Ness, K.K., Gurney, J.G., Mulrooney, D.A., Chemaitilly, W., Krull, K.R., Green, D.M. & Armstrong, G.T. 2013, Clinical ascertainment of health outcomes among adults treated for childhood cancer, *Journal of the American Medical Association* 309, 22, 2371–2381.
22. Skinner, R. & Oeffinger, K.C. 2013, developing international consensus for late effects screening and guidance, *Current Opinion in Supportive and Palliative Care* 7, 303–308.
23. Oeffinger, K.C., Mertens, A.C., Sklar, C.A., Kawashima, T., Hudson, M.M., Meadows, A.T., Friedman, D.L., Marina, N., Hobbie, W., Kadan-Lottick, N.S., Schwartz, M.D., Leisenring, S.D. & Robinson, L.L. 2006, Chronic health conditions in adult survivors of childhood cancer, *The New England Journal of Medicine* 355, 1572–1582.
24. Children's Oncology Group 2007, *Establishing and enhancing services for childhood cancer survivors: Long-Term Follow-up Program resource guide*, Children's Oncology Group. Online: [www.survivorshipguidelines.org/](http://www.survivorshipguidelines.org/), accessed 29 Aug 2013.
25. Nathan, P.C., Patel, S.K., Dilley, K., Goldsby, R., Harvey, J., Jacobsen, C., Kadan-Lottick, N., McKinley, K., Millham, A.K., Noore, I., Ocku, M.F., Woodman, C.L., Brouwers, P. & Armstrong, F.D. 2007, Guidelines for the identification of, advocacy for, and interventions in neurocognitive problems in survivors of childhood cancer, *Archives of Pediatric Adolescent Medicine* 161, 8, 798–806.
26. Friedman, D.L., Freyer, D.R. & Levitt, G.A. 2006, Models of care for survivors of childhood cancer, *Pediatric Blood and Cancer* 46, 159–168.
27. Landier, W.L., Armenian, S.H., Lee, J., Thomas, O., Wong, F.L., Francisco, L., Herrera, C., Kasper, C., Wilson, K.D., Zomorodi, M. & Bhatia, S. 2012, Yield of screening for long-term complications using the Children's Oncology Group Long-Term Follow-Up guidelines, *Journal of Clinical Oncology* 30, 35, 4401–4408.
28. Firth, E.R., Davies, N. & Skinner, R. 2013, Views of childhood cancer survivors and their families on the provision and format of a treatment summary, *Journal of Pediatric Hematology Oncology* 35, 3, 193–196.

29. Skinner R, Wallace WHB, Levitt GA. 2005, *Therapy based long-term follow-up: practice statement*, United Kingdom Children's Cancer Study Group (LateEffects Group) [www.cclg.org.uk/dynamic\\_files/LTFU-full.pdf](http://www.cclg.org.uk/dynamic_files/LTFU-full.pdf), accessed 13 Sep 2013.
30. Scottish Collegiate Guidelines Network 2013, Long-term follow-up of survivors of childhood cancer. *A national clinical guideline*. Online: [www.sign.ac.uk/pdf/sign132.pdf](http://www.sign.ac.uk/pdf/sign132.pdf), accessed 13 Sep 2013
31. Livestrong 2011, *The Livestrong essential elements of survivorship care: definitions and recommendations*. Online: [www.livestrong.org/What-We-Do/Our-Approach/Reports-Findings/Essential-Elements-Brief](http://www.livestrong.org/What-We-Do/Our-Approach/Reports-Findings/Essential-Elements-Brief), accessed 09 Oct 2013.
32. National Association of Testing Authorities Australia (NATA). Online: [www.nata.com.au](http://www.nata.com.au), accessed 15 Oct 2013.
33. The Royal College of Pathologists Australia (RCPA). Online: [www.rcpa.edu.au](http://www.rcpa.edu.au), accessed 15 Oct 2013.
34. Knops, R.R.G., van Dalen, E.C., Mulder, R.L., Leclercq, E., Knijnenburg, S.L., Kaspers, G.J.L., Pieters, R., Caron, H.N. & Kremer, L.C.M. 2013, The volume effect in paediatric oncology: a systematic review, *The Annals of Oncology* 24, 1749–1753.
35. Dang-Tan, T., Trotter, H., Mery, L.S., Morrison, H.J., Barr, R.D., Greenberg, M.L. & Franco, E.L. 2008 Delays in diagnosis and treatment among children and adolescents with cancer in Canada, *Pediatric Blood and Cancer* 51, 468–474.
36. Weiser, D.A., Kaste, S.C., Siegel, M.J. & Adamson, P. 2013, Review: Imaging in childhood cancer: a Society for Pediatric Radiology and Children's Oncology Group Joint Task Force report, *Pediatric Blood and Cancer* 60:1253–1260.
37. States, L.J. & Meyer, J.S. 2011, Imaging modalities in pediatric oncology, *Radiology Clinics of North America* 49, 579–588.
38. Wallace, A.B. 2010, The implementation of diagnostic reference levels to Australian radiology practice, *Journal of Medical Imaging and Radiation Oncology* 54, 5, 465–471.
39. The Royal College of Radiologists, Society and College of Radiographers, Children's Cancer and Leukaemia Group 2012, *Good practice guide for paediatric radiotherapy*, The Royal College of Radiologists.
40. Merchant, T.E., Hodgson, D., Laack, N.N., Wolden, S., Indelicato, D.J. & Kalapurakal, J.A. 2013, Children's Oncology Group's 2013 Blueprint for research: radiation oncology, *Pediatric Blood and Cancer* 60, 1037–1043.
41. Queensland Health 2011, *Children's radiation oncology services: clinical services capability framework*. Online: [www.health.qld.gov.au/cscf/docs/21\\_childradonc.pdf](http://www.health.qld.gov.au/cscf/docs/21_childradonc.pdf), accessed 5 Aug 13.
42. The Royal Australasian College of Physicians 2008, *Standards for the care of children and adolescents in health services*. Online: [www.racp.edu.au](http://www.racp.edu.au), accessed 5 Aug 2013.
43. Meadows, A.T., Kramer, S., Hopson, R., Lustbader, E., Jarret, P. & Evans, A.E. 1983, Survival in childhood acute lymphocytic leukaemia: effect of protocol and place of treatment, *Cancer Invest* 1, 49–55.
44. Kramer, S., Meadows, A.T., Pastore, G., Jarret, P. & Bruce, D. 1984. Influence of place of treatment on diagnosis, treatment and survival in three paediatric solid tumours, *Journal of Clinical Oncology* 2, 917–923.
45. Cantrell, M.A. & Ruble, K. 2011 Multidisciplinary care in paediatric oncology, *Journal of Multidisciplinary Healthcare* 1, 4, 171–181.
46. Stevens, W.B.C., van Krieken, J.H., Mus, R.D.M., Arens, A.I.J., Mattijssen, V., Oosterveld, M., de Kruijf, F.M., de Vries, F., Koster, A., van der Maazen, R. & Raemaekers, J. 2012, Centralised multi-disciplinary re-evaluation of diagnostic procedures in patients with newly diagnosed hodgkin lymphoma, *Annals of Oncology* 23, 2676–2681.
47. Howard, S., Pedrosa, M., Lins, M, Pedrosa, A., Pui, C., Ribeiro, R.C. & Pedrosa, F. 2004, Establishment of a pediatric oncology program and outcomes of childhood acute lymphoblastic leukemia in a resource poor area, *Journal of the American Medical Association* 291, 20, 2471.
48. National Cancer Action Team 2013, *National Cancer Peer Review Programme: Manual for cancer services*, Children's Cancer Measures (v.3). National Health Service. Online: [www.cquins.nhs.uk/?menu=resources](http://www.cquins.nhs.uk/?menu=resources), accessed 1 Aug 2013.
49. Northern Ireland Department of Health, Social Service and Public Safety 2007 *Service framework for cancer prevention, treatment and care*. Online: [www.dhsspsni.gov.uk/service\\_framework\\_for\\_cancer\\_prevention\\_treatment\\_and\\_care\\_-\\_full\\_document.pdf](http://www.dhsspsni.gov.uk/service_framework_for_cancer_prevention_treatment_and_care_-_full_document.pdf), accessed 2 Aug 2013.
50. Ministry of Health 2012, *Guidance for implementing high-quality multidisciplinary meetings: achieving best practice cancer care*, Ministry of Health, Wellington. Online: [www.health.govt.nz/publication/guidance-implementing-high-quality-multidisciplinary-meetings](http://www.health.govt.nz/publication/guidance-implementing-high-quality-multidisciplinary-meetings), accessed 2 Aug 2013.
51. National Breast Cancer Centre 2005, *Multidisciplinary meetings for cancer care: a guide for health service providers*, National Breast Cancer Centre, Camperdown. Online: [http://canceraustralia.gov.au/sites/default/files/publications/mdm-mdc-meeting-for-cancer-care\\_504af02d7368d.pdf](http://canceraustralia.gov.au/sites/default/files/publications/mdm-mdc-meeting-for-cancer-care_504af02d7368d.pdf), accessed 2 Aug 2013.
52. Department of Human Services 2007, *Achieving best practice cancer care: a guide for implementing multidisciplinary care*, State Government of Victoria, Melbourne.
53. Department of Health 2011, *Multidisciplinary team meetings in Victoria: monitoring progress towards achieving best practice cancer care*, State Government of Victoria, Melbourne. Online: [www.health.vic.gov.au/cancer](http://www.health.vic.gov.au/cancer), accessed 14 Oct 2013.
54. Landier, W., Leonard, M. & Ruccione, K.S. 2013, Children's Oncology Group's 2013 Blueprint for research: nursing discipline, *Pediatric Blood and Cancer* 60, 1031–1036.
55. Cancer Nurses Society of Australia 2010, *CNSA position statement on the minimum education requirements for nurses involved in the administration of anti-cancer drugs within the oncology and Australian Confederation of Paediatric and Child Health Nurses 2006*. Position statement: minimum standards for nurses caring for children and young people. Online: [www.accypn.org](http://www.accypn.org), accessed 21 Aug 2013.
56. APHON 2008, *APHON position paper on ambulatory pediatric hematology oncology nursing practice*, Association of Pediatric Hematology Oncology Nurses. Online: [www.aphon.org](http://www.aphon.org), accessed 20 Aug 2013.
57. APHON 2009, *APHON position paper on educating the pediatric hematology oncology nurse*, Association of Pediatric Hematology Oncology Nurses. Online: [www.aphon.org](http://www.aphon.org), accessed 20 Aug 2013.
58. APHON 2007 *Pediatric oncology nursing: scope and standards of practice*, Association of Pediatric Hematology Oncology Nurses, Glenview IL.
59. ANZCHOG Nurses Group 2011, *Australian and New Zealand Childhood Haematology and Oncology Group nursing position statement for minimum education and safety in the administration of anti-cancer therapy to children and adolescents with cancer*.
60. Cancer Nurses Society of Australia 2010, *CNSA position statement on the minimum safety requirements for nurses involved in the administration of anti-cancer drugs within the oncology and non-oncology setting*. Online: [www.cnsa.org.au](http://www.cnsa.org.au), accessed 19 Aug 2013.
61. Cancer Nurses Society of Australia 2010, *CNSA position statement on the minimum education requirements for nurses involved in the administration of anti-cancer drugs within the oncology and non-oncology setting*. Online: [www.cnsa.org.au](http://www.cnsa.org.au), accessed 19 Aug 2013.
62. Carrington, C., Stone, L., Koczvara, B., Searle, C., Siderov, J., Stevenson, B., Michael, M., Hyde, S., Booth, A. & Rushton, S. 2010, The Clinical Oncological Society of Australia (COSA) Guidelines for the safe prescribing, dispensing and administration of cancer chemotherapy, *Asia-Pacific Journal of Clinical Oncology* 6, 220–237. Online: [www.cnsa.org.au](http://www.cnsa.org.au), accessed 19 Aug 2013.
63. Children's Oncology Group 2012, *Requirements for a cooperative group clinical research office*. Online: <https://members.childroncologygroup.org/files/disc/cra/newcras/7RequirementsCooperativeGRO.pdf>, accessed 29 Jul 2013.
64. Adamson, P. 2013, The Children's Oncology Group's 2013 Five-year blueprint for research, *Pediatric Blood and Cancer* 60, 955–956.
65. Smith, M.A., Siebel, N.L., Altekruze, S.F., Ries, L.A.G., Melbert, D.L., O'Leary, M., Smith, F.O. & Reaman, G.H. 2010, Outcomes for children and adolescents with cancer: challenges for the twenty-first century, *Journal of Clinical Oncology* 28, 15, 2625–2634.
66. O'Leary, M., Krailo, M.O., Anderson, J.R. & Reaman, G.H. 2008, Progress in childhood cancer: 50 years of research collaboration, a report from the Children's Oncology Group, *Seminars in Oncology* 35, 5, 484–493.
67. Therapeutic Goods Administration 2006, *The Australian clinical trial handbook: a simple, practical guide to the conduct of clinical trials to international standards of good clinical practice (GCP) in the Australian context*, Commonwealth of Australia.
68. Department of Health 2013, *Consultative Council for Clinical Trials research*. Online: [www.health.vic.gov.au/clinicaltrials/governance.htm](http://www.health.vic.gov.au/clinicaltrials/governance.htm), accessed 21 Mar 2013.
69. Long, K.A. & Marsland, A.L. 2011, Family adjustment to childhood cancer: a systematic review, *Clinical Child and Family Psychology Review* 14, 57–88.
70. Buchbinder, D., Casillas, J., Krull, K.R., Goodman, P., Leisenring, W., Recklitis, C., Alderfer, M.A., Robison, L.L., Armstrong, G.T., Kunin-Batson, A., Stuber, M. & Zeltzer, L.K. 2011, Psychological outcomes of siblings of cancer survivors: a report from the Childhood Cancer Survivor Study, *Psychooncology* 20, 12, 1259–1268.
71. Gibbins, J., Steinhardt, K. & Beinart, H. 2012, A systematic review of qualitative studies exploring the experience of parents whose child is diagnosed and treated for cancer, *Journal of Pediatric Oncology Nursing* 29, 253–257.
72. Manne, S., DuHamel, K., Ostroff, J., Parsons, S., Martini, D.R., Williams, S.E., Lee, M., Sexon, S., Austin, J., Difede, J., Rini, C. & Redd, W.H. 2004, Anxiety, depressive and posttraumatic stress disorders among mothers of pediatric survivors of hematopoietic stem cell transplantation, *Pediatrics* 113, 1700–1708.
73. Noll, R.B., Patel, S.K., Embry, L.E., Hardy, K.K., Pelletier, W., Annett, R.D., Patenaude, A., Lown, E.A., Sands, S.A. & Barakat, L.P. 2013, Children's Oncology Group's 2013 Blueprint for Research: Behavioural Science, *Pediatric Blood and Cancer* 60, 1048–1054.
74. Robinson, L.R., Armstrong, G.T., Boice, J.D., Chow, E.J., Davies, S.M., Donaldson, S.S., Green, D.M., Hammond, S., Meadows, A.T., Mertens, A.C., Mulvihill, J.J., Nathan, P.C., Neglia, J.P., Packer, R.J., Rajaraman, P., Sklar, C.A., Stovall, M., Strong, L.C., Yasui, Y. & Zeltzer, L.K. 2009, The Childhood Cancer Survivor Study: a national cancer institute-supported resource for outcome and intervention research, *Journal of Clinical Oncology* 27, 14, 2308–2318.
75. Schultz, K.P., Ness, K.K., Whitton, J., Recklitis, C., Zebrack, B., Robinson, L.L., Zeltzer, L. & Mertens, A.C. 2007, Behavioural and social outcomes in adolescent survivors of childhood cancer: a report from the Childhood Cancer Survivor Study, *Journal of Clinical Oncology* 25, 24, 3649–3656.
76. Zebrack, B.J., Zevon, M.A., Turk, N., Nagarajan, R., Whitton, J., Robison, L.L. & Zeltzer, L.K. 2007, Psychological distress in long-term survivors of solid tumors diagnosed in childhood: a report from the Childhood Cancer Survivor Study, *Pediatric Blood and Cancer* 49, 47–51.
77. Zeltzer, L.K., Recklitis, C., Buchbinder, D., Zebrack, B., Casillas, J., Tsao, J.C.I., Lu, Q. & Krull, K. 2009, Psychological status in childhood cancer survivors: a report from the Childhood Cancer Survivor Study, *Journal of Clinical Oncology* 27, 14, 2396–2404.
78. Birkmeyer, J.D., Sun, Y., Wong, S.L. & Stukel, T.A. 2007, Hospital volume and late survival after cancer surgery, *Annals of Surgery* 245, 777–783.
79. Axt, J.R., Murphy, A.J., Arbogast, P.G. & Lovvorn, H.N. 2012, Volume-outcome effects for children undergoing resection of renal malignancies, *Journal of Surgical Research*. E27–E33.
80. Guitierrez, J.C., Koniaris, L.G., Cheung, M.C., Byrne, M.M., Fischer, A.C. & Sola, J.E. 2009, Cancer care in the pediatric surgical patient: a paradigm to abolish volume outcome disparities in surgery, *Surgery*, January, 76–85.
81. Albright, A.L., Spoto, R., Homes, E., Zeltzer, P.M., Finaly, J.L., Wisoff, J.H., Berger, M.S., Packer, R.J. & Pollack, I.F. 2000, Correlation of neurosurgical subspecialization with outcomes in children with malignant brain tumours, *Neurosurgery* 47, 4, 879–887.
82. Chumas, P., Pople, I., Mallucci, C., Steers, J. & Crimmins, D. 2008, British paediatric neurosurgery – a time for change? *British Journal of Neurosurgery* 22, 6, 719–728

83. Chumas, P., Hardy, D., Hockley, A., Lang, D., Leggate, J., May, P. & Steers, J. 2002, Safe paediatric neurosurgery 2001, Society of British Neurological Surgeons Working Group, *British Journal of Neurosurgery* 16, 3, 208–210.
84. Department of Human Services 2008, *Strengthening care for children with a life threatening condition: a policy for health, palliative care, disability, children's services and community care providers*, 2008–2015. State Government of Victoria, Melbourne. Online: [www.health.vic.gov.au/palliativecare/documents/strengthencare-policy.pdf](http://www.health.vic.gov.au/palliativecare/documents/strengthencare-policy.pdf), accessed 10 Oct 2013.
85. College of Intensive Care Medicine of Australia and New Zealand 2011, *Minimum standards for intensive care units*. Online: [www.cicm.org.au/policydocs.php](http://www.cicm.org.au/policydocs.php), accessed 10 Oct 2013.
86. Royal Australasian College of Physicians 2008, *Standards for the care of children and adolescents in health services*. Online: [www.racp.edu.au](http://www.racp.edu.au), accessed 10 Oct 2013.
87. National Health and Medical Research Council 2013, *NHMRC recommendations on influenza vaccinations*. Online: [www.health.gov.au/internet/main/publishing.nsf/Content/cda-surveil-ozflu-flunhmrc.htm](http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-surveil-ozflu-flunhmrc.htm), accessed 13 Oct 2013.
88. Grayson, M., Russo, P., Ryan, K., Havers, S. & Heard, K. (eds) 2013, *Hand Hygiene Australia*. Online: [www.hha.org.au/UserFiles/file/Manual/HHAManual\\_2010-11-23.pdf](http://www.hha.org.au/UserFiles/file/Manual/HHAManual_2010-11-23.pdf), accessed 14 Oct 2013.
89. Nielsen, J.D., Palshof, T., Mainz, Jensen, A.B. & Olesen, F. 2003, Randomized controlled trial of a shared care programme for newly referred cancer patients: bridging the gap between general practice and hospital, *Quality and Safety in Healthcare* 12, 263–272.
90. Foundation for the Accreditation of Cellular Therapy 2012, *International standards for cellular therapy product collection, processing and administration* (5th edn). Online: [www.factwebsite.org](http://www.factwebsite.org), accessed 13 Oct 2013.

## Paediatric Integrated Cancer Service

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