

Queensland Youth Cancer Service Review

An in-depth review of the state-wide service for
15-25yrs olds diagnosed with cancer

Trends in diagnoses, treatment and access
2016-2018



Acknowledgements

The Queensland Youth Cancer report has been developed under the auspices of the Queensland Cancer Control Safety and Quality Partnership (The Partnership). The members of The Partnership include: Professor David E Theile AO (Chair), Professor Joanne Aitken, Dr Marie-Frances Burke, Aniko Cooper, Professor Kwun Fong, Adjunct Professor Liz Kenny AO, Shoni Philpot, Professor Mark Smithers, Professor Euan Walpole, Associate Professor David Wyld, Dr Hazel Harden and Professor Keith McNeil.

The Youth Cancer Subcommittee was established in 2015 as a Subcommittee of The Partnership to examine and improve outcomes for young people who have been diagnosed with cancer across Queensland - an approach which has never been adopted for in Queensland.

We wish to thank members of the Youth Cancer Subcommittee Rick Walker (Chair), Po Inglis, Ashleigh Sullivan and Lucy Holland for reviewing the data and providing valuable comments. We would also like to thank Roslyn Henny for her contribution.

The report was prepared by Danica Cossio, Pardeep Dhanda, Nancy Tran and the Queensland Cancer Control Analysis Team (QCCAT).

This report was endorsed by the Strategic Advisory Committee - Qld Youth Cancer Service on 17th April 2020.

Suggested citation:

Queensland Government. Queensland Youth Cancer Service, trends in diagnosis, treatment and access, 2016-18. Queensland Health, Brisbane, 2020

Copyright protects this publication. However, the Queensland Government has no objection to this material being reproduced with acknowledgement, except for commercial purposes.

Permission to reproduce for commercial purposes should be sought from:

Senior Director

Queensland Cancer Control Analysis Team, Cancer Alliance Queensland

Burke Street Centre, Level 1, B2, 2 Burke St

Woolloongabba QLD 4102

Date published: April 2020

© The State of Queensland

Queensland Health

Table of Contents

What is the Queensland Youth Cancer Service Report?	5
Where has the data come from?	5
Executive summary	6
Key Findings	7
0 Epidemiological overview	8
0.1 Cancer incidence and mortality rates by sex	9
0.2 Most common cancers by sex	10
0.3 Survival	10
1 Diagnosis and treatment	11
1.1 Queensland Youth Cancer Review	12
1.2 Characteristics of youths with cancer	13
1.3 Treatment	14
1.4 Queenslanders receiving surgery by AIHW Peer Group	18
1.5 Queenslanders receiving radiation therapy by AIHW Peer Group	19
1.6 Queenslanders receiving IV systemic therapy by AIHW Peer Group	20
1.7 Treatment flows	21
1.8 Out-flows	22
2 Access to quality cancer care	23
2.1 Time from diagnosis to QYCS review	24
2.2 Hospital stay	24
2.3 Median days from diagnosis to first treatment	25
2.4 Median days to first surgery	26
2.5 Median days to first radiation therapy	27
2.6 Median days to first concurrent RT & IVST	28
2.7 Median days to first IV systemic therapy	29
2.8 Socio-economically disadvantaged	30
2.9 Remoteness	31
3 Multidisciplinary Team Review	32
3.1 MDT by cancer type	33
3.2 Characteristics of cancer patients	37
3.3 MDT by Hospital and Health Service (HHS) of residence	39
Appendix	41
Appendix 1 Cancer groupings	42
Appendix 2 Patient cohort ICD-10-AM codes	45

Appendix 3 Indicator calculations	48
Appendix 4 AIHW Peer Groups	49
References	51
Method	52
Glossary.....	53

What is the Queensland Youth Cancer Service Report?

The Queensland Youth Cancer Service (QYCS) report was commissioned by the QYCS to provide insight into trends in diagnosis, treatment and access to quality care for youths diagnosed with cancer. The report has been developed by the Cancer Alliance Queensland (CAQ), lead clinicians and relevant persons under the auspices of the Queensland Cancer Control Safety and Quality Partnership (The Partnership). CAQ supports a clinician-led, safety and quality program for cancer across Queensland. The Partnership was gazetted as a quality assurance committee under Part 6, Division 1 of the Hospital and Health Boards Act 2011 in 2004. A key role of the Partnership is to provide cancer clinicians, Hospital and Health Services (HHS), hospitals, treatment facilities and Queensland Health with cancer information and tools to deliver the best patient care.

The Queensland Youth Cancer Service report is a tool for reviewing and comparing information on the safety and quality of cancer treatment and outcomes. The Partnership has prepared Queensland Youth Cancer Service report to assist cancer clinicians and administrators to improve patient care. In some cases, it may prompt a change in the delivery and organisation of cancer services to improve health outcomes and performance. The Queensland Youth Cancer Service report includes public and private cancer care services.

Where has the data come from?

Since 2004 QCCAT have compiled and analysed a vast amount of information about cancer incidence, mortality, treatment, and survival. Key to CAQ's program of work is the ability to match and link population-based cancer information on an individual patient basis. This matched and linked data is housed in the Queensland Oncology Repository (QOR), a resource managed by the Qld Cancer Control Analysis Team (QCCAT). This centralised repository compiles and collates data from a range of source systems including the Queensland Cancer Register, private and public hospital admissions data, death data, treatment systems, public and private pathology, hospital clinical data systems and QOOL. QOR contains approximately 50 million records between 1982–2018. Our matching and linking processes provide the 570,000+ matched and linked records of cancer patients between 1982–2018 which provide the data for The Queensland Youth Cancer Service report.

To access previous publications, go to <https://cancerallianceqld.health.qld.gov.au/reports-publications>.

Executive summary

This Queensland Youth Cancer Service report provides a comprehensive overview of cancer in young people 15-25 years old who were diagnosed in Queensland during 2016 – 2018. The aim of this report was to clarify and discuss methods to inform the review of the existing QYCS model of care. The planning and development of QYCS commenced in 2013. The service now consists of 5 partner hospitals including Princess Alexandra Hospital, Royal Brisbane and Women’s Hospital, Gold Coast University Hospital, Townsville Hospital and Queensland Children’s Hospital. QYCS aims to provide comprehensive, developmentally appropriate AYA oncology care to young people with cancer across Queensland. This is done through the provision of multidisciplinary clinical care, education and research. As a new service, the approach to capturing activity data was developed iteratively. In partnership with QCCAT, methods were established that utilise the QOOL application as a repository to reliably capture QYCS activity data. Youth cancer data items were built into QOOL, a web-based data repository that enables data entry and review of cancer activity across Queensland Health hospitals. The QOOL system for the statewide QYCS went live in January 2015.

This report provides an important baseline to understand the current status of youth cancer in QLD and identify areas of unmet need in terms of access to developmentally appropriate youth cancer services and care. It provides an analysis of AYA cancer demographics, epidemiology, diagnoses and treatment across all cancer facilities including treatment types and flows and access to multidisciplinary care and QYCS care. This aims to provide a mechanism to understand the efficacy of current investments in AYA cancer care and assist service planning and future investment to areas of unmet need. This will also inform ongoing evaluation of changes in AYA patient outcomes, clinical practice and service delivery over time. Performance indicators, linked to clinical outcomes that align with national benchmarking is a key service action in the Cancer Care State-wide Health Service Strategy, 2014. This report supports QYCS alignment with this strategy to facilitate the delivery of best practice quality youth care to young people in Queensland.

Diagnoses, in this report are in accordance with the SEER AYA published cancer groupings and place and type of treatment (surgery, IV systemic therapy and radiation therapy) are analysed. This examination enables the profile and patterns of the service to be considered which would allow a mapping to the Clinical Service Capability Framework (CSCF v3.2). Service gaps, underserved populations and issues where young people are not being treated in an ideal setting are identified to inform areas for improvement and the new model of care. Movement across sectors of health care will also be reported.

Key Findings

Cancer in the AYA age group accounts for approximately 1% of all cancer diagnoses in Queensland

- There were 693 AYA's diagnosed with cancer from 2016-2018
- Melanoma (19%), lymphoma (16%), germ cell (12%), appendiceal carcinomas (10%) and thyroid carcinomas (10%) were the most commonly diagnosed cancer types. The high incidence of melanoma is particularly relevant for youth cancer in Queensland.
- AYA's fair very well, with 92% of patients alive 5yrs from diagnosis.
- Half of the AYA patients diagnosed in this time period were reviewed by an AYA QYCS Care Coordinator (excluding appendiceal carcinoma, thyroid carcinoma and melanoma patients).

Patient characteristics, diagnoses by age and gender reflect Australian population norms.

- The majority of patients live in a major city (70%), are from a middle socioeconomic background (65%) and were treated in their HHS of residence (93%).
- Most young people were otherwise well, with no other reported comorbidities (93%).
- A low percentage of AYAs identified as indigenous (4%).

Access to cancer treatment should be equitable for young people across Queensland

- Treatment commencing within 30 days of diagnosis was slightly higher in patients from an affluent or middle socioeconomic background (84%) than those from a low socioeconomic background (81%).
- Patients residing in a metropolitan area received treatment within 30 days of diagnosis (83%), similar to outer regional areas (85%) and 100% for those patients residing in remote and very remote areas.

AYA's diagnosed with cancer most commonly receive treatment in the Public sector

- 71% of patients received treatment solely in a Public facility, 23% treated solely in the Private sector and the remaining 6% receive treatment across sectors.

QYCS Psychosocial Review

AYA cancer patients have unique developmental needs that require specialist care

- Half of patients diagnosed were reviewed by a specialist AYA Care Coordinator (excluding appendiceal carcinoma, thyroid carcinoma and melanoma), and of the patients who had treatment, 62% received review by an AYA Care Coordinator.
- The majority of patients were reviewed within 60 days of diagnosis (75%).
- A third of the patients who received surgery or radiation (XRT) as their first treatment were reviewed by an AYA Care Coordinator (33%).
- The majority of patients receiving IVST as their first treatment were reviewed by an AYA Care Coordinator (75%).
- The QYCS central team is involved in 18% of non QYCS partner site reviews and this is likely to increase given there is no dedicated AYA Care Coordinator operating in the Private sector.

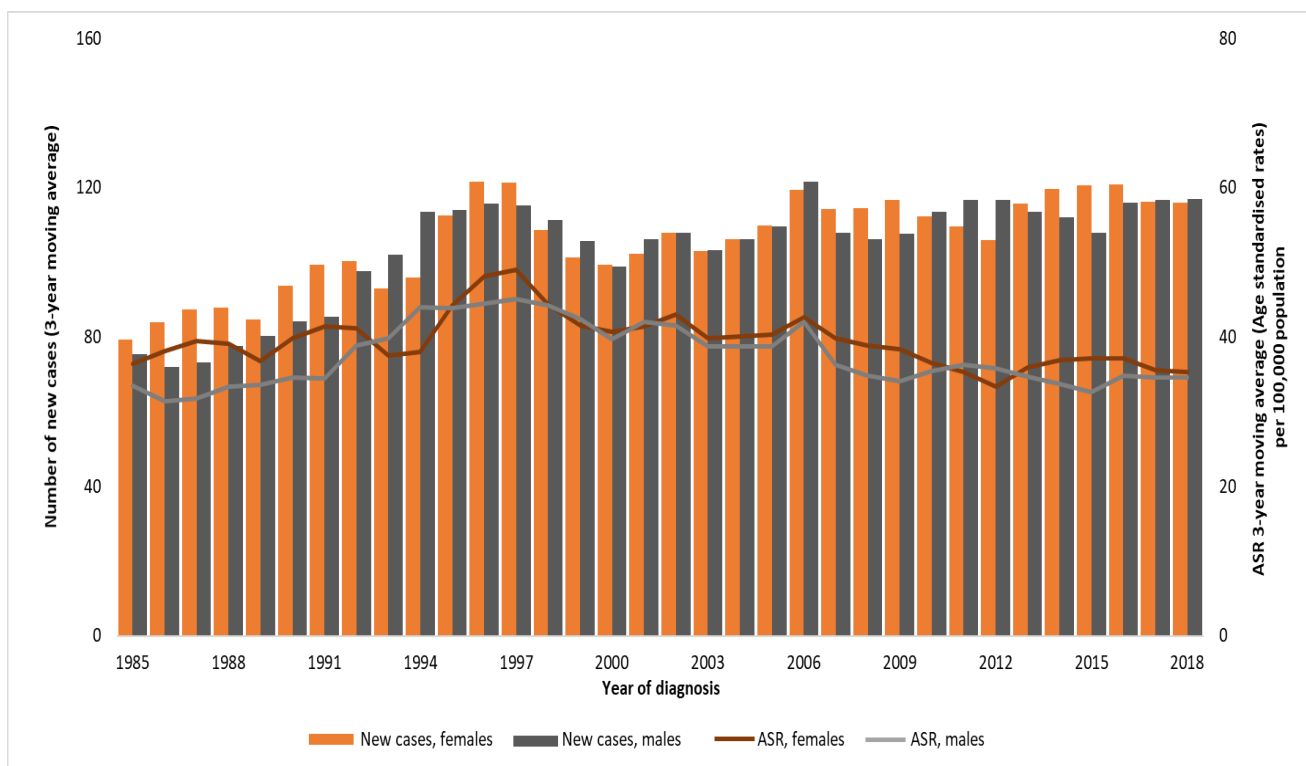
0 | Epidemiological overview



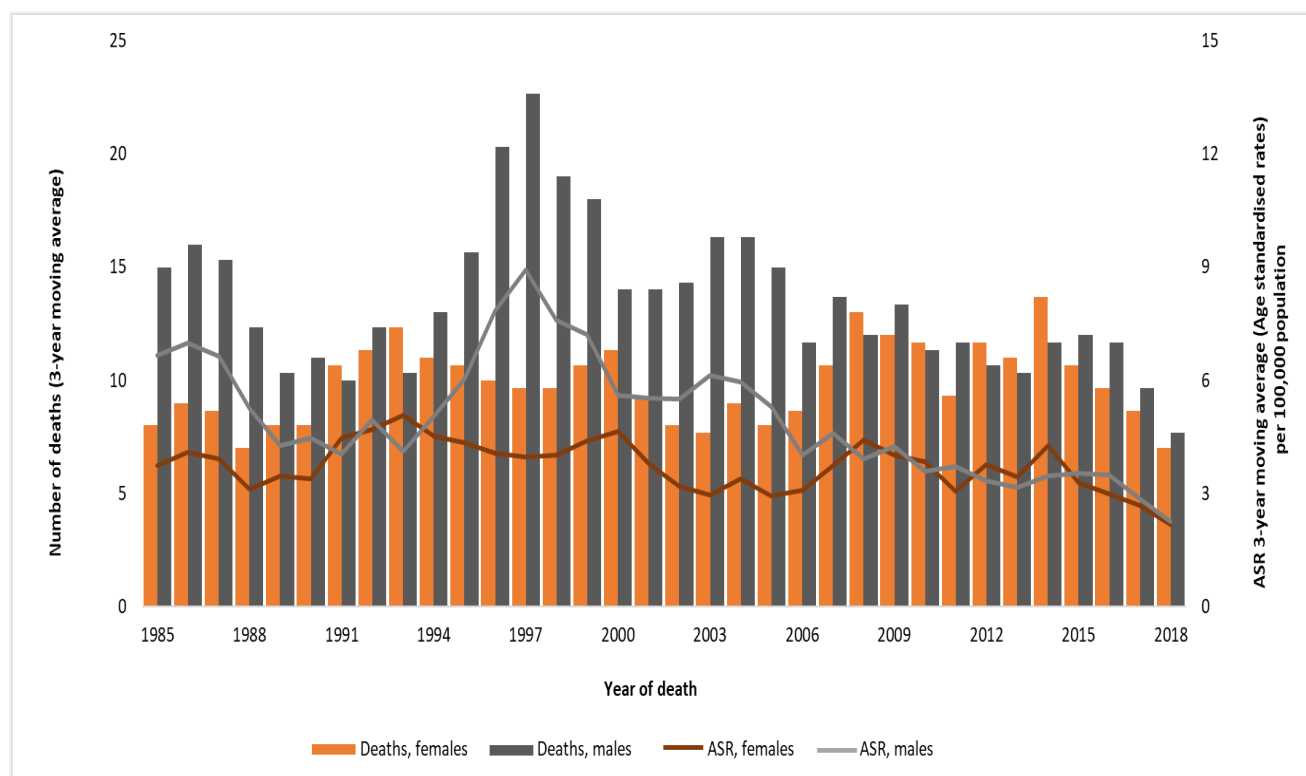
0.1 | Cancer incidence and mortality rates by sex

Diagnosis years 1982-2018

0.1.1 | Incidence for youth cancer by sex, 1982-2018



0.1.2 | Mortality for youth cancer by sex, 1982-2018



0.2 | Most common cancers by sex

Diagnosis years 2016-2018

0.2.1 | What is the distribution of youth cancer by sex?

Cancer ¹	Diagnosis					
	Male		Female		Total	
	n	%	n	%	N	Qld %
Appendix tumour	28	41%	41	59%	69	10%
Bone sarcomas	23	79%	6	21%	29	4%
Carcinomas (excluding thyroid and appendix)	23	38%	37	62%	60	9%
Brain/CNS	23	53%	20	47%	43	6%
Germ cell	68	85%	12	15%	80	12%
Leukaemias	26	68%	12	32%	38	5%
Lymphomas	49	45%	61	55%	110	16%
Melanomas	59	45%	71	55%	130	19%
Soft-tissue sarcomas	22	63%	13	37%	35	5%
Thyroid carcinomas	15	21%	55	79%	70	10%
Other invasive	11	38%	18	62%	29	4%
Total AYA	347	50%	346	50%	693	100%

¹ See appendix 1 for cancer descriptions.

0.3 | Survival

0.3.1 | What percentage of youth cancer patients are living after 5 year after their diagnosis?

Survival	2013-2017
(% of people who would have survived after diagnosed)	
Cancer	5-year survival
Appendix tumour	100%
Bone sarcomas	57%
Carcinomas (excluding thyroid and appendix)	84%
Brain/CNS	69%
Germ cell	95%
Leukaemias	81%
Lymphomas	96%
Melanomas	98%
Soft-tissue sarcomas	84%
Thyroid carcinomas	100%
Other invasive	84%
Total AYA	92%

¹ See appendix 1 for cancer descriptions.

Relative survival was calculated using the Ederer II method, and the period approach was used. Relative survival was calculated for all persons aged 0-89 at diagnosis.

1 | Diagnosis and treatment



1.1 | Queensland Youth Cancer Review

Diagnosis years 2016-2018

1.1.1 | What percentage of youths with cancer receive review from QYCS specialist by cancer type?

Cancer ¹	QYCS review ²					
	No		Yes		Total	
	n	%	n	%	N	Qld %
Appendix tumour	69	100%	0	0%	69	10%
Bone sarcomas	10	34%	19	66%	29	4%
Carcinomas (excluding thyroid and appendix)	42	70%	18	30%	60	9%
Brain/CNS	25	58%	18	42%	43	6%
Germ cell	48	60%	32	40%	80	12%
Leukaemias	8	21%	30	79%	38	5%
Lymphomas	39	35%	71	65%	110	16%
Melanomas	124	95%	6	5%	130	19%
Soft-tissue sarcomas	17	49%	18	51%	35	5%
Thyroid carcinomas	53	76%	17	24%	70	10%
Other invasive	23	79%	6	21%	29	4%
Total AYA	458	66%	235	34%	693	100%

¹ See appendix 1 for cancer descriptions.

² Youth has been reviewed by QYCS captured in QOOL.

Appendix tumours, melanoma and thyroid carcinoma cases are excluded from the remainder of this report.

1.2 | Characteristics of youths with cancer

Diagnosis years 2016-2018

1.2.1 | What are the characteristics of youths with cancer who receive review from QYCS specialists (excludes melanoma, thyroid and appendix tumours)?

	Diagnosis		QYCS review ¹	
	N	Qld %	n	%
Queensland	424	100%	212	50%
Sex				
Male	245	58%	124	51%
Female	179	42%	88	49%
Age Group				
15 - 19	164	39%	99	60%
20 - 24	260	61%	113	43%
Indigenous status				
Indigenous	19	4%	9	47%
Other	405	96%	203	50%
Socioeconomic status				
Affluent	74	17%	37	50%
Middle	274	65%	132	48%
Disadvantaged	76	18%	43	57%
Remoteness				
Major city	304	72%	153	50%
Inner regional	74	17%	37	50%
Outer regional	38	9%	17	45%
Remote & very remote	8	2%	5	63%
Comorbidities				
0 Comorbidities	379	89%	183	48%
1 Comorbidities	35	8%	24	69%
2+ Comorbidities	10	2%	5	50%

¹ Review by QYCS specialist is captured in QOOL.

1.3 | Treatment

Diagnosis years 2016-2018

1.3.1 | What percentage of youths diagnosed with cancer receive treatment and YCS review?

Cancer ¹	Diagnosis		Treatment ²		Surgery				Radiation therapy (RT)				IV systemic therapy (IVST)			
	N	Qld %	n	%	Total surgery		QYCS review		Total RT		QYCS review		Total IVST		QYCS review	
					n	%	n	%	n	%	n	%	n	%	n	%
<i>Bone sarcomas</i>	29	4%	29	100%	22	76%	13	59%	8	28%	6	75%	21	72%	18	86%
Ewing tumour	10	1%	10	100%	5	50%	4	80%	5	50%	4	80%	10	100%	8	80%
Osteosarcoma	12	2%	12	100%	10	83%	8	80%	1	8%	1	100%	11	92%	10	91%
Other bone tumour	7	1%	7	100%	7	100%	1	14%	2	29%	1	50%	0	0%	0	-
<i>Carcinomas (excluding thyroid and appendix)</i>	60	9%	57	95%	45	79%	10	22%	16	28%	12	75%	17	30%	11	65%
Breast	3	0%	3	100%	0	0%	0	-	2	67%	0	0%	3	100%	0	0%
Cervix	6	1%	5	83%	3	60%	0	0%	2	40%	2	100%	2	40%	2	100%
Gastrointestinal tract	14	2%	13	93%	13	100%	0	0%	0	0%	0	-	2	15%	0	0%
Genitourinary tract	5	1%	5	100%	4	80%	1	25%	0	0%	0	-	1	20%	1	100%
Gonads	2	0%	2	100%	2	100%	0	0%	0	0%	0	-	1	50%	0	0%
Other carcinoma (including skin and breast in males)	3	0%	3	100%	0	0%	0	-	1	33%	0	0%	2	67%	2	100%
Other head and neck	21	3%	20	95%	17	85%	9	53%	11	55%	10	91%	6	30%	6	100%
Trachea, bronchus and lung	6	1%	6	100%	6	100%	0	0%	0	0%	0	-	0	0%	0	-
<i>Brain/CNS</i>	43	6%	37	86%	35	95%	16	46%	17	46%	13	76%	13	35%	12	92%
Glioblastoma and anaplastic astrocytoma	7	1%	7	100%	7	100%	4	57%	6	86%	4	67%	3	43%	2	67%
Medulloblastoma	3	0%	3	100%	3	100%	3	100%	3	100%	3	100%	3	100%	3	100%
Other astrocytoma, glioma or ependymoma	30	4%	25	83%	25	100%	9	36%	6	24%	4	67%	5	20%	5	100%
Other central nervous system tumour	3	0%	2	67%	0	0%	0	-	2	100%	2	100%	2	100%	2	100%
<i>Germ cell</i>	80	12%	79	99%	74	94%	30	41%	3	4%	2	67%	45	57%	28	62%
Gonadal	77	11%	77	100%	73	95%	30	41%	1	1%	1	100%	43	56%	27	63%
Non-gonadal	3	0%	2	67%	1	50%	0	0%	2	100%	1	50%	2	100%	1	50%

Section 1.3.1 (Continued)

Cancer ¹	Diagnosis		Treatment ²		Surgery				Radiation therapy (RT)				IV systemic therapy (IVST)			
	N	Qld %	n	%	Total surgery n	%	QYCS review n	%	Total RT n	%	QYCS review n	%	Total IVST n	%	QYCS review n	%
<i>Leukaemias</i>	38	5%	32	84%	-	-	-	-	11	34%	10	91%	32	100%	29	91%
Leukaemia (acute)	33	5%	31	94%	-	-	-	-	10	32%	9	90%	31	100%	28	90%
Leukaemia (chronic)	5	1%	1	20%	-	-	-	-	1	100%	1	100%	1	100%	1	100%
<i>Lymphomas</i>	110	16%	104	95%	-	-	-	-	47	45%	31	66%	99	95%	70	71%
Hodgkin Lymphoma	82	12%	80	98%	-	-	-	-	35	44%	21	60%	77	96%	52	68%
Non-Hodgkin Lymphoma	28	4%	24	86%	-	-	-	-	12	50%	10	83%	22	92%	18	82%
<i>Soft-tissue sarcomas</i>	35	5%	32	91%	21	66%	8	38%	12	38%	11	92%	17	53%	15	88%
Rhabdomyosarcoma	10	1%	10	100%	4	40%	4	100%	8	80%	8	100%	10	100%	10	100%
Other soft-tissue sarcoma	25	4%	22	88%	17	77%	4	24%	4	18%	3	75%	7	32%	5	71%
<i>Other invasive</i>	29	4%	16	55%	11	69%	4	36%	2	13%	0	0%	6	38%	3	50%
Total AYA	424	61%	386	91%	208	54%	81	39%	116	30%	85	73%	250	65%	186	74%

¹ See appendix 1 for cancer descriptions.

² Youth cancer patients can have more than one type of treatment. Treatment includes radiation therapy, IV systemic therapy, and/or surgery.

³ % = number of surgeries, RT or IVST / number of treatments.

⁴ % = number of QYCS review / number of surgeries, RT or IVST.

1.3.2 | What is the first treatment received by youths with cancer?

Cancer ¹	Diagnosis		First treatment ²		Surgery				Radiation therapy (RT)				Concurrent RT & IVST				IV systemic therapy (IVST)			
					Total surgery		QYCS review		Total RT		QYCS review		Total RT		QYCS review		Total IVST		QYCS review	
	N	Qld %	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<i>Bone sarcomas</i>	29	4%	29	100%	10	34%	3	30%	0	0%	0	-	5	17%	4	80%	14	48%	12	86%
Ewing tumour	10	1%	10	100%	1	10%	1	100%	0	0%	0	-	5	50%	4	80%	4	40%	3	75%
Osteosarcoma	12	2%	12	100%	2	17%	1	50%	0	0%	0	-	0	0%	0	-	10	83%	9	90%
Other bone tumour	7	1%	7	100%	7	100%	1	14%	0	0%	0	-	0	0%	0	-	0	0%	0	-
<i>Carcinomas (excluding thyroid and appendix)</i>	60	9%	57	95%	41	72%	7	17%	1	2%	0	0%	8	14%	8	100%	7	12%	3	43%
Breast	3	0%	3	100%	0	0%	0	-	0	0%	0	-	0	0%	0	-	3	100%	0	0%
Cervix	6	1%	5	83%	3	60%	0	0%	0	0%	0	-	2	40%	2	100%	0	0%	0	-
Gastrointestinal tract	14	2%	13	93%	12	92%	0	0%	0	0%	0	-	0	0%	0	-	1	8%	0	0%
Genitourinary tract	5	1%	5	100%	4	80%	1	25%	0	0%	0	-	0	0%	0	-	1	20%	1	100%
Gonads	2	0%	2	100%	2	100%	0	0%	0	0%	0	-	0	0%	0	-	0	0%	0	-
Other carcinoma (including skin and breast in males)	3	0%	3	100%	0	0%	0	-	1	33%	0	0%	0	0%	0	-	2	67%	2	100%
Other head and neck	21	3%	20	95%	14	70%	6	43%	0	0%	0	-	6	30%	6	100%	0	0%	0	-
Trachea, bronchus and lung	6	1%	6	100%	6	100%	0	0%	0	0%	0	-	0	0%	0	-	0	0%	0	-
<i>Brain/CNS</i>	43	6%	37	86%	34	92%	16	47%	2	5%	1	50%	0	0%	0	-	1	3%	1	100%
Glioblastoma and anaplastic astrocytoma	7	1%	7	100%	6	86%	4	67%	1	14%	0	0%	0	0%	0	-	0	0%	0	-
Medulloblastoma	3	0%	3	100%	3	100%	3	100%	0	0%	0	-	0	0%	0	-	0	0%	0	-
Other astrocytoma, glioma or ependymoma	30	4%	25	83%	25	100%	9	36%	0	0%	0	-	0	0%	0	-	0	0%	0	-
Other central nervous system tumour	3	0%	2	67%	0	0%	0	-	1	50%	1	100%	0	0%	0	-	1	50%	1	100%
<i>Germ cell</i>	80	12%	79	99%	73	92%	29	40%	0	0%	0	-	1	1%	1	100%	5	6%	2	40%
Gonadal	77	11%	77	100%	72	94%	29	40%	0	0%	0	-	1	1%	1	100%	4	5%	1	25%
Non-gonadal	3	0%	2	67%	1	50%	0	0%	0	0%	0	-	0	0%	0	-	1	50%	1	100%

Section 1.3.2 (continued)

Cancer ¹	Diagnosis		First treatment ²		Surgery				Radiation therapy (RT)				Concurrent RT & IVST				IV systemic therapy (IVST)			
	N	Qld %	n	%	Total surgery		QYCS review		Total RT		QYCS review		Total RT		QYCS review		Total IVST		QYCS review	
					n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<i>Leukaemias</i>	38	5%	32	84%	-	-	-	-	0	0%	0	-	4	13%	4	100%	28	88%	25	89%
Leukaemia (acute)	33	5%	31	94%	-	-	-	-	0	0%	0	-	4	13%	4	100%	27	87%	24	89%
Leukaemia (chronic)	5	1%	1	20%	-	-	-	-	0	0%	0	-	0	0%	0	-	1	100%	1	100%
<i>Lymphomas</i>	110	16%	104	95%	-	-	-	-	6	6%	1	17%	5	5%	5	100%	93	89%	65	70%
Hodgkin Lymphoma	82	12%	80	98%	-	-	-	-	3	4%	0	0%	2	3%	2	100%	75	94%	50	67%
Non-Hodgkin Lymphoma	28	4%	24	86%	-	-	-	-	3	13%	1	33%	3	13%	3	100%	18	75%	15	83%
<i>Soft-tissue sarcomas</i>	35	5%	32	91%	16	50%	3	19%	1	3%	1	100%	8	25%	8	100%	7	22%	6	86%
Rhabdomyosarcoma	10	1%	10	100%	0	0%	0	-	0	0%	0	-	8	80%	8	100%	2	20%	2	100%
Other soft-tissue sarcoma	25	4%	22	88%	16	73%	3	19%	1	5%	1	100%	0	0%	0	-	5	23%	4	80%
<i>Other invasive</i>	29	4%	16	55%	11	69%	4	36%	0	0%	0	-	2	13%	0	0%	3	19%	2	67%
Total AYA	424	61%	386	91%	185	48%	62	34%	10	3%	3	30%	33	9%	30	91%	158	41%	116	73%

¹ See appendix 1 for cancer descriptions.

² Youth cancer patients can only have one first treatment. First treatment includes radiation therapy, IV systemic therapy, and/or surgery.

³ % = number of surgeries, RT or IVST / number of treatments.

⁴ % = number of QYCS review / number of surgeries, RT or IVST.

1.4 | Queenslanders receiving surgery by AIHW Peer Group

Diagnosis years 2016-2018

1.4.1 | What percentage of youths with cancer receive surgery by AIHW Peer Group?

AIHW Peer Group ²	QYCS review ¹				Total surgery	
	No		Yes		N	QLD %
	n	%	n	%		
Principal referral hospitals	46	43%	60	57%	106	51%
Group A hospitals	66	81%	15	19%	81	39%
Group B hospitals	5	71%	2	29%	7	3%
Other hospitals	10	71%	4	29%	14	7%
<i>Hospital type</i>						
Public	85	56%	68	44%	153	74%
Private	42	76%	13	24%	55	26%
Queensland	127	61%	81	39%	208	100%

¹ Review by QYCS specialist is captured in QOOL.

² See appendix 4 for AIHW peer group descriptions.

1.5 | Queenslanders receiving radiation therapy by AIHW Peer Group

Diagnosis years 2016-2018

1.5.1 | What percentage of youths with cancer receive radiation therapy by AIHW Peer Group?

AIHW Peer Group ²	QYCS review ¹					
	No		Yes		Total RT	
	n	%	n	%	N	QLD %
Principal referral hospitals	16	18%	74	82%	90	78%
Group A hospitals	-	-	-	-	-	-
Group B hospitals	-	-	-	-	-	-
Other hospitals	15	58%	11	42%	26	22%
<i>Hospital type</i>						
Public	16	18%	74	82%	90	78%
Private	15	58%	11	42%	26	22%
Queensland	31	27%	85	73%	116	100%

¹ Review by QYCS specialist is captured in QOOL.

² See appendix 4 for AIHW peer group descriptions.

1.6 | Queenslanders receiving IV systemic therapy by AIHW Peer Group

Diagnosis years 2016-2018

1.6.1 | What percentage of youths with cancer receive IV systemic therapy by AIHW Peer Group?

AIHW Peer Group ²	QYCS review ¹					
	No		Yes		Total IVST	
	n	%	n	%	N	QLD %
Principal referral hospitals	12	7%	162	93%	174	70%
Group A hospitals	31	69%	14	31%	45	18%
Group B hospitals	3	100%			3	1%
Other hospitals	18	64%	10	36%	28	11%
<i>Hospital type</i>						
Public	33	16%	169	84%	202	81%
Private	31	65%	17	35%	48	19%
Queensland	64	26%	186	74%	250	100%

¹ Review by QYCS specialist is captured in QOOL.

² See appendix 4 for AIHW peer group descriptions.

1.7 | Treatment flows

Diagnosis years 2016-2018

1.7.1 | What percentage of youths with cancer receive treatment in public and private sectors?

Cancer ¹	Had treatment	First treatment at public facility, then private facility after		First treatment at private facility, then public facility after		First treatment and other treatments at public facility		First treatment and other treatments at private facility		Have only 1 treatment at public facility		Have only 1 treatment at private facility	
			%		%		%		%		%		%
Bone sarcomas	29	1	3%	1	3%	14	48%	4	14%	6	21%	3	10%
Carcinomas (excluding thyroid and appendix)	57	2	4%	1	2%	10	18%	2	4%	31	54%	11	19%
Brain/CNS	37	4	11%	-	-	16	43%	-	-	13	35%	4	11%
Germ cell	79	-	-	3	4%	30	38%	8	10%	31	39%	7	9%
Leukaemias	32	-	-	1	3%	10	31%	-	-	19	59%	2	6%
Lymphomas	104	4	4%	5	5%	27	26%	6	6%	43	41%	19	18%
Soft-tissue sarcomas	32	1	3%	1	3%	12	38%	1	3%	11	34%	6	19%
Other invasive	16	1	6%	-	-	2	13%	-	-	8	50%	5	31%
Grand Total	386	13	3%	12	3%	121	31%	21	5%	162	42%	57	15%

¹ See appendix 1 for cancer descriptions.

1.8 | Out-flows

Diagnosis years 2016-2018

1.8.1 | What percentage of patients underwent treatment outside the HHS that they reside in?

HHS of residence	Treatment outside the HHS a patient resides in		Treatment within the HHS a patient resides in		Total N
	n	%	n	%	
Cairns and Hinterland	8	53%	7	47%	15
Central Queensland	10	71%	4	29%	14
Central West	2	100%	0	0%	2
Darling Downs	11	61%	7	39%	18
Gold Coast	12	23%	40	77%	52
Mackay	11	73%	4	27%	15
Metro North	13	17%	63	83%	76
Metro South	25	22%	90	78%	115
North West	-	-	0	-	0
South West	-	-	0	-	0
Sunshine Coast	14	54%	12	46%	26
Townsville	6	29%	15	71%	21
West Moreton	15	71%	6	29%	21
Wide Bay	9	90%	1	10%	10
Queensland¹	137	35%	249	65%	386

¹ A patient can only have one first treatment

² Example – Of the Metro North patients, 13 (17%) received treatment outside of Metro North, and 63 (83%) received treatment within Metro North.

1.8.2 | What percentage of patients underwent treatment at Queensland's Children Hospital by HHS of residence?

HHS of residence	Treatment at Queensland's Children Hospital	
	n	%
Cairns and Hinterland	3	8%
Central Queensland	2	5%
Central West	0	-
Darling Downs	3	8%
Gold Coast	5	14%
Mackay	2	5%
Metro North	5	14%
Metro South	10	27%
North West	0	-
South West	0	-
Sunshine Coast	2	5%
Townsville	1	3%
West Moreton	2	5%
Wide Bay	2	5%
Queensland	37	100%

2 | Access to quality cancer care



2.1 | Time from diagnosis to QYCS review

Diagnosis years 2016-2018

2.1.1 | What is the time from diagnosis to QYCS review by facility?

QYCS facility	Had reviewed before date of diagnosis		0-30 days of diagnosis		31-60 days of diagnosis		>60 days of diagnosis		Total QYCS review	
	n	%	n	%	n	%	n	%	N	Qld %
Hospital A	2	3%	32	46%	24	35%	11	16%	69	33%
Hospital B	2	12%	4	24%	2	12%	9	53%	17	8%
Hospital C	0	0%	10	29%	13	38%	11	32%	34	16%
Hospital D	1	50%	1	50%	0	0%	0	0%	2	1%
Hospital E	3	33%	1	11%	1	11%	4	44%	9	4%
Hospital F	1	5%	18	86%	1	5%	1	5%	21	10%
Hospital G	1	2%	19	36%	17	32%	16	30%	53	25%
Hospital H	1	14%	2	29%	1	14%	3	43%	7	3%
Queensland	11	5%	87	41%	59	28%	55	26%	212	100%

2.2 | Hospital stay

Diagnosis years 2016-2018

2.2.1 | How long do youth cancer¹ patients stay in hospital for surgery by cancer type?

Length of stay (days) (Median time between admission and discharge date of surgery)	Surgery	Median days	IQR
Bone sarcomas	22	8	(4-13)
Carcinomas (excluding thyroid and appendix)	45	5	(2-8)
Brain/CNS	35	6	(4-13)
Germ cell	74	1	(1-1)
Soft-tissue sarcomas	21	1	(1-5)
Other invasive	11	1	(1-4)
Total AYA	208	3	(1-7)

¹ See appendix 1 for cancer descriptions.

2.3 | Median days from diagnosis to first treatment

Diagnosis years 2016-2018

2.3.1 | What is the median number of days from diagnosis to first treatment¹ by cancer type² and QYCS review?

Days from diagnosis to first treatment	No QYCS review			Had QYCS review			Total		
	First treatment	Median days	IQR	First treatment	Median days	IQR	First treatment	Median days	IQR
Bone sarcomas	10	12	(0-22)	19	17	(13-21)	29	14	(8-21)
Carcinomas (excluding thyroid and appendix)	39	3	(0-27)	18	22	(0-29)	57	10	(0-28)
Brain/CNS	19	0	(0-4)	18	0	(0-0)	37	0	(0-0)
Germ cell	47	0	(0-0)	32	0	(0-0)	79	0	(0-0)
Leukaemias	3	4	(0-12)	29	2	(1-5)	32	2	(1-5)
Lymphomas	33	15	(13-31)	71	16	(9-31)	104	15	(9-31)
Soft-tissue sarcomas	14	31	(0-48)	18	12	(7-24)	32	14	(3-41)
Other invasive	10	0	(0-60)	6	33	(6-116)	16	3	(0-69)
Total AYA	175	0	(0-22)	211	8	(0-21)	386	6	(0-21)

¹ First treatment includes radiation therapy, IV systemic therapy, and/or surgery.

² See appendix 1 for cancer descriptions.

2.4 | Median days to first surgery

Diagnosis years 2016-2018

2.4.1 | What is the median number of days from diagnosis to surgery where surgery is the first treatment received?

Days from diagnosis to surgery as the first treatment	No QCYS review			Had QCYS review			Total		
	Surgery	Median days	IQR	Surgery	Median days	IQR	Surgery	Median days	IQR
Bone sarcomas	7	12	(0-42)	3	21	(14-22)	10	17	(0-22)
Carcinomas (excluding thyroid and appendix)	34	0	(0-16)	7	0	(0-24)	41	0	(0-16)
Brain/CNS	18	0	(0-0)	16	0	(0-0)	34	0	(0-0)
Germ cell	44	0	(0-0)	29	0	(0-0)	73	0	(0-0)
Soft-tissue sarcomas	13	35	(0-48)	3	0	(0-15)	16	21	(0-48)
Other invasive	7	0	(0-0)	4	8	(3-56)	11	0	(0-6)
Total AYA	123	0	(0-6)	62	0	(0-0)	185	0	(0-0)

¹ See appendix 1 for cancer descriptions.

2.5 | Median days to first radiation therapy

Diagnosis years 2016-2018

2.5.1 | What is the median number of days from diagnosis to radiation therapy where radiation therapy is the first treatment received?

Days from diagnosis to radiation therapy as the first treatment	No QCYS review			Had QCYS review			Total		
	Radiation therapy	Median days	IQR	Radiation therapy	Median days	IQR	Radiation therapy	Median days	IQR
Carcinomas (excluding thyroid and Brain/CNS)	1	117	(117-	-	-	-	1	117	(117-
Brain/CNS	1	21	(21-21)	1	47	(47-47)	2	34	(21-47)
Lymphomas	5	35	(27-133)	1	119	(119-	6	77	(27-
Soft-tissue sarcomas	-	-	-	1	41	(41-41)	1	41	(41-41)
Total AYA	7	35	(21-133)	3	47	(41-	10	44	(27-

¹ See appendix 1 for cancer descriptions.

2.6 | Median days to first concurrent RT & IVST

Diagnosis years 2016-2018

2.6.1 | What is the median number of days from diagnosis to concurrent radiation and IV systemic therapy (CRT) where concurrent CRT is the first treatment received?

Days from diagnosis to concurrent RT & IVST as the first treatment	No QCYS review			Had QCYS review			Total		
	Concurrent RT & IVST	Median days	IQR	Concurrent RT & IVST	Median days	IQR	Concurrent RT & IVST	Median days	IQR
Bone sarcomas	1	13	(13-13)	4	17	(15-22)	5	17	(14-17)
Carcinomas (excluding thyroid and appendix)	-	-	-	8	25	(18-41)	8	25	(18-41)
Germ cell	-	-	-	1	5	(5-5)	1	5	(5-5)
Leukaemias	-	-	-	4	4	(2-8)	4	4	(2-8)
Lymphomas	-	-	-	5	20	(2-39)	5	20	(2-39)
Soft-tissue sarcomas	-	-	-	8	8	(3-14)	8	8	(3-14)
Other invasive	2	97	(60-134)	-	-	-	2	97	(60-134)
Total AYA	3	60	(13-134)	30	14	(7-24)	33	14	(7-24)

¹ See appendix 1 for cancer descriptions.

2.7 | Median days to first IV systemic therapy

Diagnosis years 2016-2018

2.7.1 | What is the median number of days from diagnosis to IV systemic therapy where IV systemic therapy is the first treatment received?

Days from diagnosis to IV systemic therapy as the first treatment	No QCYS review			Had QCYS review			Total		
	IV systemic therapy	Median days	IQR	IV systemic therapy	Median days	IQR	IV systemic therapy	Median days	IQR
Bone sarcomas	2	10	(8-13)	12	15	(8-20)	14	13	(8-18)
Carcinomas (excluding thyroid and appendix)	4	41	(22-57)	3	28	(6-34)	7	29	(15-54)
Brain/CNS	-	-	-	1	11	(11-11)	1	11	(11-11)
Germ cell	3	28	(13-233)	2	5	(3-7)	5	13	(7-28)
Leukaemias	3	4	(0-12)	25	2	(1-4)	28	2	(1-5)
Lymphomas	28	14	(11-29)	65	15	(9-28)	93	14	(9-28)
Soft-tissue sarcomas	1	16	(16-16)	6	23	(13-53)	7	19	(13-53)
Other invasive	1	69	(69-69)	2	151	(116-187)	3	116	(69-187)
Total AYA	42	14	(12-29)	116	13	(5-25)	158	13	(6-28)

¹ See appendix 1 for cancer descriptions.

2.8 | Socio-economically disadvantaged

Diagnosis years 2016-2018

2.8.1 | What percentage of patients receive treatment within 30 days from diagnosis by socio-economic status?

Cancer ¹	Received first treatment ² within 30 days of diagnosis								
	Disadvantaged			Middle			Affluent		
	n	N	%	n	N	%	n	N	%
Bone sarcomas	4	5	80%	15	17	88%	6	7	86%
Carcinomas (excluding thyroid and appendix)	6	7	86%	30	38	79%	9	12	75%
Brain/CNS	8	8	100%	18	21	86%	8	8	100%
Germ cell	11	11	100%	52	53	98%	15	15	100%
Leukaemias	7	7	100%	21	21	100%	4	4	100%
Lymphomas	14	21	67%	50	65	77%	13	18	72%
Soft-tissue sarcomas	3	7	43%	15	21	71%	4	4	100%
Other invasive	1	1	100%	9	13	69%	0	2	0%
Total AYA	54	67	81%	210	249	84%	59	70	84%

¹ See appendix 1 for cancer descriptions.

² First treatment includes radiation therapy, IV systemic therapy, and/or surgery.

2.9 | Remoteness

Diagnosis years 2016-2018

2.9.1 | What percentage of patients living outside a metropolitan area receive treatment within 30 days from diagnosis?

Cancer ¹	Received first treatment ² within 30 days of diagnosis								
	Metropolitan ³			Outer regional			Remote & very remote		
	n	N	%	n	N	%	n	N	%
Bone sarcomas	22	26	85%	2	2	100%	1	1	100%
Carcinomas (excluding thyroid and appendix)	41	53	77%	3	3	100%	1	1	100%
Brain/CNS	32	35	91%	2	2	100%	0	0	-
Germ cell	72	73	99%	6	6	100%	0	0	-
Leukaemias	29	29	100%	3	3	100%	0	0	-
Lymphomas	64	88	73%	10	13	77%	3	3	100%
Soft-tissue sarcomas	21	29	72%	1	3	33%	0	0	-
Other invasive	8	14	57%	1	1	100%	1	1	100%
Total AYA	289	347	83%	28	33	85%	6	6	100%

¹ See appendix 1 for cancer descriptions.

² First treatment includes radiation therapy, IV systemic therapy, and/or surgery.

³ Metropolitan include major city and inner regional areas.

3 | Multidisciplinary Team Review



3.1 | MDT by cancer type

Diagnosis years 2009-2017

3.1.1 | What percentage of youths with cancer were reviewed by a MDT# compared to those over 25 yrs old by cancer type?

Cancer	Diagnosis year: 2009-2017	Had treatment		Age at diagnosis: 15-25						Age at diagnosis: >25					
		N	n	%	Diagnosis	% ^b	MDT review	% ^c	No MDT review	% ^c	Diagnosis	% ^b	MDT review	% ^c	No MDT review
<i>Bone sarcomas</i>	344	289	84%	78	23%	48	62%	30	38%	266	77%	103	39%	163	61%
Ewing tumour	54	52	96%	30	56%	23	77%	7	23%	24	44%	8	33%	16	67%
Osteosarcoma	98	81	83%	32	33%	19	59%	13	41%	66	67%	29	44%	37	56%
Other bone tumour	192	156	81%	16	8%	6	38%	10	63%	176	92%	66	38%	110	63%
<i>Carcinomas (excluding thyroid and appendix)</i>	145,809	113,764	78%	258	<1%	91	35%	167	65%	145,551	100%	39,585	27%	105,966	73%
Breast	28,526	26,427	93%	25	<1%	11	44%	14	56%	28,501	100%	10,493	37%	18,008	63%
Cervix	1,638	1,482	90%	51	3%	13	25%	38	75%	1,587	97%	241	15%	1,346	85%
Gastrointestinal tract	35,001	27,981	80%	65	<1%	23	35%	42	65%	34,936	100%	10,499	30%	24,437	70%
Genitourinary tract	47,587	34,411	72%	24	<1%	2	8%	22	92%	47,563	100%	3,376	7%	44,187	93%
Gonads	2,028	1,719	85%	14	<1%	2	14%	12	86%	2,014	99%	242	12%	1,772	88%
Other carcinoma (including skin and breast in males)	3,910	1,980	51%	8	<1%	1	13%	7	88%	3,902	100%	1,008	26%	2,894	74%
Other head and neck	7,955	5,900	74%	52	<1%	31	60%	21	40%	7,903	99%	4,994	63%	2,909	37%
Trachea, bronchus and lung	19,164	13,864	72%	19	<1%	8	42%	11	58%	19,145	100%	8,732	46%	10,413	54%
<i>Brain/CNS</i>	2,843	2,346	83%	110	4%	72	65%	38	35%	2,733	96%	1,121	41%	1,612	59%
Glioblastoma and anaplastic astrocytoma	2,030	1,781	88%	34	2%	23	68%	11	32%	1,996	98%	838	42%	1,158	58%
Medulloblastoma	19	19	100%	10	53%	9	90%	1	10%	9	47%	6	67%	3	33%
Other astrocytoma, glioma or ependymoma	653	496	76%	58	9%	35	60%	23	40%	595	91%	251	42%	344	58%
Other central nervous system tumour	132	42	32%	5	4%	3	60%	2	40%	127	96%	24	19%	103	81%
Supratentorial PNET	9	8	89%	3	33%	2	67%	1	33%	6	67%	2	33%	4	67%

Section 3.1.1 (cont.)

Cancer	Diagnosis year: 2009-2017	Had treatment			Age at diagnosis: 15-25						Age at diagnosis: >25					
					MDT review		No MDT review		MDT review		No MDT review					
		N	n	%	Diagnosis	% ^b	% ^c	% ^c	Diagnosis	% ^b	% ^c	% ^c	Diagnosis	% ^b	% ^c	% ^c
<i>Germ cell</i>	1,533	1,423	93%	306	20%	57	19%	249	81%	1,227	80%	215	18%	1,012	82%	
Gonadal	1,466	1,360	93%	293	20%	48	16%	245	84%	1,173	80%	199	17%	974	83%	
Non-gonadal	67	63	94%	13	19%	9	69%	4	31%	54	81%	16	30%	38	70%	
<i>Leukaemias</i>	6,432	3,069	48%	135	2%	29	21%	106	79%	6,297	98%	279	4%	6,018	96%	
Leukaemia (acute)	2,393	1,600	67%	114	5%	28	25%	86	75%	2,279	95%	72	3%	2,207	97%	
Leukaemia (chronic)	4,039	1,469	36%	21	<1%	1	5%	20	95%	4,018	99%	207	5%	3,811	95%	
<i>Lymphomas</i>	9,883	7,558	76%	373	4%	194	52%	179	48%	9,510	96%	2,734	29%	6,776	71%	
Hodgkin Lymphoma	1,059	987	93%	246	23%	123	50%	123	50%	813	77%	320	39%	493	61%	
Non-Hodgkin Lymphoma	8,824	6,571	74%	127	1%	71	56%	56	44%	8,697	99%	2,414	28%	6,283	72%	
<i>Soft-tissue sarcomas</i>	2,043	1,351	66%	90	4%	41	46%	49	54%	1,953	96%	622	32%	1,331	68%	
Rhabdomyosarcoma	50	46	92%	17	34%	8	47%	9	53%	33	66%	16	48%	17	52%	
Other soft-tissue sarcoma	1,993	1,305	65%	73	4%	33	45%	40	55%	1,920	96%	606	32%	1,314	68%	
<i>Other invasive</i>	29,496	13,657	46%	101	<1%	22	22%	79	78%	29,395	100%	4,136	14%	25,259	86%	
Total	198,382	143,456	72%	1,451	<1%	554	38%	897	62%	196,931	99%	48,794	25%	148,137	75%	

^a % = Had treatment / N.

^b % = Diagnosis of age subgroup / N.

^c % = MDT review / Diagnosis.

3.1.2 | What percentage of youths with cancer were reviewed by a MDT# compared to those over 25 yrs old by cancer type?

Diagnosis years 2013-2017

Cancer	Diagnosis year: 2013-2017	Had treatment		Age at diagnosis: 15-25						Age at diagnosis: >25					
		N	n	%	Diagnosis	% ^b	MDT review	% ^c	No MDT review	% ^c	Diagnosis	% ^b	MDT review	% ^c	No MDT review
<i>Bone sarcomas</i>	202	160	79%	42	21%	31	74%	11	26%	160	79%	65	41%	95	59%
Ewing tumour	32	31	97%	16	50%	14	88%	2	13%	16	50%	7	44%	9	56%
Osteosarcoma	63	49	78%	16	25%	12	75%	4	25%	47	75%	18	38%	29	62%
Other bone tumour	107	80	75%	10	9%	5	50%	5	50%	97	91%	40	41%	57	59%
<i>Carcinomas (excluding thyroid and appendix)</i>	84,243	63,847	76%	133	<1%	50	38%	83	62%	84,110	100%	25,218	30%	58,892	70%
Breast	16,846	15,335	91%	12	<1%	5	42%	7	58%	16,834	100%	6,642	39%	10,192	61%
Cervix	941	830	88%	21	2%	4	19%	17	81%	920	98%	110	12%	810	88%
Gastrointestinal tract	20,188	15,337	76%	34	<1%	15	44%	19	56%	20,154	100%	6,876	34%	13,278	66%
Genitourinary tract	27,000	18,534	69%	15	<1%			15	100%	26,985	100%	2,453	9%	24,532	91%
Gonads	1,141	954	84%	6	<1%	1	17%	5	83%	1,135	99%	118	10%	1,017	90%
Other carcinoma (including skin and breast in males)	2,272	1,172	52%	4	<1%	1	25%	3	75%	2,268	100%	673	30%	1,595	70%
Other head and neck	4,585	3,439	75%	28	<1%	19	68%	9	32%	4,557	99%	3,151	69%	1,406	31%
Trachea, bronchus and lung	11,270	8,246	73%	13	<1%	5	38%	8	62%	11,257	100%	5,195	46%	6,062	54%
<i>Brain/CNS</i>	1,609	1,294	80%	62	4%	46	74%	16	26%	1,547	96%	752	49%	795	51%
Glioblastoma and anaplastic astrocytoma	1,159	992	86%	17	1%	13	76%	4	24%	1,142	99%	572	50%	570	50%
Medulloblastoma	8	8	100%	4	50%	4	100%			4	50%	4	100%		
Other astrocytoma, glioma or ependymoma	361	266	74%	36	10%	25	69%	11	31%	325	90%	159	49%	166	51%
Other central nervous system tumour	75	22	29%	3	4%	3	100%			72	96%	15	21%	57	79%
Supratentorial PNET	6	6	100%	2	33%	1	50%	1	50%	4	67%	2	50%	2	50%

Section 3.1.2 (cont.)

Cancer	Diagnosis year: 2013-2017			Age at diagnosis: 15-25						Age at diagnosis: >25					
	Had treatment			Diagnosis		MDT review		No MDT review		Diagnosis		MDT review		No MDT review	
	N	n	%		% ^b		% ^c		% ^c		% ^b		% ^c		% ^c
<i>Germ cell</i>	908	808	89%	179	20%	46	26%	133	74%	729	80%	162	22%	567	78%
Gonadal	867	768	89%	172	20%	39	23%	133	77%	695	80%	149	21%	546	79%
Non-gonadal	41	40	98%	7	17%	7	100%			34	83%	13	38%	21	62%
<i>Leukaemias</i>	3,895	1,759	45%	67	2%	28	42%	39	58%	3,828	98%	213	6%	3,615	94%
Leukaemia (acute)	1,453	942	65%	59	4%	27	46%	32	54%	1,394	96%	62	4%	1,332	96%
Leukaemia (chronic)	2,442	817	33%	8	<1%	1	13%	7	88%	2,434	100%	151	6%	2,283	94%
<i>Lymphomas</i>	5,877	4,365	74%	215	4%	129	60%	86	40%	5,662	96%	1,790	32%	3,872	68%
Hodgkin Lymphoma	632	595	94%	141	22%	79	56%	62	44%	491	78%	205	42%	286	58%
Non-Hodgkin Lymphoma	5,245	3,770	72%	74	1%	50	68%	24	32%	5,171	99%	1,585	31%	3,586	69%
<i>Soft-tissue sarcomas</i>	1,191	764	64%	58	5%	27	47%	31	53%	1,133	95%	412	36%	721	64%
Rhabdomyosarcoma	25	23	92%	8	32%	6	75%	2	25%	17	68%	9	53%	8	47%
Other soft-tissue sarcoma	1,166	741	64%	50	4%	21	42%	29	58%	1,116	96%	403	36%	713	64%
<i>Other invasive</i>	17,943	7,887	44%	59	<1%	15	25%	44	75%	17,884	100%	2,570	14%	15,314	86%
Total	115,867	80,883	70%	815	<1%	372	46%	443	54%	115,052	99%	31,181	27%	83,871	73%

^a % = Had treatment / N.

^b % = Diagnosis of age subgroup / N.

^c % = MDT review / Diagnosis.

3.2 | Characteristics of cancer patients

Diagnosis years 2009-2017

3.2.1 | Patient characteristics of youths with cancer who were reviewed by a MDT[#] compared to those over 25 yrs old.

	Diagnosis year: 2009-2017		Had treatment		Age at diagnosis: 15-25						Age at diagnosis: >25					
	N	Qld %	n	% ^a	Diagnosis	% ^b	MDT	% ^c	No	% ^c	Diagnosis	% ^b	MDT	% ^c	No MDT	% ^c
Queensland	198,382	100%	143,456	72%	1,451	<1%	554	38%	897	62%	196,931	99%	48,794	25%	148,137	75%
Sex																
Male	112,314	57%	77,747	69%	834	<1%	302	36%	532	64%	111,480	99%	24,517	22%	86,963	78%
Female	86,068	43%	65,709	76%	617	<1%	252	41%	365	59%	85,451	99%	24,277	28%	61,174	72%
Indigenous status																
Indigenous	3,815	2%	2,675	70%	73	2%	25	34%	48	66%	3,742	98%	1,245	33%	2,497	67%
Non-Indigenous	193,958	98%	140,693	73%	1,366	<1%	528	39%	838	61%	192,592	99%	47,526	25%	145,066	75%
Not stated/unknown	609	0%	88	14%	12	2%	1	8%	11	92%	597	98%	23	4%	574	96%
Socioeconomic status																
Affluent	27,285	14%	20,654	76%	248	<1%	78	31%	170	69%	27,037	99%	4,805	18%	22,232	82%
Middle	127,965	65%	92,775	73%	941	<1%	356	38%	585	62%	127,024	99%	32,106	25%	94,918	75%
Disadvantaged	43,118	22%	30,020	70%	262	<1%	120	46%	142	54%	42,856	99%	11,883	28%	30,973	72%
Remoteness																
Major city	125,491	63%	91,604	73%	1,000	<1%	376	38%	624	62%	124,491	99%	30,838	25%	93,653	75%
Inner regional	46,950	24%	33,762	72%	276	<1%	121	44%	155	56%	46,674	99%	11,274	24%	35,400	76%
Outer regional	21,764	11%	15,239	70%	139	<1%	47	34%	92	66%	21,625	99%	5,952	28%	15,673	72%
Remote & very remote	4,177	2%	2,851	68%	36	<1%	10	28%	26	72%	4,141	99%	730	18%	3,411	82%
Comorbidities																
0 Comorbidities	130,764	66%	99,156	76%	1,296	<1%	491	38%	805	62%	129,468	99%	30,920	24%	98,548	76%
1 Comorbidities	38,858	20%	26,859	69%	121	<1%	51	42%	70	58%	38,737	100%	10,337	27%	28,400	73%
2+ Comorbidities	28,760	14%	17,441	61%	34	<1%	12	35%	22	65%	28,726	100%	7,537	26%	21,189	74%

^a % = Had treatment / N.

^b % = Diagnosis of age subgroup / N.

^c % = MDT review / Diagnosis.

3.2.2 | Patient characteristics of youths with cancer who were reviewed by a MDT# compared to those over 25 yrs old.

Diagnosis years 2013-2017

	Diagnosis year: 2013-2017		Had treatment		Age at diagnosis: 15-25						Age at diagnosis: >25					
	N	Qld %	n	% ^a	Diagnosis	% ^b	MDT review	% ^c	No MDT review	% ^c	Diagnosis	% ^b	MDT review	% ^c	No MDT review	% ^c
Queensland	115,867	100%	80,883	70%	815	<1%	372	46%	443	54%	115,052	99%	31,181	27%	83,871	73%
Sex																
Male	64,989	56%	43,194	66%	466	<1%	214	46%	252	54%	64,523	99%	15,781	24%	48,742	76%
Female	50,878	44%	37,689	74%	349	<1%	158	45%	191	55%	50,529	99%	15,400	30%	35,129	70%
Indigenous status																
Indigenous	2,395	2%	1,639	68%	42	2%	20	48%	22	52%	2,353	98%	862	37%	1,491	63%
Non-Indigenous	113,026	98%	79,179	70%	765	<1%	352	46%	413	54%	112,261	99%	30,299	27%	81,962	73%
Not stated/unknown	446	0%	65	15%	8	2%		<1%	8	100%	438	98%	20	5%	418	95%
Socioeconomic status																
Affluent	15,980	14%	11,645	73%	142	<1%	55	39%	87	61%	15,838	99%	2,990	19%	12,848	81%
Middle	74,893	65%	52,340	70%	523	<1%	235	45%	288	55%	74,370	99%	20,579	28%	53,791	72%
Disadvantaged	24,985	22%	16,895	68%	150	<1%	82	55%	68	45%	24,835	99%	7,612	31%	17,223	69%
Remoteness																
Major city	73,416	63%	51,683	70%	554	<1%	250	45%	304	55%	72,862	99%	19,418	27%	53,444	73%
Inner regional	27,376	24%	19,085	70%	164	<1%	77	47%	87	53%	27,212	99%	7,104	26%	20,108	74%
Outer regional	12,740	11%	8,559	67%	84	<1%	38	45%	46	55%	12,656	99%	4,171	33%	8,485	67%
Remote & very remote	2,335	2%	1,556	67%	13	<1%	7	54%	6	46%	2,322	99%	488	21%	1,834	79%
Comorbidities																
0 Comorbidities	73,858	64%	53,660	73%	722	<1%	326	45%	396	55%	73,136	99%	19,237	26%	53,899	74%
1 Comorbidities	23,731	20%	16,091	68%	75	<1%	37	49%	38	51%	23,656	100%	6,717	28%	16,939	72%
2+ Comorbidities	18,278	16%	11,132	61%	18	<1%	9	50%	9	50%	18,260	100%	5,227	29%	13,033	71%

^a % = Had treatment / N.

^b % = Diagnosis of age subgroup / N.

^c % = MDT review / Diagnosis.

3.3 | MDT by Hospital and Health Service (HHS) of residence

Diagnosis years 2009-2017

3.3.1 | MDT rates by HHS of residence and age group

HHS of residence	Diagnosis year: 2009-2017		Had treatment		Age at diagnosis: 15-25						Age at diagnosis: >25					
	N	Qld %	n	% ^a	Diagnosis	% ^b	MDT review	% ^c	No MDT review	% ^c	Diagnosis	% ^b	MDT review	% ^c	No MDT review	% ^c
Cairns and Hinterland	10,692	5%	7,444	70%	61	<1%	21	34%	40	66%	10,631	99%	4,105	39%	6,526	61%
Central Queensland	8,641	4%	6,252	72%	63	<1%	25	40%	38	60%	8,578	99%	1,607	19%	6,971	81%
Central West	562	0%	395	70%	6	1%	2	33%	4	67%	556	99%	93	17%	463	83%
Darling Downs	12,815	6%	9,047	71%	82	<1%	33	40%	49	60%	12,733	99%	2,995	24%	9,738	76%
Gold Coast	24,807	13%	18,006	73%	171	<1%	69	40%	102	60%	24,636	99%	6,831	28%	17,805	72%
Mackay	6,667	3%	4,770	72%	60	<1%	15	25%	45	75%	6,607	99%	425	6%	6,182	94%
Metro North	38,027	19%	27,718	73%	302	<1%	120	40%	182	60%	37,725	99%	10,242	27%	27,483	73%
Metro South	40,061	20%	29,538	74%	377	<1%	138	37%	239	63%	39,684	99%	8,843	22%	30,841	78%
North West	819	0%	590	72%	7	<1%	3	43%	4	57%	812	99%	68	8%	744	92%
South West	1,098	1%	728	66%	5	<1%	2	40%	3	60%	1,093	100%	272	25%	821	75%
Sunshine Coast	20,544	10%	14,877	72%	108	<1%	58	54%	50	46%	20,436	99%	7,286	36%	13,150	64%
Torres and Cape	667	0%	418	63%	8	1%	1	13%	7	88%	659	99%	249	38%	410	62%
Townsville	9,836	5%	7,012	71%	84	<1%	19	23%	65	77%	9,752	99%	231	2%	9,521	98%
West Moreton	9,941	5%	7,319	74%	75	<1%	28	37%	47	63%	9,866	99%	2,351	24%	7,515	76%
Wide Bay	13,205	7%	9,342	71%	42	<1%	20	48%	22	52%	13,163	100%	3,196	24%	9,967	76%
Queensland	198,382	100%	143,456	72%	1,451	<1%	554	38%	897	62%	196,931	99%	48,794	25%	148,137	75%

^a % = Had treatment / N.

^b % = Diagnosis of age subgroup / N.

^c % = MDT review / Diagnosis.

3.3.2 | MDT rates by HHS of residence

Diagnosis years 2013-2017

HHS of residence	Diagnosis year: 2013-2017		Had treatment		Age at diagnosis: 15-25						Age at diagnosis: >25					
	N	Qld %	n	% ^a	Diagnosis	% ^b	MDT review	% ^c	No MDT review	% ^c	Diagnosis	% ^b	MDT review	% ^c	No MDT review	% ^c
Cairns and Hinterland	6,411	6%	4,308	67%	34	<1%	16	47%	18	53%	6,377	99%	3,037	48%	3,340	52%
Central Queensland	4,956	4%	3,483	70%	37	<1%	14	38%	23	62%	4,919	99%	925	19%	3,994	81%
Central West	326	0%	223	68%	3	<1%	1	33%	2	67%	323	99%	61	19%	262	81%
Darling Downs	7,365	6%	5,056	69%	44	<1%	22	50%	22	50%	7,321	99%	1,904	26%	5,417	74%
Gold Coast	14,724	13%	10,299	70%	104	<1%	47	45%	57	55%	14,620	99%	4,597	31%	10,023	69%
Mackay	3,830	3%	2,609	68%	38	<1%	13	34%	25	66%	3,792	99%	259	7%	3,533	93%
Metro North	22,212	19%	15,652	70%	171	<1%	78	46%	93	54%	22,041	99%	6,353	29%	15,688	71%
Metro South	23,135	20%	16,419	71%	205	<1%	91	44%	114	56%	22,930	99%	5,217	23%	17,713	77%
North West	445	0%	313	70%	2	<1%	2	100%		<1%	443	100%	43	10%	400	90%
South West	607	1%	394	65%	3	<1%	1	33%	2	67%	604	100%	172	28%	432	72%
Sunshine Coast	12,005	10%	8,364	70%	60	<1%	36	60%	24	40%	11,945	100%	4,642	39%	7,303	61%
Torres and Cape	395	0%	249	63%	1	<1%	1	100%		<1%	394	100%	187	47%	207	53%
Townsville	5,847	5%	4,045	69%	46	<1%	16	35%	30	65%	5,801	99%	137	2%	5,664	98%
West Moreton	5,848	5%	4,170	71%	39	<1%	20	51%	19	49%	5,809	99%	1,627	28%	4,182	72%
Wide Bay	7,761	7%	5,299	68%	28	<1%	14	50%	14	50%	7,733	100%	2,020	26%	5,713	74%
Queensland	115,867	100%	80,883	70%	815	<1%	372	46%	443	54%	115,052	99%	31,181	27%	83,871	73%

^a % = Had treatment / N.

^b % = Diagnosis of age subgroup / N.

^c % = MDT review / Diagnosis.

Appendix



Appendix 1 | Cancer groupings

Cancer group	Primary site code	Primary site code description	Morphology descriptions	Diagnosis
Appendix tumour				69
	C181	Appendix	Atypical carcinoid tumour	4
			Carcinoid tumour	55
			Enterochromaffin cell carcinoid	2
			Mucinous adenocarcinoma	1
			Neuroendocrine carcinoma	7
Bone sarcomas				29
	C40	Bone and articular cartilage of limbs	Chondroblastic osteosarcoma	1
			Chondrosarcoma	2
			Ewing sarcoma	4
			Osteosarcoma	7
			Parosteal osteosarcoma	1
	C41	Bone and articular cartilage of other and unspecified sites	Chondrosarcoma	1
			Chondroblastic osteosarcoma	1
			Ewing sarcoma	4
			Osteosarcoma	2
			Chondrosarcoma	1
			Juxtacortical chondrosarcoma	1
			Chordoma	1
	C49	Other connective and soft tissue	Ewing sarcoma	1
			Myxoid chondrosarcoma	1
			Ewing sarcoma	1
Carcinomas (excluding thyroid and appendix)				60
	C00	Lip	Squamous cell carcinoma, keratinising	1
	C02	Other and unspecified parts of tongue	Squamous cell carcinoma, keratinising	3
			Squamous cell carcinoma	1
	C05	Palate	Mucoepidermoid carcinoma	1
			Acinar cell carcinoma	4
	C07	Parotid gland	Carcinoma	1
			Mucoepidermoid carcinoma	4
	C08	Other and unspecified major salivary glands	Mucoepidermoid carcinoma	1
			Lymphoepithelial carcinoma	1
	C11	Nasopharynx	Squamous cell carcinoma	1
			Squamous cell carcinoma, keratinising	1
	C16	Cardia	Mucinous adenocarcinoma	1
			Adenocarcinoma	1
	C18	Colon	Adenocarcinoma in tubulovillous adenoma	1
			Mucinous adenocarcinoma	1
			Signet ring cell carcinoma	1
	C20	Rectum	Adenocarcinoma	1
	C22	Liver cell carcinoma	Hepatocellular carcinoma, fibrolamellar	2
			Neuroendocrine carcinoma	1
	C25	Pancreas	Solid pseudopapillary carcinoma	3
			Neuroendocrine carcinoma	1
			Solid pseudopapillary carcinoma	1
	C31	Accessory sinuses	Squamous cell carcinoma, keratinising	1
			Squamous cell carcinoma, large cell, nonkeratinising	1
			Carcinoid tumour	2
	C34	Bronchus and lung	Mucinous adenocarcinoma	1
			Atypical carcinoid tumour	1
			Carcinoid tumour	2
	C37	Thymus	Thymoma type, B3, malignant	1
			Thymoma, type AB, malignant	1
	C50	Breast	Infiltrating duct carcinoma	2
			Infiltrating duct carcinoma	1
			Spindle cell carcinoma	1
	C53	Cervix uteri	Squamous cell carcinoma	3
			Squamous cell carcinoma, microinvasive	1
			Squamous cell carcinoma, microinvasive	1
	C56	Ovary	Mucinous adenocarcinoma	1
			Serous cystadenocarcinoma	1
			Clear cell adenocarcinoma	1
	C64	Kidney, except renal pelvis	Cyst-associated renal cell carcinoma	1
			Renal cell carcinoma	2
			Renal cell carcinoma, chromophobe type	1
	C80	Malignant neoplasm without specification of site	Adenocarcinoma	1

Cancer group	Primary site code	Primary site code description	Morphology descriptions	Diagnosis
Brain/CNS				43
			Astrocytoma	9
			Astrocytoma, anaplastic	1
			Ependymoma	1
			Ependymoma, anaplastic	1
			Glioblastoma	6
	C71	Brain	Glioma, malignant	9
			Medulloblastoma	3
			Oligodendroglioma	6
			Oligodendroglioma, anaplastic	1
			Pleomorphic xanthoastrocytoma	2
	C72	Optic nerve	Astrocytoma	1
	C75	Pineal gland	Pineoblastoma	3
Germ cell				80
			Dysgerminoma	1
			Germinoma	1
	C56	Ovary	Mixed germ cell tumour	1
			Teratoma, malignant	5
			Yolk sac tumour	2
			Choriocarcinoma	1
			Choriocarcinoma combined with other germ cell elements	5
			Embryonal carcinoma	7
	C62	Testis	Germ cell tumour, nonseminomatous	9
			Germinoma	2
			Mixed germ cell tumour	31
			Seminoma	9
			Teratoma, malignant	3
	C71	Brain	Mixed germ cell tumour	1
	C75	Other endocrine glands and related structures	Germinoma	2
Leukaemias				38
			B lymphoblastic leukaemia/lymphoma with t(12;21)(p13;q22); TEL-AML1 (ETV6-RUNX1)	2
			B lymphoblastic leukaemia/lymphoma,	5
			Burkitt cell leukaemia	1
	C91	Lymphoid leukaemia	Precursor B-cell lymphoblastic leukaemia	1
			Precursor cell lymphoblastic leukaemia	7
			Precursor T-cell lymphoblastic leukaemia	2
			T-cell large granular lymphocytic leukaemia	1
			Acute myeloid leukaemia	4
			Acute myeloid leukaemia, minimal differentiation	1
			Acute myeloid leukaemia, t(8;21)(q22;q22)	1
	C92	Myeloid leukaemia	Acute myelomonocytic leukaemia	2
			Acute promyelocytic leukaemia	4
			Chronic myeloid leukaemia	4
	C93	Monocytic leukaemia	Acute monocytic leukaemia	3
Lymphomas				110
			Hodgkin disease, mixed cellularity	5
			Hodgkin lymphoma	20
	C81	Hodgkin lymphoma	Hodgkin lymphoma, lymphocyte-rich	1
			Hodgkin lymphoma, nodular lymphocyte predominance	4
			Hodgkin lymphoma, nodular sclerosis	52
	C83	Non-follicular lymphoma	Burkitt lymphoma	5
			Lymphoma, large B-cell, diffuse	9
	C84	Mature t/nk-cell lymphomas	Anaplastic large cell lymphoma, T cell and Null cell type	3
			Cutaneous T-cell lymphoma	1
			Mycosis fungoides	2
			Composite Hodgkin and non-Hodgkin lymphoma	1
	C85	Other and unspecified types of non-hodgkin lymphoma	Lymphoma, non-Hodgkin	2
			Malignant lymphoma	1
			Mediastinal large B-cell lymphoma	1
			Precursor T-cell lymphoblastic lymphoma	1
	C86	Other specified types of t/nk-cell lymphoma	Primary cutaneous CD30+ T-cell lymphoproliferative disorder	1
			Subcutaneous panniculitis-like T-cell lymphoma	1

Cancer group	Primary site code	Primary site code description	Morphology descriptions	Diagnosis
Melanomas				130
	C20	Rectum	Malignant melanoma	1
	C43	Skin	Malignant melanoma	128
	C69	Eye and adnexa	Malignant melanoma	1
Soft-tissue sarcomas				35
	C22	Liver and intrahepatic bile ducts	Epithelioid haemangioendothelioma, malignant	1
	C30	Nasal cavity and middle ear	Alveolar rhabdomyosarcoma	1
	C31	Accessory sinuses	Embryonal rhabdomyosarcoma	1
			Rhabdomyosarcoma	1
	C44	Other malignant neoplasms of skin	Dermatofibrosarcoma	8
			Leiomyosarcoma	1
	C47	Peripheral nerves and autonomic nervous system	Malignant peripheral nerve sheath tumour	2
			Alveolar rhabdomyosarcoma	3
			Epithelioid sarcoma	2
			Liposarcoma	1
			Myxoid liposarcoma	2
			Sarcoma	1
			Small cell sarcoma	1
			Spindle cell rhabdomyosarcoma	1
			Spindle cell sarcoma	1
			Synovial sarcoma	3
	C49	Other connective and soft tissue	Synovial sarcoma, biphasic	1
			Embryonal rhabdomyosarcoma	1
	C53	Cervix uteri	Embryonal rhabdomyosarcoma	1
	C61	Prostate	Embryonal rhabdomyosarcoma	1
	C62	Testis	Embryonal rhabdomyosarcoma	1
	C80	Malignant neoplasm without specification of site	Desmoplastic small round cell tumour	1
Thyroid carcinomas				70
	C73	Thyroid gland	Follicular adenocarcinoma	1
			Follicular carcinoma, minimally invasive	6
			Insular carcinoma	1
			Nonencapsulated sclerosing carcinoma	2
			Oxyphilic adenocarcinoma	1
			Papillary adenocarcinoma	38
			Papillary carcinoma	2
			Papillary carcinoma, columnar cell	1
			Papillary carcinoma, encapsulated	4
			Papillary carcinoma, follicular variant	6
			Papillary carcinoma, oxyphilic cell	1
			Papillary microcarcinoma	7
Other invasive				29
	C20	Rectum	Carcinoid tumour	3
	C24	Other and unspecified parts of biliary tract	Adenocarcinoma	1
	C30	Nasal cavity and middle ear	Malignant tumour, spindle cell type	1
	C48	Retroperitoneum and peritoneum	Paraganglioma, malignant	1
	C50	Breast	Phyllodes tumour, malignant	1
	C54	Corpus uteri	Endometrioid adenocarcinoma	1
	C56	Ovary	Sertoli-Leydig cell tumour, poorly differentiated	1
	C96	Other and unspecified malignant neoplasms of lymphoid, haematopoietic and related tissue	Langerhans cell histiocytosis	6
			Myeloproliferative neoplasm, unclassifiable	2
	D45	Polycythaemia vera	Polycythaemia vera	2
	D46	Myelodysplastic syndromes	Refractory anaemia with excess of blasts	1
			Therapy-related myelodysplastic syndrome	1
	D47	Other neoplasms of uncertain or unknown behaviour of lymphoid, haematopoietic and related tissue	Essential thrombocythaemia	8
Total AYA				693

Appendix 2 | Patient cohort ICD-10-AM codes

What are the exact ICD codes that define the patient cohort?

PROCEDURE/GROUPING	ICD-10-AM
Bladder	
Excision	
Endo. destruction of a single bladder lesion ≤ 2 cm or tissue of bladder	36840-03
Endoscopic destruction of a single lesion of bladder > 2 cm in diameter	36845-06
Endoscopic destruction of multiple lesions of bladder	36845-07
Endo. resection of a single bladder lesion ≤ 2cm or tissue of bladder	36840-02
Endoscopic resection of a single lesion of bladder > 2 cm in diameter	36845-04
Endoscopic resection of multiple lesions of bladder	36845-05
Segmental Cystectomy	
Laparoscopic partial excision of bladder	37000-00
Partial excision of bladder	37000-01
Radical Cystectomy	
Total excision of bladder	37014-00
Urinary Diversion	
Formation of continent intestinal urinary reservoir	36606-00
Formation of continent intestinal urinary reservoir with attachment of reservoir to urethra	36606-03
Formation of incontinent intestinal urinary reservoir	36600-02
Lymph Node Excision	
Excision of lymph node of groin	30329-00
Regional excision of lymph nodes of groin	30329-01
Radical excision of lymph nodes of groin	30330-00
Excision of lymph node of other site	90282-00
Regional excision of lymph nodes of other site	90282-01
Radical excision of retroperitoneal lymph nodes	37607-00
Radical excision of retroperitoneal lymph nodes, subsequent	37610-00
Radical excision of lymph nodes of other site	90282-02
Breast	
Excision of Lesion/Breast Conserving Surgery	
Complete excision of lesion without guidewire	31536-00
Complete excision of lesion with guidewire	31500-00
Mastectomy	
Total mastectomy (unilateral)	31518-00
Total mastectomy (bilateral)	31518-01
Subcutaneous mastectomy (unilateral)	31524-00
Subcutaneous mastectomy (bilateral)	31524-01
Re-excision	
Re-excision of lesion site	31515-00
Sentinel lymph node surgery	
Excision of single axillary lymph node	30332-00
Excision of sentinel lymph node(s) in level I, II or III of axilla	30300-00
Axillary dissection	
Level I of excision of lymph nodes of axilla	30336-00
Level II or III excision of lymph nodes of axilla	30335-00
Colorectal	
Colectomy	
A. Resection of colon without stoma with anastomosis	
Resection of small intestine with anastomosis	30566-00
Limited excision of large intestine with anastomosis	32003-00
Right hemicolectomy with anastomosis	32003-01
Extended right hemicolectomy with anastomosis	32005-01
Left hemicolectomy with anastomosis	32006-00
Subtotal colectomy with anastomosis	32005-00
Total colectomy with anastomosis	32012-00
B. Resection of colon with stoma	
Resection of small intestine with formation of stoma	30565-00

Limited excision of large intestine with formation of stoma	32000-00
Right hemicolectomy with formation of stoma	32000-01
Extended right hemicolectomy with formation of stoma	32004-01
Left hemicolectomy with formation of stoma	32006-01
Subtotal colectomy with formation of stoma	32004-00
Total colectomy with ileostomy	32009-00
Local Excision, Polypectomy	
C. Local excision, polypectomy	
Fibreoptic colonoscopy to hepatic flexure, with polypectomy	32087-00
Fibreoptic colonoscopy to hepatic flexure, with biopsy	32084-01
Fibreoptic colonoscopy to caecum, with polypectomy	32093-00
Fibreoptic colonoscopy to caecum, with biopsy	32090-01
Endoscopic mucosal resection of large intestine	90297-02
Excision of other lesion of large intestine	90959-00
Per anal submucosal excision of lesion or tissue of rectum	32099-00
Per anal excision of lesion or tissue of rectum via stereoscopic rectoscopy	32103-00
Other excision of lesion of rectum	90341-00
Excision of anal polyp	32142-01
Per anal full thickness excision of anorectal lesion or tissue	32105-00
Endoscopic excision of lesion or tissue of anus	90315-00
Rigid sigmoidoscopy with biopsy	32075-01
Biopsy of large intestine	30075-14
Full thickness biopsy of rectum	32096-00
Biopsy of anus	30075-34
Excision of other lesion or tissue of anus	90315-01
Abdominalperineal Resection	
D. AP Resection (with stoma)	
Abdominoperineal proctectomy	32039-00
Total Proctoclectomy	
E. Total proctocolectomy without stoma	
Total proctocolectomy with ileo-anal anastomosis	32051-00
F. Total proctocolectomy with stoma	
Total proctocolectomy with ileostomy	32015-00
Total proctocolectomy with ileo-anal anastomosis and formation of temporary ileostomy	32051-01
Anterior Resection	
G. Anterior Resection	
High anterior resection of rectum	32024-00
Low anterior resection of rectum	32025-00
Ultra low anterior resection of rectum	32026-00
Ultra low anterior resection of rectum with hand sutured coloanal anastomosis	32028-00
Anterior resection of rectum, level unspecified	92208-00
Hartmann's	
I. Hartmann's with stoma	
Rectosigmoidectomy with formation of stoma	32030-00
Stoma	
J. Stoma	
Temporary ileostomy	30375-29
Other enterostomy	30375-01
Stoma Closures	
K. Stoma Closures	
Closure of loop colostomy	30562-02
Closure of colostomy with restoration of bowel continuity	30562-03
Closure of other stoma of large intestine	30562-05
Restoration of bowel continuity after Hartmann's procedure	32033-00
Closure of other stoma of small intestine	30562-04
Closure of loop ileostomy	30562-00
Restorative proctectomy	32060-00
Entero/Enterocolostomy	
L. Entero/Enterocolostomy	
Enterocolostomy	30515-01
Enteroenterostomy	30515-02

NSCLC	
Partial Resection	
Endoscopic wedge resection of lung	90169-00
Radical wedge resection of lung	38440-01
Segmental wedge resection of lung	38438-00
Wedge resection of lung	38440-00
Lobectomy of lung	
Lobectomy of lung	38438-01
Radical lobectomy	38441-00
Pneumonectomy	
Pneumonectomy	38438-02
Radical pneumonectomy	38441-01
Gastrectomy	
Partial distal gastrectomy with gastroduodenal anastomosis	30518-00
Partial distal gastrectomy with gastrojejunal anastomosis	30518-01
Partial proximal gastrectomy with oesophago-gastric anastomosis	30518-02
Total gastrectomy	30521-00
Subtotal gastrectomy	30523-00
Radical gastrectomy	30524-00
Oesophagectomy	
Oesophagectomy by abdominal and transthoracic mobilisation, with thoracic oesophagogastric anastomosis	30535-00
Oesophagectomy by abdominal and transthoracic mobilisation, with cervical oesophagogastric anastomosis	30536-00
Oesophagectomy by abdominal and transthoracic mobilisation, with cervical oesophagostomy	30536-01
Trans-hiatal oesophagectomy by abdominal and cervical mobilisation, with oesophagogastric anastomosis	30541-00
Trans-hiatal oesophagectomy by abdominal and cervical mobilisation, with oesophagojejunal anastomosis	30541-01
Oesophagectomy by abdominal and thoracic mobilisation with thoracic anastomosis, large intestine interposition and anastomosis	30545-00
Oesophagectomy by abdominal and thoracic mobilisation with thoracic anastomosis using Roux-en-Y reconstruction	30545-01
Oesophagectomy by abdominal and thoracic mobilisation with cervical anastomosis, large intestine interposition and anastomosis	30550-00
Oesophagectomy by abdominal and thoracic mobilisation with cervical anastomosis using Roux-en-Y reconstruction	30550-01

Appendix 3 | Indicator calculations

QYCS review

n – The number of AYA cancer patients who been reviewed by QYCS (Queensland Youth Cancer Services).

N – The number of AYA cancer patients.

Surgery

n – The number of AYA cancer patients who cancer surgery 30 days prior and up to 12 months following diagnosis.

N – The number of AYA cancer patients who been reviewed by QYCS.

IV systemic therapy

n – The number of AYA cancer patients who had IV systemic therapy after diagnosis.

N – The number of AYA cancer patients who been reviewed by QYCS.

Radiation therapy

n – The number of AYA cancer patients who had radiation therapy after diagnosis.

N – The number of AYA cancer patients who been reviewed by QYCS.

Median days from pathological diagnosis to surgery: the midpoint between the top half and bottom half of the observed length of stay, in days.

Interquartile range (IQR): a measure of variability, based on dividing a data set into quartiles. Quartiles divide a rank-ordered data set into four equal parts. The values that separate these parts are called the first, second, and third quartiles; and they are denoted by Q_1 , Q_2 (median), and Q_3 , respectively. The IQR is the distance between the 75th and 25th percentiles, $IQR=Q_3 - Q_1$.

Median days from pathological diagnosis to first treatment: the midpoint between the top half and bottom half of the observed length of stay, in days.

Interquartile range (IQR): a measure of variability, based on dividing a data set into quartiles. Quartiles divide a rank-ordered data set into four equal parts. The values that separate these parts are called the first, second, and third quartiles; and they are denoted by Q_1 , Q_2 (median), and Q_3 , respectively. The IQR is the distance between the 75th and 25th percentiles, $IQR=Q_3 - Q_1$.

Received first treatment within 30 days of diagnosis by disadvantaged status

n – The number of AYA cancer patients, whose socio-economic status is disadvantaged, and who had their first treatment within 30 days of diagnosis.

N – The number of AYA cancer patients, whose socio-economic status is disadvantaged and had a cancer treatment.

Received first treatment within 30 days of diagnosis by metropolitan region

n – The number of AYA cancer patients, who live in major city or inner regional areas, who had their first treatment within 30 days of diagnosis.

N – The number of AYA cancer patients, who live in major city or inner regional areas, who had a cancer treatment.

Appendix 4 | AIHW Peer Groups

Principal referral hospitals

Principal referral hospitals are public acute hospitals that provide a very broad range of services, have a range of highly specialised service units, and have very large patient volumes. The term 'referral' recognises that these hospitals have specialist facilities not typically found in smaller hospitals.

Hospital list	
Gold Coast University Hospital	Princess Alexandra Hospital
Royal Brisbane & Women's Hospital	The Prince Charles Hospital
The Townsville Hospital	Sunshine Coast University Hospital
Radiation Oncology Princess Alexandra Raymond Terrace (ROPART)	Radiation Oncology Princess Alexandra Ipswich Road (ROPAIR)
Queensland Children's Hospital	

Public acute group A hospitals (Group A hospitals – Public)

Public acute group A hospitals are public acute hospitals that provide a wide range of services typically including a 24-hour emergency department, intensive care unit, coronary care unit and oncology unit, but do not provide the breadth of services provided by *Principal referral hospitals*.

Hospital list	
Bundaberg Base Hospital	Cairns Hospital
Hervey Bay Hospital	Ipswich Hospital
Logan Hospital	Mackay Base Hospital
Mater Hospital Brisbane	Nambour General Hospital
Queen Elizabeth II Jubilee Hospital	Redcliffe Hospital
Rockhampton Hospital	Toowoomba Hospital

Private acute group A hospitals (Group A hospitals – Private)

Private acute group A hospitals are private acute hospitals that have a 24-hour emergency department and an intensive care unit and provide a number of other specialised services such as coronary care, special care nursery, cardiac surgery and neurosurgery.

Hospital list	
Gold Coast Private Hospital	Greenslopes Private Hospital
Holy Spirit Northside	John Flynn Private Hospital
Mater Private Hospital Brisbane	Noosa Hospital
Pindara Private Hospital	St Andrew's War Memorial Hospital
The Wesley Hospital	

Public acute group B hospitals (Group B hospitals)

Public acute group B hospitals are those public acute hospitals that do not have the service profile of the *Principal referral hospitals* and *Group A hospitals*, but do have 24-hour emergency department; they typically provide elective surgery and have specialised service units such as obstetric, paediatric and psychiatric units.

Hospital list	
Caboolture Hospital	Gladstone Hospital
Caloundra Hospital	Mount Isa Base Hospital
Gympie Hospital	Robina Hospital
Redland Hospital	

Private acute group B hospitals (Group B hospitals)

Private acute group B hospitals are private acute hospitals that do not have a 24-hour emergency department but do have an intensive care unit and a number of other specialised services including coronary care, special care nursery, cardiac surgery and neurosurgery.

Hospital list	
Buderim Private Hospital	Mater Hospital Pimlico
Friendly Society Private Hospital	St Vincent's Hospital Toowoomba
St Andrew's Toowoomba Hospital	The Sunshine Coast Private Hospital
Sunshine Coast University Private Hospital	

Other hospitals

Hospital list	
Atherton Hospital	Icon Cancer Care Townsville
Bowen Hospital	Icon Cancer Care Wesley
Collinsville Hospital	Icon Cancer Centre Mackay
Dalby Hospital	Icon Integrated Cancer Care North Lakes
Emerald Hospital	Icon Integrated Cancer Centre Bundaberg
Goondiwindi Hospital	Mater Hospitals Brisbane/Icon Cancer Care South Brisbane
Ingham Hospital	Mater Misericordiae Day Unit
Innisfail Hospital	Mater Misericordiae Hospital Bundaberg
Julia Creek Hospital	Mater Misericordiae Hospital Gladstone
Kingaroy Hospital	Mater Misericordiae Hospital Mackay
Miles Hospital	Mater Misericordiae Hospital Rockhampton
Monto Hospital	Mater Private Hospital Redland
Proserpine Hospital	Mater Private Hospital Springfield
Roma Hospital	Mater Women's and Children's Hospital Hyde Park
Tully Hospital	Nambour Selangor Private Hospital
Warwick Hospital	North Lakes Day Hospital
Winton Hospital	North West Private Hospital
Brisbane Private Hospital	Pacific Private Day Hospital
Caboolture Private Hospital	Peninsula Private Hospital
Cairns Haematology and Oncology Clinic	St Andrew's - Ipswich Private Hospital
Cairns Private Hospital	St Stephen's Hospital Hervey Bay
Canossa Private Hospital	St Stephen's Private Hospital Maryborough
Chermside Day Hospital	Sunnybank Private Hospital
Gympie Private Hospital	Sunshine Coast Haematology & Oncology Clinic
Icon Cancer Care Chermside	Tasman Health Care Day Infusion Unit
Icon Cancer Care South Brisbane	The Wesley Hospital/Icon Cancer Care Wesley
Icon Cancer Care Southport	

References

1. JOURNAL OF ADOLESCENT AND YOUNG ADULT ONCOLOGY, Volume 7, Number 3, 2018
Queensland Youth Cancer Service: A Partnership Model to Facilitate Access to Quality Care for Young People Diagnosed with Cancer DOI: 10.1089/
2. Australian Institute of Health and Welfare. Australian hospital peer groups [Internet]. Canberra; 2015 p. 17-28. Available from: <https://www.aihw.gov.au/getmedia/79e7d756-7cfe-49bf-b8c0-0bbb0daa2430/14825.pdf.aspx?inline=true>

Method

Assigning a surgery record to a person

To assign a surgery record to a person with cancer, the earliest diagnosis in the cancer group is used. For example, if a person was diagnosed with cancer in 2010 and 2015, the surgery record linked to the cancer diagnosed in 2010 where the surgery occurred within 30 days prior to diagnosis date and up to 365 days after diagnosis date will be counted.

Diagnosis year

This report is structured around diagnosis years as recorded in the Queensland Cancer Register, the latest incident year being 2016. Only patients diagnosed between 2007 and 2016 will be included in this report. Patients that had surgery in 2007 but were diagnosed in an earlier year are excluded from the report.

Changes in historical incidence

Cancer incidence has increased slightly due to an increased number of sources notifying cancer, improved processes within the Queensland Cancer Register, and an increase in electronic notifications from public and private pathology laboratories (around 2-3% annually for 2010 to 2014). Caution should be used when comparing this report to previous editions.

Glossary

Flows

In-flows

In-flows show the distribution of residence for the total group of patients who were operated on by a hospital, group of hospitals or HHS.

Out-flows

Out-flows shows the proportion of patients residing in a given HHS who receive their surgery in a different HHS.

Number of surgeries

Includes Queensland residents of all ages diagnosed with invasive cancer in the surgical cohort time period who underwent surgery.

Private hospital

All hospitals that are not Queensland Health hospitals.

QOOL

QOOL supports cancer multidisciplinary teams by assisting meeting preparation, communication and documentation of essential clinical information such as diagnosis, cancer stage and recommended treatment plans. QOOL provides continuity of care, state-wide multidisciplinary team linkage and provides access to clinical outcomes and system performance data for quality improvement. The system provides a central view of patient data for multiple users, accessible at multiple locations.

QYCS review

AYA cancer patients have been reviewed by QYCS (Queensland Youth Cancer Services).

Remoteness

The relative remoteness of residence at time of diagnosis, derived from the Australian Standard Geographical Classification (ASGC). In this report, remoteness is classified into three groups based on the original ASGC grouping.

ASGC classifications	Modified ASGC classification
Major City	Metropolitan
Inner Regional	Regional
Outer Regional	
Remote	Rural and Remote
Very Remote	

An exception to this grouping is the metropolitan area of Townsville (originally classified as Rural). Townsville has been classified as Metropolitan because of the availability of tertiary level cancer services.

Sex

Refers to the biological and physiological characteristics that define men and women.

Socioeconomic status

Socioeconomic status is based on the Socio-Economic Indexes for Areas (SEIFA), a census-based measure of social and economic well-being developed by the Australian Bureau of Statistics (ABS) and aggregated at the level of Statistical Local Areas (SLA).

The ABS use SEIFA scores to rank regions into ten groups or deciles numbered one to ten, with one being the most disadvantaged and ten being the most affluent group. This ranking is useful at the national level, but the number of people in each decile often becomes too small for meaningful comparisons when applied to a subset of the population. For this reason, this document further aggregates SEIFA deciles into 3 socioeconomic groups.

SEIFA Group	Decile	Percentage of population (approximate)
Disadvantaged	1-2	20%
Middle	3-8	60%
Affluent	9-10	20%

FOR MORE INFORMATION

Queensland Cancer Control Analysis Team, Cancer Alliance Queensland
Queensland Health

Tel: (+61) (07) 3176 4400

Email: CancerAllianceQld@health.qld.gov.au

<https://canceralliancequeensland.health.qld.gov.au>

Although care has been taken to ensure the accuracy, completeness and reliability of the information provided these data are released for purposes of quality assurance and are to be used with appropriate caution. Be aware that data can be altered subsequent to original distribution and that the information is therefore subject to change without notice. It is recommended that careful attention be paid to the contents of any data and if required QCCAT can be contacted with any questions regarding its use. If you find any errors or omissions, please report them to CancerAllianceQld@health.qld.gov.au