

Queensland Head and Neck Cancer Quality Index

Indicators of safe, quality cancer care

Public and private hospitals

2011 – 2015



Acknowledgements

The Queensland Head and Neck Cancer Quality Index 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, Dr Hazel Harden, Adjunct Professor Liz Kenny AO, Professor Keith McNeil, Shoni Philpot, Professor Mark Smithers AM, Professor Euan Walpole, Associate Professor David Wyld.

The Head and Neck Cancer Sub-committee was established in 2019 as a Sub-committee of The Partnership to examine and improve outcomes for cancer patients who have been diagnosed with head and neck cancer across Queensland – an approach which has never been adopted for head and neck cancer in Queensland.

We wish to thank members of the Head and Neck Sub-committee: Sandro Porceddu (Chair), Martin Batstone, Raymond Chan, Michael Collins, Sam Douthwaite, Brett Hughes, Liz Kenny, Rahul Ladwa, and Ben Panizza for reviewing the data and providing valuable comments.

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Message from the Chair

As the Chair of the Head and Neck Cancer Sub-committee of the Queensland Cancer Control and Safety Quality Partnership, I am privileged to introduce the **Head and Neck Cancer Quality Index, Indicators of safe, quality cancer care, public and private hospitals, 2011-2015** report.

This report provides the first population-wide profile of head and neck cancer diagnoses and treatment in Queensland, containing vital information about surgery and radiation therapy and systemic treatments provided to Queenslanders newly diagnosed with a head and neck cancer between 2011 and 2015.

Data are presented by age group, sex, socio-economic status, remoteness of residence, Aboriginal and Torres Strait Islander status and other patient characteristics. This report tracks Queensland's progress toward delivering safe, quality cancer care and will be provided to all public and private hospitals that provide head and neck cancer services.

By assessing variations that exist, this report reveals differences between hospitals which may not be obvious in daily clinical practice but become clear with this type of analysis. I encourage you to consider how this information will inform how head and neck cancer is managed in your jurisdiction in Queensland.

I wish to acknowledge the commitment of the members of the Head and Neck Cancer Sub-committee and the Queensland Cancer Control Analysis Team in providing the information, analyses, statistics, discussion, and recommendations for this report.



Professor Sandro V Porceddu
Chair
Head and Neck Cancer Sub-committee

Summary

Head and neck cancer is a term used to describe a range of cancers occurring in the mouth, nose, sinuses, throat and salivary glands. This report includes Queensland patients diagnosed with primary head and neck cancer; cutaneous malignancies of the head and neck were excluded. For the report period 2011 to 2015, 3,644 new cases of head and neck cancer were diagnosed in Queensland and males accounted for around 75% of new cases. The median age at diagnosis was 63 for both males and females.

Head and neck cancers are a major cause of illness in Australia

While the annual number of head and neck cancers diagnosed in Queensland is increasing, the age-standardised incidence rate has remained stable since around 2001 at about 14-16 cancers per 100,000 persons. That said, the incidence of head and neck cancer in Queensland is changing. At the primary site level, we observed a dramatic increase in oropharyngeal cancers (OPC), particularly in males, which matches trends observed elsewhere (D'souza, Kreimer et al. 2007, Chaturvedi, Anderson et al. 2013). This increase is primarily driven by human papillomavirus (HPV) associated OPC. HPV-associated OPC tend to appear in a younger population, and survival rates are higher than non-HPV related tumours (Ang, Harris et al. 2010).

Survival was high at one year, but not for all sub-sites

During the report period 2011-2015, one-year relative survival for all head and neck cancers was high at 84%, decreasing to 74% at two years and 62% at five years. However, high survival was not observed for all head and neck cancer sub-sites, with one-year relative survival dropping to 77% for hypopharyngeal cancer and 66% for cancer of other and ill-defined sites of the lip, oral cavity and larynx (termed *Other pharynx* in this report).

Treatment rates are high and largely equitable for all head and neck sub-sites

The majority of Queenslanders with newly diagnosed major salivary gland (91%), oral cavity (79%), nasal cavity and paranasal sinuses (64%), and laryngeal (59%) cancers underwent a surgical procedure in the 12 months following their diagnosis.

Radiation therapy was a major treatment for head and neck cancer, particularly for cancers of the oropharynx, nasopharynx, and hypopharynx, with 81%, 77% and 72% of patients receiving this treatment in the 5 months following diagnosis, respectively. Treatment with intravenous (IV) systemic therapy was more common for cancers of the nasopharynx (73%) and oropharynx (70%).

The documented multidisciplinary team (MDT) review rate for head and neck cancer was high, at 80%.

Review at MDT is the gold standard for determining a patient's diagnosis and subsequent treatment plan

(Cancer Australia, 2019). Complete state-wide rates of MDT were not available with known gaps in data from the private sector in addition to Townsville Hospital and Health Service, so this rate was likely an underestimate of the true rate.

Head and neck cancers were primarily treated in public radiation oncology services (83%) and in public IV systemic therapy services (87%). For surgical procedures, 59% were conducted by the public sector. There was little variation in the characteristics of Queenslanders who received treatment for head and neck cancers with around 90% of patients receiving treatment. Notable exceptions were individuals aged over 85 who had lower treatment rates than younger patients (66%) and those residing in remote and very remote locations (77%).

Surgical mortality was low for head and neck cancers

Overall, 90-day surgical mortality was low at 2% for all head and neck cancer patients treated with surgery. However, 90-day surgical mortality was higher (4%) for hypopharyngeal patients.

Two-year surgical survival ranged from 61% for hypopharyngeal patients to 88% for major salivary gland and oropharyngeal cancer patients.

Oral cavity cancer is primarily treated with surgery, with high surgical survival

Surgical procedures of the oral tongue (46%) and floor of mouth/hard palate (45%) were more common among oral cavity cancer patients. Thirty-eight percent of oral cavity cancer patients had a tracheostomy, with the rate of tracheostomy much higher in Aboriginal and Torres Strait Islander Australians compared to non-Indigenous patients (70% and 37%, respectively). Just under half (45%) of oral cavity cancer patients also had surgery for reconstruction and repair. Two-year surgical survival was high at 81%.

Use of radiation therapy and chemotherapy near end of life

Eight percent of patients treated with IV systemic therapy and 5% of those treated with radiation therapy died within 30 days of treatment.

Next steps

The Head and Neck Cancer Quality Index provides baseline measurements for the on-going monitoring of the quality of head and neck cancer care in Queensland. Cancer Alliance Queensland promotes the collection and analyses of TNM staging data in Queensland and it is hoped this information will be available for future reports. HPV status for oropharyngeal cancer has important prognostic and treatment implications. Cancer Alliance Queensland is undertaking a project to document HPV status and outcomes and this information will be incorporated in future reports.

What is The Queensland Head and Neck Cancer Quality Index?

The Queensland Head and Neck Cancer Quality Index report has been developed for public and private cancer services. It is an initiative of the Head and Neck Cancer Sub-committee, part of the Cancer Alliance Queensland, which brings together the Cancer Control Safety and Quality Partnership (The Partnership), Queensland Cancer Control Analysis Team (QCCAT) and the Queensland Cancer Register (QCR) (<https://cancerallianceqld.health.qld.gov.au/>). The Queensland Head and Neck Cancer Quality Index includes the following quality dimensions, developed by Cancer Alliance Queensland with clinical leadership (Walpole, Theile, Philpot et al. 2019).

Quality Dimensions	
Effectiveness	Achieving the best outcomes for Queenslanders with head and neck cancer
Efficient	Optimally using resources to achieve desired outcomes
Safe	Avoiding and preventing adverse outcomes or injuries by healthcare management
Surgical Survival	Understanding the outcomes of surgery
Accessible	Making health services available to patients
Equitable	Providing care and ensuring health status does not vary in quality because of personal characteristics

The Queensland Head and Neck Cancer Quality Index reports on five years of data from 2011-2015, however there may have been changes more recently that are not captured by the time periods reported. Regardless, this report provides an important baseline for monitoring current investments in cancer care and changes in clinical practice. It also enables us to reflect on past treatment improvement programs and identify areas where a renewed effort or new approach may be required.

Why develop The Queensland Head and Neck Cancer Quality Index?

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. The Queensland Head and Neck Cancer Quality Index has been developed by QCCAT and lead head and neck cancer clinicians and relevant persons under the auspices of The Partnership. The Cancer Alliance Queensland supports a clinician-led, safety and quality program for cancer across Queensland. The Partnership is a gazetted quality assurance committee under Section 82 of the *Hospital and Health Boards Act 2011* (gazetted 10 December 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.

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 QCCAT'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 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 1982–2015. Our matching and linking processes provide the 570,000+ matched and linked records of cancer patients between 1982–2015 which provide the data for The Queensland Head and Neck Cancer Quality Index.

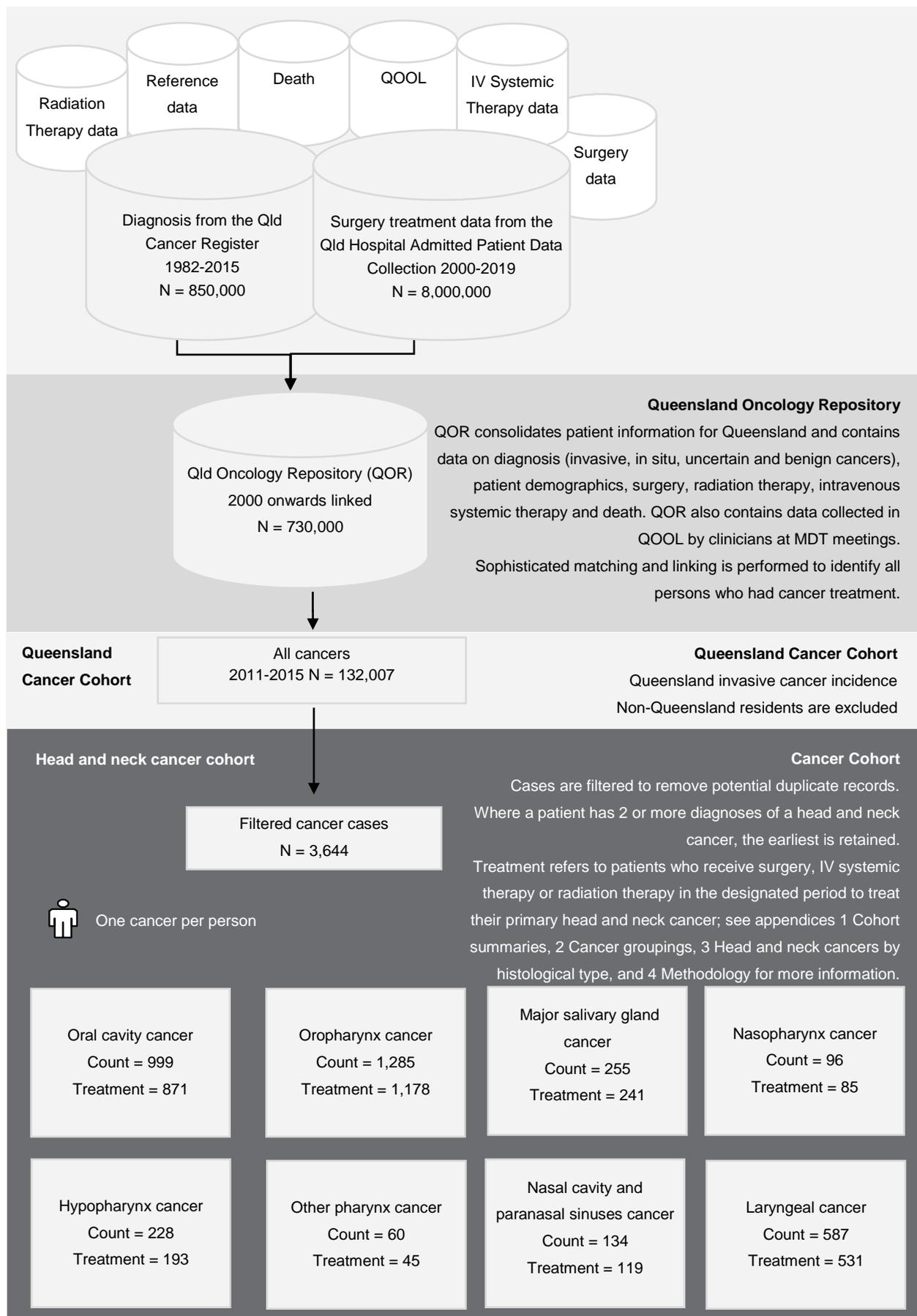
Looking ahead

The Head and Neck Cancer Quality Index provides baseline measurements for the on-going monitoring of the quality of head and neck cancer care in Queensland. The Sub-committee has chosen to report on an initial set of indicators to provide a picture of the safety and quality of head and neck cancer care in Queensland. This suite of indicators and reporting will be expanded on as more data become available. Complete TNM staging data were not available for inclusion in this report and would be a useful addition to future quality indexes. Cancer Alliance Queensland promotes the collection and analyses of staging data in Queensland and it is hoped this information will be available for future reports. Some variation seen in this report could be explained by differences in stage at diagnosis for the different head and neck sub-sites.

HPV status for oropharyngeal cancer has important prognostic implications. Cancer Alliance Queensland is undertaking a project to document HPV status and this information will be incorporated in future reports. The present study provides rates of radiation therapy and IV systemic treatments for head and neck cancer patients. The future inclusion of treatment intent, that is whether treatment was provided curatively or palliatively, would also be of interest.

No doubt the use of immunotherapy will increase in the future and we plan to understand its utilisation within Queensland for head and neck patients.

What data have been included in The Head and Neck Cancer Quality Index?



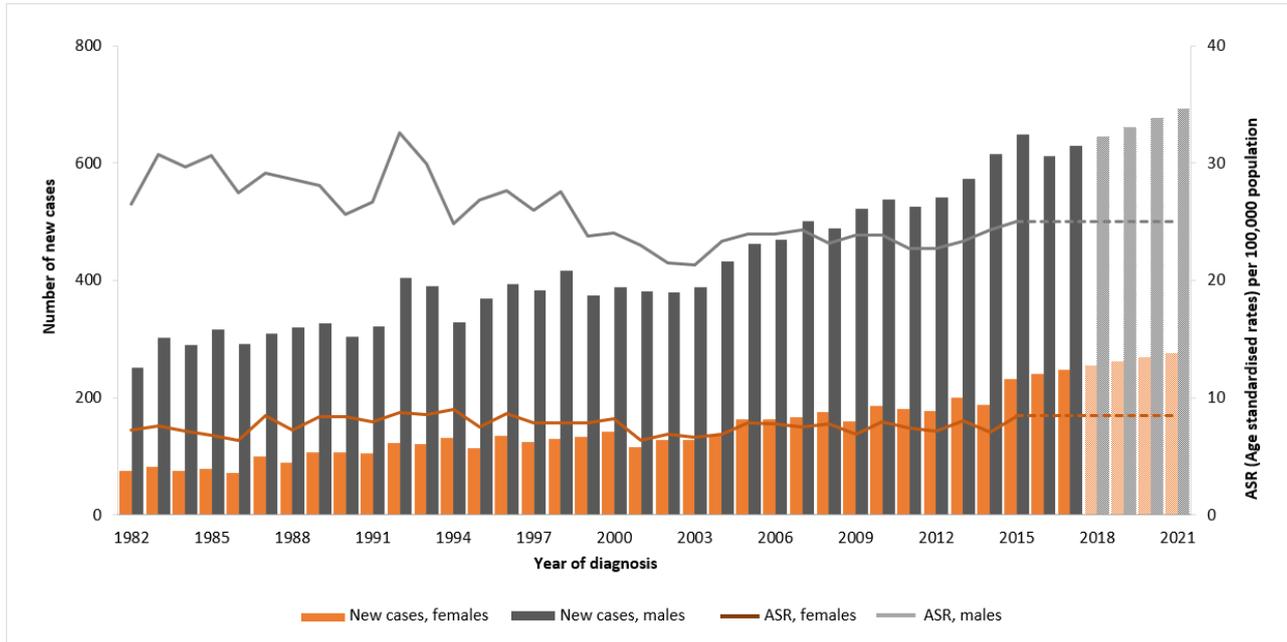
Part 1 | Epidemiological overview

Understanding the characteristics of
Queenslanders diagnosed with head and neck
cancer

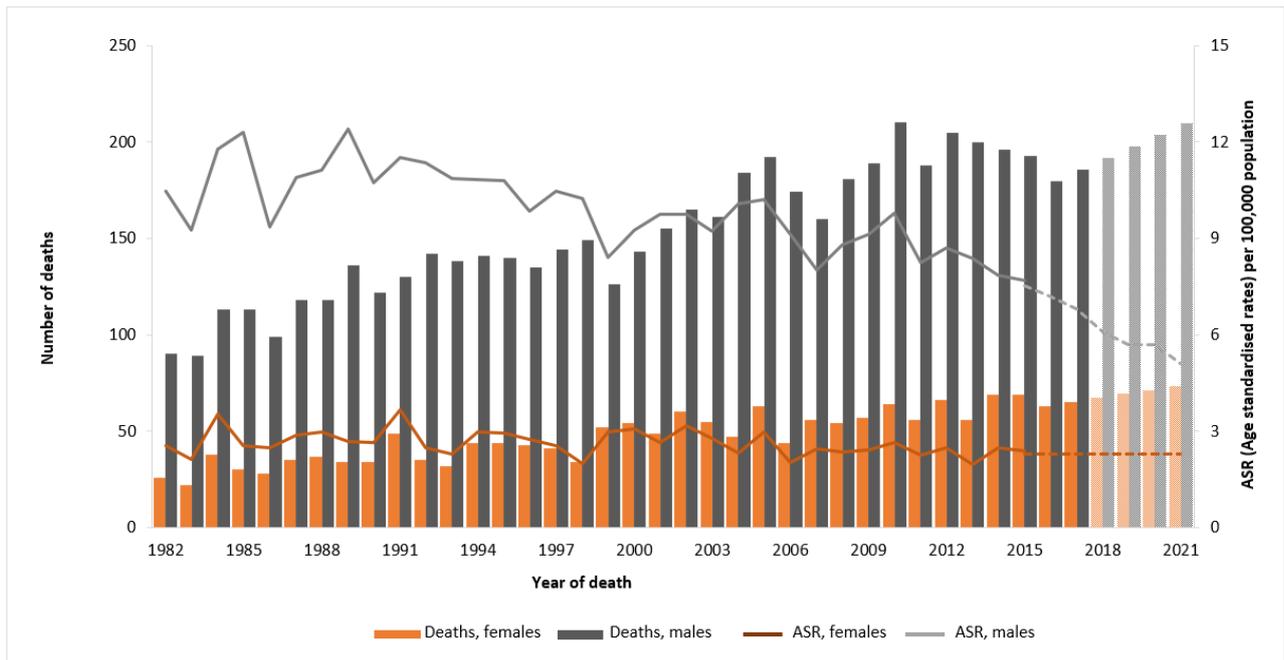


1.1 | Head and neck cancer incidence and mortality trends

1.1.1 | Trends in numbers and rates for all head and neck cancer incidence, Queensland, 1982-2021

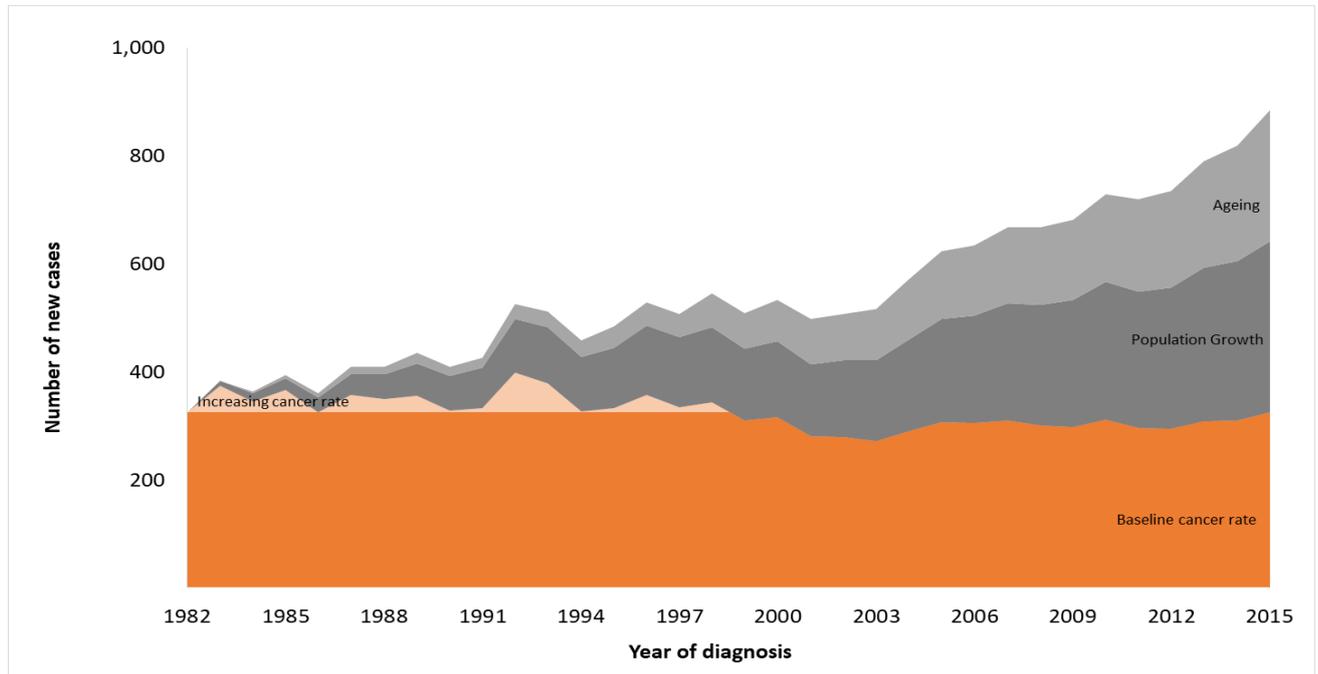


1.1.2 | Trends in numbers and rates for all head and neck cancer deaths, Queensland, 1982-2021



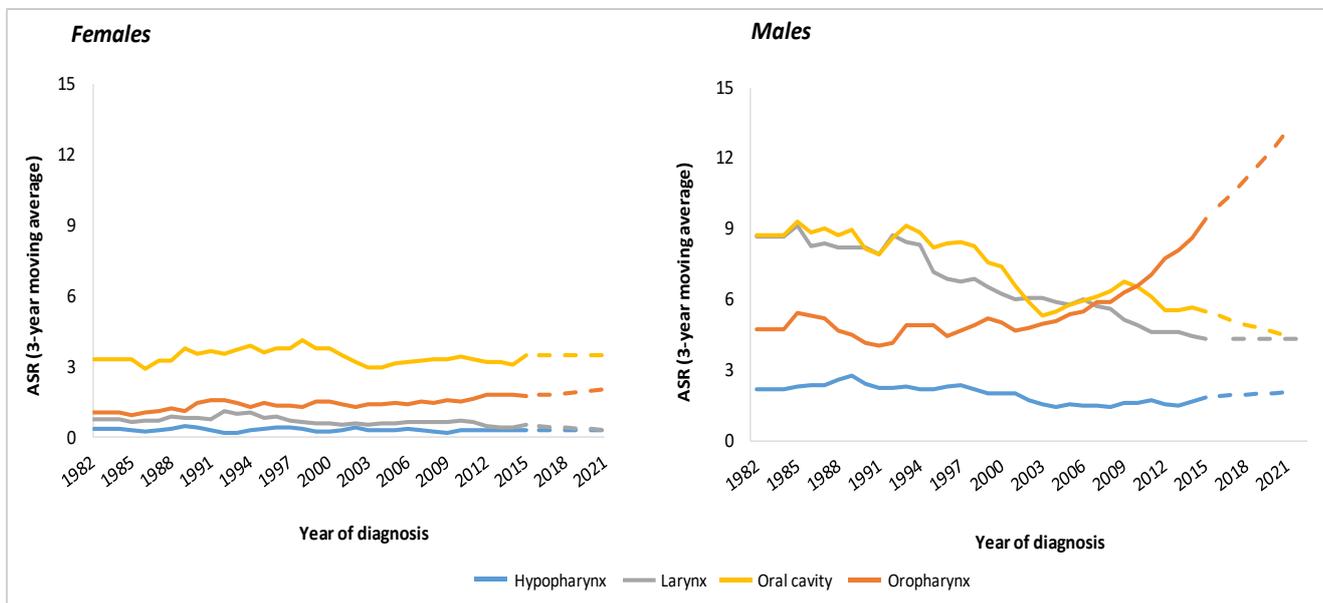
1.2 | Growth in new cases of all head and neck cancers

1.2.1 | Growth in new cases of all head and neck cancers, Queensland, 1982-2015

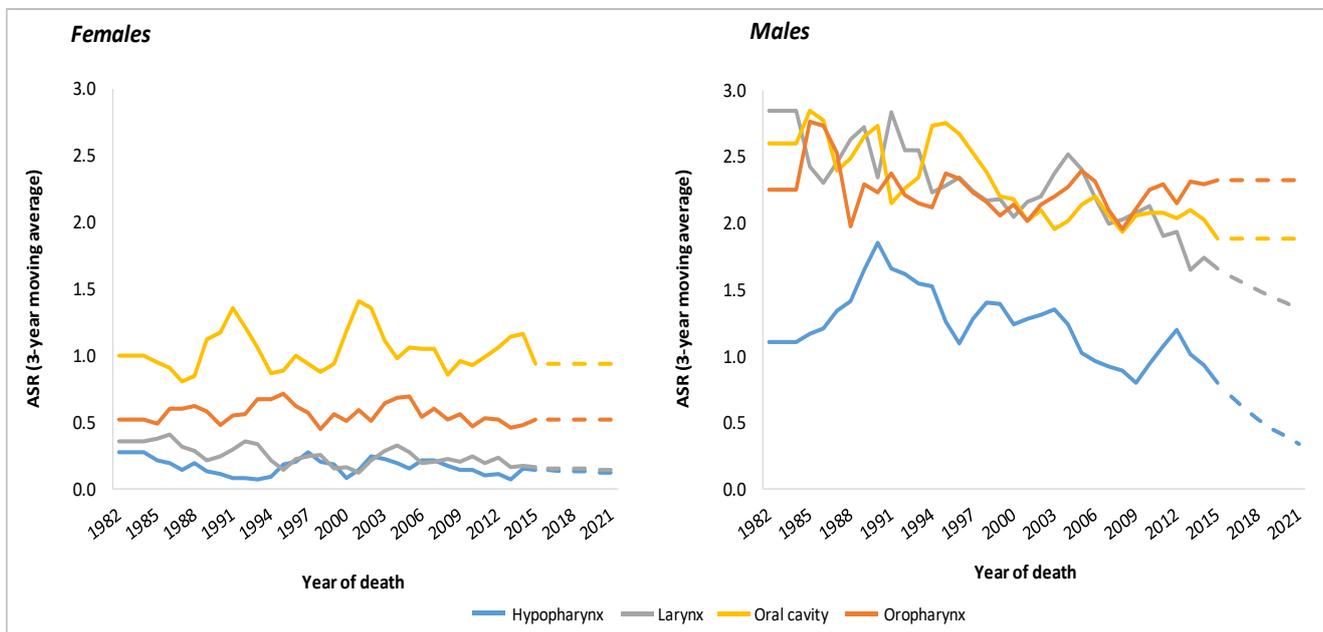


1.3 | Incidence and mortality trends in selected head and neck cancers

1.3.1 | Selected head and neck cancer age-standardised incidence rates (3-year moving average), Queensland, 1982-2021

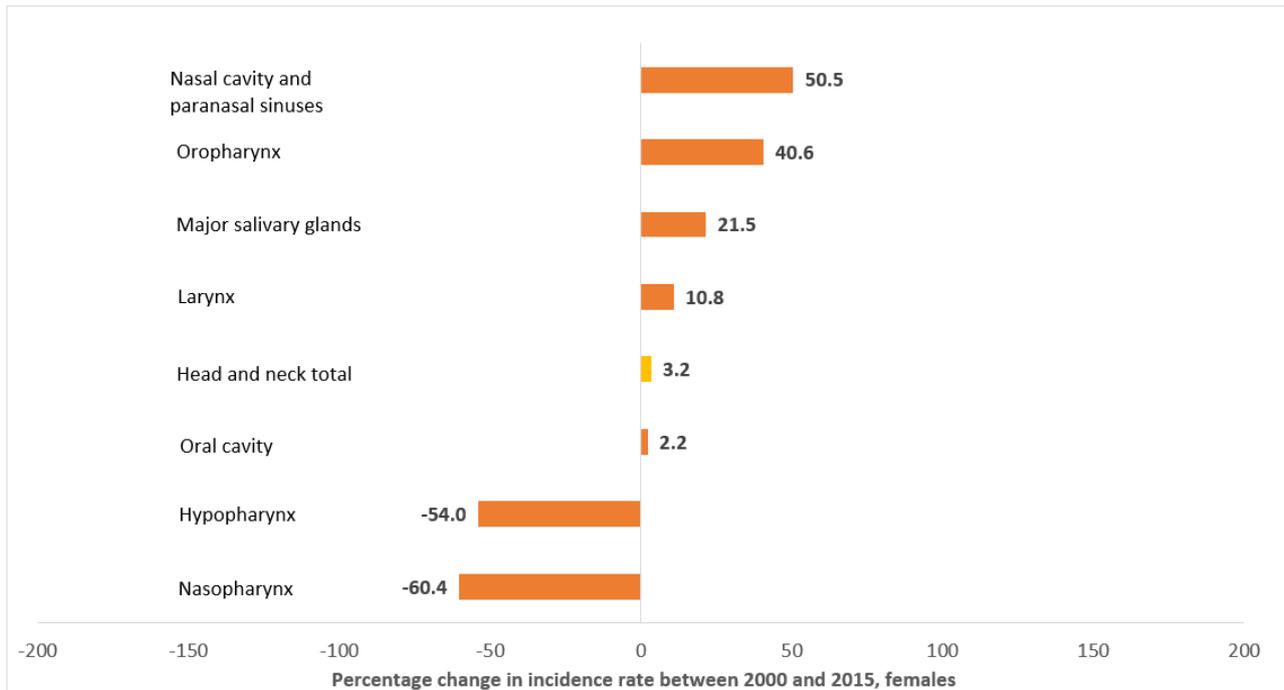


1.3.2 | Selected head and neck cancer age-standardised mortality rates (3-year moving average), Queensland, 1982-2021

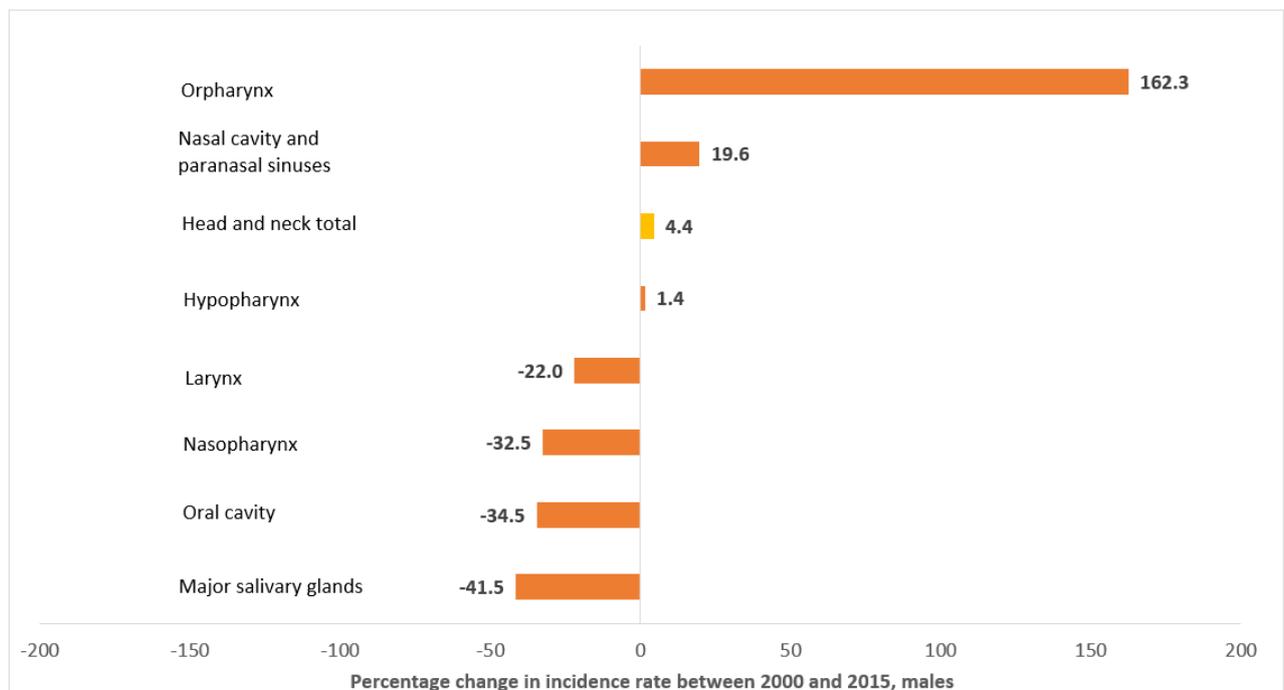


1.4 | Percentage change in age-standardised incidence rates for selected head and neck cancers

1.4.1 | Percentage change in age-standardised incidence rates for head and neck cancer in females between 2000 and 2015



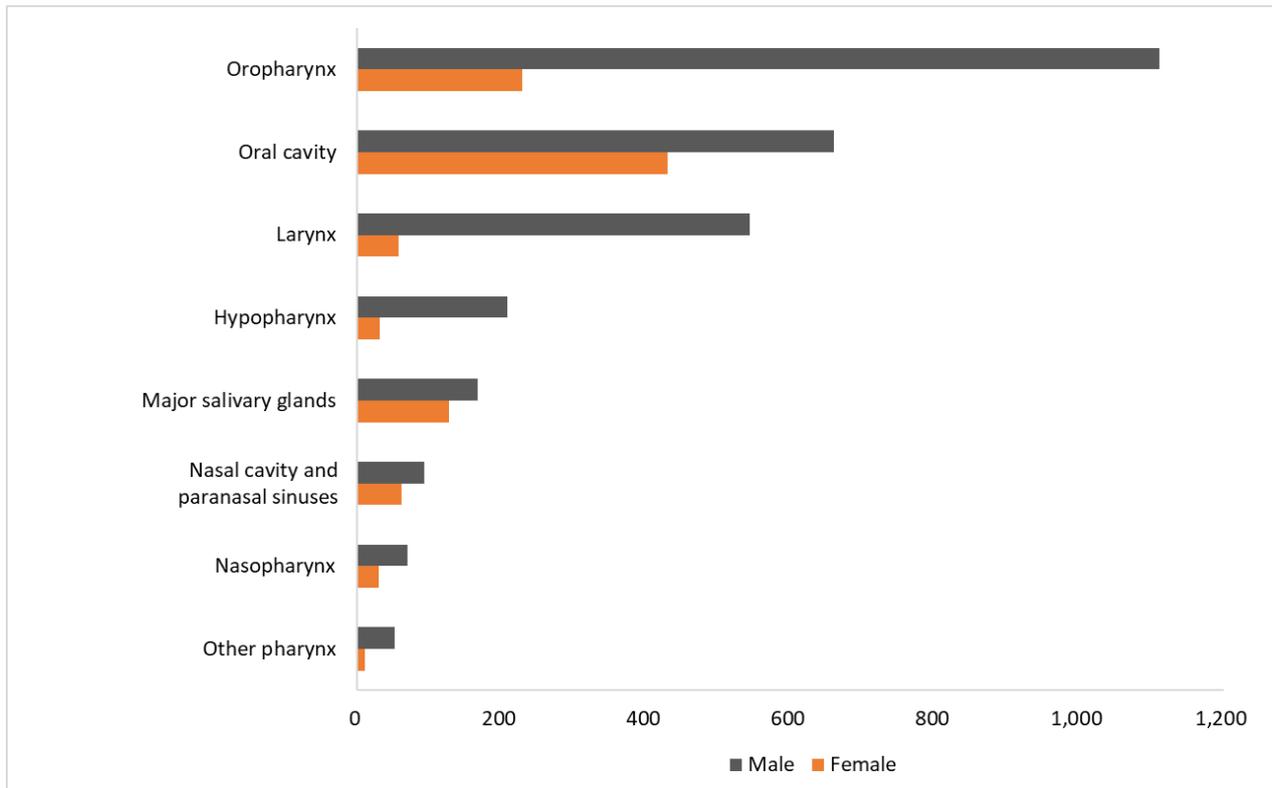
1.4.2 | Percentage change in age-standardised incidence rates for head and neck cancer in males between 2000 and 2015



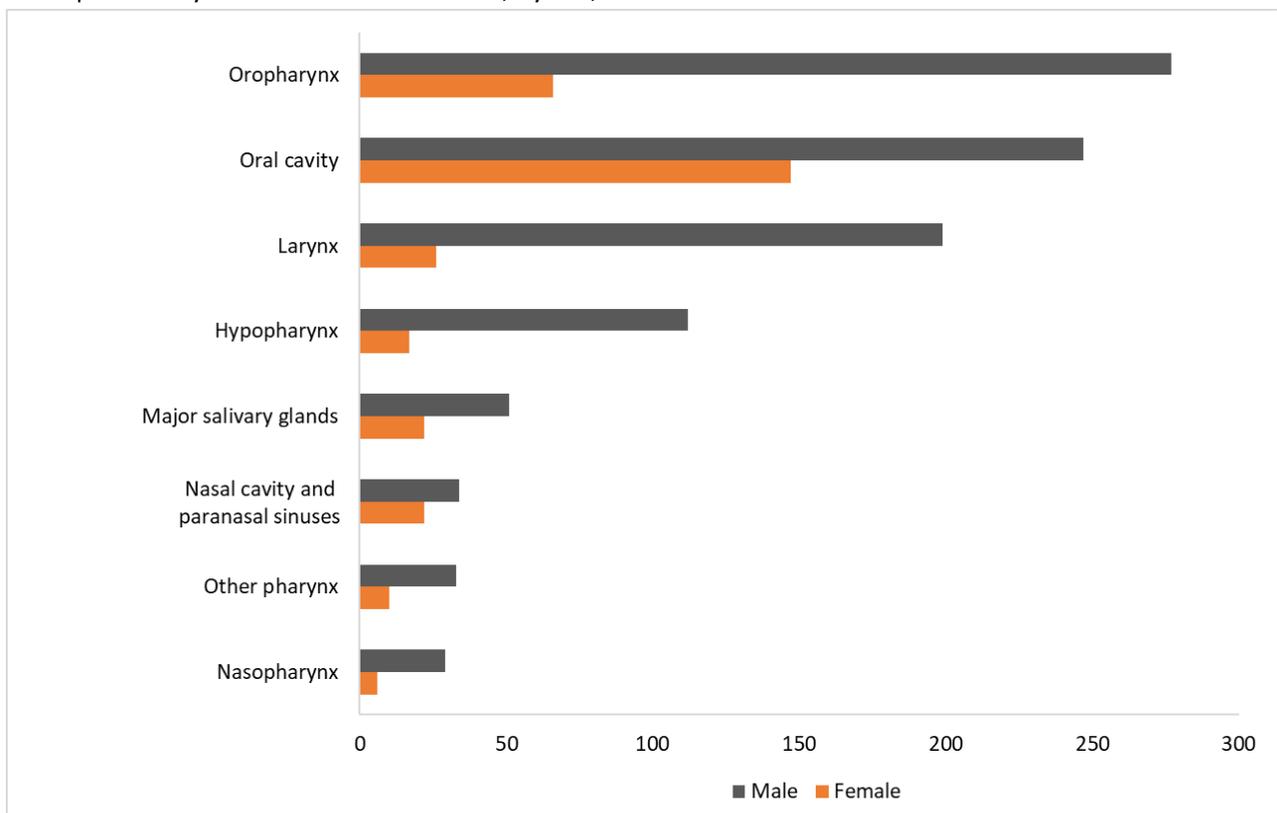
Note: The bars indicate the estimated percentage change in age-standardised incidence rates between 2000 and 2015. The percentage change between 2000 and 2015 is a summary measure that allows the use of a single number to describe the change over a period of multiple years. However, it is not always reasonable to expect that a single measure can accurately describe the trend over the entire period. Head and neck total includes Other pharynx (see Appendix 2).

1.5 | Head and neck cancer incidence and mortality rates, by sex

1.5.1 | Incidence of head and neck cancer, by sex, 2011-2015

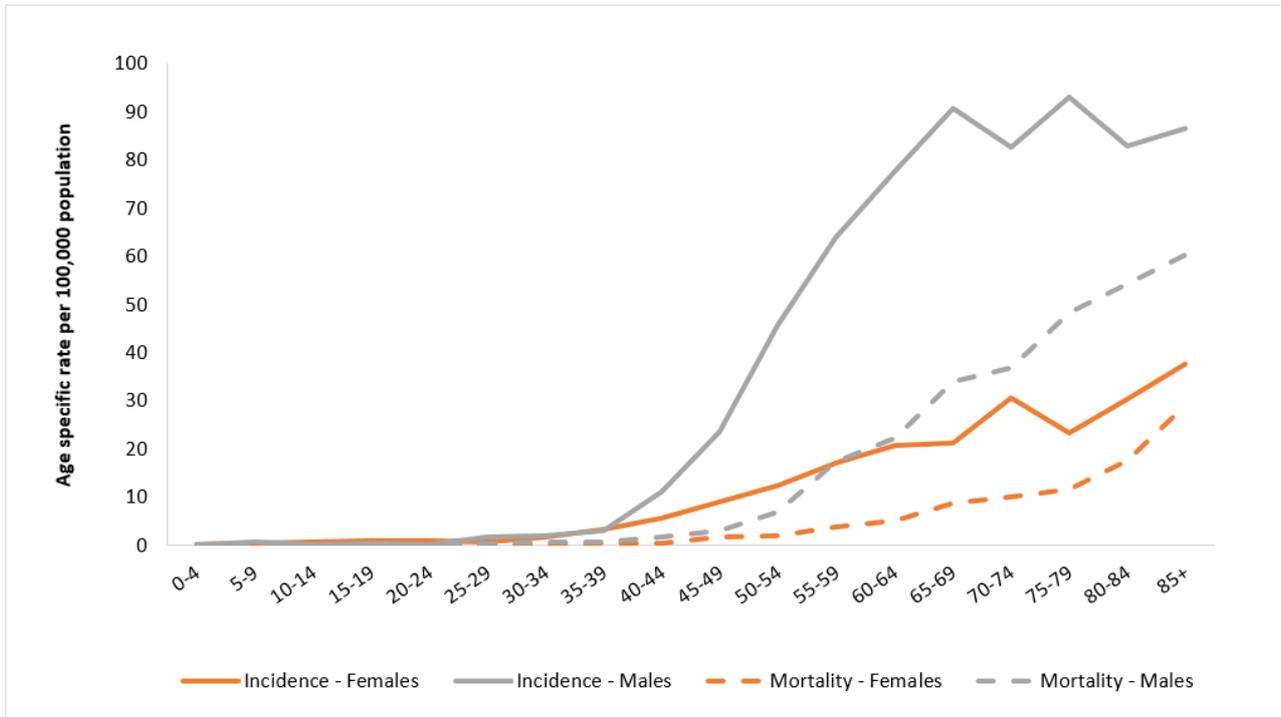


1.5.2 | Mortality of head and neck cancer, by sex, 2011-2015



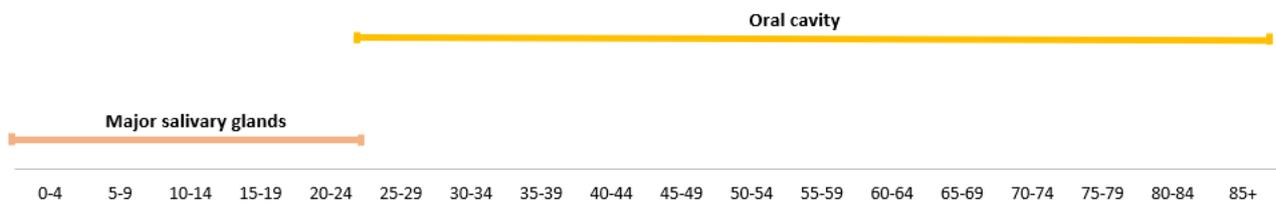
1.6 | Age-specific incidence and mortality rates for all head and neck cancers

1.6.1 | Age-specific head and neck cancer incidence and mortality rates per 100,000 population, by age at diagnosis and sex, 2011-2015

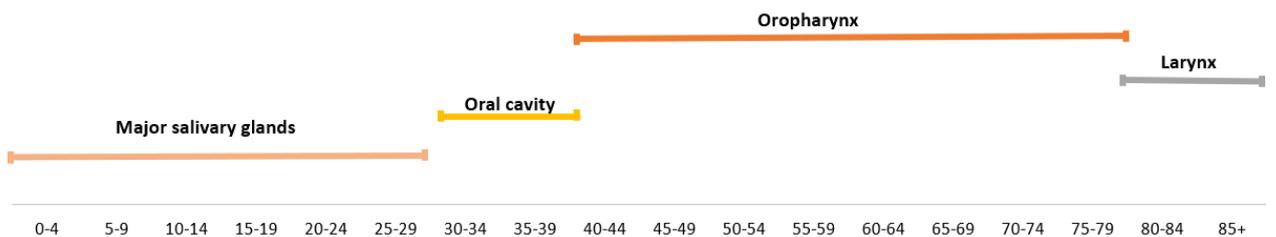


1.7 | Most commonly diagnosed head and neck cancers across the lifespan

1.7.1 | Most commonly diagnosed head and neck cancers across the lifespan, females, 2011-2015



1.7.2 | Most commonly diagnosed head and neck cancers across the lifespan, males, 2011-2015

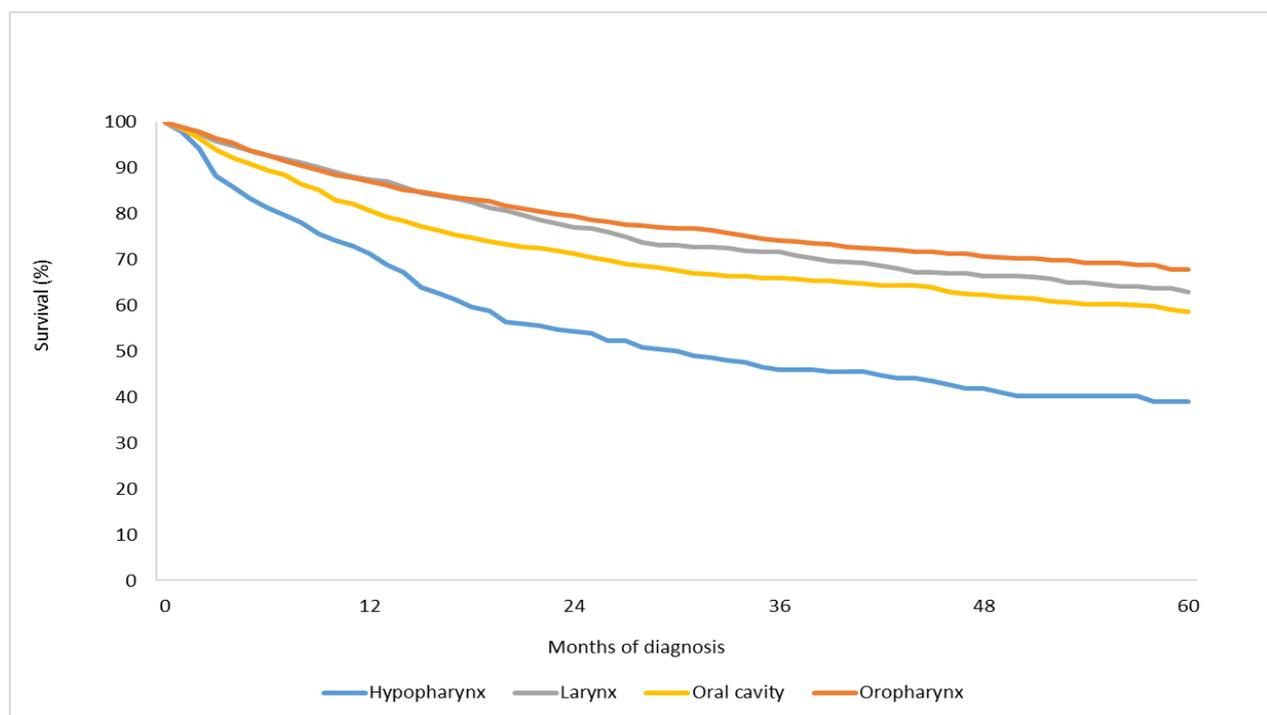


1.8 | Survival

1.8.1 | Proportion of Queenslanders diagnosed with head and neck cancer living 1, 2, and 5 years after their diagnosis, 2011-2015

Cancer	1-year survival	2-year survival	5-year survival
Oral cavity	81%	71%	59%
Oropharynx	87%	80%	68%
Major salivary glands	89%	80%	66%
Nasopharynx	85%	77%	65%
Hypopharynx	71%	54%	39%
Other pharynx	66%	61%	53%
Nasal cavity and paranasal sinuses	79%	65%	48%
Larynx	87%	77%	63%
Total head and neck	84%	74%	62%

1.8.2 | Survival curves for selected head and neck cancers, 2011-2015



Part 2 | Head and neck cancer quality index



The remainder of this report will focus on head and neck cancer treatment, 2011-2015.

Where a patient has two or more primary head and neck cancers, the earliest is reported.

2.1 | Demographics: Understanding the characteristics of head and neck cancer patients and where patients receive treatment

2.1.1 | Characteristics of patients diagnosed with a head and neck cancer, 2011-2015

	Diagnosis		ASR ^a per 100,000 population	Had treatment ^b	
	N	Qld %		n	%
Queensland	3,644	100%	15	3,263	90%
Sex					
Male	2,736	75%	24	2,456	90%
Female	908	25%	8	807	89%
Age group^c					
< 35	77	2%	1	73	95%
35 - 44	182	5%	6	175	96%
45 - 54	667	18%	22	640	96%
55 - 64	1,098	30%	44	1,011	92%
65 - 74	960	26%	56	851	89%
75 - 84	474	13%	55	391	82%
85 +	186	5%	55	122	66%
Median age at diagnosis					
Male	63			62	
Female	63			62	
Indigenous status					
Indigenous	127	3%	35	110	87%
Non-Indigenous	3,506	96%	15	3,152	90%
Not stated	11	0%	n.a	1	9%
Socio-economic status					
Affluent	439	12%	12	405	92%
Middle	2,260	62%	15	2,021	89%
Disadvantaged	939	26%	20	832	89%
Remoteness^d					
Major city	2,162	59%	14	1,954	90%
Inner regional	885	24%	16	788	89%
Outer regional	495	14%	19	442	89%
Remote & very remote	102	3%	19	79	77%
MDT^e					
MDT review	2,910	80%	n.a	2,706	93%
No MDT review	734	20%	n.a	557	76%
Comorbidities					
0 Comorbidities	2,544	70%	n.a	2,314	91%
1 Comorbidities	651	18%	n.a	568	87%
2+ Comorbidities	449	12%	n.a	381	85%

a ASR: age standardised rates per 100,000 population.

b Had treatment includes IV systemic therapy, radiation therapy, and/or surgery.

c Age specific rates per 100,000 population have been calculated for each age group.

d Metropolitan Townsville is included in Major City because of the availability of tertiary level cancer services.

e MDT rate includes facilities that use QOOL to capture MDT review.

n.a Not applicable.

2.2 | Effectiveness: Achieving the best outcomes for Queenslanders with head and neck cancer

2.2.1 | Head and neck cancer treatment rates

2.2.1.1 | First treatment received by head and neck cancer patients^a, 2011-2015

Cancer	Diagnosis	Treatment		Surgery		Radiation therapy (RT)		Concurrent IVST & RT		IV systemic therapy (IVST)	
	N	n	%	n	%	n	%	n	%	n	%
Oral cavity	999	871	87%	770	88%	54	6%	33	4%	14	2%
Oropharynx	1,285	1,178	92%	406	34%	127	11%	552	47%	93	8%
Major salivary glands	255	241	95%	231	96%	8	3%	0	0%	2	1%
Nasopharynx	96	85	89%	10	12%	14	16%	52	61%	9	11%
Hypopharynx	228	193	85%	91	47%	43	22%	47	24%	11	6%
Other pharynx	60	45	75%	21	47%	3	7%	17	38%	4	9%
Nasal cavity and paranasal sinuses	134	119	89%	81	68%	17	14%	16	13%	5	4%
Larynx	587	531	90%	326	61%	136	26%	56	11%	13	2%
Total head and neck	3,644	3,263	90%	1,936	59%	402	12%	773	24%	151	5%

a A patient can only have one first treatment. One patient was excluded due to incomplete data.

2.2.1.2 | All treatments received by head and neck cancer patients^a, 2011-2015

Cancer	Diagnosis	Surgery		Radiation therapy (RT)		IV systemic therapy (IVST)	
	N	n	%	n	%	n	%
Oral cavity	999	791	79%	375	38%	122	12%
Oropharynx	1,285	422	33%	1,035	81%	895	70%
Major salivary glands	255	233	91%	155	61%	6	2%
Nasopharynx	96	12	13%	74	77%	70	73%
Hypopharynx	228	100	44%	165	72%	96	42%
Other pharynx	60	22	37%	37	62%	29	48%
Nasal cavity and paranasal sinuses	134	86	64%	75	56%	34	25%
Larynx	587	345	59%	360	61%	118	20%
Total head and neck	3,644	2,011	55%	2,276	62%	1,370	38%

a A patient can have more than one type of treatment.

Part 2 | Head and neck cancer quality index

2.2.1.3 | Annual trends in treatment rates by head and neck cancer, 2011-2015

Cancer	Diagnosis year					Total n (N)
	2011 n (N)	2012 n (N)	2013 n (N)	2014 n (N)	2015 n (N)	
Oral cavity	87% 166 (191)	87% 158 (182)	88% 187 (212)	87% 183 (210)	87% 177 (204)	87% 871 (999)
Oropharynx	89% 192 (215)	88% 214 (242)	93% 214 (229)	95% 260 (274)	92% 298 (325)	92% 1,178 (1,285)
Major salivary glands	94% 51 (54)	98% 41 (42)	93% 50 (54)	95% 52 (55)	94% 47 (50)	95% 241 (255)
Nasopharynx	87% 13 (15)	95% 19 (20)	84% 16 (19)	85% 23 (27)	93% 14 (15)	89% 85 (96)
Hypopharynx	73% 27 (37)	86% 30 (35)	91% 43 (47)	93% 51 (55)	78% 42 (54)	85% 193 (228)
Other pharynx	71% 10 (14)	78% 14 (18)	71% 10 (14)	83% 5 (6)	75% 6 (8)	75% 45 (60)
Nasal cavity and paranasal sinuses	96% 24 (25)	86% 19 (22)	88% 23 (26)	88% 22 (25)	86% 31 (36)	89% 119 (134)
Larynx	91% 97 (107)	88% 108 (123)	94% 112 (119)	88% 92 (105)	92% 122 (133)	90% 531 (587)
Total head and neck	88% 580 (658)	88% 603 (684)	91% 655 (720)	91% 688 (757)	89% 737 (825)	90% 3,263 (3,644)

2.2.1.4 | Surgery, radiation therapy and IV systemic therapy by AIHW peer group, 2011-2015

AIHW Peer Group ^a	Surgery		Radiation therapy (RT)		IV systemic therapy (IVST)	
	N	%	N	%	N	%
Principal referral hospitals	950	47%	1,879	83%	1,053	77%
Group A hospitals	615	31%	0	0%	256	19%
Group B hospitals	157	8%	0	0%	25	2%
Other hospitals	275	14%	397	17%	36	3%
Queensland	2,011	100%	2,276	100%	1,370	100%

^a See Appendix 5 for AIHW Peer Group description.

Part 2 | Head and neck cancer quality index

2.2.2 | Head and neck cancer treatment rates by public/private split

2.2.2.1 | Head and neck cancer surgery, radiation therapy, and IV systemic therapy treatment rates by public/private split, 2011-2015

Cancer	Diagnosis	Surgery						Radiation therapy (RT)						IV systemic therapy (IVST)					
	N	Total		Public		Private		Total		Public		Private		Total		Public		Private	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Oral Cavity	999	791	79%	508	64%	283	36%	375	38%	303	81%	72	19%	122	12%	111	91%	11	9%
Oropharynx	1,285	422	33%	207	49%	215	51%	1,035	81%	892	86%	143	14%	895	70%	778	87%	117	13%
Major Salivary Glands	255	233	91%	119	51%	114	49%	155	61%	105	68%	50	32%	6	2%	4	67%	2	33%
Nasopharynx	96	12	13%	6	50%	6	50%	74	77%	71	96%	3	4%	70	73%	63	90%	7	10%
Hypopharynx	228	100	44%	77	77%	23	23%	165	72%	146	88%	19	12%	96	42%	84	88%	12	13%
Other pharynx	60	22	37%	13	59%	9	41%	37	62%	31	84%	6	16%	29	48%	27	93%	2	7%
Nasal Cavity and Paranasal Sinuses	134	86	64%	59	69%	27	31%	75	56%	62	83%	13	17%	34	25%	26	76%	8	24%
Larynx	587	345	59%	207	60%	138	40%	360	61%	276	77%	84	23%	118	20%	99	84%	19	16%
Total head and neck	3,644	2,011	55%	1,196	59%	815	41%	2,276	62%	1,886	83%	390	17%	1,370	38%	1,192	87%	178	13%

2.3 | Efficient: Optimally using resources to achieve desired outcomes

2.3.1 | Length of stay

2.3.1.1 | Length of stay for head and neck cancer surgery, 2011-2015

Length of stay (days) <i>(Median time between admission and discharge date of surgery)</i>	Surgery	Median days	IQR
Oral cavity	791	6	(1-12)
Oropharynx	422	1	(1-1)
Major salivary glands	233	3	(2-4)
Nasopharynx	12	1	(1-5)
Hypopharynx	100	14	(1-20)
Other pharynx	22	5	(1-15)
Nasal cavity and paranasal sinuses	86	2	(1-6)
Larynx	345	1	(1-11)
Total head and neck	2,011	2	(1-9)

2.4 | Safe: Avoiding and preventing adverse outcomes or injuries by healthcare management

2.4.1 | 90-day mortality

2.4.1.1 | Proportion of patients who die within 90 days of surgery, 2011-2015

Cancer	Surgery	90-day mortality	
	N	n	%
Oral cavity	791	15	2%
Oropharynx	422	4	1%
Major salivary glands	233	2	1%
Nasopharynx	12	0	0%
Hypopharynx	100	4	4%
Other pharynx	22	0	0%
Nasal cavity and paranasal sinuses	86	2	2%
Larynx	345	4	1%
Total head and neck	2,011	31	2%

2.4.1.2 | Proportion of patients who die within 90 days of surgery by AIHW peer group^a, 2011-2015

AIHW Peer Group	Surgery		90-day mortality	
	N	%	n	%
Principal referral hospitals	950	47%	21	2%
Group A hospitals	615	31%	7	1%
Group B hospitals	157	8%	0	0%
Other hospitals	275	14%	3	1%
Queensland	2,011	100%	31	2%

^a See Appendix 5 for AIHW Peer Group description.

Part 2 | Head and neck cancer quality index

2.4.2 | Radiation therapy and IV systemic therapy near end of life

2.4.2.1 | Proportion of patients who die within 30 days of last radiation therapy treatment, 2011-2015

Cancer	Radiation therapy (RT) ^a		Death within 30 days of RT		Male		Age 70+		Disadvantaged		Rural ^b		1+ Comorbidities	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Oral cavity	457	46%	34	7%	22	65%	18	53%	6	18%	8	24%	21	62%
Oropharynx	1,072	83%	35	3%	30	86%	12	34%	8	23%	5	14%	15	43%
Major salivary glands	163	64%	4	2%	4	100%	2	50%	0	0%	2	50%	2	50%
Nasopharynx	80	83%	6	8%	6	100%	1	17%	2	33%	1	17%	3	50%
Hypopharynx	176	77%	15	9%	12	80%	6	40%	6	40%	4	27%	11	73%
Other pharynx	41	68%	4	10%	4	100%	3	75%	0	0%	0	0%	3	75%
Nasal cavity and paranasal sinuses	86	64%	5	6%	2	40%	2	40%	0	0%	1	20%	3	60%
Larynx	402	68%	24	6%	23	96%	11	46%	7	29%	6	25%	14	58%
Total head and neck	2,477	68%	127	5%	103	81%	55	43%	29	23%	27	21%	72	57%

a Unlike other analyses in this report, for the radiation therapy near end of life analyses radiation therapy can occur any time after diagnosis.

b Rural includes outer regional, remote and very remote areas.

c 27 patients received both radiation therapy and IVST and died within 30 days of treatment.

2.4.2.2 | Proportion of patients who die within 30 days of last IV systemic therapy treatment, 2011-2015

Cancer	IV systemic therapy (IVST) ^a		Death within 30 days of IVST		Male		Age 70+		Disadvantaged		Rural ^b		1+ Comorbidities	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Oral cavity	194	19%	30	15%	20	67%	6	20%	4	13%	3	10%	10	33%
Oropharynx	936	73%	53	6%	42	79%	8	15%	14	26%	5	9%	18	34%
Major salivary glands	21	8%	5	24%	5	100%	2	40%	2	40%	2	40%	1	20%
Nasopharynx	73	76%	2	3%	2	100%	1	50%	1	50%	1	50%	1	50%
Hypopharynx	113	50%	6	5%	5	83%	0	0%	2	33%	0	0%	3	50%
Other pharynx	32	53%	0	0%	0	-	0	-	0	-	0	-	0	-
Nasal cavity and paranasal sinuses	42	31%	7	17%	5	71%	1	14%	1	14%	2	29%	2	29%
Larynx	159	27%	24	15%	24	100%	7	29%	8	33%	5	21%	13	54%
Total head and neck	1,570	43%	127	8%	103	81%	25	20%	32	25%	18	14%	48	38%

a Unlike other analyses in this report, for the IV systemic therapy near end of life analyses IV systemic therapy can occur any time after diagnosis.

b Rural includes outer regional, remote and very remote areas.

c 27 patients received both radiation therapy and IVST and died within 30 days of treatment.

2.5 | Surgical survival: Understanding the outcomes of surgery

2.5.1 | 2-year surgical survival

2.5.1.1 | Proportion of patients alive two-years following surgery, 2011-2015

Cancer	Surgery		2-year surgical survival	
	N		n	%
Oral cavity	791		642	81%
Oropharynx	422		370	88%
Major salivary glands	233		206	88%
Nasopharynx	12		10	83%
Hypopharynx	100		61	61%
Other pharynx	22		17	77%
Nasal cavity and paranasal sinuses	86		69	80%
Larynx	345		284	82%
Total head and neck	2,011		1,659	82%

2.5.1.2 | Proportion of patients alive two-years following surgery, by AIHW peer group, 2011-2015

AIHW Peer Group ^a	Surgery		2-year surgical survival	
	N	%	n	%
Principal referral hospitals	950	47%	728	77%
Group A hospitals	615	31%	533	87%
Group B hospitals	157	8%	141	90%
Other hospitals	275	14%	243	88%
Queensland^b	2,011	100%	1,659	82%

^a See Appendix 5 for AIHW Peer Group description.

2.6 | Accessible: Making health services available to patients

2.6.1 | Timeliness: Time to first surgery within 30 days

2.6.1.1 | Timeliness: proportion of patients who receive first surgery within 30 days of pathological diagnosis, 2011-2015

Cancer	Surgery			Received surgery within 30 days of diagnosis		
	Public	Private	All	Public	Private	All
Oral cavity	491	279	770	47%	79%	58%
Oropharynx	198	208	406	67%	90%	79%
Major salivary glands	119	112	231	64%	88%	76%
Nasopharynx	5	5	10	100%	80%	90%
Hypopharynx	68	23	91	59%	83%	65%
Other pharynx	12	9	21	25%	67%	43%
Nasal cavity and paranasal sinuses	54	27	81	57%	93%	69%
Larynx	192	134	326	70%	91%	79%
Total head and neck	1,139	797	1,936	57%	86%	69%

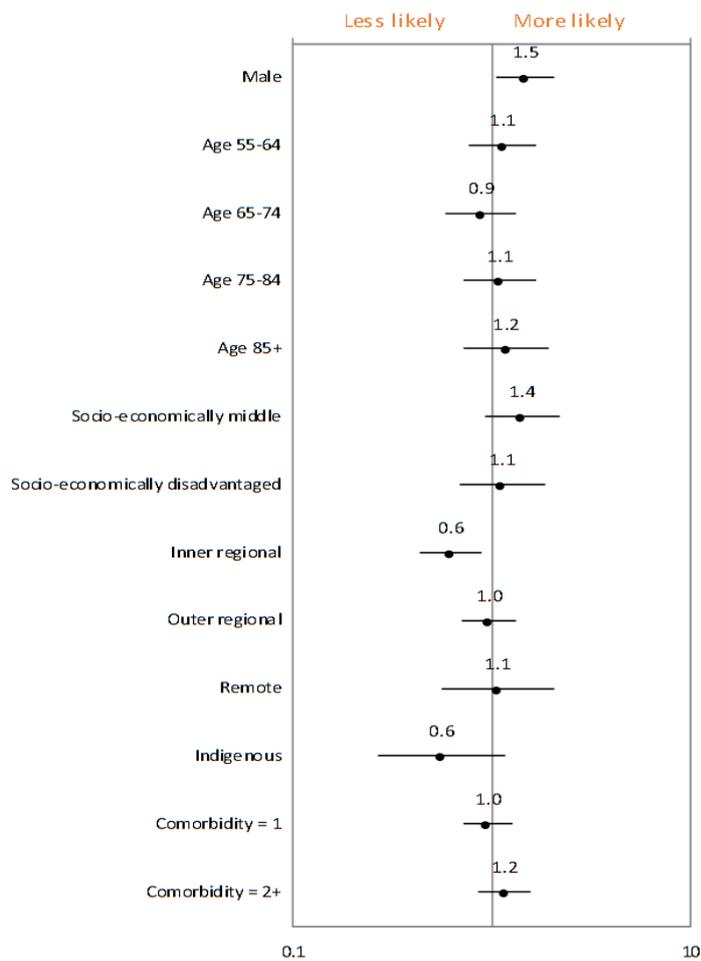
2.6.2 | Timeliness: Time to first radiation therapy, concurrent IV systemic therapy and radiation therapy, and IV systemic therapy within 45 days

2.6.2.1 | Timeliness: proportion of patients who receive first radiation therapy within 45 days of pathological diagnosis, 2011-2015

Cancer	Radiation therapy (RT)	Received RT within 45 days of diagnosis	
	N	n	%
Oral cavity	54	17	31%
Oropharynx	127	55	43%
Major salivary glands	8	2	25%
Nasopharynx	14	6	43%
Hypopharynx	43	14	33%
Other pharynx	3	2	67%
Nasal cavity and paranasal sinuses	17	10	59%
Larynx	136	65	48%
Total head and neck	402	171	43%

Part 2 | Head and neck cancer quality index

2.6.2.2 | Relative risk of first radiation therapy treatment being given within 45 days of diagnosis for head and neck cancer, 2011-2015



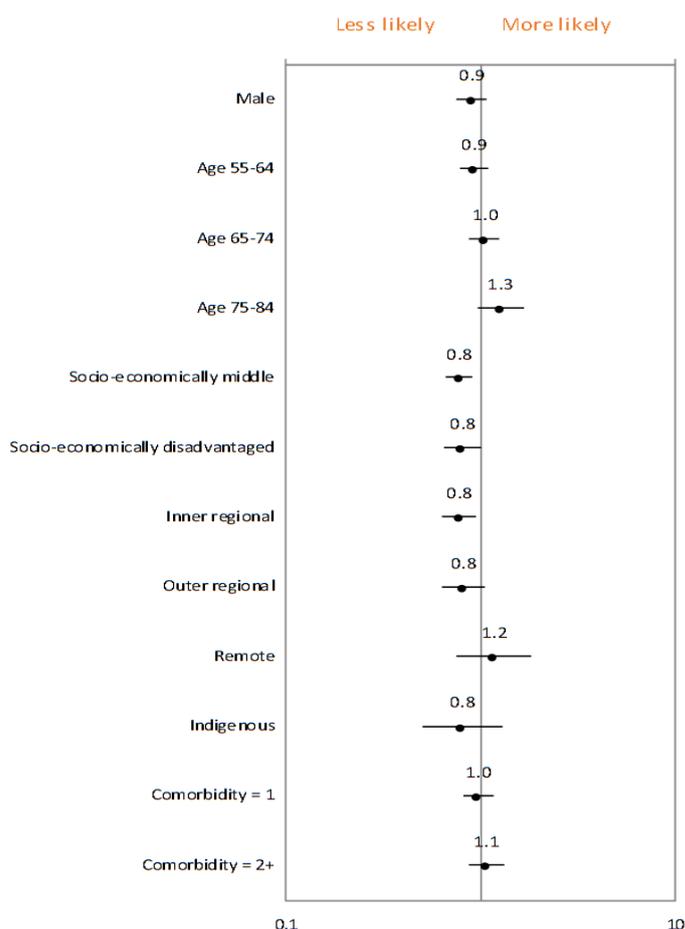
The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant. Hazard ratios for those from Middle and Disadvantaged socio-economic areas are obtained by comparing to those from Affluent areas. Inner and Outer Regional, Remote areas are compared with Major Cities. Patients with comorbidities are compared to those with no comorbidities.

Part 2 | Head and neck cancer quality index

2.6.2.3 | Timeliness: proportion of patients who receive first concurrent IV systemic therapy and radiation therapy within 45 days of pathological diagnosis, 2011-2015

Cancer	Concurrent IVST & radiation therapy	Received concurrent IVST & radiation therapy within 45 days of diagnosis	
	N	n	%
Oral cavity	33	15	45%
Oropharynx	552	275	50%
Major salivary glands	0	0	-
Nasopharynx	52	38	73%
Hypopharynx	47	25	53%
Other pharynx	17	10	59%
Nasal cavity and paranasal sinuses	16	12	75%
Larynx	56	30	54%
Total head and neck	773	405	52%

2.6.2.4 | Relative risk of first concurrent IV systemic therapy and radiation therapy being given within 45 days of diagnosis for head and neck cancer, 2011-2015



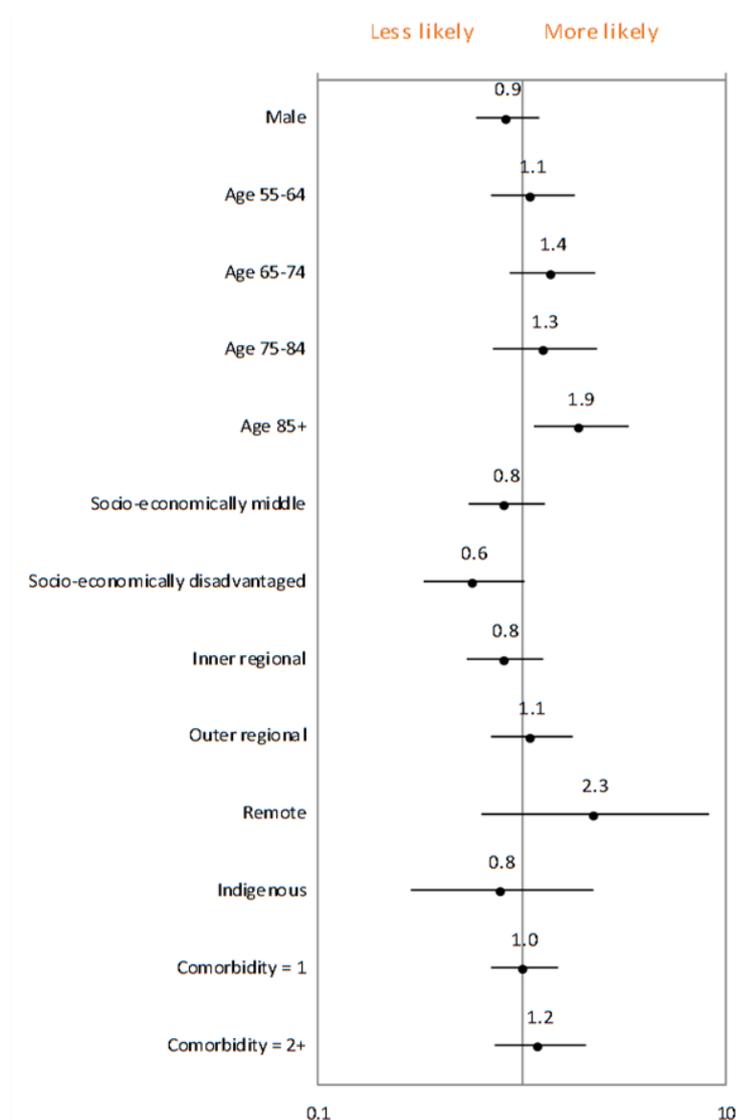
The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant. Hazard ratios for those from Middle and Disadvantaged socio-economic areas are obtained by comparing to those from Affluent areas. Inner and Outer Regional, and Remote areas are compared with Major Cities. Patients with comorbidities are compared to those with no comorbidities.

Part 2 | Head and neck cancer quality index

2.6.2.5 | Timeliness: proportion of patients who receive first IV systemic therapy within 45 days of pathological diagnosis, 2011-2015

Cancer	IV systemic therapy (IVST)	Received IVST within 45 days of diagnosis	
	N	n	%
Oral cavity	14	13	93%
Oropharynx	93	37	40%
Major salivary glands	2	1	50%
Nasopharynx	9	6	67%
Hypopharynx	11	6	55%
Other pharynx	4	3	75%
Nasal cavity and paranasal sinuses	5	4	80%
Larynx	13	7	54%
Total head and neck	151	77	51%

2.6.2.6 | Relative risk of first IV systemic therapy being given within 45 days of diagnosis for head and neck cancer, 2011-2015



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant. Hazard ratios for those from Middle and Disadvantaged socio-economic areas are obtained by comparing to those from Affluent areas. Inner and Outer Regional, Remote areas are compared with Major Cities. Patients with comorbidities are compared to those with no comorbidities.

Part 2 | Head and neck cancer quality index

2.6.2.7 | Timeliness: proportion of patients who receive first IVST, RT and concurrent IVST and radiation therapy within 45 days of pathological diagnosis, 2011-2015

Treatment type	All head and neck cancers	Any treatment	Radiation therapy		Concurrent IV systemic therapy and radiation therapy		IV systemic therapy	
			≤45 days	>45 days	≤45 days	>45 days	≤45 days	>45 days
Queensland	3,644	3,263	171	231	405	368	77	74
%	100%	90%	43%	57%	52%	48%	51%	49%
Median age at diagnosis	63	62	69	67	60	59	64	61
% Male	75%	75%	86%	78%	84%	86%	74%	82%
% ≥75 Age	18%	16%	33%	28%	6%	4%	13%	11%
% Indigenous	3.5%	3.4%	2.9%	6.5%	2.5%	3.8%	5.2%	5.4%
% Socio-economically disadvantaged	26%	25%	24%	32%	20%	23%	21%	35%
% Live rural	16%	16%	21%	19%	12%	16%	19%	18%
% With ≥ 1 comorbidity	30%	29%	44%	43%	27%	26%	34%	27%
% With ≥ 2 comorbidity	12%	12%	21%	16%	11%	11%	13%	8.1%
% Discussed at QOOL MDT	80%	83%	71%	77%	84%	89%	86%	89%
1-year survival from diagnosis	84%	89%	71%	76%	91%	92%	55%	88%
2-year survival from diagnosis	75%	80%	58%	59%	83%	85%	45%	70%

a Rural includes outer regional, remote and very remote areas.

2.7 | Equitable: Providing care and ensuring health status does not vary in quality because of personal characteristics

2.7.1 | Treatment rates by HHS of residence

2.7.1.1 | Trends in head and neck cancer treatment rates, by year and by HHS of residence, 2011-2015

HHS of residence	Diagnosis year					Total n (N)
	2011 n (N)	2012 n (N)	2013 n (N)	2014 n (N)	2015 n (N)	
Cairns and Hinterland	90% 43 (48)	93% 51 (55)	94% 46 (49)	93% 57 (61)	86% 54 (63)	91% 251 (276)
North West	50% 1 (2)	83% 5 (6)	80% 4 (5)	75% 3 (4)	100% 6 (6)	83% 19 (23)
Central Queensland	96% 23 (24)	76% 26 (34)	89% 39 (44)	96% 26 (27)	80% 33 (41)	86% 147 (170)
Central West	100% 2 (2)	- 0 (0)	100% 2 (2)	50% 2 (4)	100% 3 (3)	82% 9 (11)
Darling Downs	73% 33 (45)	82% 31 (38)	90% 35 (39)	86% 43 (50)	96% 43 (45)	85% 185 (217)
Gold Coast	90% 72 (80)	89% 85 (95)	85% 61 (72)	93% 84 (90)	91% 83 (91)	90% 385 (428)
Mackay	89% 24 (27)	97% 29 (30)	80% 16 (20)	87% 27 (31)	88% 30 (34)	89% 126 (142)
Metro North	84% 102 (122)	86% 106 (123)	94% 117 (124)	92% 126 (137)	89% 126 (142)	89% 577 (648)
Metro South	92% 112 (122)	87% 105 (121)	90% 112 (125)	94% 133 (142)	90% 149 (165)	91% 611 (675)
North West	50% 1 (2)	83% 5 (6)	80% 4 (5)	75% 3 (4)	100% 6 (6)	83% 19 (23)
South West	100% 2 (2)	100% 3 (3)	50% 2 (4)	67% 4 (6)	67% 2 (3)	72% 13 (18)
Sunshine Coast	79% 41 (52)	90% 57 (63)	95% 70 (74)	91% 52 (57)	92% 73 (79)	90% 293 (325)
Torres and Cape	67% 4 (6)	100% 2 (2)	100% 6 (6)	63% 5 (8)	78% 7 (9)	77% 24 (31)
Townsville	95% 42 (44)	88% 29 (33)	92% 56 (61)	86% 36 (42)	90% 45 (50)	90% 208 (230)
West Moreton	97% 35 (36)	98% 42 (43)	97% 38 (39)	88% 43 (49)	97% 32 (33)	95% 190 (200)
Wide Bay	96% 44 (46)	84% 32 (38)	91% 51 (56)	96% 47 (49)	84% 51 (61)	90% 225 (250)
Queensland	88% 580 (658)	88% 603 (684)	91% 655 (720)	91% 688 (757)	89% 737 (825)	90% 3,263 (3,644)

2.7.2 | Characteristics of patients who received surgery within 30 days of diagnosis

2.7.2.1 | Characteristics of patients who received surgery within 30 days of diagnosis, 2011-2015

	Had treatment ^a		Had surgery		Received surgery within 30 days of diagnosis	
	n	% ^b	n	% ^c	n	% ^d
Queensland	3,263	90%	2,011	55%	1,344	67%
Sex						
Male	2,456	90%	1,416	52%	941	66%
Female	807	89%	595	66%	403	68%
Age group						
< 35	73	95%	57	74%	42	74%
35 - 44	175	96%	135	74%	95	70%
45 - 54	640	96%	377	57%	255	68%
55 - 64	1,011	92%	589	54%	399	68%
65 - 74	851	89%	512	53%	328	64%
75 - 84	391	82%	256	54%	176	69%
85 +	122	66%	85	46%	49	58%
Indigenous status						
Indigenous	110	87%	61	48%	34	56%
Non-Indigenous	3,152	90%	1,948	56%	1,310	67%
Not stated	1	9%	2	18%	0	0%
Socio-economic status						
Affluent	405	92%	258	59%	200	78%
Middle	2,021	89%	1,229	54%	828	67%
Disadvantaged	832	89%	523	56%	315	60%
Remoteness^e						
Major city	1,954	90%	1,185	55%	827	70%
Inner regional	788	89%	509	58%	339	67%
Outer regional	442	89%	266	54%	150	56%
Remote & very remote	79	77%	51	50%	28	55%
MDT^f						
MDT review	2,706	93%	1,660	57%	1,074	65%
No MDT review	557	76%	351	48%	270	77%
Comorbidities						
0 Comorbidities	2,314	91%	1,458	57%	1,006	69%
1 Comorbidities	568	87%	334	51%	210	63%
2+ Comorbidities	381	85%	219	49%	128	58%

a Had treatment includes IV systemic therapy, radiation therapy, and/or surgery.

b % = number of treatments / number of diagnosis.

c % = number of surgery / number of diagnosis.

d % = number of surgery within 30 days of diagnosis / number of surgeries.

e Metropolitan Townsville is included in Major City because of the availability of tertiary level cancer services.

f MDT rate includes facilities that use QOOL to capture MDT review.

Part 2 | Head and neck cancer quality index

2.7.3 | Treatment flows for surgery, IV systemic therapy and radiation therapy

2.7.3.1 | Head and neck cancer surgery rates by HHS of residence and HHS of treatment, 2011-2015

HHS of residence	HHS of surgery treatment														Queensland
	Cairns and Hinterland	Central Queensland	Central West	Children's Health Queensland	Darling Downs	Gold Coast	Mackay	Metro North	Metro South	Sunshine Coast	Torres and Cape	Townsville	West Moreton	Wide Bay	
Cairns and Hinterland	71 (47%, 87%)							35 (23%, 4%)	27 (18%, 7%)			16 (11%, 10%)			150 (7%)
Central Queensland		30 (31%, 97%)				1 (1%, <1%)	1 (1%, 4%)	62 (63%, 8%)	3 (3%, <1%)	1 (1%, 1%)					98 (5%)
Central West		1 (20%, 3%)	1 (20%, 100%)		1 (20%, <1%)			2 (40%, <1%)							5 (<1%)
Darling Downs					101 (82%, 84%)	1 (<1%, <1%)		7 (6%, <1%)	11 (9%, 3%)	1 (<1%, 1%)			1 (<1%, 2%)		123 (6%)
Gold Coast				1 (<1%, 50%)		196 (84%, 94%)		18 (8%, 2%)	15 (6%, 4%)						232 (12%)
Mackay							25 (32%, 96%)	20 (25%, 3%)	7 (9%, 2%)			24 (30%, 16%)			79 (4%)
Metro North					2 (<1%, <1%)			305 (86%, 39%)	39 (11%, 9%)	1 (<1%, 1%)					354 (18%)
Metro South					6 (2%, 3%)			129 (36%, 16%)	224 (62%, 54%)				1 (<1%, 2%)		360 (18%)
North West	2 (18%, 2%)							2 (18%, <1%)	1 (9%, <1%)	1 (9%, 1%)		5 (45%, 3%)			11 (<1%)
South West					4 (50%, 3%)			3 (38%, <1%)	1 (13%, <1%)						8 (<1%)
Sunshine Coast						2 (1%, <1%)		87 (45%, 11%)	26 (13%, 6%)	79 (41%, 93%)					195 (10%)
Torres and Cape	8 (50%, 10%)							3 (19%, <1%)	1 (6%, <1%)		1 (6%, 100%)	3 (19%, 2%)			16 (<1%)
Townsville								9 (7%, 1%)	7 (6%, 2%)			106 (87%, 69%)			122 (6%)
West Moreton				1 (<1%, 50%)	14 (12%, 12%)	1 (<1%, <1%)		18 (15%, 2%)	31 (26%, 8%)				53 (45%, 96%)		118 (6%)
Wide Bay	1 (<1%, 1%)							91 (65%, 12%)	19 (14%, 5%)	2 (1%, 2%)				27 (19%, 96%)	140 (7%)
Queensland	82 (4%)	31 (2%)	1 (<1%)	2 (<1%)	120 (6%)	209 (10%)	26 (1%)	791 (39%)	412 (20%)	85 (4%)	1 (<1%)	154 (8%)	55 (3%)	28 (1%)	2,011

Guide to interpretation: Almost two-thirds (61%) of head and neck cancer patients had their surgery in the HHS they were residing in at the time of diagnosis (calculated by adding the blue cells, which indicate patients receiving treatment in their HHS of residence). Across the state, 69% of head and neck cancer patients received their surgery in hospitals in the Metro North, Metro South, or Gold Coast HHSs. Considering Cairns and Hinterland HHS:

- There were **71** Cairns and Hinterland residents treated by facilities within Cairns and Hinterland.
- In total, there were 82 patients treated by facilities in Cairns and Hinterland HHS, meaning that **87%** (or 71 of 82) of all patients treated within Cairns and Hinterland HHS were residents.
- There were 150 Cairns and Hinterland residents who received surgery, meaning that **47%** (or 71 of 150) were treated within Cairns and Hinterland HHS.

Part 2 | Head and neck cancer quality index

2.7.3.2 | Head and neck radiation therapy rates by HHS of residence and HHS of treatment, 2011-2015

HHS of residence	HHS of radiation therapy treatment								
	Cairns and Hinterland	Darling Downs	Gold Coast	Metro North	Metro South	Sunshine Coast	Townsville	Wide Bay	Queensland
Cairns and Hinterland	38 (21%, 88%)		1 (<1%, <1%)	23 (13%, 3%)	24 (13%, 3%)	1 (<1%, 3%)	93 (52%, 29%)		180 (8%)
Central Queensland				88 (98%, 11%)	1 (1%, <1%)		1 (1%, <1%)		90 (4%)
Central West		2 (29%, 2%)		2 (29%, <1%)		1 (14%, 3%)	2 (29%, <1%)		7 (<1%)
Darling Downs		88 (67%, 80%)		6 (5%, <1%)	37 (28%, 5%)				131 (6%)
Gold Coast			159 (58%, 95%)	14 (5%, 2%)	95 (35%, 12%)				275 (12%)
Mackay			1 (1%, <1%)	21 (23%, 3%)	7 (8%, <1%)		63 (68%, 19%)		92 (4%)
Metro North				319 (82%, 40%)	69 (18%, 9%)		1 (<1%, <1%)		389 (17%)
Metro South		1 (<1%, <1%)	6 (1%, 4%)	84 (19%, 11%)	349 (79%, 45%)				440 (19%)
North West				2 (18%, <1%)	1 (9%, <1%)		8 (73%, 2%)		11 (<1%)
South West		5 (56%, 5%)		1 (11%, <1%)	3 (33%, <1%)				9 (<1%)
Sunshine Coast			1 (<1%, <1%)	121 (65%, 15%)	31 (17%, 4%)	33 (18%, 85%)			186 (8%)
Torres and Cape	5 (29%, 12%)			1 (6%, <1%)	2 (12%, <1%)		9 (53%, 3%)		17 (<1%)
Townsville				3 (2%, <1%)	3 (2%, <1%)		148 (96%, 46%)		154 (7%)
West Moreton		14 (10%, 13%)		17 (12%, 2%)	112 (78%, 14%)				143 (6%)
Wide Bay				88 (58%, 11%)	48 (32%, 6%)	4 (3%, 10%)		12 (8%, 100%)	152 (7%)
Queensland	43 (2%)	110 (5%)	168 (7%)	790 (35%)	782 (34%)	39 (2%)	325 (14%)	12 (<1%)	2,276

Guide to interpretation: Half (50%) of head and neck cancer patients had their radiation therapy treatment in the HHS they were residing in at the time of diagnosis (calculated by adding the blue cells, which indicate patients receiving treatment in their HHS of residence). Across the state, 76% of head and neck cancer patients received their radiation therapy in facilities in the Metro North, Metro South, and Gold Coast HHSs. Considering Cairns and Hinterland HHS:

- There were **38** Cairns and Hinterland residents treated by facilities within Cairns and Hinterland HHS.
- In total, there were 43 patients treated by facilities within the Cairns and Hinterland HHS, meaning that **88%** (or 38 of 43) of all patients treated within Cairns and Hinterland HHS were residents.
- There were 180 Cairns and Hinterland residents who received radiation therapy, meaning that **21%** (or 38 of 180) were treated within Cairns and Hinterland HHS.

Part 2 | Head and neck cancer quality index

2.7.3.3 | Head and neck cancer IV systemic therapy rates by HHS of residence and HHS of treatment, 2011-2015

HHS of residence	HHS of IV systemic therapy treatment												Queensland
	Cairns and Hinterland	Central Queensland	Children's Health Queensland	Darling Downs	Gold Coast	Mackay	Metro North	Metro South	North West	Sunshine Coast	Townsville	Wide Bay	
Cairns and Hinterland	12 (11%, 100%)				1 (<1%, <1%)		19 (18%, 4%)	23 (21%, 5%)		1 (<1%, 9%)	52 (48%, 33%)		108 (8%)
Central Queensland		3 (5%, 75%)	1 (2%, 13%)				60 (94%, 11%)						64 (5%)
Central West									1 (50%, 9%)	1 (50%, <1%)			2 (<1%)
Darling Downs			2 (3%, 25%)	34 (53%, 85%)			4 (6%, <1%)	24 (38%, 5%)					64 (5%)
Gold Coast			1 (<1%, 13%)		109 (62%, 96%)		7 (4%, 1%)	60 (34%, 12%)					177 (13%)
Mackay					1 (<1%, <1%)	5 (11%, 100%)	11 (24%, 2%)	3 (7%, <1%)			26 (57%, 16%)		46 (3%)
Metro North			1 (<1%, 13%)				209 (84%, 40%)	39 (16%, 8%)			1 (<1%, <1%)		250 (18%)
Metro South			2 (<1%, 25%)		2 (<1%, <1%)		46 (17%, 9%)	216 (81%, 44%)					267 (19%)
North West							2 (18%, <1%)	1 (9%, <1%)	1 (9%, 100%)		7 (64%, 4%)		11 (<1%)
South West				1 (25%, 3%)			1 (25%, <1%)	2 (50%, <1%)					4 (<1%)
Sunshine Coast							96 (77%, 18%)	19 (15%, 4%)		8 (6%, 73%)			124 (9%)
Torres and Cape							1 (14%, <1%)	1 (14%, <1%)			5 (71%, 3%)		7 (<1%)
Townsville		1 (1%, 25%)					4 (5%, <1%)	3 (4%, <1%)			67 (89%, 42%)		75 (5%)
West Moreton			1 (1%, 13%)	5 (6%, 13%)			8 (10%, 2%)	64 (82%, 13%)					78 (6%)
Wide Bay							57 (61%, 11%)	32 (34%, 7%)		1 (1%, 9%)		3 (3%, 100%)	93 (7%)
Queensland	12 (<1%)	4 (<1%)	8 (<1%)	40 (3%)	113 (8%)	5 (<1%)	525 (38%)	487 (36%)	1 (<1%)	11 (<1%)	159 (12%)	3 (<1%)	1,370

Guide to interpretation: Just under half (49%) of head and neck cancer patients had their IV systemic therapy treatment in the HHS they were residing in at the time of diagnosis (calculated by adding the blue cells, which indicate patients receiving treatment in their HHS of residence). Across the state, 77% of head and neck cancer patients received their IV systemic therapy in facilities in the Metro North, Metro South, and Gold Coast HHSs. Considering Cairns and Hinterland HHS:

- 12 → There were **12** Cairns and Hinterland residents treated by facilities within the Cairns and Hinterland HHS.
- (11%, 100%) → In total, there were 12 patients treated by facilities in Cairns and Hinterland HHS, meaning that **100%** (or 12 of 12) of all patients treated within Cairns and Hinterland HHS were residents.
- There were 108 Cairns and Hinterlands residents who received IV systemic therapy, meaning that **11%** (or 12 of 108) were treated within Cairns and Hinterland HHS.

2.8 | Head and neck cancer sub-site quality index overview

2.8.1 | Oral cavity

Indicator summary 2011-2015	Principal referral hospitals	Group A hospitals	Group B hospitals	Other hospitals	Public hospitals	Private hospitals	Queensland
2.2 Effectiveness							
Surgery	54% 429 (791)	28% 218 (791)	6% 47 (791)	11% 88 (791)	64% 508 (791)	36% 283 (791)	79% 791 (999)
Radiation therapy (RT)	80% 300 (375)	0% 0 (375)	0% 0 (375)	20% 75 (375)	81% 303 (375)	19% 72 (375)	38% 375 (999)
IV systemic therapy (IVST)	84% 102 (122)	13% 16 (122)	2% 3 (122)	1% 1 (122)	91% 111 (122)	9% 11 (122)	12% 122 (999)
2.3 Efficient							
Surgical hospital stay (median days)	8 (4-15)	4 (1-10)	1 (1-4)	1 (1-2)	8 (3-14)	2 (1-7)	6 (1-12)
2.4 Safe							
30-day mortality post surgery	0.7% 3 (429)	1.4% 3 (218)	0.0% 0 (47)	0.0% 0 (88)	1.0% 5 (508)	0.4% 1 (283)	0.8% 6 (791)
90-day mortality post surgery	2.6% 11 (429)	1.4% 3 (218)	0.0% 0 (47)	1.1% 1 (88)	2.6% 13 (508)	0.7% 2 (283)	1.9% 15 (791)
Death within 30 days of IVST	11% 15 (134)	27% 12 (44)	0% 0 (4)	25% 3 (12)	15% 30 (194)	- 0 (0)	15% 30 (194)
Death within 30 days of RT	7% 23 (352)	- 0 (0)	- 0 (0)	10% 11 (105)	7% 26 (356)	8% 8 (101)	7% 34 (457)
2.5 Surgical Survival							
2-year surgical survival	78% 335 (429)	85% 186 (218)	81% 38 (47)	84% 74 (88)	78% 396 (508)	87% 246 (283)	81% 642 (791)
2.6 Accessible							
Time from diagnosis to first surgery within 30 days	45% 188 (421)	67% 144 (215)	85% 39 (46)	90% 79 (88)	47% 229 (491)	79% 221 (279)	58% 450 (770)
Time from diagnosis to first radiation therapy within 45 days	29% 8 (28)	- 0 (0)	- 0 (0)	35% 9 (26)	29% 10 (34)	35% 7 (20)	31% 17 (54)
Time from diagnosis to first IV systemic therapy within 45 days	89% 8 (9)	100% 4 (4)	100% 1 (1)	- 0 (0)	89% 8 (9)	100% 5 (5)	93% 13 (14)
Time from diagnosis to first concurrent IVST & RT within 45 days	46% 12 (26)	- 0 (0)	- 0 (0)	43% 3 (7)	42% 13 (31)	100% 2 (2)	45% 15 (33)
2.7 Equitable							
Proportion of Indigenous patients who receive surgery within 30 days	28% 5 (18)	33% 1 (3)	100% 1 (1)	100% 1 (1)	26% 5 (19)	75% 3 (4)	35% 8 (23)
Proportion of socially disadvantaged patients who receive surgery within 30 days	39% 45 (115)	62% 26 (42)	75% 9 (12)	79% 15 (19)	43% 63 (145)	73% 32 (44)	50% 95 (189)
Proportion of patients who live rurally and who receive surgery within 30 days	28% 19 (68)	52% 13 (25)	50% 2 (4)	89% 25 (28)	30% 27 (89)	84% 32 (38)	46% 59 (127)

2.8.2 | Oropharynx

Indicator summary 2011-2015	Principal referral hospitals	Group A hospitals	Group B hospitals	Other hospitals	Public hospitals	Private hospitals	Queensland
2.2 Effectiveness							
Surgery	32% 134 (422)	41% 173 (422)	9% 39 (422)	18% 75 (422)	49% 207 (422)	51% 215 (422)	33% 422 (1,285)
Radiation therapy (RT)	86% 888 (1,035)	0% 0 (1,035)	0% 0 (1,035)	14% 147 (1,035)	86% 892 (1,035)	14% 143 (1,035)	81% 1,035 (1,285)
IV systemic therapy (IVST)	77% 690 (895)	19% 174 (895)	2% 15 (895)	2% 16 (895)	87% 778 (895)	13% 117 (895)	70% 895 (1,285)
2.3 Efficient							
Surgical hospital stay (median days)	1 (1-5)	1 (1-1)	1 (1-1)	1 (1-1)	1 (1-4)	1 (1-1)	1 (1-1)
2.4 Safe							
90-day mortality post surgery	1.5% 2 (134)	1.2% 2 (173)	0.0% 0 (39)	0.0% 0 (75)	1.4% 3 (207)	0.5% 1 (215)	0.9% 4 (422)
Death within 30 days of IVST	4% 28 (683)	8% 15 (195)	21% 5 (24)	15% 5 (34)	6% 53 (936)	- 0 (0)	6% 53 (936)
Death within 30 days of RT	3% 23 (903)	- 0 (0)	- 0 (0)	7% 12 (167)	3% 25 (912)	6% 10 (160)	3% 35 (1072)
2.5 Surgical Survival							
2-year surgical survival	83% 111 (134)	89% 154 (173)	92% 36 (39)	91% 68 (75)	84% 173 (207)	92% 197 (215)	88% 370 (422)
2.6 Accessible							
Time from diagnosis to first surgery within 30 days	60% 78 (129)	84% 140 (167)	92% 35 (38)	94% 68 (72)	67% 133 (198)	90% 188 (208)	79% 321 (406)
Time from diagnosis to first radiation therapy within 45 days	48% 28 (58)	- 0 (0)	- 0 (0)	39% 27 (69)	45% 46 (103)	38% 9 (24)	43% 55 (127)
Time from diagnosis to first IV systemic therapy within 45 days	38% 22 (58)	45% 14 (31)	33% 1 (3)	0% 0 (1)	40% 36 (89)	25% 1 (4)	40% 37 (93)
Time from diagnosis to first concurrent IVST & RT within 45 days	46% 145 (317)	56% 20 (36)	100% 3 (3)	55% 107 (196)	47% 221 (471)	67% 54 (81)	50% 275 (552)
2.7 Equitable							
Proportion of Indigenous patients who receive surgery within 30 days	40% 2 (5)	50% 3 (6)	50% 1 (2)	100% 1 (1)	45% 5 (11)	67% 2 (3)	50% 7 (14)
Proportion of socially disadvantaged patients who receive surgery within 30 days	47% 21 (45)	72% 31 (43)	75% 6 (8)	92% 11 (12)	55% 41 (74)	82% 28 (34)	64% 69 (108)
Proportion of patients who live rurally and who receive surgery within 30 days	47% 9 (19)	68% 23 (34)	67% 2 (3)	90% 9 (10)	58% 30 (52)	93% 13 (14)	65% 43 (66)

2.8.3 | Major salivary glands

Indicator summary 2011-2015	Principal referral hospitals	Group A hospitals	Group B hospitals	Other hospitals	Public hospitals	Private hospitals	Queensland
2.2 Effectiveness							
Surgery	33%	38%	15%	14%	51%	49%	91%
	76 (233)	89 (233)	36 (233)	32 (233)	119 (233)	114 (233)	233 (255)
Radiation therapy (RT)	68%	0%	0%	32%	68%	32%	61%
	105 (155)	0 (155)	0 (155)	50 (155)	105 (155)	50 (155)	155 (255)
IV systemic therapy (IVST)	50%	17%	0%	33%	67%	33%	2%
	3 (6)	1 (6)	0 (6)	2 (6)	4 (6)	2 (6)	6 (255)
2.3 Efficient							
Surgical hospital stay (median days)	3	3	3	2	3	2	3
	(2-6)	(2-4)	(2-4)	(2-4)	(2-5)	(2-4)	(2-4)
2.4 Safe							
90-day mortality post surgery	2.6%	0.0%	0.0%	0.0%	1.7%	0.0%	0.9%
	2 (76)	0 (89)	0 (36)	0 (32)	2 (119)	0 (114)	2 (233)
Death within 30 days of IVST	27%	0%	33%	25%	24%	-	24%
	3 (11)	0 (3)	1 (3)	1 (4)	5 (21)	0 (0)	5 (21)
Death within 30 days of RT	1%	-	-	5%	2%	5%	2%
	1 (107)	0 (0)	0 (0)	3 (56)	1 (107)	3 (56)	4 (163)
2.5 Surgical Survival							
2-year surgical survival	80%	91%	92%	97%	82%	95%	88%
	61 (76)	81 (89)	33 (36)	31 (32)	98 (119)	108 (114)	206 (233)
2.6 Accessible							
Time from diagnosis to first surgery within 30 days	61%	78%	86%	94%	64%	88%	76%
	46 (76)	69 (88)	31 (36)	29 (31)	76 (119)	99 (112)	175 (231)
Time from diagnosis to first radiation therapy within 45 days	0%	-	-	40%	0%	50%	25%
	0 (3)	0 (0)	0 (0)	2 (5)	0 (4)	2 (4)	2 (8)
Time from diagnosis to first IV systemic therapy within 45 days	-	-	-	50%	-	50%	50%
	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	1 (2)	1 (2)
Time from diagnosis to first concurrent IVST & RT within 45 days	-	-	-	-	-	-	-
	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
2.7 Equitable							
Proportion of Indigenous patients who receive surgery within 30 days	0%	100%	-	100%	50%	100%	60%
	0 (2)	2 (2)	0 (0)	1 (1)	2 (4)	1 (1)	3 (5)
Proportion of socially disadvantaged patients who receive surgery within 30 days	30%	70%	88%	88%	44%	90%	61%
	6 (20)	14 (20)	7 (8)	7 (8)	16 (36)	18 (20)	34 (56)
Proportion of patients who live rurally and who receive surgery within 30 days	45%	64%	100%	86%	52%	93%	69%
	5 (11)	7 (11)	6 (6)	6 (7)	11 (21)	13 (14)	24 (35)

2.8.4 | Nasopharynx

Indicator summary 2011-2015	Principal referral hospitals	Group A hospitals	Group B hospitals	Other hospitals	Public hospitals	Private hospitals	Queensland
2.2 Effectiveness							
Surgery	50%	17%	0%	33%	50%	50%	13%
	6 (12)	2 (12)	0 (12)	4 (12)	6 (12)	6 (12)	12 (96)
Radiation therapy (RT)	96%	0%	0%	4%	96%	4%	77%
	71 (74)	0 (74)	0 (74)	3 (74)	71 (74)	3 (74)	74 (96)
IV systemic therapy (IVST)	80%	14%	0%	6%	90%	10%	73%
	56 (70)	10 (70)	0 (70)	4 (70)	63 (70)	7 (70)	70 (96)
2.3 Efficient							
Surgical hospital stay (median days)	4	1	-	1	4	1	1
	(1-14)	(1-1)		(1-1)	(1-13)	(1-1)	(1-5)
2.4 Safe							
90-day mortality post surgery	0.0%	0.0%	-	0.0%	0.0%	0.0%	0.0%
	0 (6)	0 (2)	0 (0)	0 (4)	0 (6)	0 (6)	0 (12)
Death within 30 days of IVST	2%	7%	-	0%	3%	-	3%
	1 (53)	1 (15)	0 (0)	0 (5)	2 (73)	0 (0)	2 (73)
Death within 30 days of RT	7%	-	-	14%	8%	20%	8%
	5 (73)	0 (0)	0 (0)	1 (7)	5 (75)	1 (5)	6 (80)
2.5 Surgical Survival							
2-year surgical survival	83%	100%	-	75%	83%	83%	83%
	5 (6)	2 (2)	0 (0)	3 (4)	5 (6)	5 (6)	10 (12)
2.6 Accessible							
Time from diagnosis to first surgery within 30 days	100%	100%	-	67%	100%	80%	90%
	5 (5)	2 (2)	0 (0)	2 (3)	5 (5)	4 (5)	9 (10)
Time from diagnosis to first radiation therapy within 45 days	50%	-	-	38%	42%	50%	43%
	3 (6)	0 (0)	0 (0)	3 (8)	5 (12)	1 (2)	6 (14)
Time from diagnosis to first IV systemic therapy within 45 days	63%	-	-	100%	67%	-	67%
	5 (8)	0 (0)	0 (0)	1 (1)	6 (9)	0 (0)	6 (9)
Time from diagnosis to first concurrent IVST & RT within 45 days	74%	100%	-	68%	72%	100%	73%
	20 (27)	3 (3)	0 (0)	15 (22)	36 (50)	2 (2)	38 (52)
2.7 Equitable							
Proportion of Indigenous patients who receive surgery within 30 days	100%	-	-	-	100%	-	100%
	1 (1)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	1 (1)
Proportion of socially disadvantaged patients who receive surgery within 30 days	100%	-	-	100%	100%	100%	100%
	2 (2)	0 (0)	0 (0)	1 (1)	2 (2)	1 (1)	3 (3)
Proportion of patients who live rurally and who receive surgery within 30 days	0%	-	-	50%	0%	50%	33%
	0 (1)	0 (0)	0 (0)	1 (2)	0 (1)	1 (2)	1 (3)

2.8.5 | Hypopharynx

Indicator summary 2011-2015	Principal referral hospitals	Group A hospitals	Group B hospitals	Other hospitals	Public hospitals	Private hospitals	Queensland
2.2 Effectiveness							
Surgery	67%	21%	3%	9%	77%	23%	44%
	67 (100)	21 (100)	3 (100)	9 (100)	77 (100)	23 (100)	100 (228)
Radiation therapy (RT)	88%	0%	0%	12%	88%	12%	72%
	146 (165)	0 (165)	0 (165)	19 (165)	146 (165)	19 (165)	165 (228)
IV systemic therapy (IVST)	78%	19%	1%	2%	88%	13%	42%
	75 (96)	18 (96)	1 (96)	2 (96)	84 (96)	12 (96)	96 (228)
2.3 Efficient							
Surgical hospital stay (median days)	15	2	1	1	16	1	14
	(10-22)	(1-1)	(1-1)	(1-6.5)	(7-22)	(1-2)	(1-20)
2.4 Safe							
90-day mortality post surgery	3.0%	4.8%	0.0%	11.1%	3.9%	4.3%	4.0%
	2 (67)	1 (21)	0 (3)	1 (9)	3 (77)	1 (23)	4 (100)
Death within 30 days of IVST	4%	9%	0%	14%	5%	-	5%
	3 (81)	2 (23)	0 (2)	1 (7)	6 (113)	0 (0)	6 (113)
Death within 30 days of RT	7%	-	-	16%	9%	13%	9%
	11 (150)	0 (0)	0 (0)	4 (25)	12 (152)	3 (24)	15 (176)
2.5 Surgical Survival							
2-year surgical survival	57%	67%	100%	67%	57%	74%	61%
	38 (67)	14 (21)	3 (3)	6 (9)	44 (77)	17 (23)	61 (100)
2.6 Accessible							
Time from diagnosis to first surgery within 30 days	57%	71%	100%	89%	59%	83%	65%
	33 (58)	15 (21)	3 (3)	8 (9)	40 (68)	19 (23)	59 (91)
Time from diagnosis to first radiation therapy within 45 days	39%	-	-	25%	30%	50%	33%
	9 (23)	0 (0)	0 (0)	5 (20)	11 (37)	3 (6)	14 (43)
Time from diagnosis to first IV systemic therapy within 45 days	67%	0%	-	-	55%	-	55%
	6 (9)	0 (2)	0 (0)	0 (0)	6 (11)	0 (0)	6 (11)
Time from diagnosis to first concurrent IVST & RT within 45 days	63%	100%	-	32%	54%	50%	53%
	15 (24)	4 (4)	0 (0)	6 (19)	22 (41)	3 (6)	25 (47)
2.7 Equitable							
Proportion of Indigenous patients who receive surgery within 30 days	100%	100%	-	-	100%	-	100%
	5 (5)	1 (1)	0 (0)	0 (0)	6 (6)	0 (0)	6 (6)
Proportion of socially disadvantaged patients who receive surgery within 30 days	58%	56%	-	100%	58%	80%	61%
	14 (24)	5 (9)	0 (0)	3 (3)	18 (31)	4 (5)	22 (36)
Proportion of patients who live rurally and who receive surgery within 30 days	43%	100%	-	100%	50%	100%	58%
	6 (14)	2 (2)	0 (0)	3 (3)	8 (16)	3 (3)	11 (19)

2.8.6 | Nasal cavity and paranasal sinuses

Indicator summary 2011-2015	Principal referral hospitals	Group A hospitals	Group B hospitals	Other hospitals	Public hospitals	Private hospitals	Queensland
2.2 Effectiveness							
Surgery	56%	28%	2%	12%	69%	31%	64%
	48 (86)	24 (86)	2 (86)	10 (86)	59 (86)	27 (86)	86 (134)
Radiation therapy (RT)	83%	0%	0%	17%	83%	17%	56%
	62 (75)	0 (75)	0 (75)	13 (75)	62 (75)	13 (75)	75 (134)
IV systemic therapy (IVST)	56%	24%	0%	21%	76%	24%	25%
	19 (34)	8 (34)	0 (34)	7 (34)	26 (34)	8 (34)	34 (134)
2.3 Efficient							
Surgical hospital stay (median days)	5	1	1	1	4	1	2
	(1-12)	(1-1)	(1-1)	(1-1)	(1-9)	(1-2)	(1-6)
2.4 Safe							
90-day mortality post surgery	2.1%	4.2%	0.0%	0.0%	1.7%	3.7%	2.3%
	1 (48)	1 (24)	0 (2)	0 (10)	1 (59)	1 (27)	2 (86)
Death within 30 days of IVST	5%	36%	100%	0%	17%	-	17%
	1 (21)	5 (14)	1 (1)	0 (6)	7 (42)	0 (0)	7 (42)
Death within 30 days of RT	6%	-	-	6%	6%	0%	6%
	4 (69)	0 (0)	0 (0)	1 (17)	5 (71)	0 (15)	5 (86)
2.5 Surgical Survival							
2-year surgical survival	75%	83%	100%	90%	80%	81%	80%
	36 (48)	20 (24)	2 (2)	9 (10)	47 (59)	22 (27)	69 (86)
2.6 Accessible							
Time from diagnosis to first surgery within 30 days	53%	83%	100%	100%	57%	93%	69%
	24 (45)	20 (24)	2 (2)	10 (10)	31 (54)	25 (27)	56 (81)
Time from diagnosis to first radiation therapy within 45 days	43%	-	-	70%	42%	100%	59%
	3 (7)	0 (0)	0 (0)	7 (10)	5 (12)	5 (5)	10 (17)
Time from diagnosis to first IV systemic therapy within 45 days	67%	100%	-	-	80%	-	80%
	2 (3)	2 (2)	0 (0)	0 (0)	4 (5)	0 (0)	4 (5)
Time from diagnosis to first concurrent IVST & RT within 45 days	67%	100%	-	70%	75%	75%	75%
	2 (3)	3 (3)	0 (0)	7 (10)	9 (12)	3 (4)	12 (16)
2.7 Equitable							
Proportion of Indigenous patients who receive surgery within 30 days	100%	-	-	-	100%	-	100%
	1 (1)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)	1 (1)
Proportion of socially disadvantaged patients who receive surgery within 30 days	43%	60%	100%	100%	39%	100%	52%
	6 (14)	3 (5)	2 (2)	1 (1)	7 (18)	5 (5)	12 (23)
Proportion of patients who live rurally and who receive surgery within 30 days	50%	100%	-	100%	50%	100%	67%
	3 (6)	3 (3)	0 (0)	2 (2)	4 (8)	4 (4)	8 (12)

2.8.7 | Larynx

Indicator summary 2011-2015	Principal referral hospitals	Group A hospitals	Group B hospitals	Other hospitals	Public hospitals	Private hospitals	Queensland
2.2 Effectiveness							
Surgery	52% 180 (345)	23% 79 (345)	8% 28 (345)	16% 56 (345)	60% 207 (345)	40% 138 (345)	59% 345 (587)
Radiation therapy (RT)	77% 276 (360)	0% 0 (360)	0% 0 (360)	23% 84 (360)	77% 276 (360)	23% 84 (360)	61% 360 (587)
IV systemic therapy (IVST)	74% 87 (118)	19% 22 (118)	5% 6 (118)	3% 3 (118)	84% 99 (118)	16% 19 (118)	20% 118 (587)
2.3 Efficient							
Surgical hospital stay (median days)	4 (1-14)	1 (1-1)	1 (1-1)	1 (1-1)	3 (1-14)	1 (1-1)	1 (1-11)
2.4 Safe							
90-day mortality post surgery	1.7% 3 (180)	0.0% 0 (79)	0.0% 0 (28)	1.8% 1 (56)	1.4% 3 (207)	0.7% 1 (138)	1.2% 4 (345)
Death within 30 days of IVST	9% 10 (106)	28% 11 (39)	11% 1 (9)	40% 2 (5)	15% 24 (159)	- 0 (0)	15% 24 (159)
Death within 30 days of RT	5% 16 (304)	- 0 (0)	- 0 (0)	8% 8 (98)	6% 17 (305)	7% 7 (97)	6% 24 (402)
2.5 Surgical Survival							
2-year surgical survival	76% 136 (180)	86% 68 (79)	96% 27 (28)	91% 51 (56)	77% 160 (207)	90% 124 (138)	82% 284 (345)
2.6 Accessible							
Time from diagnosis to first surgery within 30 days	67% 112 (167)	83% 65 (78)	100% 26 (26)	98% 54 (55)	70% 135 (192)	91% 122 (134)	79% 257 (326)
Time from diagnosis to first radiation therapy within 45 days	52% 32 (62)	- 0 (0)	- 0 (0)	45% 33 (74)	45% 43 (95)	54% 22 (41)	48% 65 (136)
Time from diagnosis to first IV systemic therapy within 45 days	50% 2 (4)	43% 3 (7)	100% 2 (2)	- 0 (0)	25% 2 (8)	100% 5 (5)	54% 7 (13)
Time from diagnosis to first concurrent IVST & RT within 45 days	54% 20 (37)	100% 1 (1)	50% 1 (2)	50% 8 (16)	51% 26 (51)	80% 4 (5)	54% 30 (56)
2.7 Equitable							
Proportion of Indigenous patients who receive surgery within 30 days	57% 4 (7)	100% 2 (2)	- 0 (0)	100% 1 (1)	67% 6 (9)	100% 1 (1)	70% 7 (10)
Proportion of socially disadvantaged patients who receive surgery within 30 days	65% 35 (54)	91% 20 (22)	100% 10 (10)	100% 13 (13)	70% 46 (66)	94% 32 (34)	78% 78 (100)
Proportion of patients who live rurally and who receive surgery within 30 days	40% 12 (30)	67% 6 (9)	100% 2 (2)	100% 11 (11)	47% 17 (36)	88% 14 (16)	60% 31 (52)

Part 3 | Spotlight on oral cavity cancer



3.1 | Demographics: Understanding the characteristics of oral cavity cancer patients

3.1.1 | Characteristics of patients diagnosed with an oral cavity cancer, 2011-2015

	Cancer		Had treatment ^a	
	N	Qld %	n	%
Queensland	999	100%	871	87%
Sex				
Male	605	61%	526	87%
Female	394	39%	345	88%
Age Group				
< 35	29	3%	26	90%
35 - 44	54	5%	52	96%
45 - 54	167	17%	154	92%
55 - 64	266	27%	238	89%
65 - 74	260	26%	238	92%
75 - 84	141	14%	111	79%
85 +	82	8%	52	63%
Indigenous status				
Indigenous	32	3%	27	84%
Non-Indigenous	959	96%	844	88%
Not stated	8	1%	0	0%
Socio-economic status				
Affluent	134	13%	120	90%
Middle	623	62%	542	87%
Disadvantaged	240	24%	208	87%
Remoteness^b				
Major city	618	62%	544	88%
Inner regional	214	21%	181	85%
Outer regional	135	14%	122	90%
Remote & very remote	32	3%	24	75%
MDT^c				
MDT review	795	80%	731	92%
No MDT review	204	20%	140	69%
Comorbidities				
0 Comorbidities	707	71%	632	89%
1 Comorbidities	177	18%	148	84%
2+ Comorbidities	115	12%	91	79%
Site				
Floor of mouth	172	17%	148	86%
Gum	134	13%	120	90%
Oral tongue	460	46%	411	89%
Other and unspecified parts of mouth	164	16%	138	84%
Palate - oral cavity	56	6%	44	79%
Wet lip	13	1%	10	77%

a Had treatment includes IV systemic therapy, radiation therapy, and/or surgery.

b Metropolitan Townsville is included in Major City because of the availability of tertiary level cancer services.

c MDT rate includes facilities that use QOOL to capture MDT review.

3.2 | Effectiveness: Achieving the best outcomes for Queenslanders with oral cavity cancer

3.2.1 | Oral cavity cancer treatment rates

3.2.1.1 | Characteristics of oral cavity cancer patients^a who received surgery, radiation therapy, and IV systemic therapy 2011-2015

	Cancer		Surgery		Radiation therapy (RT)		IV systemic therapy (IVST)	
	N	Qld %	n	%	n	%	n	%
Queensland	999	100%	791	79%	375	38%	122	12%
Sex								
Male	605	61%	473	78%	250	41%	97	16%
Female	394	39%	318	81%	125	32%	25	6%
Age Group								
< 35	29	3%	24	83%	10	34%	2	7%
35 - 44	54	5%	53	98%	25	46%	7	13%
45 - 54	167	17%	145	87%	68	41%	27	16%
55 - 64	266	27%	220	83%	115	43%	48	18%
65 - 74	260	26%	213	82%	102	39%	31	12%
75 - 84	141	14%	94	67%	41	29%	6	4%
85 +	82	8%	42	51%	14	17%	1	1%
Indigenous status								
Indigenous	32	3%	23	72%	13	41%	3	9%
Non-Indigenous	959	96%	766	80%	362	38%	119	12%
Not stated	8	1%	2	25%	0	0%	0	0%
Socio-economic status								
Affluent	134	13%	109	81%	48	36%	14	10%
Middle	623	62%	492	79%	232	37%	83	13%
Disadvantaged	240	24%	189	79%	95	40%	25	10%
Remoteness^b								
Major city	618	62%	498	81%	233	38%	74	12%
Inner regional	214	21%	166	78%	77	36%	26	12%
Outer regional	135	14%	107	79%	56	41%	20	15%
Remote & very remote	32	3%	20	63%	9	28%	2	6%
MDT^c								
MDT review	795	80%	669	84%	329	41%	114	14%
No MDT review	204	20%	122	60%	46	23%	8	4%
Comorbidities								
0 Comorbidities	707	71%	588	83%	257	36%	95	13%
1 Comorbidities	177	18%	121	68%	75	42%	15	8%
2+ Comorbidities	115	12%	82	71%	43	37%	12	10%
Site								
Floor of mouth	172	17%	136	79%	62	36%	13	8%
Gum	134	13%	108	81%	59	44%	19	14%
Oral tongue	460	46%	381	83%	156	34%	57	12%
Other and unspecified parts of mouth	164	16%	117	71%	73	45%	26	16%
Palate - oral cavity	56	6%	37	66%	20	36%	6	11%
Wet lip	13	1%	12	92%	5	38%	1	8%

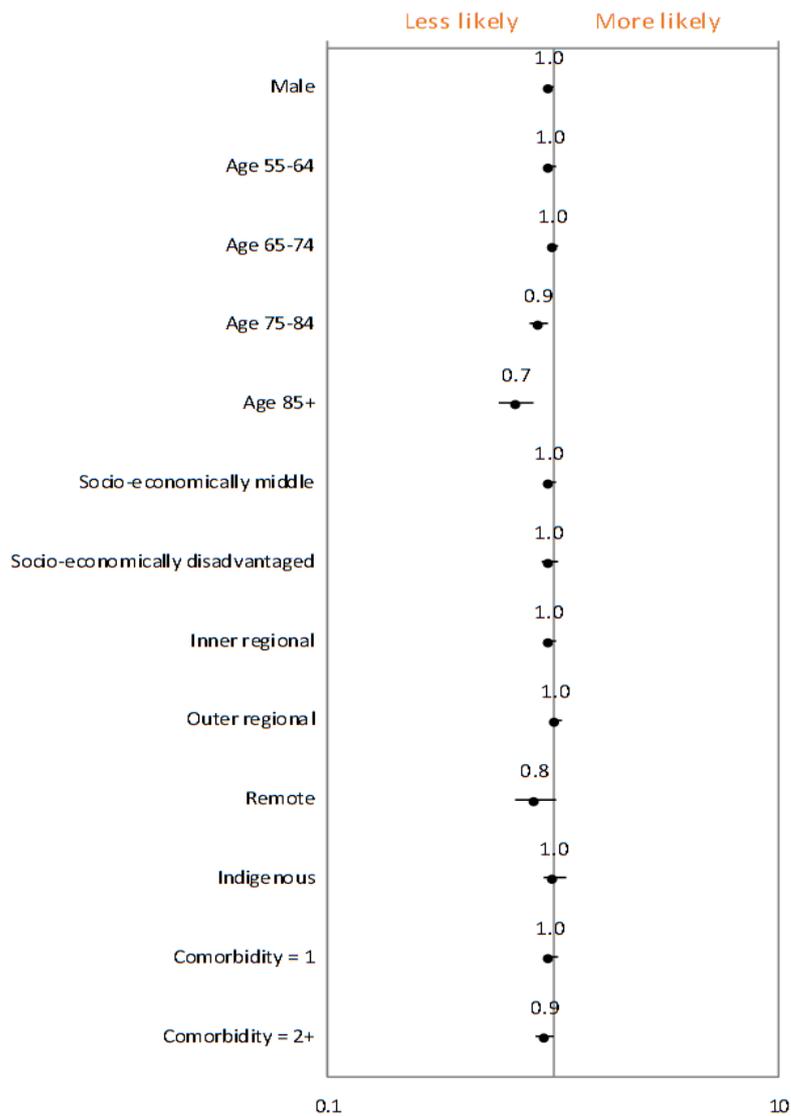
^a A patient can have more than one type of treatment.

^b Metropolitan Townsville is included in Major City because of the availability of tertiary level cancer services.

^c MDT rate includes facilities that use QOOL to capture MDT review.

Part 3 | Spotlight on oral cavity cancer

3.2.1.2 | Relative risk of receiving treatment for oral cavity cancer, 2011-2015



The above graph (forest plot) is a graphical display of the hazard ratios for each covariate in the analysis. The dot represents the estimate of the hazard ratio with the confidence interval of the estimate represented by a horizontal line. The central vertical line represents no effect, if the confidence intervals for an estimate cross this central vertical line then the effect is considered not to be statistically significant. Hazard ratios for those from Middle and Disadvantaged socio-economic areas are obtained by comparing to those from Affluent areas. Inner and Outer Regional, Remote areas are compared with Major Cities. Patients with comorbidities are compared to those with no comorbidities.

Part 3 | Spotlight on oral cavity cancer

3.2.2 | Selected types of major resection for oral cavity cancer

3.2.2.1 | Selected types of major resection procedure^a for oral cavity cancer patients by AIHW Peer Group^{b,c}, 2011-2015

AIHW Peer Group	Surgery		Maxilla		Mandible		Mouth or palate		Tongue		Tracheostomy	
	N	QLD %	n	%	n	%	n	%	n	%	n	%
Principal referral hospitals	429	54%	33	67%	61	67%	227	64%	180	49%	214	71%
Group A hospitals	218	28%	10	20%	21	23%	88	25%	106	29%	66	22%
Group B hospitals	47	6%	3	6%	4	4%	14	4%	29	8%	5	2%
Other hospitals	88	11%	3	6%	5	5%	24	7%	52	14%	17	6%
Queensland	791	100%	49	100%	91	100%	354	100%	367	100%	302	100%

a See Appendix 4: methodology for associated ICD procedure codes.

b A patient can appear in more than one column.

c See Appendix 5 for AIHW Peer Group description.

Part 3 | Spotlight on oral cavity cancer

3.2.2.1 | Selected types of major resection^a for oral cavity cancer patients^b, 2011-2015

	Cancer		Surgery		Maxilla		Mandible		Mouth or palate		Tongue		Tracheostomy	
	N	Qld %	N	Qld %	n	%	n	%	n	%	n	%	n	%
Queensland	999	100%	791	79%	49	6%	91	12%	354	45%	367	46%	302	38%
Sex														
Male	605	61%	473	78%	23	5%	58	12%	207	44%	227	48%	212	45%
Female	394	39%	318	81%	26	8%	33	10%	147	46%	140	44%	90	28%
Age Group														
< 35	29	3%	24	83%	3	13%	2	8%	4	17%	16	67%	6	25%
35 - 44	54	5%	53	98%	3	6%	5	9%	20	38%	29	55%	20	38%
45 - 54	167	17%	145	87%	6	4%	15	10%	52	36%	78	54%	63	43%
55 - 64	266	27%	220	83%	11	5%	25	11%	118	54%	97	44%	96	44%
65 - 74	260	26%	213	82%	12	6%	24	11%	99	46%	97	46%	79	37%
75 - 84	141	14%	94	67%	13	14%	13	14%	40	43%	35	37%	29	31%
85 +	82	8%	42	51%	1	2%	7	17%	21	50%	15	36%	9	21%
Indigenous status														
Indigenous	32	3%	23	72%	0	0%	1	4%	13	57%	12	52%	16	70%
Non-Indigenous	959	96%	766	80%	49	6%	90	12%	341	45%	355	46%	286	37%
Not stated	8	1%	2	25%	0	0%	0	0%	0	0%	0	0%	0	0%
Socio-economic status														
Affluent	134	13%	109	81%	10	9%	8	7%	44	40%	43	39%	34	31%
Middle	623	62%	492	79%	28	6%	65	13%	219	45%	232	47%	199	40%
Disadvantaged	240	24%	189	79%	11	6%	18	10%	90	48%	92	49%	69	37%
Remoteness^c														
Major city	618	62%	498	81%	35	7%	62	12%	224	45%	228	46%	202	41%
Inner regional	214	21%	166	78%	9	5%	17	10%	77	46%	75	45%	54	33%
Outer regional	135	14%	107	79%	4	4%	9	8%	44	41%	57	53%	40	37%
Remote & very remote	32	3%	20	63%	1	5%	3	15%	9	45%	7	35%	6	30%
MDT^d														
MDT review	795	80%	669	84%	47	7%	84	13%	324	48%	299	45%	291	43%
No MDT review	204	20%	122	60%	2	2%	7	6%	30	25%	68	56%	11	9%
Comorbidities														
0 Comorbidities	707	71%	588	83%	35	6%	73	12%	253	43%	279	47%	212	36%
1 Comorbidities	177	18%	121	68%	10	8%	10	8%	57	47%	49	40%	47	39%
2+ Comorbidities	115	12%	82	71%	4	5%	8	10%	44	54%	39	48%	43	52%
Site														
Floor of mouth	172	17%	136	79%	0	0%	23	17%	124	91%	21	15%	70	51%
Gum	134	13%	108	81%	26	24%	32	30%	64	59%	2	2%	54	50%
Oral tongue	460	46%	381	83%	0	0%	10	3%	53	14%	334	88%	122	32%
Other and unspecified parts of mouth	164	16%	117	71%	5	4%	23	20%	86	74%	10	9%	47	40%
Palate - oral cavity	56	6%	37	66%	18	49%	2	5%	25	68%	0	0%	8	22%
Wet lip	13	1%	12	92%	0	0%	1	8%	2	17%	0	0%	1	8%

a See Appendix 4: methodology for associated ICD procedure codes.

b A patient can appear in more than one column.

c Metropolitan Townsville is included in Major City because of the availability of tertiary level cancer services.

d MDT rate includes facilities that use QOOL to capture MDT review.

3.2.3 | Excision, lymph node dissection and reconstruction and repair rates for oral cavity cancer

3.2.3.1 | Proportion of oral cavity cancer surgery patients who also received lymph node dissection and /or reconstruction and repair, 2011-2015

	Cancer		Surgery		Excision only		Excision with lymph node dissection		Excision with reconstruction/repair		Excision with lymph node dissection and reconstruction/repair	
	N	Qld %	N	Qld %	n	%	n	%	n	%	n	%
Queensland	999	100%	791	79%	353	45%	87	11%	226	29%	125	16%
Sex												
Male	605	61%	473	78%	197	42%	52	11%	139	29%	85	18%
Female	394	39%	318	81%	156	49%	35	11%	87	27%	40	13%
Age Group												
< 35	29	3%	24	83%	10	42%	6	25%	4	17%	4	17%
35 - 44	54	5%	53	98%	25	47%	8	15%	11	21%	9	17%
45 - 54	167	17%	145	87%	60	41%	18	12%	37	26%	30	21%
55 - 64	266	27%	220	83%	96	44%	22	10%	69	31%	33	15%
65 - 74	260	26%	213	82%	92	43%	20	9%	69	32%	32	15%
75 - 84	141	14%	94	67%	46	49%	10	11%	26	28%	12	13%
85 +	82	8%	42	51%	24	57%	3	7%	10	24%	5	12%
Indigenous status												
Indigenous	32	3%	23	72%	7	30%	2	9%	8	35%	6	26%
Non-Indigenous	959	96%	766	80%	344	45%	85	11%	218	28%	119	16%
Not stated	8	1%	2	25%	2	100%	0	0%	0	0%	0	0%
Socio-economic status												
Affluent	134	13%	109	81%	52	48%	16	15%	30	28%	11	10%
Middle	623	62%	492	79%	216	44%	51	10%	136	28%	89	18%
Disadvantaged	240	24%	189	79%	85	45%	20	11%	59	31%	25	13%
Remoteness^a												
Major city	618	62%	498	81%	210	42%	54	11%	148	30%	86	17%
Inner regional	214	21%	166	78%	81	49%	17	10%	46	28%	22	13%
Outer regional	135	14%	107	79%	52	49%	15	14%	27	25%	13	12%
Remote & very remote	32	3%	20	63%	10	50%	1	5%	5	25%	4	20%
MDT^b												
MDT review	795	80%	669	84%	248	37%	83	12%	217	32%	121	18%
No MDT review	204	20%	122	60%	105	86%	4	3%	9	7%	4	3%
Comorbidities												
0 Comorbidities	707	71%	588	83%	270	46%	64	11%	153	26%	101	17%
1 Comorbidities	177	18%	121	68%	46	38%	18	15%	41	34%	16	13%
2+ Comorbidities	115	12%	82	71%	37	45%	5	6%	32	39%	8	10%
Site												
Floor of mouth	172	17%	136	79%	50	37%	3	2%	65	48%	18	13%
Gum	134	13%	108	81%	34	31%	4	4%	51	47%	19	18%
Oral tongue	460	46%	381	83%	195	51%	74	19%	43	11%	69	18%
Other and unspecified parts of mouth	164	16%	117	71%	48	41%	3	3%	53	45%	13	11%
Palate - oral cavity	56	6%	37	66%	20	54%	2	5%	12	32%	3	8%
Wet lip	13	1%	12	92%	6	50%	1	8%	2	17%	3	25%

a Metropolitan Townsville is included in Major City because of the availability of tertiary level cancer services.

b MDT rate includes facilities that use QOOL to capture MDT review.

Part 3 | Spotlight on oral cavity cancer

3.2.3.2 | Oral cavity cancer surgery by AIHW hospital peer group, 2011-2015

AIHW Peer Group ^a	N	Surgery	
			Qld %
Principal referral hospitals	429		54%
Group A hospitals	218		28%
Group B hospitals	47		6%
Other hospitals	88		11%
Queensland	791		100%

a See Appendix 5 for AIHW Peer Group description.

3.3 | Efficient: Optimally using resources to achieve desired outcomes

3.3.1 | Length of stay

3.3.1.1 | Length of stay for all oral cavity cancer surgery^{a,b}, 2011-2015

Length of stay (days) (Median time between admission and discharge date of surgery)	Surgery	Median days	IQR
Principal referral hospitals	429	8	(4-15)
Group A hospitals	218	4	(1-10)
Group B hospitals	47	1	(1-4)
Other hospitals	88	1	(1-2)
Queensland	791	6	(1-12)

a See Appendix 5 for AIHW Peer Group description.

b These results were not adjusted for patient complexity.

3.3.1.2 | Length of stay for oral cavity cancer surgery^{a,b} (excision only), 2011-2015

Length of stay (days) (Median time between admission and discharge date of surgery)	Surgery	Median days	IQR
Principal referral hospitals	133	2	(1-6)
Group A hospitals	107	1	(1-3)
Group B hospitals	34	1	(1-1)
Other hospitals	70	1	(1-1)
Queensland	353	1	(1-3)

a See Appendix 5 for AIHW Peer Group description.

b These results were not adjusted for patient complexity.

3.3.1.3 | Length of stay for all oral cavity cancer surgery^{a,b} (excision with lymph node dissection), 2011-2015

Length of stay (days) (Median time between admission and discharge date of surgery)	Surgery	Median days	IQR
Principal referral hospitals	36	5	(4-7)
Group A hospitals	36	6	(4-8)
Group B hospitals	8	4	(3-5)
Other hospitals	7	4	(4-5)
Queensland	87	5	(4-7)

a See Appendix 5 for AIHW Peer Group description.

b These results were not adjusted for patient complexity.

Part 3 | Spotlight on oral cavity cancer

3.1.3.4 | Length of stay for all oral cavity cancer surgery^{a,b} (excision with reconstruction and repair), 2011-2015

Length of stay (days) (Median time between admission and discharge date of surgery)	Surgery	Median days	IQR
Principal referral hospitals	168	13	(8-18)
Group A hospitals	50	10	(7-13)
Group B hospitals	4	6	(2-8)
Other hospitals	4	7	(1-19)
Queensland	226	12	(8-17)

a See Appendix 5 for AIHW Peer Group description.

b These results were not adjusted for patient complexity.

3.1.3.5 | Length of stay for all oral cavity cancer surgery^{a,b} (excision with lymph node dissection and/or reconstruction and repair), 2011-2015

Length of stay (days) (Median time between admission and discharge date of surgery)	Surgery	Median days	IQR
Principal referral hospitals	92	12	(9-16)
Group A hospitals	25	12	(8-17)
Group B hospitals	1	6	(6-6)
Other hospitals	7	8	(8-12)
Queensland	125	12	(8-16)

a See Appendix 5 for AIHW Peer Group description.

b These results were not adjusted for patient complexity.

3.4 | Safe: Avoiding and preventing adverse outcomes or injuries by healthcare management

3.4.1 | 30-day mortality

3.4.1.1 | Proportion of oral cavity cancer patients who die within 30 days of surgery by AIHW peer group^{a,b}, 2011-2015

AIHW Peer Group	Surgery	30-day mortality	
	N	n	%
Principal referral hospitals	429	3	0.7%
Group A hospitals	218	3	1.4%
Group B hospitals	47	0	0.0%
Other hospitals	88	0	0.0%
Queensland	791	6	0.8%

a See Appendix 5 for AIHW Peer Group description.

b Date used from last surgery.

3.5 | Equitable: Providing care and ensuring health status does not vary in quality because of personal characteristics

3.5.1 | Characteristics of oral cavity cancer patients who received surgery within 30 days of diagnosis

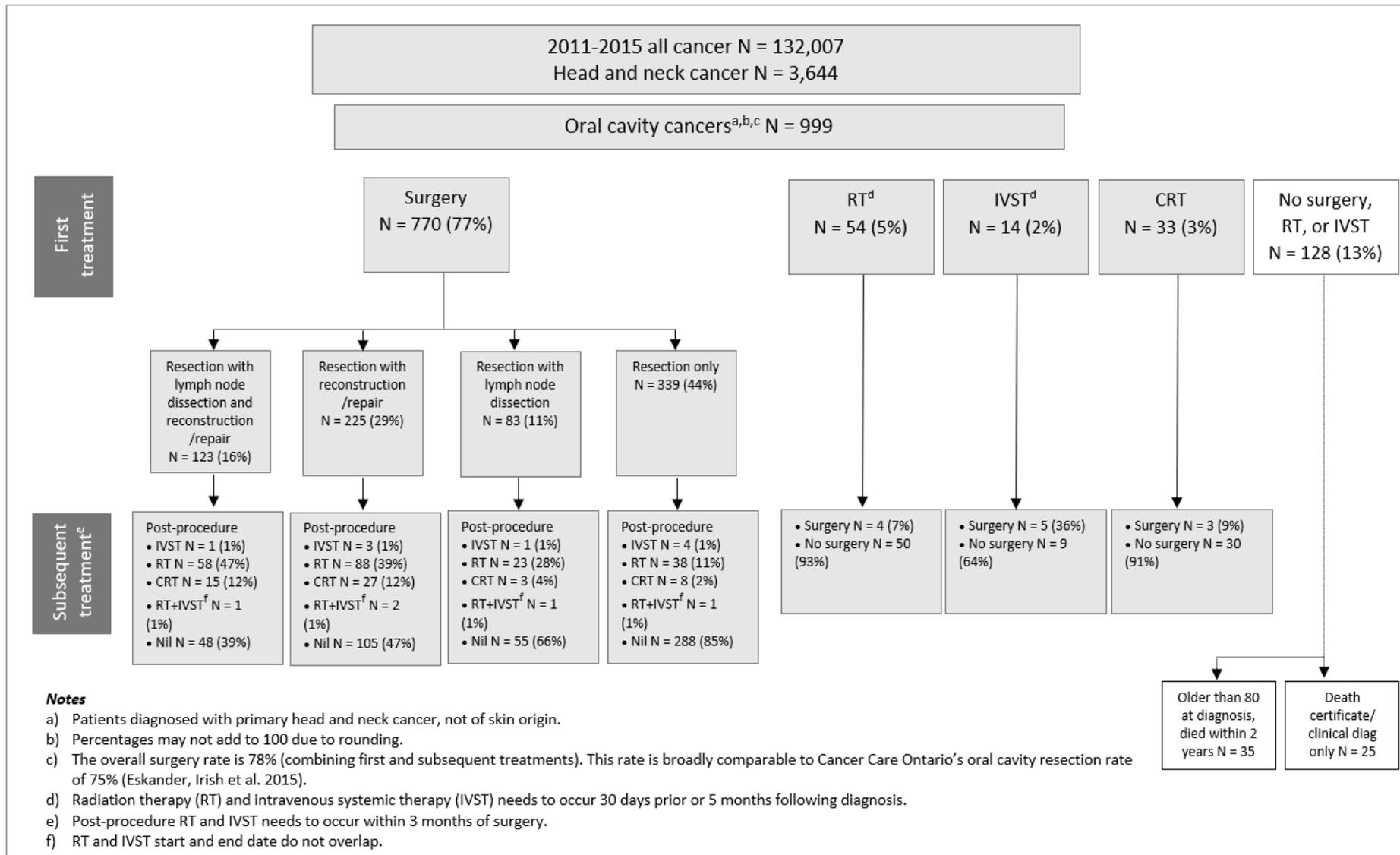
3.5.1.1 | Characteristics of oral cavity cancer patients who received surgery within 30 days of diagnosis

	Surgery	Received surgery within 30 days of diagnosis	
	N	n	%
Queensland	770	450	58%
Sex			
Male	455	257	56%
Female	315	193	61%
Age Group			
< 35	24	16	67%
35 - 44	51	32	63%
45 - 54	143	84	59%
55 - 64	211	122	58%
65 - 74	207	118	57%
75 - 84	93	56	60%
85 +	41	22	54%
Indigenous status			
Indigenous	23	8	35%
Non-Indigenous	747	442	59%
Socioeconomic status			
Affluent	105	77	73%
Middle	478	277	58%
Disadvantaged	186	95	51%
Remoteness^a			
Major city	482	300	62%
Inner regional	164	92	56%
Outer regional	104	49	47%
Remote & very remote	20	9	45%
MDT^b			
MDT review	656	363	55%
No MDT review	114	87	76%
Comorbidities			
0 Comorbidities	573	342	60%
1 Comorbidities	118	71	60%
2+ Comorbidities	79	37	47%
Site			
Floor of mouth	136	77	57%
Gum	105	53	50%
Oral tongue	372	237	64%
Other and unspecified parts of mouth	112	56	50%
Palate - oral cavity	37	22	59%
Wet lip	8	5	63%

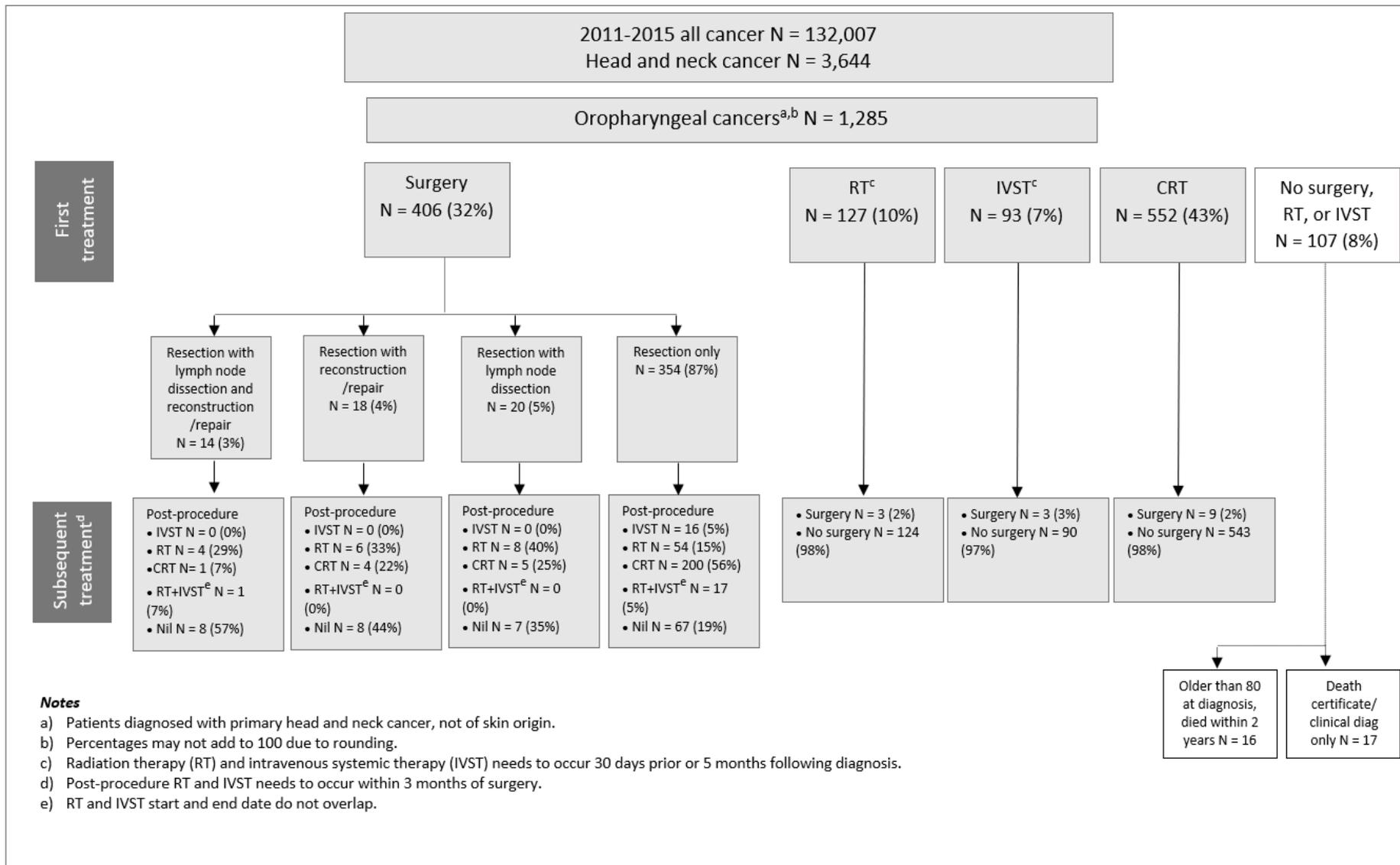
a Metropolitan Townsville is included in Major City because of the availability of tertiary level cancer services.

b MDT rate includes facilities that use QOOL to capture MDT review.

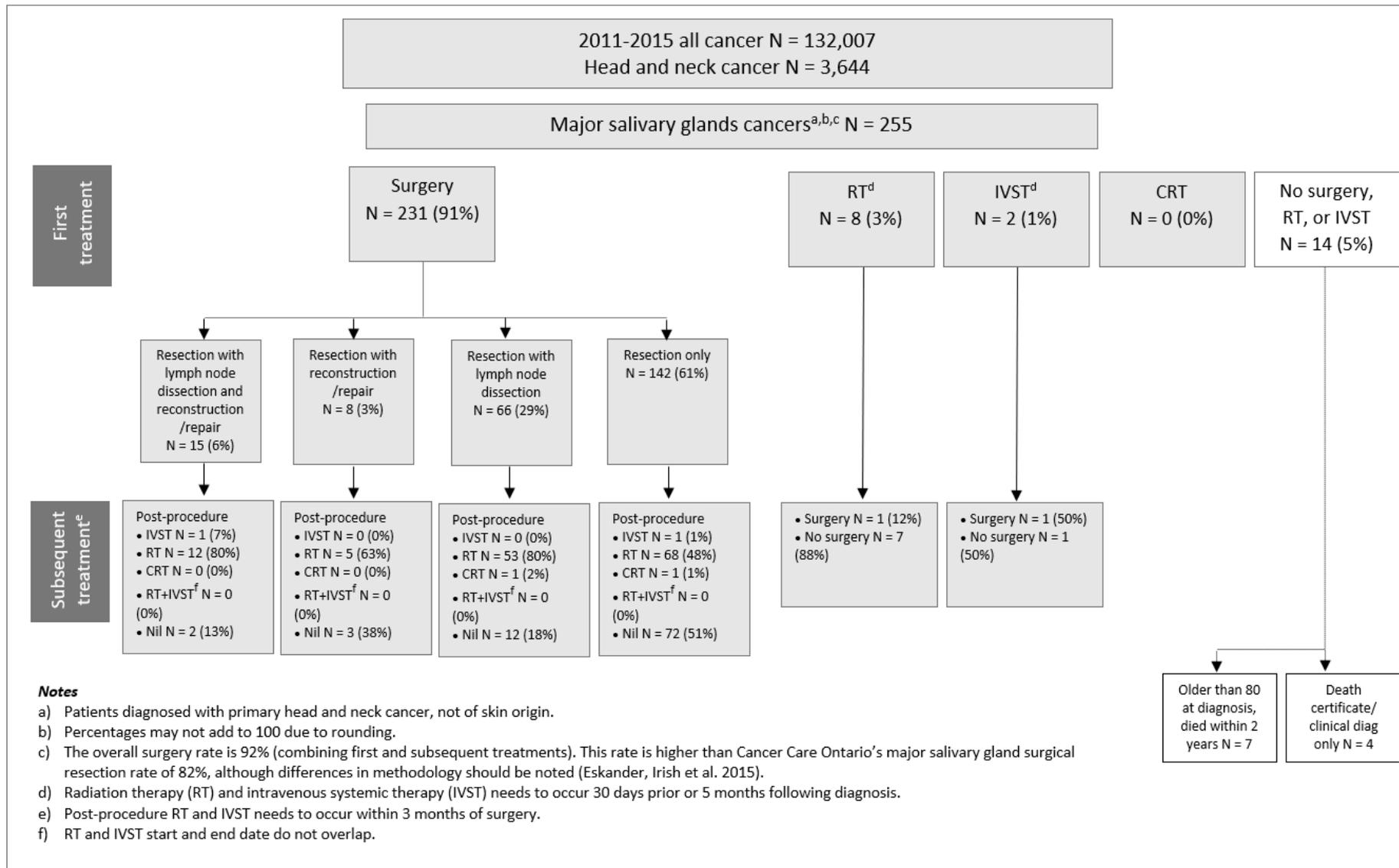
Appendix 1: Cohort summaries



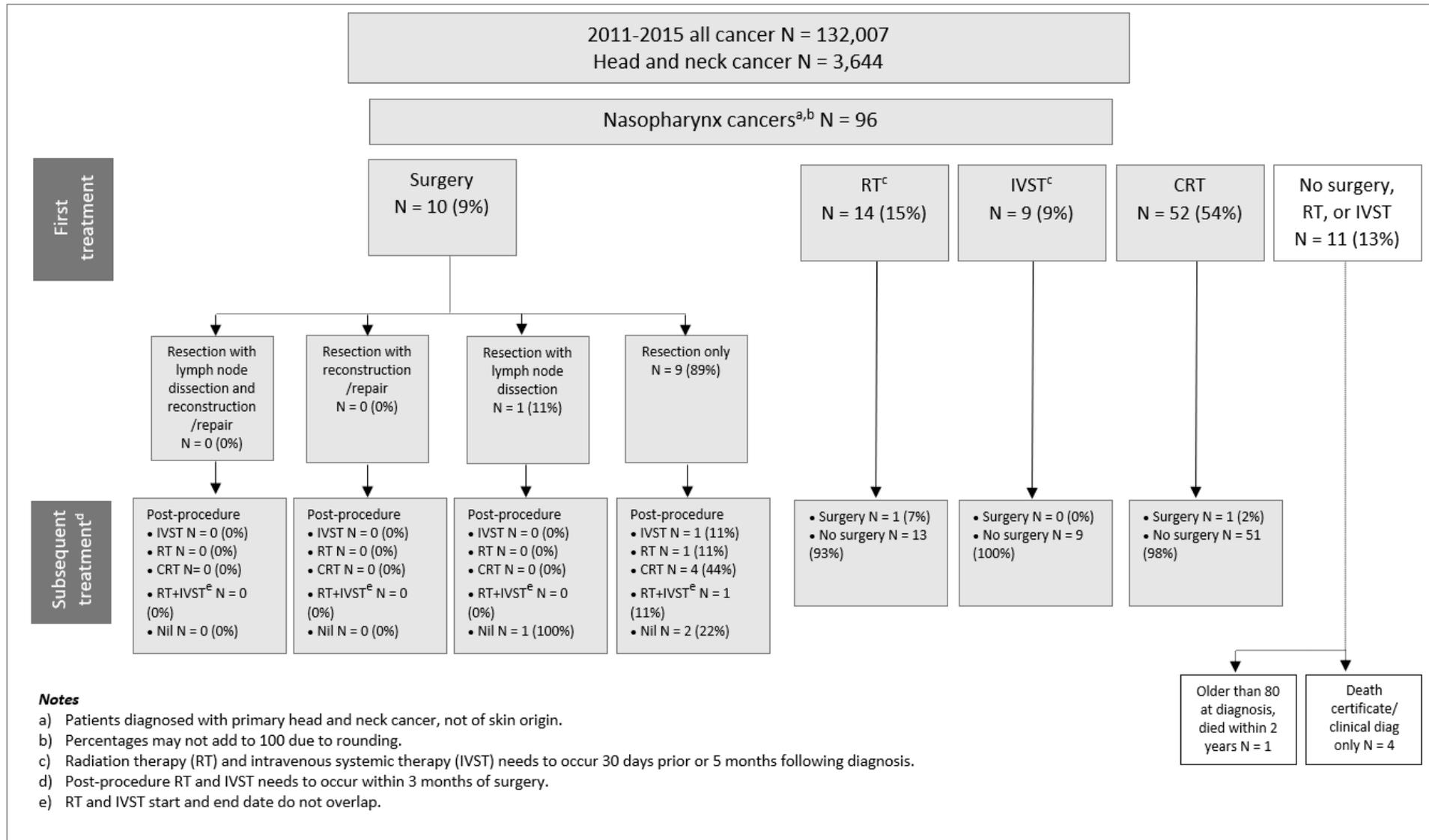
Appendix



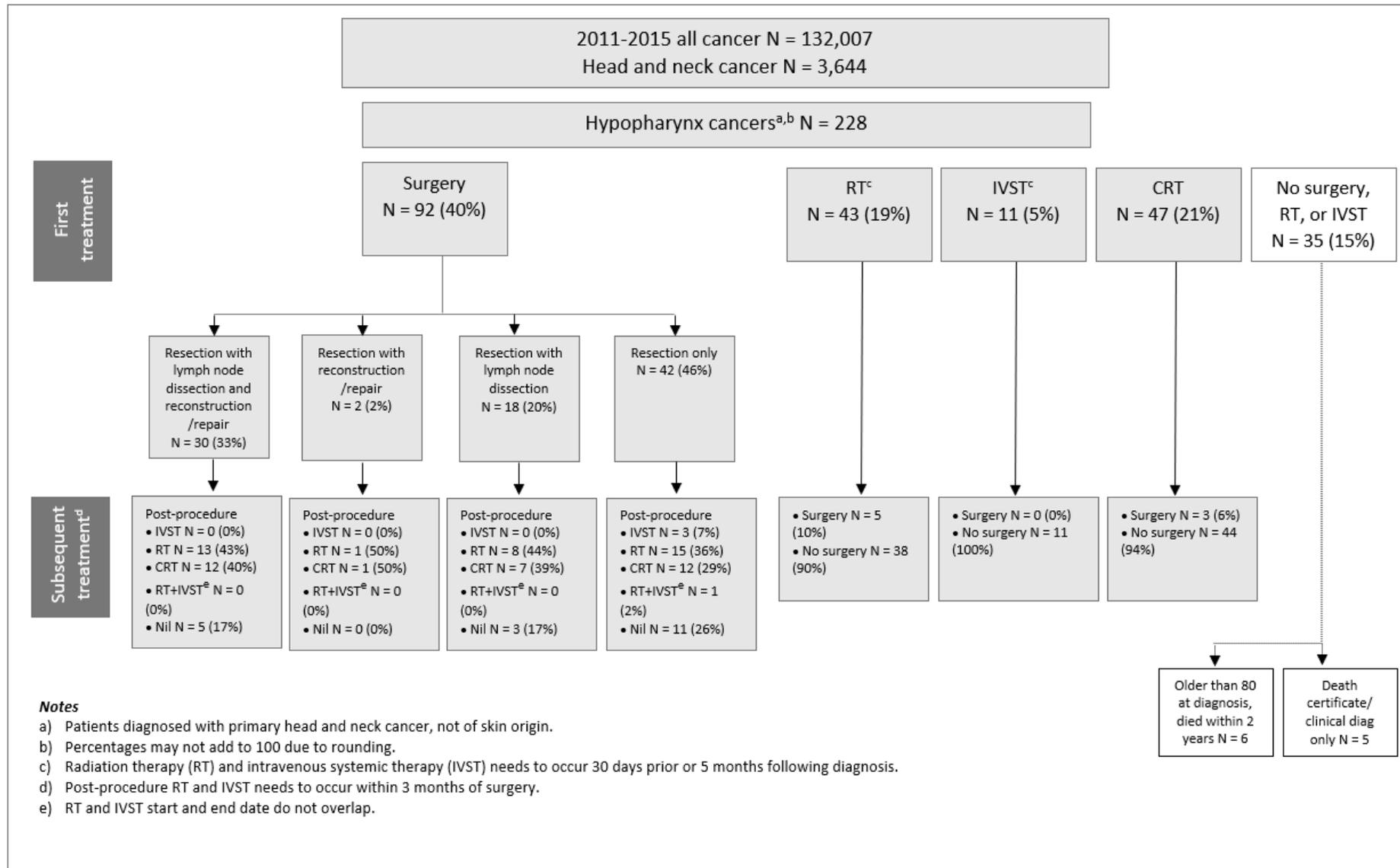
Appendix



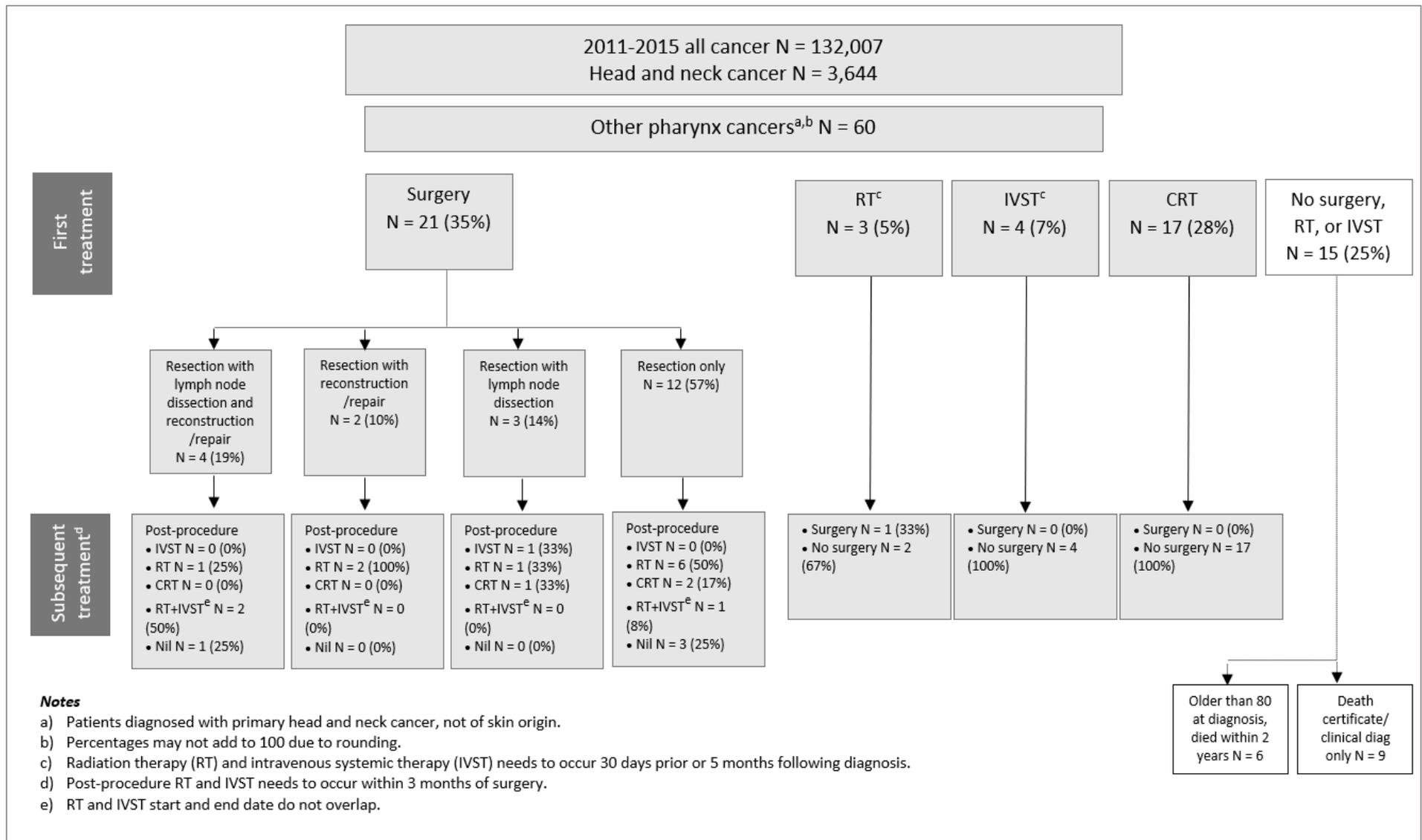
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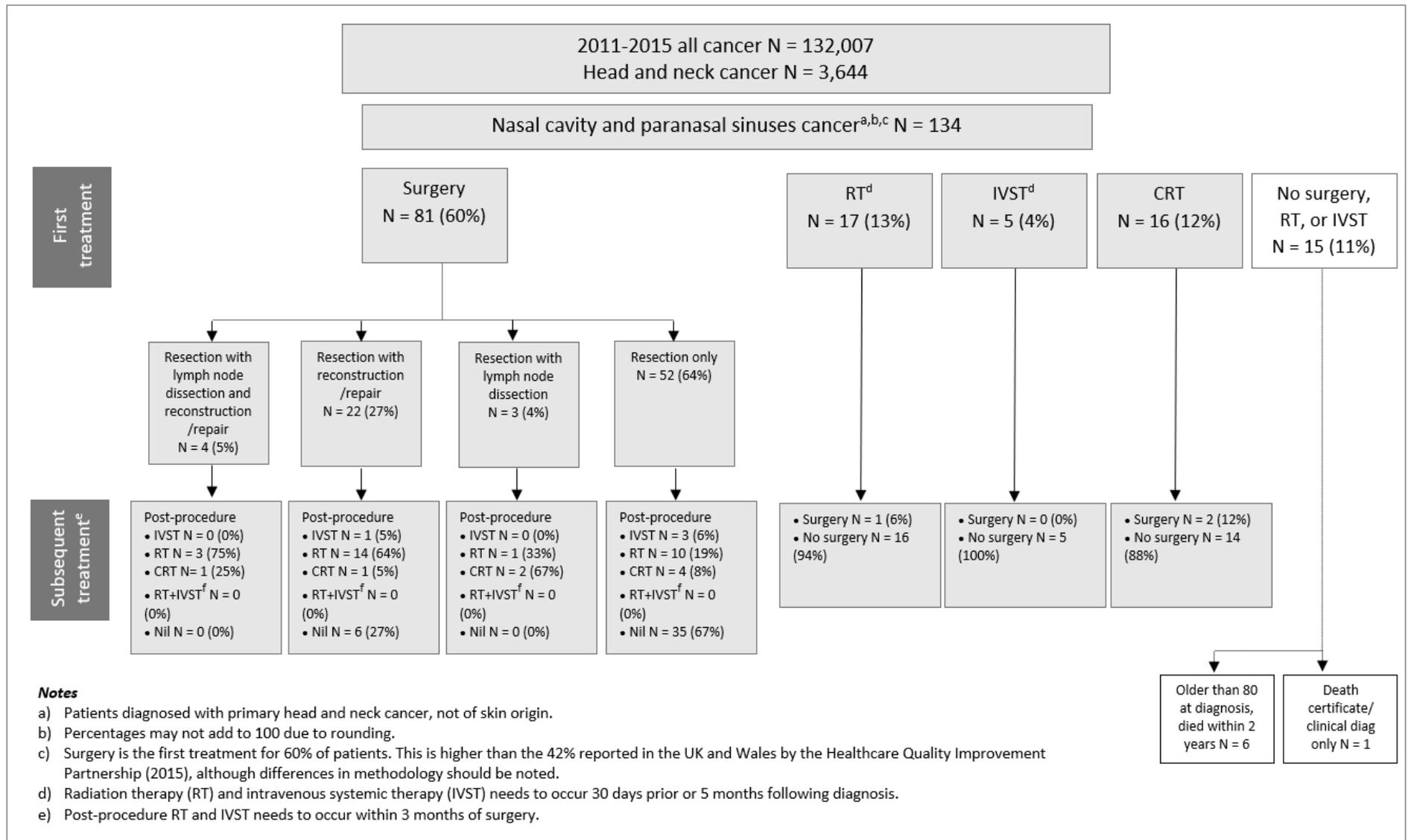
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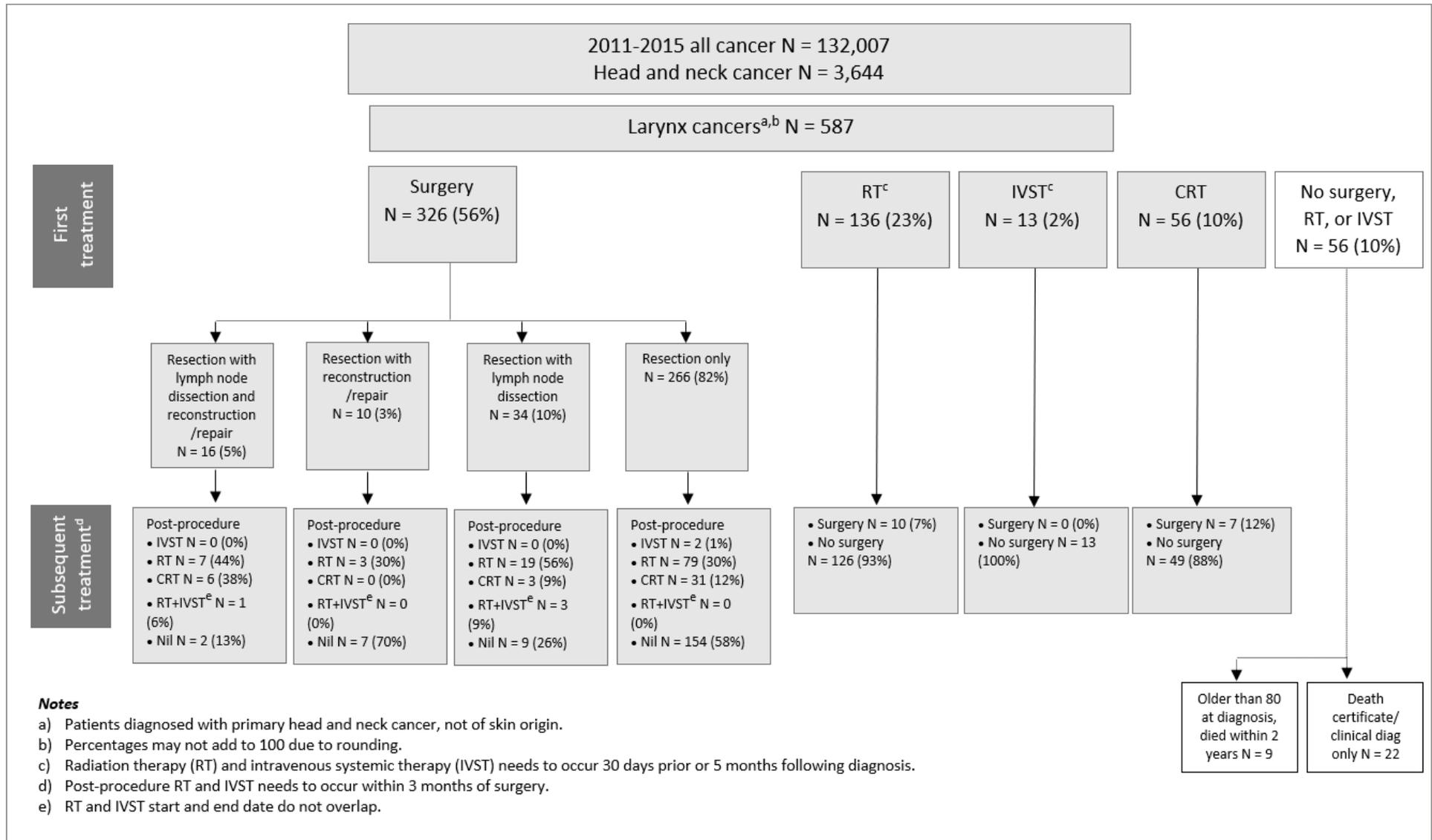
Appendix



Appendix



Appendix



Appendix

Appendix 2: Cancer groupings

Head and neck sub-site	Cancer	ICD-10-AM 10 th edition	2011-2015 N		
Oral cavity	C00 Lip ^a	C003	Mucosa of upper lip	2	
		C004	Mucosa of lower lip	5	
		C005	Mucosa of lip, NOS	1	
		C006	Commissure of lip	2	
		C008	Overlapping lesion of lip	0	
		C009	Lip, NOS	3	
	C02 Other and unspecified parts of tongue	C020	Dorsal surface of tongue, NOS	15	
		C021	Border of tongue	248	
		C022	Ventral surface of tongue, NOS	76	
		C023	Anterior 2/3 of tongue, NOS	35	
		C028	Overlapping lesion of tongue	16	
		C029	Tongue, NOS	70	
		C03 Gum	C030	Upper gum	37
			C031	Lower gum	91
			C039	Gum, NOS	6
		C04 Floor of mouth	C040	Anterior floor of mouth	74
	C041		Lateral floor of mouth	11	
	C048		Overlapping lesion of floor of mouth	6	
	C049		Floor of mouth, NOS	81	
	C05 Palate		C050	Hard palate	30
		C058	Overlapping lesion of palate	10	
		C059	Palate, NOS	16	
		C06 Other and unspecified parts of mouth	C060	Cheek mucosa	56
C061	Vestibule of mouth		10		
C062	Retromolar area		69		
C068	Overlapping lesion of other and unspecified parts of mouth		15		
C069	Mouth, NOS		14		
				999	
Oropharynx	C01.9 Base of tongue NOS	C01	Base of tongue, NOS	453	
		C051	Soft palate, NOS (excludes nasopharyngeal surface of soft palate C11.3)	47	
	C09 Tonsil	C052	Uvula	12	
		C090	Tonsillar fossa	56	
		C091	Tonsillar pillar	23	
		C024	Lingual tonsil	32	
		C098	Overlapping lesion of tonsil	11	
		C099	Tonsil, NOS (excludes lingual tonsil C02.4 and pharyngeal tonsil C11.1)	543	
	C10 Oropharynx	C100	Vallecula	17	
		C101	Anterior surface of epiglottis	1	
		C102	Lateral wall of oropharynx	5	
		C103	Posterior wall of oropharynx	5	
		C104	Branchial cleft (site of neoplasm)	1	
C108		Overlapping lesion of oropharynx	16		
C109		Oropharynx, NOS	63		
			1,285		
Major salivary glands	C07	Parotid gland	210		
	C08 Other and unspecified major salivary glands	C080	Submandibular gland	37	
		C081	Sublingual gland	2	
		C088	Overlapping lesion of major salivary glands	0	
		C089	Major salivary gland, NOS	6	
			255		

Appendix

Head and neck sub-site	Cancer	ICD-10-AM 10 th edition		2011-2015 N
<i>Nasopharynx</i>	C11 Nasopharynx	C110	Superior wall of nasopharynx	2
		C111	Posterior wall of nasopharynx	6
		C112	Lateral wall of nasopharynx	6
		C113	Anterior wall of nasopharynx	3
		C118	Overlapping lesion of nasopharynx	3
		C119	Nasopharynx, NOS	76
				96
<i>Hypopharynx</i>	C12 Pyriform sinus C13 Hypopharynx	C12	Pyriform sinus	143
		C130	Postcricoid region	7
		C131	Hypopharyngeal aspect of aryepiglottic fold	26
		C132	Posterior wall of hypopharynx	5
		C138	Overlapping lesion of hypopharynx	4
		C139	Hypopharynx, NOS	43
				228
<i>Other pharynx</i>	C14 Other and ill-defined sites in the lip, oral cavity and pharynx	C140	Pharynx, NOS	47
		C142	Waldeyer ring	0
		C148	Overlapping lesion of lip, oral cavity and pharynx	13
				60
<i>Nasal cavity and paranasal sinuses</i>	C30 Nasal cavity and middle ear	C300	Nasal cavity (excludes nose, NOS C76.0)	68
		C301	Middle ear	3
	C31 Accessory sinuses	C310	Maxillary sinus	40
		C311	Ethmoid sinus	8
		C312	Frontal sinus	4
		C313	Sphenoid sinus	3
		C318	Overlapping lesion of accessory sinuses	2
C319	Accessory sinus, NOS	6		
				134
<i>Larynx</i>	C32 Larynx	C320	Glottis	377
		C321	Supraglottis	142
		C322	Subglottis	12
		C323	Laryngeal cartilage	8
		C328	Overlapping lesion of larynx	15
		C329	Larynx, NOS	33
				587
Total head and neck				3644

a Wet lip was included in oral cavity due to small numbers

Appendix

Appendix 3: Head and neck cancers by histological type^a

Cancer Group	ICD-10-AM 10th edition	Morphology	2011-2015 N
Oral cavity	C00-C06	Adenocarcinomas	49
		Squamous carcinomas	926
		Sarcomas and soft tissue tumours	3
		Other and unspecified types of cancer	21
			999
Oropharynx	C01, C05, C09-C10	Adenocarcinomas	15
		Squamous carcinomas	1,247
		Other and unspecified types of cancer	23
			1,285
Major salivary glands	C07-C08	Adenocarcinomas	181
		Squamous carcinomas	24
		Other and unspecified types of cancer	50
			255
Nasopharynx	C11	Adenocarcinomas	1
		Sarcomas and soft tissue tumours	6
		Squamous carcinomas	42
		Other and unspecified types of cancer	47
			96
Hypopharynx	C12-C13	Adenocarcinomas	2
		Squamous carcinomas	220
		Sarcomas and soft tissue tumours	1
		Other and unspecified types of cancer	5
			228
Other pharynx	C14	Adenocarcinomas	3
		Squamous carcinomas	47
		Other and unspecified types of cancer	10
			60
Nasal cavity and paranasal sinuses	C30-C31	Adenocarcinomas	27
		Sarcomas and soft tissue tumours	13
		Squamous carcinomas	76
		Other and unspecified types of cancer	18
			134
Larynx	C32	Adenocarcinomas	1
		Sarcomas and soft tissue tumours	4
		Squamous carcinomas	567
		Other and unspecified types of cancer	15
			587
Total head and neck			3644

^a Patients diagnosed with primary head and neck cancer, not of skin origin.

Appendix 4: Methodology

A4.1 | Assigning a treatment to a patient

The following steps were taken to assign a treatment to a patient.

- 1 Locate patients with a diagnosis of primary head and neck cancer between 01 January 2011 and 31 December 2015 using the Queensland Oncology Repository.
- 2 Exclude malignant melanoma morphologies.
- 3 Assign treatments to each patient.
 - 3.1 IV systemic therapy and radiation therapy were selected where the treatment start date occurred 30 days prior and up to 150 days following diagnosis. Note that complete radiation oncology data were available for 2011-2014. For 2015 data from one private radiation oncology provider were not available for inclusion in this report at the time of publication. The impact of this is that the reported head and neck radiation therapy rate for 2011-2015 (62%, section 2.2.1.2 *All treatments received by head and neck cancer patients*, page 22) is likely a slight underestimate (1%) of the true rate.
 - 3.2 Cancer surgery identification and categorisation included the following steps:
 - a) Any surgical procedures (using ICD-AM-10th edition procedure codes) recorded in the period 3 months prior and any time after diagnosis were identified.
 - b) This list of procedures then underwent expert clinical review to identify surgical procedures relating to direct management of the primary lesion for the following head and neck cancer sub-sites:
 - Oral cavity (due to low numbers, C003-C009 wet lip was included in oral cavity)
 - Oropharynx
 - Major salivary glands
 - Nasopharynx
 - Hypopharynx
 - Other pharynx
 - Nasal cavity and paranasal sinuses
 - Larynx.

Procedures were split into the following categories (see section A4.2 for specific procedure codes):

- Primary resections specific to each of the head and neck sub-sites
- Nodal resection, which was considered universal to all head and neck sub-sites
- Reconstruction and repair, which was considered universal to all head and neck sub-sites.

In this report, surgery refers to treatment of the primary lesion. A patient is considered to have had surgery where a patient has had a primary resection specific to that site, note that for major salivary glands this also includes nodal resection. Where a patient only had a nodal resection and/or reconstruction and repair procedure this is not considered surgery for the surgical indicators in this report. Using this methodology tracheostomy is not considered a primary resection for example for an oral cavity cancer. However, tracheostomy rates were included in the oral cavity chapter to provide more detail as to the types of surgical procedures that patients underwent. Note also that some surgery tables may not add to the Queensland total as there were some patients for whom limited data about the surgery was available, where we could allocate the patient as having had a surgical procedure to treat the cancer, but we did not have detailed information about the dates and locations of that surgery.

- c) Where a primary resection occurred 30 days prior or 365 days following diagnosis it was retained. Major resections, nodal resections and reconstruction and repair procedures were recorded for each patient, where a patient has more than one type of procedure (for instance multiple reconstruction and repair procedures) the earliest was retained.

Appendix

- d) Refined procedure codes were shared with members of the Head and Neck Cancer Sub-committee for comment. Appendix A Cohort summaries displays the first and subsequent treatments received for each head and neck cancer sub-site.

A4.2 | ICD-10-AM procedure codes

Major resection: Oral cavity

ICD-10-AM 10th edition code and description		ICD-10-AM 10th edition code and description	
<i>Major resection</i>			
3028300	Excision of cyst of mouth	4572002	Ostectomy of mandible, unilateral
9014101	Excision of other lesion of mouth	4572003	Ostectomy of maxilla, unilateral
9014100	Local excision or destruction of lesion of bony palate	4572001	Osteotomy of maxilla, unilateral
3027500	Radical excision of intraoral lesion	4181001	Uvulectomy
3025900	Excision of sublingual gland	4178701	Uvulectomy with partial palatectomy and tonsillectomy
3025300	Partial excision of parotid gland	4560500	Partial resection of mandible
3025500	Removal of submandibular ducts	5212000	Partial resection of mandible with condylectomy
3024700	Total excision of parotid gland	4560200	Subtotal resection of mandible
3025000	Total excision of parotid gland with preservation of facial nerve	4559900	Total resection of both sides of mandible
9013800	Excision of lesion of salivary gland	4560501	Partial resection of maxilla
9013500	Excision of lesion of tongue	4559700	Total resection of both maxillae
3027200	Partial excision of tongue	4560201	Subtotal resection of maxilla
4177901	Total excision of tongue	4559600	Total resection of 1 maxilla
3025600	Excision of submandibular gland	4178900	Tonsillectomy without adenoidectomy
4572000	Osteotomy of mandible, unilateral		
<i>Other related resection</i>			
4178200	Partial pharyngectomy	3007526	Pharyngeal biopsy
4178501	Partial pharyngectomy with total glossectomy	3123500	Excision of lesion of skin and subcutaneous tissue of other site of head
4178500	Partial pharyngectomy with partial glossectomy	3120500	Excision of lesion of skin and subcutaneous tissue of other site
4186100	Micro-laryngoscopy with removal of lesion with laser	9733100	Alveolectomy, per segment
4186400	Micro-laryngoscopy with removal of lesion	3135000	Excision of lesion of soft tissue, not elsewhere classified
3140000	Excision of lesion of upper aerodigestive tract		

a Where a patient has a resection in the “major resection” list, that surgery is selected. Where this is not the case and the patient has a surgery in the “other related resection” list, then that surgery is selected as the patient’s resection.

Procedure codes for section 3.2.2 | Selected types of major resection for oral cavity cancer

ICD-10-AM 10th edition code and description		ICD-10-AM 10th edition code and description	
<i>Mandible</i>			
4561100	Mandibular condylectomy	4560200	Subtotal resection of mandible
4560500	Partial resection of mandible	4559900	Total resection of both sides of mandible
5212000	Partial resection of mandible with condylectomy	4559900	Total resection of both sides of mandible
<i>Maxilla</i>			
4560501	Partial resection of maxilla	4559600	Total resection of 1 maxilla
4560201	Subtotal resection of maxilla		
<i>Mouth or palate</i>			
3028300	Excision of cyst of mouth	9014100	Local excision or destruction of lesion of bony palate
9014101	Excision of other lesion of mouth	3027500	Radical excision of intraoral lesion
<i>Tongue</i>			
9013500	Excision of lesion of tongue	4178900	Total excision of tongue
3027200	Partial excision of tongue		
<i>Tracheostomy</i>			
4188101	Open tracheostomy, permanent	4188000	Percutaneous tracheostomy
4188100	Open tracheostomy, temporary		

Appendix

Major resection: Oropharynx

ICD-10-AM 10th edition code and description		ICD-10-AM 10th edition code and description	
3028300	Excision of cyst of mouth	4178700	Uvulectomy with partial palatotomy
9014101	Excision of other lesion of mouth	4178701	Uvulectomy with partial palatotomy and tonsillectomy
3027500	Radical excision of intraoral lesion	9016100	Excision of other lesion of larynx
3135000	Excision of lesion of soft tissue, not elsewhere classified	3140000	Excision of lesion of upper aerodigestive tract
9013500	Excision of lesion of tongue	9014900	Excision of other lesion of pharynx
3027200	Partial excision of tongue	9014301	Other procedures on palate
4177901	Total excision of tongue	4178500	Partial pharyngectomy with partial glossectomy
4184300	Laryngopharyngectomy	4178200	Partial pharyngectomy
4184000	Supraglottic laryngectomy	4178501	Partial pharyngectomy with total glossectomy
4183400	Total laryngectomy	3029401	Laryngopharyngectomy and plastic reconstruction
4185200	Laryngoscopy with removal of lesion	4560500	Partial resection of mandible
4186400	Microlaryngoscopy with removal of lesion	5212000	Partial resection of mandible with condylectomy
4186100	Microlaryngoscopy with removal of lesion by laser	4560200	Subtotal resection of mandible
9014400	Excision of lesion of tonsils or adenoids	4559900	Total resection of both sides of mandible
4181001	Uvulectomy		

Major resection: Major salivary glands^a

ICD-10-AM 10th edition code and description		ICD-10-AM 10th edition code and description	
<i>Major resection</i>			
3024700	Total excision of parotid gland	4572001	Osteotomy of maxilla, unilateral
3025000	Total excision of parotid gland with preservation of facial nerve	9056900	Osteotomy, not elsewhere classified
3025300	Partial excision of parotid gland	4559900	Total resection of both sides of mandible
3025500	Removal of submandibular ducts	4560200	Subtotal resection of mandible
3025600	Excision of submandibular gland	4560500	Partial resection of mandible
3025900	Excision of sublingual gland	5212000	Partial resection of mandible with condylectomy
9013800	Excision of lesion of salivary gland	4559600	Total resection of 1 maxilla
4572000	Osteotomy of mandible, unilateral	4559700	Total resection of both maxillae
4572003	Ostectomy of maxilla, unilateral	4560201	Subtotal resection of maxilla
4572000	Osteotomy of mandible, unilateral	4560501	Partial resection of maxilla
<i>Other related resection</i>			
3123500	Excision of lesion of skin and subcutaneous tissue of other site of head	4178900	Tonsillectomy without adenoidectomy
3135000	Excision of lesion of soft tissue, not elsewhere classified	3027500	Radical excision of intraoral lesion
9014900	Excision of other lesion of pharynx	9066500	Excisional debridement of skin and subcutaneous tissue

^a Where a patient has a resection in the “major resection” list, that surgery is selected. Where this is not the case and the patient has a surgery in the “other related resection” list, then that surgery is selected as the patient’s resection.

Major resection: Nasopharynx^a

ICD-10-AM 10th edition code and description		ICD-10-AM 10th edition code and description	
<i>Major resection</i>			
4173703	Ethmoidectomy, bilateral	4176700	Removal of lesion of nasopharynx
4173702	Ethmoidectomy, unilateral	4175201	Sphenoidectomy
4173709	Frontal sinusectomy	4180100	Adenoidectomy without tonsillectomy
<i>Other related resection</i>			
3135000	Excision of lesion of soft tissue, not elsewhere classified	4167100	Submucous resection of nasal septum

^a Where a patient has a resection in the “major resection” list, that surgery is selected. Where this is not the case and the patient has a surgery in the “other related resection” list, then that surgery is selected as the patient’s resection.

Appendix

Major resection: Hypopharynx

ICD-10-AM 10th edition code and description		ICD-10-AM 10th edition code and description	
4183700	Hemilaryngectomy	4186400	Microlaryngoscopy with removal of lesion
4184300	Laryngopharyngectomy	4186100	Microlaryngoscopy with removal of lesion by laser
4184000	Supraglottic laryngectomy	4186700	Microlaryngoscopy with arytenoidectomy
4183400	Total laryngectomy	3029401	Laryngopharyngectomy and plastic reconstruction
4185200	Laryngoscopy with removal of lesion		

Major resection: Nasal cavity and paranasal sinuses^a

ICD-10-AM 10th edition code and description		ICD-10-AM 10th edition code and description	
<i>Major resection</i>			
3966002	Excision of lesion of cavernous sinus	4176700	Removal of lesion of nasopharynx
3964000	Removal of lesion involving anterior cranial fossa	4173101	Ethmoidectomy with sphenoidectomy, frontonasal approach
3964200	Removal of lesion involving anterior cranial fossa with clearance of paranasal sinus extension	4173703	Ethmoidectomy, bilateral
3964600	Removal of lesion involving anterior cranial fossa with radical clearance of paranasal sinus and orbital fossa extensions	4173100	Ethmoidectomy, frontonasal approach
4158100	Removal of lesion involving infratemporal fossa	4173702	Ethmoidectomy, unilateral
3965000	Removal of lesion involving middle cranial and infratemporal fossae	4171606	Excision of lesion of maxillary antrum
9003200	Removal of lesion involving posterior cranial fossa	4173709	Frontal sinusectomy
4560501	Partial resection of maxilla	4175201	Sphenoidectomy
4560201	Subtotal resection of maxilla	4572001	Osteotomy of maxilla, unilateral
4559600	Total resection of 1 maxilla	4171000	Radical maxillary antrostomy, unilateral
4172800	Lateral rhinotomy with removal of intranasal lesion	4171300	Radical maxillary antrostomy with transantral ethmoidectomy
9013100	Local excision of other intranasal lesion	4171301	Radical maxillary antrostomy with transantral vidian neurectomy
4166800	Removal of nasal polyp	3025600	Excision of submandibular gland
<i>Other related resection</i>			
3970000	Excision of lesion of skull	4253605	Exenteration of orbit with therapeutic removal of orbital bone
4168901	Partial turbinectomy, bilateral	4155701	Radical mastoidectomy
4168900	Partial turbinectomy, unilateral	4154500	Mastoidectomy
4168903	Total turbinectomy, bilateral	4155700	Modified radical mastoidectomy
4168902	Total turbinectomy, unilateral	4158400	Partial resection of temporal bone with mastoidectomy
4169201	Submucous resection of turbinate, bilateral	4158401	Partial resection of temporal bone with mastoidectomy and decompression of facial nerve
4169200	Submucous resection of turbinate, unilateral	4167100	Submucous resection of nasal septum
4253600	Exenteration of orbit	9011600	Other procedures on mastoid or temporal bone
4253604	Exenteration of orbit with removal of adjacent structures	4167103	Septoplasty with submucous resection of nasal septum
4253601	Exenteration of orbit with skin graft		

^a Where a patient has a resection in the “major resection” list, that surgery is selected. Where this is not the case and the patient has a surgery in the “other related resection” list, then that surgery is selected as the patient’s resection.

Appendix

Major resection: Larynx

ICD-10-AM 10th edition code and description		ICD-10-AM 10th edition code and description	
4183700	Hemilaryngectomy	4186400	Microscopy with removal of lesion
4184300	Laryngopharyngectomy	4186100	Microscopy with removal of lesion by laser
4184000	Supraglottic laryngectomy	4186700	Microscopy with arytenoidectomy
4183400	Total laryngectomy	3029401	Laryngopharyngectomy and plastic reconstruction
4185200	Laryngoscopy with removal of lesion	9016100	Excision of other lesion of larynx

Nodal resection

ICD-10-AM 10th edition code and description		ICD-10-AM 10th edition code and description	
3142300	Excision of lymph node of neck	9028200	Excision of lymph node of other site
3143500	Radical excision of lymph nodes of neck	9028202	Radical excision of lymph nodes of other site
3142301	Regional excision of lymph nodes of neck	3031700	Re-exploration of lymph node of neck

Reconstruction and repair

ICD-10-AM 10th edition code and description		ICD-10-AM 10th edition code and description	
4584500	Intraoral osseointegrated dental implant, first stage	4584900	Bone graft to maxillary sinus
5210200	Removal of pin, screw or wire from maxilla, mandible or zygoma	4172200	Closure of oro-antral fistula
4286900	Insertion of implant into eyelid	9013200	Other repair of nose
4171605	Biopsy of maxillary antrum	3005203	Repair of wound of nose
4565602	Composite graft to eyelid	4187902	Closure of external fistula of trachea
4565603	Composite graft to other site	4187903	Closure of other fistula of trachea
4505100	Facial contour reconstruction with implant	4187904	Repair of trachea, cervical approach
4564701	Facial contour restoration using cartilage graft	4544200	Extensive split skin graft of any site
4156900	Intracranial decompression of facial nerve	4544802	Small split skin graft of lip
4523000	Delay of direct distant skin flap	4558100	Excision of tissue for facial nerve paralysis
4522101	Direct distant skin flap, first stage	4558101	Excision of tissue for facial nerve paralysis with suspension
4522401	Direct distant skin flap, second stage	4557500	Fascia graft for facial nerve paralysis
3027800	Lingual fraenectomy	3276000	Procurement of vein from limb for bypass or replacement graft
4561700	Reduction of upper eyelid	4561400	Reconstruction of eyelid
4558800	Facelift, bilateral	4567401	Reconstruction of eyelid using flap, second stage
4579702	Osseointegration procedure, fixation of transcutaneous abutment for attachment of prosthetic orbit	4567101	Reconstruction of eyelid using flap, single or first stage
4556201	Innervated free flap	4567400	Reconstruction of lip using flap, second stage
4556200	Noninnervated free flap	4567100	Reconstruction of lip using flap, single or first stage
4824200	Bone graft with internal fixation, not elsewhere classified	5232700	Reconstruction of mouth using direct tongue flap, second stage
9058301	Muscle graft, not elsewhere classified	5232400	Reconstruction of mouth using direct tongue flap, single or first stage
4286002	Graft to lower eyelid, with recession of lid retractors, 1 eye	4560801	Partial reconstruction of mandible
9766100	Fitting of implant abutment, per abutment	4560800	Reconstruction of mandibular condyle
9028100	Incision of lymphatic structure	4560802	Subtotal reconstruction of mandible
3027801	Lysis of adhesions of tongue	4560803	Total reconstruction of mandible
4523301	Indirect distant skin flap, preparation, transfer and attachment to final site	5212200	Partial reconstruction of maxilla
4523600	Indirect distant skin flap, spreading of tubed pedicle	5212201	Subtotal reconstruction of maxilla
4556300	Island flap with vascular pedicle	5212202	Total reconstruction of 1 maxilla
4265300	Full thickness transplantation of cornea	4559000	Reconstruction of orbital cavity

Appendix

ICD-10-AM 10th edition code and description		ICD-10-AM 10th edition code and description	
3038500	Postoperative reopening of laparotomy site	4559302	Reconstruction of orbital cavity with bone graft
4187602	Laryngoplasty	4559001	Reconstruction of orbital cavity with implant
4520603	Local skin flap of ear	4559303	Reconstruction of orbital cavity with implant and bone graft
4520600	Local skin flap of eyelid	9068300	Reconstruction of zygoma
4520602	Local skin flap of lip	4151200	Reconstruction of external auditory canal
4520604	Local skin flap of neck	4187906	Reconstruction of trachea and construction of artificial larynx
4520601	Local skin flap of nose	4778900	Open reduction of fracture of mandible with internal fixation
4520609	Local skin flap of other areas of face	4551501	Release of contracture of skin and subcutaneous tissue
9751101	Metallic restoration of tooth, 1 surface, direct	3520200	Reoperation of arteries or veins, not elsewhere classified
4500901	Muscle flap	4584300	Alveolar ridge augmentation by insertion of tissue expander
4500301	Myocutaneous flap	3930000	Primary repair of nerve
4572303	Ostectomy of maxilla with internal fixation, unilateral	3930600	Primary repair of nerve trunk
4572900	Osteotomy of mandible with internal fixation, bilateral	4571601	Pharyngeal flap
4572301	Osteotomy of maxilla with internal fixation, unilateral	4571600	Pharyngoplasty
4262000	Occlusion of lacrimal punctum by plug	9001102	Other repair on spinal canal or spinal cord structures
9738901	Surgery to isolate and preserve neurovascular tissue	3003500	Repair of wound of skin and subcutaneous tissue of face or neck, involving soft tissue
9066900	Excision of skin for graft	3003200	Repair of wound of skin and subcutaneous tissue of face or neck, superficial
4545103	Full thickness skin graft of ear	3002900	Repair of wound of skin and subcutaneous tissue of other site, involving soft tissue
4545100	Full thickness skin graft of eyelid	3002600	Repair of wound of skin and subcutaneous tissue of other site, superficial
4545102	Full thickness skin graft of lip	9013900	Other repair of salivary gland or duct
4545104	Full thickness skin graft of neck	3026900	Repair of fistula of salivary gland or duct
4545124	Full thickness skin graft of other areas of face	4549700	Complete revision of free tissue flap by liposuction
4545109	Full thickness skin graft of other site	9065900	Excision of flap monitoring tissue
9787100	Adjustment of fixed or removable orthodontic appliance	4549600	Open revision of free tissue flap
4167200	Reconstruction of nasal septum	4551201	Revision of scar of neck more than 3 cm in length
9068100	Other repair of facial bone	4523900	Revision of local skin flap
3005204	Closure of fistula of mouth	4565000	Revision of rhinoplasty
4583701	Open vestibuloplasty	4188102	Revision of tracheostomy
4567600	Other repair of mouth	4563200	Rhinoplasty involving correction of cartilage
9014201	Other repair of palate	4564401	Rhinoplasty using bone graft from distant donor site
3005202	Repair of wound of lip	4564400	Rhinoplasty using cartilage graft from distant donor site
4583700	Submucosal vestibuloplasty	4564100	Rhinoplasty using nasal or septal cartilage graft
9008500	Other repair of eyelid	9001400	Other surgical sympathectomy
3005201	Repair of wound of eyelid	4178600	Uvulopalatopharyngoplasty
4184301	Primary restoration of alimentary continuity following laryngopharyngectomy		

Appendix

A4.3 | Quality Index indicator calculations

2.2 | Effectiveness

Surgery

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

N – The number of head and neck cancer patients.

IV systemic therapy

n – The number of head and neck cancer patients who had IV systemic therapy within five months of diagnosis.

N – The number of head and neck cancer patients.

Radiation therapy

n – The number of head and neck cancer patients who had radiation therapy within five months of diagnosis.

N – The number of head and neck cancer patients.

2.3 | Efficient

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

Length of stay is for all surgery, not just where surgery is the first treatment received. Where a patient has multiple surgeries, the first is used.

Length of stay is calculated for a patient's first major surgery, not only where surgery is the first treatment.

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, $IQR=Q_3 - Q_1$.

2.4 | Safe

30-day mortality

n – The number of head and neck cancer patients who had a head and neck cancer surgery, who died within 30 days of their last surgery.

N – The number of head and neck cancer patients who had a head and neck cancer surgery.

90-day mortality

n – The number of head and neck cancer patients who had a head and neck cancer surgery, who died within 90 days of their last surgery.

N – The number of head and neck cancer patients who had a head and neck cancer surgery.

Death within 30 days of IVST

n – The number of head and neck cancer patients who died within 30 days of their last IV systemic therapy treatment.

N – The number of head and neck cancer patients who had an IV systemic therapy treatment.

Note that unlike other analyses in this report, for the IV systemic therapy near end of life analyses IV systemic therapy can occur any time after diagnosis.

Appendix

Death within 30 days of RT

n – The number of head and neck cancer patients who died within 30 days of last radiation therapy treatment.

N – The number of head and neck cancer patients who had a radiation therapy treatment.

Note that unlike other analyses in this report, for the RT near end of life analyses RT can occur any time after diagnosis.

Appendix

2.5 | Surgical survival

2-year surgical survival

n – The number of head and neck cancer patients who had a head and neck cancer surgery, still alive 2 years after their first head and neck cancer surgery.

N – The number of head and neck cancer patients who had a head and neck cancer surgery.

2.6 | Accessible

Time from diagnosis to first surgery within 30 days

n – The number of head and neck cancer patients who had surgery as their first treatment, who had the surgery within 30 days of diagnosis.

N – The number of head and neck cancer patients who had surgery as their first treatment.

Time from diagnosis to first IV systemic therapy within 45 days

n – The number of head and neck cancer patients who had an IV systemic therapy as their first treatment, who had IV systemic therapy within 45 days of diagnosis.

N – The number of head and neck cancer patients who had IV systemic therapy as their first treatment.

Time from diagnosis to first radiation therapy within 45 days

n – The number of head and neck cancer patients who had a radiation therapy as their first treatment, who had the radiation therapy within 45 days of diagnosis.

N – The number of head and neck cancer patients who had radiation therapy as their first treatment.

Time from diagnosis to concurrent IV systemic therapy and radiation therapy within 45 days

n – The number of head and neck cancer patients who had a concurrent IV systemic therapy and radiation therapy as their first treatment, who had the first concurrent IV systemic therapy radiation therapy treatment within 45 days of diagnosis.

N – The number of head and neck cancer patients who had a concurrent IV systemic therapy and RT as their first treatment.

2.7 | Equitable

Received surgery within 30 days by Indigenous status

n – The number of head and neck cancer patients, who identify as Aboriginal and/or Torres Strait Islander who had a head and neck cancer surgery, who had the surgery within 30 days of diagnosis.

N – The number of head and neck cancer patients, who identify as Aboriginal and/or Torres Strait Islander who had a head and neck cancer surgery.

Received surgery within 30 days by disadvantaged status

n – The number of head and neck cancer patients, whose socio-economic status is disadvantaged, who had the head and neck cancer surgery within 30 days of diagnosis.

N – The number of head and neck cancer patients, whose socio-economic status is disadvantaged who had a head and neck cancer surgery.

Appendix

Received surgery within 30 days by rural status

n – The number of head and neck cancer patients, who live in a rural area, who had the head and neck cancer surgery within 30 days of diagnosis.

N – The number of head and neck cancer patients, who live in a rural area who had a head and neck cancer surgery.

Definitions

1-year survival

The percentage of cancer cases still alive at one year or more from their earliest diagnosis with a given cancer.

2-year survival

The percentage of cancer cases still alive at two years or more from their earliest diagnosis with a given cancer.

5-year survival

The percentage of cancer cases still alive at five years or more from their earliest diagnosis with a given cancer.

2-year surgical survival

All-cause crude survival: the percentage of cases still alive two years after surgery.

Age-Standardised Rate (ASR)

The hypothetical rate, expressed as the number of cases per 100,000 persons, of cancer incidence or mortality in a group of people if their age distribution is the same as that in a standard or reference population.

ASR is used to compare cancer incidence or mortality between populations with different sizes and age structures. The different populations can represent different states or countries, as well as different time periods for the same geographic region.

ASR allows tracking of incidence and mortality trends that are not due to changes or differences in population size or age. Cancer incidence and mortality generally increases over time as a result of population growth and ageing. Similarly, cancer incidence will usually differ between two populations of similar sizes if one population is older than the other.

The standard populations used in calculation of ASR are listed below.

Age Group	Australia 2001	Australia 2001 (per 100,000)
0-4	1,282,357	6,600
5-9	1,351,664	7,000
10-14	1,353,177	7,000
15-19	1,352,745	7,000
20-24	1,302,412	6,700
25-29	1,407,081	7,200
30-34	1,466,615	7,500
35-39	1,492,204	7,700
40-44	1,479,257	7,600
45-49	1,358,594	7,000
50-54	1,300,777	6,700
55-59	1,008,799	5,200
60-64	822,024	4,200
65-69	682,513	3,500
70-74	638,380	3,300
75-79	519,356	2,700
80-84	330,050	1,700
85+	265,235	1,400
Total	19,413,240	100,000

Comorbidity

A clinical condition that has the potential to significantly affect a cancer patient's prognosis.

Comorbidity is derived from hospital admissions data following the Quan algorithm for classifying ICD-10 coded conditions, modified to exclude metastasis, which is represented by a separate and distinct metastasis dimension.

Comorbidity is limited to conditions coded in any admission episode between 12 months before and 12 months after the date of cancer diagnosis.

For any given cancer diagnosis, comorbidity is restricted to conditions other than the primary cancer.

Benign tumours were not considered comorbidities.

Co-morbidity list:

AIDS	Acute myocardial infarction	Cancer
Cerebrovascular disease	Congestive heart failure	Chronic obstructive pulmonary disease
Dementia	Diabetes	Diabetes + complications
Hemiplegia or Paraplegia	Mild liver disease	Moderate/severe liver disease
Peptic ulcer	Peripheral vascular disease	Renal disease
Rheumatoid disease		

Confidence interval (CI)

The confidence interval represents the probability that a population parameter will fall between two set values. A very wide interval may indicate that more data should be collected before anything very definite can be said about the parameter.

Flows

In-flows

In-flows show the distribution of residence for the total group of patients who receive radiation therapy by a treating facility.

Out-flows

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

Forest plots

The forest plot is a graphical display of the results from a regression model, illustrating the hazard ratio (HR) or relative risk (RR) for each covariate included in the regression model. The dot represents the estimate of the HR/RR with the confidence interval of the estimate represented by a horizontal line. A central vertical line representing no effect is also plotted, and if the confidence intervals for an estimate cross this line then the effect is considered not to be statistically significant.

Funnel plots

Funnel plots have been created by plotting the observed result for each hospital result against the surgical volume of the hospital. Confidence limit intervals of 95% (~2 standard deviations) and 99% (~3 standard deviations) have been superimposed around the overall Queensland result.

Head and neck sub-site

Head and neck cancer has been disaggregated into 8 anatomical sub-sites based on the ICD-O 3rd edition WHO classification system – oral cavity, oropharynx, major salivary glands, nasopharynx, hypopharynx, other pharynx, nasal cavity and paranasal sinuses, and larynx (see Appendix 2 for more information).

HHS of Residence

Hospital and Health Service of residence is a geographic area defined by a collection of Statistical Areas Level 2 (SA2s) where the patient resides at time of diagnosis. Queensland unknown residence includes addresses reported as overseas, unknown, or not fixed.

Hospital peer groups

The Australian Institute of Health and Welfare (AIHW) have published The Australian hospital peer groups report that groups public and private hospitals that share similar characteristics, providing a basis for meaningful comparisons. There are thirty peer groups, nine of which are relevant to this report. Peer group definitions and groupings used in this report are defined in Appendix 5.

Hospital stay

The median time between the admission and discharge date of a patient's cancer surgery.

Indigenous status

A measure of whether a person identifies as being of Aboriginal or Torres Strait Islander origin.

Interquartile range (IQR)

The interquartile range is 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 Q1, Q2 (median), and Q3, respectively. The IQR is the distance between the 75th and 25th percentiles, $IQR = Q3 - Q1$.

QOOL MDT Review

Cancer patients are discussed by a Multidisciplinary Team to make sure that all available treatment options are considered.

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 and 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.

Median age (yrs)

The age that divides a population into two halves: one older than the median, the other younger than the median.

Mortality

30-day mortality: The percentage of patients that die within 30 days following their surgery.

90-day mortality: The percentage of patients that die within 90 days following their surgery.

Pathological diagnosis

Confirmation of cancer through pathological tests.

Private facility

All other hospitals that are not Queensland Health hospitals.

Public facility

Queensland Health hospitals.

Radiation therapy

Includes Queensland residents of all ages diagnosed with invasive cancer who had radiation therapy 30 days prior and within 150 days of diagnosis.

Remoteness

The relative remoteness of residence at time of diagnosis, based on the Australian Standard Geographical Classification (ASGC). In this report, remoteness is classified into three groups: Metropolitan, Regional and Rural & Remote.

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.

Socio-economic status

Socio-economic 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 socio-economic groups.

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

Surgery

Includes Queensland residents of all ages diagnosed with invasive cancer who had surgery 30 days prior and within one year of diagnosis. In this report, surgery refers to treatment of the primary lesion. A patient is considered to have had surgery where a patient has had a primary resection specific to that site, note that for major salivary glands this also includes nodal resection (see Appendices 4.1 and 4.2 for more detail about the methodology and ICD-10-AM procedure codes used). Where a patient only had a nodal resection and/or reconstruction and repair procedure this is not considered surgery for the surgical indicators in this report. Using this methodology, tracheostomy is not considered a primary resection for example for an oral cavity cancer. However, tracheostomy rates were included in the oral cavity chapter to provide more detail as to the types of surgical procedures that patients underwent.

Systemic therapy

Includes Queensland residents of all ages diagnosed with invasive cancer who had intravenous (IV) systemic therapy 30 days prior and within 150 days of diagnosis.

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