Australian Government

Australian Institute of Health and Welfare

Colorectal and other digestive-tract cancers

AIHW

Australian Government
Australian Institute of Health and Welfare

Cancer Series
Number 114

Colorectal and other digestive-tract cancers

Australian Institute of Health and Welfare
Canberra
Cat. no. CAN 117

The Australian Institute of Health and Welfare is a major national agency whose purpose is to create authoritative and accessible information and statistics that inform decisions and improve the health and welfare of all Australians.

This publication is part of the Australian Institute of Health and Welfare's Cancer series. A complete list of the Institute's publications is available from the Institute's website <www.aihw.gov.au>.

ISSN 2205-4855 (PDF)
ISSN 1039-3307 (Print)
ISBN 978-1-76054-429-4 (PDF)
ISBN 978-1-76054-430-0 (Print)

Suggested citation

Australian Institute of Health and Welfare 2018. Colorectal and other digestive-tract cancers. Cancer series no. 114. Cat. no. CAN 117. Canberra: AIHW.

Any enquiries relating to copyright or comments on this publication should be directed to:
Australian Institute of Health and Welfare
GPO Box 570
Canberra ACT 2601
Tel: (02) 6244 1000
Email: info@aihw.gov.au

Published by the Australian Institute of Health and Welfare

This publication is printed in accordance with ISO 14001 (Environmental Management Systems) and ISO 9001 (Quality Management Systems). The paper is sourced from sustainably managed certified forests.

Please note that there is the potential for minor revisions of data in this report. Please check the online version at <www.aihw.gov.au> for any amendments.

Contents

Acknowledgments ..... **v**
Abbreviations ..... **vi**
Symbols ..... **vii**
Notes for tables and figures ..... **viii**
Summary ..... **x**
Data at a glance ..... **xv**
1 Introduction **1**
1.1 Types of digestive-tract cancers reported 1
1.2 Impact of digestive-tract cancers on survivors 3
1.3 Data sources 3
2 Colorectal (bowel) cancer (C18–C20) **4**
2.1 A picture of colorectal cancer in Australia 4
2.2 Screening, surveillance and diagnosis 10
2.3 Treatment 13
2.4 Survivorship population 15
2.5 Burden from colorectal cancer 16
3 Pancreatic cancer (C25) **19**
3.1 A picture of pancreatic cancer in Australia 19
3.2 Treatment 24
3.3 Survivorship population 26
3.4 Burden from pancreatic cancer 26
4 Stomach cancer (C16) **29**
4.1 A picture of stomach cancer in Australia 29
4.2 Treatment 33
4.3 Survivorship population 35
4.4 Burden from stomach cancer 36
5 Liver cancer (C22) **39**
5.1 A picture of liver cancer in Australia 39
5.2 Treatment 44
5.3 Survivorship population 46
5.4 Burden from liver cancer 47

6 Oesophageal cancer (C15) 49
6.1 A picture of oesophageal cancer in Australia 49
6.2 Treatment 53
6.3 Survivorship population 55
6.4 Burden from oesophageal cancer 56
7 Cancer of the gallbladder and extrahepatic bile ducts (C23–C24) 59
7.1 A picture of cancer of the gallbladder and extrahepatic bile ducts in Australia 59
7.2 Treatment 63
7.3 Survivorship population 66
7.4 Burden from cancer of the gallbladder and extrahepatic bile ducts 67
8 Cancer of the small intestine (C17) 69
8.1 A picture of cancer of the small intestine in Australia 69
8.2 Treatment 74
8.3 Survivorship population 76
8.4 Burden from cancer of the small intestine 76
9 Anal cancer (C21) 78
9.1 A picture of anal cancer in Australia 78
9.2 Treatment 82
9.3 Survivorship population 84
9.4 Burden from anal cancer 85
10 Cancer of unspecified digestive organs (C26) 86
10.1 A picture of cancer of unspecified digestive organs in Australia 86
10.2 Treatment 88
10.3 Survivorship population 89
Appendix A: Additional tables 90
Appendix B: Defining digestive-tract cancers 147
Appendix C: Data sources 150
Appendix D: Defining digestive-tract cancer hospitalisations 154
Appendix E: Hospital-based colonoscopies 161
Glossary 163
References 166
List of tables 172
List of figures 178
Related publications 182

Acknowledgments

This report was prepared by Natasha Bartlett, Ellen Connell, Justin Harvey, Harene Ranjithakumaran and Henry Wong, under the direction of Lynelle Moon. Substantial contributions were also made by Brett Davis, Rachel Kilo, Mark Short and the Australian Burden of Disease team.

The authors would like to thank all colleagues who commented on earlier drafts, including members of the Cancer Monitoring Advisory Group who provided expert advice and assistance in producing this document.

The support of the Australasian Association of Cancer Registries through providing cancer incidence data to the AIHW's Australian Cancer Database is gratefully acknowledged.

Abbreviations

ABDS	Australian Burden of Disease Study
ABS	Australian Bureau of Statistics
ACCD	Australian Consortium for Classification Development
ACD	Australian Cancer Database
ACHI	Australian Classification of Health Interventions
AIHW	Australian Institute of Health and Welfare
ASR	age-standardised rate
DALY	disability-adjusted life year
HCC	hepatocellular carcinoma
HIV	human immunodeficiency virus
HPV	human papillomavirus
IARC	International Agency for Research on Cancer
ICD-10	International Statistical Classification of Diseases and Related Health Problems, Tenth Revision
iFOBT	immunochemical Faecal Occult Blood Test
MBS	Medicare Benefits Schedule
NBCSP	National Bowel Cancer Screening Program
NDI	National Death Index
NHMD	National Hospital Morbidity Database
NMD	National Mortality Database
NMDS	National Minimum Data Set
NRWTD	National Radiotherapy Waiting Times Database
RD	registry-derived
SA2	Statistical Area Level 2
SEIFA	Socio-Economic Indexes for Areas
UK	United Kingdom
USA	United States of America
YLD	years lived with disability
YLL	years of life lost

Symbols

—	nil or rounded to zero
. .	not applicable
n.p.	not publishable because of small numbers, confidentiality or other concerns about the quality of the data

Notes for tables and figures

Notes for all the tables and figures are presented here, rather than as footnotes below each table and figure. Please refer to this section when reviewing tables and figures.

- The 2014 incidence data include estimates for NSW.
- Deaths registered in 2014 and earlier are based on the final version of cause of death data; deaths registered in 2015 and 2016 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
- Actual mortality data from 1998 to 2015 are based on the year of *occurrence* of the death and data for 2016 are based on the year of *registration* of the death.
- The 2015–2018 estimates for incidence are based on 2004–2013 incidence data. The 2017–2018 estimates for mortality are based on joinpoint analysis of 1994–2013 mortality data for males and 1995–2013 mortality data for females. Estimates for males and females may not sum to the total number of persons.
- Relative survival was calculated with the period method, using the period 2010–2014 (Brenner & Gefeller 1996). This method examines the survival experience of people who were alive at the beginning of a particular recent calendar period and who were diagnosed with cancer before this period. Note that this period does not contain incidence data for 2014 for NSW.
- Relative survival for registry-derived (RD) stage tables were calculated using the cohort method, using the period 2011–2016. In this method, a cohort of patients diagnosed with cancer is followed over time to estimate the proportion surviving for a selected timeframe (for example, 5 years).
- Observed survival was calculated for survival analysis by remoteness area and socioeconomic area. Observed survival was calculated using the period method, using the period 2010–2014. Note that this period does not contain incidence data for 2013–2014 for NSW because those data were not available. Records with Statistical Area Level 2 (SA2s) that were unknown or that could not be mapped to a remoteness area are excluded. Records with SA2s that were unknown or that could not be mapped to a socioeconomic group are excluded.
- Incidence and survival data by Indigenous status are for New South Wales, Victoria, Queensland, Western Australia and the Northern Territory only. Ninety per cent of Indigenous Australians live in these 5 jurisdictions.
- Cancer Institute New South Wales are currently investigating a *potential* issue with indigenous status and will determine any impacts to data released, when this work is completed.
- Mortality data by Indigenous status are for New South Wales, Queensland, Western Australia, South Australia and the Northern Territory only. Eighty-eight per cent of Indigenous Australians live in these 5 jurisdictions.
- Total count and age-standardised rate includes people whose Indigenous status was unknown. Therefore, tables by Indigenous status exclude people whose Indigenous status was unknown.
- Five-year relative survival rates are not calculated for Australians whose Indigenous status was unknown. Therefore, the Australia 5-year relative survival rate is not directly comparable to the Indigenous and non-Indigenous Australian 5-year relative survival rate.

- Age-specific incidence, mortality and prevalence rates are expressed as number per 100,000 population
- Age-specific hospitalisation rates are expressed as number per 10,000 population.
- Age-standardised incidence and mortality rates were age-standardised to the 2001 Australian Standard Population and are expressed as number per 100,000 population.
- Age-standardised hospitalisation rates were age-standardised to the 2001 Australian Standard Population and are expressed as number per 10,000 population.
- Incidence and mortality rates are based on the Australia population as at 30 June. Prevalence and hospitalisation rates are based on the Australian population as at 31 December.
- Remoteness areas are classified according to the 2011 Australian Statistical Geography Standard (ASGS) Remoteness Areas. Not all remoteness areas are represented in all jurisdictions. Disaggregation by remoteness area is based on SA2 of usual residence at time of diagnosis. The accuracy of these classifications decreases over time due to changes in infrastructure within SA2 boundaries since 2011.
- Socioeconomic groups are classified according to the SEIFA quintile using the Index of Relative Socioeconomic Disadvantage (IRSD). Disaggregation by SEIFA quintile is based on 2011 classifications of Statistical Areas Level 2 (SA2) of usual residence at time of diagnosis. The accuracy of these classifications decreases over time due to changes in infrastructure within SA2 boundaries since 2011.
- Male-to-female ratio is based on the proportion of prevalent counts between males and females.
- Hospitalisations for which the care type was reported as 'Newborn with no qualified days' and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.
- Hospitalisations related to digestive-tract cancer are defined as those where the principal diagnosis (the diagnosis chiefly responsible for the episode of care) and the additional diagnosis (a diagnosis that coexists with the principal diagnosis or arises during the episode of care and affects the care) is a digestive-tract cancer.
- For radiotherapy tables, some providers report the primary site of cancer rather than the principal diagnosis.
- Burden of disease columns may not sum to the total due to rounding.
- Attributable burden from multiple risk factors cannot be combined or added together due to the complex pathways and interactions between risk factors.
- See Appendix B for definition of digestive-tract cancer subsite and histology.
- See Appendix D for definition of surgical and chemotherapy procedures.
- Hospital codes were sourced from the ninth edition of the ACHI (ACCD 2014, 2015).
- Stage data for colorectal cancer excludes cases identified from death certificates only, cancer of the appendix (ICD-10 code C18.1), and colorectal cancers with a histology for which staging rules are not applicable.
- Hashed bars in the figures at the start of each chapter indicate the cancer that is explored in the chapter.

Summary

This is the first national report to present comprehensive data specific to digestive-tract cancers in Australia. Digestive-tract cancers are related to the digestive tract and accessory digestive organs. Upper digestive-tract cancers include oesophageal, stomach, liver and pancreatic cancers and cancer of the small intestine, and lower digestive-tract cancers include colorectal and anal cancer.

Digestive-tract cancers are a major cause of illness and death

In 2018, there will be 79 digestive-tract cancers diagnosed and 38 deaths from digestive-tract cancers every day.

It is estimated that about 28,900 new cases of digestive-tract cancers will be diagnosed and about 13,800 people will die from a digestive-tract cancer in Australia in 2018.

Digestive-tract cancers are estimated to account for about 2 in 10 (21%) of all cancers diagnosed and nearly 3 in 10 (28%) cancer deaths.

Table 1: Incidence and mortality of all digestive-tract cancers combined, 2018

		Incidence			Mortality		
Cancer type		**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Upper digestive-tract cancers (C15–C17, C22–C25)	Number	6,966	4,209	11,175	4,895	3,119	8,014
	ASR	49.5	26.3	37.4	34.8	18.8	26.4
Lower digestive-tract cancers (C18–C21)	Number	9,478	7,965	17,444	2,171	2,048	4,219
	ASR	68.1	50.9	59.0	15.6	12.3	13.9
All digestive cancers combined (C15–C26)	**Number**	**16,575**	**12,306**	**28,881**	**7,896**	**5,913**	**13,809**
	ASR	**118.5**	**77.9**	**97.2**	**56.3**	**35.5**	**45.3**

Sources: AIHW ACD 2014; AIHW NMD.

Men are more likely to have, and die from, digestive-tract cancers

Males are 3.4 times as likely to be diagnosed with liver cancer, and 2.4 times as likely to die from this disease as females.

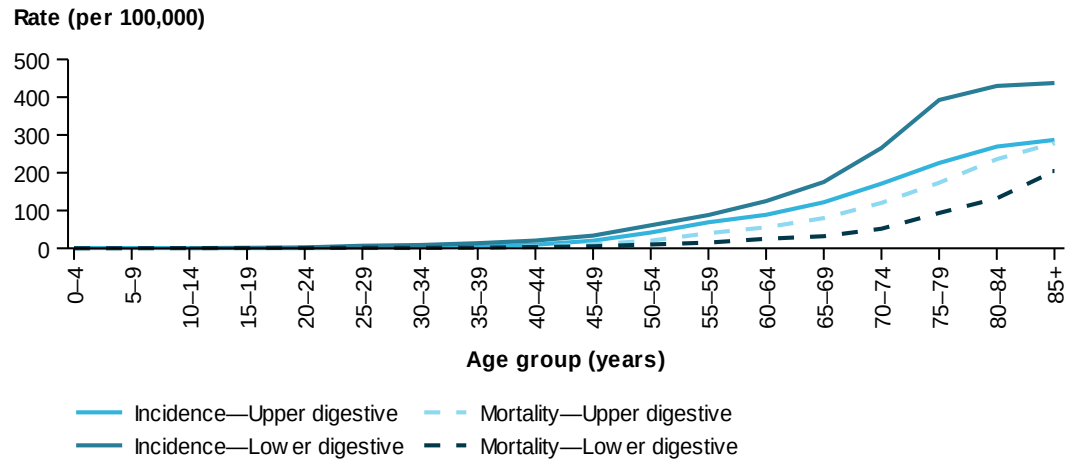
Overall, males are 1.5 times as likely to be diagnosed with a digestive-tract cancer and 1.6 times as likely to die from digestive-tract cancers as females. Males have higher incidence rates than females for all types of digestive-tract cancer, except cancer of the gallbladder and extrahepatic bile ducts (equal rates) and anal cancer (higher for females).

Table 2: Rate ratio by sex and digestive-tract cancers, 2018

Sex ratio (Male: female)	Colorectal	Pancreatic	Stomach	Liver	Oesophageal	Gallbladder	Small intestine	Anal
Incidence	1.4	1.3	2.1	3.4	2.8	1.0	1.5	0.8
Mortality	1.3	1.3	2.0	2.4	3.2	1.1	1.3	1.0

Incidence and deaths increase with increasing age

Incidence and mortality rates of digestive-tract cancers increase with age.



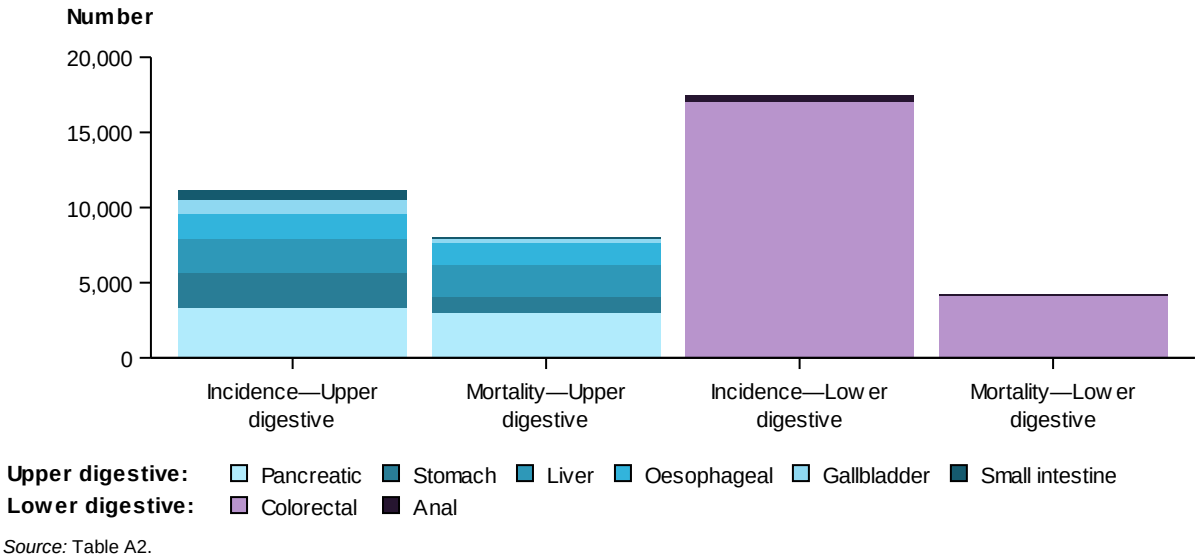
Source: Table A1.

Figure 1: Estimated age-specific incidence and mortality rates of upper and lower digestive-tract cancers, by age at diagnosis, 2018

Not all digestive-tract cancers are equal

A person's chance of survival depends on the type of digestive-tract cancer they have:

- colorectal cancer is the most commonly diagnosed digestive-tract cancer (59% of digestive-tract cancers) and has the highest 5-year relative survival rate of all digestive-tract cancers (69%)
- pancreatic cancer is the second most commonly diagnosed digestive-tract cancer (12% of digestive-tract cancers), and has the lowest 5-year relative survival of all specified digestive cancers (8.7%).

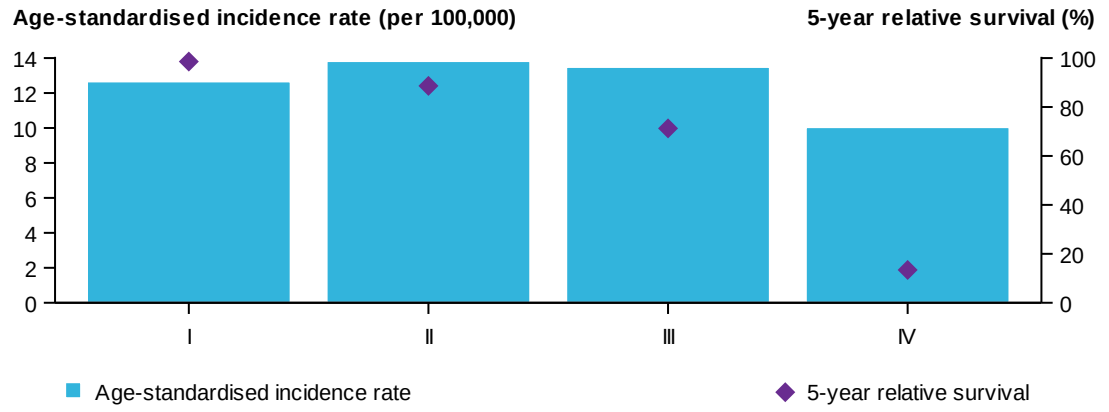


Source: Table A2.

Figure 2: Estimated incidence and mortality of digestive-tract cancers, by site, 2018

Survival is worse for later stage colorectal cancers

Among Australians diagnosed with colorectal cancer, 46% were considered to be early stage (registry-derived (RD) stage I and II). Early stage colorectal cancers were associated with better survival outcomes, and Australians diagnosed with RD stage IV colorectal cancer had the worst survival outcomes (13%).

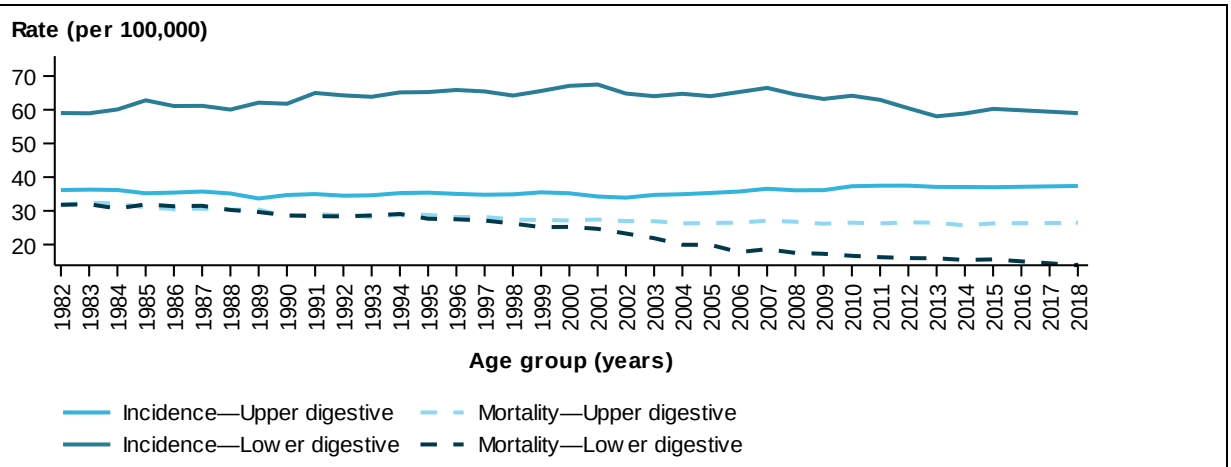


Source: Table A2.6.

Figure 3: Age-standardised incidence rates of colorectal cancer, by RD stage, 2011

Gains in population health

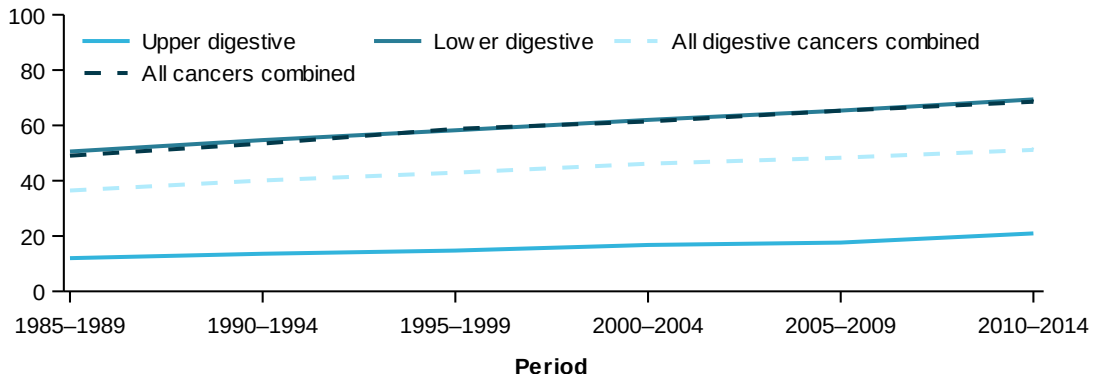
The age-standardised incidence rate of digestive-tract cancers remained relatively stable between 1982 and 2018, while the age-standardised mortality rate fell. The mortality rate fell more for lower than upper digestive tract cancers. The decrease in the lower digestive mortality rate is due to changes to the colorectal cancer mortality rate.



Source: Table A3.

Figure 4: Incidence trends (1982–2014) and mortality trends (1982–2016) for upper and lower digestive-tract cancers, with projections to 2018

In 2010–2014, Australians diagnosed with a digestive-tract cancer had a 51% chance of surviving for 5 years, compared with 37% in 1985–1989. For comparison, over the same period, 5-year relative survival for all cancers combined increased from 49% to 69%. Upper digestive-tract cancers had lower 5-year relative survival than lower digestive-tract cancers for all years, which could be due to low survival rates for pancreatic cancer.



Source: Table A2.3.

Figure 5: Five-year relative survival from digestive-tract cancers and all cancers combined, 1985–1989 to 2010–2014

Australians in remote areas and low socioeconomic groups, and Indigenous Australians have higher incidence and mortality rates

Based on incidence data for 2009–2013 and mortality data for 2012–2016:

- Aboriginal and Torres Strait Islander Australians were 1.3 times as likely to be diagnosed with a digestive-tract cancer and 1.4 times as likely to die than non-Indigenous Australians
- Australians living in *Remote* areas of Australia were 1.1 times as likely to be diagnosed with and die from a digestive-tract cancer as Australians in *Major cities*
- Australians in the lowest socioeconomic group were 1.2 times as likely to be diagnosed and 1.4 times as likely to die as those in the highest socioeconomic group.

The impact of particular population groups varies between different digestive-tract sites. There were relatively large differences for liver cancer, oesophageal cancer and cancer of the gallbladder and extrahepatic bile ducts.

Table 3: Rate ratio by population groups and digestive-tract cancers, 2018

Ratio	Colorectal	Pancreatic	Stomach	Liver	Oesophageal	Gallbladder	Small intestine	Anal
Indigenous: non-Indigenous								
Incidence	0.9	1.6	1.5	2.4	2.2	2.7	1.3	1.7
Mortality	0.9	1.3	1.6	2.4	1.7	3.3	1.5	2.7
Very remote: Major cities								
Incidence	0.9	0.8	0.8	1.6	1.4	1.9	0.6	1.4
Mortality	0.7	0.8	0.8	1.7	1.2	2.9	n.p.	3.0
SES lowest: highest								
Incidence	1.2	1.2	1.3	1.5	1.5	1.2	1.1	1.1
Mortality	1.3	1.2	1.4	1.6	1.5	1.6	1.0	2.0

Treatment variation among digestive-tract cancers

In 2016–17, there were 221,529 digestive-tract cancer-related hospitalisations. This accounted for 18% of all cancer-related hospitalisations in Australia. Treatment for patients with digestive-tract cancer included surgical procedures, chemotherapy procedures and radiotherapy. The type of surgical procedures varied between digestive-tract cancers.

In 2016–17 there were:

- 182,223 chemotherapy procedures related to a digestive-tract cancer, representing 27% of all chemotherapy procedures
- 6,213 radiotherapy courses where the principal diagnosis was a digestive-tract cancer, representing 10% of all radiotherapy courses.

High digestive-tract cancer burden

In 2011, Australians lost 220,071 disability-adjusted life years (DALYs) due to premature death or living with disability due to digestive-tract cancers. This accounted for 26% of the burden of all cancers in Australia. The majority of the digestive-tract cancer burden was due to Australians dying prematurely. However, survivors of digestive-tract cancers often face ongoing burden as a result of the detection, diagnosis and treatment of cancer. For example, use of a stoma with a colostomy bag accounted for 8% of the non-fatal burden from colorectal cancer (AIHW 2017c).

A large proportion of the burden is potentially preventable

A large proportion of the digestive-tract cancer burden (measured by DALYs) was potentially preventable due to modifiable risk factors. The risk factors that attributed the most to the burden of digestive-tract cancer burden were tobacco use, high body mass and alcohol use (AIHW 2017c).

- Tobacco use contributed to the burden of colorectal, pancreatic, stomach, liver and oesophageal cancer. Of particular note, 54% of oesophageal cancer burden was attributed to this risk factor.
- High body mass contributed to the burden of colorectal, pancreatic, liver, oesophageal cancer and cancer of the gallbladder and extrahepatic bile ducts.
- Alcohol use contributed to the burden of colorectal, liver and oesophageal cancer. Of particular note, 40% of liver cancer burden was attributable to this risk factor.

Data at a glance

Table 4: Summary of digestive-tract cancers in Australia

	New cases (2018)	Deaths (2018)	5-year relative survival (%) (2010–2014)	5-year prevalence (end of 2013)	DALYs (2011)
Colorectal cancer (C18–C20)	17,004	4,129	69.4	52,892	92,422
Pancreatic cancer (C25)	3,364	3,006	8.7	3,045	44,428
Stomach cancer (C16)	2,332	1,078	29.5	4,150	22,583
Liver cancer (C22)	2,215	2,088	18.1	2,803	29,376
Oesophageal cancer (C15)	1,685	1,447	21.0	2,420	23,773
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	931	262	19.7	1,329	4,287
Cancer of the small intestine (C17)	648	133	65.8	1,809	1,557
Anal cancer (C21)	440	90	67.4	1,498	1,645

Sources: AIHW ACD 2014; AIHW NMD.

Table 5: Trend summary for incidence, mortality and 5-year relative survival

Digestive-tract cancer	Incidence rate	Mortality rate	5-year relative survival (%)
Colorectal cancer (C18–C20)	Stable	Decrease	Increase
Pancreatic cancer (C25)	Stable	Stable	Increase
Stomach cancer (C16)	Decrease	Decrease	Increase
Liver cancer (C22)	Increase	Increase	Increase
Oesophageal cancer (C15)	Stable	Stable	Increase
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	Stable	Decrease	Increase
Cancer of the small intestine (C17)	Increase	Stable	Increase
Anal cancer (C21)	Increase	Stable	Increase

Sources: AIHW ACD 2014; AIHW NMD.

1 Introduction

Cancer is a major cause of illness in Australia and has a substantial physical, psychological, social and economic impact on individuals, families and the community. As a disease group, cancer is the greatest contributor to the burden of disease, illness and injury in Australia, accounting for one-fifth (19%) of the burden (AIHW 2018a).

Cancer (also called malignant neoplasms) is a diverse group of diseases characterised by the uncontrolled proliferation of abnormal cells. These abnormal cells invade and damage the tissues around them, and spread to other parts of the body, which can cause further damage and potentially death. Digestive-tract cancers refer to various malignancies that can originate in the digestive organs and throughout the digestive tract.

This report is the latest in a series of reports developed under the framework of the National Centre for Monitoring Cancer, under the guidance of the Cancer Monitoring Advisory Group. It is the first national report to present key data specific to digestive-tract cancers (see Box 1.1 for details). Data are presented by sex, age, trend, characteristics (subsite, histology and stage) and population groups (Indigenous status, remoteness area and socioeconomic disadvantage).

Box 1.1: Aspects of cancer examined

There are various ways to measure cancer within the Australian health system. For each type of cancer (forming individual chapters in this report), information is presented on:

incidence—the number of new cases occurring during a given period

mortality—the number of deaths occurring during a given period

relative survival—a measure of the average survival experience of a population of people diagnosed with cancer, relative to the 'average' Australian of the same sex and age

treatment—including hospitalisations, selected surgical procedures, chemotherapy and radiotherapy

prevalence—the number of people alive who have been diagnosed with the cancer in the past 5 years

burden of disease—the impact on the Australian population of dying prematurely or living with the cancer, and the burden attributed to modifiable risk factors.

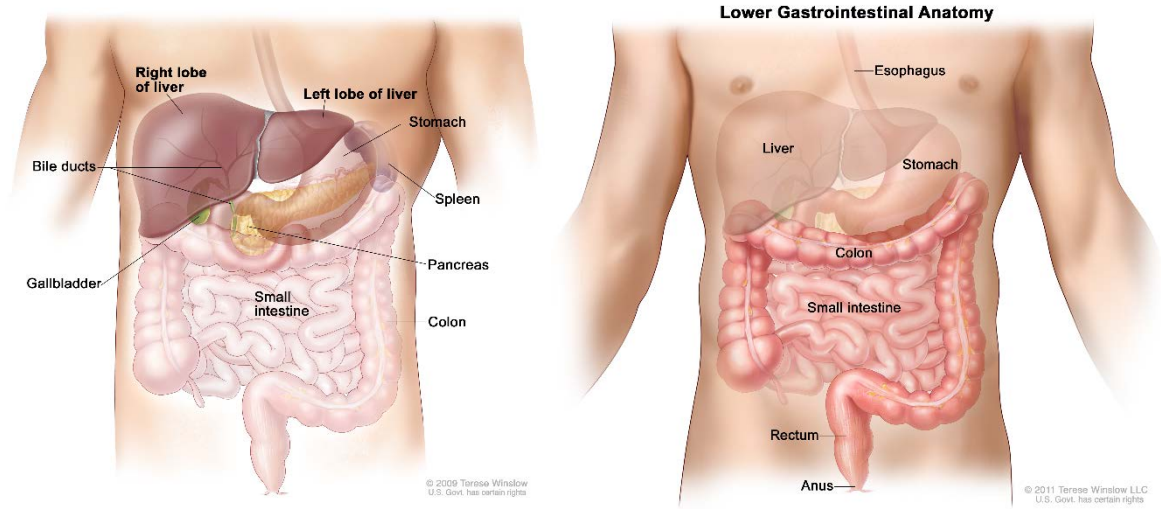
The chapter on colorectal cancer also includes information on participation in, and outcomes for, the National Bowel Cancer Screening Program (NBCSP) and on hospital-based colonoscopies used to identify bowel cancer.

1.1 Types of digestive-tract cancers reported

This report presents data on individual cancers within the digestive system. The digestive system (Figure 1.1) includes the digestive tract: a continuous tract, starting at the oesophagus and extending from the stomach to the intestines, and ending at the anus, through which food passes and waste exits. It also includes accessory digestive organs, such as the liver, gallbladder, pancreas and associated structures, which secrete digestive liquids and process substances absorbed by the organs of the digestive tract.

The cancer sites defined within this report (in order of how frequently they are diagnosed) are:

- colorectal cancer (C18–C20)
- pancreatic cancer (C25)
- stomach cancer (C16)
- liver cancer (C22)
- oesophageal cancer (C15)
- cancer of the gallbladder and extrahepatic bile ducts (C23–C24)
- cancer of the small intestine (C17)
- anal cancer (C21)
- cancer of unspecified digestive organs (C26) (referred to as 'unspecified' in this report).



Sources: Lower Gastrointestinal Anatomy © 2011 Terese Winslow LLC, U.S. Govt. has certain rights; Liver Anatomy © 2009 Terese Winslow LLC, U.S. Govt. has certain rights.

Figure 1.1: The organs of the digestive-tract system

Cancer subsite describes the specific part of the organ in which the cancer was diagnosed. This level of classification (see Appendix B) is important to report because survival rates can vary between subsites.

Histology describes the type of cells in which cancer originates. Symptom patterns and survival outcomes vary based on histology type. Histology groupings presented in this report are based on the histological groups described in *Cancer incidence in five continents* (Brayet al. 2017). These are mainly organised by the predominantly site-based categories of the 10th revision of the International Classification of Disease (ICD-10). See Appendix B for further details.

Cancer stage at diagnosis refers to the extent or spread of cancer at the time of diagnosis. The stage at diagnosis and subsequent treatment outcomes are important determinants of cancer survival. They can also reflect the extent to which improvements in survival are a result of earlier detection or better treatment.

Data on stage of cancer at diagnosis are not currently collected nationally. Cancer Australia has been working in collaboration with all states and territory population-based cancer registries, the Australian Association of Cancer Registries (AACR) and the AIHW to coordinate the collection of RD stage at diagnosis for the 5 highest incidence cancers. In 2017, all state and territory cancer registries provided RD staging data for diagnoses in 2011 to AIHW for the top 5 incidence cancers (breast cancer in females, prostate cancer, colorectal cancer, lung

cancer and melanoma of the skin) for inclusion in the Australian Cancer Database (ACD). Colorectal cancer RD staging groups are based on a simplified TNM (tumour, nodes, metastasis) business rule, which uses 4 stages of increasing severity, based on the characteristics of the primary tumour (Bowel Cancer Australia 2017; UICC 2016).

- **stage I:** cancer has invaded several layers of the bowel, but has not spread outside the bowel wall
- **stage II:** cancer has grown through the muscle layer of the bowel or rectum and invaded nearby tissues, but has not spread to the lymph nodes
- **stage III:** cancer has spread to nearby lymph nodes, but not to other parts of the body
- **stage IV:** the cancer has spread from where it started in the colon or rectum to other organs, often the liver and lungs, and/or non-regional lymph nodes.

1.2 Impact of digestive-tract cancers on survivors

Survivors of digestive-tract cancers face a range of physical and psychosocial changes. Of the survivors who had surgery for major upper digestive-tract cancers, such as pancreatic, stomach and oesophageal cancers, some expressed experiencing difficulties consuming food and managing nutrition and body weight, with symptoms including premature feelings of fullness, reflux, malabsorption and loose movement of the bowels (diarrhoea) (Birgisson et al. 2007; Carey et al. 2013; Gusani et al. 2009; Wilson 2017). Of those who were treated for colorectal cancer, some identified worsened sexual function, urination and inability to achieve an erection or orgasm as additional issues (Bailey et al. 2015; Wilson 2017). Further effects of a range of digestive-tract cancers include fatigue (Jefford et al. 2008), pain and bloating from surgeries, the adjustment to resuming consuming food after having upper gastrointestinal cancer surgery and, for those who require a stoma, new knowledge, skill and commitment for stoma management (Carey et al. 2013; Wilson 2017).

Adjusting to these new physical requirements can lead to low confidence (Jefford et al. 2008) and body image issues. Survivors who have more digestive symptoms and diarrhoea have poorer body image. Low confidence and poor body image is directly associated with greater symptoms of stress, depression and anxiety (Benedict et al. 2016; Carey et al. 2013). Survivors of digestive-tract cancers, like other cancers, also face the stress associated with potential cancer recurrence (Jefford et al. 2008). Research has indicated that over one-third of colorectal cancer survivors are at risk of depression (Tsunoda et al. 2005) and that many survivors of colorectal cancer experience psychological distress that would warrant further psychological assessment and intervention (Lynch et al. 2008; Tian et al. 2007).

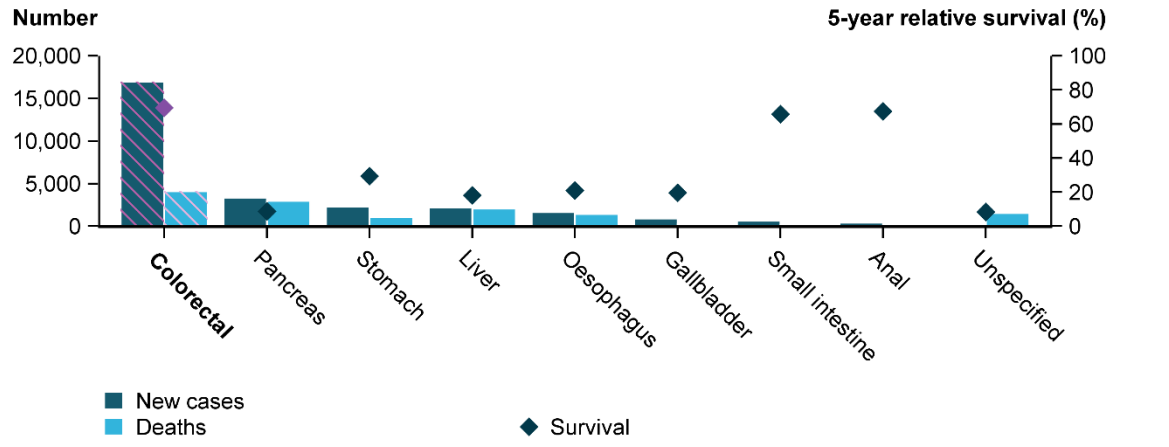
Survivors of digestive-tract cancers also face significant financial burden, associated with treatment, the cost of new clothes, medications and follow-up to maintain the changed body (Carey et al. 2013; Guy et al. 2014; Kale & Carroll 2016; Kent et al. 2013; Morgan 2009; Ramsey et al. 2013; Stone et al. 2017). Cancer survivors and their families also have to adjust to modifications that may be required at home and a change in medical support (Harvard University 2017; Jefford et al. 2008; Wilson 2017).

1.3 Data sources

The results in this report were mainly produced using the ACD and the National Mortality Database (NMD). Other data sources include the National Hospital Morbidity Database, the National Radiotherapy Waiting Times Database and the National Bowel Cancer Screening Program database. See Appendix C for information about each of these data sources.

2 Colorectal (bowel) cancer (C18–C20)

17,004 new cases	4,129 deaths
69% 5-year relative survival	92,422 DALYs



2.1 A picture of colorectal cancer in Australia

In 2018, it is estimated that colorectal cancer will be the most commonly diagnosed digestive-tract cancer and the most common cause of digestive-tract cancer-related deaths. Colorectal cancer is estimated to be the third most commonly diagnosed type of cancer in Australia and the second leading cause of cancer death. In 2018, it is estimated that 17,004 new cases of colorectal cancer will be diagnosed in Australia and that 4,129 people will die from this cancer. This is an average of 47 new cases and 11 deaths a day.

In 2010–2014, Australians diagnosed with colorectal cancer had a 69% chance of surviving 5 years compared with their counterparts in the general population (Table 2.1). This was the highest 5-year relative survival rate of all digestive-tract cancers and was similar to all cancers combined (69%).

Males were 1.4 times as likely to be diagnosed with colorectal cancer and 1.3 times as likely to die from colorectal cancer as females. Males and females had similar 5-year relative survival rates (Table 2.1).

Note that the mortality numbers may be an underestimate; due to code classification standards, some colorectal cancer deaths may have been coded as deaths from cancer of unspecified digestive organs. See Chapter 10 for more information.

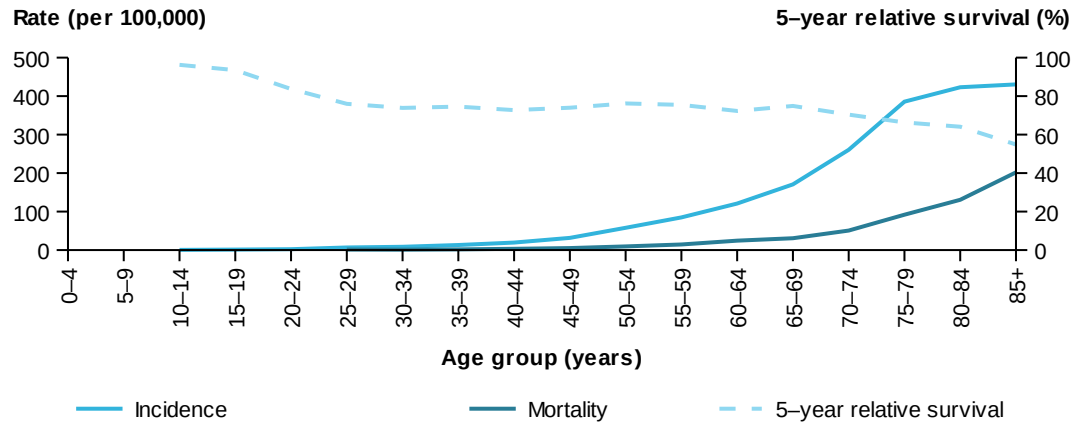
Table 2.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), colorectal cancer, by sex

	Incidence		Mortality		Survival
Sex	**Number**	**ASR**	**Number**	**ASR**	**5-year relative survival (%)**
Male	9,294	66.7	2,124	15.2	69.0
Female	7,709	49.2	2,005	12.0	70.0
Persons	**17,004**	**57.5**	**4,129**	**13.5**	**69.4**

Sources: AIHW ACD 2014; AIHW NMD.

Age group

The colorectal cancer incidence and mortality rate increased with age. In 2010–2014, the 5-year relative survival rate decreased with age (Figure 2.1).



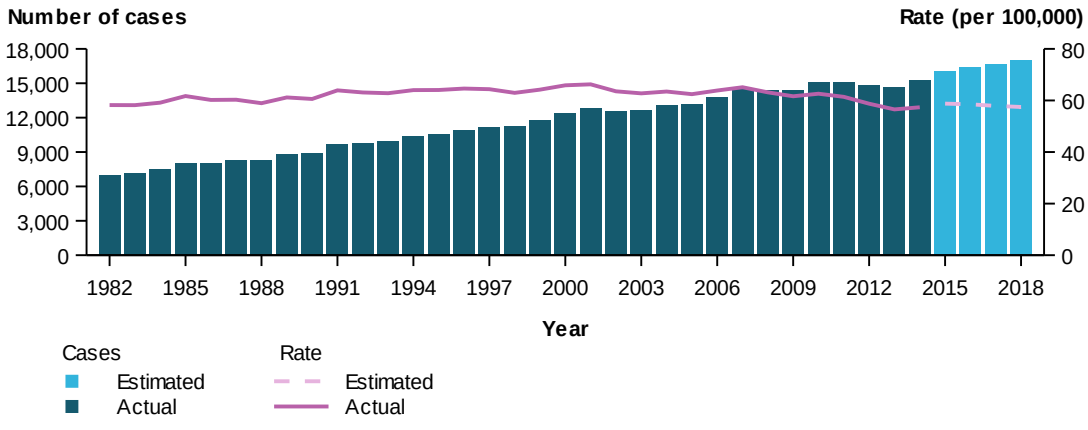
Source: Table A2.1.

Figure 2.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for colorectal cancer, by age group

Trend

The number of new cases of colorectal cancer increased from 6,988 cases in 1982 to an estimated 17,004 in 2018. The age-standardised incidence rate fluctuated between 58 and 66 cases per 100,000 persons over the same period (Figure 2.2). The age-specific incidence rate has remained relatively stable for people aged under 50 and for those aged 50 and older. However, when analysing 5-year age groups, there has been a statistically significant upwards trend in the incidence rate of colorectal cancer for Australians aged 20–39 since the mid-1990s (AIHW 2017b).

The increase in the number of new cases from colorectal cancer is due to a growing and ageing population, as well as the introduction of the National Bowel Cancer Screening Program (NBCSP) in 2006. The introduction of the NBCSP is expected to lead to a short-term increase in the number of people being diagnosed with colorectal cancer, due to the detection of previously undetected cancers in those being screened for the first time. However, it is expected that the incidence of colorectal cancer for the age group targeted for screening (50–74) will reduce in future years as pre-cancerous conditions are detected and treated before they progress to cancer (AIHW 2012).

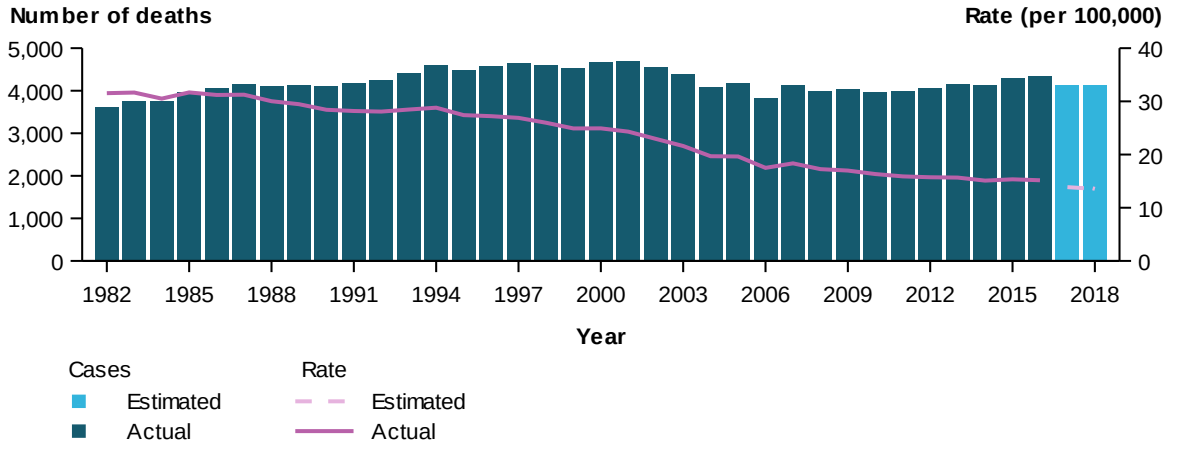


Source: Table A2.2.

Figure 2.2: Incidence trends for colorectal cancer, 1982–2014, with projections to 2018

The number of deaths from colorectal cancer increased from 3,617 deaths in 1982 to an estimated 4,129 in 2018. The age-standardised rate decreased from 32 deaths per 100,000 persons to 14 per 100,000 over the same time period (Figure 2.3). The increase in the number of deaths from colorectal cancer is due to a growing and ageing population.

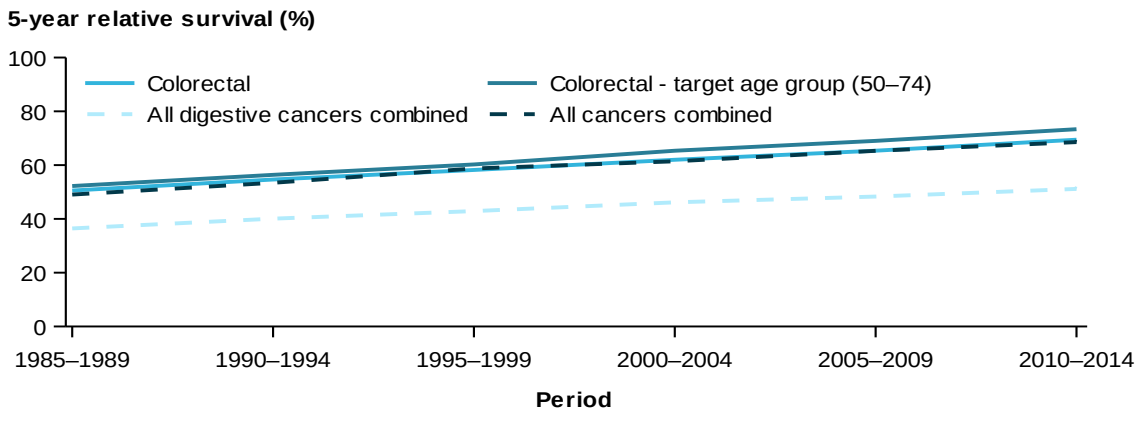
Note that the mortality trends may have been affected by differences in code classification standards. See Chapter 10 for more information.



Source: Table A2.2.

Figure 2.3: Mortality trends for colorectal cancer, 1982–2016, with projections to 2018

Between 1985–1989 and 2010–2014, the 5-year relative survival rate for colorectal cancer increased from 51% to 69%. Compared with all digestive-tract cancers, 5-year relative survival for colorectal cancer was consistently higher for all periods, but it was similar when compared with the survival for all cancers combined. The 5-year relative survival rate for colorectal cancer for Australians aged 50–74 (target age for screening) has increased from 52% to 73% (Figure 2.4).



Source: Table A2.3.

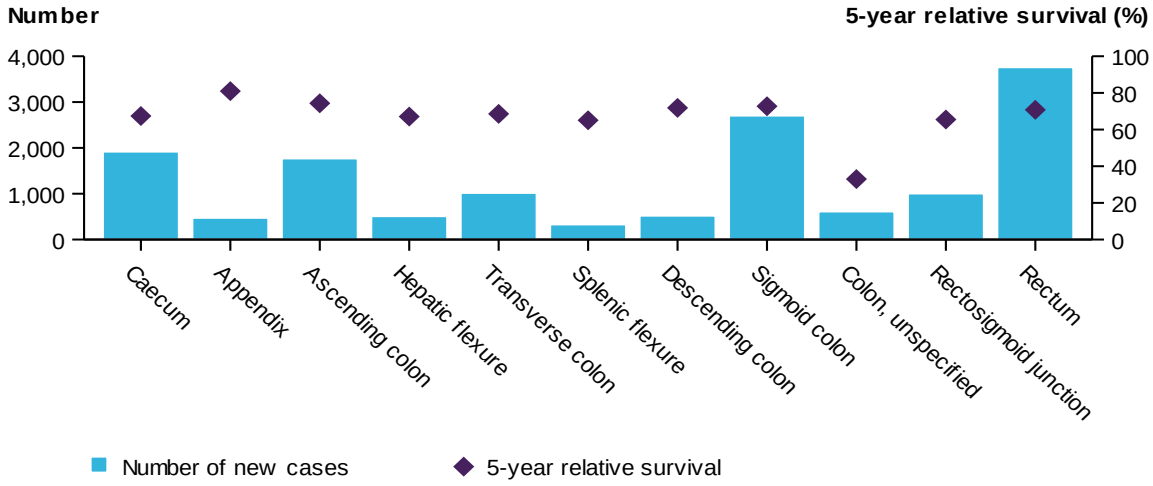
Figure 2.4: Five-year relative survival from colorectal cancer, all digestive-tract cancers combined and all cancers combined, 1985–1989 to 2010–2014

Characteristics

Subsite

In 2013, the rectum was the most common colorectal cancer subsite, representing 26% of all colorectal cancer diagnoses. Australians diagnosed with this subsite had a 71% chance of surviving 5 years compared with their counterparts in the general population, which was higher than the 5-year relative survival rate for all colorectal cancers (69%).

Of all colorectal cancer subsites, 5-year relative survival was highest for the appendix (81%) and lowest for colon, unspecified (33%) (Figure 2.5). Colon, unspecified may have low survival rates because this category includes a relatively large proportion of cancers that are diagnosed at a later stage. Analysis of unpublished incidence data, indicates that this category is more common in older age groups.



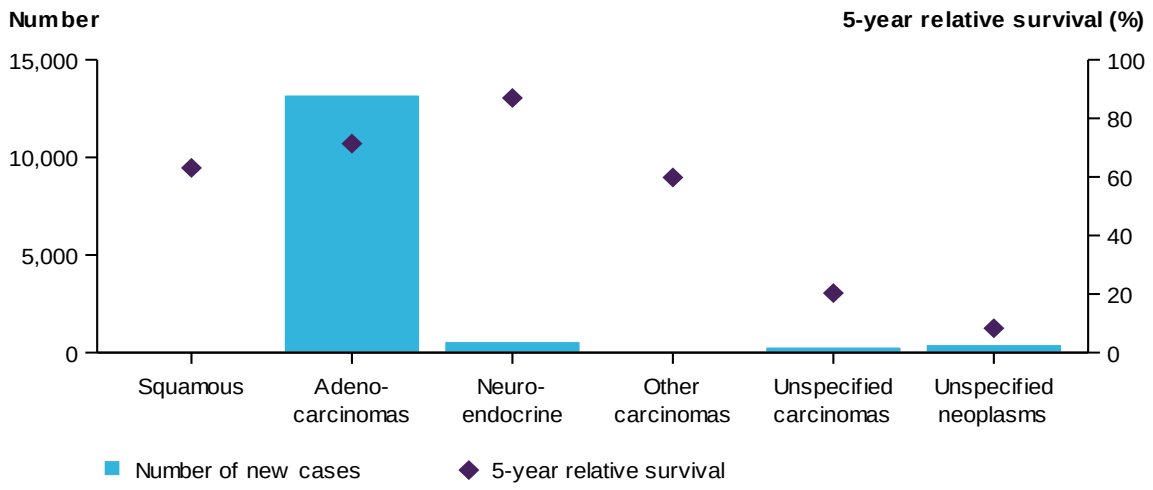
Source: Table A2.4.

Figure 2.5: Incidence (2013) and 5-year relative survival (2010–2014) for colorectal cancer, by subsite

Histology

In 2013, adenocarcinoma was the most common colorectal cancer histological type, representing 90% of all colorectal cancer cases diagnosed. Australians diagnosed with this histological type had a 71% chance of surviving 5 years compared with their counterparts in the general population. This was higher than the 5-year relative survival rate for all colorectal cancers (69%).

Five-year relative survival was highest for neuroendocrine neoplasms (87%) and lowest for unspecified neoplasms (8.3%) (Figure 2.6). Low survival rates for unspecified neoplasms may reflect cancers unsuitable for biopsy, treatment in patients with advanced disease at diagnosis or significant comorbidities. Analysis of unpublished incidence data indicates that unspecified neoplasms are more common in older age groups.



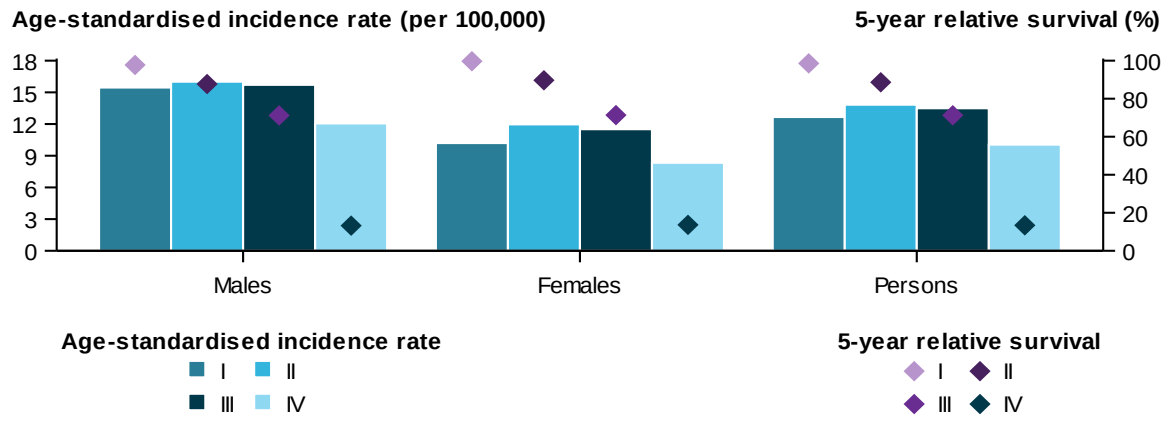
Source: Table A2.5.

Figure 2.6: Incidence (2013) and 5-year relative survival (2010–2014) for colorectal cancer, by histology

Stage

Among Australians diagnosed with colorectal cancer in 2011, 46% were considered to be early stage (registry-derived (RD) stage I and II). A similar proportion of colorectal cancers were RD stage I, II, or III (around 23% for each), and a lower proportion were stage IV cancers (18%). Registry-derived stage II was the most common colorectal cancer stage at diagnosis for both males and females.

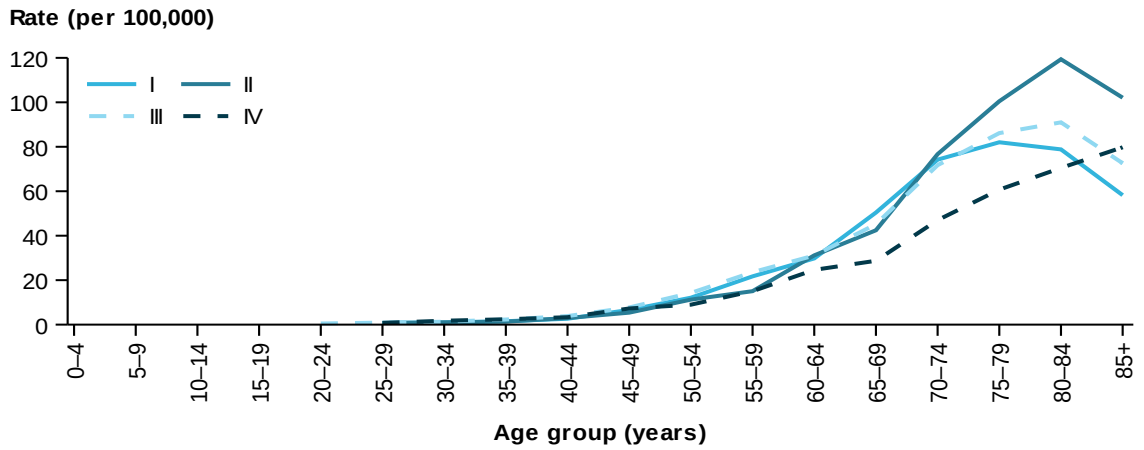
Early stage colorectal cancer was associated with better survival outcomes. Five-year relative survival was highest for Australians diagnosed with RD stage I colorectal cancer (99%) and then decreased with each stage. Australians diagnosed with RD stage IV colorectal cancer had the worst prognosis (13%) of the 4 stages (Figure 2.7). A similar pattern has been found in international studies (Morris et al. 2013; Public Health England 2016).



Source: Table A2.6.

Figure 2.7: Age-standardised incidence rates (2011) and 5-year relative survival (2011–2016) of colorectal cancer, by RD stage and sex

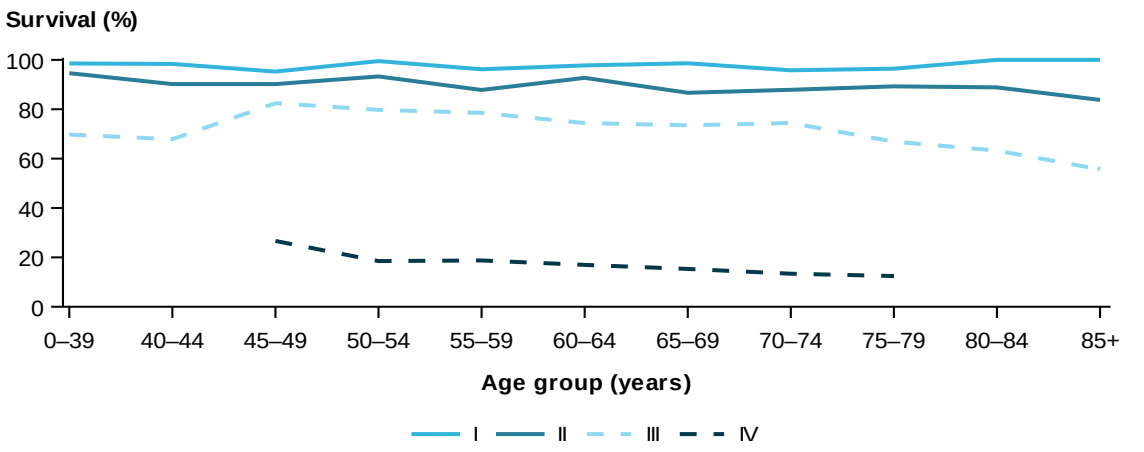
The age-specific colorectal cancer incidence rate by RD stage generally increased with age. Australians aged 50 and over had a higher proportion of early stage colorectal cancers (RD stage I and stage II) than those aged under 50 (Figure 2.8).



Source: Table A2.8.

Figure 2.8: Age-specific incidence rates of colorectal cancer, by RD stage and age group, 2011

Five-year relative survival from colorectal cancer was high across all age groups for early stage cancers (RD stage I and stage II). Five-year relative survival was lowest for RD stage IV cancers for all age groups and decreased with increasing age (Figure 2.9).



Source: Table A2.7.

Figure 2.9: Five-year relative survival of colorectal cancer, by RD stage and age group, 2011–2016

Population groups

Indigenous status

Non-Indigenous Australians living in the jurisdictions for which data were available (see notes on page vii for more details) were 1.1 times as likely to be diagnosed with colorectal cancer in 2009–2013 and 1.1 times as likely to die from colorectal cancer in 2012–2016 as Indigenous Australians. This was the opposite pattern to the all cancers combined incidence and mortality rate ratio, where Indigenous Australians were more likely to be diagnosed with and die from all cancers combined. Five-year relative survival was lower in Indigenous Australians (57%) than in non-Indigenous Australians (67%) (Table A2.9).

Remoteness area

In 2009–2013, Australians living in *Remote* areas of Australia were 1.1 times as likely to be diagnosed with colorectal cancer compared with Australians living in *Major cities* (Table A2.10). Australians living in *Outer regional* areas of Australia were 1.4 times as likely to die from colorectal cancer in 2011–2016 compared with Australians living in *Very remote* areas (Table A2.11). The colorectal cancer incidence rate ratio (0.9) for Australians living in *Very Remote* areas compared with those living in *Major cities* was similar to the same incidence rate ratio (0.9) for all cancers combined. The colorectal cancer mortality rate ratio (0.7) for Australians living in *Very Remote* areas compared with those living in *Major cities* was lower than the same mortality rate ratio (1.2) for all cancers combined. The 5-year observed survival rate was similar across remoteness areas (Table A2.12).

Socioeconomic disadvantage

Australians in the lowest socioeconomic group were 1.2 times as likely to be diagnosed with colorectal cancer in 2009–2013 (Table A2.13) and 1.3 times as likely to die from colorectal cancer in 2012–2016 compared with Australians in the highest socioeconomic group (Table A2.14). The colorectal cancer incidence (1.2) and mortality (1.3) rate ratio between Australians in the lowest and highest socioeconomic group was higher than the same incidence (1.0) and mortality (1.4) rate ratio for all cancers combined. The 5-year observed survival rate was lower for Australians in the lowest socioeconomic group (56%) and higher for Australians in the highest socioeconomic group (63%) (Table A2.15).

2.2 Screening, surveillance and diagnosis

Colorectal cancer generally develops through a multistage process in which a series of cellular mutations occur over time. Most colorectal cancers start in the epithelial cells, which form part of the inner lining of the large colorectal tract (intestinal mucosa layer). Early stages of these mutations result in benign polyps. However, polyps may undergo further mutations and become an adenoma (benign growths that have the potential to become cancerous) and, ultimately, a malignant colorectal cancer. Later stages of colorectal cancer can spread to other sites in the body through the lymphatic or vascular system.

Screening, surveillance and diagnostic tools are important in detecting cancer and abnormalities that may develop into cancer. Early diagnosis of colorectal cancer can improve treatment outcomes and survival (AIHW 2018d). Further, removal of benign polyps and adenomas during a colonoscopy reduces the risk of them developing into colorectal cancer.

Population-based screening

The National Bowel Cancer Screening Program (NBCSP) began in 2006. It aims to reduce the morbidity and mortality from bowel cancer through early detection or prevention of the disease. It offers free screening every 2 years, using an immunochemical faecal occult blood test (iFOBT), to people aged 50–74. An iFOBT is a non-invasive test that can detect microscopic amounts of blood in a bowel motion, which may indicate a bowel abnormality such as an adenoma or cancer. Participants with a positive screening result, indicated by blood in the stool sample, are advised to consult their primary health-care practitioner to discuss further diagnostic assessment; in most cases, this will be a colonoscopy. For more details on NBCSP, see the most recent monitoring report (AIHW 2018d).

Of the 3.2 million people invited to the NBCSP between January 2015 and December 2016, over a million people participated in the NBCSP, giving an overall Australia-wide participation

rate of 41%. Participation was higher among those who had participated in the NBCSP before (AIHW 2018d).

In 2016, about 59,000 Australians returned a positive screening test, giving an 8.1% screening positivity rate. Of the people who received a positive screening test, 68% had reported a follow-up diagnostic assessment colonoscopy—a total of 39,928 people (AIHW 2018d). In 2016, of the data available for participants who had a diagnostic assessment colonoscopy, there were 228 confirmed cancers (0.6% of people who had a diagnostic assessment), 1,182 suspected cancers (3.2%) and 4,439 adenomas (12.1%) detected (AIHW 2018d).

Research into the impact of national screening found that NBCSP invitees (particularly those who participated) had less risk of dying from bowel cancer, and were more likely to have less-advanced bowel cancers when diagnosed, than non-invitees. These findings confirm that the NBCSP is contributing to reducing morbidity and mortality from bowel cancer in Australia (AIHW 2018b).

Hospital-based colonoscopies

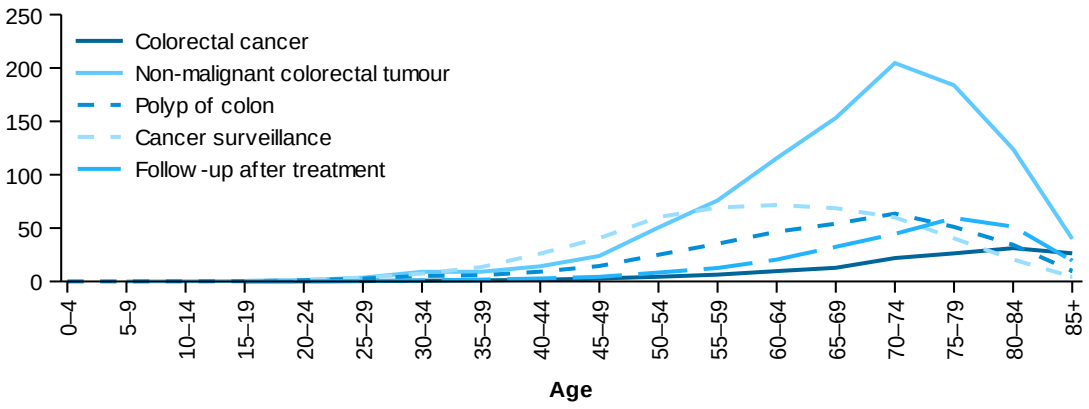
A colonoscopy is a commonly performed diagnostic assessment procedure to examine the bowel using a special scope (colonoscope). In a cancer context, colonoscopies are used as a diagnostic assessment tool for patients presenting with symptoms of colorectal cancer, as a surveillance tool in those at increased risk for colorectal cancer, and as a follow-up to positive iFOBT, including for those in the NBCSP. Colonoscopies are commonly used to diagnose colorectal cancer and the abnormalities, such as benign tumours and polyps, that may mutate further and result in colorectal cancer. Colonoscopies are carried out in admitted hospital settings and also in private clinics on an outpatient basis. Information on colonoscopies performed on admitted hospital patients is available through the National Hospital Morbidity Database (NHMD). This excludes people who received colonoscopies in a non-admitted setting.

In 2016–17, there were 838,975 colonoscopies performed in an admitted patient setting in hospitals. Of the colonoscopies performed in 2016–17, 1 in 4 (28%) were related to the treatment, surveillance and diagnosis of colorectal tumours (Table A2.16). The most common principal reason for the hospital admission in which a colonoscopy occurred was a non-malignant colorectal tumour (12%), followed by surveillance for intestinal cancer (where no tumour was found) (7.4%); polyp of colon (4.7%); follow-up after treatment for digestive-tract cancer (2.7%) and colorectal cancer (1.4%). Other reasons for the hospital admission in which a colonoscopy occurred included other diseases of the digestive system (such as dark blood in the stool or vomit) (7.3%); follow-up for treatment of a non-cancer condition (7.1%); abdominal and pelvic pain (7.0%); and other faecal abnormalities (6.9%) (Table A2.16). Other faecal abnormalities includes patients with a positive iFOBT (and no other symptoms), along with other stool abnormalities. It is expected that some of these colonoscopies are due to patients screening for colorectal cancer through the NBCSP, but it is currently not possible to separate them from patients presenting for other reasons.

There were more colonoscopies related to the treatment, surveillance and diagnosis of colorectal tumours performed in males than females. Colorectal tumour-related colonoscopies accounted for 31% of all colonoscopies performed in males and 26% for females. A higher proportion of colonoscopies performed had an associated diagnosis of colorectal tumours in males than in females, while a higher proportion of the colonoscopies performed in females had a recorded diagnosis of cancer surveillance (Table A2.16).

The number of colorectal tumour-related colonoscopies performed increased with age. About 7 in 10 (68%) colorectal tumour-related colonoscopies occurred for people within the NBCSP

target age group (50–74). Interestingly, colonoscopies associated with a non-malignant colorectal tumour increased at a greater rate for people aged over 50, peaking at 70–74, before decreasing in older age groups (Figure 2.10). Due to data limitations, it is not possible to determine outcomes for patients referred from the NBCSP compared with others.

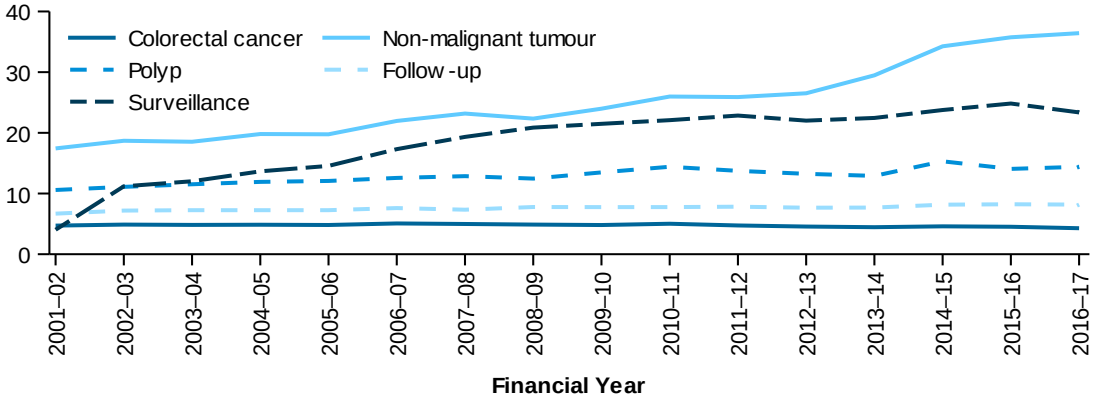


Source: Table A2.17.

Figure 2.10: Age-specific rate of colorectal tumour related colonoscopies, 2016–17

Between 2001–02 and 2016–17, the age-standardised rate of colorectal tumour-related colonoscopies increased from 43 to 87 per 10,000. Colonoscopies resulting in a principal diagnosis of non-malignant tumour and surveillance for cancer appear to be driving this trend. Colonoscopies for a colorectal cancer and polyp have been relatively stable over the period (Figure 2.11).

Further analysis of trend data reveals that for patients aged 50–74 (target age group for the NBCSP), the age-standardised rate of colonoscopies for colorectal cancer has been decreasing over time, while this rate has been increasing for those below the target age group. Over the same period, the age-standardised rate of colonoscopies for a polyp or benign tumour has increased notably for those in the target age group (figures E1–E5).



Source: Table A2.19.

Figure 2.11: Age-standardised rate of colorectal tumour-related colonoscopies, 2001–02 to 2016–17

For those colorectal tumour-related colonoscopies where the principal reason for care was cancer surveillance, the most common additional diagnosis given as a reason for cancer surveillance was a family history of digestive-tract cancer (81%), followed by a personal history of polyps of the colon (4.5%) (Table A2.18). Due to data limitations, it is not possible to determine whether those with a family history of cancer or personal history of polyps have higher rates of cancer detection.

2.3 Treatment

Hospitalisations

In 2016–17, there were 129,065 colorectal cancer-related hospitalisations. This accounted for 11% of all cancer-related hospitalisations and 58% of digestive-tract cancer-related hospitalisations in Australia (Table A2.20). Of these, 57% were for males and 43% were for females, which is consistent with the incidence pattern (Table 2.1). In 23% of these hospitalisations, colorectal cancer was the principal diagnosis (Table 2.2).

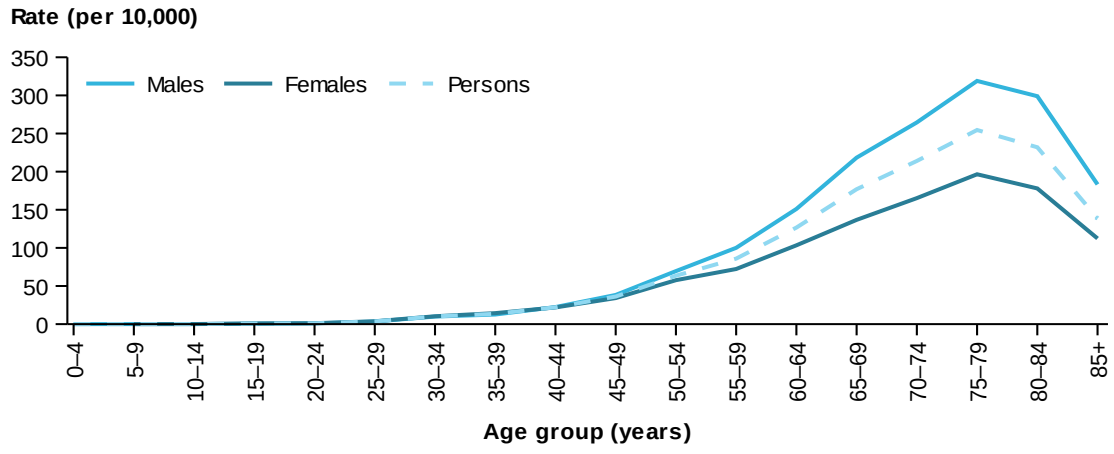
Table 2.2: Hospitalisations related to colorectal cancer, by sex, 2016–17

	Males			Females			Persons		
	Number	%	ASR	Number	%	ASR	Number	%	ASR
Principal diagnosis of cancer	16,249	12.6	12.2	13,597	10.5	9.2	29,846	23.1	10.6
Additional diagnosis of cancer	57,666	44.7	43.0	41,553	32.2	29.2	99,219	76.9	35.8
All colorectal cancer-related hospitalisations	**73,915**	**57.3**	**55.2**	**55,150**	**42.7**	**38.4**	**129,065**	**100.0**	**46.4**

Source: AIHW NHMD.

Age group

In 2016–17, the age-specific colorectal cancer-related hospitalisation rate increased with age, reaching a peak of 255 hospitalisations per 10,000 for people aged 75–79, before decreasing in older age groups (Figure 2.12). The trend is similar among males and females for age groups up to those aged 45–49, after which males have higher rates of hospitalisations than females.

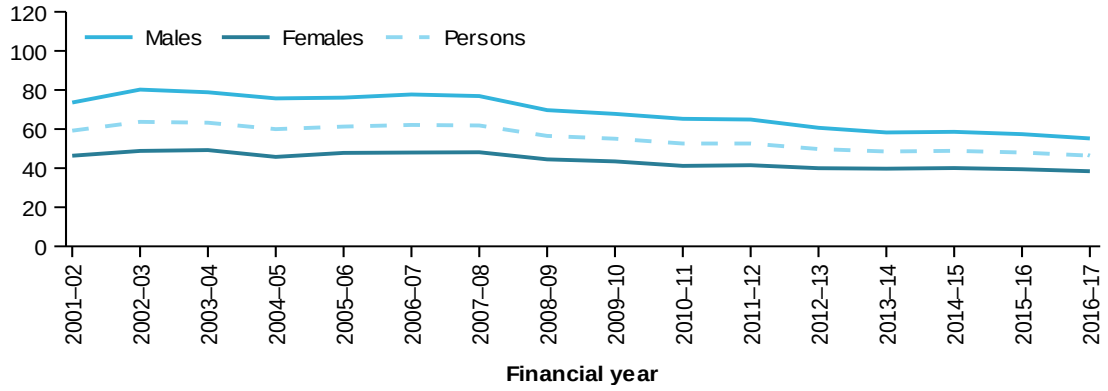


Source: Table A2.21.

Figure 2.12: Age-specific rates of hospitalisations related to colorectal cancer, by age group and sex, 2016–17

Trend

Between 2001–02 and 2016–17, the age-standardised colorectal cancer-related hospitalisation rate decreased from 59 hospitalisations per 10,000 to 46 per 10,000 (Figure 2.13). Males had higher rates than females for all financial periods, but the differences reduced over time, mostly due to a lowering of rates for males over time.



Source: Table A2.22.

Figure 2.13: All colorectal cancer-related hospitalisations, by sex, 2001–02 to 2016–17

Selected surgical procedures

In 2016–17, there were 16,619 surgical procedures (see Table D4 for details) related to colorectal cancer. There were more procedures in males (55%) than in females (45%) (Table 2.3), which was consistent with the incidence pattern (Table 2.1). A colectomy procedure was reported for 44% of surgical procedures. More colectomy procedures were reported in females than males. See Appendix C for information on how surgical procedures were calculated.

Table 2.3: Number of surgical procedures, colorectal cancer, by sex, 2016–17

	Males		Females		Persons	
Procedure type	**Number**	**%**	**Number**	**%**	**Number**	**%**
Colectomy	3,543	38.5	3,718	50.1	7,261	43.7
Rectosigmoidectomy or proctectomy	590	6.4	380	5.1	970	5.8
Anterior resection of rectum	2,703	29.4	1,739	23.4	4,442	26.7
Total proctocolectomy	66	0.7	46	0.6	112	0.7
Other excision procedures	2,111	23.0	1,409	19.0	3,520	21.2
Repair (i.e. caecostomy, colostomy)	183	2.0	131	1.8	314	1.9
All surgical procedures	**9,196**	**100.0**	**7,423**	**100.0**	**16,619**	**100.0**

Source: AIHW NHMD.

Chemotherapy

In 2016–17 there were 121,361 chemotherapy procedures related to colorectal cancer. This accounted for 67% of all digestive-tract cancer chemotherapy procedures and 18% of all cancer-related chemotherapy procedures. There were more chemotherapy procedures for males (58%) than females (42%) (Table A2.23), which was consistent with the incidence pattern (Table 2.1). See Appendix C for information on how chemotherapy procedures were calculated.

Radiotherapy

In 2016–17, there were 2,929 radiotherapy courses where the principal diagnosis was colorectal cancer. This accounted for 4.6% of all radiotherapy courses provided and 47% of all digestive-tract cancer-related radiotherapy courses. More radiotherapy courses were provided to males than females (Table A2.24). Of the radiotherapy courses, 70% of these courses were for a principal diagnosis of rectal cancer (AIHW, unpublished data).

2.4 Survivorship population

The combined effect of several factors—increasing incidence, decreasing mortality, improving survival and developments in treatment—is leading to an increase in the population who has ever been diagnosed with cancer. This increasing proportion of the population will require ongoing treatments, support and long-term follow-up care. Cancer survivorship focuses on the health and wellbeing of a person living with and beyond cancer. Family members and caregivers are also part of the survivorship experience (Cancer Australia 2017). The number of people living with the effects of a diagnosis of cancer can be estimated using prevalence data. Please note that prevalence data reported in this report refers only to people alive who have been previously diagnosed with cancer and excludes family members and caregivers. Therefore, the true number living with the effects of cancer could be larger.

At the end of 2013, there were 52,892 people alive who were diagnosed with colorectal cancer in the previous 5 years. Five-year prevalence was 1.2 times higher for males than for females (Table 2.4), which is consistent with the incidence pattern (Table 2.1).

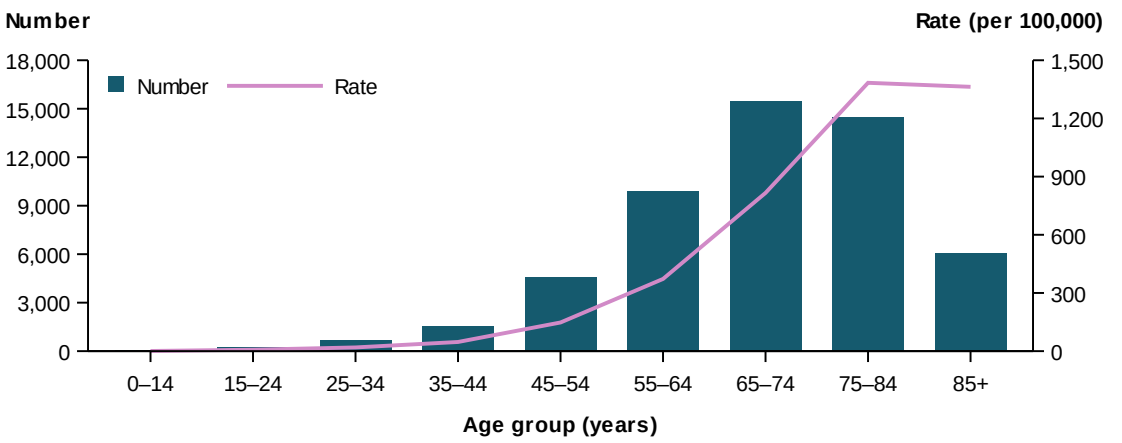
Table 2.4: Limited-duration prevalence of colorectal cancer, by sex, as at end of 2013

	Males			Females			Persons		
	Number	% of cases	Rate	Number	% of cases	Rate	Number	% of cases	Rate
1-year prevalence	6,998	54.4	60.4	5,867	45.6	50.1	12,865	100.0	55.2
5-year prevalence	29,037	54.9	250.7	23,855	45.1	203.6	52,892	100.0	227.0
32-year prevalence	70,672	52.9	610.2	62,957	47.1	537.4	133,629	100.0	573.6

Source: AIHW ACD 2014.

Age group

Five-year prevalence rates for colorectal cancer increased with age from age group 0–14 to age group 75–84, before decreasing slightly for those aged 85 and older (Figure 2.14). People aged 75 or older accounted for 39% of the 5-year prevalent cases of colorectal cancer.



Source: Table A2.25.

Figure 2.14: Five-year prevalence of colorectal cancer, by age group, as at end of 2013

2.5 Burden from colorectal cancer

In 2011, Australians lost 92,422 DALYs due to premature death or living with disability due to colorectal cancer. This accounted for 11% of the total cancer burden, ranking colorectal cancer as the 2nd greatest cause of cancer burden and the greatest cause of digestive-tract cancer burden. Males accounted for a larger proportion of the burden (57%) than females (43%) (Table 2.5).

The majority (92%) of the colorectal cancer burden was due to dying prematurely. However, compared with other digestive-tract cancers, there was a higher non-fatal burden component. Almost half (47%) of the non-fatal burden from colorectal cancer is from health loss due to diagnosis (for example, biopsies) and primary therapy (for example, surgery, chemotherapy and radiotherapy) (Table A2.26). This is because of the long average duration of treatment (9 months), which may include bowel resection. Long-term effects, such as the use of a stoma with a colostomy bag, account for 8% of the non-fatal burden from colorectal cancer (AIHW 2017c).

Table 2.5: Burden of disease from colorectal cancer, by sex, 2011

	Males			Females			Persons		
	Number	% of cancer burden	Rank	Number	% of cancer burden	Rank	Number	% of cancer burden	Rank
Fatal burden (YLL)	49,443	11.2	2	36,381	10.7	3	85,824	11.0	2
Non-fatal burden (YLD)	3,641	13.1	2	2,957	12.8	2	6,598	13.0	3
Total burden (DALYs)	**53,084**	**11.3**	**2**	**39,338**	**10.8**	**3**	**92,422**	**11.1**	**2**

Source: AIHW Burden of Disease Database 2011.

Age group

In 2011, the burden of colorectal cancer increased across age groups (AIHW 2017c). Children (0–14) were rarely impacted by colorectal cancer. Adolescents and young adults (15–24) lost 347 DALYs due to premature death or living with disability as a result of colorectal cancer. Among males, colorectal cancer was the 3rd leading cause of cancer

burden, accounting for 7% of the total burden. Among females, it was the 8th leading cause of cancer burden, accounting for 2.5% of the total burden.

Adults (25–64) lost 38,844 DALYs due to premature death or living with disability as a result of colorectal cancer. Among males, colorectal cancer was the 2nd leading cause of cancer burden, accounting for 11% of the total burden. Among females, it was the 3rd leading cause of cancer burden, accounting for 10% of the total burden.

Older adults (65+) lost 53,221 DALYs due to premature death or living with disability as a result of colorectal cancer. Among males and females, colorectal cancer was the 3rd leading cause of cancer burden, accounting for 12% of the total burden (Table A2.27).

Contribution of risk factors to colorectal cancer burden

Certain personal and lifestyle factors are associated with an increased risk of colorectal cancer. In particular, high-calorie diets comprised of a greater intake of meat, especially processed meats, and little fruit and vegetables as well as a high consumption of alcoholic beverages are linked to an increased risk of developing colorectal cancer. Australian-based research has indicated that 18% of colorectal cancers diagnosed were attributable to red and processed meat consumption (Nagle et al. 2015). Furthermore, excessive body fat and physical inactivity contribute to the enhanced risk of diagnosis. Smoking (including passive smoking) and use of smokeless tobacco are other lifestyle factors that may increase the risk of colorectal cancer (AIHW 2017c; IARC 2014; WCRF 2018).

The Australian Burden of Disease Study (ABDS) 2011 analysed 17 preventable risk factors and their contribution to the cancer burden. As a person can have more than 1 risk factor, and many risk factors are interrelated, the burden attributable to different risk factors cannot be simply added together. Cancers were only linked to a risk factor if there was sufficient evidence of a causal association (AIHW 2016b, 2017c). See the *Burden of cancer in Australia* (AIHW 2016b) for details on how risk factors are calculated.

In Australia, after adjusting for interrelated risk factors, about 51% of colorectal cancer burden in 2011 is estimated to be attributable to 8 risk factors combined (AIHW, unpublished data). Of these risk factors, physical inactivity and high body mass contributed the most individually to colorectal cancer burden in 2011 (16% and 13% of the colorectal cancer burden, respectively, although, because they are likely to be interrelated, their combined burden will be less than the sum of the individual burden estimates). A greater proportion of the colorectal cancer burden in males (18%) was due to high body mass than in females (6%) (Table 2.6).

Table 2.6: Colorectal cancer burden attributed to selected risk factors, 2011

	Males		Females		Persons	
Risk factor	Attributable DALYs	% of colorectal cancer burden	Attributable DALYs	% of colorectal cancer burden	Attributable DALYs	% of colorectal cancer burden
Physical inactivity[(a)]	8,363	15.8	6,640	16.9	15,003	16.2
High body mass[(a)]	9,307	17.5	2,513	6.4	11,819	12.8
Diet low in milk	5,821	11.0	4,393	11.2	10,214	11.1
Diet low in fibre	5,127	9.7	3,855	9.8	8,982	9.7
Tobacco use	3,466	6.5	3,747	9.5	7,213	7.8
Diet high in processed meat	4,744	8.9	2,380	6.1	7,124	7.7
Alcohol use[(a)]	2,562	4.8	2,448	6.2	5,010	5.4
Diet high in red meat	2,518	4.7	1,081	2.7	3,600	3.9

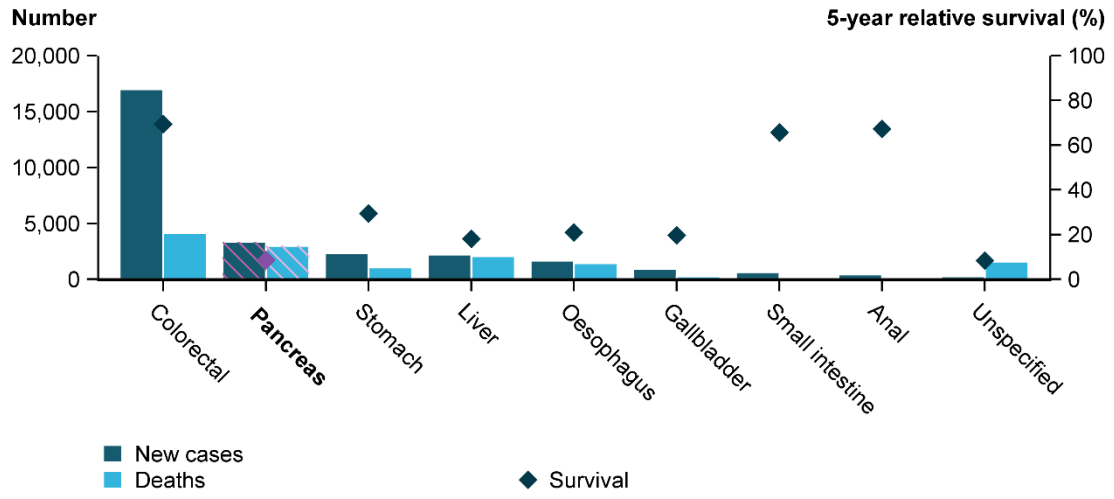
(a) Estimates for alcohol use, physical inactivity and high body mass are based on revised methods and improvements developed as part of extension projects done by the AIHW to look into the impact of various risk factors on chronic conditions (AIHW 2017e, 2017f, 2018c). These estimates will differ from those presented in earlier publications from the ABDS 2011 (AIHW 2016a).

Sources: AIHW ABDS 2011; AIHW (2016a, 2017d, 2017e, 2018b).

Other risk factors for colorectal cancer include occupational exposures to carcinogenic and/or toxic chemicals, industrial processes and ionising radiation (from, for example, diagnostic X-rays, working in the nuclear industry and natural sources) (IARC 2014). Certain genetic mutations increase the susceptibility of diagnosis. Around 20% of colorectal cancers can be attributed to a hereditary component (IARC 2014; Weitz et al. 2005).

3 Pancreatic cancer (C25)

3,364 new cases	3,006 deaths
8.7% 5-year relative survival	44,428 DALYs



3.1 A picture of pancreatic cancer in Australia

In 2018, it is estimated that pancreatic cancer will be the 2nd most commonly diagnosed digestive-tract cancer and the 2nd most common cause of digestive-tract cancer-related deaths. Pancreatic cancer is estimated to be the 10th most commonly diagnosed type of cancer in Australia and the fifth leading cause of cancer death. In 2018, it is estimated that 3,364 new cases of pancreatic cancer will be diagnosed in Australia and 3,006 people will die from this disease. This is an average of 9 new cases a day and 8 deaths a day.

In 2010–2014, Australians diagnosed with pancreatic cancer had an 8.7% chance of surviving 5 years compared with their counterparts in the general population. This was the 2nd lowest 5-year relative survival rate of all digestive-tract cancers and was lower than all cancers combined (69%).

Males were 1.3 times as likely to be diagnosed with pancreatic cancer and 1.3 times as likely to die from pancreatic cancer as females. Males and females had similar 5-year relative survival rates (Table 3.1).

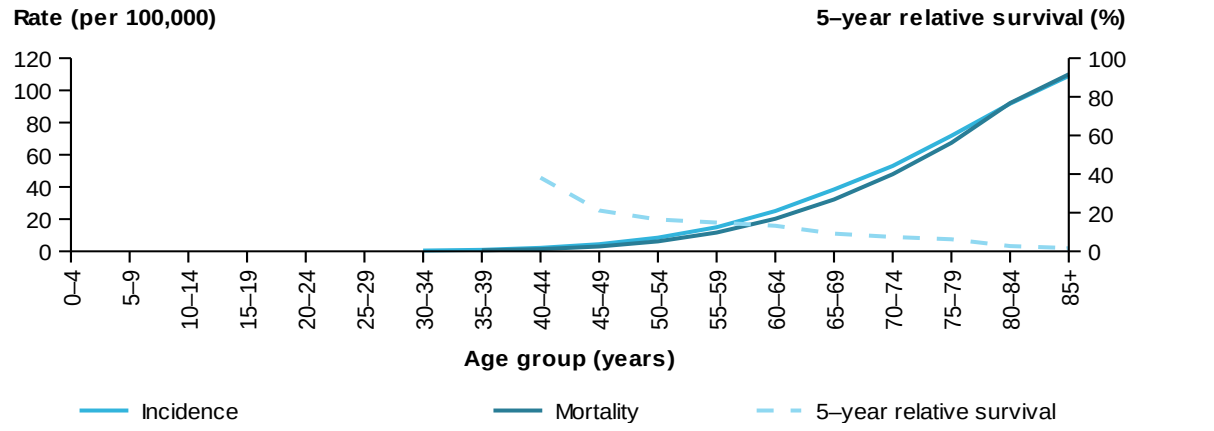
Table 3.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), pancreatic cancer, by sex

	Incidence		Mortality		Survival
Sex	**Number**	**ASR**	**Number**	**ASR**	**5-year relative survival (%)**
Male	1,774	12.6	1,563	11.1	8.7
Female	1,590	9.7	1,443	8.7	8.7
Persons	**3,364**	**11.1**	**3,006**	**9.8**	**8.7**

Sources: AIHW ACD 2014; AIHW NMD.

Age group

The pancreatic cancer incidence and mortality rate increased with age. In 2010–2014, the 5-year relative survival rate decreased with age (Figure 3.1).

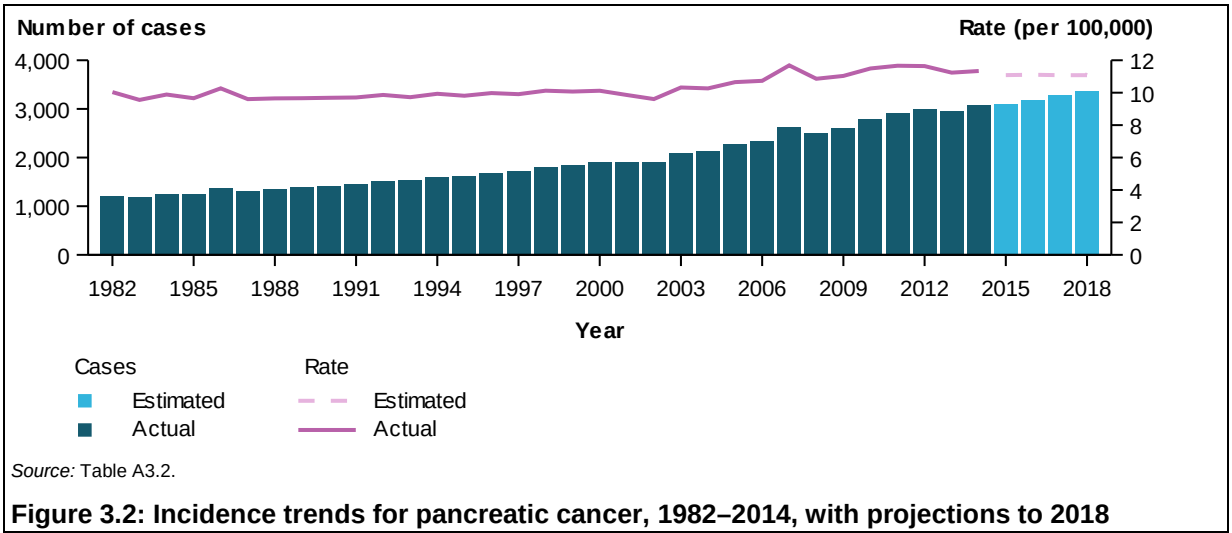


Source: Table A3.1.

Figure 3.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for pancreatic cancer, by age group

Trend

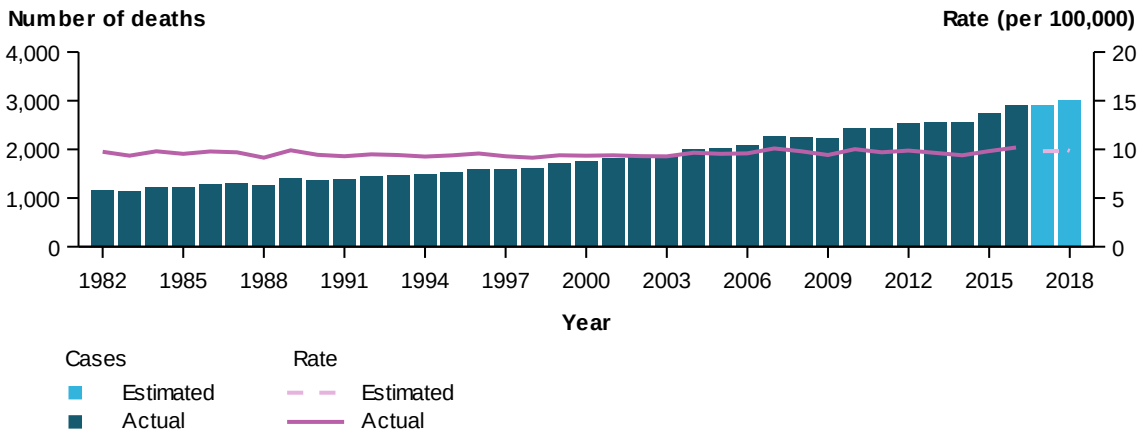
The number of new cases of pancreatic cancer increased from 1,206 cases in 1982 to an estimated 3,364 in 2018. The age-standardised incidence rate remained at about 10 cases per 100,000 persons across the same time period (Figure 3.2). The increase in the number of new cases of pancreatic cancer is due to a growing and ageing population.



Source: Table A3.2.

Figure 3.2: Incidence trends for pancreatic cancer, 1982–2014, with projections to 2018

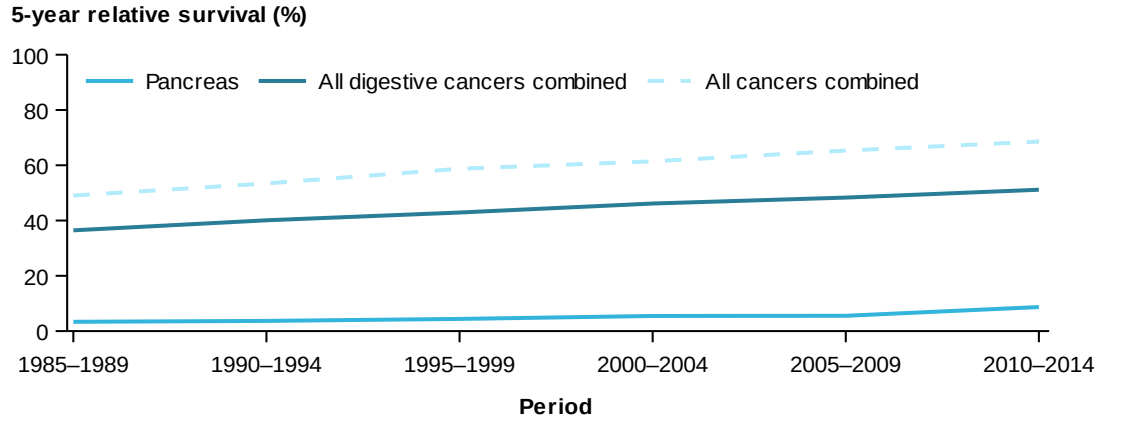
The number of deaths from pancreatic cancer increased from 1,168 deaths in 1982 to an estimated 3,006 in 2018. The age-standardised rate remained at about 10 deaths per 100,000 person across the same period (Figure 3.3).



Source: Table A3.2.

Figure 3.3: Mortality trends for pancreatic cancer, 1982–2016, with projections to 2018

Between 1985–1989 and 2010–2014, the 5-year relative survival rate for pancreatic cancer increased from 3.4% to 8.7%. Five-year relative survival was lower for pancreatic cancer than for all digestive-tract cancers combined and all cancers combined (Figure 3.4).



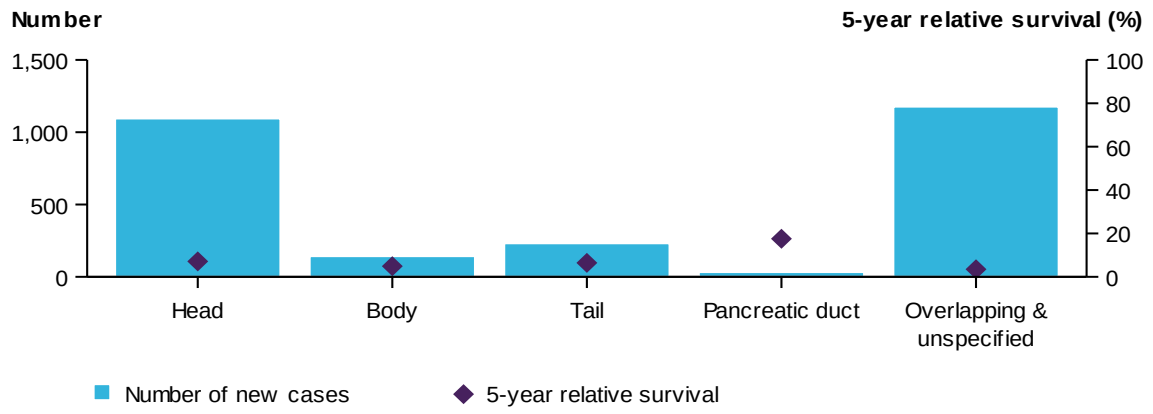
Source: Table A2.3.

Figure 3.4: Five-year relative survival from pancreatic cancer, all digestive-tract cancers combined and all cancers combined, 1985–1989 to 2010–2014

Characteristics

Subsite

In 2013, pancreas, overlapping and unspecified was the most common pancreatic cancer subsite, representing 43% of all pancreatic cancers diagnosed, followed by the head of the pancreas (40%). Australians diagnosed with cancer of the head of the pancreas had a 7.1% chance of surviving 5 years compared with their counterparts in the general population. This was lower than the 5-year relative survival rate for all pancreatic cancers (8.7%) and was the 2nd highest 5-year relative survival rate for pancreatic cancer by subsite. Pancreas, overlapping and unspecified had the lowest 5-year relative survival rate (3.5%) (Figure 3.5). Pancreas, overlapping and unspecified may have low survival rates because this category includes a relatively large proportion of cancers that are diagnosed at a later stage (AIHW 2012). Analysis of unpublished incidence data indicates that pancreas, overlapping and unspecified cancers are more common in older age groups. Note that this analysis excludes neuroendocrine tumours.



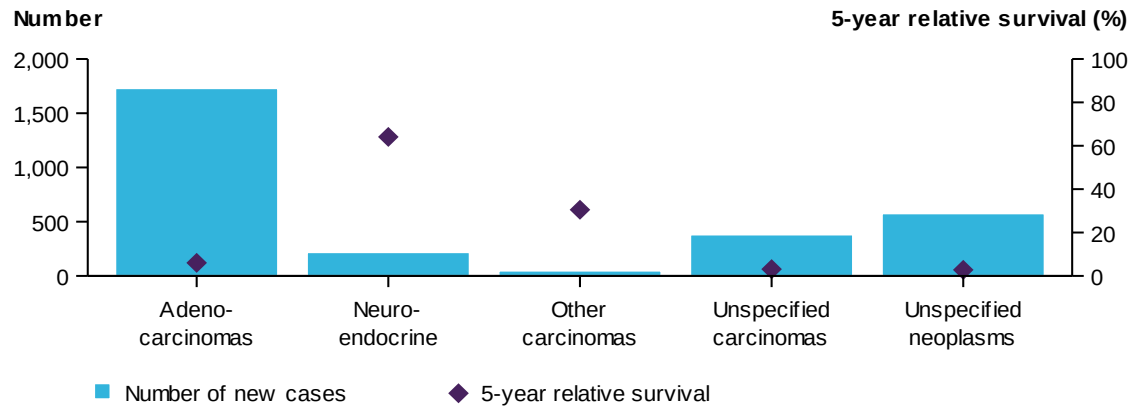
Source: Table A3.3.

Figure 3.5: Incidence (2013) and 5-year relative survival (2010–2014) for cancer of the exocrine pancreas, by subsite

Histology

In 2013, adenocarcinoma was the most common pancreatic cancer histological type, representing 58% of all pancreatic cancer cases diagnosed (Figure 3.6). Australians diagnosed with this histological type had a 6.0% chance of surviving 5 years compared with their counterparts in the general population. This was lower than the 5-year relative survival rate for all pancreatic cancers (8.7%) and was the 3rd lowest 5-year relative survival rate for pancreatic histological types.

Five-year relative survival was highest for neuroendocrine neoplasms (64%) and lowest for unspecified neoplasms (2.8%) (Figure 3.6). Low survival rates for unspecified neoplasms may reflect cancers unsuitable for biopsy, treatment in patients with advanced disease at diagnosis or significant comorbidities. Analysis of unpublished incidence data indicates that unspecified neoplasms are more common in older age groups.



Source: Table A3.4.

Figure 3.6: Incidence (2013) and 5-year relative survival (2010–2014) for pancreatic cancer, by histology

Stage

Stage information is currently not available on the ACD for pancreatic cancer. However, research indicates that the poorer outcomes associated with pancreatic cancer are primarily due to its presentation at an advanced stage. Early stages of pancreatic cancer do not usually produce symptoms, so it is generally advanced when it is diagnosed (AIHW 2012).

Population groups

Indigenous status

Indigenous Australians living in the jurisdictions for which data were available (see notes on page vii for more details) were 1.6 times as likely to be diagnosed with pancreatic cancer in 2009–2013 and 1.3 times as likely to die from pancreatic cancer in 2012–2016 as non-Indigenous Australians. The incidence (1.6) and mortality (1.3) rate ratio between Indigenous and non-Indigenous Australians for pancreatic cancer was higher than the same incidence rate ratio (1.1) and lower than the same mortality rate ratio (1.4) for all cancers combined. One-year relative survival was lower in Indigenous Australians (19%) than in non-Indigenous Australians (27%) (Table A2.9).

Remoteness area

Australians living in *Major cities* were 1.2 times as likely to be diagnosed with pancreatic cancer in 2009–2013 than Australians living in *Very remote* areas (Table A2.10). Australians living in *Outer regional* areas were 1.3 times as likely to die from pancreatic cancer in 2011–2016 compared with Australians living in *Very remote* areas (Table A2.11). The pancreatic cancer incidence (0.8) and mortality (0.8) rate ratio for Australians living in *Very remote* areas compared with those living in *Major cities* was lower than the same incidence (0.9) and mortality (1.2) rate ratio for all cancers combined. The 5-year observed survival rate was lower for Australians living in *Outer regional* areas (6.0%) and higher for Australians living in *Major cities* (8.3%). Note that observed survival could not be calculated for *Remote* and *Very remote* areas due to small numbers (Table A2.12).

Socioeconomic disadvantage

Australians in the lowest socioeconomic group were 1.2 times as likely to be diagnosed with pancreatic cancer in 2009–2013 (Table A2.13) and 1.2 times as likely to die from pancreatic cancer in 2012–2016 compared with Australians in the highest socioeconomic group (Table A2.14). The pancreatic cancer incidence (1.2) rate ratio between Australians in the lowest and highest socioeconomic group was higher than the same incidence (1.0) rate ratio for all cancers combined. The pancreatic cancer mortality (1.2) rate ratio between Australians in the lowest and highest socioeconomic group was lower than the same mortality (1.4) rate ratio for all cancers combined. The 5-year observed survival rate was lower for Australians in the 2nd lowest socioeconomic groups (6.5%) and higher for Australians in the highest socioeconomic group (10%) (Table A2.15).

3.2 Treatment

Hospitalisations

In 2016–17, there were 35,095 pancreatic cancer-related hospitalisations. This accounted for 2.9% of cancer-related hospitalisations and 16% of digestive-tract cancer-related hospitalisations in Australia (Table A2.20). Of these hospitalisations, 54% were for males and 46% were for females, which is consistent with the incidence pattern (Table 3.1). In 21% of these hospitalisations, pancreatic cancer was the principal diagnosis (Table 3.2).

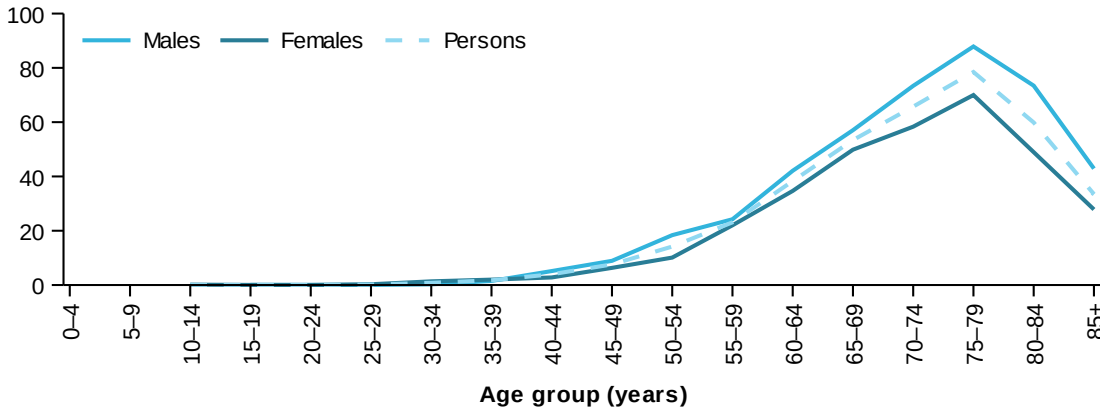
Table 3.2: Hospitalisations related to pancreatic cancer, by sex, 2016–17

	Males			Females			Persons		
	Number	%	ASR	Number	%	ASR	Number	%	ASR
Principal diagnosis of cancer	3,785	10.8	2.9	3,623	10.3	2.4	7,408	21.1	2.6
Additional diagnosis of cancer	15,115	43.1	11.2	12,572	35.8	8.6	27,687	78.9	9.8
All pancreatic cancer-related hospitalisations	**18,900**	**53.9**	**14.0**	**16,195**	**46.1**	**11.0**	**35,095**	**100.0**	**12.4**

Source: AIHW NHMD.

Age group

In 2016–17, the age-specific pancreatic cancer-related hospitalisation rate increased with age up to age group 75–79 before decreasing for those aged 80 or older (Figure 3.7). Similar rates were observed between males and females for all ages up to age group 45–49, before differences become more noticeable for age groups thereafter.

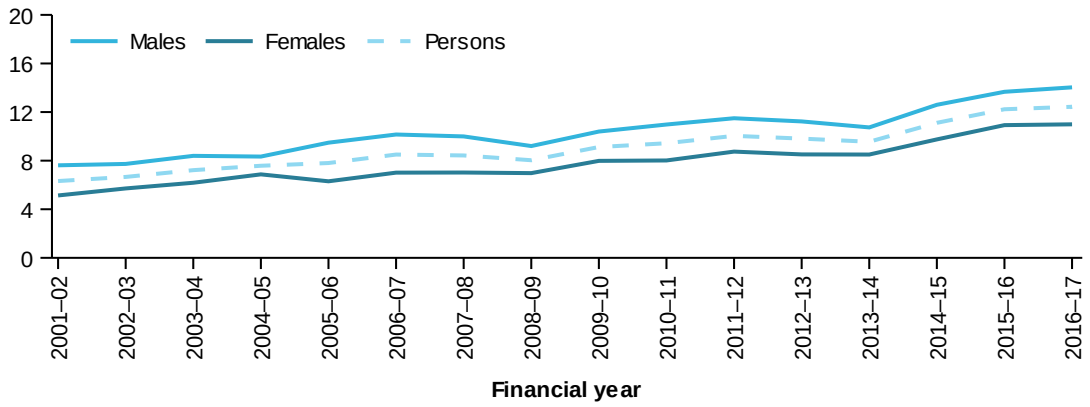


Source: Table A3.5.

Figure 3.7: Age-specific rates for hospitalisations related to pancreatic cancer, by age group and sex, 2016–17

Trend

Between 2001–02 and 2016–17, the age-standardised pancreatic cancer-related hospitalisation rate increased from 6.3 to 12 hospitalisations per 10,000 (Figure 3.8). Similar trends were observed for males and females, with males having consistently higher rates than females.



Source: Table A3.6.

Figure 3.8: All pancreatic cancer-related hospitalisations, by sex, 2001–02 to 2016–17

Selected surgical procedures

In 2016–17, there were 705 surgical procedures (see Table D5 for details) related to pancreatic cancer. There were more procedures in males (54%) than in females (46%) (Table 3.3), which was consistent with the incidence pattern (Table 3.1). A pancreatectomy procedure was reported for 98% of surgical procedures. See Appendix C for information on how surgical procedures were calculated.

Table 3.3: Number of surgical procedures, pancreatic cancer, by sex, 2016–17

	Males		Females		Persons	
Procedure type	**Number**	**%**	**Number**	**%**	**Number**	**%**
Pancreatectomy	376	97.9	314	97.8	690	97.9
Other excisions	n.p.	n.p.	n.p.	n.p.	15	2.1
All surgical procedures	**384**	**100.0**	**321**	**100.0**	**705**	**100.0**

Source: AIHW NHMD.

Chemotherapy

In 2016–17, there were 26,397 chemotherapy procedures related to pancreatic cancer. This accounted for 15% of all digestive-tract cancer chemotherapy procedures and 4% of all cancer-related chemotherapy procedures. There were more chemotherapy procedures in males (55%) than females (45%) (Table A2.23), which was consistent with the incidence pattern (Table 3.1). See Appendix C for information on how chemotherapy procedures were calculated.

Radiotherapy

In 2016–17, there were 466 radiotherapy courses where the principal diagnosis was recorded as pancreatic cancer. This accounted for 0.7% of all radiotherapy courses provided and 7.5% of all digestive-tract cancer-related radiotherapy courses. A similar number of courses were provided to males as females (Table A2.24).

3.3 Survivorship population

Cancer survivorship focuses on the health and wellbeing of a person living with and beyond cancer (Cancer Australia 2017). See Section 2.4 for a full description of cancer survivorship, including data limitations. At the end of 2013, there were 3,045 people alive who were diagnosed with pancreatic cancer in the previous 5 years. Five-year prevalence for pancreatic cancer was 1.1 times higher in males than in females (Table 3.4), which is consistent with the incidence pattern (Table 3.1).

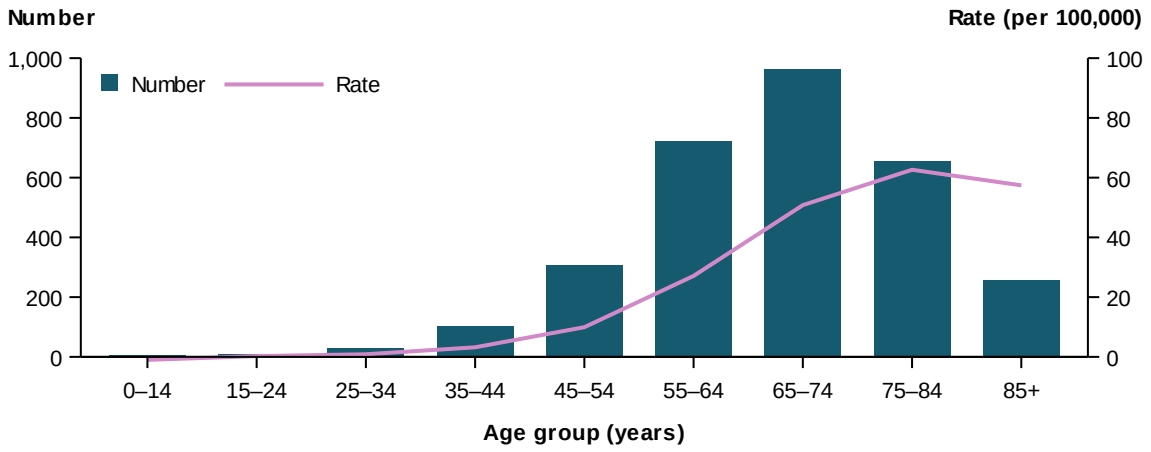
Table 3.4: Limited-duration prevalence of pancreatic cancer, by sex, as at end of 2013

	Males			Females			Persons		
	Number	% of cases	Rate	Number	% of cases	Rate	Number	% of cases	Rate
1-year prevalence	799	51.1	6.9	766	48.9	6.5	1,565	100.0	6.7
5-year prevalence	1,566	51.4	13.5	1,479	48.6	12.6	3,045	100.0	13.1
32-year prevalence	2,142	50.9	18.5	2,067	49.1	17.6	4,209	100.0	18.1

Source: AIHW ACD 2014.

Age group

At the end of 2013, 5-year prevalence rates for pancreatic cancer increased with age until age group 75–84, before decreasing for those aged 85 and older (Figure 3.9). Australians aged 75 or older accounted for 30% of all 5-year prevalent cases of pancreatic cancer.



Source: Table A3.7.

Figure 3.9: Five-year prevalence of pancreatic cancer, by age group, as at end of 2013

3.4 Burden from pancreatic cancer

In 2011, Australians lost 44,428 DALYs due to premature death or living with disability due to pancreatic cancer. This accounted for 5.3% of the total cancer burden, ranking pancreatic cancer the 5th greatest cause of cancer burden and the 2nd greatest cause of digestive-tract cancer burden. Males accounted for a larger proportion of the burden (55%) than females (45%) (Table 3.5).

The majority (99%) of the pancreatic cancer burden was due to dying prematurely. Compared with other digestive-tract cancers, there was a smaller non-fatal burden. Two-thirds (69%) of the non-fatal burden from pancreatic cancer is due to the metastatic and terminal phase

(50% and 19%, respectively) (Table A2.26). This includes health loss from various treatment regimens to either control the spread of the disease or to minimise pain. This reflects the poor prognosis of survival for pancreatic cancer (AIHW 2017c).

Table 3.5: Burden of disease from pancreatic cancer, by sex, 2011

	Males			Females			Persons		
	Number	% of cancer burden	Rank	Number	% of cancer burden	Rank	Number	% of cancer burden	Rank
Fatal burden (YLL)	24,347	5.5	4	19,544	5.7	4	43,890	5.6	4
Non-fatal burden (YLD)	274	1.0	17	263	1.1	18	538	1.1	20
Total burden (DALYs)	**24,621**	**5.2**	**4**	**19,807**	**5.5**	**4**	**44,428**	**5.3**	**5**

Source: AIHW burden of disease database 2011.

Age group

In 2011, the burden of pancreatic cancer increased across age groups (AIHW 2017c). Children (0–14) and adolescents and young adults (15–24) were rarely affected by pancreatic cancer. Adults (25–64) lost 19,362 DALYs due to premature death or living with disability as a result of pancreatic cancer. Among males and females, pancreatic cancer was the 6th leading cause of cancer burden, accounting for 6% and 4% of the total burden, respectively.

Older adults (65+) lost 24,974 DALYs due to premature death or living with disability as a result of pancreatic cancer. For both males and females, pancreatic cancer was the 4th leading cause of cancer burden, accounting for 4.8% and 6.8% of the total burden, respectively (Table A2.27).

Contribution of risk factors to pancreatic cancer burden

Certain personal and lifestyle factors, such as smoking and the use of smokeless tobacco products and having a high body mass, are associated with an increased risk of pancreatic cancer (IARC 2014). These preventable risk factors and their contribution to the cancer burden were examined in the ABDS 2011 study (AIHW 2016b, 2017c). See Section 2.5 for details on this study. Of these risk factors, tobacco use contributed the most individually to pancreatic cancer burden (23%) (Table 3.6).

Table 3.6: Pancreatic cancer burden attributed to selected risk factors, 2011

	Males		Females		Persons	
Risk factor	Attributable DALYs	% of pancreatic cancer burden	Attributable DALYs	% of pancreatic cancer burden	Attributable DALYs	% of pancreatic cancer burden
High body mass[(a)]	1,937	7.9	1,927	9.7	3,863	8.7
Tobacco use	5,937	24.3	4,399	22.3	10,336	23.3

(a) Estimates for high body mass are based on revised methods and improvements developed as part of extension projects done by the AIHW to look into the impact of various risk factors on chronic conditions (AIHW 2017e, 2017f, 2018c). These estimates will differ from those presented in earlier publications from the ABDS 2011 (AIHW 2016a).

Sources: AIHW ABDS 2011; AIHW (2016a, 2017d, 2017e, 2018b).

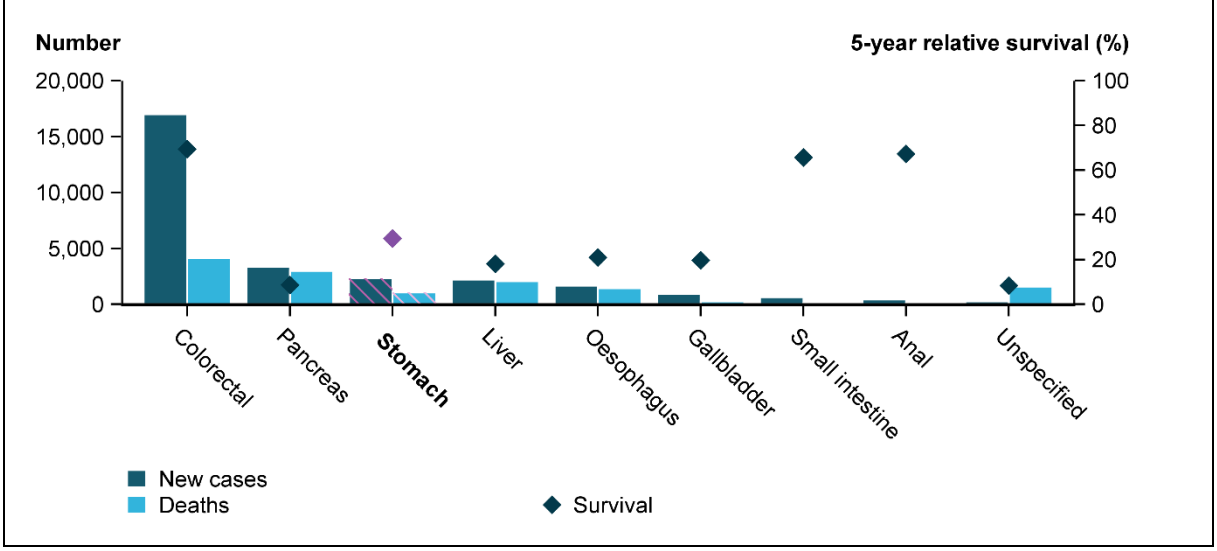
Another way to measure the impact of a risk factor on cancer is to examine population attributable factors. Population attributable fractions are a quantification of the proportion of a particular disease that is attributed to a certain risk factor. Australia-based research has

indicated a population attributable fraction of 7.8% for pancreatic cancer diagnoses attributed to being overweight and obese. This is over double the population attributable fraction for all cancers combined (3.4%) (Kendall et al. 2015).

Certain hereditary diseases, such as diabetes mellitus type 1, increases the risk of pancreatic cancer (IARC 2014). Genetics and family history are associated with increased risk of pancreatic cancer, with an estimated 5–9% due to hereditary syndromes or disease (Hassan et al. 2007; Lochan et al. 2007). Type II diabetes, chronic cirrhosis, pancreatitis and prior cholecystectomy are associated with increased risk of the disease (Huxley et al. 2005).

4 Stomach cancer (C16)

2,332 new cases	1,078 deaths
30% 5-year relative survival	22,583 DALYs



4.1 A picture of stomach cancer in Australia

In 2018, it is estimated that stomach cancer will be the 3rd most commonly diagnosed digestive-tract cancer and the 6th most common cause of digestive-tract cancer-related deaths. Stomach cancer is estimated to be the 15th most commonly diagnosed type of cancer in Australia and the 15th leading cause of cancer death. In 2018, it is estimated that 2,332 new cases of stomach cancer will be diagnosed in Australia and 1,078 people will die from this cancer. This is an average of 6 new cases a day and 3 deaths a day.

In 2010–2014, Australians diagnosed with stomach cancer had a 30% chance of surviving 5 years compared with their counterparts in the general population. This was the 4th highest 5-year relative survival rate of all digestive-tract cancers and was lower than all cancers combined (69%).

Males were 2.1 times as likely to be diagnosed with stomach cancer and 2.0 times as likely to die from stomach cancer as females. Males had lower 5-year relative survival rates than females (Table 4.1).

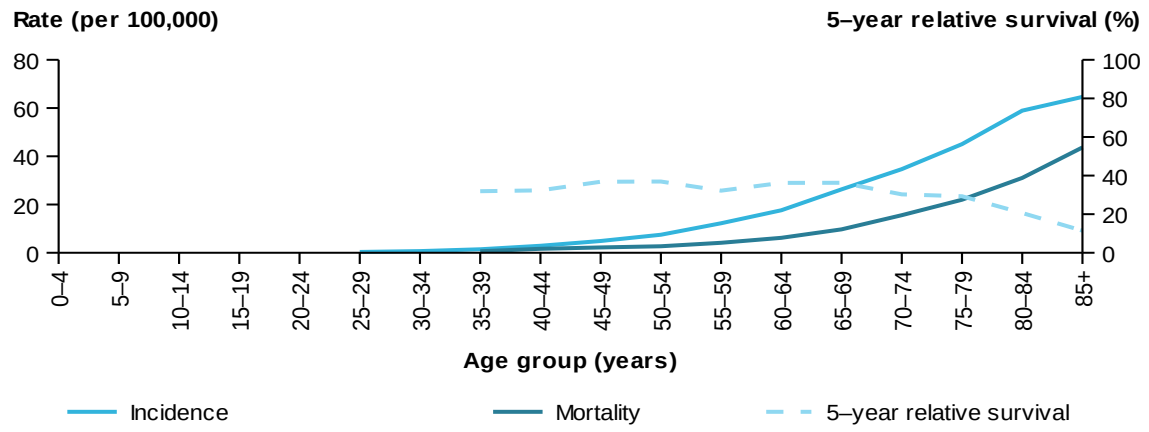
Table 4.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), stomach cancer, by sex

	Incidence		Mortality		Survival
Sex	**Number**	**ASR**	**Number**	**ASR**	**5-year relative survival (%)**
Male	1,517	10.8	677	4.9	28.0
Female	815	5.2	401	2.5	32.1
Persons	**2,332**	**7.8**	**1,078**	**3.6**	**29.5**

Sources: AIHW ACD 2014; AIHW NMD.

Age group

The stomach cancer incidence and mortality rates increased with age. In 2010–2014, the 5-year relative survival rate was consistent for people aged 35–79 and decreased in older age groups (Figure 4.1).

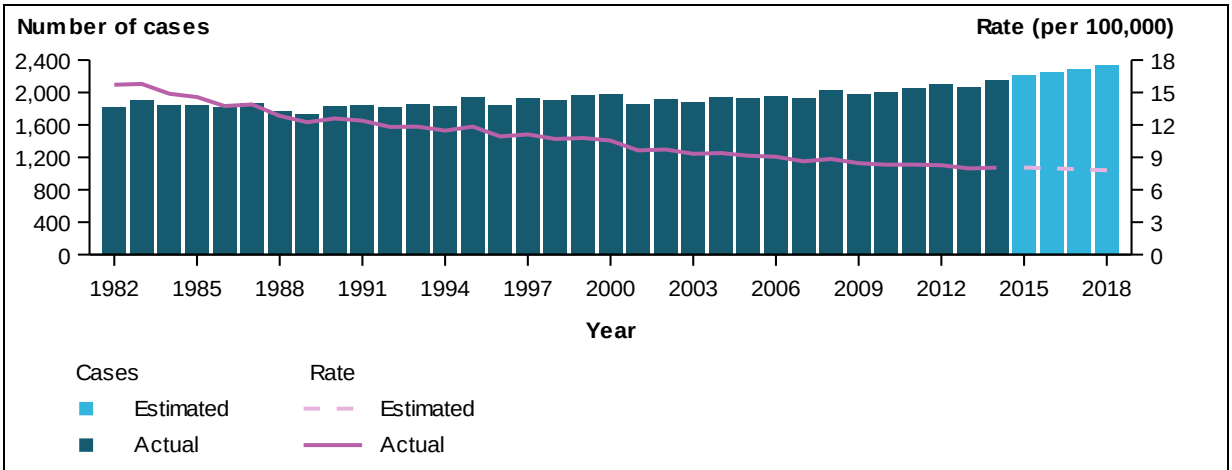


Source: Table A4.1.

Figure 4.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for stomach cancer, by age group

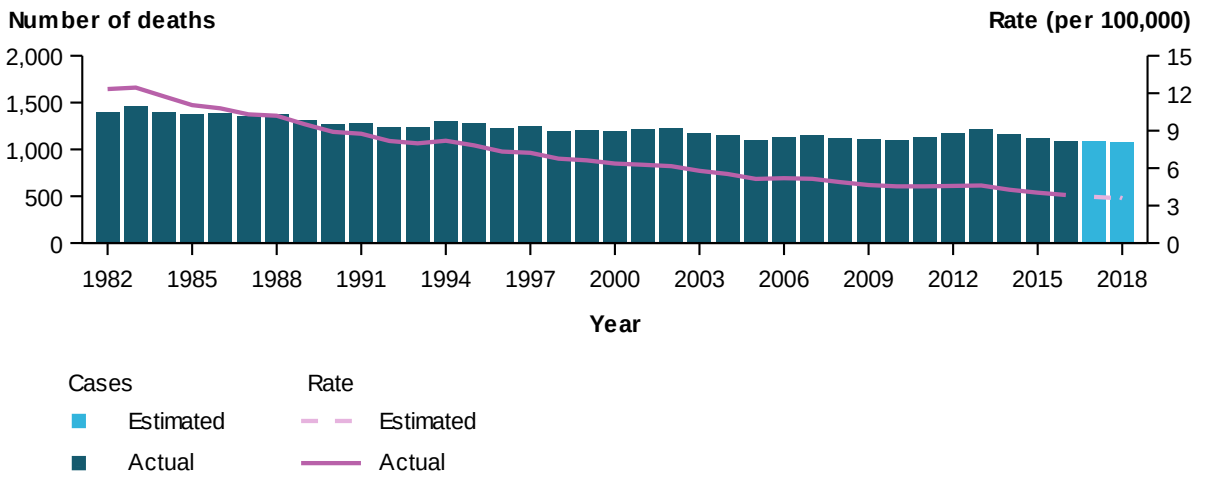
Trend

The number of new cases of stomach cancer increased from 1,825 cases in 1982 to an estimated 2,332 in 2018. The age-standardised incidence rate decreased from 16 cases per 100,000 persons to an expected 7.8 per 100,000 over the same period (Figure 4.2). The number of deaths from stomach cancer decreased from 1,398 deaths in 1982 to an estimated 1,078 in 2018. The age-standardised rate decreased from 12 deaths per 100,000 persons to an expected 3.6 per 100,000 over the same period (Figure 4.3). The decrease in the incidence and mortality rate is commonly attributed to changes in diet and nutrition, improvements in food preservation, and improved diagnosis and treatment of infections with *Helicobacter pylori* (Parkin 2001) and reduction in smoking rates (AIHW 2012).



Source: Table A4.2.

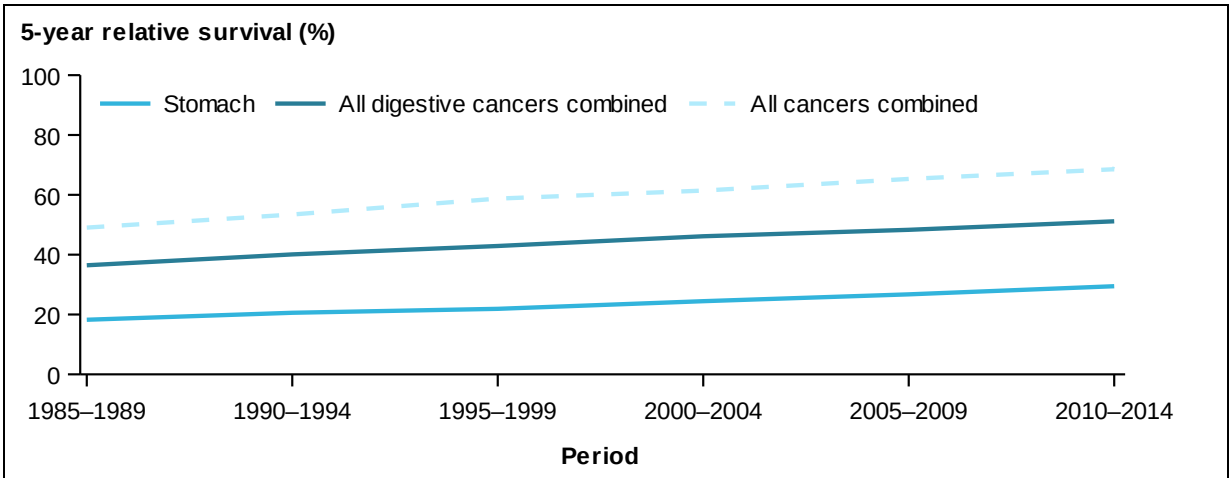
Figure 4.2: Incidence trends for stomach cancer, 1982–2014, with projections to 2018



Source: Table A4.2.

Figure 4.3: Mortality trends for stomach cancer, 1982–2016, with projections to 2018

Between 1985–1989 and 2010–2014, the 5-year relative survival rate for stomach cancer increased from 18% to 30%. Five-year relative survival was lower for stomach cancer than for all digestive-tract cancers combined and all cancers combined (Figure 4.4).



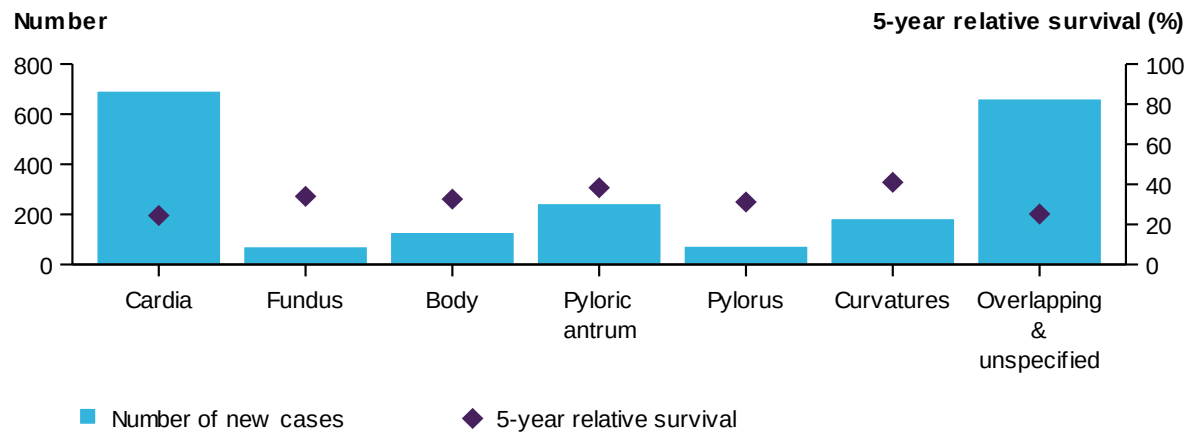
Source: Table A2.3.

Figure 4.4: Five-year relative survival for stomach cancer, all digestive-tract cancers combined and all cancers combined, 1985–1989 to 2010–2014

Characteristics

Subsite

In 2013, the cardia (including cardio-oesophageal junction) was the most common stomach cancer subsite, representing 34% of all stomach cancer cases diagnosed. Australians diagnosed with this subsite had a 24% chance of surviving 5 years compared with their counterparts in the general population. This was lower than the 5-year relative survival rate for all stomach cancers (30%) and was the lowest 5-year relative survival rate for stomach cancer subsites. Five-year relative survival was highest for curvatures of the stomach (41%) (Figure 4.5).



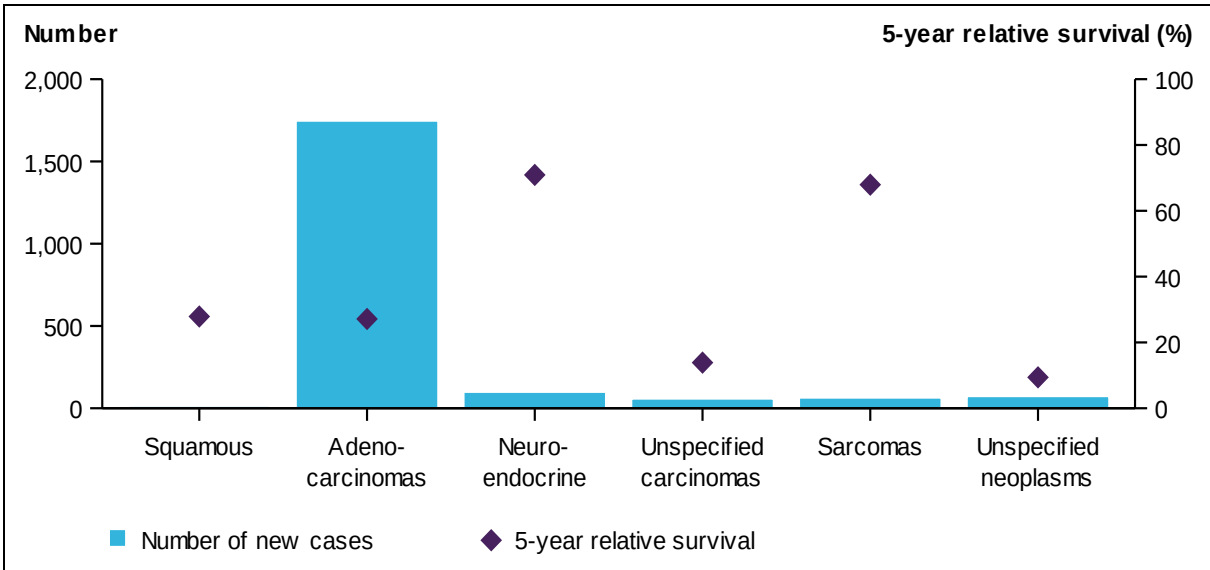
Source: Table A4.3.

Figure 4.5: Incidence (2013) and 5-year relative survival (2010–2014) for stomach cancer, by subsite

Histology

In 2013, adenocarcinoma was the most common stomach cancer histological type, representing 85% of all stomach cancer cases diagnosed. Australians diagnosed with this histological type had a 27% chance of surviving 5 years compared with their counterparts in the general population. This was lower than the 5-year relative survival rate for all stomach cancers (30%) and was the 3rd lowest 5-year relative survival rate for stomach histological types.

Five-year relative survival was highest for neuroendocrine neoplasms (71%) and lowest for unspecified neoplasms (9.4%) (Figure 4.6). Low survival rates for unspecified neoplasms may reflect cancers unsuitable for biopsy, treatment in patients with advanced disease at diagnosis or significant comorbidities. Analysis of unpublished incidence data indicates that unspecified neoplasms are more common in older age groups.



Source: Table A4.4.

Figure 4.6: Incidence (2013) and 5-year relative survival (2010–2014) for stomach cancer, by histology

Population groups

Indigenous status

Indigenous Australians living in the jurisdictions for which data were available (see notes on page vii for more details) were 1.5 times as likely to be diagnosed with stomach cancer in 2009–2013 and 1.6 times as likely to die from stomach cancer in 2012–2016 as non-Indigenous Australians. The incidence (1.5) and mortality (1.6) rate ratio between Indigenous and non-Indigenous Australians for stomach cancer was higher than the same incidence rate ratio (1.1) and the mortality rate ratio (1.4) for all cancers combined. Five-year relative survival was lower in Indigenous Australians (19%) than in non-Indigenous Australians (28%) (Table A2.9).

Remoteness area

Australians living in *Major cities* of Australia were 1.3 times as likely to be diagnosed with stomach cancer in 2009–2013 (Table A2.10) and 1.2 as likely to die from stomach cancer in 2011–2016 compared with Australians living in *Very remote* areas (Table A2.11). The stomach cancer incidence (0.8) and mortality (0.8) rate ratio for Australians living in *Very remote* areas compared with those living in *Major cities* was lower than the same incidence (0.9) and mortality (1.2) rate ratio for all cancers combined. The 5-year observed survival rate was lower for Australians living in *Remote* and *Very remote* areas (20%) and higher for Australians living in *Major cities* (27%) (Table A2.12).

Socioeconomic disadvantage

Australians in the lowest socioeconomic group were 1.3 times as likely to be diagnosed with stomach cancer in 2009–2013 (Table A2.13) and 1.4 times as likely to die from stomach cancer in 2012–2016 compared with Australians in the highest socioeconomic group (Table A2.14). The stomach cancer incidence (1.3) rate ratio between Australians in the lowest and highest socioeconomic group was higher than the same incidence (1.0) rate ratio for all cancers combined. The stomach cancer mortality (1.4) rate ratio between Australians in the lowest and highest socioeconomic group was similar than the same mortality (1.4) rate ratio for all cancers combined. The 5-year observed survival rate was lower for Australians in the two lowest socioeconomic groups (23%) and higher for Australians in the highest socioeconomic group (29%) (Table A2.15).

4.2 Treatment

Hospitalisations

In 2016–17, there were 16,993 stomach cancer-related hospitalisations. This accounted for 1.4% of cancer-related hospitalisations and 7.7% of digestive-tract cancer-related hospitalisations in Australia (Table A2.20). Of these, 68% were for males and 32% were for females, which is consistent with the incidence pattern (Table 4.1). In 31% of these hospitalisations, stomach cancer was the principal diagnosis (Table 4.2).

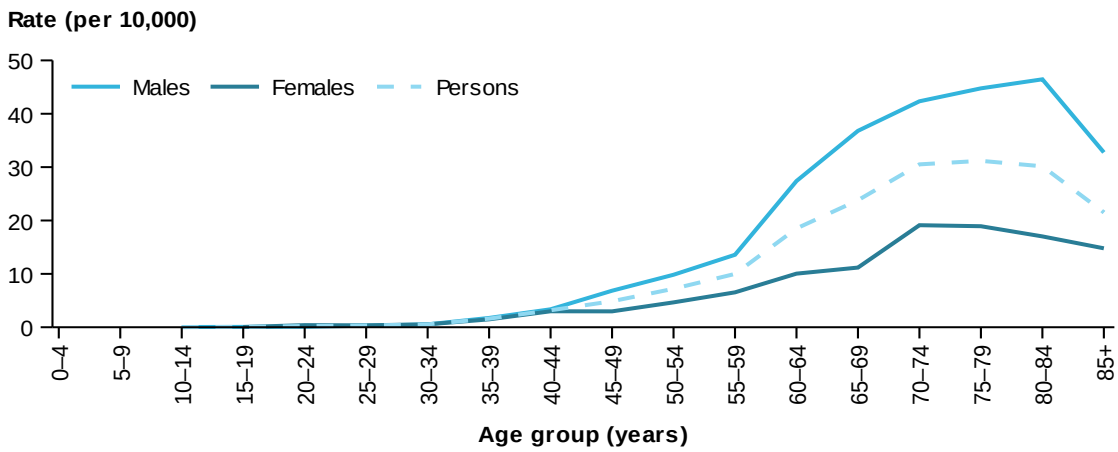
Table 4.2: Hospitalisations related to stomach cancer, by sex, 2016–17

	Males			Females			Persons		
	No	%	ASR	No	%	ASR	No	%	ASR
Principal diagnosis of cancer	3,384	19.9	2.5	1,872	11.0	1.3	5,256	30.9	1.9
Additional diagnosis of cancer	8,216	48.3	6.1	3,521	20.7	2.5	11,737	69.1	4.2
All stomach cancer-related hospitalisations	**11,600**	**68.3**	**8.6**	**5,393**	**31.7**	**3.7**	**16,993**	**100.0**	**6.1**

Source: AIHW NHMD.

Age group

In 2016–17, the age-specific stomach cancer-related hospitalisation rate increased with age, reaching a peak for age group 75–79, before decreasing in older age groups (Figure 4.7).

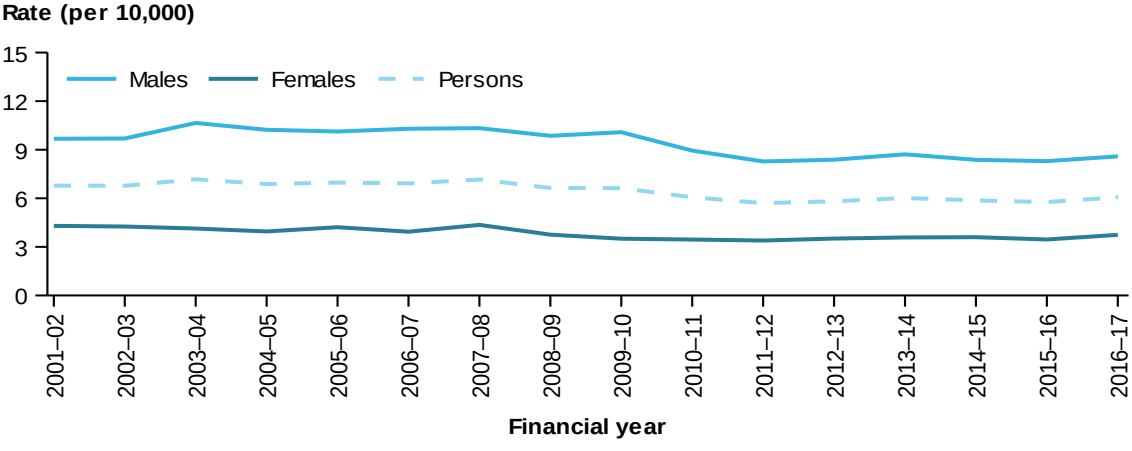


Source: Table A4.5.

Figure 4.7: Age-specific rates of hospitalisations related to stomach cancer, by age group and sex, 2016–17

Trend

Between 2001–02 and 2016–17, the age-standardised stomach cancer-related hospitalisation rate remained relatively stable, varying between 5.7 and 7.2 per 10,000 (Figure 4.8). Similar trends were observed for males and females, with males having higher rates than females.



Source: Table A4.6.

Figure 4.8: All stomach cancer-related hospitalisations, by sex, 2001–02 to 2016–17

Selected surgical procedures

In 2016–17, there were 804 surgical procedures (see Table D6 for details) related to stomach cancer. There were more procedures in males (65%) than in females (35%) (Table 4.3), which was consistent with the incidence pattern (Table 4.1). A gastrectomy procedure was reported for 78% of surgical procedures. See Appendix C for information on how surgical procedures were calculated.

Table 4.3: Number of surgical procedures, stomach cancer, by sex, 2016–17

	Males		Females		Persons	
Procedure type	**Number**	**%**	**Number**	**%**	**Number**	**%**
Gastrectomy	432	82.1	197	70.9	629	78.2
Other excision procedures on stomach	37	7.0	41	14.7	78	9.7
Gastrostomy or gastroenterostomy	57	10.8	40	14.4	97	12.1
All surgical procedures	**526**	**100.0**	**278**	**100.0**	**804**	**100.0**

Source: AIHW NHMD.

Chemotherapy

In 2016–17, there were 12,322 chemotherapy procedures related to stomach cancer. This accounted for 6.8% of all digestive-tract cancer chemotherapy procedures and 1.8% of all cancer-related chemotherapy procedures. There were more chemotherapy procedures in males (70%) than females (30%) (Table A2.23), which was consistent with the incidence pattern (Table 4.1). See Appendix C for information on how chemotherapy procedures were calculated.

Radiotherapy

In 2016–17, there were 415 radiotherapy courses for a principal diagnosis of stomach cancer. This accounted for 0.7% of all radiotherapy courses provided and 6.7% of all digestive-tract cancer-related radiotherapy courses. More courses were provided to males than females (Table A2.24).

4.3 Survivorship population

Cancer survivorship focuses on the health and wellbeing of a person living with and beyond cancer (Cancer Australia 2017). See Section 2.4 for a full description of cancer survivorship, including data limitations. At the end of 2013, there were 4,150 people alive who were diagnosed with stomach cancer in the previous 5 years (Table 4.4). Five-year prevalence for stomach cancer was 1.9 times higher in males than females, which is consistent with the incidence pattern (Table 4.1).

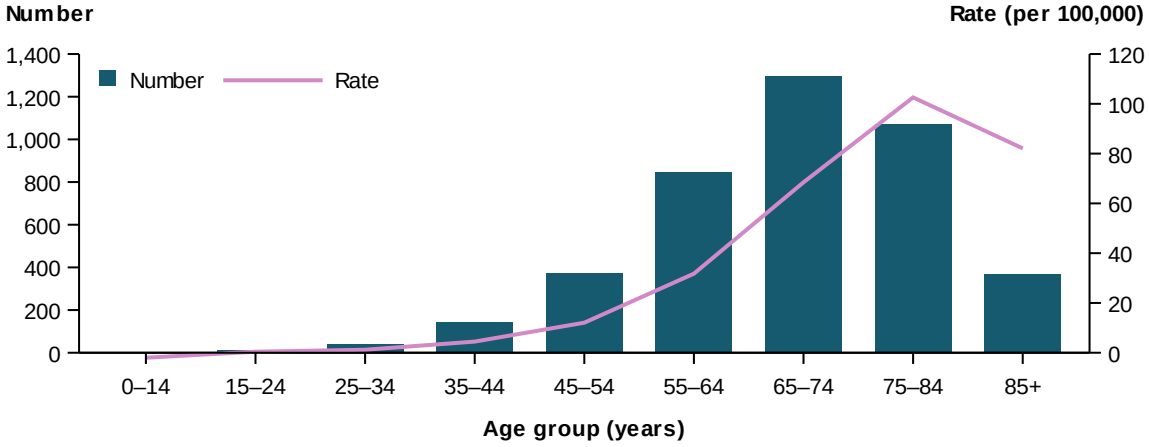
Table 4.4: Limited-duration prevalence of stomach cancer, by sex, as at end of 2013

	Males			Females			Persons		
	Number	% of cases	Rate	Number	% of cases	Rate	Number	% of cases	Rate
1-year prevalence	1,011	67.9	8.7	478	32.1	4.1	1,489	100.0	6.4
5-year prevalence	2,713	65.4	23.4	1,437	34.6	12.3	4,150	100.0	17.8
32-year prevalence	5,894	62.7	50.9	3,508	37.3	29.9	9,402	100.0	40.4

Source: AIHW ACD 2014.

Age group

Five-year prevalence rates for stomach cancer increased with age from age group 15–24 to age group 75–84, before decreasing for those aged 85 and older (Figure 4.9). At the end of 2013, Australians aged 75 and older accounted for over one-third (35%) of all 5-year prevalent cases for stomach cancer.



Source: Table A4.7.

Figure 4.9: Five-year prevalence of stomach cancer, by age group, as at end of 2013

4.4 Burden from stomach cancer

In 2011, Australians lost 22,583 DALYs due to premature death or living with disability due to stomach cancer. This accounted for 2.7% of the total cancer burden, ranking stomach cancer as the 13th greatest cause of cancer burden and the 5th highest cause of digestive-tract cancer burden. Stomach cancer ranked lower in burden compared with other less common digestive-tract cancers, reflecting the slightly higher survival rates.

Stomach cancer accounted for a greater proportion of cancer burden in males (3.1%) than females (2.2%). Almost double the number of years of life lost were attributed to males than females for the same year (Table 4.5).

The majority (97%) of the stomach cancer burden was due to dying prematurely. Compared with other digestive-tract cancers, there was a higher non-fatal burden component. Almost half (49%) of the non-fatal burden from stomach cancer is from health loss due to diagnosis (for example, biopsies) and primary therapy (for example, surgery, chemotherapy and radiotherapy), and 23% is from health loss during the control phase, and includes general worry and daily medications (Table A2.26) (AIHW 2017c).

Table 4.5: Burden of disease from stomach cancer, by sex, 2011

	Males			Females			Persons		
	Number	% of cancer burden	Rank	Number	% of cancer burden	Rank	Number	% of cancer burden	Rank
Fatal burden (YLL)	14,176	3.2	11	7,826	2.3	11	22,002	2.8	13
Non-fatal burden (YLD)	372	1.3	15	209	0.9	21	581	1.1	18
Total burden (DALYs)	**14,548**	**3.1**	**12**	**8,035**	**2.2**	**11**	**22,583**	**2.7**	**13**

Source: AIHW burden of disease database 2011.

Age group

In 2011, the stomach cancer burden increased across age groups (AIHW 2017c). Children (0–14) and adolescents and young adults (15–24) were rarely impacted by stomach cancer. Adults (25–64) lost 11,153 DALYs due to premature death or living with disability as a result of stomach cancer. Among males, stomach cancer was the 11th leading cause of cancer burden, accounting for 3.5% of the total burden. Among females, it was the 11th leading cause of cancer burden, accounting for 2.3% of the total burden.

Older adults (65+) lost 11,354 DALYs due to premature death or living with disability as a result of stomach cancer. Among males in this age group, stomach cancer was the 12th leading cause of cancer burden, accounting for 2.9% of the total burden. Among females, it was the 14th leading cause of cancer burden, accounting for 2.1% of the total burden (Table A2.27).

Contribution of risk factors to stomach cancer burden

Personal and lifestyle factors such as smoking and a diet high in sodium are associated with an increased risk of stomach cancer. These preventable risk factors and their contribution to the cancer burden were examined in the ABDS 2011 (AIHW 2016b, 2017c). See Section 2.5 for details on this study. Of these risk factors, tobacco use contributed the most individually to stomach cancer burden (14%). A greater proportion of stomach cancer burden in males (16%) was due to tobacco use than in females (12%) (Table 4.6).

Table 4.6: Stomach cancer burden attributed to selected risk factors, 2011

	Males		Females		Persons	
Risk factor	Attributable DALYs	% of stomach cancer burden	Attributable DALYs	% of stomach cancer burden	Attributable DALYs	% of stomach cancer burden
Tobacco use	2,313	16.0	920	11.6	3,234	14.3
Diet high in sodium	467	3.2	147	1.8	614	2.7

Sources: AIHW ABDS 2011; AIHW (2016a, 2017d, 2017e, 2018b).

There is some evidence that other lifestyle factors, such as consumption of alcoholic beverages (Agudo et al. 1992; Bagnardi et al. 2001a, 2001b; Kabat et al. 1993; Vaughan et al. 1995) and body fatness (Chen et al. 2013; MacInnis et al. 2006; WCRF/AICR 2018, WCRF 2018; Yang et al. 2009) may be associated with stomach cancer.

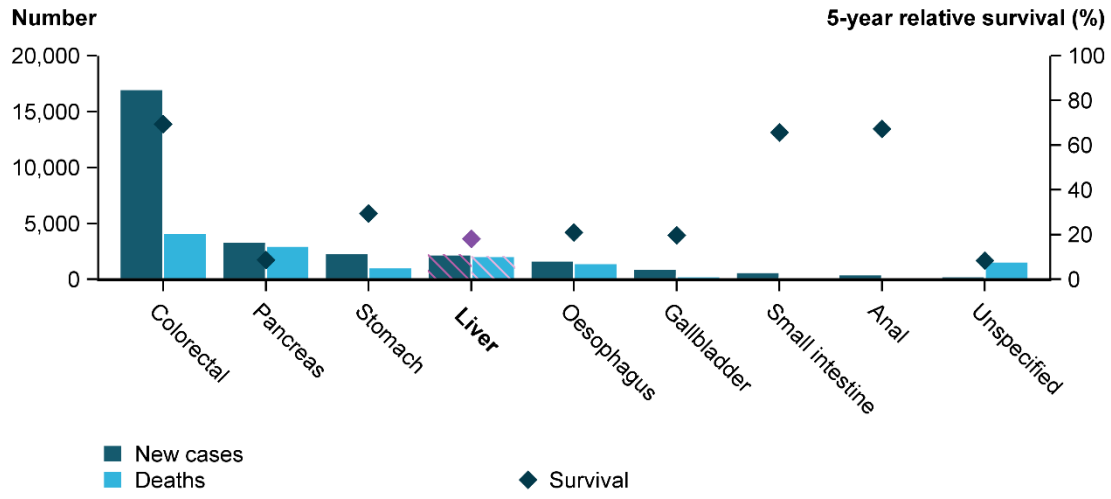
Certain viral and bacterial infections of the stomach can lead to formation of carcinogenic substances and consequently increase the risk of stomach cancer (IARC 2014). *Helicobacter pylori*, a common bacterium that infects the stomach, is associated with an increased risk ofr stomach cancer (Forman & Burley 2006; WCRF/AICR 2007). In Australia, about 40% of

people over 60 years of age have *Helicobacter pylori*, and this infection is higher in Indigenous communities than in non-Indigenous communities (GESA 2010). *Helicobacter pylori* is estimated to confer a 1–2% risk of gastric cancer (Mitchell & Katelaris 2016).

Occupational and general exposure to carcinogenic and/or toxic substances can be risk factors for stomach cancer. Furthermore, exposure to ionising radiation from, for example, diagnostic X-rays, working in the nuclear industry and natural sources is often associated with increased risk of stomach cancer (IARC 2014). Certain genetic anomalies can be associated with an increased risk of stomach cancer (IARC 2014).

5 Liver cancer (C22)

2,215 new cases	2,088 deaths
18% 5-year relative survival	29,376 DALYs



5.1 A picture of liver cancer in Australia

Liver cancer can be divided into 2 types: primary liver cancer and secondary liver cancer (that is, cancer that develops elsewhere in the body and spreads to the liver). While secondary liver cancer is more common than primary liver cancer (Cancer Council NSW 2007), only primary cases are recorded in the ACD; hence, this report refers to primary liver cancer only.

In 2018, it is estimated that liver cancer will be the 4th most commonly diagnosed digestive-tract cancer and the 3rd most common cause of digestive-tract cancer-related deaths. Liver cancer is estimated to be the 16th most commonly diagnosed type of cancer in Australia and the 7th leading cause of cancer death. In 2018, it is estimated that 2,215 new cases of liver cancer will be diagnosed in Australia and 2,088 people will die from this cancer. This is an average of 6 new cases a day and 6 deaths a day.

In 2010–2014, Australians diagnosed with liver cancer had an 18% chance of surviving 5 years compared with their counterparts in the general population (Table 5.1). This was the 3rd lowest 5-year relative survival rate of all digestive-tract cancers and was lower than all cancers combined (69%).

Males are 3.4 times as likely to be diagnosed with liver cancer and 2.4 times as likely to die from liver cancer as females. Prevalence of risk factors might be related to the higher rates in males. Research also indicates that this difference may be due to a difference in the production of a protein that leads to inflammation in the liver, with oestrogen acting to suppress this protein. The higher levels of oestrogen in females could lead to lower levels of inflammation, and therefore subsequent conditions including liver cancer, compared with males (Clodfelter et al. 2006; Naugler et al. 2007; Tangkijvanich et al. 2004; Waxman & Holloway 2009). Females had lower 5-year relative survival rates than males.

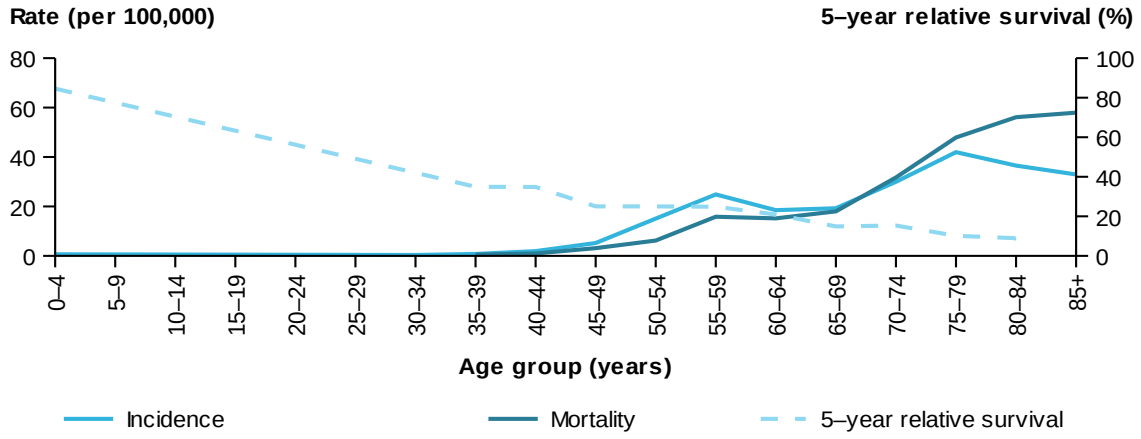
Table 5.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), liver cancer, by sex

	Incidence		Mortality		Survival
Sex	**Number**	**ASR**	**Number**	**ASR**	**5-year relative survival (%)**
Male	1,669	12.0	1,407	10.0	18.7
Female	545	3.5	681	4.2	16.5
Persons	**2,215**	**7.6**	**2,088**	**7.0**	**18.1**

Sources: AIHW ACD 2014; AIHW NMD.

Age group

In 2018, it is estimated that the liver cancer incidence and mortality rate will increase with age until age group 55–59 and then decrease until age group 65–69, before increasing. In 2010–2014, the 5-year relative survival rate steadily decreased with age (Figure 5.1).



Source: Table A5.1.

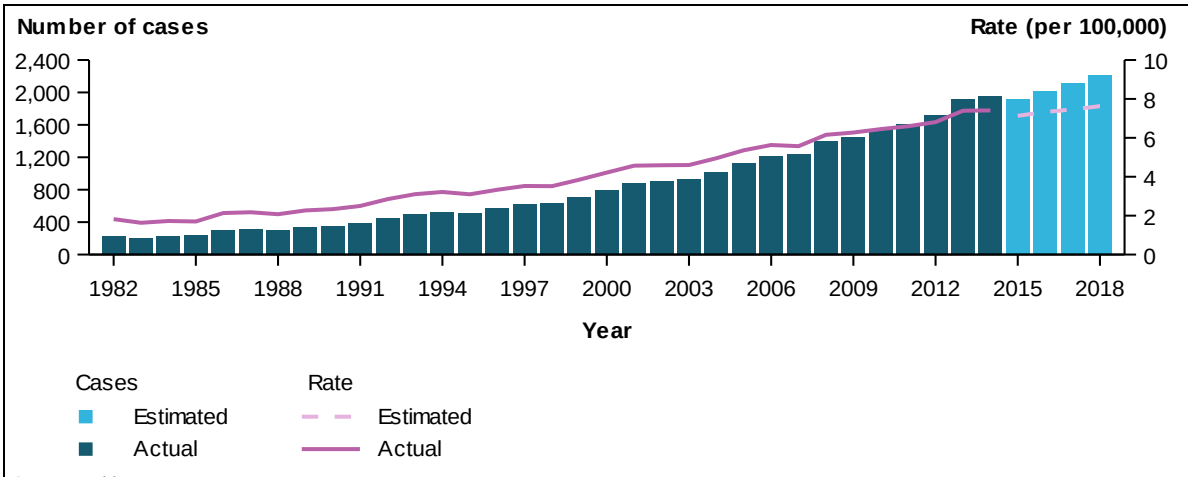
Figure 5.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for liver cancer, by age group

Trend

The number of new cases of liver cancer increased from 229 cases in 1982 to an estimated 2,215 in 2018. The age-standardised incidence rate increased from 1.8 cases per 100,000 persons to an expected 7.6 per 100,000 over the same time period (Figure 5.2).

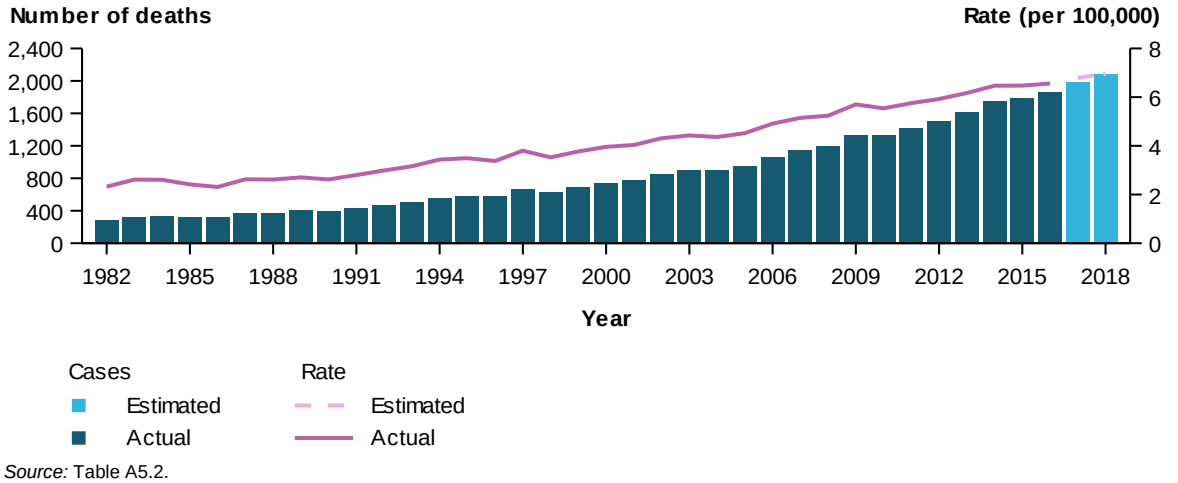
The number of deaths from liver cancer increased from 282 deaths in 1982 to an estimated 2,088 in 2018. The age-standardised death rate increased from 2.3 deaths per 100,000 persons to an expected 7.0 per 100,000 over the same time period (Figure 5.3).

The increase in incidence and mortality rates are likely to reflect changes in prevalent risk factors. Analysis of incidence rates by area in New South Wales show that liver cancer incidence was higher in areas that have a high proportion of people born overseas, especially those from South-Eastern and Eastern Asia and Middle and Western Africa, where hepatitis B and C infections are endemic (Alam et al. 2009).



Source: Table A5.2.

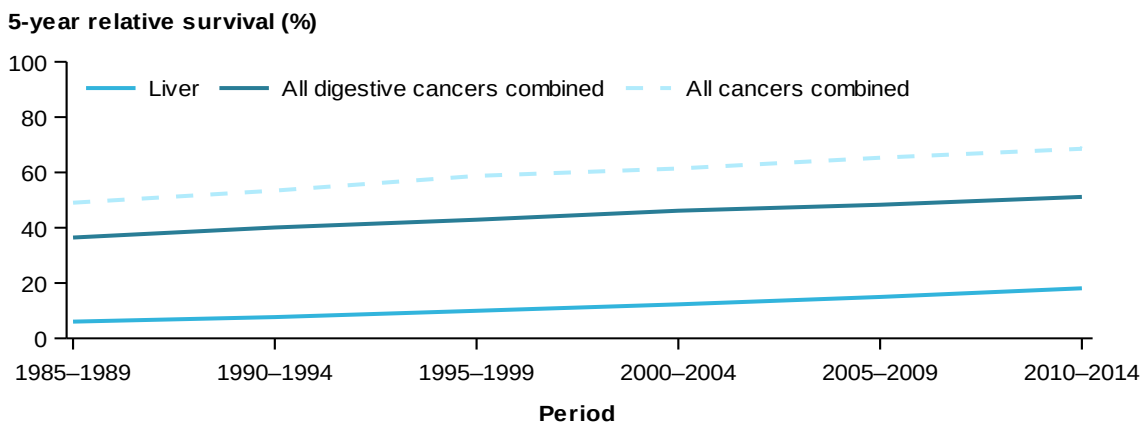
Figure 5.2: Incidence trends for liver cancer, 1982–2014, with projections to 2018



Source: Table A5.2.

Figure 5.3: Mortality trends for liver cancer, 1982–2016, with projections to 2018

Between 1985–1989 and 2010–2014, the 5-year relative survival rate for liver cancer increased from 6.0% to 18%. Five-year relative survival was lower for liver cancer than for all digestive-tract cancers combined and all cancers combined (Figure 5.4).



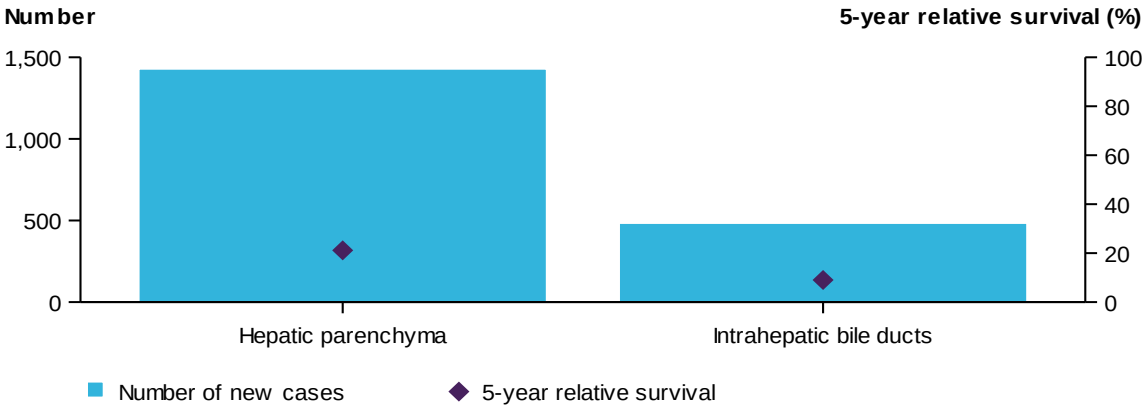
Source: Table A2.3.

Figure 5.4: Five-year relative survival for liver cancer, all digestive-tract cancers combined and all cancers combined, 1985–1989 to 2010–2014

Characteristics

Subsite

In 2013, hepatic parenchyma was the most common liver cancer subsite, representing 75% of all liver cancer cases diagnosed. Australians diagnosed with this subsite had a 21% chance of surviving 5 years compared with their counterparts in the general population. This was higher than the 5-year relative survival rate for all liver cancers (18%). Five-year relative survival was lowest for intrahepatic bile ducts (9.0%) (Figure 5.5).



Source: Table A5.3.

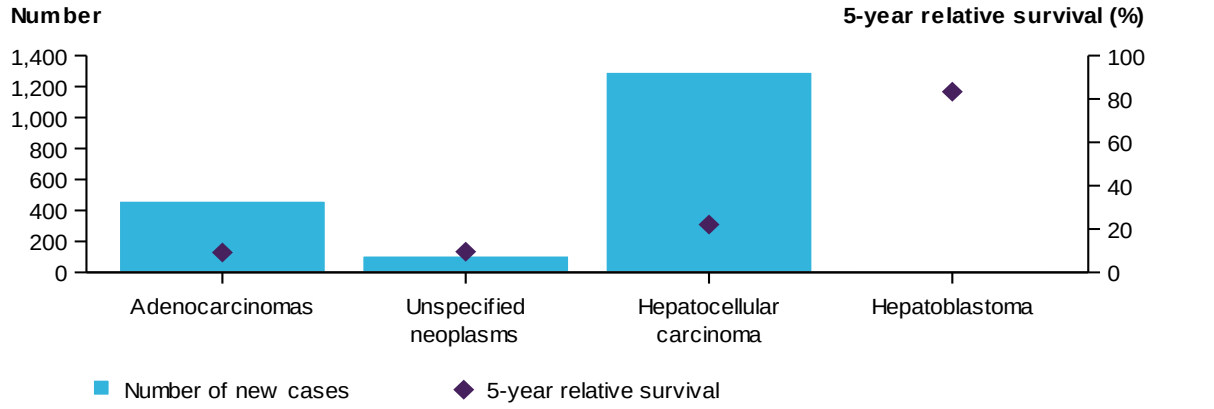
Figure 5.5: Incidence (2013) and 5-year relative survival (2010–2014) for liver cancer, by subsite

Histology

In 2013, hepatocellular carcinoma was the most common liver cancer histological type, representing 68% of all liver cancer cases diagnosed. Australians diagnosed with this histological type had a 22% chance of surviving 5 years compared with their counterparts in the general population. This was higher than the 5-year relative survival rate for all liver cancers (18%) and was the 2nd highest 5-year relative survival rate for liver histological types.

Five-year relative survival was highest for hepatoblastoma (83%) and lowest for adenocarcinomas (9.2%) and unspecified neoplasms (9.5%) (Figure 5.6). Low survival rates for unspecified neoplasms may reflect cancers unsuitable for biopsy, treatment in patients

with advanced disease at diagnosis or significant comorbidities. Analysis of unpublished incidence data indicates that unspecified neoplasms are more common in older age groups.



Source: Table A5.4.

Figure 5.6: Incidence (2013) and 5-year relative survival (2010–2014) for liver cancer, by histology

Population groups

Indigenous status

Indigenous Australians living in the jurisdictions for which data were available (see notes on page vii for more details) were 2.4 times as likely to be diagnosed in 2009–2013 and 2.4 times as likely to die from liver cancer in 2012–2016 as non-Indigenous Australians. The incidence (2.4) and mortality (2.4) rate ratio between Indigenous and non-Indigenous Australians for liver cancer was higher than the same incidence rate ratio (1.1) and mortality rate ratio (1.4) for all cancers combined. Five-year relative survival was lower in Indigenous Australians (7.7%) than in non-Indigenous Australians (18%) (Table A2.9).

Remoteness area

Australians living in *Very remote* areas of Australia were 2.1 times as likely to be diagnosed with liver cancer in 2009–2013 and 2.0 times as likely to die from liver cancer in 2012–2016 compared with Australians living in *Inner regional* areas. The liver cancer incidence (1.6) and mortality (1.7) rate ratio for Australians living in *Very remote* areas compared with those living in *Major cities* was higher than the same incidence (0.9) and mortality (1.2) rate ratio for all cancers combined (tables A2.10 and A2.11). The 5-year observed survival rate was lower for Australians living in *Outer regional* areas (10%) and higher for Australians living in *Major cities* (19%). Note that observed survival could not be calculated for *Remote* and *Very remote* areas due to small numbers (Table A2.12).

Socioeconomic disadvantage

Australians in the lowest socioeconomic group were 1.5 times as likely to be diagnosed with liver cancer in 2009–2013 (Table A2.13) and 1.6 times as likely to die from liver cancer in 2012–2016 compared with Australians in the highest socioeconomic group (Table A2.14). The liver cancer incidence (1.5) and mortality (1.6) rate ratio between Australians in the lowest and highest socioeconomic group was higher than the same incidence (1.0) and mortality (1.4) rate ratio for all cancers combined. The 5-year observed survival rate was lower for Australians in the second lowest socioeconomic group (13%) and higher for Australians in the highest socioeconomic group (20%) (Table A2.15).

5.2 Treatment

Hospitalisations

In 2016–17, there were 12,800 liver cancer-related hospitalisations. This accounted for 1.0% of cancer-related hospitalisations and 5.8% of digestive-tract cancer-related hospitalisations in Australia (Table A2.20). Of these, around 68% were for males and 32% were for females, which is consistent with the incidence pattern (Table 5.1). In 45% of these hospitalisations, liver cancer was the principal diagnosis (Table 5.2).

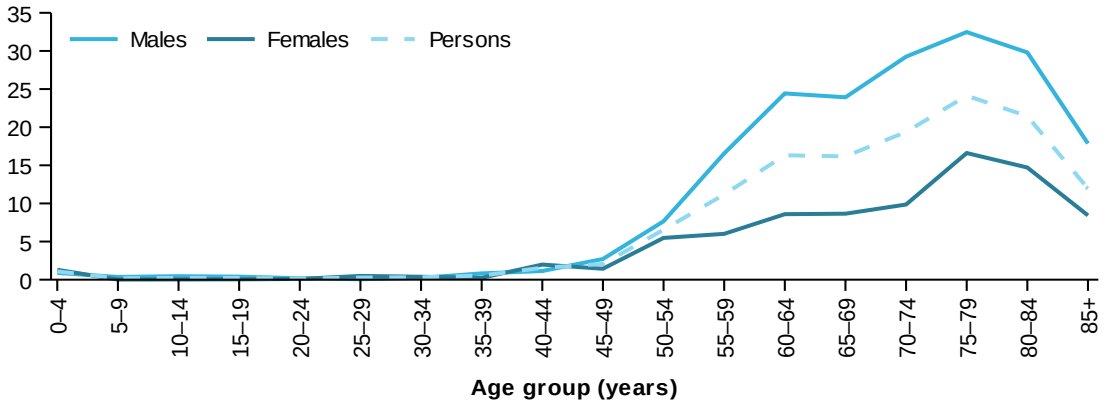
Table 5.2: Hospitalisations related to liver cancer, by sex, 2016–17

	Males			Females			Persons		
	Number	%	ASR	Number	%	ASR	Number	%	ASR
Principal diagnosis of cancer	4,188	32.7	3.1	1,506	11.8	1.0	5,694	44.5	2.0
Additional diagnosis of cancer	4,454	34.8	3.3	2,652	20.7	1.9	7,106	55.5	2.5
All liver cancer-related hospitalisations	**8,642**	**67.5**	**6.3**	**4,158**	**32.5**	**2.9**	**12,800**	**100.0**	**4.6**

Source: AIHW NHMD.

Age group

In 2016–17, the age-specific liver cancer-related hospitalisation rate remained relatively low for those aged 0–49. The rate then increased to age group 75–79, before decreasing in older age groups (Figure 5.7). There was a large difference between males and females aged 50 and older, with males having a more rapid increase than females.

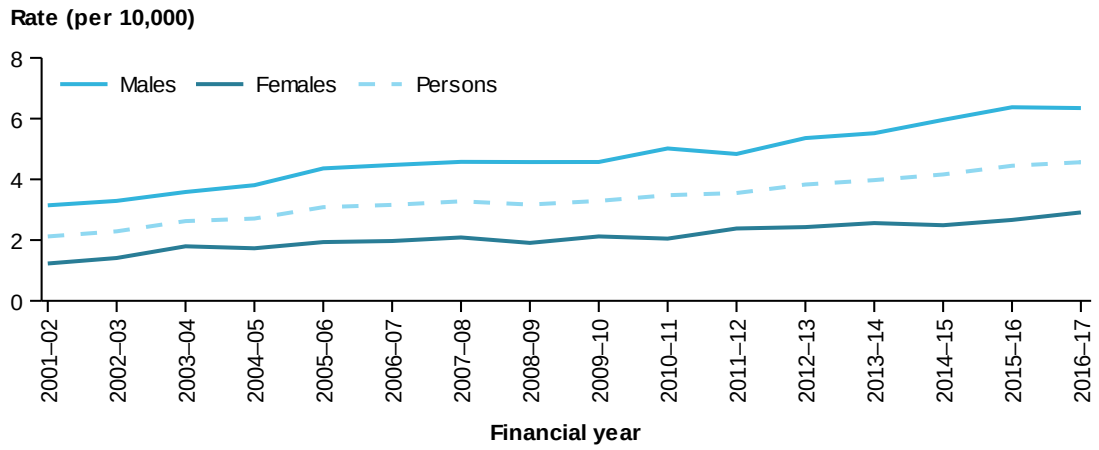


Source: Table A5.5.

Figure 5.7: Age-specific rates of hospitalisations related to liver cancer, by age group and sex, 2016–17

Trend

Between 2001–02 and 2016–17, the age-standardised liver cancer-related hospitalisation rate increased from 2.1 to 4.6 per 10,000 (Figure 5.8). A similar trend is observed in both males and females, with males consistently having higher rates than females.



Source: Table A5.6.

Figure 5.8: All liver cancer-related hospitalisations, by sex, 2001–02 to 2016–17

Selected surgical procedures

In 2016–17, there were 540 surgical procedures (see Table D7 for details) related to liver cancer. There were more procedures in males (70%) than in females (30%) (Table 5.3), which was consistent with the incidence pattern (Table 5.1). The number of surgical procedures related to liver cancer appears low compared with the number of new cases diagnosed each year and could possibly indicate advanced disease at diagnosis. A segmental resection of the liver was reported for 37% of surgical procedures. A transplantation of the liver was reported for 6% of surgical procedures. See Appendix C for information on how surgical procedures were calculated.

Table 5.3: Number of surgical procedures, liver cancer, by sex, 2016–17

	Males		Females		Persons	
Procedure type	**Number**	**%**	**Number**	**%**	**Number**	**%**
Excision of lesion of liver	28	7.4	10	6.3	38	7.0
Segmental resection of liver	144	37.9	58	36.3	202	37.4
Lobectomy of liver	120	31.6	59	36.9	179	33.1
Trisegmental resection of liver	54	14.2	27	16.9	81	15.0
Total hepatectomy	6	1.6	—	—	6	1.1
Transplantation of liver	28	7.4	6	3.8	34	6.3
All surgical procedures	**380**	**100.0**	**160**	**100.0**	**540**	**100.0**

Source: AIHW NHMD.

Chemotherapy

In 2016–17, there were 4,422 chemotherapy procedures related to liver cancer. This accounted for 2.4% of all digestive-tract cancer chemotherapy procedures and 0.6% of all cancer-related chemotherapy procedures. Liver cancer chemotherapy procedures are ranked lower than its incidence pattern. This may reflect the fact that chemotherapy is not as effective in treating liver cancer as other digestive-tract cancers (American Cancer Society 2018). There were more chemotherapy procedures in males (55%) than females (45%) (Table A2.23), which was consistent with the incidence pattern (Table 5.1). See Appendix C for information on how chemotherapy procedures were calculated.

Radiotherapy

In 2016–17, there were 244 radiotherapy courses where the principal diagnosis was recorded as liver cancer. This accounted for 0.4% of all radiotherapy courses provided and 3.9% of all digestive-tract cancer-related radiotherapy courses. More courses were provided to males than females (Table A2.24).

5.3 Survivorship population

Cancer survivorship focuses on the health and wellbeing of a person living with and beyond cancer (Cancer Australia 2017). See Section 2.4 for a full description of cancer survivorship, including data limitations. At the end of 2013, there were 2,803 people alive who were diagnosed with liver cancer in the previous 5 years. Five-year prevalence for liver cancer in males was 2.8 times that of females. Liver cancer has with the greatest difference in 5-year prevalence between males and females out of all digestive-tract cancer (Table 5.4).

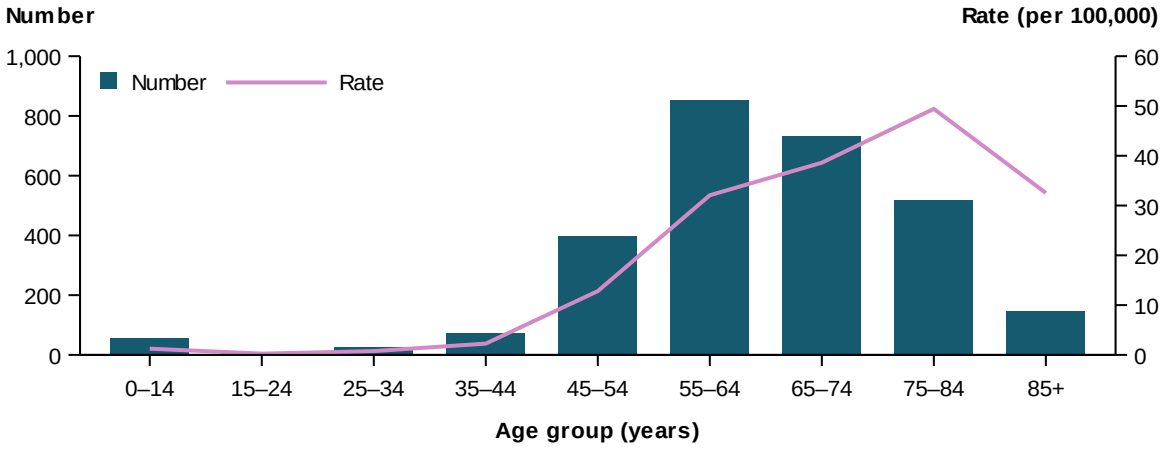
Table 5.4: Limited-duration prevalence of liver cancer, by sex, as at end of 2013

	Males			Females			Persons		
	Number	% of prevalent cases	Rate	Number	% of prevalent cases	Rate	Number	% of prevalent cases	Rate
1-year prevalence	879	74.1	7.6	307	25.9	2.6	1,186	100.0	5.1
5-year prevalence	2,063	73.6	17.8	740	26.4	6.3	2,803	100.0	12.0
32-year prevalence	2,997	72.4	25.9	1,141	27.6	9.7	4,138	100.0	17.8

Source: AIHW ACD 2014.

Age group

Five-year prevalence rates for liver cancer generally increased with age from those aged 0–14 (decreasing slightly for those aged 15–34) to those aged 75–84, before decreasing for those aged 85 and older (Figure 5.9). People aged 75 or older accounted for around a quarter (24%) of all 5-year prevalent cases of liver cancer.



Source: Table A5.7.

Figure 5.9: Five-year prevalence of liver cancer, by age group, as at end of 2013

5.4 Burden from liver cancer

In 2011, Australians lost 29,376 DALYs due to premature death or living with disability due to liver cancer. This accounted for 3.5% of the total cancer burden, ranking liver cancer as the 10th most common cause of cancer burden and the 3rd highest cause of digestive-tract cancer burden. Liver cancer ranked higher in burden compared with other more common digestive-tract cancers, due to the low survival rates and high fatal burden. Males accounted for 3 times the proportion of the burden (74%) than females (26%) (Table 5.5).

Most of the liver cancer burden was due to dying prematurely (99%). Compared with other digestive-tract cancers, there was a smaller non-fatal burden. Half (50%) of the non-fatal burden from liver cancer is due to the metastatic and terminal phase (30% and 20%, respectively) (Table A2.26). This includes health loss from various treatment regimens to either control the spread of the disease or to minimise pain. This reflects the poor prognosis of survival for liver cancer (AIHW 2017c).

Table 5.5: Burden of disease from liver cancer, by sex, 2011

	Males			Females			Persons		
	Number	% of cancer burden	Rank	Number	% of cancer burden	Rank	Number	% of cancer burden	Rank
Fatal burden (YLL)	21,523	4.9	6	7,544	2.2	12	29,067	3.7	10
Non-fatal burden (YLD)	220	0.8	19	89	0.4	24	309	0.6	24
Total burden (DALYs)	**21,743**	**4.6**	**6**	**7,632**	**2.1**	**12**	**29,376**	**3.5**	**10**

Source: AIHW burden of disease database 2011.

Age group

In 2011, the burden of liver cancer varied across age groups (AIHW 2017c). Children (0–14) lost 251 DALYs due to premature death or living with disability as a result of liver cancer. Among males, liver cancer was the 5th leading cause of cancer burden, accounting for 3.4% of the total burden. Among females, it was the 6th leading cause of cancer burden, accounting for 2.0% of the total burden.

Adolescents and young adults (15–24) lost 128 DALYs due to premature death or living with disability as a result of liver cancer. Among males in this age group, liver cancer was the 10th leading cause of cancer burden, accounting for 1.6% of the total burden. Among females, it was the 12th leading cause of cancer burden, accounting for 2.2% of the total burden.

Adults (25–64) lost 15,842 DALYs due to premature death or living with disability as a result of liver cancer. Among males in this age group, liver cancer was the 4th leading cause of cancer burden, accounting for 6.5% of the total burden. Among females, it was the 14th leading cause of cancer burden, accounting for 1.7% of the total burden.

Older adults (65+) lost 13,154 DALYs due to premature death or living with disability as a result of liver cancer. Among males in this age group, liver cancer was the 10th leading cause of cancer burden, accounting for 3.3% of the total burden. Among females, it was the 9th leading cause of cancer burden, accounting for 2.5% of the total burden (Table A2.27).

Contribution of risk factors to liver cancer

The most common risk factor for liver cancer is chronic infection with hepatitis B or hepatitis C (Ganem & Prince 2004). Hepatitis B and C both cause progressive liver disease and cirrhosis, which can evolve into hepatocellular carcinoma (HCC) (a liver cancer histology type) (Beasley et al. 1981; Bruix et al. 1989; Colombo et al. 1989). Globally, over 50% of HCC can be attributed to the 2 viruses combined (Perz et al. 2006; Yang & Roberts 2010) and hepatitis B is estimated to be directly responsible for almost half a million HCC cases annually (Gane 2009). In 2016, there were an estimated 233,034 Australians living with chronic hepatitis B, and 208,821 Australians living with chronic hepatitis C. Over the last 5 years, hepatitis B notifications declined for young people aged 15–29 but increased for older age groups (Kirby Institute 2016a), while the hepatitis C notifications remained stable between 2012 and 2015, before increasing by 12% between 2015 and 2016 (Kirby Institute 2016b).

Hepatitis B or C can spread from person to person through sharing contaminated needles (such as, in drug use) (AIHW 2018c; Amin et al. 2006) or through unsafe sex (Kirby Institute 2016a; Terrault 2002). A common risk factor of hepatitis B acquisition is being born in a region with a high prevalence of hepatitis B, such as Asia, the Pacific Islands, North Africa, the Middle East or Mediterranean countries (Tawk et al. 2006). The number of patients in Australia with HCC who were born in Asia has doubled between 1982 and 2010, while there was a slight reduction in those born in Oceania and Europe (Wallace et al. in press).

Other common risk factors for liver cancer include personal and lifestyle factors such as having a high body mass, the consumption of alcoholic beverages and smoking. Other risk factors for liver cancer include exposure to chemicals, carcinogenic and/or toxic substances, and metabolic diseases (IARC 2014).

The ABDS 2011 study includes information on preventable risk factors and their contribution to the cancer burden (AIHW 2016b, 2017c). See Section 2.5 for details on this study. In 2011, liver cancer burden was estimated to be attributable to 5 risk factors. Of these risk factors, alcohol use contributed the most individually to liver cancer burden (40%) (Table 5.6).

Table 5.6: Liver cancer burden attributed to selected risk factors, 2011

	Males		Females		Persons	
Risk factor	Attributable DALYs	% of liver cancer burden	Attributable DALYs	% of liver cancer burden	Attributable DALYs	% of liver cancer burden
High body mass[(a)]	5,565	25.6	1,287	16.9	6,852	23.3
Tobacco use	5,049	23.5	1,142	15.3	6,191	21.1
Alcohol use[(a)]	8,447	38.8	3,203	42.0	11,650	40.0
Drug use[(a)(b)]	4,477	20.6	1,565	20.5	6,042	5.9
Unsafe sex	1,794	8.3	758	10.0	2,552	8.7

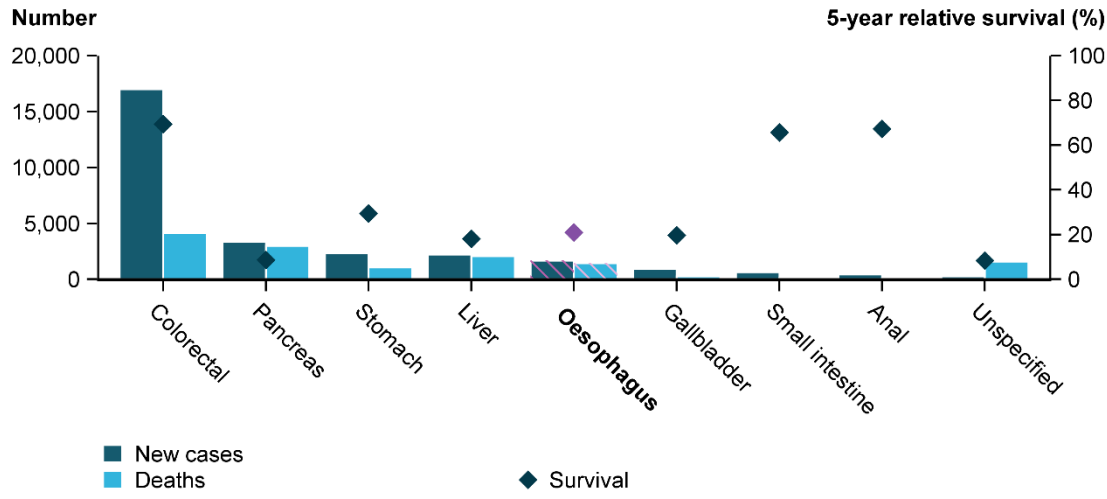
(a) Estimates for alcohol use, drug use and high body mass are based on revised methods and improvements developed as part of extension projects done by the AIHW to look into the impact of various risk factors on chronic conditions (AIHW 2017e, 2017f, 2018c). These estimates will differ from those presented in earlier publications from the ABDS 2011 (AIHW 2016a).

(b) Hepatitis B and C are outcomes due to drug use in the Global Burden of Disease study (Lim et al. 2012).

Sources: AIHW ABDS 2011; AIHW (2016a, 2017d, 2017e, 2018b).

6 Oesophageal cancer (C15)

1,685 new cases	1,447 deaths
21% 5-year relative survival	23,773 DALYs



6.1 A picture of oesophageal cancer in Australia

In 2018, it is estimated that oesophageal cancer will be the 5th most commonly diagnosed digestive-tract cancer and the 5th most common cause of digestive-tract cancer-related deaths. Oesophageal cancer is estimated to be the 19th most commonly diagnosed type of cancer in Australia and the 12th leading cause of cancer death. In 2018, it is estimated that 1,685 new cases of oesophageal cancer will be diagnosed in Australia and that 1,447 people will die from this cancer. This is an average of 5 new cases a day and 4 deaths a day.

In 2010–2014, Australians diagnosed with oesophageal cancer had a 21% chance of surviving 5 years compared with their counterparts in the general population. This was the 5th lowest 5-year relative survival rate of all digestive-tract cancers and was lower than all cancers combined (69%).

Males were 2.8 times as likely to be diagnosed with oesophageal cancer and 3.2 times as likely to die from oesophageal cancer as females. Males and females had similar 5-year relative survival rates (Table 6.1).

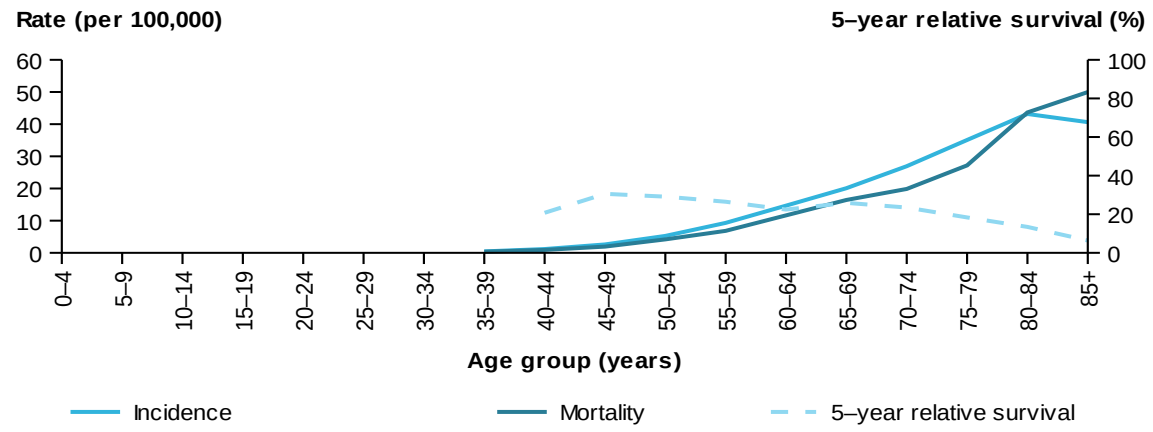
Table 6.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), oesophageal cancer, by sex

	Incidence		Mortality		Survival
Sex	**Number**	**ASR**	**Number**	**ASR**	**5-year relative survival (%)**
Male	1,182	8.3	1,045	7.4	20.5
Female	504	3.0	403	2.3	22.0
Persons	**1,685**	**5.6**	**1,447**	**4.8**	**21.0**

Sources: AIHW ACD 2014; AIHW NMD.

Age group

The oesophageal cancer incidence and mortality rate increased with age. In 2010–2014, the 5-year relative survival varied between 20% and 30% for people aged 40–74, before decreasing in older age groups (Figure 6.1).

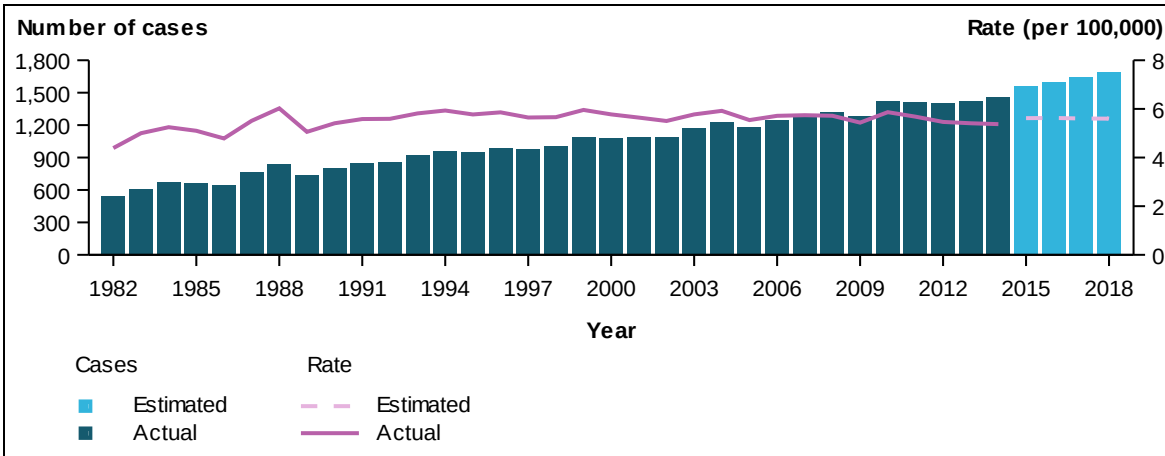


Source: Table A6.1.

Figure 6.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for oesophageal cancer, by age group

Trend

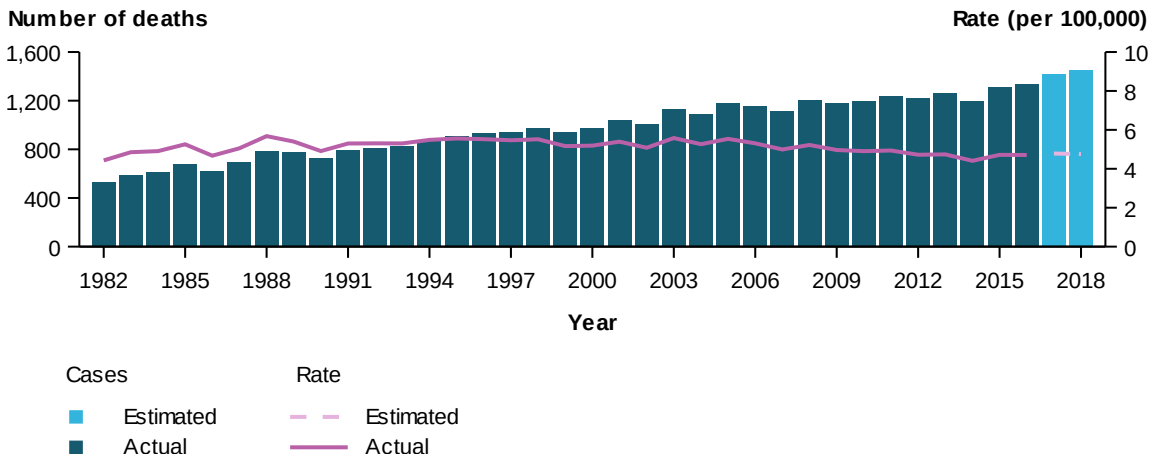
The number of new cases of oesophageal cancers diagnosed increased from 537 cases in 1982 to an estimated 1,685 in 2018. The age-standardised incidence rate has remained stable at about 5 cases per 100,000 persons (Figure 6.2).



Source: Table A6.2.

Figure 6.2: Incidence trends for oesophageal cancer, 1982–2014, with projections to 2018

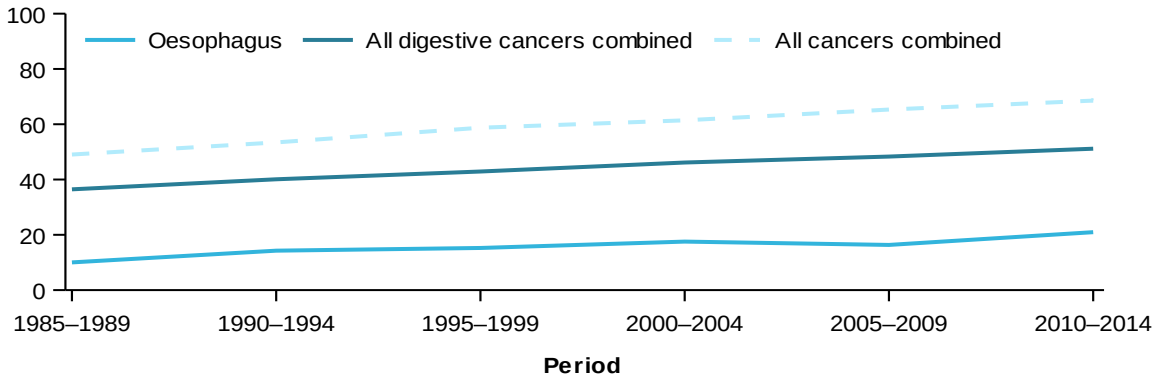
The number of deaths from oesophageal cancer increased from 527 deaths in 1982 to an estimated 1,447 in 2018. The age-standardised rate remained steady at 5.0 deaths per 100,000 persons over the same period (Figure 6.3). The increase in the number of deaths from oesophageal cancer is due to a growing and ageing population.



Source: Table A6.2.

Figure 6.3: Mortality trends for oesophageal cancer, 1982–2016, with projections to 2018

Between 1985–1989 and 2010–2014, the 5-year relative survival rate for oesophageal cancer increased from 10% to 21%. Five-year relative survival was lower for oesophageal cancer than for all digestive-tract cancers combined and all cancers combined (Figure 6.4).



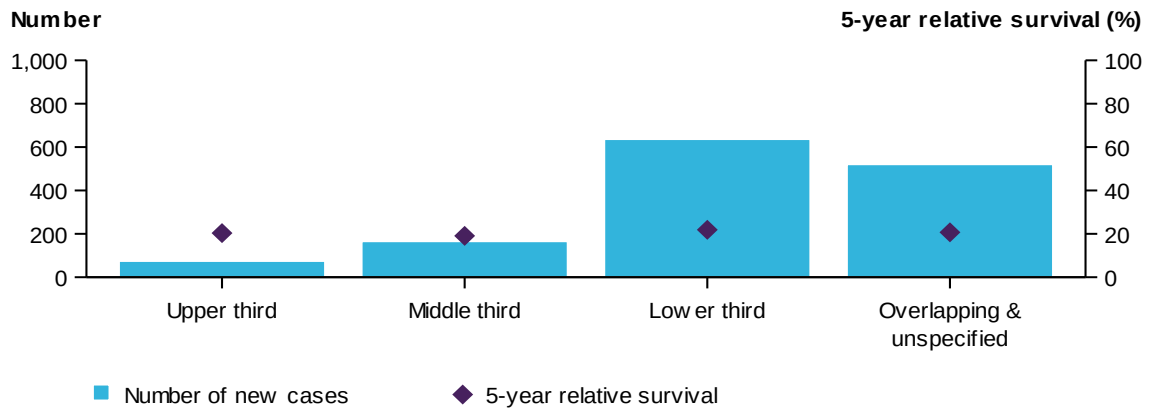
Source: Table A2.3.

Figure 6.4: Five-year relative survival for oesophageal cancer, all digestive-tract cancers combined and all cancers combined, 1985–1989 to 2010–2014

Characteristics

Subsite

In 2013, the lower third of the oesophagus was the most common oesophageal cancer subsite, representing 45% of all oesophageal cancers diagnosed. Australians diagnosed with this subsite had a 22% chance of surviving 5 years compared with their counterparts in the general population. This was higher than the 5-year relative survival rate for all oesophagus cancers (21%). The 5-year relative survival rate for this subsite was similar to other oesophageal subsites (Figure 6.5).



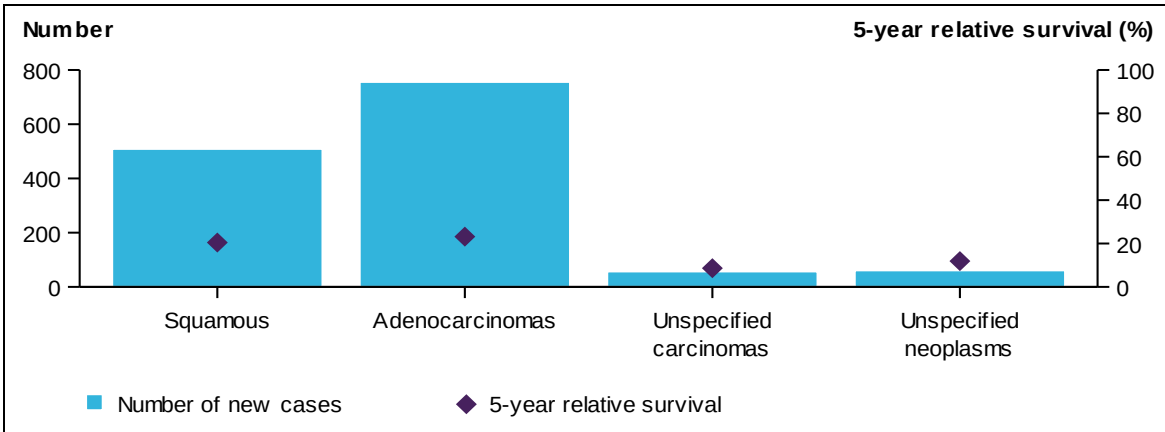
Source: Table A6.3.

Figure 6.5: Incidence (2013) and 5-year relative survival (2010–2014) for oesophageal cancer, by subsite

Histology

In 2013, adenocarcinomas was the most common oesophageal cancer histological type, representing 53% of all oesophageal cancer cases diagnosed. Between 1982 and 2013, the number of adenocarcinomas cases increased from 75 cases in 1982 to 756 cases in 2013. Over the same period, the number of squamous cell carcinomas (previously the most common oesophageal cancer) fluctuated between 360 and 509 cases. The increase in adenocarcinomas may be related to increasing rates of obesity (AIHW 2018a) and gastro-oesophageal reflux disease (GORD) (WCRF/AICR 2007).

Australians diagnosed with adenocarcinomas had a 23% chance of surviving 5 years compared with their counterparts in the general population. This was higher than the 5-year relative survival rate for all oesophagus cancers (21%) and was the highest 5-year relative survival rate for oesophageal histological types. Five-year relative survival was lowest for unspecified carcinomas (8.6%) (Figure 6.6). Low survival rates for unspecified neoplasms and unspecified carcinomas may reflect cancers unsuitable for biopsy, treatment in patients with advanced disease at diagnosis or significant comorbidities.



Source: Table A6.4.

Figure 6.6: Incidence (2013) and 5-year relative survival (2010–2014) for oesophageal cancer, by histology

Population groups

Indigenous status

Indigenous Australians living in the jurisdictions for which data were available (see notes on page vii for more details) were 2.2 times as likely to be diagnosed with oesophageal cancer in 2009–2013 and 1.7 times as likely to die from oesophageal cancer in 2012–2016 as non-Indigenous Australians. The incidence (2.2) and mortality (1.7) rate ratio between Indigenous and non-Indigenous Australians for oesophageal cancer was higher than the same incidence rate ratio (1.1) and mortality rate ratio (1.4) for all cancers combined. One-year relative survival was lower in Indigenous Australians (37%) than in non-Indigenous Australians (48%) (Table A2.9).

Remoteness area

Australians living in *Remote* areas of Australia were 1.4 times as likely to be diagnosed with oesophageal cancer in 2009–2013 (Table A2.10) and 1.5 times as likely to die from oesophageal cancer in 2011–2016, compared with Australians living in *Major cities* (Table A2.11). The oesophageal cancer incidence (1.4) and mortality (1.2) rate ratio for Australians living in *Very remote* areas compared with those living in *Major cities* was higher than the same incidence (0.9) and mortality (1.2) rate ratio for all cancers combined. The 5-year observed survival rate was lower for Australians living in *Outer regional* areas (15%) and higher for Australians living in *Major cities* (20%). Note that observed survival could not be calculated for *Remote* and *Very remote* areas due to small numbers (Table A2.12).

Socioeconomic disadvantage

Australians in the lowest socioeconomic group were 1.5 times as likely to be diagnosed with oesophageal cancer in 2009–2013 (Table A2.13) and 1.5 times as likely to die from oesophageal cancer in 2012–2016 compared with Australians in the highest socioeconomic group (Table A2.14). The oesophageal cancer incidence (1.5) and mortality (1.5) rate ratio between Australians in the lowest and highest socioeconomic group was higher than the same incidence (1.0) and mortality (1.4) rate ratio for all cancers combined. The 5-year observed survival rate was lower for Australians in the lowest socioeconomic group (16%) and higher for Australians in the two highest socioeconomic group (21%) (Table A2.15).

6.2 Treatment

Hospitalisations

In 2016–17, there were 12,863 oesophageal cancer-related hospitalisations. This accounted for 1.0% of cancer-related hospitalisations and 5.8% of digestive-tract cancer-related hospitalisations in Australia (Table A2.20). Of these, around 77% were for males and 23% were for females, which is consistent with the incidence pattern (Table 6.1). In 32% of these hospitalisations, oesophageal cancer was the principal diagnosis (Table 6.2).

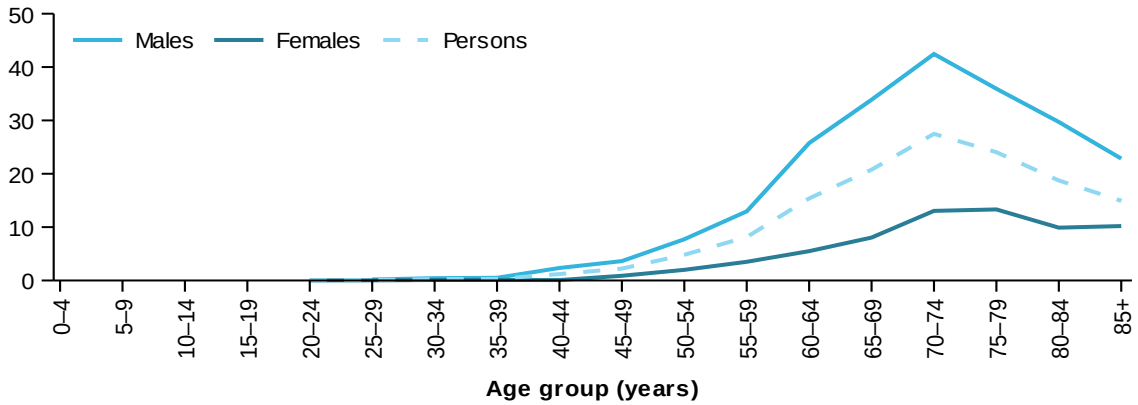
Table 6.2: Hospitalisations related to oesophageal cancer, by sex, 2016–17

	Males			Females			Persons		
	No	%	ASR	No	%	ASR	No	%	ASR
Principal diagnosis of cancer	3,064	23.8	2.3	1,100	8.6	0.7	4,164	32.4	1.5
Additional diagnosis of cancer	6,779	52.7	4.9	1,920	14.9	1.3	8,699	67.6	3.0
All oesophageal cancer-related hospitalisations	**9,843**	**76.5**	**7.2**	**3,020**	**23.5**	**2.0**	**12,863**	**100.0**	**4.5**

Source: AIHW NHMD.

Age group

In 2016–17, the age-specific oesophageal cancer-related hospitalisation rate increased with age, before decreasing for those aged 75 or older (Figure 6.7).

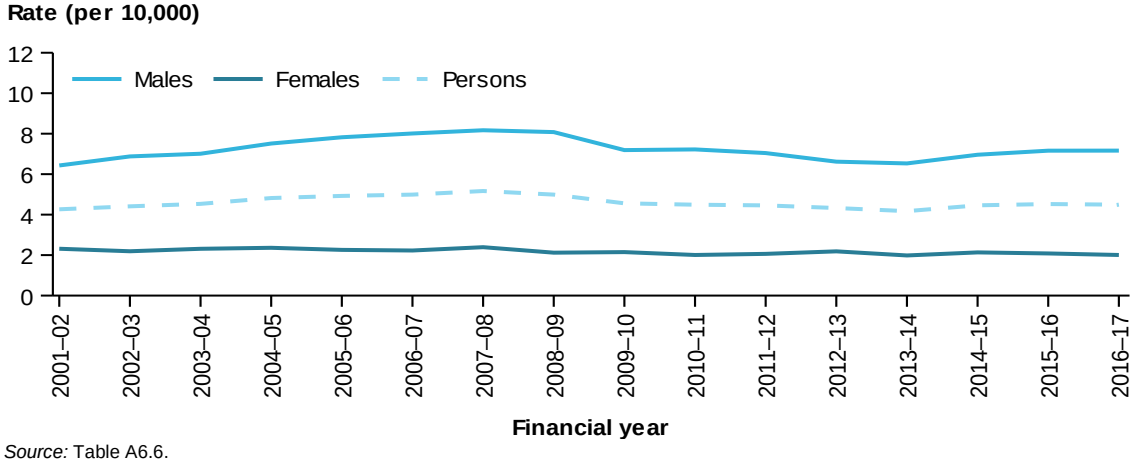


Source: Table A6.5.

Figure 6.7: Age-specific rates of hospitalisations related to oesophageal cancer, by age group and sex, 2016–17

Trend

Between 2001–02 and 2016–17, the age-standardised oesophageal cancer-related hospitalisation rate remained relatively stable at between 4.2 and 5.2 per 10,000 (Figure 6.8). Males had higher rates than females for all years.



Source: Table A6.6.

Figure 6.8: All oesophageal cancer-related hospitalisations, by sex, 2001–02 to 2016–17

Selected surgical procedures

In 2016–17, there were 736 surgical procedures (see Table D8 for details) related to oesophageal cancer. There were more procedures in males (74%) than in females (26%) (Table 6.3), which was consistent with the incidence pattern (Table 6.1). Insertion or replacement of prosthesis (38%) and oesophagectomy (37%) were the most common surgical procedures. Dilation of oesophagus (often used as palliative treatment) was reported in 17% of surgical procedures. See Appendix C for information on how surgical procedures were calculated.

Table 6.3: Number of surgical procedures, oesophageal cancer, by sex, 2016–17

	Males		Females		Persons	
Procedure type	**Number**	**%**	**Number**	**%**	**Number**	**%**
Insertion or replacement of prosthesis	207	37.8	74	39.2	281	38.2
Oesophagectomy	213	38.9	59	31.2	272	37.0
Other excision procedures on oesophagus	44	8.0	16	8.5	60	8.2
Dilation of oesophagus	83	15.2	40	21.2	123	16.7
All surgical procedures	**547**	**100.0**	**189**	**100.0**	**736**	**100.0**

Source: AIHW NHMD.

Chemotherapy

In 2016–17, there were 7,748 chemotherapy procedures related to oesophageal cancer. This accounted for 4.3% of all digestive-tract cancer-related chemotherapy procedures and 1.1% of all cancer-related chemotherapy procedures. There were more chemotherapy procedures in males (79%) than females (21%) (Table A2.23), which was consistent with the incidence pattern (Table 6.1). See Appendix C for information on how chemotherapy procedures were calculated.

Radiotherapy

In 2016–17, there were 1,441 radiotherapy courses where the principal diagnosis was oesophageal cancer. This accounted for 2.3% of all radiotherapy courses provided and 23% of all digestive-tract cancer-related radiotherapy courses. Oesophageal cancer was the 2nd most common digestive-tract cancer to receive a radiotherapy procedure. Radiotherapy may be used for oesophageal cancer to ‘shrink’ tumours to alleviate symptoms or reduce the mass prior to surgery (Macmillan Cancer Support 2018; Cancer Council Victoria 2017). More radiotherapy courses were provided to males than females (Table A2.24).

6.3 Survivorship population

Cancer survivorship focuses on the health and wellbeing of a person living with and beyond cancer (Cancer Australia 2017). See Section 2.4 for a full description of cancer survivorship, including data limitations. At the end of 2013, there were 2,420 people alive who were diagnosed with oesophageal cancer in the previous 5 years. Five-year prevalence for males was 2.5 times that of females (Table 6.4), which is consistent with the incidence pattern (Table 6.1). This makes oesophageal cancer the digestive-tract cancer with the second greatest difference in 5-year prevalent cases between males and females.

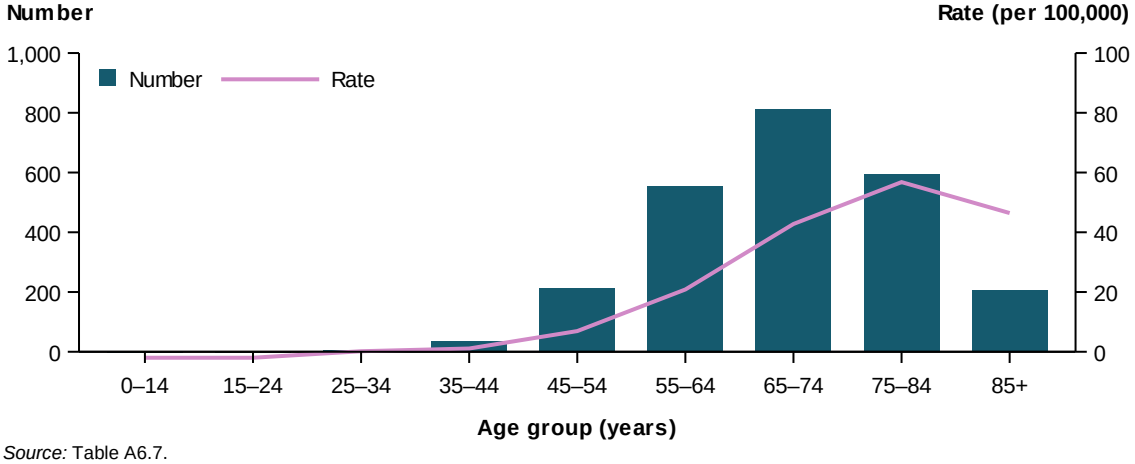
Table 6.4: Limited-duration prevalence of oesophageal cancer, by sex, as at end of 2013

	Males			Females			Persons		
	Number	% of cases	Rate	Number	% of cases	Rate	Number	% of cases	Rate
1-year prevalence	678	72.8	5.9	253	27.2	2.2	931	100.0	4.0
5-year prevalence	1,729	71.4	14.9	691	28.6	5.9	2,420	100.0	10.4
32-year prevalence	2,786	68.5	24.1	1,284	31.5	11.0	4,070	100.0	17.5

Source: AIHW ACD 2014.

Age group

At the end of 2013, 5-year prevalence rates for oesophageal cancer increased with age, reaching a peak for age group 75–84, before decreasing in older age groups (Figure 6.9). People aged 75 or older accounted for one-third (33%) of the total 5-year prevalent cases of oesophageal cancer.



Source: Table A6.7.

Figure 6.9: Five-year prevalence of oesophageal cancer, by age group, as at end of 2013

6.4 Burden from oesophageal cancer

In 2011, Australians lost 23,773 DALYs due to premature death or living with disability due to oesophageal cancer. This accounted for 2.9% of the total cancer burden, ranking oesophageal cancer as the 12th greatest cause of cancer burden and the 4th highest cause of digestive-tract cancer burden. Oesophageal cancer ranked higher in burden compared with other more common digestive-tract cancers, due to the low survival rates and high fatal burden. Oesophageal cancer accounted for a greater proportion of cancer burden in males (3.9%) than females (1.5%) (Table 6.5).

The majority (98%) of the oesophageal cancer burden was due to dying prematurely. Compared with other digestive-tract cancers, there was a smaller non-fatal burden. Over half (61%) of the non-fatal burden from oesophageal cancer is due to the metastatic and terminal phase (47% and 13%, respectively) (Table A2.26). This includes health loss from various treatment regimens to either control the spread of the disease and to minimise pain. This reflects the poor prognosis of survival for oesophageal cancer (AIHW 2017c).

Table 6.5: Burden of disease from oesophageal cancer, by sex, 2011

	Males			Females			Persons		
	Number	% of cancer burden	Rank	Number	% of cancer burden	Rank	Number	% of cancer burden	Rank
Fatal burden (YLL)	18,136	4.1	9	5,245	1.5	16	23,382	3.0	12
Non-fatal burden (YLD)	283	1.0	16	108	0.5	23	391	0.8	22
Total burden (DALYs)	**18,420**	**3.9**	**10**	**5,353**	**1.5**	**17**	**23,773**	**2.9**	**12**

Source: AIHW burden of disease database 2011.

Age group

In 2011, the burden of oesophageal cancer increased across age groups (AIHW 2017c). Children (0–14) and adolescents and young adults (15–24) were rarely impacted by oesophageal cancer. Adults (25–64) lost 11,273 DALYs due to premature death or living with disability as a result of oesophageal cancer. Among males, oesophageal cancer was the 7th leading cause of cancer burden, accounting for 4.7% of the total burden. Among females, it was the 18th leading cause of cancer burden, accounting for 1.1% of the total burden.

Older adults (65+) lost 12,499 DALYs due to premature death or living with disability as a result of oesophageal cancer. Among males, oesophageal cancer was the 8th leading cause of cancer burden, accounting for 3.4% of the total burden. Among females, it was the 15th leading cause of cancer burden, accounting for 1.9% of the total burden (Table A2.27).

Contribution of risk factors to oesophageal cancer burden

Risk factors for oesophageal cancer differ according to the different histological types of this cancer. Cigarette smoking, high body mass and obesity, low intake of fresh fruit and vegetables and gastro-oesophageal reflux disorder (GORD) are risk factors for oesophageal adenocarcinoma cases, as well as consumption of alcoholic drinks (IARC 2014; WCRF/AICR 2007). Cigarette smoking, excess alcohol consumption and low fruit and vegetable intake are risk factors for oesophageal squamous cell carcinomas (AIHW 2012; GBD 2016; IARC 2014).

The ABDS 2011 study includes information on preventable risk factors and their contribution to the cancer burden (AIHW 2016b, 2017c). See Section 2.5 for details on this study. In 2011, oesophageal cancer burden was estimated to be attributable to 4 risk factors, of which tobacco use contributed the most (54%), followed by high body mass (38%). A greater proportion of oesophageal cancer burden in females (57%) was due to tobacco use than in males (53%) (Table 6.6).

Table 6.6: Oesophageal cancer burden attributed to selected risk factors, 2011

	Males		Females		Persons	
Risk factor	Attributable DALYs	% oesophageal cancer burden	Attributable DALYs	% oesophageal cancer burden	Attributable DALYs	% oesophageal cancer burden
High body mass[(a)]	6,750	38.6	1,880	37.0	8,630	38.2
Tobacco use	9,746	53.3	3,070	57.4	12,816	53.9
Alcohol use[(a)]	4,343	23.6	670	12.5	5,013	21.1
Diet low in fruit	3,793	20.6	1,045	19.5	4,838	20.4

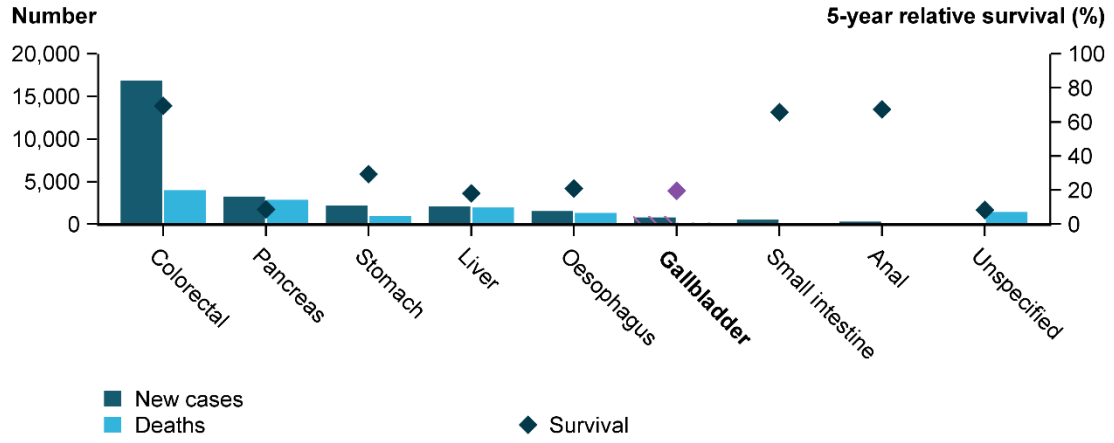
(a) Estimates for alcohol use and high body mass are based on revised methods and improvements developed as part of extension projects done by the AIHW to look into the impact of various risk factors on chronic conditions (AIHW 2017e, 2017f, 2018c). These estimates will differ from those presented in earlier publications from the ABDS 2011 (AIHW 2016a).

Sources: AIHW ABDS 2011; AIHW (2016a, 2017d, 2017e, 2018b).

Other risk factors for oesophageal cancer include a diet high in sugar sweetened beverages, occupational exposure to carcinogenic and/or toxic substances through accidental ingestion and indirect means as well as ionising radiation (from, for example, diagnostic X-rays, working in the nuclear industry and natural sources) and certain genetic anomalies (GBD 2016; IARC 2014).

7 Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)

931 new cases	262 deaths
20% 5-year relative survival	4,287 DALYs



7.1 A picture of cancer of the gallbladder and extrahepatic bile ducts in Australia

In 2018, it is estimated that cancer of the gallbladder and extrahepatic bile ducts will be the 6th most commonly diagnosed digestive-tract cancer and the 7th most common cause of digestive-tract cancer-related deaths. Cancer of the gallbladder and extrahepatic bile ducts is estimated to be the 24th most commonly diagnosed type of cancer in Australia and the 25th leading cause of cancer death. In 2018, it is estimated that 931 new cases of cancer of the gallbladder and extrahepatic bile ducts will be diagnosed in Australia and that 262 people will die from this cancer. This is an average of 3 new cases a day and 5 deaths a week.

In 2010–2014, Australians diagnosed with cancer of the gallbladder and extrahepatic bile ducts had a 20% chance of surviving 5 years compared with their counterparts in the general population (Table 7.1). This was the 6th highest 5-year relative survival rate of all digestive-tract cancers and was lower than all cancers combined (69%).

Males and females were equally likely to be diagnosed with and die from cancer of the gallbladder and extrahepatic bile ducts in 2018. Females had lower 5-year relative survival rates than males.

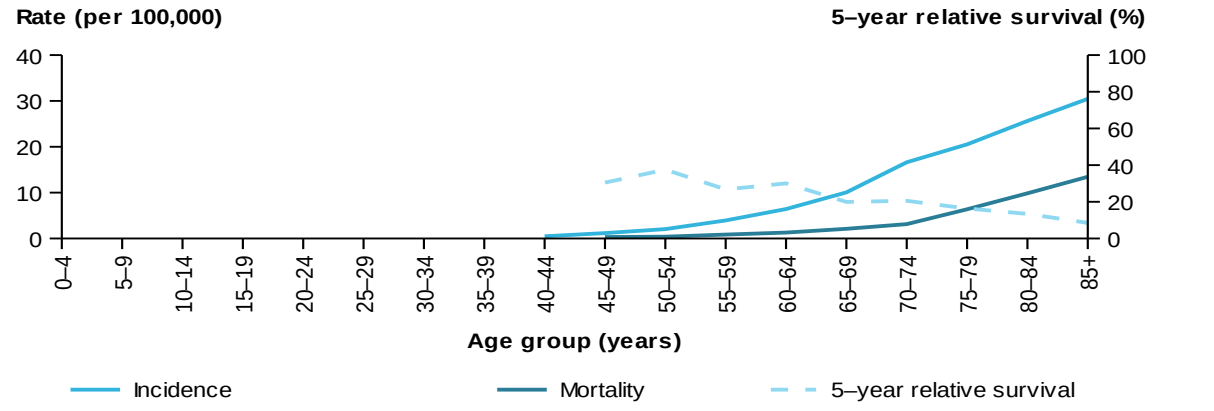
Table 7.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), cancers of the gallbladder and extrahepatic bile ducts, by sex

	Incidence		Mortality		Survival
Sex	**Number**	**ASR**	**Number**	**ASR**	**5-year relative survival (%)**
Male	444	3.1	127	0.9	21.8
Female	487	3.0	135	0.8	17.8
Persons	**931**	**3.1**	**262**	**0.9**	**19.7**

Sources: AIHW ACD 2014; AIHW NMD.

Age group

The cancer of the gallbladder and extrahepatic bile ducts incidence and mortality rate increased with age. In 2010–2014, the 5-year relative survival rate decreased with age (Figure 7.1).

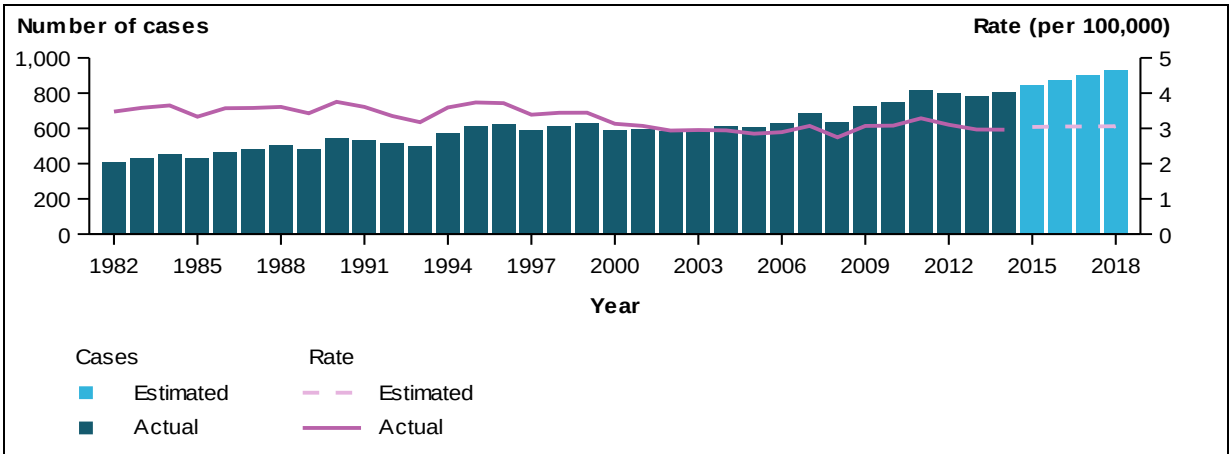


Source: Table A7.1.

Figure 7.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for cancer of the gallbladder and extrahepatic bile ducts, by age group

Trend

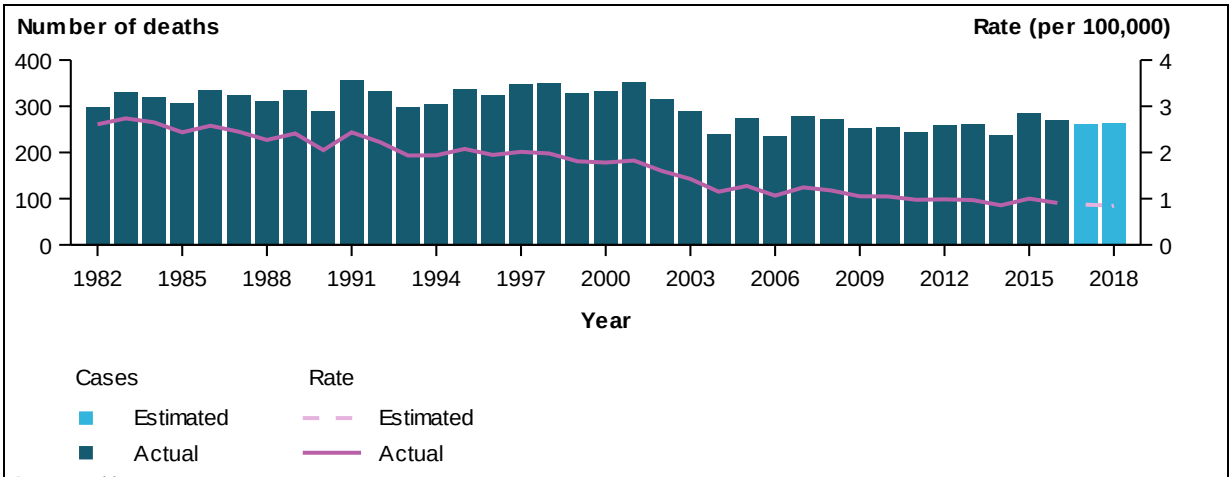
The number of new cases of cancer of the gallbladder and extrahepatic bile ducts increased from 409 cases in 1982 to an estimated 931 in 2018. The age-standardised incidence rate remained steady at around 3 per 100,000 over the same period (Figure 7.2). The increase in the number of cases is due to a growing and ageing population.



Source: Table A7.2.

Figure 7.2: Incidence trends for cancer of the gallbladder and extrahepatic bile ducts, 1982–2014, with projections to 2018

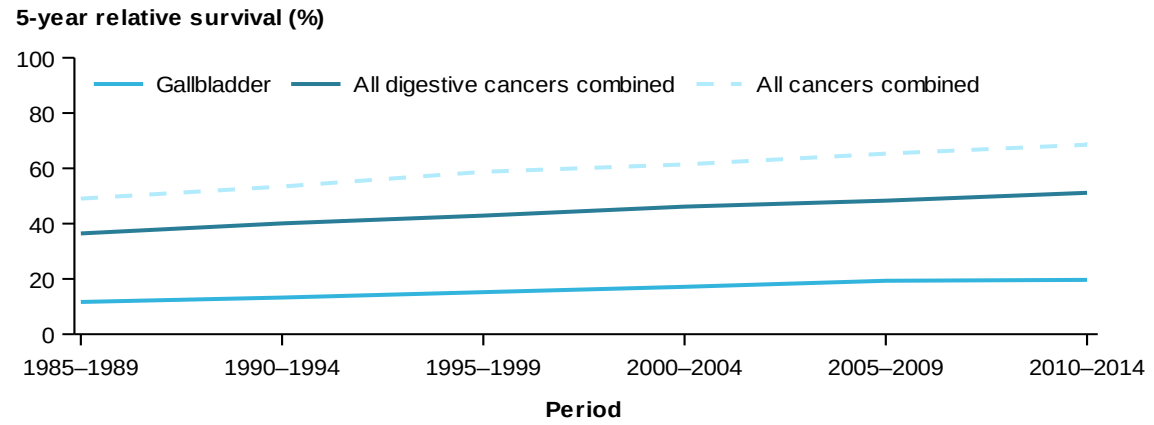
The number of deaths from cancer of the gallbladder and extrahepatic bile ducts decreased from 297 deaths in 1982 to an estimated 262 in 2018. The age-standardised rate decreased from 2.6 deaths per 100,000 persons to an expected 0.9 per 100,000 over the same time period (Figure 7.3).



Source: Table A7.2.

Figure 7.3: Mortality trends for cancer of the gallbladder and extrahepatic bile ducts, 1982–2016, with projections to 2018

Between 1985–1989 and 2010–2014, the 5-year relative survival rate for cancer of the gallbladder and extrahepatic bile ducts increased from 12% to 20%. Five-year relative survival was lower for cancer of the gallbladder and extrahepatic bile ducts than for all digestive-tract cancers combined and all cancers combined (Figure 7.4).



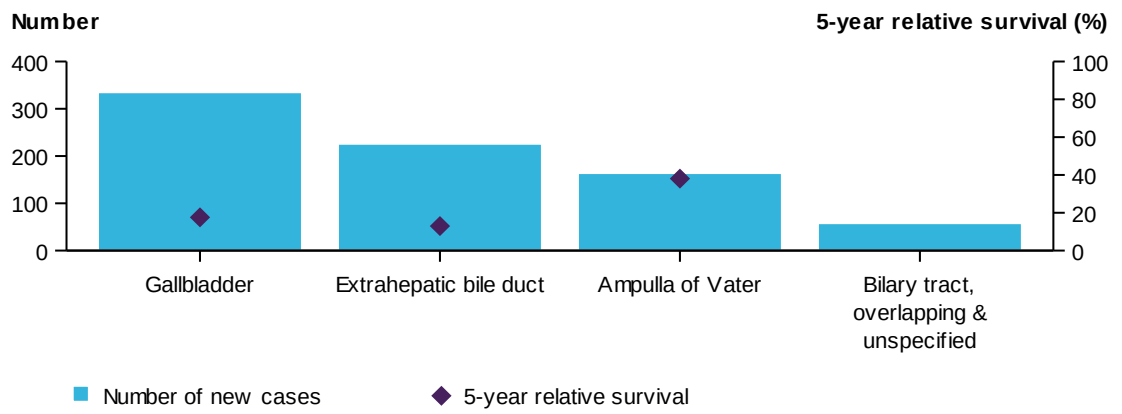
Source: Table A2.3.

Figure 7.4: Five-year relative survival from cancer of the gallbladder and extrahepatic bile ducts, all digestive-tract cancers combined and all cancers combined, 1985–89 to 2010–14

Characteristics

Subsite

In 2013, the gallbladder was the most common site of cancer, representing 43% of cases diagnosed. Australians diagnosed with gallbladder cancer had an 18% chance of surviving 5 years compared with their counterparts in the general population. This was lower than the 5-year relative survival rate for all cancers of the gallbladder and extrahepatic bile ducts (20%) and was the 2nd lowest 5-year relative survival rate for the cancer of the gallbladder and extrahepatic bile ducts subsite. Five-year relative survival was highest for cancer of the ampulla of Vater (38%) and lowest for the extrahepatic bile duct (13%) (Figure 7.5).



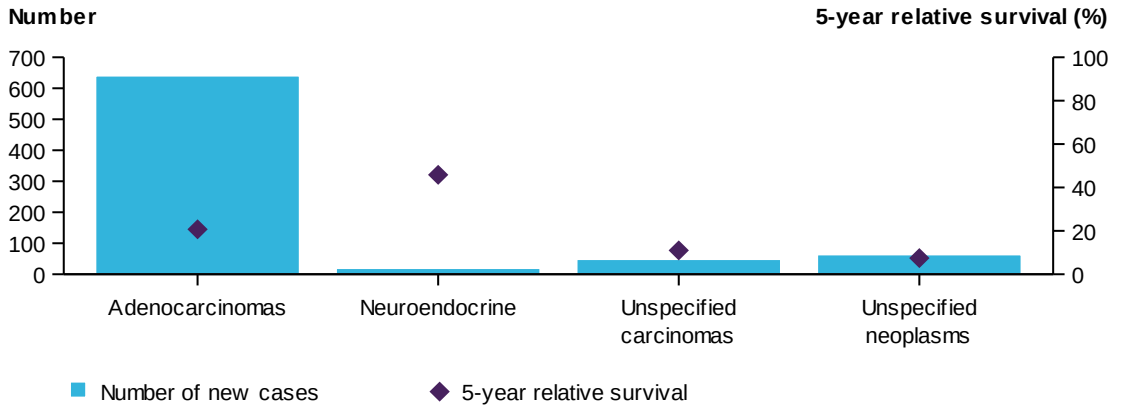
Source: Table A7.3.

Figure 7.5: Incidence (2013) and 5-year relative survival (2010–2014) for cancer of the gallbladder and extrahepatic bile ducts, by subsite

Histology

In 2013, adenocarcinoma was the most common histological type diagnosed in the gallbladder and extrahepatic bile ducts, representing 82% of cases diagnosed. Australians diagnosed with this histological type had a 21% chance of surviving 5 years compared with their counterparts in the general population. This was higher than the 5-year relative survival rate for all cancers of the gallbladder and extrahepatic bile ducts (20%) and was the 2nd highest 5-year relative survival rate for cancer of the gallbladder and extrahepatic bile ducts histological types.

Five-year relative survival was highest for neuroendocrine neoplasms (46%) and lowest for unspecified neoplasms (7.4%) (Figure 7.6). Low survival rates for unspecified neoplasms may reflect cancers unsuitable for biopsy, treatment in patients with advanced disease at diagnosis or significant comorbidities. Analysis of unpublished incidence data indicates unspecified neoplasms are more common in older age groups.



Source: Table A7.4.

Figure 7.6: Incidence (2013) and 5-year relative survival (2010–2014) for cancer of the gallbladder and extrahepatic bile ducts, by histology

Population groups

Indigenous status

Indigenous Australians living in the jurisdictions for which data were available (see notes on page vii for more details) were 2.7 times as likely to be diagnosed with cancer of the gallbladder and extrahepatic bile ducts in 2009–2013 and 3.3 times as likely to die from cancer of the gallbladder and extrahepatic bile ducts in 2012–2016 than non-Indigenous Australians. The incidence (2.7) and mortality (3.3) rate ratio between Indigenous and non-Indigenous Australians for cancer of the gallbladder and extrahepatic bile ducts was higher than the same incidence rate ratio (1.1) and mortality rate ratio (1.4) for all cancers combined. One-year relative survival was lower in Indigenous Australians (26%) than in non-Indigenous Australians (47%) (Table A2.9).

Remoteness area

Australians living in *Very remote* areas of Australia were 1.9 times as likely to be diagnosed with cancer of the gallbladder and extrahepatic bile ducts in 2009–2013 (Table A2.10) and 2.9 times as likely to die from this cancer in 2011–2016 as Australians living in *Major cities* (Table A2.11). The cancer of the gallbladder and extrahepatic bile ducts incidence (1.9) and mortality (2.9) rate ratio between Australians living in *Very remote* and *Major cites* was higher than the same incidence (0.9) and mortality (1.2) rate ratio for all cancers combined. The 5-year observed survival rate was lower for Australians living in *Inner regional* areas (14%) and higher for Australians living in *Major cities* (18%). Note that observed survival could not be calculated for *Remote* and *Very remote* areas due to small numbers (Table A2.12).

Socioeconomic disadvantage

Australians in the lowest socioeconomic group were 1.2 times as likely to be diagnosed with cancer of the gallbladder and extrahepatic bile ducts in 2009–2013 (Table A2.13) and 1.6 times as likely to die from cancer of the gallbladder and extrahepatic bile ducts in 2012–2016 than Australians in the highest socioeconomic group (Table A2.14). The cancer of the gallbladder and extrahepatic bile ducts incidence (1.2) and mortality (1.6) rate ratio between Australians in the lowest and highest socioeconomic group was higher than the same incidence (1.0) rate ratio for all cancers combined and similar to the same mortality (1.4) rate ratio for all cancers combined. The 5-year observed survival rate was lower for Australians in the 2nd lowest socioeconomic group (12%) and higher for Australians in the highest socioeconomic group (22%) (Table A2.15).

7.2 Treatment

Hospitalisations

In 2016–17, there were 6,740 hospitalisations related to cancer of the gallbladder and extrahepatic bile ducts. This accounted for 0.5% of cancer-related hospitalisations and 3.0% of digestive-tract cancer-related hospitalisations in Australia (Table A2.20). Males and females had similar number of hospitalisations, which is consistent with the incidence pattern (Table 7.1). In 26% of these hospitalisations, cancer of the gallbladder and extrahepatic bile ducts was the principal diagnosis (Table 7.2).

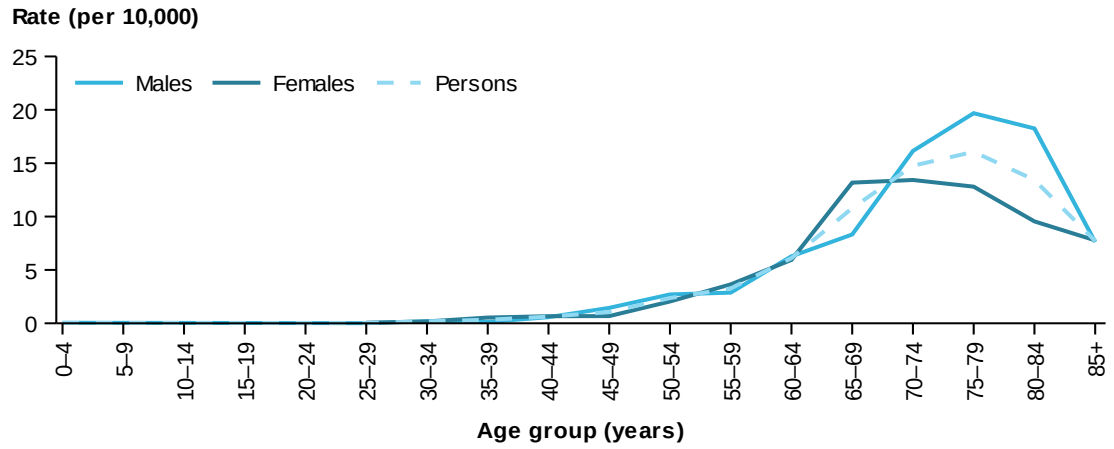
Table 7.2: Hospitalisations related to cancer of the gallbladder and extrahepatic bile ducts, by sex, 2016–17

	Males			Females			Persons		
	No	%	ASR	No	%	ASR	No	%	ASR
Principal diagnosis of cancer	842	12.5	0.6	915	13.6	0.6	1,757	26.1	0.6
Additional diagnosis of cancer	2,527	37.5	1.9	2,456	36.4	1.6	4,983	73.9	1.8
All hospitalisations related to cancer of the gall bladder and extrahepatic bile ducts	**3,369**	**50.0**	**2.5**	**3,371**	**50.0**	**2.2**	**6,740**	**100.0**	**2.4**

Source: AIHW NHMD.

Age group

In 2016–17, the age-specific cancer of the gallbladder and extrahepatic bile ducts-related hospitalisation rate increased with age, before generally decreasing for those aged 80 or older (Figure 7.7). There was little variation in the rate between males and females until age group 60–64, after which differences become more noticeable.

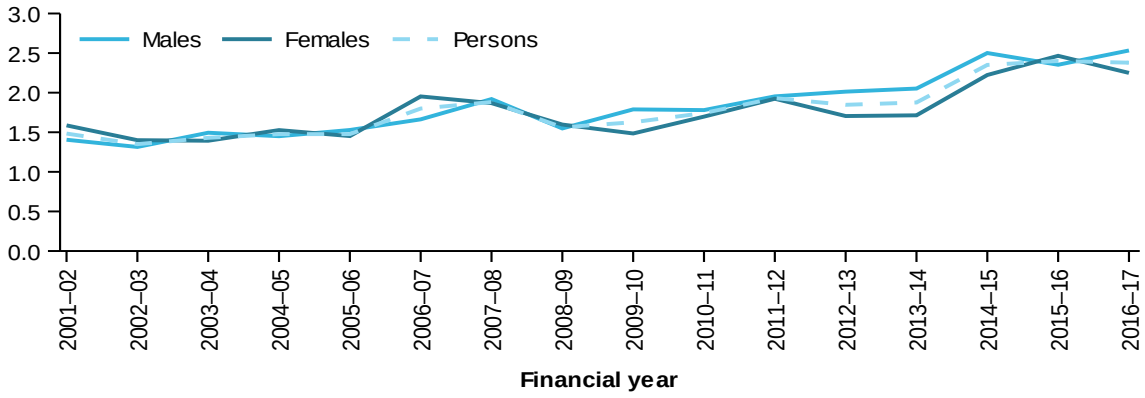


Source: Table A7.5.

Figure 7.7: Age-specific rates of hospitalisations related to cancer of the gallbladder and extrahepatic bile ducts, by age group and sex, 2016–17

Trend

Between 2001–02 and 2016–17, the age-standardised cancer of the gallbladder and extrahepatic bile ducts-related hospitalisation rate increased from 1.5 to 2.4 per 10,000 (Figure 7.8). This trend is observed in both males and females.



Source: Table A7.6.

Figure 7.8: All hospitalisations related to cancer of the gallbladder and extrahepatic bile ducts, by sex, 2001–02 to 2016–17

Selected surgical procedures

In 2016–17, there were 790 surgical procedures (see Table D9 for details) related to cancer of the gallbladder and extrahepatic bile ducts. There were more procedures in males (54%) than in females (46%) (Table 7.3), which was different to the incidence pattern (Table 7.1). This could potentially be related to the types of cancer diagnosed. When exploring incidence histology data, proportionally, more unspecified and other cancers are diagnosed in females and more adenocarcinomas in males (AIHW, unpublished data). A stenting of biliary tract procedure was reported for 50% of surgical procedures. See Appendix C for information on how surgical procedures were calculated.

Table 7.3: Number of surgical procedures, cancer of the gallbladder and extrahepatic bile ducts, by sex, 2016–17

	Males		Females		Persons	
Procedure type	**Number**	**%**	**Number**	**%**	**Number**	**%**
Stenting of biliary tract	218	50.7	176	48.9	394	49.9
Cholecystectomy	115	26.7	111	30.8	226	28.6
Other excision procedures	49	11.4	36	10.0	85	10.8
Stoma	34	7.9	29	8.1	63	8.0
Other repair procedures	14	3.3	8	2.2	22	2.8
All surgical procedures	**430**	**100.0**	**360**	**100.0**	**790**	**100.0**

Source: AIHW NHMD.

Chemotherapy

In 2016–17 there were 4,103 chemotherapy procedures related to cancer of the gallbladder and extrahepatic bile ducts. This accounted for 2.3% of all digestive-tract cancer chemotherapy procedures and 0.6% of all cancer-related chemotherapy procedures. There were slightly more chemotherapy procedures in males (51%) than females (49%) (Table A2.23). See Appendix C for information on how chemotherapy procedures were calculated.

Radiotherapy

In 2016–17, there were 135 radiotherapy courses where the principal diagnosis was recorded as cancer of the gallbladder and extrahepatic bile ducts. This accounted for 0.2% of all radiotherapy courses provided and 2.2% of all digestive-tract cancer-related radiotherapy courses. A similar number of courses were provided to males and females (Table A2.24).

7.3 Survivorship population

Cancer survivorship focuses on the health and wellbeing of a person living with and beyond cancer (Cancer Australia 2017). See Section 2.4 for a full description of cancer survivorship, including data limitations. At the end of 2013, there were 1,329 people alive who were diagnosed with cancer of the gallbladder and extrahepatic bile ducts in the previous 5 years. The 5-year prevalence was similar for males and females (Table 7.4), which is consistent with the incidence pattern (Table 7.1).

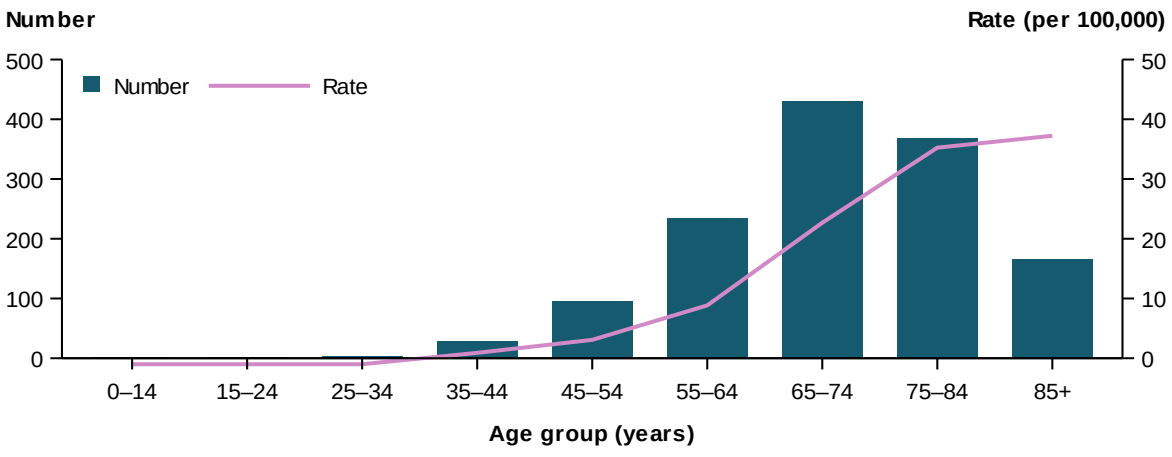
Table 7.4: Limited-duration prevalence of cancer of the gallbladder and extrahepatic bile ducts, by sex, as at end of 2013

	Males			Females			Persons		
	Number	% of cases	Rate	Number	% of cases	Rate	Number	% of cases	Rate
1-year prevalence	264	50.0	2.3	264	50.0	2.3	528	100.0	2.3
5-year prevalence	665	50.0	5.7	664	50.0	5.7	1,329	100.0	5.7
32-year prevalence	1,153	47.7	10.0	1,266	52.3	10.8	2,419	100.0	10.4

Source: AIHW ACD 2014.

Age group

Five-year prevalence rates for cancer of the gallbladder and extrahepatic bile ducts increased with age to a peak of 37 per 100,000 for people aged 85 or older (Figure 7.9). At the end of 2013, the majority (73%) of 5-year prevalent cases of cancer of the gallbladder and extrahepatic bile ducts were in those aged 65 and older.



Source: Table A7.7.

Figure 7.9: Five-year prevalence of cancer of the gallbladder and extrahepatic bile ducts, by age group, as at end of 2013.

7.4 Burden from cancer of the gallbladder and extrahepatic bile ducts

In 2011, Australians lost 4,287 DALYs due to premature death or living with disability due to cancer of the gallbladder and extrahepatic bile ducts. This accounted for 0.5% of the total cancer burden, ranking this cancer as the 25th greatest cause of cancer burden and the 6th highest cause of digestive-tract cancer burden. Females accounted for a larger proportion of the burden (62%) than males (38%) (Table 7.5).

The majority (97%) of the burden of cancer of the gallbladder and extrahepatic bile duct was due to dying prematurely. Compared with most digestive-tract cancers, there was a higher non-fatal burden component. Less than half (40%) of the non-fatal burden from cancer of the gallbladder and extrahepatic bile ducts is from health loss during the control phase (Table A2.26). This phase refers to the time after primary therapy has finished and the patient is considered in remission. Health loss includes general worry and daily medication (AIHW 2017c).

Table 7.5: Burden of disease from gallbladder and extrahepatic bile duct cancers, by sex, 2011

	Males			Females			Persons		
	No	% of cancer burden	Rank	No	% of cancer burden	Rank	No	% of cancer burden	Rank
Fatal burden (YLL)	1,578	0.4	22	2,589	0.8	21	4,167	0.5	25
Non-fatal burden (YLD)	52	0.2	26	67	0.3	26	119	0.2	30
Total burden (DALYs)	**1,630**	**0.3**	**22**	**2,657**	**0.7**	**22**	**4,287**	**0.5**	**25**

Source: AIHW burden of disease database 2011.

Age group

In 2011, the burden from cancer of the gallbladder and extrahepatic bile ducts varied across age groups (AIHW 2017c). Children (0–14), adolescents, and young adults (15–24) were rarely impacted by cancer of the gallbladder and extrahepatic bile ducts. Adults (25–64) lost 1,599 DALYs due to premature death or living with disability as a result of cancer of the gallbladder and extrahepatic bile ducts. Among males in this age group, cancer of the gallbladder and extrahepatic bile ducts was the 22nd leading cause of cancer burden, accounting for 0.4% of the total burden. Among females, it was the 20th leading cause of cancer burden, accounting for 0.5% of the total burden.

Older adults (65+) lost 2,681 DALYs due to premature death or living with disability as a result of cancer of the gallbladder and extrahepatic bile ducts. Among males and females in this age group, cancer of the gallbladder and extrahepatic bile ducts was the 21st leading cause of cancer burden, accounting for 0.4% and 1.0% of the total burden, respectively (Table A2.27).

Contribution of risk factors to gallbladder cancer burden

The most common risk factor for cancer of the gallbladder and biliary tract is high body mass (GBD 2016; IARC 2014). In 2011, about 25% of cancer of the gallbladder burden was estimated to be attributable to high body mass based on the ABDS study (AIHW 2016b, 2017c). See Section 2.5 for details on this study. A greater proportion of the burden in

females (29%) was due to high body mass than in males (17%) (Table 7.6). Other risk factors include a diet high in sugar and sweetened beverages (GBD 2016), a history of cholelithiasis (gallstones), chronic infections of the gallbladder, environmental exposures and genetics (Hundal & Shaffer 2014; Jain et al. 2013; Sheth et al. 2000).

Table 7.6: Gallbladder cancer burden attributed to selected risk factors (DALYs and proportion), 2011

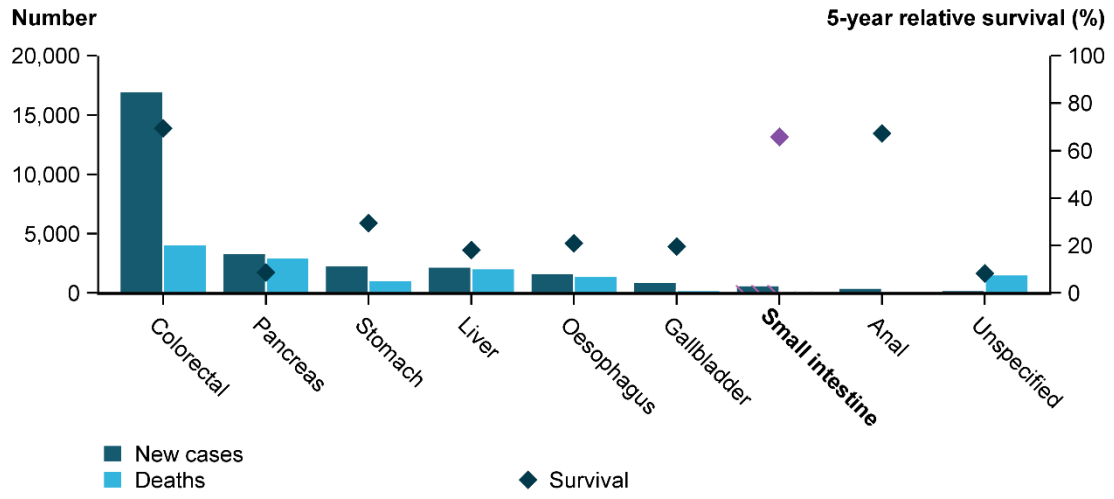
	Males		Females		Persons	
Risk factor	Attributable DALYs	% gallbladder cancer of burden	Attributable DALYs	% gallbladder cancer of burden	Attributable DALYs	% gallbladder cancer of burden
High body mass[(a)]	271	16.7	782	29.4	1,054	24.6

(a) Estimates for high body mass are based on revised methods and improvements developed as part of extension projects done by the AIHW to look into the impact of various risk factors on chronic conditions (AIHW 2017e, 2017f, 2018c). These estimates will differ from those presented in earlier publications from the ABDS 2011 (AIHW 2016a).

Sources: AIHW ABDS 2011; AIHW (2016a, 2017d, 2017e, 2018b).

8 Cancer of the small intestine (C17)

648 new cases	133 deaths
66% 5-year relative survival	1,557 DALYs



8.1 A picture of cancer of the small intestine in Australia

In 2018, it is estimated that cancer of the small intestine will be the 7th most commonly diagnosed digestive-tract cancer and the 8th most common cause of digestive-tract cancer-related deaths. Cancer of the small intestine is estimated to be the 29th most commonly diagnosed type of cancer in Australia and the 29th leading cause of cancer death. In 2018, it is estimated that 648 new cases of cancer of the small intestine will be diagnosed in Australia and 133 people will die from this cancer. This is an average of 2 new cases a day and 3 deaths a week.

In 2010–2014, Australians diagnosed with small intestine cancer had a 66% chance of surviving 5 years compared with their counterparts in the general population (Table 8.1). This was the 3rd highest 5-year relative survival rate of all digestive-tract cancers and was similar to all cancers combined (69%).

Males are 1.5 times as likely to be diagnosed with cancer of the small intestine and 1.3 times as likely to die from cancer of the small intestine as females. Males and females had similar 5-year relative survival rates.

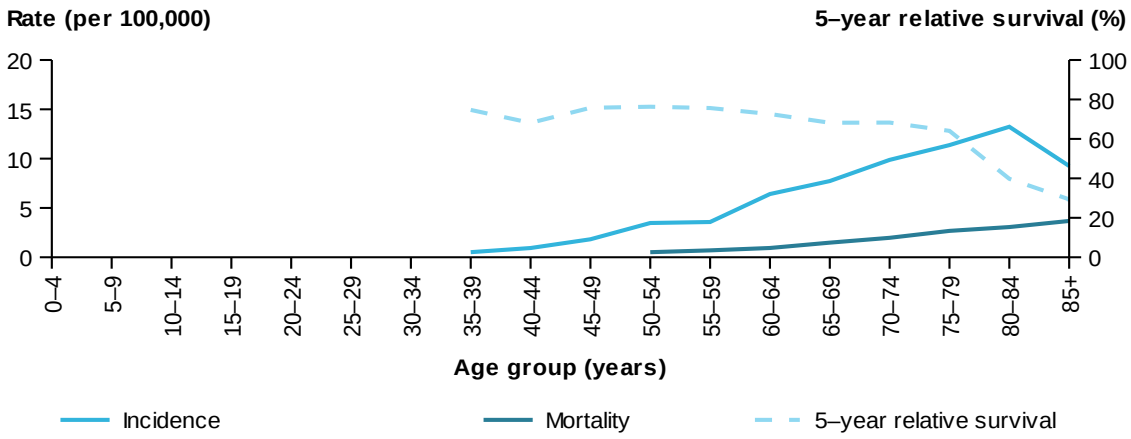
Table 8.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), cancer of the small intestine, by sex

	Incidence		Mortality		Survival
Sex	**Number**	**ASR**	**Number**	**ASR**	**5-year relative survival (%)**
Male	380	2.7	76	0.5	65.2
Female	267	1.8	57	0.4	66.6
Persons	**648**	**2.2**	**133**	**0.4**	**65.8**

Sources: AIHW ACD 2014; AIHW NMD.

Age group

The cancer of the small intestine incidence and mortality rate increased with age. In 2010–2014, the 5-year relative survival rate was stable for those aged 35–79 and decreased in older age groups (Figure 8.1).

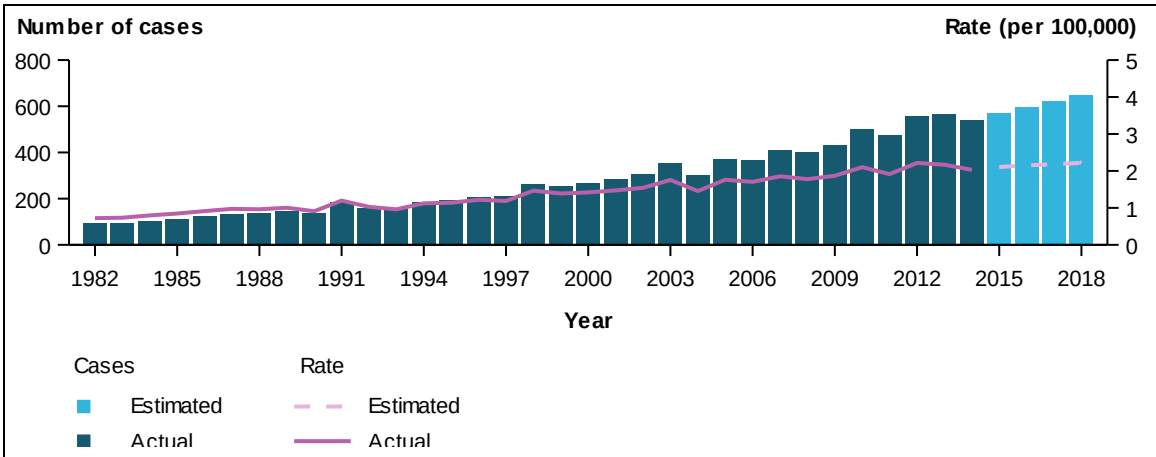


Source: Table A8.1.

Figure 8.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for cancer of the small intestine, by age group

Trend

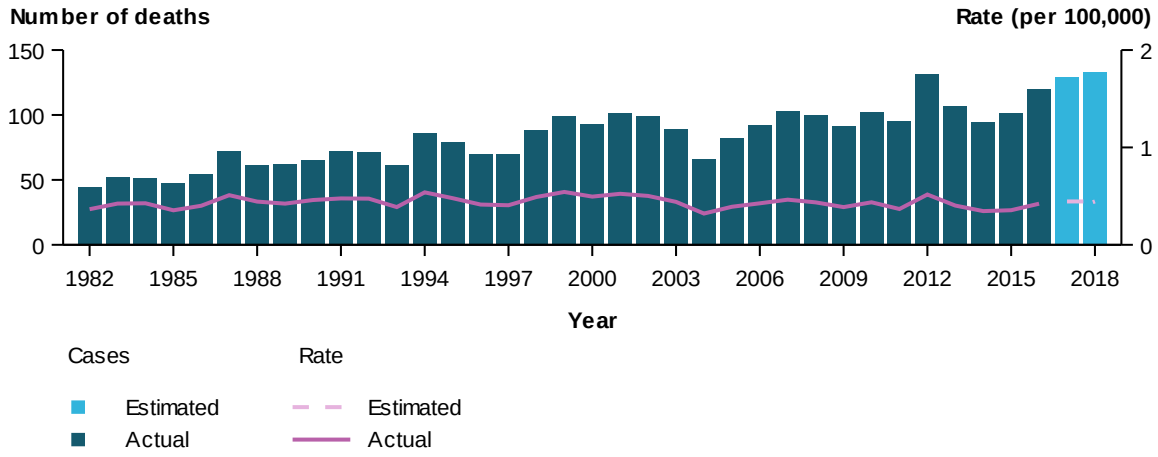
The number of new cases of cancer of the small intestine increased from 91 cases in 1982 to an estimated 648 in 2018. The age-standardised incidence rate increased from 0.7 cases per 100,000 persons to an expected 2.2 per 100,000 over the same time period (Figure 8.2). This increase is likely to reflect improvements in data recording and diagnosis, and changing prevalence of risk factors (Cancer Research UK 2018).



Source: Table A8.2.

Figure 8.2: Incidence trends for cancer of the small intestine, 1982–2014, with projections to 2018

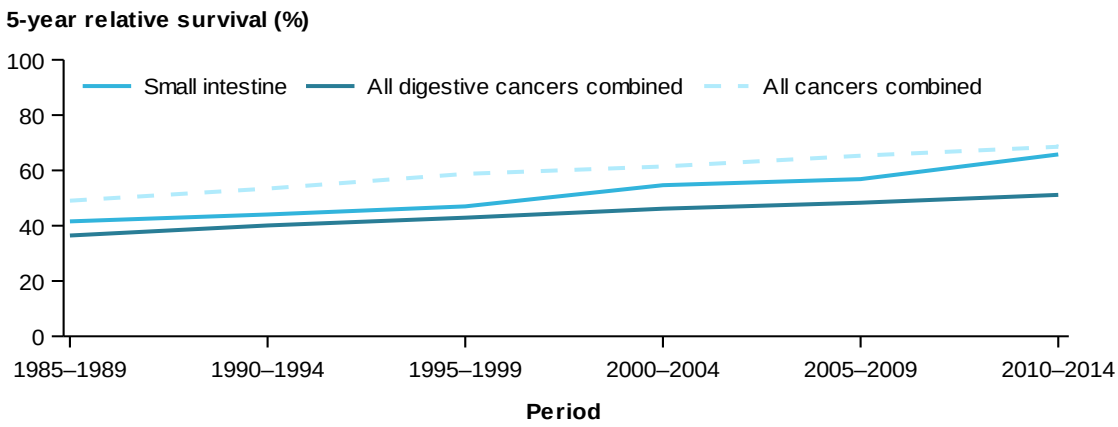
The number of deaths from cancer of the small intestine increased from 44 deaths in 1982 to an estimated 133 in 2018. The age-standardised rate remained at 0.4 deaths per 100,000 persons over the same time period. The increase in the number of deaths from cancer of the small intestine is due to a growing and ageing population (Figure 8.3).



Source: Table A8.2.

Figure 8.3: Mortality trends for cancer of the small intestine, 1982–2016, with projections to 2018

Between 1985–1989 and 2010–2014, the 5-year relative survival rate for cancer of the small intestine increased from 42% to 66%. Five-year relative survival was higher for cancer of the small intestine than for all digestive-tract cancers combined, but lower than the all cancers combined 5-year relative survival rate (Figure 8.4).



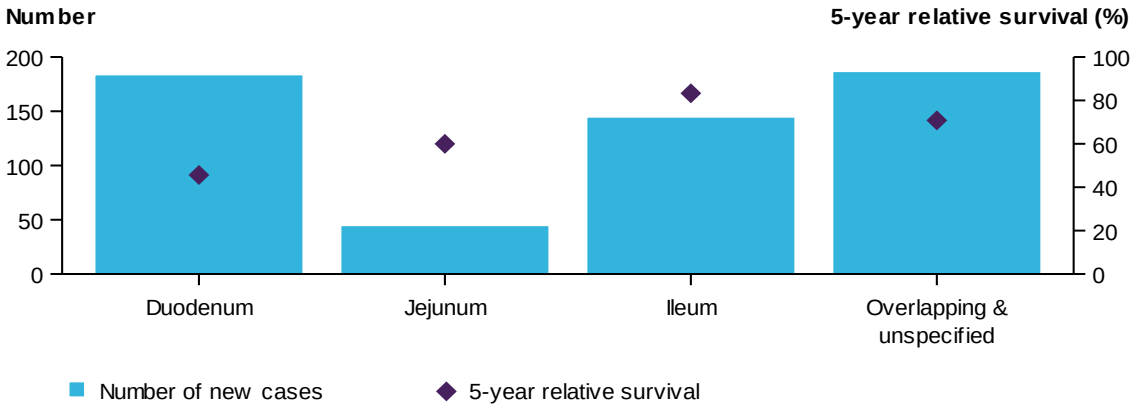
Source: Table A2.3.

Figure 8.4: Five-year relative survival for cancer of the small intestine, all digestive-tract cancers combined and all cancers combined, 1985–1989 to 2010–2014

Characteristics

Subsite

In 2013, small intestine, overlapping and unspecified, and cancer of the duodenum were the most common subsites diagnosed, both representing 33% of all cancers of the small intestine. Australians diagnosed with small intestine, overlapping and unspecified had a 71% chance of surviving 5 years compared with their counterparts in the general population. This was higher than the 5-year relative survival rate for all cancers of the small intestine (66%) and was the 2nd highest 5-year relative survival rate for cancer of the small intestine. Australian diagnosed with cancer of the duodenum had a 46% chance of surviving 5 years compared with their counterparts in the general population. This was the lowest 5-year relative survival rate for cancer of the small intestine. The highest 5-year relative survival rate was for cancer of the ileum (83%) (Figure 8.5).



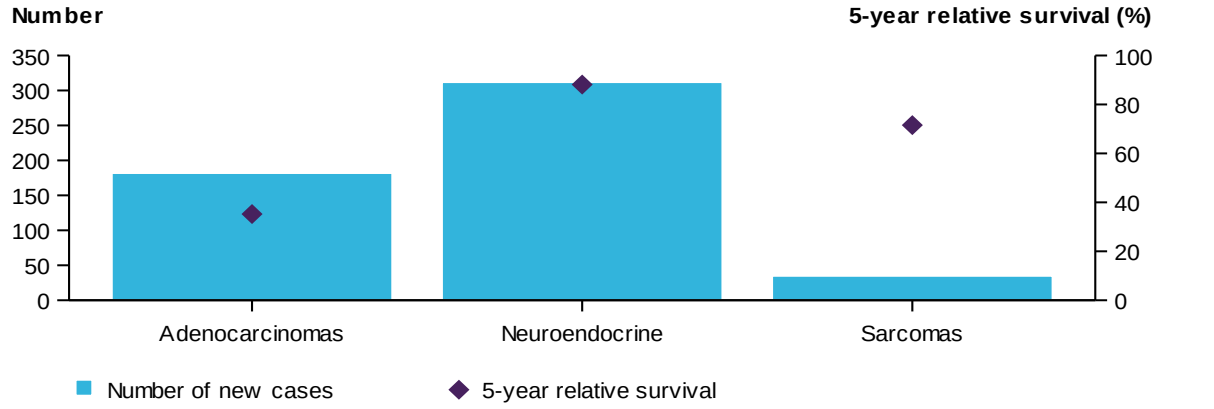
Source: Table A8.3.

Figure 8.5: Incidence (2013) and 5-year relative survival (2010–2014) for cancer of the small intestine, by subsite

Histology

In 2013, neuroendocrine neoplasms was the most common cancer of the small intestine histological type diagnosed, representing 55% of cases. Australians diagnosed with neuroendocrine neoplasms of the small intestine had an 88% chance of surviving 5 years

compared with their counterparts in the general population. This was higher than the 5-year relative survival rate for all cancers of the small intestine (66%) and was the highest 5-year relative survival rate of all cancers of the small intestine. The lowest 5-year relative survival rate was for adenocarcinomas (35%) (Figure 8.6).



Source: Table A8.4.

Figure 8.6: Incidence (2013) and 5-year relative survival (2010–2014) for cancer of the small intestine, by histology

Population groups

Indigenous status

Indigenous Australians living in the jurisdictions for which data were available (see notes on page vii for more details) were 1.3 times as likely to be diagnosed with small intestine cancer in 2009–2013 and 1.5 times as likely to die from cancer of the small intestine in 2012–2016 as non-Indigenous Australians. The incidence (1.3) and mortality (1.5) rate ratio between Indigenous and non-Indigenous Australians for cancer of the small intestine was higher than the same incidence rate ratio (1.1) and mortality rate ratio (1.4) for all cancers combined. One-year relative survival was lower in Indigenous Australians (72%) than in non-Indigenous Australians (80%) (Table A2.9).

Remoteness area

Australians living in *Major cities* of Australia were 1.8 times as likely to be diagnosed with cancer of the small intestine in 2009–2013 (Table A2.10) compared with Australians living in *Very remote* areas. The incidence rate ratio (0.6) for cancer of the small intestine for Australians living in *Very remote* areas compared with those living in *Major cities* was lower than the same incidence rate ratio (0.9) for all cancers combined. Cancer of the small intestine age-standardised mortality rates were similar for all remoteness areas (Table A2.11). The 5-year observed survival rate was lower for Australians living in *Outer regional* areas (55%) and higher for Australians living in *Inner regional areas* (62%). Note that observed survival could not be calculated for *Remote* and *Very remote* areas due to small numbers (Table A2.12).

Socioeconomic disadvantage

The age-standardised incidence (Table A2.13) and mortality (Table A2.14) rates for cancer of the small intestine were similar for all socioeconomic groups. The 5-year observed survival rate was lower for Australians in the lowest socioeconomic group (58%) and higher for Australians in the two highest socioeconomic groups (61%) (Table A2.15).

8.2 Treatment

Hospitalisations

In 2016–17, there were 4,757 small intestine cancer-related hospitalisations. This accounted for 0.4% of cancer-related hospitalisations and 2.1% of digestive-tract cancer-related hospitalisations in Australia (Table A2.20). Of these, 57% were for males and 43% were for females, which is consistent with the incidence pattern (Table 8.1). In 24% of these hospitalisations, cancer of the small intestine was the principal diagnosis (Table 8.2).

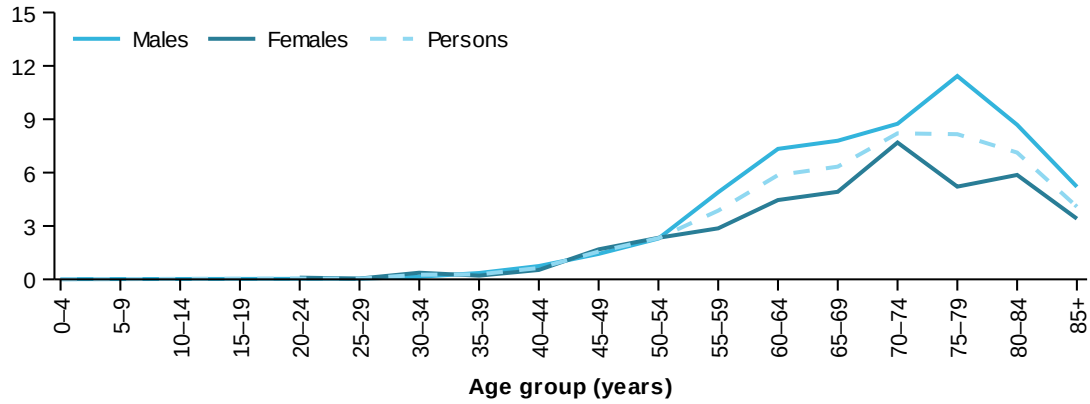
Table 8.2: Hospitalisations related to cancer of the small intestine, by sex, 2016–17

	Males			Females			Persons		
	Number	%	ASR	Number	%	ASR	Number	%	ASR
Principal diagnosis of cancer	627	13.2	0.5	516	10.8	0.4	1,143	24.0	0.4
Additional diagnosis of cancer	2,086	43.9	1.5	1,528	32.1	1.1	3,614	76.0	1.3
All hospitalisations related to cancer of the small intestine	**2,713**	**57.0**	**2.0**	**2,044**	**43.0**	**1.4**	**4,757**	**100.0**	**1.7**

Source: AIHW NHMD.

Age group

In 2016–17, the age-specific cancer of the small intestine-related hospitalisation rate increased with age from 25–29 to 75–79, before decreasing for those aged 80 or older (Figure 8.7). Rates were similar for males and females for age groups up to 55–59. Differences were more apparent for older age groups.

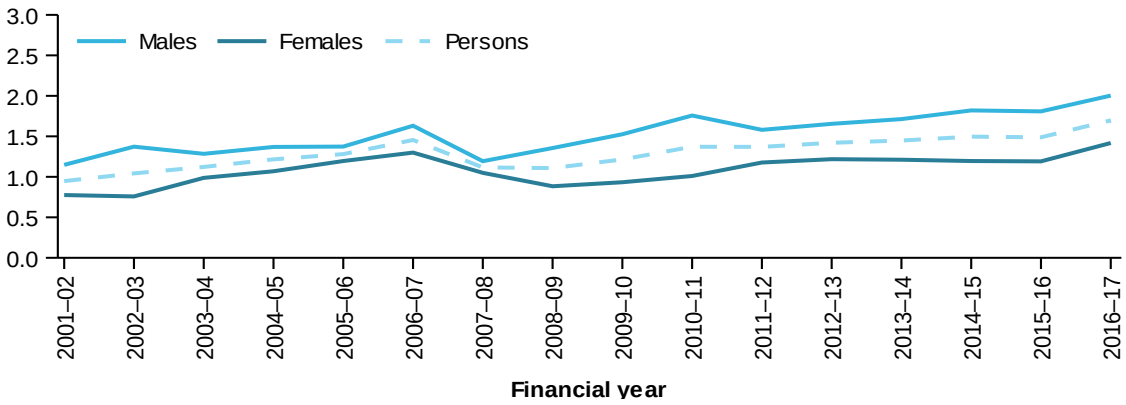


Source: Table A8.5.

Figure 8.7: Age-specific rates of hospitalisations related to cancer of the small intestine, by age group and sex, 2016–17

Trend

Between 2001–02 and 2016–17, the age-standardised cancer of the small intestine-related hospitalisation rate increased from 0.9 to 1.7 per 10,000 (Figure 8.8). This trend was observed for both males and females, with males having consistently higher rates than females.



Source: Table A8.6.

Figure 8.8: All hospitalisations related to cancer of the small intestine, by sex, 2001–02 to 2016–17

Selected surgical procedures

In 2016–17, there were 277 surgical procedures (see Table D10 for details) related to cancer of the small intestine. There were more procedures in males (53%) than in females (47%) (Table 8.3), which was consistent with the incidence pattern (Table 8.1). A resection of small intestine was reported for 84% of surgical procedures. See Appendix C for information on how surgical procedures were calculated.

Table 8.3: Number of surgical procedures, cancer of the small intestine, by sex, 2016–17

	Males		Females		Persons	
Procedure type	**Number**	**%**	**Number**	**%**	**Number**	**%**
Insertion of prosthesis	10	6.8	8	6.2	18	6.5
Enterotomy	n.p.	n.p.	n.p.	n.p.	5	1.8
Resection of small intestine	124	83.8	108	83.7	232	83.8
Other excision procedure	n.p.	n.p.	n.p.	n.p.	8	2.9
Stomas of small intestine	n.p.	n.p.	n.p.	n.p.	14	5.1
All surgical procedures	**148**	**100.0**	**129**	**100.0**	**277**	**100.0**

Source: AIHW NHMD.

Chemotherapy

In 2016–17, there were 3,567 chemotherapy procedures related to cancer of the small intestine. This accounted for 2.0% of all digestive-tract cancer chemotherapy procedures and 0.5% of all cancer-related chemotherapy procedures. There were more chemotherapy procedures in males (57%) than females (43%) (Table A2.23), which was consistent with the incidence pattern (Table 8.1). See Appendix C for information on how chemotherapy procedures were calculated.

Radiotherapy

In 2016–17, there were 56 radiotherapy courses where the principal diagnosis was recorded as cancer of the small intestine. This accounted for 0.1% of all radiotherapy courses provided and 0.9% of all digestive-tract cancer-related radiotherapy courses. A similar number of courses were provided to males and females (Table A2.24).

8.3 Survivorship population

Cancer survivorship focuses on the health and wellbeing of a person living with and beyond cancer (Cancer Australia 2017). See Section 2.4 for a full description of cancer survivorship, including data limitations. At the end of 2013, there were 1,809 people alive who were diagnosed with cancer of the small intestine in the previous 5 years. Five-year prevalence of cancer of the small intestine was 1.3 times higher in males than in females (Table 8.4), which is consistent with the incidence pattern (Table 8.1).

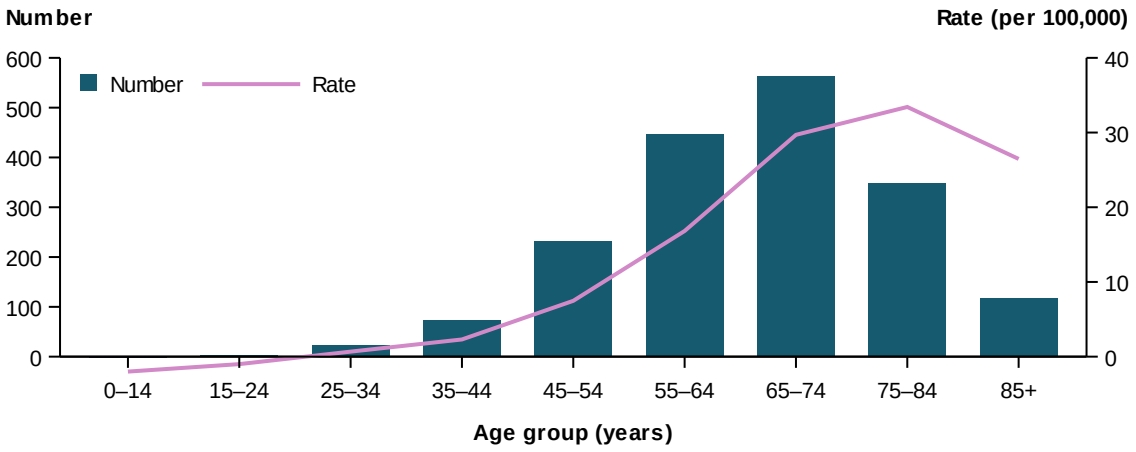
Table 8.4: Limited-duration prevalence of cancer of the small intestine, by sex, as at end of 2013

	Males			Females			Persons		
	Number	% of cases	Rate	Number	% of cases	Rate	Number	% of cases	Rate
1-year prevalence	285	58.2	2.5	205	41.8	1.7	490	100.0	2.1
5-year prevalence	1,018	56.3	8.8	791	43.7	6.8	1,809	100.0	7.8
32-year prevalence	1,951	55.0	16.8	1,596	45.0	13.6	3,547	100.0	15.2

Source: AIHW ACD 2014.

Age group

At the end of 2013, 5-year prevalence rates for cancer of the small intestine increased with age from those aged 15–24 to those aged 75–84, before decreasing for those aged 85 and older (Figure 8.9). At the end of 2013, Australians aged 75 and older accounted for around a quarter (26%) of the total 5-year prevalence of cancer of the small intestine.



Source: Table A8.7.

Figure 8.9: Five-year prevalence of cancer of the small intestine, by age group, as at end of 2013

8.4 Burden from cancer of the small intestine

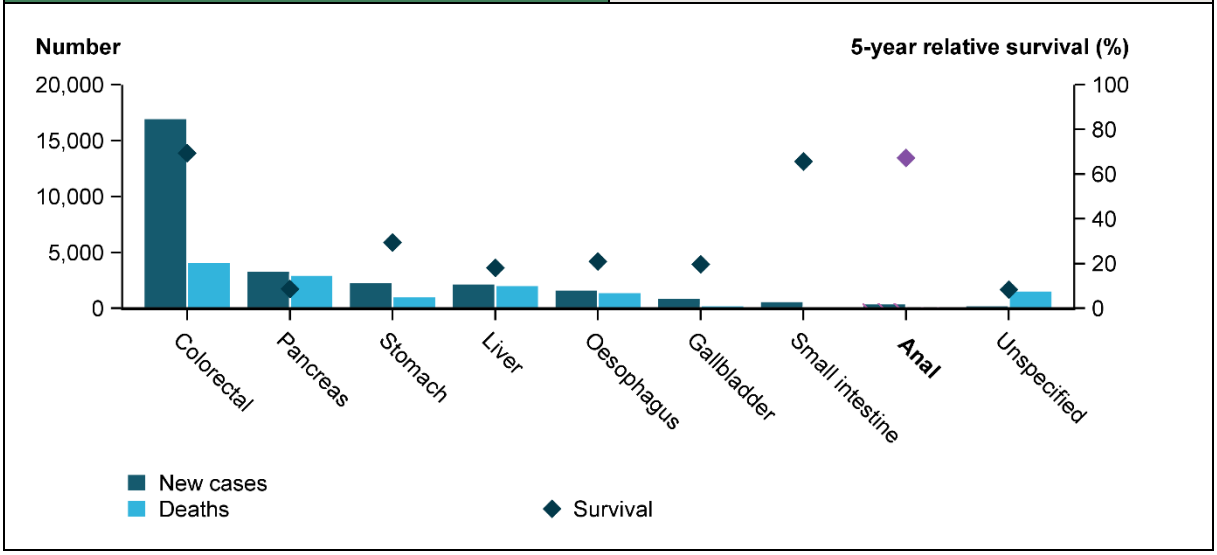
Burden estimates for cancer of the small intestine were included in the burden from 'other malignant cancers' in the Australian Burden of Disease Study 2011 (AIHW 2017c), so the burden estimates provided are an approximation from post-hoc analyses. In 2011, the estimated burden of cancer of the small intestine was 1,557 DALYs. This burden accounted for 0.2% of the total cancer burden. No further information is available.

Risk factors

Certain viral and bacterial infections of the small intestine may lead to prolonged inflammation and cause the symptoms of Crohn's disease and coeliac disease, which are risk factors for cancer of the small intestine. Some research indicates that personal and lifestyle factors such as dietary habits, smoking and lack of physical activity are associated with causing and/or worsening of symptoms related to Crohn's disease and coeliac disease (IARC 2014).

9 Anal cancer (C21)

440 new cases	90 deaths
67% 5-year relative survival	1,645 DALYs



9.1 A picture of anal cancer in Australia

In 2018, it is estimated that anal cancer will be the 8th most commonly diagnosed digestive-tract cancer and the 9th most common cause of digestive-tract cancer-related death. Anal cancer is estimated to be the 31st most commonly diagnosed type of cancer in Australia and the 30th leading cause of cancer death. In 2018, it is estimated that 440 new cases of anal cancer will be diagnosed in Australia and 90 people will die from this cancer. This is an average of 1 case a day and 2 death a week.

In 2010–2014, Australians diagnosed with anal cancer had a 67% chance of surviving 5 years compared with their counterparts in the general population. This was the 2nd highest 5-year relative survival rate of all digestive-tract cancers and was similar to all cancers combined (69%).

Females are 1.3 times as likely to be diagnosed with anal cancer. Males and females were equally likely to die from anal cancer. Females had higher 5-year relative survival rates than males (Table 9.1).

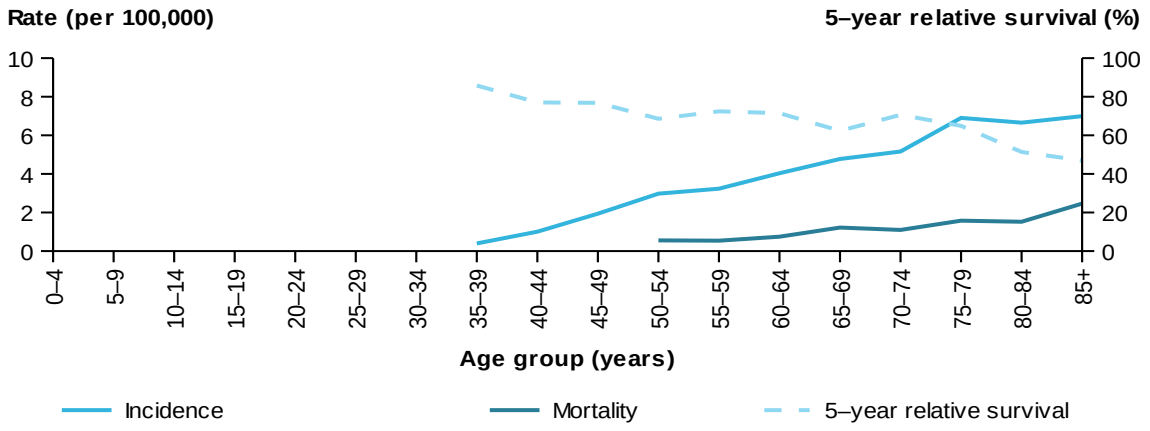
Table 9.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), anal cancer, by sex

	Incidence		Mortality		Survival
Sex	**Number**	**ASR**	**Number**	**ASR**	**5-year relative survival (%)**
Male	184	1.3	47	0.3	60.1
Female	256	1.7	43	0.3	72.4
Persons	**440**	**1.5**	**90**	**0.3**	**67.4**

Sources: AIHW ACD 2014; AIHW NMD.

Age group

The incidence and mortality rates for anal cancer increased with age. In 2010–2014, the 5-year relative survival rate decreased with increasing age (Figure 9.1).

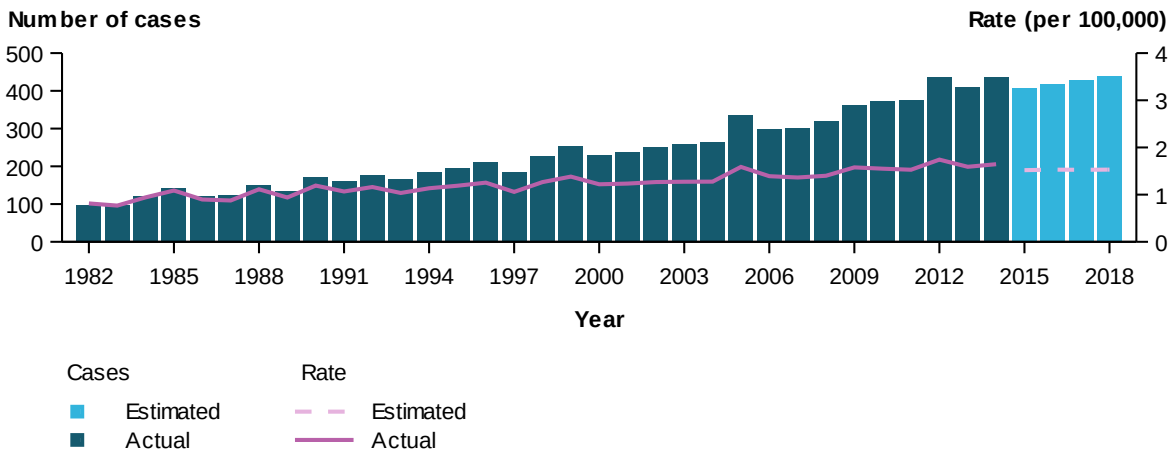


Source: Table A9.1.

Figure 9.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for anal cancer, by age group

Trend

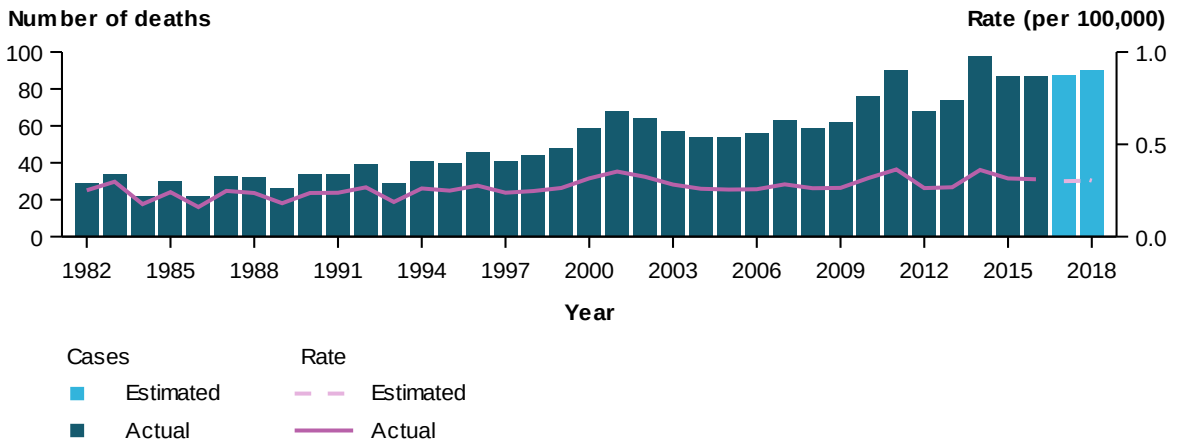
The number of new cases of anal cancer increased from 96 cases in 1982 to an estimated 440 in 2018. The age-standardised incidence rate increased from 0.8 cases per 100,000 to an expected 1.5 per 100,000 over the same time period (Figure 9.2). This increase is likely due to smoking, sexual behaviours, and infection by human papillomavirus (HPV) or human immunodeficiency virus (HIV), but the introduction of the HPV vaccine is expected to lead to a decrease in the incidence of cases in the future (Islami et al. 2016; van der Zee et al. 2013).



Source: Table A9.2.

Figure 9.2: Incidence trends for anal cancer, 1982–2014, with projections to 2018

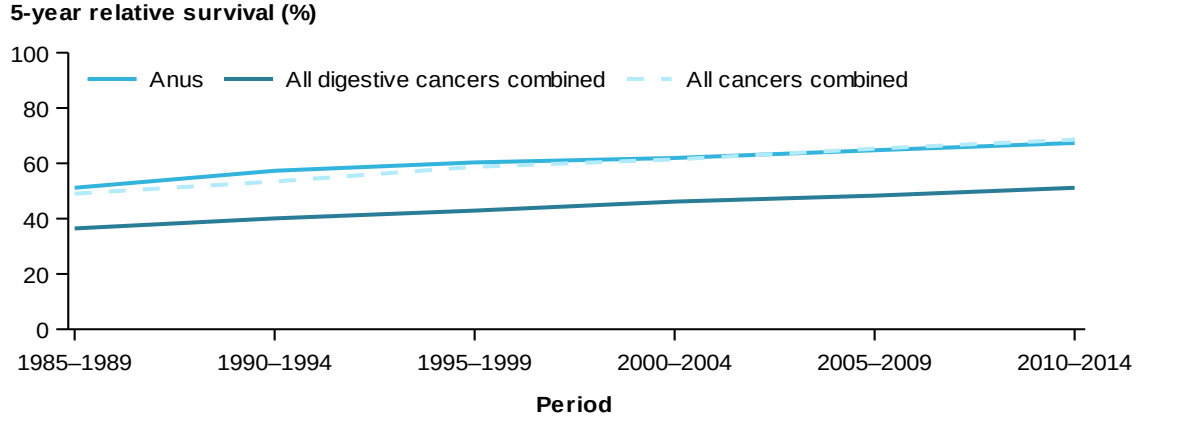
The number of deaths from anal cancer increased from 29 deaths in 1982 to an estimated 90 in 2018. The age-standardised rate remained at 0.3 deaths per 100,000 persons during this period (Figure 9.3).



Source: Table A9.2.

Figure 9.3: Mortality trends for anal cancer, 1982–2016, with projections to 2018

Between 1985–1989 and 2010–2014, the 5-year relative survival rate for anal cancer increased from 51% to 67%. Five-year relative survival for anal cancer was higher than the all digestive-tract cancers combined and all cancers combined (Figure 9.4).



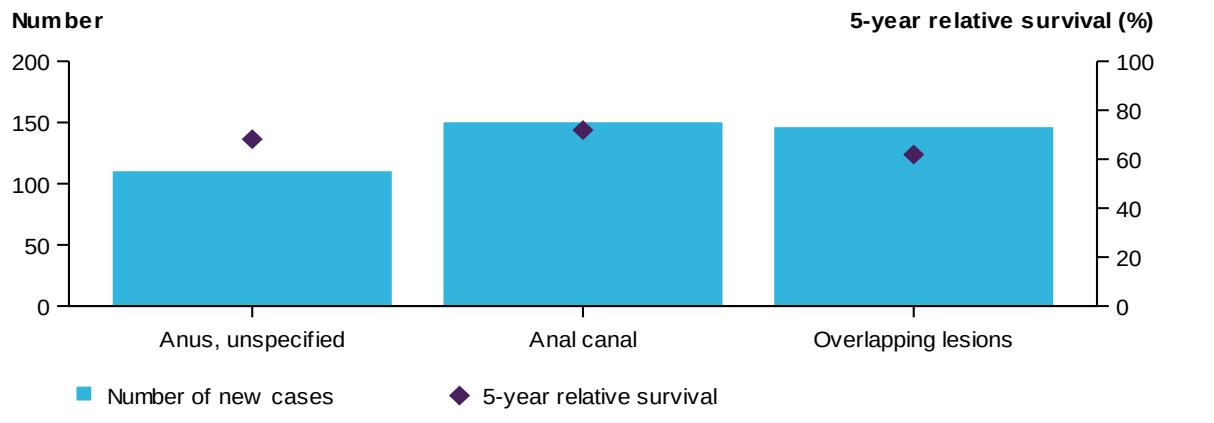
Source: Table A2.3.

Figure 9.4: Five-year relative survival for anal cancer, all digestive-tract cancers combined and all cancers combined, 2010–2014

Characteristics

Subsite

In 2013, the anal canal was the most common anal cancer subsite diagnosed, representing 37% of all anal cancer cases. Australians diagnosed with this subsite had a 72% chance of surviving 5 years compared with their counterparts in the general population. This was higher than the 5-year relative survival rate for all anal cancers (67%) and was the highest 5-year relative survival rate for anal cancer. The lowest 5-year relative survival rate was for cancer of the overlapping lesion of rectum, anus and anal canal (62%) (Figure 9.5).

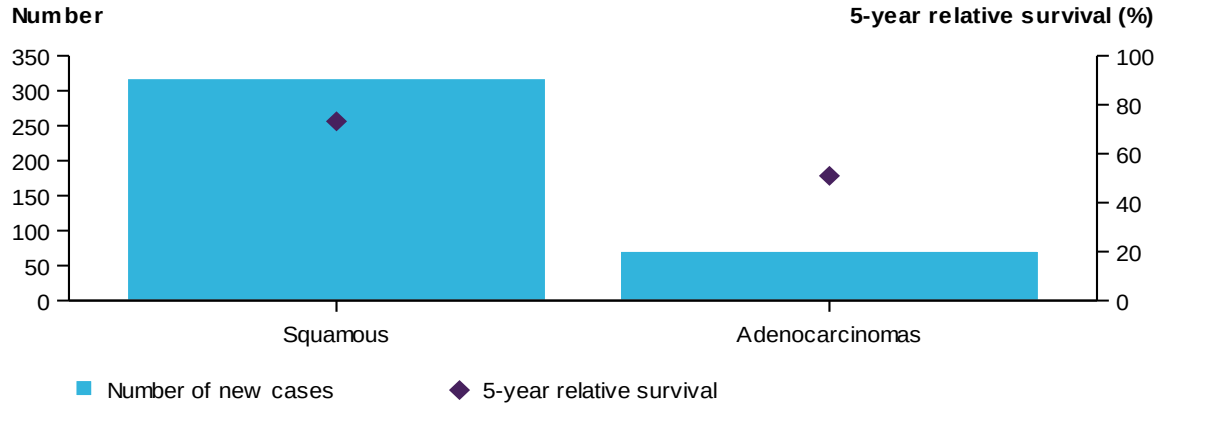


Source: Table A9.3.

Figure 9.5: Incidence (2013) and 5-year relative survival for anal cancer (2010–2014), by subsite

Histology

In 2013, squamous neoplasms were the most common anal cancer histological type, representing 78% of all anal cancer cases diagnosed. Australians diagnosed with squamous neoplasms had a 73% chance of surviving 5 years compared with their counterparts in the general population. This was higher than the 5-year relative survival rate for all anal cancers (67%) and was the highest 5-year relative survival rate for anal histological types. Adenocarcinomas have the lowest 5-year relative survival rate (51%) (Figure 9.6).



Source: Table A9.4.

Figure 9.6: Incidence (2013) and 5-year relative survival (2010–2014) for anal cancer, by histology

Population groups

Indigenous status

Indigenous Australians living in the jurisdictions for which data were available (see notes on page vii for more details) were 1.7 times as likely to be diagnosed with anal cancer in 2009–2013 and 2.7 times as likely to die from anal cancer in 2012–2016 as non-Indigenous Australians. The incidence (1.7) and mortality (2.7) rate ratio between Indigenous and non-Indigenous Australians for anal cancer was higher than the same incidence rate ratio (1.1) and mortality rate ratio (1.4) for all cancers combined. One-year relative survival was lower in Indigenous Australians (81%) than in non-Indigenous Australians (88%) (Table A2.9).

Remoteness area

Australians living in *Very remote* areas of Australia were 1.4 times as likely to be diagnosed with anal cancer in 2009–2013 (Table A2.10) and 3.0 times as likely to die from anal cancer in 2011–2016 compared with Australians living in *Major cities* (Table A2.11). The anal cancer incidence (1.4) and mortality (3.0) rate ratio for Australians living in *Very remote* areas compared with those living in *Major cities* was higher than the same incidence (0.9) and mortality (1.2) rate ratio for all cancers combined. The 5-year observed survival rate was lower for Australians living in *Outer regional* areas (56%) and higher for Australians living in *Major cities* (62%). Note that observed survival could not be calculated for *Remote* and *Very remote* areas due to small numbers (Table A2.12).

Socioeconomic disadvantage

Australians in the lowest socioeconomic group were 1.1 times as likely to be diagnosed with anal cancer in 2009–2013 (Table A2.13) and 2.0 times as likely to die from anal cancer in 2012–2016 compared with Australians in the highest socioeconomic group (Table A2.14). The anal cancer incidence (1.1) and mortality (2.0) rate ratio between Australians in the lowest and highest socioeconomic group was higher than the same incidence (1.0) and mortality (1.4) rate ratio for all cancers combined. The 5-year observed survival rate was lowest for Australians in the lowest socioeconomic group (55%) and higher for Australians in the third highest socioeconomic group (66%) (Table A2.15).

9.2 Treatment

Hospitalisations

In 2016–17, there were 2,826 anal cancer-related hospitalisations. This accounted for 0.2% of cancer-related hospitalisations and 1.3% of digestive-tract cancer-related hospitalisations in Australia (Table A2.20). Of these, 36% were for males and 64% were for females, which is consistent with the incidence pattern (Table 9.1). Anal cancer was the principal diagnosis in just over one-third (34%) of these hospitalisations (Table 9.2).

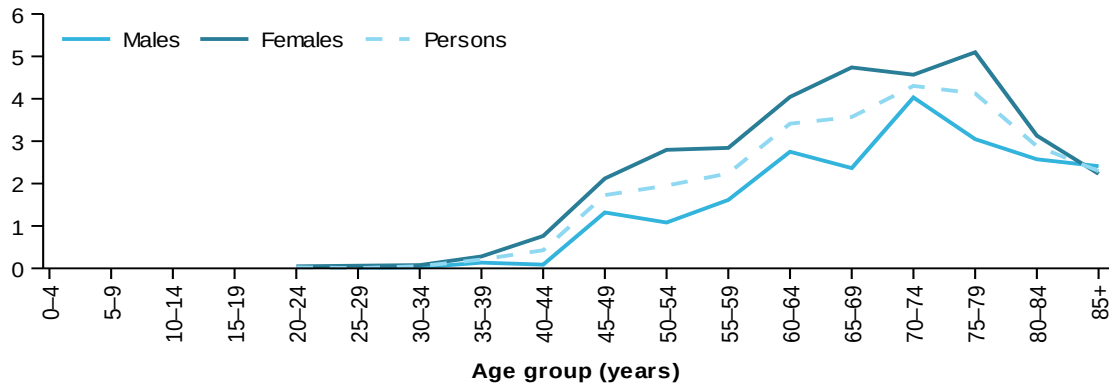
Table 9.2: Hospitalisations related to anal cancer, by sex, 2016–17

	Males			Females			Persons		
	Number	**%**	**ASR**	**Number**	**%**	**ASR**	**Number**	**%**	**ASR**
Principal diagnosis of cancer	399	14.1	0.3	567	20.1	0.4	966	34.2	0.3
Additional diagnosis of cancer	619	21.9	0.5	1,241	43.9	0.9	1,860	65.8	0.7
All anal cancer-related hospitalisations	**1,018**	**36.0**	**0.8**	**1,808**	**64.0**	**1.3**	**2,826**	**100.0**	**1.0**

Source: AIHW NHMD.

Age group

In 2016–17, the age-specific anal cancer-related hospitalisation rate increased with age, before decreasing for those aged 75 or older. Females had higher rates than males for most age groups between 40–44 and 85 and over (Figure 9.7).

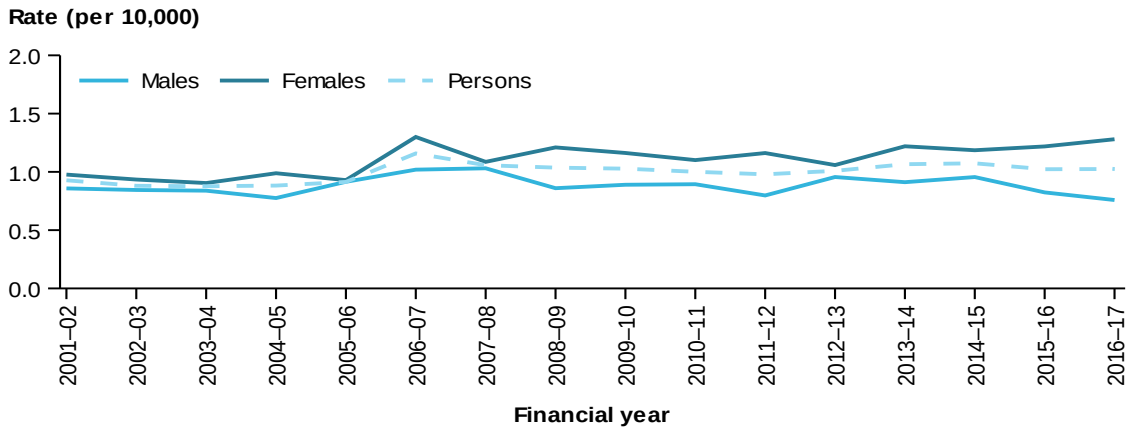


Source: Table A9.5.

Figure 9.7: Age-specific rates of hospitalisations related to anal cancer, by age group and sex, 2016–17

Trend

Between 2001–02 and 2016–17, the age-standardised hospitalisation rate for anal cancer remained relatively unchanged at between 0.9 and 1.0 per 10,000 (Figure 9.8). Females consistently had similar or higher rates than males across all periods.



Source: Table A9.6.

Figure 9.8: All anal cancer-related hospitalisations, by sex, 2001–02 to 2016–17

Selected surgical procedures

In 2016–17, there were 189 surgical procedures (see Table D11 for details) related to anal cancer. There were a similar number of procedures in males (49%) as females (51%) (Table 9.3), which was consistent with the incidence pattern (Table 9.1). Abdominoperineal proctectomy was reported for 43% of surgical procedures. See Appendix C for information on how surgical procedures were calculated.

Table 9.3: Number of surgical procedures, anal cancer, by sex, 2016–17

	Males		Females		Persons	
Procedure type	**Number**	**%**	**Number**	**%**	**Number**	**%**
Abdominoperineal proctectomy	43	46.7	38	39.2	81	42.9
Other excision procedures	49	53.3	59	60.8	108	57.1
All surgical procedures	**92**	**100.0**	**97**	**100.0**	**189**	**100.0**

Source: AIHW NHMD.

Chemotherapy

In 2016–17 there were 1,791 chemotherapy procedures related to anal cancer. This accounted for 1.0% of all digestive-tract cancer chemotherapy procedures and 0.3% of all cancer-related chemotherapy procedures. The high number of chemotherapy procedures for anal cancer (compared with other digestive-tract cancers) may be due to the fact that chemotherapy, in combination with radiotherapy, is the main treatment for anal cancer treatment (Cancer Council Victoria 2016). There were more chemotherapy procedures in females (68%) than males (32%) (Table A2.23), which was consistent with the incidence pattern (Table 9.1). See Appendix C for information on how chemotherapy procedures were calculated.

Radiotherapy

In 2016–17, there were 498 radiotherapy courses where the principal diagnosis was recorded as anal cancer. This accounted for 0.8% of all radiotherapy courses provided and 8.0% of all digestive-tract cancer-related radiotherapy courses. More courses were provided to females than males (Table A2.24).

9.3 Survivorship population

Cancer survivorship focuses on the health and wellbeing of a person living with and beyond cancer (Cancer Australia 2017). See Section 2.4 for a full description of cancer survivorship, including data limitations. At the end of 2013, there were 1,498 people alive who were diagnosed with anal cancer in the previous 5 years. Five-year prevalence for anal cancer was 1.6 times higher in females than in males (Table 9.4), which is consistent with the incidence pattern (Table 9.1).

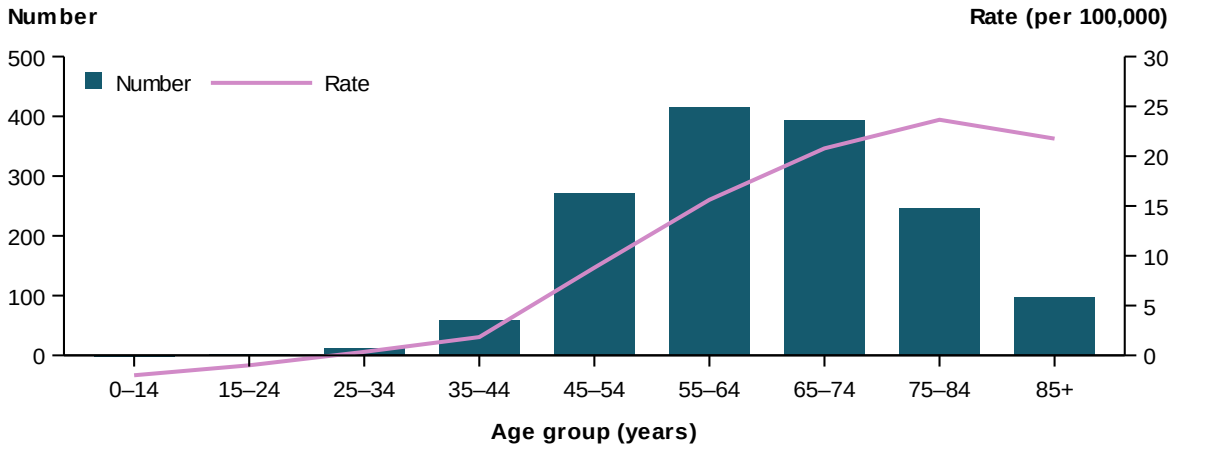
Table 9.4: Limited-duration prevalence of anal cancer, by sex, as at end of 2013

	Males			Females			Persons		
	Number	**% of prevalent cases**	**Rate**	**Number**	**% of prevalent cases**	**Rate**	**Number**	**% of prevalent cases**	**Rate**
1-year prevalence	161	41.8	1.4	224	58.2	1.9	385	100.0	1.7
5-year prevalence	576	38.5	5.0	922	61.5	7.9	1,498	100.0	6.4
32-year prevalence	1,232	38.5	10.6	1,968	61.5	16.8	3,200	100.0	13.7

Source: AIHW ACD 2014.

Age group

Five-year prevalence rates for anal cancer increased with age from age group 15–24 to age group 75–84, before decreasing for those aged 85 and older (Figure 9.9). At the end of 2013, Australians 75 years or older accounted for almost a quarter (23%) of all 5-year prevalent cases for anal cancer.



Source: Table A9.7.

Figure 9.9: Five-year prevalence of anal cancer, by age group, as at end of 2013

9.4 Burden from anal cancer

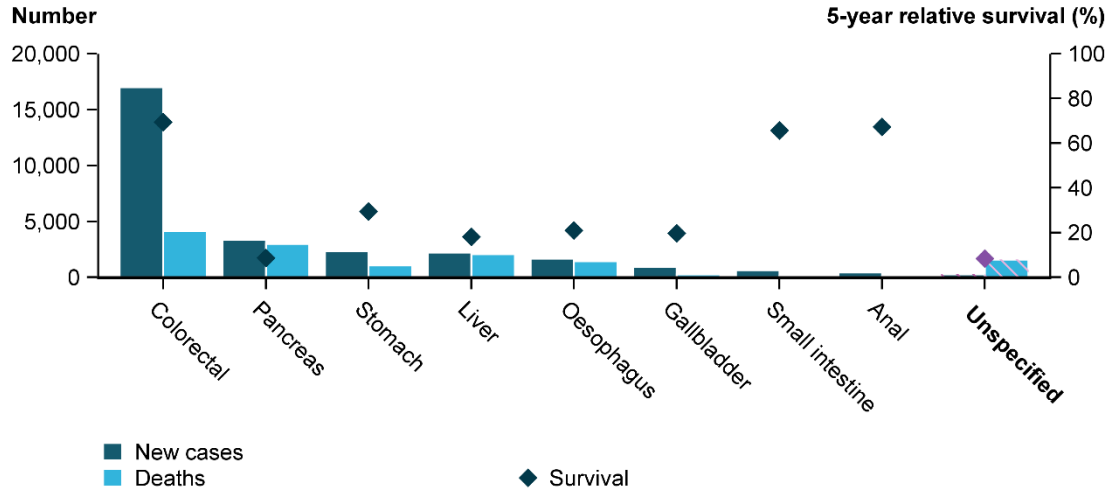
Burden estimates for anal cancer were included in the burden from 'other malignant cancers' in the Australian Burden of Disease Study 2011, so the burden estimates provided are an approximation from post-hoc analyses. In 2011, the estimated burden of anal cancer was 1,645 DALYs. This burden accounted for 0.2% of the total cancer burden. No further information is available.

Risk factors

Certain viral and bacterial infections, such as HPV and HIV, are related to an increased risk of anal cancer. However, the introduction of the HPV vaccine is expected to lead to a decrease in the incidence of cases in the future (Islami et al. 2016; van der Zee et al. 2013).

10 Cancer of unspecified digestive organs (C26)

263 new cases	1,576 deaths
8.3% 5-year relative survival	



This category is used when the primary site of the cancer cannot be narrowed down to a specific organ but is known to be in the digestive system. In some cases the primary site might be known to the treating doctors but not to the organisation that creates and maintains the record in its database, while in other cases the primary site might be truly unknown. This could be because investigations did not reveal the primary site, or the patient was too frail to subject to further investigations, or refused further investigations or died before the primary site was located.

This category occurs much more frequently in mortality data than in incidence data. There are 2 reasons for this. The first is that the doctor who completes the medical certificate of cause of death (MCCD) may not have access to all the relevant details and so is only able to attribute the cause to ‘cancer of the digestive system’. The second reason is the common use of the terms ‘bowel cancer’ and ‘colorectal cancer’ on the MCCD. These terms are not specific enough to assign to colon (C18), rectosigmoid junction (C19) or rectum (C20) and so are assigned to ‘intestinal tract, part unspecified, for which the code is C26.0 (ABS 2017).

10.1 A picture of cancer of unspecified digestive organs in Australia

In 2018, it is estimated that 263 new cases of cancer of unspecified digestive organs will be diagnosed in Australia and 1,576 people will die from this cancer. This is an average of 5 cases a week and 4 deaths each day. In 2010–2014, Australians diagnosed with cancer of unspecified digestive organs had an 8.3% chance of surviving 5 years compared with their counterparts in the general population (Table 10.1). This was the lowest 5-year relative survival rate of all digestive-tract cancers and was lower than all cancers combined (69%).

Males were 1.3 times as likely to be diagnosed with cancer of unspecified digestive organs and 1.4 times as likely to die from cancer of unspecified digestive organs as females. Males and females had similar 5-year relative survival rates.

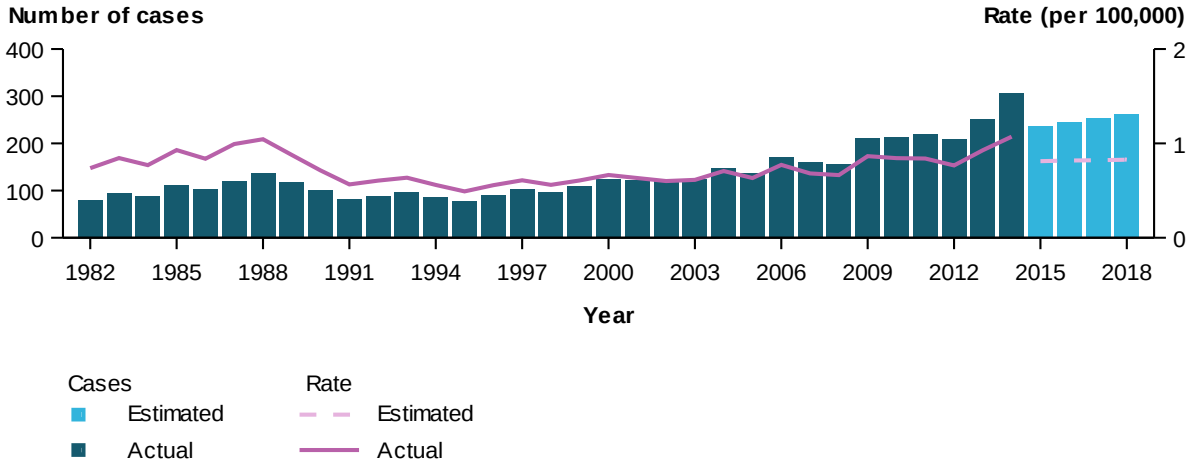
Table 10.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), cancer of unspecified digestive organs, by sex

	Incidence		Mortality		Survival
Sex	**Number**	**ASR**	**Number**	**ASR**	**5-year relative survival (%)**
Male	131	0.9	830	5.9	7.9
Female	132	0.7	746	4.3	8.8
Persons	**263**	**0.8**	**1,576**	**5.1**	**8.3**

Sources: AIHW ACD 2014; AIHW NMD.

Trend

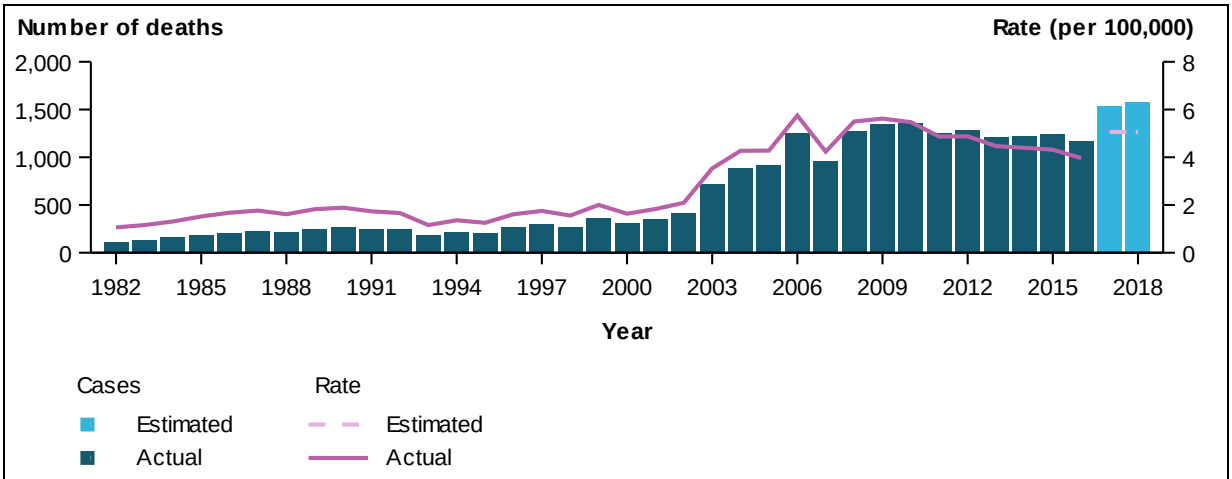
The number of new cases of cancer of unspecified digestive organs increased from 80 cases in 1982 to an estimated 263 in 2018. The age-standardised incidence rate remained relatively steady at 0.8 cases per 100,000 persons over the same time period (Figure 10.1).



Source: Table A10.1.

Figure 10.1: Incidence trends for cancer of unspecified digestive organs, 1982–2014, with projections to 2018

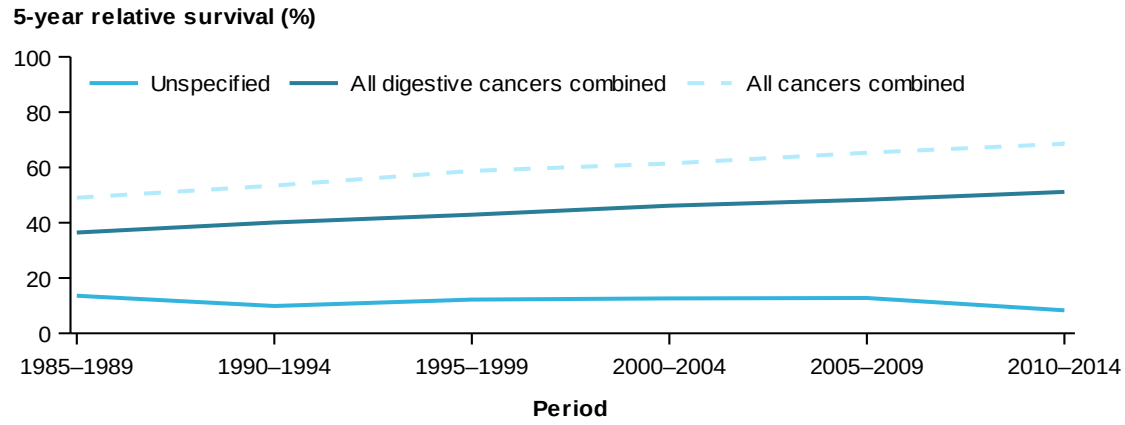
The number of deaths from cancer of unspecified digestive organs increased from 113 deaths in 1982 to an estimated 1,576 in 2018. The age-standardised rate increased from 1.1 deaths per 100,000 persons to an expected 5.1 per 100,000 over the same time period (Figure 10.2). The increase in the number and rate might be related to changes in the availability of information on the death certificate or changes in recording or coding practices, rather than an actual increase.



Source: Table A10.1.

Figure 10.2: Mortality trends for cancer of unspecified digestive organs, 1982–2016, with projections to 2018

Between 1985–1989 and 2010–2014, the 5-year relative survival rate for cancer of unspecified digestive organs decreased from 14% to 8.3%. Five-year relative survival was lower for cancer of unspecified digestive organs than for all digestive-tract cancers combined and all cancers combined (Figure 10.3).



Source: Table A2.3.

Figure 10.3: Five-year relative survival from cancer of unspecified digestive organs, all digestive-tract cancers combined and all cancers combined, 2010–2014

10.2 Treatment

Hospitalisations

In 2016–17, there were 1,393 hospitalisations related to cancer of unspecified digestive organs. This accounted for 0.1% of cancer-related hospitalisations and 0.6% of digestive-tract cancer-related hospitalisations in Australia (Table A2.20). Of these, 53% were for males and 47% were for females, which is consistent with the incidence pattern (Table 10.1). In 24% of these hospitalisations, cancer of unspecified digestive organs was the principal diagnosis (Table 10.2).

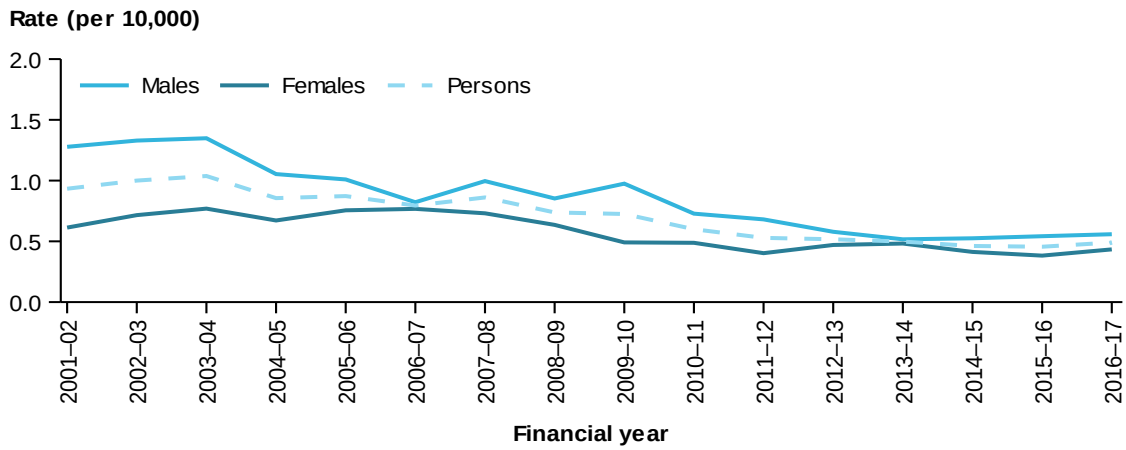
Table 10.2: Hospitalisations related to cancer of unspecified digestive organs, by sex, 2016–17

	Males			Females			Persons		
	Number	%	ASR	Number	%	ASR	Number	%	ASR
Principal diagnosis of cancer	163	11.7	0.1	164	11.8	0.1	327	23.5	0.1
Additional diagnosis of cancer	579	41.6	0.4	487	35.0	0.3	1,066	76.5	0.4
All hospitalisations related to cancer of unspecified digestive organs	**742**	**53.3**	**0.6**	**651**	**46.7**	**0.4**	**1,393**	**100.0**	**0.5**

Source: AIHW NHMD.

Trend

Between 2001–02 and 2016–17, the age-standardised hospitalisation rate for cancer of unspecified digestive organs decreased slightly from 0.9 to 0.5 per 10,000 (Figure 10.4).



Source: Table A10.2.

Figure 10.4: All hospitalisations related to cancer of unspecified digestive organs, by sex, 2001–02 to 2016–17

10.3 Survivorship population

Cancer survivorship focuses on the health and wellbeing of a person living with and beyond cancer (Cancer Australia 2017). See Section 2.4 for a full description of cancer survivorship, including data limitations. At the end of 2013, there were 168 people alive who were diagnosed with cancer of unspecified digestive organs in the previous 5 years (Table 10.3).

Table 10.3: Limited-duration prevalence of cancer of unspecified digestive organs, by sex, as at end of 2013

	Males			Females			Persons		
	Number	% of cases	Rate	Number	% of cases	Rate	Number	% of cases	Rate
1-year prevalence	49	59.0	0.4	34	41.0	0.3	83	100.0	0.4
5-year prevalence	92	54.8	0.8	76	45.2	0.6	168	100.0	0.7
32-year prevalence	195	54.0	1.7	166	46.0	1.4	361	100.0	1.5

Source: AIHW ACD 2014.

Appendix A: Additional tables

Summary

Table A1: Estimated age-specific incidence and mortality rates of upper and lower digestive-tract cancers, by age at diagnosis, 2018

	Incidence		Mortality	
Age group	Upper digestive-tract cancers	Lower digestive-tract cancers	Upper digestive-tract cancers	Lower digestive-tract cancers
0–4	0.7	n.p.	n.p.	0.0
5–9	n.p.	n.p.	n.p.	n.p.
10–14	n.p.	0.5	n.p.	n.p.
15–19	n.p.	1.2	n.p.	n.p.
20–24	0.5	2.3	n.p.	n.p.
25–29	1.1	6.8	0.5	1.3
30–34	2.0	8.7	0.7	1.0
35–39	4.3	13.5	2.1	1.8
40–44	9.6	20.5	5.0	3.4
45–49	20.1	33.6	10.8	5.3
50–54	41.8	60.8	20.1	10.1
55–59	68.9	88.1	40.0	15.1
60–64	88.6	124.9	55.5	25.2
65–69	121.9	175.5	79.9	32.0
70–74	171.1	265.6	120.2	51.8
75–79	225.8	392.5	173.5	93.4
80–84	269.2	429.7	235.8	132.1
85+	286.9	437.4	278.7	204.4

Sources: AIHW ACD 2014; AIHW NMD.

Table A2: Estimated incidence and mortality of digestive-tract cancers, by site, 2018

Cancer		Incidence	Mortality
Upper digestive-tract cancers	Pancreatic cancer (C25)	3,364	3,006
	Stomach cancer (C16)	2,332	1,078
	Liver cancer (C22)	2,215	2,088
	Oesophageal cancer (C15)	1,685	1,447
	Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	931	262
	Cancer of the small intestine (C17)	648	133
Lower digestive-tract cancers	Colorectal cancer (C18–C20)	17,004	4,129
	Anal cancer (C21)	440	90

Sources: AIHW ACD 2014; AIHW NMD.

Table A3: Trends in incidence (1982–2014) and mortality (1982–2016) age-standardised rates of upper and lower digestive-tract cancers, with projections to 2018

	Incidence		Mortality	
Year	Upper digestive-tract cancers	Lower digestive-tract cancers	Upper digestive-tract cancers	Lower digestive-tract cancers
1982	36.2	59.0	31.8	31.8
1983	36.3	58.9	32.4	32.0
1984	36.2	60.1	32.1	30.7
1985	35.2	62.8	31.1	31.9
1986	35.4	61.1	30.5	31.4
1987	35.7	61.2	30.6	31.5
1988	35.2	60.0	30.4	30.3
1989	33.7	62.1	30.4	29.6
1990	34.7	61.8	28.4	28.7
1991	35.0	65.0	29.1	28.4
1992	34.5	64.3	28.7	28.3
1993	34.6	63.8	28.2	28.6
1994	35.3	65.1	28.9	29.1
1995	35.4	65.2	28.8	27.7
1996	35.0	65.9	28.2	27.5
1997	34.8	65.4	28.2	27.1
1998	34.9	64.2	27.4	26.2
1999	35.5	65.6	27.3	25.2
2000	35.2	67.1	27.1	25.2
2001	34.3	67.5	27.4	24.7
2002	33.9	64.8	27.0	23.3
2003	34.7	64.0	26.9	21.9
2004	34.9	64.7	26.3	19.9
2005	35.3	64.0	26.4	19.9
2006	35.7	65.2	26.5	17.8
2007	36.6	66.5	27.1	18.6
2008	36.1	64.5	26.8	17.5
2009	36.1	63.2	26.2	17.2
2010	37.3	64.2	26.5	16.7
2011	37.5	62.9	26.3	16.3
2012	37.5	60.4	26.6	16.0
2013	37.1	58.0	26.5	15.9
2014	37.1	58.9	25.7	15.4
2015	37.0	60.3	26.3	15.6
2016	37.1	59.8	26.5	15.4
2017	37.3	59.4	26.4	14.2
2018	37.4	59.0	26.4	13.9

Sources: AIHW ACD 2014; AIHW NMD.

Chapter 2: Colorectal cancer

Table A2.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for colorectal cancer, by age group

	Incidence		Mortality		Survival
Age group	**Number**	**Rate**	**Number**	**Rate**	**5-year relative survival (%)**
0–4	—	—	—	—	n.p.
5–9	1	n.p.	—	—	n.p.
10–14	7	0.5	—	—	96.2
15–19	18	1.2	1	n.p.	93.5
20–24	38	2.3	4	n.p.	83.7
25–29	123	6.7	24	1.3	76.0
30–34	161	8.5	19	1.0	73.9
35–39	232	13.1	31	1.8	74.5
40–44	318	19.5	53	3.3	72.7
45–49	540	31.6	88	5.2	74.0
50–54	894	57.8	147	9.5	76.2
55–59	1,310	84.8	224	14.5	75.4
60–64	1,664	120.9	336	24.4	72.3
65–69	2,055	170.7	370	30.7	74.9
70–74	2,662	260.5	518	50.7	70.4
75–79	2,724	385.6	649	91.9	66.3
80–84	2,070	423.0	639	130.6	64.1
85+	2,184	430.4	1,025	201.9	54.9
Total	**17,004**	**57.5**	**4,129**	**13.5**	**69.4**

Sources: AIHW ACD 2014; AIHW NMD.

Table A2.2: Incidence (1982–2014) and mortality (1982–2016) trends, colorectal cancer, with projections to 2018

	Incidence		Mortality	
Year	Number	ASR	Number	ASR
1982	6,988	58.2	3,617	31.5
1983	7,160	58.2	3,758	31.7
1984	7,493	59.1	3,738	30.5
1985	8,007	61.7	3,969	31.7
1986	8,048	60.2	4,059	31.2
1987	8,271	60.3	4,155	31.3
1988	8,290	58.9	4,112	30.0
1989	8,792	61.2	4,127	29.5
1990	8,900	60.6	4,098	28.4
1991	9,647	63.9	4,162	28.2
1992	9,733	63.1	4,233	28.1
1993	9,913	62.8	4,398	28.5
1994	10,335	64.0	4,587	28.8
1995	10,571	64.1	4,468	27.4
1996	10,929	64.6	4,560	27.2
1997	11,184	64.4	4,630	26.9
1998	11,219	62.9	4,599	26.0
1999	11,733	64.2	4,527	24.9
2000	12,355	65.9	4,661	24.9
2001	12,775	66.3	4,687	24.3
2002	12,545	63.5	4,538	22.9
2003	12,663	62.8	4,373	21.6
2004	13,088	63.5	4,070	19.7
2005	13,194	62.4	4,165	19.6
2006	13,793	63.9	3,814	17.5
2007	14,464	65.1	4,119	18.3
2008	14,392	63.1	3,981	17.3
2009	14,377	61.6	4,028	17.0
2010	15,041	62.6	3,969	16.3
2011	15,086	61.4	3,987	15.9
2012	14,864	58.7	4,056	15.7
2013	14,625	56.5	4,151	15.7
2014	15,253	57.4	4,120	15.1
2015	16,031	58.8	4,279	15.3
2016	16,349	58.5	4,326	15.2
2017	16,682	57.9	4,114	13.9
2018	17,004	57.5	4,129	13.5

Sources: AIHW ACD 2014; AIHW NMD.

Table A2.3: Five-year relative survival from digestive-tract cancers and all cancers combined, 1985–1989 to 2010–2014

	1985–1989	1990–1994	1995–1999	2000–2004	2005–2009	2010–2014
Colorectal cancer (C18–C20)	50.5	54.6	58.2	62.0	65.4	69.4
Pancreatic cancer (C25)	3.4	3.7	4.4	5.5	5.5	8.7
Stomach cancer (C16)	18.2	20.6	21.9	24.5	26.7	29.5
Liver cancer (C22)	6.0	7.7	10.0	12.3	15.0	18.1
Oesophageal cancer (C15)	10.0	14.3	15.2	17.5	16.3	21.0
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	11.7	13.3	15.2	17.1	19.3	19.7
Cancer of the small intestine (C17)	41.6	44.1	47.0	54.6	56.8	65.8
Anal cancer (C21)	51.2	57.3	60.3	61.9	64.7	67.4
Cancer of unspecified digestive organs (C26)	13.6	9.9	12.2	12.6	12.8	8.3
Upper digestive-tract cancers (C15–C17, C22–C26)	12.0	13.6	14.7	16.8	17.6	20.9
Lower digestive-tract cancers (C18–C21)	50.6	54.7	58.2	62.0	65.3	69.4
All digestive-tract cancers combined (C15–C26)	*36.5*	*40.1*	*42.9*	*46.2*	*48.3*	*51.1*
All cancers combined (C00–C97, D45, D46, D47.1, D47.3–D47.5)	**49.0**	**53.4**	**58.7**	**61.4**	**65.3**	**68.6**

Source: AIHW ACD 2014.

Table A2.4: Incidence (2013) and 5-year relative survival (2010–2014) for colorectal cancer, by subsite

Cancer subsite	Incidence (number)	5-year relative survival (%)
Caecum	1,919	67.4
Appendix	474	81.0
Ascending colon	1,770	74.3
Hepatic flexure	510	67.1
Transverse colon	1,018	68.6
Splenic flexure	330	65.1
Descending colon	521	71.8
Sigmoid colon	2,705	72.7
Colon, overlapping and unspecified	613	33.0
Rectosigmoid junction	1,005	65.5
Rectum	3,760	70.8

Source: AIHW ACD 2014.

Table A2.5: Incidence (2013) and 5-year relative survival (2010–2014) for colorectal cancer, by histology group

Histology group	Incidence (number)	5-year relative survival (%)
Squamous cell carcinomas	33	63.1
Adenocarcinomas	13,221	71.4
Neuroendocrine neoplasms	591	87.0
Other specified carcinomas	16	59.8
Unspecified carcinomas	311	20.3
Sarcomas	9	n.p.
Other specified malignant neoplasms	6	n.p.
Unspecified malignant neoplasms	438	8.3

Source: AIHW ACD 2014.

Table A2.6: Age-standardised incidence rates (2011) and 5-year relative survival (2011–2016) of colorectal cancer, by RD stage and sex, 2011

	Males			Females			Persons		
Stage	**Number**	**ASR**	**Survival (%)**	**Number**	**ASR**	**Survival (%)**	**Number**	**ASR**	**Survival (%)**
I	1,783	15.5	97.7	1,315	10.2	99.7	3,098	12.7	98.6
II	1,817	16.0	87.7	1,582	12.0	89.7	3,399	13.8	88.6
III	1,803	15.7	71.2	1,496	11.5	71.4	3,299	13.5	71.3
IV	1,379	12.1	13.2	1,095	8.3	13.6	2,474	10.0	13.4
Stage unknown	959	8.5	61.2	764	5.5	51.2	1,723	6.9	56.9
Total	**7,741**	**67.7**	**69.5**	**6,252**	**47.5**	**69.5**	**13,993**	**56.9**	**69.5**

Source: AIHW ACD 2014.

Table A2.7: Five-year relative survival (%) of colorectal cancer, by RD stage and age group, 2011–2016

Age group	I	II	III	IV	Total
0–39	98.5	94.6	69.8	n.p.	**67.9**
40–44	98.4	90.2	67.8	n.p.	**65.3**
45–49	95.3	90.2	82.5	26.7	**70.8**
50–54	99.5	93.3	79.7	18.5	**76.8**
55–59	96.2	87.8	78.5	18.7	**74.5**
60–64	97.8	92.7	74.4	17.0	**73.0**
65–69	98.6	86.7	73.5	15.3	**74.0**
70–74	95.8	87.9	74.4	13.4	**72.7**
75–79	96.4	89.3	66.9	12.4	**69.2**
80–84	100.0	88.9	63.3	n.p.	**65.4**
85+	100.0	83.8	55.6	n.p.	**53.2**

Source: AIHW ACD 2014.

Table A2.8: Age-specific incidence rates of colorectal cancer, by RD stage and age group, 2011

Age group	I		II		III		IV		Stage unknown		Total	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	—	—	—	—	—	—	—	—	—	—	—	—
5–9	—	—	—	—	—	—	—	—	—	—	—	—
10–14	—	—	—	—	—	—	—	—	—	—	—	—
15–19	—	—	1	n.p.	—	—	1	n.p.	—	—	2	n.p.
20–24	1	n.p.	3	n.p.	8	0.5	3	n.p.	—	—	15	0.9
25–29	14	0.8	11	0.7	15	0.9	13	0.8	3	n.p.	56	3.4
30–34	15	1.0	16	1.0	20	1.3	27	1.8	8	0.5	86	5.6
35–39	24	1.5	21	1.3	36	2.3	38	2.4	16	1.0	135	8.6
40–44	42	2.6	47	3.0	61	3.8	53	3.3	24	1.5	227	14.3
45–49	102	6.6	83	5.4	119	7.7	112	7.3	47	3.0	463	30.0
50–54	181	12.1	168	11.2	213	14.3	134	9.0	89	6.0	785	52.5
55–59	290	21.7	201	15.0	315	23.6	201	15.0	103	7.7	1,110	83.1
60–64	365	29.8	382	31.2	381	31.1	302	24.6	181	14.8	1,611	131.4
65–69	481	50.4	405	42.4	431	45.2	274	28.7	168	17.6	1,759	184.3
70–74	540	74.2	558	76.7	522	71.7	342	47.0	259	35.6	2,221	305.2
75–79	458	82.0	561	100.5	481	86.1	339	60.7	230	41.2	2,069	370.6
80–84	350	78.8	530	119.4	404	91.0	313	70.5	243	54.7	1,840	414.4
85+	235	58.2	412	102.1	293	72.6	322	79.8	352	87.2	1,614	399.9

Source: AIHW ACD 2014.

Table A2.9: Incidence (2009–2013), mortality (2012–2016) and 5-year relative survival (2007–2014) for digestive-tract cancers, by Indigenous status and cancer type, selected jurisdictions

		Incidence		Mortality		Survival	
Cancer	**Indigenous status**	**Number**	**ASR**	**Number**	**ASR**	**1-year relative survival (%)**	**5-year relative survival (%)**
Colorectal cancer (C18–C20)	Indigenous Australians	612	53.1	162	13.6	83.4	57.3
	Non-Indigenous Australians	59,650	55.8	14,200	14.9	85.2	66.7
Pancreatic cancer (C25)	Indigenous Australians	190	17.1	158	12.3	18.8	n.p.
	Non-Indigenous Australians	11,679	10.8	9,123	9.6	27.3	7.5
Stomach cancer (C16)	Indigenous Australians	145	12.2	79	6.5	43.5	19.3
	Non-Indigenous Australians	8,417	7.9	3,783	4.0	54.0	27.7
Liver cancer (C22)	Indigenous Australians	211	15.5	202	15.3	28.9	7.7
	Non-Indigenous Australians	6,795	6.4	5,957	6.3	43.9	17.8
Oesophageal cancer (C15)	Indigenous Australians	144	11.5	118	7.8	37.4	n.p.
	Non-Indigenous Australians	5,656	5.2	4,380	4.6	48.0	19.3
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	Indigenous Australians	84	7.7	28	3.0	26.4	n.p.
	Non-Indigenous Australians	3,173	2.9	859	0.9	47.2	19.5
Cancer of the small intestine (C17)	Indigenous Australians	30	2.4	9	0.6	72.1	n.p.
	Non-Indigenous Australians	2,041	1.9	380	0.4	79.6	61.2
Anal cancer (C21)	Indigenous Australians	34	2.5	9	0.8	81.4	n.p.
	Non-Indigenous Australians	1,603	1.5	284	0.3	88.0	65.1
Cancer of unspecified digestive organs (C26)	Indigenous Australians	12	1.8	57	5.2	n.p.	n.p.
	Non-Indigenous Australians	792	0.7	4,290	4.4	18.2	9.1
All digestive cancers combined (C15–C26)	*Indigenous Australians*	*1,462*	*123.8*	*822*	*65.0*	*55.0*	*31.1*
	Non-Indigenous Australians	*99,806*	*93.1*	*43,256*	*45.5*	*69.7*	*49.1*
All cancers combined (C00–C97, D45, D46, D47.1, D47.3–D47.5)	**Indigenous Australians**	**6,397**	**501.4**	**2,917**	**234.5**	**68.7**	**49.7**
	Non-Indigenous Australians	**466,956**	**438.6**	**155,790**	**163.9**	**80.4**	**64.5**

Sources: AIHW ACD 2014; AIHW NMD.

Table A2.10: Incidence (2009–2013) of digestive-tract cancers, by remoteness and cancer type

	Major cities		Inner regional		Outer regional		Remote		Very remote	
	Number	**ASR**	**Number**	**ASR**	**Number**	**ASR**	**Number**	**ASR**	**Number**	**ASR**
Colorectal cancer (C18–C20)	47,872	57.7	16,820	64.4	7,972	66.3	920	63.3	329	50.6
Pancreatic cancer (C25)	9,643	11.5	2,973	11.2	1,376	11.3	151	10.3	61	9.3
Stomach cancer (C16)	7,078	8.5	2,082	7.9	882	7.4	114	7.8	46	6.5
Liver cancer (C22)	5,888	7.1	1,399	5.4	733	6.0	108	7.0	83	11.3
Oesophageal cancer (C15)	4,233	5.1	1,711	6.4	832	6.8	108	7.2	47	7.2
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	2,651	3.2	768	2.9	351	2.9	57	4.1	38	6.1
Cancer of the small intestine (C17)	1,731	2.1	507	2.0	248	2.1	29	1.9	10	1.2
Anal cancer (C21)	1,316	1.6	408	1.6	178	1.5	33	2.1	17	2.3
Cancer of unspecified digestive organs (C26)	618	0.7	319	1.2	132	1.1	18	1.5	5	n.p.
All digestive-tract cancers combined (C15–C26)	*81,032*	*97.5*	*26,989*	*102.9*	*12,705*	*105.3*	*1,538*	*105.1*	*636*	*95.6*
All cancers combined (C00–C97, D45, D46, D47.1, D47.3–D47.5)	**404,503**	**489.1**	**132,244**	**515.4**	**61,506**	**513.1**	**7,416**	**494.1**	**3,211**	**446.2**

Source: AIHW ACD 2014.

Table A2.11: Mortality (2011–2016) of digestive-tract cancers, by remoteness and cancer type

	Major cities		Inner regional		Outer regional		Remote		Very remote	
	Number	ASR	Number	ASR	Number	ASR	Number	ASR	Number	ASR
Colorectal cancer (C18–C20)	14,031	15.3	4,522	15.5	2,072	15.9	206	14.1	69	11.1
Pancreatic cancer (C25)	8,916	9.8	2,872	9.7	1,317	10.0	144	9.7	48	7.5
Stomach cancer (C16)	3,968	4.4	1,162	4.0	518	4.0	62	4.2	27	3.6
Liver cancer (C22)	5,817	6.5	1,649	5.7	823	6.2	108	6.6	86	11.2
Oesophageal cancer (C15)	3,733	4.1	1,633	5.6	809	6.1	102	6.3	39	5.1
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	871	0.9	289	1.0	112	0.8	19	1.3	15	2.6
Cancer of the small intestine (C17)	377	0.4	113	0.4	53	0.4	8	0.5	2	n.p.
Anal cancer (C21)	273	0.3	89	0.3	40	0.3	6	0.4	7	0.9
Cancer of unspecified digestive organs (C26)	3,162	3.3	1,852	6.2	959	7.3	93	6.4	48	8.6
All digestive cancers combined (C15–C26)	41,148	45.0	14,181	48.5	6,705	51.1	747	49.6	341	50.8
All cancers combined (C00–C97, D45, D46, D47.1, D47.3–D47.5)	**144,048**	**157.3**	**51,442**	**175.8**	**23,680**	**180.2**	**2,619**	**175.5**	**1,279**	**195.2**

Source: AIHW NMD.

Table A2.12: 5-year observed survival for digestive-tract cancers, by cancer type and remoteness area, 2010–2014

Cancer site (ICD-10 code)	Major cities	Inner regional	Outer regional	Remote and Very remote
Colorectal cancer (C18–C20)	60.2	58.9	58.3	59.5
Pancreatic cancer (C25)	8.3	6.5	6.0	n.p.
Stomach cancer (C16)	26.6	22.4	23.1	19.6
Liver cancer (C22)	18.7	11.1	10.2	n.p.
Oesophageal cancer (C15)	19.7	17.0	14.8	n.p.
Cancer of the gallbladder and extrahepatic bile duct (C23–C24)	17.7	13.6	16.4	n.p.
Cancer of the small intestine (C17)	59.3	61.7	54.9	n.p.
Anal cancer (C21)	62.4	59.7	55.5	n.p.
Cancer of other and unspecified digestive organs (C26)	7.7	n.p.	n.p.	n.p.
All digestive-tract cancers combined (C15–C26)	*44.5*	*43.8*	*43.1*	*40.0*
All cancers combined (C00–C97, D45, D46, D47.1, D47.3–D47.5)	**61.7**	**60.1**	**59.3**	**57.7**

Source: AIHW ACD 2014.

Table A2.13: Incidence (2009–2013) of digestive-tract cancers, by socioeconomic quintile and cancer type

	1 (lowest)		2		3		4		5 (highest)	
	No.	**ASR**	**No.**	**ASR**	**No.**	**ASR**	**No.**	**ASR**	**No.**	**ASR**
Colorectal cancer (C18–C20)	16,811	63.8	16,492	62.8	14,806	59.8	13,041	57.7	12,748	54.9
Pancreatic cancer (C25)	3,332	12.5	3,065	11.5	2,771	11.1	2,527	11.1	2,506	10.7
Stomach cancer (C16)	2,419	9.2	2,301	8.7	1,994	8.1	1,818	8.0	1,667	7.2
Liver cancer (C22)	2,167	8.4	1,792	6.9	1,502	6.1	1,452	6.4	1,294	5.5
Oesophageal cancer (C15)	1,748	6.6	1,634	6.1	1,346	5.4	1,145	5.1	1,056	4.5
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	911	3.4	826	3.1	777	3.1	687	3.0	664	2.8
Cancer of the small intestine (C17)	532	2.1	508	2.0	524	2.1	484	2.1	476	2.0
Anal cancer (C21)	436	1.7	419	1.7	392	1.6	358	1.6	348	1.5
Cancer of unspecified digestive organs (C26)	280	1.0	274	1.0	211	0.8	157	0.7	171	0.7
All digestive-tract cancers combined (C15–C26)	*28,636*	*108.7*	*27,311*	*103.7*	*24,323*	*98.1*	*21,669*	*95.7*	*20,930*	*89.9*
All cancers combined (C00–C97, D45, D46, D47.1, D47.3–D47.5)	**131,743**	**510.2**	**130,893**	**505.1**	**121,249**	**492.5**	**110,293**	**483.9**	**114,554**	**487.7**

Source: AIHW ACD 2014.

Table A2.14: Mortality (2011–2016) of digestive-tract cancers, by socioeconomic quintile and cancer type

	1 (lowest)		2		3		4		5 (highest)	
	No.	ASR	No.	ASR	No.	ASR	No.	ASR	No.	ASR
Colorectal cancer (C18–C20)	4,929	17.0	4,596	15.8	4,155	15.2	3,773	15.1	3,447	13.5
Pancreatic cancer (C25)	3,060	10.6	2,895	9.9	2,630	9.6	2,435	9.8	2,277	9.0
Stomach cancer (C16)	1,395	4.9	1,243	4.3	1,169	4.3	1,022	4.1	907	3.6
Liver cancer (C22)	2,221	7.9	1,928	6.7	1,666	6.1	1,424	5.7	1,244	4.9
Oesophageal cancer (C15)	1,593	5.6	1,478	5.1	1,236	4.5	1,023	4.1	983	3.8
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	314	1.1	298	1.0	241	0.9	260	1.0	194	0.7
Cancer of the small intestine (C17)	108	0.4	116	0.4	125	0.5	106	0.4	98	0.4
Anal cancer (C21)	108	0.4	91	0.3	81	0.3	71	0.3	63	0.2
Cancer of unspecified digestive organs (C26)	1,630	5.5	1,632	5.4	1,169	4.2	872	3.4	811	3.1
All digestive cancers combined (C15–C26)	15,358	53.3	14,278	48.9	12,472	45.6	10,985	44.0	10,024	39.3
All cancers combined (C00–C97, D45, D46, D47.1, D47.3–D47.5)	**54,175**	**187.7**	**51,187**	**175.5**	**44,742**	**163.7**	**38,084**	**152.5**	**34,867**	**136.6**

Source: AIHW NMD.

Table A2.15: 5-year observed survival for digestive-tract cancers, by cancer type and socioeconomic group, 2010–2014

Cancer site (ICD-10 code)	1 Lowest	2	3	4	5 Highest
Colorectal cancer (C18–C20)	55.8	58.8	60.4	61.4	63.1
Pancreatic cancer (C25)	6.7	6.5	7.0	8.5	10.2
Stomach cancer (C16)	22.7	22.7	25.8	28.4	28.7
Liver cancer (C22)	16.1	12.9	15.3	18.8	20.2
Oesophageal cancer (C15)	15.7	16.6	19.3	20.9	20.5
Cancer of the gallbladder and extrahepatic bile duct (C23–C24)	16.9	12.1	16.1	18.6	21.8
Cancer of the small intestine (C17)	57.5	58.6	58.7	61.0	61.0
Anal cancer (C21)	54.5	58.0	66.2	63.4	65.1
Cancer of other and unspecified digestive organs (C26)	4.6	n.p.	n.p.	n.p.	n.p.
All digestive-tract cancers combined (C15–C26)	*40.5*	*42.7*	*44.9*	*46.0*	*48.0*
All cancers combined (C00–C97, D45, D46, D47.1, D47.3–D47.5)	**55.5**	**58.6**	**61.4**	**63.7**	**67.2**

Source: AIHW ACD 2014.

Table A2.16: Colonoscopies in an admitted patient setting, 2016–17

	Males		Females		Persons	
Principal diagnosis (ICD-10 code)	**Number**	**%**	**Number**	**%**	**Number**	**%**
Colonoscopies related to colorectal tumours	126,826	31.3	111,310	25.6	238,139	28.4
Non-malignant colorectal tumour (D12.1–D12.8, D37.3–D37.5)	58,559	14.5	43,161	9.9	101,723	12.1
Intestinal cancer surveillance (Z12.1)	27,583	6.8	34,450	7.9	62,033	7.4
Polyp of colon (K63.5)	21,413	5.3	18,114	4.2	39,527	4.7
Follow-up after treatment for a digestive cancer (Z08/Z85.0)	12,559	3.1	10,276	2.4	22,835	2.7
Colorectal cancer (C18–C20)	6,712	1.7	5,309	1.2	12,021	1.4
All other colonoscopies	278,016	68.7	322,817	74.4	600,836	71.6
Other diseases of digestive system (K92)	32,992	8.1	28,420	6.5	61,412	7.3
Abdominal and pelvic pain (R10)	21,731	5.4	36,645	8.4	58,377	7.0
Follow-up examination after treatment for conditions other than malignant neoplasms (Z09)	31,145	7.7	28,787	6.6	59,932	7.1
Other faecal abnormalities, including positive FOBT tests (R19.5)	30,693	7.6	26,912	6.2	57,605	6.9
Other symptoms and signs involving the digestive system and abdomen (R19.0–R19.4, R19.6–R19.8)	12,146	3.0	19,062	4.4	31,208	3.7
Haemorrhoids and perianal venous thrombosis (K64)	19,850	4.9	17,908	4.1	37,758	4.5
Diverticular disease of intestine (K57)	14,534	3.6	16,519	3.8	31,053	3.7
Gastro-oesophageal reflux disease (K21)	12,867	3.2	14,934	3.4	27,803	3.3
Iron deficiency anaemia (D50)	7,329	1.8	13,222	3.0	20,551	2.4
Other diseases of anus and rectum (K62)	11,012	2.7	10,005	2.3	21,017	2.5
Other gastroenteritis and colitis of infectious and unspecified origin (A09)	6,577	1.6	11,207	2.6	17,784	2.1
Ulcerative colitis (K51)	7,921	2.0	7,301	1.7	15,222	1.8
Other functional intestinal disorders (K59)	4,614	1.1	9,102	2.1	13,716	1.6
Other	64,605	16.0	82,793	19.1	147,398	17.6
Total	**404,842**	**100.0**	**434,127**	**100.0**	**838,975**	**100.0**

Source: AIHW NHMD.

Table A2.17: Age-specific rate of colorectal tumour related colonoscopies, by age group and principal diagnosis

Age group	Principal diagnosis									
	Colorectal cancer		Non-malignant colorectal tumour		Polyp of colon		Follow-up after treatment		Cancer surveillance	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0–4	1	n.p.	2	n.p.	8	0.1	—	—	1	n.p.
5–9	—	—	12	0.1	15	0.1	—	—	1	n.p.
10–14	1	n.p.	26	0.2	3	n.p.	—	—	4	n.p.
15–19	8	0.1	61	0.4	36	0.2	10	0.1	69	0.5
20–24	14	0.1	216	1.3	185	1.1	21	0.1	271	1.6
25–29	59	0.3	641	3.5	486	2.7	67	0.4	650	3.6
30–34	133	0.7	1,636	9.0	933	5.1	182	1.0	1,334	7.4
35–39	162	1.0	1,481	9.1	946	5.8	275	1.7	2,192	13.4
40–44	257	1.6	2,295	14.2	1,478	9.1	447	2.8	4,217	26.1
45–49	451	2.8	3,888	23.9	2,352	14.5	707	4.3	6,600	40.6
50–54	678	4.4	7,808	50.5	3,866	25.0	1,288	8.3	9,313	60.3
55–59	951	6.4	11,325	75.9	5,271	35.3	1,883	12.6	10,328	69.2
60–64	1,279	9.7	15,234	115.4	6,145	46.6	2,701	20.5	9,459	71.7
65–69	1,529	12.8	18,312	153.2	6,472	54.2	3,877	32.4	8,198	68.6
70–74	2,025	21.9	18,910	204.6	5,872	63.5	4,118	44.6	5,549	60.0
75–79	1,748	26.3	12,208	183.8	3,395	51.1	3,948	59.4	2,684	40.4
80–84	1,439	31.2	5,720	124.0	1,582	34.3	2,369	51.4	950	20.6
85+	1,286	26.3	1,948	39.9	482	9.9	942	19.3	213	4.4

Source: AIHW NHMD.

Table A2.18: Top 10 additional diagnoses listed for colonoscopies for cancer surveillance, 2016–17

Rank	Additional diagnosis	Number
1	Family history of malignant neoplasm of digestive organs	50,247
2	Personal history of colonic polyps	2,789
3	Follow-up examination after surgery for other conditions	1,980
4	Family history of diseases of the digestive system	1,330
5	Personal history of non-malignant neoplasms	516
6	Personal history of malignant neoplasm of digestive organs	388
7	Person with feared complaint in whom no diagnosis is made	367
8	Personal history of other digestive system disease	362
9	Follow-up examination after unspecified treatment for other conditions	276
10	Special screening examination for digestive tract disorder	208

Source: AIHW NHMD.

Table A2.19: Age-standardised rate of colorectal tumour related colonoscopies, 2001–02 to 2016–17

	Principal diagnosis											
	Colorectal cancer		Non-malignant colorectal tumour		Polyp of colon		Follow-up after treatment		Cancer surveillance		All colorectal tumour-related colonoscopies	
Financial year	Number	ASR	Number	ASR	Number	ASR	Number	ASR	Number	ASR	Number	ASR
2001–02	9,192	4.7	33,994	17.4	20,631	10.6	13,024	6.7	7,860	4.0	84,701	43.4
2002–03	9,730	4.9	37,281	18.7	22,117	11.1	14,316	7.2	22,261	11.2	105,705	53.0
2003–04	9,845	4.8	37,781	18.5	23,471	11.5	14,742	7.3	24,416	12.0	110,255	54.2
2004–05	10,112	4.9	41,227	19.8	24,771	11.9	15,052	7.3	28,268	13.7	119,430	57.5
2005–06	10,277	4.8	42,039	19.8	25,610	12.1	15,382	7.3	30,716	14.6	124,024	58.4
2006–07	11,087	5.1	47,867	22.0	27,291	12.6	16,502	7.6	37,288	17.3	140,035	64.5
2007–08	11,204	5.0	51,949	23.2	28,681	12.9	16,310	7.3	42,618	19.3	150,762	67.7
2008–09	11,223	4.9	51,230	22.3	28,477	12.5	17,746	7.8	47,049	20.9	155,725	68.3
2009–10	11,341	4.8	56,403	24.0	31,558	13.5	18,142	7.8	49,563	21.5	167,007	71.5
2010–11	12,185	5.0	62,793	26.0	34,539	14.4	18,648	7.8	52,135	22.1	180,300	75.3
2011–12	11,785	4.7	64,164	25.9	33,718	13.7	19,291	7.8	55,003	22.8	183,961	75.0
2012–13	11,652	4.6	67,441	26.5	33,373	13.2	19,371	7.7	54,268	22.0	186,105	74.0
2013–14	11,645	4.5	76,918	29.5	33,255	12.9	19,928	7.7	56,478	22.5	198,224	77.0
2014–15	12,344	4.6	91,402	34.3	40,237	15.3	21,693	8.2	60,826	23.8	226,502	86.1
2015–16	12,383	4.5	97,344	35.7	37,749	14.1	22,447	8.2	64,725	24.8	234,648	87.4
2016–17	12,021	4.3	101,723	36.4	39,527	14.4	22,835	8.2	62,033	23.4	238,139	86.6

Source: AIHW NHMD.

Table A2.20: Number of cancer-related hospitalisations, by sex and cancer type, 2016–17

	Males			Females			Persons		
Cancer type	**Number**	**% of all digestive cancers**	**% of all cancers combined**	**Number**	**% of all digestive cancers**	**% of all cancers combined**	**Number**	**% of all digestive cancers**	**% of all cancers combined**
Colorectal cancer (C18–C20)	73,915	56.8	11.4	55,150	60.3	9.5	129,065	58.3	10.5
Pancreatic cancer (C25)	18,900	14.5	2.9	16,195	17.7	2.8	35,095	15.8	2.9
Stomach cancer (C16)	11,600	8.9	1.8	5,393	5.9	0.9	16,993	7.7	1.4
Liver cancer (C22)	8,642	6.6	1.3	4,158	4.5	0.7	12,800	5.8	1.0
Oesophageal cancer (C15)	9,843	7.6	1.5	3,020	3.3	0.5	12,863	5.8	1.0
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	3,369	2.6	0.5	3,371	3.7	0.6	6,740	3.0	0.5
Cancer of the small intestine (C17)	2,713	2.1	0.4	2,044	2.2	0.4	4,757	2.1	0.4
Anal cancer (C21)	1,018	0.8	0.2	1,808	2.0	0.3	2,826	1.3	0.2
Cancer of unspecified digestive organs (C26)	742	0.6	0.1	651	0.7	0.1	1,393	0.6	0.1
All digestive-tract cancers combined (C15–C26)	130,100	100.0	20.1	91,429	100.0	15.7	221,529	100.0	18.0
All cancers combined (C00–C97, D45, D46, D47.1, D47.3–D47.5)	**647,051**	**. .**	**100.0**	**581,844**	**. .**	**100.0**	**1,228,905**	**. .**	**100.0**

Source: AIHW NHMD.

Table A2.21: Age-specific rates for hospitalisations related to colorectal cancer, by age group and sex, 2016–17

	Males		Females		Persons	
Age group	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
0–4	1	n.p.	–	–	1	n.p.
5–9	–	–	1	n.p.	1	n.p.
10–14	5	0.1	7	0.1	12	0.1
15–19	37	0.5	72	1.0	109	0.7
20–24	84	1.0	102	1.2	186	1.1
25–29	314	3.4	342	3.7	656	3.6
30–34	892	9.9	941	10.3	1,833	10.1
35–39	1,025	12.6	1,181	14.4	2,206	13.5
40–44	1,797	22.4	1,778	21.9	3,575	22.1
45–49	3,049	38.3	2,836	34.2	5,885	36.2
50–54	5,275	69.5	4,516	57.6	9,791	63.5
55–59	7,319	100.1	5,495	72.3	12,814	85.9
60–64	9,720	151.0	6,979	103.4	16,699	126.6
65–69	12,835	218.4	8,281	136.8	21,116	176.9
70–74	12,010	264.5	7,780	165.3	19,790	214.0
75–79	10,048	319.0	6,864	196.6	16,912	254.6
80–84	6,159	299.0	4,549	178.0	10,708	232.0
85+	3,345	183.2	3,426	112.3	6,771	138.9
Total	**73,915**	**55.2**	**55,150**	**38.4**	**129,065**	**46.4**

Source: AIHW NHMD.

Table A2.22: Age-standardised rates for all hospitalisations related to colorectal cancer, by sex, 2001–02 to 2016–17

	Males		Females		Persons	
Financial year	**Number**	**ASR**	**Number**	**ASR**	**Number**	**ASR**
2001–02	68,181	73.6	47,214	46.4	115,395	59.2
2002–03	76,220	80.2	50,638	48.8	126,866	63.7
2003–04	76,629	78.8	52,171	49.2	128,800	63.3
2004–05	75,121	75.7	49,545	45.8	124,669	60.0
2005–06	77,579	76.1	52,946	47.8	130,525	61.3
2006–07	81,300	77.7	54,416	48.0	135,717	62.1
2007–08	82,773	76.9	55,850	48.1	138,623	61.8
2008–09	76,713	69.7	52,955	44.5	129,668	56.5
2009–10	76,387	67.8	53,003	43.5	129,390	55.1
2010–11	75,711	65.2	51,434	41.2	127,145	52.6
2011–12	76,960	64.9	53,040	41.5	130,000	52.6
2012–13	73,845	60.7	52,440	40.0	126,285	49.8
2013–14	72,746	58.3	53,197	39.7	125,947	48.5
2014–15	75,006	58.6	54,842	40.0	129,848	48.9
2015–16	74,931	57.4	55,226	39.4	130,157	48.0
2016–17	73,915	55.2	55,150	38.4	129,065	46.4

Source: AIHW NHMD.

Table A2.23: Number of digestive-tract cancer chemotherapy procedures, by sex and cancer type, 2016–17

	Males		Females		Persons	
Cancer type	**Number**	**% of cases**	**Number**	**% of cases**	**Number**	**% of cases**
Colorectal cancer (C18–C20)	70,654	58.2	50,707	41.8	121,361	100.0
Pancreatic cancer (C25)	14,444	54.7	11,953	45.3	26,397	100.0
Stomach cancer (C16)	8,642	70.1	3,680	29.9	12,322	100.0
Liver cancer (C22)	2,440	55.2	1,982	44.8	4,422	100.0
Oesophageal cancer (C15)	6,159	79.5	1,589	20.5	7,748	100.0
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	2,095	51.1	2,008	48.9	4,103	100.0
Cancer of the small intestine (C17)	2,050	57.5	1,517	42.5	3,567	100.0
Anal cancer (C21)	578	32.3	1,213	67.7	1,791	100.0
Cancer of other and ill-defined digestive organs (C26)	474	60.1	315	39.9	789	100.0
All digestive cancers (C15–C26)	107,353	58.9	74,870	41.1	182,223	100.0
All cancers combined (C00–C97, D45–D46, D47.1, D47.3–D47.5)	**323,274**	**47.2**	**361,216**	**52.8**	**684,498**	**100.0**

Source: AIHW NHMD.

Table A2.24: Number of digestive-tract cancer radiotherapy procedures, by sex and principal diagnosis, 2016–17

	Males		Females		Persons	
Principal diagnosis	**No. of courses**	**% of total courses**	**No. of courses**	**% of total courses**	**No. of courses**	**% of total courses**
Colorectal cancer (C18–C20)	1,805	5.8	1,124	3.5	2,929	4.6
Pancreatic cancer (C25)	237	0.8	229	0.7	466	0.7
Stomach cancer (C16)	266	0.9	149	0.5	415	0.7
Liver cancer (C22)	185	0.6	59	0.2	244	0.4
Oesophageal cancer (C15)	1,023	3.3	417	1.3	1,441	2.3
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	66	0.2	69	0.2	135	0.2
Cancer of the small intestine (C17)	28	0.1	28	0.1	56	0.1
Anal cancer (C21)	187	0.6	311	1.0	498	0.8
Cancer of ill-defined and other sites (C26)	16	0.1	13	0.0	29	0.0
All digestive-tract cancers combined (C15–C26)	3,813	12.3	2,399	7.4	6,213	9.8
All cancers combined (C00–C97, D45–D46, D47.1, D47.3–D47.5)	**29,865**	**96.4**	**31,007**	**95.3**	**60,887**	**95.8**

Source: AIHW NRWTD.

Table A2.25: Five-year prevalence of colorectal cancer, by age group and sex, as at end of 2013

Age group	Males		Females		Persons		Male-to-female ratio
	Number	Rate	Number	Rate	Number	Rate	
0–14	13	0.6	20	0.9	33	0.7	0.6
15–24	90	5.6	141	9.2	231	7.4	0.6
25–34	311	18.1	342	20.1	653	19.1	0.9
35–44	759	47.5	761	47.0	1,520	47.3	1.0
45–54	2,462	161.3	2,106	134.7	4,568	147.8	1.2
55–64	5,752	439.1	4,140	307.3	9,892	372.3	1.4
65–74	9,103	972.5	6,368	663.4	15,471	816.0	1.5
75–84	7,919	1,662.2	6,529	1,150.0	14,448	1,383.7	1.4
85+	2,628	1,646.3	3,448	1,205.0	6,076	1,363.0	1.4
Total	**29,037**	**250.7**	**23,855**	**203.6**	**52,892**	**227.0**	**1.2**

Source: AIHW ACD 2014.

Table A2.26: Non-fatal cancer burden (YLD), by cancer phase, 2011

Cancer	Diagnosis and primary therapy	Control phase	Metastatic phase	Terminal phase	Long-term effects	Total
Colorectal cancer (C18–C20)	3,267	1,975	972	232	554	7,000
Pancreatic cancer (C25)	66	110	288	111	. .	574
Stomach cancer (C16)	301	141	122	54	. .	618
Liver cancer (C22)	69	90	98	65	. .	322
Oesophageal cancer (C15)	67	97	198	56	. .	417
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	37	51	26	12	. .	127

Source: AIHW burden of disease database 2011.

Table A2.27: Burden of disease from digestive-tract cancers, by age group, 2011

	0–14			15–24			25–64			65+		
	DALYs	% of total cancer burden	Rank	DALYs	% of total cancer burden	Rank	DALYs	% of total cancer burden	Rank	DALYs	% of total cancer burden	Rank
Males												
Colorectal cancer (C18–C20)	—	—	—	273	7.1	3	22,061	11.0	2	30,748	11.8	3
Pancreatic cancer (C25)	78	1.6	8	6	0.2	13	11,934	6.0	6	12,603	4.8	4
Stomach cancer (C16)	—	—	—	9	0.2	12	7,045	3.5	11	7,493	2.9	12
Liver cancer (C22)	163	3.4	5	63	1.6	10	12,928	6.5	4	8,589	3.3	10
Oesophageal cancer (C15)	—	—	—	—	—	—	9,424	4.7	7	8,995	3.4	8
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	—	—	—	—	—	—	712	0.4	22	919	0.4	21
Females												
Colorectal cancer (C18–C20)	8	0.2	19	74	2.5	8	16,783	9.6	3	22,473	12.4	3
Pancreatic cancer (C25)	8	0.2	13	—	—	—	7,428	4.2	6	12,371	6.8	4
Stomach cancer (C16)	—	—	—	66	2.2	11	4,108	2.3	11	3,861	2.1	14
Liver cancer (C22)	88	2.0	6	65	2.2	12	2,914	1.7	14	4,565	2.5	9
Oesophageal cancer (C15)	—	—	—	—	—	—	1,849	1.1	18	3,504	1.9	15
Cancer of the gallbladder and extrahepatic bile ducts (C23–C24)	8	0.2	10	—	—	—	887	0.5	20	1,762	1.0	21

Source: AIHW burden of disease database 2011.

Chapter 3: Pancreatic cancer

Table A3.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for pancreatic cancer, by age group

	Incidence		Mortality		Survival
Age group	**Number**	**Rate**	**Number**	**Rate**	**5-year relative survival (%)**
0–4	—	—	—	—	n.p.
5–9	—	—	1	n.p.	n.p.
10–14	—	—	—	—	n.p.
15–19	1	n.p.	—	—	n.p.
20–24	1	n.p.	—	—	n.p.
25–29	4	n.p.	1	n.p.	n.p.
30–34	9	0.5	4	n.p.	n.p.
35–39	16	0.9	10	0.6	n.p.
40–44	35	2.2	22	1.3	38.1
45–49	75	4.4	51	3.0	21.1
50–54	131	8.5	95	6.2	16.5
55–59	231	15.0	180	11.7	14.9
60–64	345	25.0	278	20.2	13.2
65–69	463	38.4	388	32.2	9.2
70–74	542	53.1	490	47.9	7.4
75–79	507	71.8	476	67.4	6.2
80–84	449	91.7	451	92.1	2.7
85+	553	109.0	558	110.0	1.7
Total	**3,364**	**11.1**	**3,006**	**9.8**	**8.7**

Sources: AIHW ACD 2014; AIHW NMD.

Table A3.2: Incidence (1982–2014) and mortality (1982–2016) trends, pancreatic cancer, with projections to 2018

	Incidence		Mortality	
Year	Number	ASR	Number	ASR
1982	1,206	10.0	1,168	9.8
1983	1,175	9.6	1,141	9.4
1984	1,239	9.9	1,218	9.8
1985	1,245	9.7	1,220	9.5
1986	1,361	10.3	1,287	9.8
1987	1,298	9.6	1,315	9.7
1988	1,341	9.6	1,259	9.1
1989	1,380	9.7	1,404	9.9
1990	1,403	9.7	1,366	9.4
1991	1,448	9.7	1,377	9.3
1992	1,503	9.9	1,445	9.5
1993	1,529	9.7	1,477	9.4
1994	1,592	9.9	1,480	9.3
1995	1,604	9.8	1,533	9.4
1996	1,677	10.0	1,601	9.6
1997	1,711	9.9	1,602	9.3
1998	1,795	10.1	1,618	9.1
1999	1,834	10.1	1,709	9.4
2000	1,894	10.1	1,749	9.3
2001	1,901	9.9	1,811	9.4
2002	1,899	9.6	1,841	9.3
2003	2,087	10.3	1,882	9.3
2004	2,123	10.3	1,998	9.7
2005	2,263	10.7	2,026	9.5
2006	2,338	10.7	2,091	9.6
2007	2,620	11.7	2,266	10.1
2008	2,488	10.9	2,260	9.8
2009	2,602	11.0	2,227	9.4
2010	2,779	11.5	2,430	10.0
2011	2,908	11.7	2,425	9.7
2012	2,983	11.6	2,544	9.9
2013	2,960	11.2	2,558	9.6
2014	3,078	11.3	2,565	9.4
2015	3,088	11.1	2,745	9.8
2016	3,177	11.1	2,911	10.2
2017	3,271	11.1	2,915	9.8
2018	3,364	11.1	3,006	9.8

Sources: AIHW ACD 2014 AIHW NMD.

Table A3.3: Incidence (2013) and 5-year relative survival (2010–2014), pancreatic cancer, by subsite

Cancer subsite	Incidence (number)	5-year relative survival (%)
Head of pancreas	1,095	7.1
Body of pancreas	143	4.9
Tail of pancreas	232	6.4
Pancreatic duct	33	17.6
Other parts of pancreas	61	n.p.
Overlapping and unspecified	1,177	3.5

Source: AIHW ACD 2014.

Table A3.4: Incidence (2013) and 5-year relative survival (2010–2014), pancreatic cancer, by histology

Histology group	Incidence (number)	5-year relative survival (%)
Adenocarcinomas	1,731	6.0
Neuroendocrine neoplasms	219	64.1
Other specified carcinomas	49	30.5
Unspecified carcinomas	382	3.1
Sarcomas	1	n.p.
Other specified malignant neoplasms	1	n.p.
Unspecified malignant neoplasms	577	2.8

Source: AIHW ACD 2014.

Table A3.5: Age-specific rates for hospitalisations related to pancreatic cancer, by age group and sex, 2016–17

	Males		Females		Persons	
Age group	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
0–4	–	–	–	–	–	–
5–9	–	–	–	–	–	–
10–14	–	–	10	0.1	10	0.1
15–19	5	0.1	3	n.p.	8	0.1
20–24	–	–	2	n.p.	2	n.p.
25–29	4	n.p.	26	0.3	30	0.2
30–34	23	0.3	124	1.4	147	0.8
35–39	122	1.5	163	2.0	285	1.7
40–44	413	5.1	227	2.8	640	4.0
45–49	710	8.9	525	6.3	1,235	7.6
50–54	1,394	18.4	792	10.1	2,186	14.2
55–59	1,772	24.2	1,673	22.0	3,445	23.1
60–64	2,709	42.1	2,341	34.7	5,050	38.3
65–69	3,353	57.0	3,019	49.9	6,372	53.4
70–74	3,331	73.4	2,746	58.3	6,077	65.7
75–79	2,768	87.9	2,444	70.0	5,212	78.5
80–84	1,513	73.4	1,251	48.9	2,764	59.9
85+	783	42.9	849	27.8	1,632	33.5
Total	**18,900**	**14.0**	**16,195**	**11.0**	**35,095**	**12.4**

Source: AIHW NHMD.

Table A3.6: Age-standardised rates for all hospitalisations related to pancreatic cancer, by sex, 2001–02 to 2016–17

	Males		Females		Persons	
Financial year	Number	ASR	Number	ASR	Number	ASR
2001–02	7,001	7.6	5,330	5.1	12,331	6.3
2002–03	7,270	7.7	6,023	5.7	13,293	6.7
2003–04	8,042	8.4	6,642	6.2	14,684	7.2
2004–05	8,216	8.3	7,570	6.9	15,786	7.6
2005–06	9,558	9.5	7,116	6.3	16,674	7.8
2006–07	10,633	10.2	8,059	7.0	18,692	8.5
2007–08	10,695	10.0	8,293	7.0	18,988	8.4
2008–09	10,118	9.2	8,356	7.0	18,474	8.0
2009–10	11,741	10.4	9,840	8.0	21,581	9.1
2010–11	12,746	11.0	10,130	8.0	22,876	9.4
2011–12	13,636	11.5	11,434	8.7	25,070	10.0
2012–13	13,777	11.2	11,381	8.5	25,158	9.8
2013–14	13,494	10.7	11,584	8.5	25,078	9.6
2014–15	16,275	12.6	13,670	9.7	29,946	11.1
2015–16	17,947	13.7	15,796	10.9	33,743	12.2
2016–17	18,900	14.0	16,195	11.0	35,095	12.4

Source: AIHW NHMD.

Table A3.7: Five-year prevalence of pancreatic cancer, by age group and sex, as at end of 2013

	Males		Females		Persons		
Age group	Number	Rate	Number	Rate	Number	Rate	Male-to-female ratio
0–14	1	n.p.	3	n.p.	4	n.p.	n.p.
15–24	2	n.p.	6	0.4	8	0.3	n.p.
25–34	11	0.6	19	1.1	30	0.9	0.6
35–44	60	3.8	43	2.7	103	3.2	1.4
45–54	173	11.3	134	8.6	307	9.9	1.3
55–64	375	28.6	345	25.6	720	27.1	1.1
65–74	512	54.7	451	47.0	963	50.8	1.2
75–84	333	69.9	321	56.5	654	62.6	1.2
85+	99	62.0	157	54.9	256	57.4	1.1
Total	**1,566**	**13.5**	**1,479**	**12.6**	**3,045**	**13.1**	**1.1**

Source: AIHW ACD 2014.

Chapter 4: Stomach cancer

Table A4.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for stomach cancer, by age group

	Incidence		Mortality		Survival
Age group	**Number**	**Rate**	**Number**	**Rate**	**5-year relative survival (%)**
0–4	—	—	—	—	n.p.
5–9	—	—	—	—	n.p.
10–14	—	—	—	—	n.p.
15–19	1	n.p.	—	—	n.p.
20–24	3	n.p.	1	n.p.	n.p.
25–29	6	0.3	3	n.p.	n.p.
30–34	13	0.7	3	n.p.	n.p.
35–39	26	1.4	11	0.6	31.9
40–44	47	2.9	27	1.6	32.3
45–49	83	4.9	38	2.2	36.8
50–54	116	7.5	42	2.7	36.9
55–59	189	12.2	64	4.1	32.2
60–64	242	17.6	85	6.2	36.2
65–69	316	26.3	117	9.7	36.3
70–74	354	34.7	159	15.6	30.3
75–79	318	45.0	155	22.0	29.3
80–84	288	58.9	152	31.0	20.6
85+	328	64.6	222	43.7	11.4
Total	**2,332**	**7.8**	**1,078**	**3.6**	**29.5**

Sources: AIHW ACD 2014; AIHW NMD.

Table A4.2: Incidence (1982–2014) and mortality (1982–2016) trends, stomach cancer, with projections to 2018

	Incidence		Mortality	
Year	Number	ASR	Number	ASR
1982	1,825	15.7	1,398	12.3
1983	1,907	15.8	1,456	12.5
1984	1,847	14.9	1,399	11.7
1985	1,847	14.6	1,377	11.0
1986	1,816	13.7	1,386	10.8
1987	1,864	13.9	1,351	10.3
1988	1,776	12.8	1,376	10.2
1989	1,728	12.2	1,313	9.5
1990	1,827	12.6	1,267	8.9
1991	1,849	12.4	1,278	8.8
1992	1,817	11.8	1,231	8.2
1993	1,853	11.8	1,232	8.0
1994	1,838	11.5	1,295	8.2
1995	1,949	11.8	1,276	7.8
1996	1,850	10.9	1,226	7.3
1997	1,926	11.1	1,245	7.2
1998	1,903	10.7	1,195	6.8
1999	1,970	10.8	1,205	6.6
2000	1,977	10.6	1,191	6.4
2001	1,859	9.6	1,209	6.3
2002	1,922	9.7	1,219	6.2
2003	1,881	9.3	1,170	5.8
2004	1,944	9.4	1,145	5.5
2005	1,926	9.1	1,091	5.1
2006	1,954	9.1	1,130	5.2
2007	1,926	8.6	1,151	5.1
2008	2,025	8.8	1,121	4.9
2009	1,981	8.5	1,106	4.6
2010	1,999	8.3	1,098	4.5
2011	2,052	8.3	1,126	4.5
2012	2,106	8.3	1,175	4.6
2013	2,065	8.0	1,209	4.6
2014	2,148	8.0	1,156	4.3
2015	2,214	8.1	1,122	4.0
2016	2,254	8.0	1,087	3.8
2017	2,294	7.9	1,084	3.7
2018	2,332	7.8	1,078	3.6

Sources: AIHW ACD 2014; AIHW NMD.

Table A4.3: Incidence (2013) and 5-year relative survival (2010–2014), stomach cancer, by subsite

Cancer subsite	Incidence (number)	5-year relative survival (%)
Cardia	694	24.4
Fundus of stomach	73	34.0
Body of stomach	130	32.6
Pyloric antrum	245	38.3
Pylorus	75	31.2
Curvatures of stomach	185	41.0
Overlapping and unspecified	663	25.2

Source: AIHW ACD 2014.

Table A4.4: Incidence (2013) and 5-year relative survival (2010–2014), stomach cancer, by histology

Histology group	Incidence (number)	5-year relative survival (%)
Squamous cell carcinomas	15	27.9
Adenocarcinomas	1,748	27.1
Neuroendocrine neoplasms	100	70.9
Other specified carcinomas	3	n.p.
Unspecified carcinomas	59	13.9
Sarcomas	65	67.9
Other specified malignant neoplasms	1	n.p.
Unspecified malignant neoplasms	74	9.4

Source: AIHW ACD 2014.

Table A4.5: Age-specific rates for hospitalisations related to stomach cancer, by age group and sex, 2016–17

	Males		Females		Persons	
Age group	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
0–4	–	–	–	–	–	–
5–9	–	–	–	–	–	–
10–14	3	n.p.	–	–	3	n.p.
15–19	5	0.1	3	n.p.	8	0.1
20–24	7	0.1	33	0.4	40	0.2
25–29	27	0.3	33	0.4	60	0.3
30–34	49	0.5	49	0.5	98	0.5
35–39	142	1.7	121	1.5	263	1.6
40–44	270	3.4	243	3.0	513	3.2
45–49	545	6.8	247	3.0	792	4.9
50–54	746	9.8	365	4.7	1,111	7.2
55–59	993	13.6	497	6.5	1,490	10.0
60–64	1,763	27.4	678	10.0	2,441	18.5
65–69	2,163	36.8	677	11.2	2,840	23.8
70–74	1,922	42.3	900	19.1	2,822	30.5
75–79	1,410	44.8	661	18.9	2,071	31.2
80–84	957	46.5	435	17.0	1,392	30.2
85+	598	32.8	451	14.8	1,049	21.5
Total	**11,600**	**8.6**	**5,393**	**3.7**	**16,993**	**6.1**

Source: AIHW NHMD.

Table A4.6: Age-standardised rates for all hospitalisations related to stomach cancer, by sex, 2001–02 to 2016–17

	Males		Females		Persons	
Financial year	Number	ASR	Number	ASR	Number	ASR
2001–02	8,791	9.7	4,432	4.3	13,223	6.8
2002–03	9,017	9.7	4,466	4.3	13,483	6.8
2003–04	10,176	10.7	4,429	4.1	14,605	7.2
2004–05	9,975	10.2	4,332	4.0	14,307	6.9
2005–06	10,104	10.1	4,683	4.2	14,787	7.0
2006–07	10,561	10.3	4,504	3.9	15,065	6.9
2007–08	10,901	10.3	5,098	4.4	15,999	7.2
2008–09	10,735	9.9	4,485	3.8	15,220	6.6
2009–10	11,253	10.1	4,300	3.5	15,553	6.6
2010–11	10,207	8.9	4,360	3.5	14,567	6.1
2011–12	9,811	8.3	4,344	3.4	14,155	5.7
2012–13	10,168	8.4	4,601	3.5	14,769	5.8
2013–14	10,925	8.7	4,840	3.6	15,765	6.0
2014–15	10,698	8.4	5,002	3.6	15,700	5.9
2015–16	10,902	8.3	4,849	3.5	15,752	5.8
2016–17	11,600	8.6	5,393	3.7	16,993	6.1

Source: AIHW NHMD.

Table A4.7: Five-year prevalence of stomach cancer, by age group and sex, as at end of 2013

	Males		Females		Persons		
Age group	Number	Rate	Number	Rate	Number	Rate	Male-to-female ratio
0–14	–	–	–	–	–	–	–
15–24	5	0.3	8	0.5	13	0.4	0.6
25–34	19	1.1	22	1.3	41	1.2	0.9
35–44	70	4.4	74	4.6	144	4.5	1.0
45–54	231	15.1	142	9.1	373	12.1	1.7
55–64	593	45.3	251	18.6	844	31.8	2.4
65–74	894	95.5	404	42.1	1,298	68.5	2.3
75–84	691	145.0	380	66.9	1,071	102.6	2.2
85+	210	131.6	156	54.5	366	82.1	2.4
Total	**2,713**	**23.4**	**1,437**	**12.3**	**4,150**	**17.8**	**1.9**

Source: AIHW ACD 2014.

Chapter 5: Liver cancer

Table A5.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for liver cancer, by age group

	Incidence		Mortality		Survival
Age group	**Number**	**Rate**	**Number**	**Rate**	**5-year relative survival (%)**
0–4	10	0.6	3	n.p.	84.6
5–9	1	n.p.	—	—	n.p.
10–14	1	n.p.	1	n.p.	n.p.
15–19	1	n.p.	1	n.p.	n.p.
20–24	3	n.p.	1	n.p.	n.p.
25–29	4	n.p.	3	n.p.	n.p.
30–34	7	0.4	3	n.p.	n.p.
35–39	14	0.8	9	0.5	34.9
40–44	31	1.9	16	1.0	34.8
45–49	89	5.2	53	3.1	25.0
50–54	233	15.1	96	6.2	25.0
55–59	384	24.9	245	15.8	24.8
60–64	255	18.5	209	15.2	20.9
65–69	232	19.3	217	18.0	14.9
70–74	306	30.0	324	31.7	15.3
75–79	296	42.0	338	47.9	10.2
80–84	179	36.5	275	56.1	8.9
85+	167	32.9	294	58.0	n.p.
Total	**2,215**	**7.6**	**2,088**	**7.0**	**18.1**

Sources: AIHW ACD 2014; AIHW NMD.

Table A5.2: Incidence (1982–2014) and mortality (1982–2016) trends, liver cancer, with projections to 2018

	Incidence		Mortality	
Year	Number	ASR	Number	ASR
1982	229	1.8	282	2.3
1983	207	1.6	325	2.6
1984	228	1.7	333	2.6
1985	236	1.7	323	2.4
1986	298	2.1	317	2.3
1987	309	2.2	365	2.6
1988	301	2.1	374	2.6
1989	344	2.3	402	2.7
1990	356	2.3	389	2.6
1991	391	2.5	431	2.8
1992	449	2.8	468	3.0
1993	502	3.1	501	3.2
1994	530	3.2	554	3.4
1995	518	3.1	579	3.5
1996	574	3.3	578	3.4
1997	620	3.5	663	3.8
1998	633	3.5	631	3.5
1999	707	3.8	690	3.8
2000	792	4.2	742	4.0
2001	881	4.6	778	4.0
2002	905	4.6	850	4.3
2003	927	4.6	893	4.4
2004	1,019	5.0	897	4.4
2005	1,128	5.4	953	4.5
2006	1,210	5.6	1,062	4.9
2007	1,236	5.6	1,145	5.1
2008	1,395	6.2	1,197	5.2
2009	1,455	6.3	1,336	5.7
2010	1,543	6.4	1,333	5.5
2011	1,609	6.6	1,419	5.8
2012	1,715	6.8	1,504	5.9
2013	1,915	7.4	1,614	6.2
2014	1,961	7.4	1,744	6.5
2015	1,921	7.1	1,785	6.5
2016	2,018	7.3	1,864	6.6
2017	2,116	7.5	1,979	6.8
2018	2,215	7.6	2,088	7.0

Sources: AIHW ACD 2014; AIHW NMD.

Table A5.3: Incidence (2013) and 5-year relative survival (2010–2014), liver cancer, by subsite

Cancer subsite	Incidence (number)	5-year relative survival (%)
Hepatic parenchyma	1,430	21.1
Intrahepatic bile ducts	485	9.0

Source: AIHW ACD 2014.

Table A5.4: Incidence (2013) and 5-year relative survival (2010–2014), liver cancer, by histology

Histology group	Incidence (number)	5-year relative survival (%)
Adenocarcinomas	463	9.2
Other specified carcinomas	19	n.p.
Unspecified carcinomas	10	n.p.
Sarcomas	6	n.p.
Unspecified malignant neoplasms	109	9.5
Hepatocellular carcinoma	1,295	22.1
Hepatoblastoma	13	83.3

Source: AIHW ACD 2014.

Table A5.5: Age-specific rates for hospitalisations related to liver cancer, by age group and sex, 2016–17

	Males		Females		Persons	
Age group	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
0–4	71	0.9	99	1.3	170	1.1
5–9	29	0.4	1	n.p.	30	0.2
10–14	34	0.5	–	–	34	0.2
15–19	30	0.4	3	n.p.	33	0.2
20–24	16	0.2	8	0.1	24	0.1
25–29	5	0.1	45	0.5	50	0.3
30–34	22	0.2	35	0.4	57	0.3
35–39	67	0.8	20	0.2	87	0.5
40–44	91	1.1	161	2.0	252	1.6
45–49	216	2.7	119	1.4	335	2.1
50–54	581	7.7	429	5.5	1,010	6.5
55–59	1,211	16.6	457	6.0	1,668	11.2
60–64	1,572	24.4	580	8.6	2,152	16.3
65–69	1,406	23.9	524	8.7	1,930	16.2
70–74	1,328	29.3	464	9.9	1,792	19.4
75–79	1,023	32.5	580	16.6	1,603	24.1
80–84	614	29.8	376	14.7	990	21.4
85+	326	17.9	257	8.4	583	12.0
Total	**8,642**	**6.3**	**4,158**	**2.9**	**12,800**	**4.6**

Source: AIHW NHMD.

Table A5.6: Age-standardised rates for all hospitalisations related to liver cancer, by sex, 2001–02 to 2016–17

	Males		Females		Persons	
Financial year	Number	ASR	Number	ASR	Number	ASR
2001–02	2,871	3.1	1,257	1.2	4,128	2.1
2002–03	3,084	3.3	1,472	1.4	4,556	2.3
2003–04	3,421	3.6	1,908	1.8	5,329	2.6
2004–05	3,733	3.8	1,885	1.7	5,618	2.7
2005–06	4,371	4.4	2,132	1.9	6,503	3.1
2006–07	4,627	4.5	2,202	2.0	6,829	3.2
2007–08	4,864	4.6	2,407	2.1	7,271	3.3
2008–09	4,962	4.6	2,264	1.9	7,226	3.2
2009–10	5,139	4.6	2,550	2.1	7,689	3.3
2010–11	5,769	5.0	2,533	2.0	8,302	3.5
2011–12	5,724	4.8	3,006	2.4	8,730	3.5
2012–13	6,505	5.4	3,194	2.4	9,699	3.8
2013–14	6,915	5.5	3,451	2.6	10,366	4.0
2014–15	7,665	6.0	3,438	2.5	11,103	4.2
2015–16	8,437	6.4	3,742	2.7	12,183	4.4
2016–17	8,642	6.3	4,158	2.9	12,800	4.6

Source: AIHW NHMD.

Table A5.7: Five-year prevalence of liver cancer, by age group and sex, as at end of 2013

Age group	Males		Females		Persons		
	Number	Rate	Number	Rate	Number	Rate	Male-to-female ratio
0–14	35	1.5	20	0.9	55	1.2	1.7
15–24	4	n.p.	4	n.p.	8	0.3	n.p.
25–34	15	0.9	11	0.6	26	0.8	1.4
35–44	49	3.1	24	1.5	73	2.3	2.1
45–54	306	20.0	90	5.8	396	12.8	3.5
55–64	684	52.2	168	12.5	852	32.1	4.2
65–74	548	58.5	184	19.2	732	38.6	3.1
75–84	332	69.7	184	32.4	516	49.4	2.2
85+	90	56.4	55	19.2	145	32.5	2.9
Total	**2,063**	**17.8**	**740**	**6.3**	**2,803**	**12.0**	**2.8**

Source: AIHW ACD 2014.

Chapter 6: Oesophageal cancer

Table A6.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for oesophageal cancer, by age group

	Incidence		Mortality		Survival
Age group	**Number**	**Rate**	**Number**	**Rate**	**5-year relative survival (%)**
0–4	—	—	—	—	n.p.
5–9	—	—	—	—	n.p.
10–14	—	—	—	—	n.p.
15–19	—	—	—	—	n.p.
20–24	—	—	—	—	n.p.
25–29	1	n.p.	1	n.p.	n.p.
30–34	3	n.p.	2	n.p.	n.p.
35–39	8	0.4	6	0.3	n.p.
40–44	19	1.2	15	0.9	20.7
45–49	44	2.6	33	1.9	30.6
50–54	81	5.3	65	4.2	29.1
55–59	144	9.3	106	6.8	26.5
60–64	202	14.7	160	11.6	22.4
65–69	242	20.1	198	16.4	25.9
70–74	275	26.9	203	19.9	23.5
75–79	248	35.1	192	27.2	18.3
80–84	211	43.2	214	43.6	13.4
85+	206	40.6	254	50.0	6.4
Total	**1,685**	**5.6**	**1,447**	**4.8**	**21.0**

Sources: AIHW ACD 2014; AIHW NMD.

Table A6.2: Incidence (1982–2014) and mortality (1982–2016) trends, oesophageal cancer, with projections to 2018

	Incidence		Mortality	
Year	Number	ASR	Number	ASR
1982	537	4.4	527	4.4
1983	607	5.0	585	4.9
1984	668	5.2	616	4.9
1985	663	5.1	677	5.3
1986	641	4.8	618	4.7
1987	760	5.5	696	5.1
1988	840	6.0	786	5.7
1989	732	5.1	774	5.4
1990	802	5.4	725	4.9
1991	848	5.6	796	5.3
1992	860	5.6	813	5.3
1993	918	5.8	829	5.3
1994	956	5.9	875	5.5
1995	948	5.8	910	5.6
1996	989	5.9	930	5.5
1997	977	5.6	945	5.5
1998	1,005	5.7	976	5.5
1999	1,086	6.0	940	5.2
2000	1,082	5.8	971	5.2
2001	1,088	5.6	1,040	5.4
2002	1,088	5.5	1,005	5.1
2003	1,169	5.8	1,130	5.6
2004	1,225	5.9	1,088	5.3
2005	1,180	5.5	1,176	5.5
2006	1,242	5.7	1,156	5.3
2007	1,282	5.7	1,118	5.0
2008	1,316	5.7	1,207	5.2
2009	1,280	5.4	1,176	5.0
2010	1,423	5.9	1,196	4.9
2011	1,410	5.7	1,240	4.9
2012	1,405	5.5	1,218	4.7
2013	1,418	5.4	1,260	4.7
2014	1,457	5.4	1,198	4.4
2015	1,555	5.6	1,312	4.7
2016	1,598	5.6	1,338	4.7
2017	1,642	5.6	1,418	4.8
2018	1,685	5.6	1,447	4.8

Sources: AIHW ACD 2014; AIHW NMD.

Table A6.3: Incidence (2013) and 5-year relative survival (2010–2014), oesophageal cancer, by subsite

Cancer subsite	Incidence (number)	5-year relative survival (%)
Cervical part of oesophagus	10	n.p.
Thoracic part of oesophagus	9	n.p.
Upper third of oesophagus	75	20.3
Middle third of oesophagus	166	19.1
Lower third of oesophagus	637	21.9
Overlapping and unspecified	521	20.7

Source: AIHW ACD 2014.

Table A6.4: Incidence (2013) and 5-year relative survival (2010–2014), oesophageal cancer, by histology

Histology group	Incidence (number)	5-year relative survival (%)
Squamous cell carcinomas	509	20.4
Adenocarcinomas	756	23.2
Neuroendocrine neoplasms	20	n.p.
Other specified carcinomas	12	n.p.
Unspecified carcinomas	57	8.6
Sarcomas	1	n.p.
Other specified malignant neoplasms	2	n.p.
Unspecified malignant neoplasms	61	11.9

Source: AIHW ACD 2014.

Table A6.5: Age-specific rates for hospitalisations related to oesophageal cancer, by age group and sex, 2016–17

	Males		Females		Persons	
Age group	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
0–4	–	–	–	–	–	–
5–9	–	–	–	–	–	–
10–14	–	–	–	–	–	–
15–19	–	–	–	–	–	–
20–24	–	–	1	n.p.	1	n.p.
25–29	17	0.2	2	n.p.	19	0.1
30–34	39	0.4	8	0.1	47	0.3
35–39	41	0.5	7	0.1	48	0.3
40–44	188	2.3	6	0.1	194	1.2
45–49	289	3.6	73	0.9	362	2.2
50–54	586	7.7	156	2.0	742	4.8
55–59	947	12.9	266	3.5	1,213	8.1
60–64	1,657	25.7	371	5.5	2,028	15.4
65–69	1,991	33.9	487	8.0	2,478	20.8
70–74	1,927	42.4	614	13.0	2,541	27.5
75–79	1,132	35.9	465	13.3	1,597	24.0
80–84	612	29.7	253	9.9	865	18.7
85+	417	22.8	311	10.2	728	14.9
Total	**9,843**	**7.2**	**3,020**	**2.0**	**12,863**	**4.5**

Source: AIHW NHMD.

Table A6.6: Age-standardised rates for all hospitalisations related to oesophageal cancer, by sex, 2001–02 to 2016–17

	Males		Females		Persons	
Financial year	Number	ASR	Number	ASR	Number	ASR
2001–02	5,860	6.4	2,453	2.3	8,313	4.3
2002–03	6,425	6.9	2,381	2.2	8,806	4.4
2003–04	6,695	7.0	2,561	2.3	9,256	4.5
2004–05	7,426	7.5	2,659	2.4	10,085	4.8
2005–06	7,978	7.8	2,634	2.3	10,612	4.9
2006–07	8,325	8.0	2,638	2.2	10,964	5.0
2007–08	8,783	8.2	2,922	2.4	11,705	5.2
2008–09	8,889	8.1	2,636	2.1	11,525	5.0
2009–10	8,128	7.2	2,718	2.1	10,846	4.6
2010–11	8,417	7.2	2,566	2.0	10,983	4.5
2011–12	8,445	7.0	2,749	2.1	11,194	4.5
2012–13	8,164	6.6	2,991	2.2	11,155	4.3
2013–14	8,256	6.5	2,764	2.0	11,020	4.2
2014–15	8,991	7.0	3,035	2.1	12,026	4.5
2015–16	9,582	7.2	3,048	2.1	12,630	4.5
2016–17	9,843	7.2	3,020	2.0	12,863	4.5

Source: AIHW NHMD.

Table A6.7: Five-year prevalence of oesophageal cancer, by age group and sex, as at end of 2013

	Males		Females		Persons		
Age group	Number	Rate	Number	Rate	Number	Rate	Male-to-female ratio
0–14	–	–	–	–	–	–	–
15–24	–	–	–	–	–	–	–
25–34	5	0.3	1	n.p.	6	0.2	n.p.
35–44	24	1.5	11	0.7	35	1.1	2.2
45–54	175	11.5	39	2.5	214	6.9	4.6
55–64	436	33.3	118	8.8	554	20.9	3.8
65–74	608	65.0	203	21.1	811	42.8	3.1
75–84	368	77.2	225	39.6	593	56.8	1.9
85+	113	70.8	94	32.8	207	46.4	2.2
Total	**1,729**	**14.9**	**691**	**5.9**	**2,420**	**10.4**	**2.5**

Source: AIHW ACD 2014.

Chapter 7: Cancer of the gallbladder and extrahepatic bile ducts

Table A7.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for gallbladder and extrahepatic bile duct cancers, by age group

	Incidence		Mortality		Survival
Age group	**Number**	**Rate**	**Number**	**Rate**	**5-year relative survival (%)**
0–4	—	—	—	—	n.p.
5–9	—	—	—	—	n.p.
10–14	—	—	—	—	n.p.
15–19	—	—	—	—	n.p.
20–24	—	—	—	—	n.p.
25–29	1	n.p.	—	—	n.p.
30–34	2	n.p.	—	—	n.p.
35–39	4	n.p.	—	—	n.p.
40–44	8	0.5	—	—	n.p.
45–49	20	1.2	5	0.3	30.5
50–54	32	2.0	6	0.4	37.5
55–59	61	3.9	13	0.9	26.8
60–64	88	6.4	18	1.3	30.0
65–69	121	10.1	25	2.1	19.9
70–74	170	16.6	32	3.1	20.5
75–79	145	20.5	45	6.4	16.4
80–84	125	25.6	48	9.9	13.4
85+	155	30.5	68	13.5	8.5
Total	**931**	**3.1**	**262**	**0.9**	**19.7**

Sources: AIHW ACD 2014; AIHW NMD.

Table A7.2: Incidence (1982–2014) and mortality (1982–2016) trends, gallbladder and extrahepatic bile duct cancers, with projections to 2018

	Incidence		Mortality	
Year	Number	ASR	Number	ASR
1982	409	3.5	297	2.6
1983	431	3.6	330	2.7
1984	450	3.7	320	2.7
1985	428	3.3	306	2.4
1986	465	3.6	335	2.6
1987	480	3.6	323	2.4
1988	501	3.6	310	2.3
1989	479	3.4	334	2.4
1990	541	3.8	290	2.1
1991	534	3.6	357	2.4
1992	516	3.4	333	2.2
1993	495	3.2	298	1.9
1994	572	3.6	305	1.9
1995	613	3.7	337	2.1
1996	621	3.7	324	1.9
1997	588	3.4	348	2.0
1998	611	3.4	349	2.0
1999	629	3.4	328	1.8
2000	586	3.1	333	1.8
2001	592	3.1	352	1.8
2002	582	2.9	316	1.6
2003	597	3.0	290	1.4
2004	611	2.9	239	1.2
2005	607	2.8	273	1.3
2006	626	2.9	234	1.1
2007	686	3.1	278	1.2
2008	632	2.7	272	1.2
2009	724	3.1	253	1.1
2010	745	3.1	255	1.0
2011	817	3.3	243	1.0
2012	798	3.1	258	1.0
2013	783	3.0	261	1.0
2014	802	3.0	236	0.9
2015	846	3.0	284	1.0
2016	873	3.1	269	0.9
2017	902	3.1	261	0.9
2018	931	3.1	262	0.9

Sources: AIHW ACD 2014; AIHW NMD.

Table A7.3: Incidence (2013) and 5-year relative survival (2010–2014), gallbladder and extrahepatic bile duct cancers, by subsite

Cancer subsite	Incidence (number)	5-year relative survival (%)
Gallbladder	335	17.6
Extrahepatic bile duct	226	13.0
Ampulla of Vater	164	38.1
Biliary tract, overlapping and unspecified	58	n.p.

Source: AIHW ACD 2014.

Table A7.4: Incidence (2013) and 5-year relative survival (2010–2014), gallbladder and extrahepatic bile duct cancers, by histology

Histology group	Incidence (number)	5-year relative survival (%)
Squamous cell carcinomas	2	n.p.
Adenocarcinomas	641	20.7
Neuroendocrine neoplasms	20	45.8
Other specified carcinomas	5	n.p.
Unspecified carcinomas	49	11.0
Other specified malignant neoplasms	2	n.p.
Unspecified malignant neoplasms	64	7.4

Source: AIHW ACD 2014.

Table A7.5: Age-specific rates for hospitalisations related to cancer of the gallbladder and extrahepatic bile ducts, by age group and sex, 2016–17

	Males		Females		Persons	
Age group	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
0–4	4	n.p.	–	–	4	n.p.
5–9	–	–	–	–	–	–
10–14	–	–	–	–	–	–
15–19	–	–	–	–	–	–
20–24	–	–	–	–	–	–
25–29	1	n.p.	5	0.1	6	–
30–34	17	0.2	16	0.2	33	0.2
35–39	10	0.1	44	0.5	54	0.3
40–44	46	0.6	54	0.7	100	0.6
45–49	115	1.4	56	0.7	171	1.1
50–54	205	2.7	160	2.0	365	2.4
55–59	210	2.9	277	3.6	487	3.3
60–64	404	6.3	401	5.9	805	6.1
65–69	489	8.3	798	13.2	1,287	10.8
70–74	733	16.1	632	13.4	1,365	14.8
75–79	620	19.7	447	12.8	1,067	16.1
80–84	376	18.3	244	9.5	620	13.4
85+	139	7.6	237	7.8	376	7.7
Total	**3,369**	**2.5**	**3,371**	**2.2**	**6,740**	**2.4**

Source: AIHW NHMD.

Table A7.6: Age-standardised rates for all hospitalisations related to cancer of the gallbladder and extrahepatic bile ducts, by sex, 2001–02 to 2016–17

	Males		Females		Persons	
Financial year	Number	ASR	Number	ASR	Number	ASR
2001–02	1,244	1.4	1,649	1.6	2,893	1.5
2002–03	1,210	1.3	1,485	1.4	2,695	1.3
2003–04	1,389	1.5	1,520	1.4	2,909	1.4
2004–05	1,376	1.5	1,689	1.5	3,065	1.5
2005–06	1,526	1.5	1,642	1.5	3,168	1.5
2006–07	1,708	1.7	2,231	2.0	3,939	1.8
2007–08	2,027	1.9	2,205	1.9	4,232	1.9
2008–09	1,654	1.5	1,942	1.6	3,596	1.6
2009–10	2,000	1.8	1,826	1.5	3,826	1.6
2010–11	2,053	1.8	2,169	1.7	4,222	1.7
2011–12	2,294	2.0	2,530	1.9	4,824	1.9
2012–13	2,461	2.0	2,294	1.7	4,755	1.8
2013–14	2,565	2.1	2,401	1.7	4,966	1.9
2014–15	3,220	2.5	3,138	2.2	6,358	2.4
2015–16	3,109	2.4	3,613	2.5	6,722	2.4
2016–17	3,369	2.5	3,371	2.2	6,740	2.4

Source: AIHW NHMD.

Table A7.7: Five-year prevalence of cancer of the gallbladder and extrahepatic bile ducts, by age group and sex, as at end of 2013

Age group	Males		Females		Persons		
	Number	Rate	Number	Rate	Number	Rate	Male-to-female ratio
0–14	2	n.p.	–	–	2	n.p.	–
15–24	–	–	1	n.p.	1	n.p.	–
25–34	1	n.p.	2	n.p.	3	n.p.	n.p.
35–44	16	1.0	13	0.8	29	0.9	1.2
45–54	49	3.2	46	2.9	95	3.1	1.1
55–64	125	9.5	110	8.2	235	8.8	1.2
65–74	224	23.9	206	21.5	430	22.7	1.1
75–84	176	36.9	192	33.8	368	35.2	1.1
85+	72	45.1	94	32.8	166	37.2	1.4
Total	**665**	**5.7**	**664**	**5.7**	**1,329**	**5.7**	**1.0**

Source: AIHW ACD 2014.

Chapter 8: Cancer of the small intestine

Table A8.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for small intestine cancer, by age group

	Incidence		Mortality		Survival
Age group	**Number**	**Rate**	**Number**	**Rate**	**5-year relative survival (%)**
0–4	—	—	—	—	n.p.
5–9	—	—	—	—	n.p.
10–14	—	—	—	—	n.p.
15–19	1	n.p.	—	—	n.p.
20–24	1	n.p.	—	—	n.p.
25–29	4	n.p.	—	—	n.p.
30–34	4	n.p.	1	n.p.	n.p.
35–39	9	0.5	2	n.p.	74.7
40–44	15	0.9	2	n.p.	68.1
45–49	31	1.8	5	n.p.	75.8
50–54	54	3.5	8	0.5	76.3
55–59	55	3.6	11	0.7	75.6
60–64	88	6.4	13	0.9	72.6
65–69	93	7.7	18	1.5	68.2
70–74	101	9.9	20	2.0	68.3
75–79	80	11.4	19	2.7	64.1
80–84	65	13.2	15	3.1	39.8
85+	47	9.3	19	3.7	29.4
Total	**648**	**2.2**	**133**	**0.5**	**65.8**

Sources: AIHW ACD 2014; AIHW NMD.

Table A8.2: Incidence (1982–2014) and mortality (1982–2016) trends, small intestine cancer, with projections to 2018

	Incidence		Mortality	
Year	Number	ASR	Number	ASR
1982	91	0.7	44	0.4
1983	93	0.7	52	0.4
1984	102	0.8	51	0.4
1985	111	0.8	47	0.4
1986	122	0.9	54	0.4
1987	134	1.0	72	0.5
1988	137	1.0	61	0.4
1989	147	1.0	62	0.4
1990	137	0.9	65	0.5
1991	182	1.2	72	0.5
1992	160	1.0	71	0.5
1993	155	1.0	61	0.4
1994	183	1.1	86	0.5
1995	193	1.1	79	0.5
1996	207	1.2	70	0.4
1997	208	1.2	70	0.4
1998	262	1.5	88	0.5
1999	254	1.4	99	0.5
2000	267	1.4	93	0.5
2001	284	1.5	101	0.5
2002	304	1.5	99	0.5
2003	353	1.8	89	0.4
2004	300	1.5	66	0.3
2005	372	1.8	82	0.4
2006	368	1.7	92	0.4
2007	408	1.9	103	0.5
2008	402	1.8	100	0.4
2009	432	1.9	91	0.4
2010	502	2.1	102	0.4
2011	472	1.9	95	0.4
2012	556	2.2	131	0.5
2013	565	2.2	107	0.4
2014	538	2.0	94	0.3
2015	568	2.1	101	0.4
2016	594	2.2	120	0.4
2017	621	2.2	129	0.4
2018	648	2.2	133	0.4

Sources: AIHW ACD 2014; AIHW NMD.

Table A8.3: Incidence (2013) and 5-year relative survival (2010–2014), small intestine cancer, by subsite

Cancer subsite	Incidence (number)	5-year relative survival (%)
Duodenum	184	45.6
Jejunum	45	60.0
Ileum	145	83.3
Meckel's diverticulum	4	n.p.
Overlapping and unspecified	187	70.8

Source: AIHW ACD 2014.

Table A8.4: Incidence (2013) and 5-year relative survival (2010–2014), small intestine cancer, by histology

Histology group	Incidence (number)	5-year relative survival (%)
Adenocarcinomas	182	35.2
Neuroendocrine neoplasms	312	88.1
Other specified carcinomas	1	n.p.
Unspecified carcinomas	21	n.p.
Sarcomas	35	71.5
Unspecified malignant neoplasms	14	n.p.

Source: AIHW ACD 2014.

Table A8.5: Age-specific rates for hospitalisations related to cancer of the small intestine, by age group and sex, 2016–17

	Males		Females		Persons	
Age group	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
0–4	1	n.p.	–	–	1	n.p.
5–9	–	–	–	–	–	–
10–14	–	–	–	–	–	–
15–19	–	–	–	–	–	–
20–24	–	–	8	0.1	8	–
25–29	3	n.p.	4	n.p.	7	–
30–34	13	0.1	34	0.4	47	0.3
35–39	29	0.4	17	0.2	46	0.3
40–44	60	0.7	43	0.5	103	0.6
45–49	114	1.4	140	1.7	254	1.6
50–54	174	2.3	183	2.3	357	2.3
55–59	358	4.9	218	2.9	576	3.9
60–64	472	7.3	301	4.5	773	5.9
65–69	458	7.8	298	4.9	756	6.3
70–74	397	8.7	362	7.7	759	8.2
75–79	360	11.4	182	5.2	542	8.2
80–84	179	8.7	150	5.9	329	7.1
85+	95	5.2	104	3.4	199	4.1
Total	**2,713**	**2.0**	**2,044**	**1.4**	**4,757**	**1.7**

Source: AIHW NHMD.

Table A8.6: Age-standardised rates for all hospitalisations related to cancer of the small intestine, by sex, 2001–02 to 2016–17

	Males		Females		Persons	
Financial year	Number	ASR	Number	ASR	Number	ASR
2001–02	1,062	1.1	787	0.8	1,849	0.9
2002–03	1,297	1.4	787	0.8	2,084	1.0
2003–04	1,235	1.3	1,043	1.0	2,278	1.1
2004–05	1,376	1.4	1,164	1.1	2,540	1.2
2005–06	1,414	1.4	1,325	1.2	2,739	1.3
2006–07	1,704	1.6	1,448	1.3	3,152	1.5
2007–08	1,269	1.2	1,223	1.0	2,492	1.1
2008–09	1,479	1.4	1,045	0.9	2,524	1.1
2009–10	1,706	1.5	1,121	0.9	2,827	1.2
2010–11	2,047	1.8	1,261	1.0	3,308	1.4
2011–12	1,877	1.6	1,502	1.2	3,379	1.4
2012–13	2,030	1.7	1,596	1.2	3,626	1.4
2013–14	2,165	1.7	1,636	1.2	3,801	1.4
2014–15	2,362	1.8	1,677	1.2	4,039	1.5
2015–16	2,383	1.8	1,705	1.2	4,088	1.5
2016–17	2,713	2.0	2,044	1.4	4,757	1.7

Source: AIHW NHMD.

Table A8.7: Five-year prevalence of cancer of the small intestine, by age group and sex, as at end of 2013

Age group	Males		Females		Persons		
	Number	Rate	Number	Rate	Number	Rate	Male-to-female ratio
0–14	–	–	–	–	–	–	–
15–24	2	n.p.	2	n.p.	4	n.p.	n.p.
25–34	12	0.7	11	0.6	23	0.7	1.1
35–44	40	2.5	34	2.1	74	2.3	1.2
45–54	135	8.8	96	6.1	231	7.5	1.4
55–64	246	18.8	201	14.9	447	16.8	1.3
65–74	338	36.1	225	23.4	563	29.7	1.5
75–84	185	38.8	164	28.9	349	33.4	1.3
85+	60	37.6	58	20.3	118	26.5	1.9
Total	**1,018**	**8.8**	**791**	**6.8**	**1,809**	**7.8**	**1.3**

Source: AIHW ACD 2014.

Chapter 9: Anal cancer

Table A9.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for anal cancer, by age group

	Incidence		Mortality		Survival
Age group	**Number**	**Rate**	**Number**	**Rate**	**5-year relative survival (%)**
0–4	—	—	—	—	n.p.
5–9	—	—	—	—	n.p.
10–14	—	—	—	—	n.p.
15–19	—	—	—	—	n.p.
20–24	1	n.p.	—	—	n.p.
25–29	1	n.p.	—	—	n.p.
30–34	3	n.p.	—	—	n.p.
35–39	7	0.4	1	n.p.	85.8
40–44	16	1.0	2	n.p.	77.0
45–49	33	1.9	2	n.p.	76.8
50–54	46	3.0	9	0.6	68.6
55–59	50	3.2	8	0.5	72.4
60–64	56	4.0	10	0.7	71.5
65–69	57	4.8	15	1.2	62.3
70–74	53	5.2	11	1.1	70.6
75–79	49	6.9	11	1.6	64.9
80–84	33	6.7	7	1.5	51.4
85+	35	7.0	12	2.5	46.9
Total	**440**	**1.5**	**90**	**0.3**	**67.4**

Sources: AIHW ACD 2014; AIHW NMD.

Table A9.2: Incidence (1982–2014) and mortality (1982–2016) trends, anal cancer, with projections to 2018

	Incidence		Mortality	
Year	Number	ASR	Number	ASR
1982	96	0.8	29	0.3
1983	97	0.8	34	0.3
1984	120	0.9	22	0.2
1985	142	1.1	30	0.2
1986	120	0.9	22	0.2
1987	124	0.9	33	0.2
1988	151	1.1	32	0.2
1989	133	0.9	26	0.2
1990	171	1.2	34	0.2
1991	161	1.1	34	0.2
1992	176	1.2	39	0.3
1993	166	1.0	29	0.2
1994	185	1.1	41	0.3
1995	195	1.2	40	0.2
1996	210	1.3	46	0.3
1997	185	1.1	41	0.2
1998	226	1.3	44	0.2
1999	253	1.4	48	0.3
2000	229	1.2	59	0.3
2001	238	1.2	68	0.4
2002	250	1.3	64	0.3
2003	258	1.3	57	0.3
2004	263	1.3	54	0.3
2005	334	1.6	54	0.3
2006	299	1.4	56	0.3
2007	302	1.4	63	0.3
2008	318	1.4	59	0.3
2009	363	1.6	62	0.3
2010	371	1.5	76	0.3
2011	374	1.5	90	0.4
2012	437	1.7	68	0.3
2013	410	1.6	74	0.3
2014	435	1.6	98	0.4
2015	406	1.5	87	0.3
2016	418	1.5	87	0.3
2017	429	1.5	87	0.3
2018	440	1.5	90	0.3

Sources: AIHW ACD 2014; AIHW NMD.

Table A9.3: Incidence (2013) and 5-year relative survival (2010–2014), anal cancer, by subsite

Cancer subsite	Incidence (number)	5-year relative survival (%)
Anus, unspecified	111	68.2
Anal canal	151	71.9
Cloacogenic zone	1	n.p.
Overlapping lesions	147	61.9

Source: AIHW ACD 2014.

Table A9.4: Incidence (2013) and 5-year relative survival (2010–2014), anal cancer, by histology

Histology group	Incidence (number)	5-year relative survival (%)
Squamous cell carcinomas	318	73.2
Adenocarcinomas	71	51.0
Neuroendocrine neoplasms	3	n.p.
Other specified carcinomas	1	n.p.
Unspecified carcinomas	3	n.p.
Other specified malignant neoplasms	9	n.p.
Unspecified malignant neoplasms	5	n.p.

Source: AIHW ACD 2014.

Table A9.5: Age-specific rates for hospitalisations related to anal cancer, by age group and sex, 2016–17

	Males		Females		Persons	
Age group	**Number**	**Rate**	**Number**	**Rate**	**Number**	**Rate**
0–4	–	–	–	–	–	–
5–9	–	–	–	–	–	–
10–14	–	–	–	–	–	–
15–19	–	–	–	–	–	–
20–24	–	–	4	n.p.	4	n.p.
25–29	1	n.p.	–	–	1	n.p.
30–34	2	n.p.	7	0.1	9	–
35–39	11	0.1	23	0.3	34	0.2
40–44	7	0.1	62	0.8	69	0.4
45–49	105	1.3	176	2.1	281	1.7
50–54	82	1.1	219	2.8	301	2.0
55–59	118	1.6	216	2.8	334	2.2
60–64	177	2.8	273	4.0	450	3.4
65–69	139	2.4	287	4.7	426	3.6
70–74	183	4.0	215	4.6	398	4.3
75–79	96	3.0	178	5.1	274	4.1
80–84	53	2.6	80	3.1	133	2.9
85+	44	2.4	68	2.2	112	2.3
Total	**1,018**	**0.8**	**1,808**	**1.3**	**2,826**	**1.0**

Source: AIHW NHMD.

Table A9.6: Age-standardised rates for all hospitalisations related to anal cancer, by sex, 2001–02 to 2016–17

	Males		Females		Persons	
Financial year	Number	ASR	Number	ASR	Number	ASR
2001–02	807	0.9	1,001	1.0	1,808	0.9
2002–03	787	0.8	961	0.9	1,748	0.9
2003–04	812	0.8	967	0.9	1,779	0.9
2004–05	773	0.8	1,055	1.0	1,828	0.9
2005–06	917	0.9	1,017	0.9	1,934	0.9
2006–07	1,064	1.0	1,453	1.3	2,517	1.2
2007–08	1,108	1.0	1,252	1.1	2,360	1.1
2008–09	954	0.9	1,424	1.2	2,378	1.0
2009–10	1,008	0.9	1,388	1.2	2,396	1.0
2010–11	1,058	0.9	1,357	1.1	2,415	1.0
2011–12	959	0.8	1,463	1.2	2,422	1.0
2012–13	1,190	1.0	1,400	1.1	2,590	1.0
2013–14	1,147	0.9	1,644	1.2	2,791	1.1
2014–15	1,255	1.0	1,642	1.2	2,897	1.1
2015–16	1,084	0.8	1,721	1.2	2,805	1.0
2016–17	1,018	0.8	1,808	1.3	2,826	1.0

Source: AIHW NHMD.

Table A9.7: Five-year prevalence of anal cancer, by age group and sex, as at end of 2013

	Males		Females		Persons		
Age group	Number	Rate	Number	Rate	Number	Rate	Male-to-female ratio
0–14	–	–	–	–	–	–	–
15–24	–	–	2	n.p.	2	n.p.	–
25–34	5	0.3	7	0.4	12	0.4	0.7
35–44	25	1.6	34	2.1	59	1.8	0.7
45–54	107	7.0	165	10.6	272	8.8	0.7
55–64	152	11.6	263	19.5	415	15.6	0.6
65–74	159	17.0	235	24.5	394	20.8	0.7
75–84	96	20.2	151	26.6	247	23.7	0.8
85+	32	20.0	65	22.7	97	21.8	0.9
Total	**576**	**5.0**	**922**	**7.9**	**1,498**	**6.4**	**0.6**

Source: AIHW ACD 2014.

Chapter 10: Cancer of unspecified digestive organs

Table A10.1: Incidence (1982–2014) and mortality (1982–2016) trends, cancer of unspecified digestive organs, with projections to 2018

	Incidence		Mortality	
Year	Number	ASR	Number	ASR
1982	80	0.7	113	1.1
1983	95	0.8	136	1.2
1984	88	0.8	158	1.3
1985	111	0.9	186	1.5
1986	103	0.8	208	1.7
1987	120	1.0	228	1.8
1988	136	1.0	213	1.6
1989	118	0.9	250	1.8
1990	101	0.7	262	1.9
1991	82	0.6	246	1.7
1992	89	0.6	245	1.7
1993	96	0.6	179	1.2
1994	85	0.6	214	1.4
1995	77	0.5	202	1.3
1996	90	0.6	269	1.6
1997	103	0.6	299	1.8
1998	97	0.6	271	1.6
1999	109	0.6	362	2.0
2000	124	0.7	305	1.6
2001	122	0.6	353	1.8
2002	119	0.6	414	2.1
2003	125	0.6	716	3.5
2004	147	0.7	887	4.3
2005	137	0.6	915	4.3
2006	170	0.8	1,257	5.7
2007	159	0.7	960	4.2
2008	156	0.7	1,277	5.5
2009	211	0.9	1,341	5.6
2010	212	0.8	1,352	5.5
2011	219	0.8	1,247	4.9
2012	209	0.8	1,280	4.9
2013	251	0.9	1,210	4.5
2014	306	1.1	1,221	4.4
2015	237	0.8	1,237	4.3
2016	246	0.8	1,171	4.0
2017	254	0.8	1,532	5.1
2018	263	0.8	1,576	5.1

Sources: AIHW ACD 2014; AIHW NMD.

Table A10.2: Age-standardised rates for all hospitalisations related to cancer of unspecified digestive organs, by sex, 2001–02 to 2016–17

	Males		Females		Persons	
Financial year	Number	ASR	Number	ASR	Number	ASR
2001–02	1,184	1.3	636	0.6	1,820	0.9
2002–03	1,241	1.3	747	0.7	1,988	1.0
2003–04	1,290	1.3	813	0.8	2,103	1.0
2004–05	1,026	1.1	739	0.7	1,765	0.9
2005–06	986	1.0	862	0.8	1,848	0.9
2006–07	860	0.8	887	0.8	1,747	0.8
2007–08	1,087	1.0	870	0.7	1,957	0.9
2008–09	934	0.9	770	0.6	1,704	0.7
2009–10	1,087	1.0	615	0.5	1,702	0.7
2010–11	832	0.7	613	0.5	1,445	0.6
2011–12	773	0.7	530	0.4	1,303	0.5
2012–13	712	0.6	640	0.5	1,352	0.5
2013–14	640	0.5	653	0.5	1,293	0.5
2014–15	660	0.5	574	0.4	1,234	0.5
2015–16	693	0.5	560	0.4	1,253	0.5
2016–17	742	0.6	651	0.4	1,393	0.5

Source: AIHW NHMD.

Appendix B: Defining digestive-tract cancers

Table B1: Subsites for digestive-tract, by cancer type

Site	Subsite	ICD-O-3 codes
Colon and rectum (C18–C20)	Caecum	C18.0
	Appendix	C18.1
	Ascending colon	C18.2
	Hepatic flexure	C18.3
	Transverse colon	C18.4
	Splenic flexure	C18.5
	Descending colon	C18.6
	Sigmoid colon	C18.7
	Colon, overlapping lesion and unspecified	C18.8, C18.9
	Rectosigmoid junction	C19.9
	Rectum	C20.9
Pancreas (C25)[(a)]	Head of pancreas	C25.0
	Body of pancreas	C25.1
	Tail of pancreas	C25.2
	Pancreatic duct	C25.3
	Other specified parts of pancreas (neck of pancreas)	C25.7
	Pancreas, overlapping lesion and unspecified	C25.8, C25.9
Stomach (C16)	Cardia, including cardio-oesophageal junction[(b)]	C16.0
	Fundus of stomach	C16.1
	Body of stomach	C16.2
	Pyloric antrum	C16.3
	Pylorus	C16.4
	Curvature of stomach, unspecified, lesser and greater curvature	C16.5, C16.6
	Stomach, overlapping lesion and unspecified	C16.8, C16.9
Liver (C22)	Hepatic parenchyma	C22.0
	Intrahepatic bile ducts	C22.1
Oesophagus (C15)	Cervical part of the oesophagus	C15.0
	Thoracic part of the oesophagus	C15.1
	Abdominal part of the oesophagus	C15.2
	Upper third of the oesophagus	C15.3
	Middle third of the oesophagus	C15.4
	Lower third of the oesophagus	C15.5
	Oesophagus, overlapping lesion and unspecified	C15.8, C15.9

(continued)

Table B1 (continued): Subsites for digestive-tract cancers, by cancer type

Cancer	Subsite	ICD-O-3 codes
Gallbladder and extrahepatic bile ducts (C23–C24)	Gallbladder	C23.9
	Extrahepatic bile ducts	C24.0
	Ampulla of Vater	C24.1
	Biliary tract, overlapping lesion and unspecified	C24.8, C24.9
Small intestine (C17)	Duodenum	C17.0
	Jejunum	C17.1
	Ileum	C17.2
	Meckel diverticulum	C17.3
	Small intestine, overlapping lesion and unspecified	C17.8, C17.9
Anus (C21)[(c)]	Anus, unspecified	C21.0
	Anal canal	C21.1
	Cloacogenic zone	C21.2
	Overlapping lesion of the rectum, anus and anal canal	C21.8

(a) Excludes neuroendocrine tumours.

(b) This has a different profile to other gastric cancers.

(c) Excludes skin of anus and perianal skin.

Source: International Classification of Diseases for Oncology, Third Edition.

Table B2: Histology groupings for digestive-tract cancers, by cancer type[(a)]

Cancer	Histology group	ICD-O-3.1 histology codes[(b)]
Oesophagus (C15) Stomach (C16) Colon and rectum (C18–C20) Gallbladder and extrahepatic bile ducts (C23–C24)	Carcinomas	801–857
	Squamous cell carcinomas	805–808
	Adenocarcinomas	814, 816, 819–823, 825–842, 848–855, 8570–8574, 8576–8579
	Neuroendocrine neoplasms	8013, 8041–8045, 815, 824
	Other specified carcinomas	8046, 809–813, 817–818, 843–847, 856, 8575
	Unspecified carcinomas	8010–8012, 8014–8039
	Sarcomas	880–893, 899, 904, 9120–9139, 9141–9249, 954–958
	Other specified malignant neoplasms	858–879, 894–898, 900–903, 906–911, 925–953
Small intestine (C17) Pancreas (C25)	Carcinomas	801–857
	Adenocarcinomas	814, 816, 819–823, 825–842, 848–855, 8570–8574, 8576–8579
	Neuroendocrine neoplasms	8013, 8041–8045, 815, 824
	Other specified carcinomas	8046, 805–813, 817–818, 843–847, 856, 8575
	Unspecified carcinomas	8010–8012, 8014–8039
	Sarcomas	880–893, 899, 904, 9120–9139, 9141–9249, 954–958
	Other specified malignant neoplasms	858–879, 894–898, 900–903, 906–911, 925–953
Anus (C21)	Carcinomas	801–857
	Squamous cell carcinomas	805–808, 8123–8124
	Adenocarcinomas	814, 816, 819–823, 825–842, 848–855, 8570–8574, 8576–8579
	Neuroendocrine neoplasms	8013, 8041–8045, 815, 824
	Other specified carcinomas	8046, 8090–8122, 813, 817–818, 843–847, 856, 8575
	Unspecified carcinomas	8010–8012, 8014–8039
	Sarcomas	880–893, 899, 904, 9120–9139, 9141–9249, 954–958
	Melanomas	872–879
	Other specified malignant neoplasms	858–871, 894–898, 900–903, 906–911, 925–953
Liver (C22)	Carcinomas	801–857
	Adenocarcinomas	814, 816, 819–823, 825–842, 848–855, 8570–8574, 8576–8579
	Other specified carcinomas	804–813, 815, 818, 824, 843–847, 856, 8575
	Unspecified carcinomas	8010–8039
	Sarcomas	880–893, 899, 904, 9120–9139, 9141–9249, 954–958
	Hepatocellular carcinoma	817
	Hepatoblastoma	8970
	Other specified malignant neoplasms	858–879, 8940–8969, 8971–8989, 900–903, 906–911, 925–953
All sites (C15–C25)	Unspecified malignant neoplasms	800
	Excluded from classification	905, 9140, 959–999

(a) Codes 9050–9055 (mesothelioma), 9140 (Kaposi sarcoma) and 9590–9992 (neoplasms of haematopoietic and lymphoid tissues) are not included in this classification because these neoplasms are reported in their own groups, not as cancers of the digestive system.

(b) Only the first 3 digits are given except when the 4th digit is necessary.

Appendix C: Data sources

Table C1: Data sources

Data source	Measure	Disaggregation and associated notes
ACD 2014	Incidence	Sex and age group: 2018 estimates
		Trend: 1982 to 2014 actual, 2015 to 2018 estimates
		Characteristics: subsite and histology: 2013 actual. 2013 is the most recent year for which actual data were available for all states and territories
		Population group: Indigenous status, Remoteness area, SES: 2009–2013. 2013 is the most recent year for which actual data were available for all states and territories. Multiple years provided to reduce random variations in rates
	Survival	Sex and age group: 2010–2014
		Trend: 1985–1989 to 2010–2014
		Population group: Indigenous status, Remoteness area, SES
	Prevalence	Limited-duration prevalence with an index date of 31 December 2013. 32-year prevalence has been used because it is the maximum number of years for which prevalence can be calculated using the available data
National Mortality Database 2016 (Deaths registered in 2013 and earlier: final Deaths registered in 2014: revised Deaths registered in 2015 and 2016: preliminary)	Mortality	Sex and age group: 2018 estimates
		Trend: 1982–2016 actual, 2017–2018 estimates
		Population group: Indigenous status, Remoteness area, SES: 2011–2016. Multiple years to reduce random variations in rates
National Hospital Morbidly database	Hospitalisation	Number of hospitalisations: Age, sex: 2016–2017
		Number of hospitalisations: Trend: 2001–2002 to 2016–2017
		Selected hospital procedures: 2016–2017. Surgical procedure include common surgical procedures performed with the purpose of treating digestive-tract cancer and excludes chemotherapy and radiotherapy and those interventions performed routinely in the course of a hospitalisation, such as administration of anaesthesia. Procedures relate to both public and private hospitals. The data presented are counts of procedures and do not to equate to the number of hospitalisations, because more than 1 procedure can be performed during a single hospitalisation
		Chemotherapy: 2016–2017. Chemotherapy procedures relate to both public and private hospitals. The data presented are counts of procedures and do not to equate to the number of hospitalisations, because more than 1 procedure can be performed during a single hospitalisation
National Radiotherapy Waiting Times Database		Radiotherapy courses: sex: 2016–2017
NBCSP	NBCSP indicators	Participation, screening positivity, diagnostic assessment

Australian Cancer Database

All forms of cancer, except basal and squamous cell carcinomas of the skin, are notifiable diseases in each Australian state and territory. The Australian Cancer Database (ACD) contains information on all new cases of primary invasive cancer (excluding basal cell and squamous cell carcinoma of the skin) diagnosed in Australia since 1982. Actual incidence data covers the period 1982–2014, except for New South Wales, where data are available to 2013 and estimated for 2014.

Cancer reporting and registration is a dynamic process, and records in the state and territory cancer registries may be modified if new information is received. As a result, the number of cancer cases reported by the AIHW for any particular year may change slightly over time and may not always align with state and territory reporting for that same year.

This report also includes estimates of cancer incidence for 2015–2018. The 2015–2018 estimates are only indicative of future trends and the actual incidence may differ from these estimates. They are not forecasts and do not attempt to allow for future changes in cancer detection methods, changes in cancer risk factors or for non-demographic factors (such as, government policy changes) that may affect future cancer incidence rates. Estimates in this report used methodology outlined in *Cancer in Australia 2017* (AIHW 2017d).

The Data Quality Statement for the ACD 2013 can be found at <http://meteor.aihw.gov.au/content/index.phtml/itemId/658607>.

National Mortality Database

This report sources data from the AIHW National Mortality Database (NMD). The AIHW NMD contains information provided by the Registry of Births, Deaths and Marriages in each state and territory and the National Coronial Information System (managed by the Victorian Department of Justice)—and coded by the ABS—for deaths from 1964 to 2016. Registration of deaths is the responsibility of each state and territory Registry of Births, Deaths and Marriages. These data are then collated and coded by the ABS and are maintained at the AIHW in the NMD.

In the NMD, both the year in which the death occurred and the year in which it was registered are provided. The mortality data presented in this report from 1982 to 2015 are based on the *year of occurrence* of the death, and data for 2016 are based on the *year of registration* of the death.

Due to the difference in data sources and analysis approaches, mortality data are not directly comparable with those published by individual state and territory cancer registries. Mortality data in this report were derived using the place of a person's residence at the time of *death*. In contrast, some state and territory cancer registries present mortality information based on a person's place of residence at the time of *diagnosis*. In the latter data, the deaths may or may not have occurred in the state or territory indicated.

The data quality statements underpinning the AIHW NMD can be found on the following ABS internet pages:

- ABS quality declaration summary for *Deaths, Australia* (ABS cat. no. 3302.0) <http://www.abs.gov.au/ausstats/abs%40.nsf/mf/3302.0/>
- ABS quality declaration summary for *Causes of death, Australia* (ABS cat. no. 3303.0) <http://www.abs.gov.au/ausstats/abs%40.nsf/mf/3303.0/>.

For more information on the AIHW NMD see *Deaths data at AIHW* <http://www.aihw.gov.au/deaths/aihw-deaths-data/>.

This report includes estimates of mortality data for 2017–2018 based on the NMD. The 2017–2018 estimates are only indicative of the future trends, and the actual numbers may differ

from these estimates. They are not forecasts and do not attempt to allow for future changes in cancer treatments. Estimates in this report, using methodology outlined in *Cancer in Australia: 2017* (AIHW 2017d), with the exception of estimates for cancer of the small intestine, which used similar methodology, but used join-point analysis software to determine an appropriate modelling window of 1968–2013, rather than 2004–2013 as the window.

National Hospital Morbidity Database

This report sources data from the National Hospital Morbidity Database (NHMD), which is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian. For more information on the NHMD, refer to Appendix D and to *Admitted patient care 2016–17: Australian hospital statistics* (AIHW 2017a).

The AIHW NHMD is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals. The data supplied are based on the National Minimum Data Set (NMDS) for admitted patient care; they include demographic, administrative and length of stay data, as well as data on the diagnoses of the patients, the procedures they underwent in hospital and external causes of injury and poisoning.

The purpose of the NMDS for admitted patient care is to collect information about care provided to admitted patients in Australian hospitals. The scope of the NMDS is episodes of care for admitted patients in all public and private acute and psychiatric hospitals, free-standing day hospital facilities, and alcohol and drug treatment centres in Australia. Hospitals operated by the Australian Defence Force, corrections authorities and in Australia's off-shore territories are not in scope, but some are included.

The Data Quality Statement for the AIHW NHMD 2016–17 can be found at <http://meteor.aihw.gov.au/content/index.phtml/itemId/612171>.

National Radiotherapy Waiting Times Database

The National Radiotherapy Waiting Times Database is a compilation of data supplied to the AIHW—based on the Radiotherapy Waiting Times National Minimum Data Set specification—which was collected from participating radiotherapy providers (100% of radiotherapy sites in Australia participated in the collection (AIHW 2018e) for the period 2016–17. Each record provides information relating to a course of radiotherapy that began in the reference period (that is, where the waiting period associated with the course of radiotherapy ended in the reference period). Other data collected includes administrative details, patient demographic characteristics and some clinical information, including principal diagnosis (9th edition of ICD-10-AM).

This report sources data on radiotherapy based on the National Radiotherapy Waiting Times Database (NRWTD). Radiotherapy is often provided on a non-admitted basis so limited information is available in the NHMD and therefore, radiotherapy numbers based on the NHMD are not presented. The NRWTD provides data on the number of courses of radiotherapy that began in a reporting period, key characteristics of the patients and information on the waiting times associated with these courses. The NRWTD contains data about the principal diagnosis. The principal diagnosis is the diagnosis established after study to be chiefly responsible for causing a patient's need for a course of treatment. In the case of radiotherapy treatment, it is most typically a type of cancer.

Data reported for principal diagnosis may not reflect the incidence of certain cancers in the Australian population. The differences in principal diagnosis activity in this report may indicate data quality issues; for example, some providers, such as Victoria, report the primary site of the cancer, rather than the diagnosis code associated with the health condition being treated in the

specific course of radiotherapy. For this reason, comparisons with incidence data should be made with caution. See *Radiotherapy in Australia 2016–17* (AIHW 2018e) for further details.

The Data Quality Statement for the NRWTD can be found at <http://meteor.aihw.gov.au/content/index.phtml/itemId/696042>.

National Death Index

The National Death Index (NDI) is a database, housed at the AIHW, which contains records of all deaths occurring in Australia since 1980. The data are obtained from the Registrar of Births, Deaths and Marriages in each state and territory. The NDI is designed to facilitate the conduct of epidemiological studies and its use is strictly confined to medical research. Cancer incidence records from the ACD were linked to the NDI and used to calculate the survival and prevalence data presented in this report.

The Data Quality Statement for the NDI can be found at <http://meteor.aihw.gov.au/content/index.phtml/itemId/480010>.

Australian Burden of Disease Study

Data to develop the Australian Burden of Disease Study (ABDS) estimates for cancer were obtained from many different sources. Deaths data for the fatal burden were sourced from the NMD. Data for the non-fatal burden came from a variety of administrative sources including the ACD, the NHMD and Medicare Benefits Schedule (MBS) claims data, as well as a number of epidemiological studies.

Other inputs for the ABDS were obtained from the 2010 or 2013 Global Burden of Disease. These included the standard life table for fatal burden, health states and disability weights for the non-fatal burden and relative risks, and theoretical minimum risk exposure distributions for the risk factor attribution. Population estimates underpinning all estimates were sourced from the Australian Demographic Statistics from the ABS.

Full details on the various methods, data sources and standard inputs are available in *Australian Burden of Disease Study 2011: methods and supplementary material* (AIHW 2016b) and *Burden of cancer in Australia: Australian Burden of Disease Study 2011* (AIHW 2017c).

Population data

Throughout this report, population data were used to derive rates of, for example, cancer incidence and mortality. The population data were sourced from the ABS using the most up-to-date estimates available at the time of analysis.

To derive its estimates of the resident populations, the ABS uses the 5-yearly Census of Population and Housing data and adjusts it as described here:

- All respondents in the Census are placed in their state or territory, Statistical Local Area and postcode of usual residence; overseas visitors are excluded.
- An adjustment is made for persons missed in the Census.
- Australians temporarily overseas on Census night are added to the usual residence Census count.

Estimated resident populations are then updated each year from the Census data, using indicators of population change, such as births, deaths and net migration. More information is available from the ABS website at <www.abs.gov.au>.

Appendix D: Defining digestive-tract cancer hospitalisations

Table D1: Definition of digestive-tract cancer-related hospitalisations

Group	Definition	Codes
Digestive-tract cancers	Principal diagnosis	C15–C26
	Additional diagnosis	C15–C26

Notes

1. Codes were sourced from the 9th edition of the ACHI (ACCD 2014).
2. Hospitalisation for which the care type was reported as 'Newborn with no qualified days' and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

Table D2: Definition of colonoscopies

Block name	Block code	Procedure code	Procedure name
Fibreoptic colonoscopy	**905**	32084-00	Fibreoptic colonoscopy to hepatic flexure
		32084-02	Fibreoptic colonoscopy to hepatic flexure with administration of tattooing agent
		32090-00	Fibreoptic colonoscopy to caecum
		32090-02	Fibreoptic colonoscopy to caecum with administration of tattooing agent
Fibreoptic colonoscopy with excision	**911**	32084-01	Fibreoptic colonoscopy to hepatic flexure, with biopsy
		32087-00	Fibreoptic colonoscopy to hepatic flexure, with polypectomy
		32090-01	Fibreoptic colonoscopy to caecum, with biopsy
		32093-00	Fibreoptic colonoscopy to caecum, with polypectomy
Computerised tomography of abdomen	**1962**	56549-01	Computerised tomography of colon (virtual colonoscopy)

Note: Codes were sourced from the 9th edition of the ACHI (ACCD 2015).

Table D3: Definition of principal and additional diagnosis codes for colorectal tumour-related colonoscopies

Diagnosis	ICD-10-AM Code
Principal diagnosis codes	
Colorectal cancer	C18–C20
Non-malignant colorectal tumour	D12.1–D12.8, D37.3–D37.5
Polyp of colon	K63.5
Follow-up after cancer treatment[(a)]	Z08
Cancer surveillance[(b)]	Z12.1
Additional diagnosis codes	
Family history of malignant neoplasm of digestive organs	Z80.0
Personal history of colonic polyps	Z87.12
Follow-up examination after surgery for other conditions	Z09.0
Family history of diseases of the digestive system	Z83.7
Personal history of non-malignant neoplasms	Z86.0
Personal history of malignant neoplasm of digestive organs	Z85.0
Person with feared complaint in whom no diagnosis is made	Z71.1
Personal history of other digestive system disease	Z87.18
Follow-up examination after unspecified treatment for other conditions	Z09.9
Special screening examination for digestive tract disorder	Z13.83

(a) Only records with an additional diagnosis of Z85.0 *Personal history of malignant neoplasm of digestive organs* were included in analysis.

(b) The code Z12 *Special* screening *examination for neoplasms* is assigned when no neoplasm is found.

Note: Codes were sourced from the 9th edition of the ACHI (ACCD 2015).

Table D4: Definition of surgical procedures for colorectal cancer

Group	Procedure code	Procedure name
Colectomy	30515-03	Ileocolic resection with anastomosis
	30515-04	Laparoscopic ileocolic resection with anastomosis
	30515-05	Ileocolic resection with formation of stoma
	30515-06	Laparoscopic ileocolic resection with formation of stoma
	32003-00	Limited excision of large intestine with anastomosis
	32003-02	Laparoscopic limited excision of large intestine with anastomosis
	32000-00	Limited excision of large intestine with formation of stoma
	32000-02	Laparoscopic limited excision of large intestine with anastomosis
	32003-01	Right hemicolectomy with anastomosis
	32003-03	Laparoscopic right hemicolectomy with anastomosis
	32000-01	Right hemicolectomy with formation of stoma
	32000-03	Laparoscopic right hemicolectomy with formation of stoma
	32005-01	Extended right hemicolectomy with anastomosis
	32005-03	Laparoscopic extended right hemicolectomy with anastomosis

(continued)

Table D4 (continued): Definition of surgical procedures for colorectal cancer

Group	Procedure code	Procedure name
Colectomy (continued)	32004-01	Extended right hemicolectomy with formation of stoma
	32004-03	Laparoscopic extended right hemicolectomy with formation of stoma
	32006-00	Left hemicolectomy with anastomosis
	32006-02	Laparoscopic left hemicolectomy with anastomosis
	32006-01	Left hemicolectomy with formation of stoma
	32006-03	Laparoscopic left hemicolectomy with formation of stoma
	32005-00	Subtotal colectomy with anastomosis
	32005-02	Laparoscopic subtotal colectomy with anastomosis
	32004-00	Subtotal colectomy with formation of stoma
	32004-02	Laparoscopic subtotal colectomy with formation of stoma
	32012-00	Total colectomy with ileorectal anastomosis
	32012-01	Laparoscopic total colectomy with ileorectal anastomosis
	32009-00	Total colectomy with ileostomy
	32009-01	Laparoscopic total colectomy with ileostomy
Rectosigmoidoscopy or proctectomy	32030-00	Rectosigmoidectomy with formation of stoma
	32030-01	Laparoscopic rectosigmoidectomy with formation of stoma
	32047-00	Perineal proctectomy
	32039-00	Abdominoperineal proctectomy
	32060-00	Restorative proctectomy
Anterior resection of rectum	32024-00	High anterior resection of rectum
	32025-00	Low anterior resection of rectum
	32026-00	Ultra low anterior resection of rectum
	32028-00	Ultra low anterior resection of rectum with hand sutured coloanal anastomosis
	92208-00	Anterior resection of rectum, level unspecified
Total proctocolectomy	32015-00	Total proctocolectomy with ileostomy
	32051-00	Total proctocolectomy with ileo-anal anastomosis
	32051-01	Total proctocolectomy with ileo-anal anastomosis and formation of temporary ileostomy
Other excision procedures	32078-00	Rigid sigmoidoscopy with polypectomy involving removal of 9 polyps
	32087-00	Fibreoptic colonoscopy to hepatic flexure, with polypectomy
	32093-00	Fibreoptic colonoscopy to caecum, with polypectomy
	90297-02	Endoscopic mucosal resection of large intestine
	32029-00	Construction of colonic reservoir
	90959-00	Excision of other lesion of large intestine
	32099-00	Per anal excision of lesion or tissue of rectum
	90341-00	Other excision of lesion of rectum
Repair (caecostomy or colostomy)	30375-00	Caecostomy
	30375-28	Temporary colostomy
	30375-04	Other colostomy

Note: Codes were sourced from the 9th edition of the ACHI (ACCD 2015).

Table D5: Definition of surgical procedures for pancreatic cancer

Group	Procedure code	Procedure name
Pancreatectomy	30593-00	Pancreatectomy
	30583-00	Distal pancreatectomy
	30593-01	Pancreatectomy with splenectomy
	30584-00	Pancreaticoduodenectomy with formation of stoma
Other excision	90294-01	Endoscopic excision of lesion of pancreas or pancreatic duct
	30578-00	Excision of lesion of pancreas or pancreatic duct

Note: Codes were sourced from the 9th edition of the ACHI (ACCD 2015).

Table D6: Definition of surgical procedures for stomach cancer

Group	Procedure code	Procedure name
Gastrectomy	30518-00	Partial distal gastrectomy with gastroduodenal anastomosis
	30518-01	Partial distal gastrectomy with gastrojejunal anastomosis
	30518-02	Partial proximal gastrectomy with oesophagogastric anastomosis
	30523-00	Subtotal gastrectomy
	30521-00	Total gastrectomy
	30524-00	Radical gastrectomy
	30497-02	Selective vagotomy with partial gastrectomy and Roux-en-Y reconstruction
Other excision procedures on stomach	30520-00	Local excision of lesion of stomach
	90297-01	Endoscopic mucosal resection of stomach
Gastrostomy, gastro-enterostomy	30375-07	Gastrostomy
	90302-00	Gastrostomy with passage of indwelling transanastomotic tube
	30515-00	Gastro-enterostomy

Note: Codes were sourced from the 9th edition of the ACHI (ACCD 2015).

Table D7: Definition of surgical procedures for liver cancer

Procedure name	Procedure code
Excision of lesion of liver	30414-00
Segmental resection of liver	30415-00
Lobectomy of liver	30418-00
Trisegmental resection of liver	30421-00
Total hepatectomy	90346-00
Transplantation of liver	90317-00

Note: Codes were sourced from the 9th edition of the ACHI (ACCD 2015).

Table D8: Definition of surgical procedures for oesophagus cancer

Group	Procedure code	Procedure name
Insertion or replacement of prosthesis	30490-00	Endoscopic insertion of oesophageal prosthesis
	30490-01	Endoscopic replacement of oesophageal prosthesis
Oesophagectomy	30550-01	Oesophagectomy by abdominal and thoracic mobilisation with cervical anastomosis using Roux-en-Y reconstruction
	30550-00	Oesophagectomy by abdominal and thoracic mobilisation with cervical anastomosis, large intestine interposition and anastomosis
	30545-01	Oesophagectomy by abdominal and thoracic mobilisation with thoracic anastomosis using Roux-en-Y reconstruction
	30545-00	Oesophagectomy by abdominal and thoracic mobilisation with thoracic anastomosis, large intestine interposition and anastomosis
	30536-00	Oesophagectomy by abdominal and transthoracic mobilisation, with cervical oesophagogastric anastomosis
	30536-01	Oesophagectomy by abdominal and transthoracic mobilisation, with cervical oesophagostomy
	30535-00	Oesophagectomy by abdominal and transthoracic mobilisation, with thoracic oesophagogastric anastomosis
	30554-00	Oesophagectomy with reconstruction by free jejunal flap
	30293-00	Oesophagostomy
	30541-00	Trans-hiatal oesophagectomy by abdominal and cervical mobilisation, with oesophagogastric anastomosis
	30541-01	Trans-hiatal oesophagectomy by abdominal and cervical mobilisation, with oesophagojejunal anastomosis
	30294-00	Cervical oesophagectomy
Other excision procedure	90297-00	Endoscopic mucosal resection of oesophagus
	30559-00	Local excision of lesion of oesophagus
	30478-13	Oesophagoscopy with excision of lesion
Dilation of oesophagus	41832-00	Endoscopic balloon dilation of oesophagus
	41831-00	Endoscopic pneumatic dilation of oesophagus
	41819-00	Other endoscopic dilation of oesophagus

Note: Codes were sourced from the 9th edition of the ACHI (ACCD 2015).

Table D9: Definition of surgical procedures for cancer of the gallbladder and extrahepatic bile ducts

Group	Procedure code	Procedure name
Stenting of biliary tract (including removal and replacement)	30492-00	Percutaneous stenting of biliary tract
	30491-00	Endoscopic stenting of other parts of biliary tract
	90337-00	Other stenting of biliary tract
	30492-01	Percutaneous replacement of biliary stent
	30451-02	Endoscopic replacement of biliary stent
	30451-00	Other replacement of biliary stent
Cholecystectomy	30445-00	Laparoscopic cholecystectomy
	30448-00	Laparoscopic cholecystectomy with exploration of common bile duct via cystic duct
	30449-00	Laparoscopic cholecystectomy with exploration of common bile duct via laparoscopic choledochotomy
	30443-00	Cholecystectomy
	30454-01	Cholecystectomy with choledochotomy
	30455-00	Cholecystectomy with choledochotomy and biliary intestinal anastomosis
Other excision procedure	30461-00	Radical resection of porta hepatis
	30463-00	Radical resection of hepatic ducts
	30464-00	Radical resection of hepatic ducts with resection of segment of liver
	90294-00	Endoscopic excision of lesion of bile ducts or sphincter of Oddi
	30458-02	Local excision of lesion of bile ducts or sphincter of Oddi
Stoma of gallbladder or bile duct	30375-05	Cholecystostomy
	30460-00	Cholecystoduodenostomy
	30460-01	Cholecystoenterostomy
	30460-04	Choledochojejunostomy
	30460-07	Hepaticoenterostomy
Other repair procedures	30460-08	Roux-en-Y intestinobiliary bypass
	30495-00	Percutaneous dilation of biliary tract
	30452-00	Choledochoscopy with dilation

Note: Codes were sourced from the 9th edition of the ACHI (ACCD 2015).

Table D10: Definition of surgical procedures for small intestine cancer

Group	Procedure code	Procedure name
Insertion of prosthesis	92068-00	Endoscopic insertion of duodenal prosthesis
Enterotomy	30375-03	Enterotomy of small intestine
Resection of small intestine	30566-00	Resection of small intestine with anastomosis
	30565-00	Resection of small intestine with formation of stoma
	30580-00	Excision of lesion of duodenum
Other excision procedure	30580-00	Excision of lesion of duodenum
Stomas of small intestine	30375-29	Temporary ileostomy
	30375-01	Other enterostomy
	30515-01	Enterocolostomy
	30515-02	Enteroenterostomy
	43807-00	Duodenoduodenostomy

Note: Codes were sourced from the 9th edition of the ACHI (ACCD 2015).

Table D11: Definition of surgical procedures for anal cancer

Group	Procedure code	Procedure name
Abdominoperineal proctectomy	32039-00	Abdominoperineal proctectomy
Other excision procedures	32142-01	Excision of anal polyp
	32105-00	Per anal excision of anorectal lesion or tissue
	90315-00	Endoscopic excision of lesion or tissue of anus
	90315-01	Excision of other lesion or tissue of anus
	32015-00	Total proctocolectomy with ileostomy
	32051-01	Total proctocolectomy with ileo-anal anastomosis and formation of temporary ileostomy

Note: Codes were sourced from the 9th edition of the ACHI (ACCD 2015).

Table D12: Definition of chemotherapy procedures for digestive-tract cancer-related hospitalisations

Block codes	Block Name
1920	Administration of pharmacotherapy
1922	Other procedures related to pharmacotherapy

Note: Codes were sourced from the 9th edition of the ACHI (ACCD 2015).

Appendix E: Hospital-based colonoscopies

This appendix presents trends over time for colonoscopies related to the treatment, surveillance and diagnosis of colorectal tumours, performed on admitted hospital patients. Trends are shown for each primary reason for the hospital admission, determined at the end of the episode of care. This includes colonoscopies in which an abnormality was found, colonoscopies for cancer surveillance in which no abnormality was found, and colonoscopies performed to follow-up after cancer treatment. For definitions of colonoscopy procedures and principal diagnoses, see Appendix D.

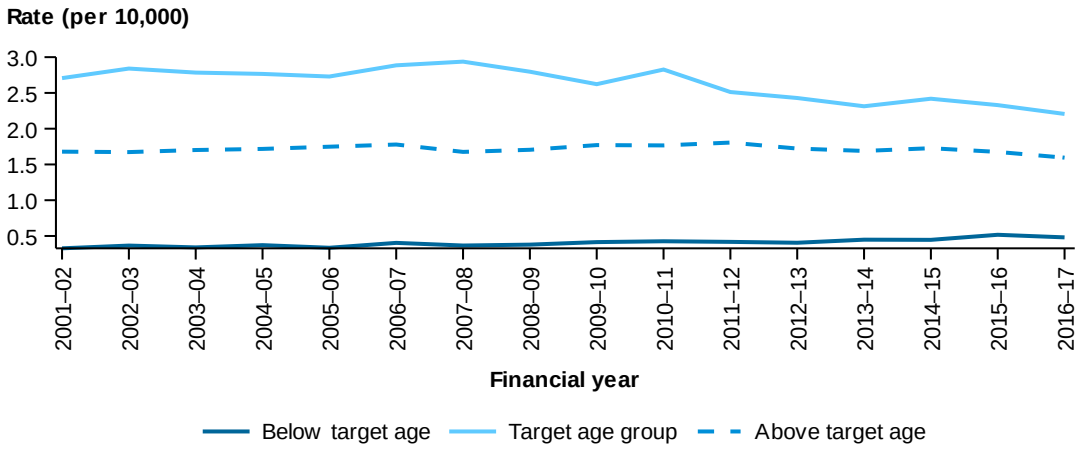


Figure E1: Age-standardised rate of colonoscopies with a principal reason for care of colorectal cancer, for the target NBCSP age range of 50–74 and other ages, 2016–17

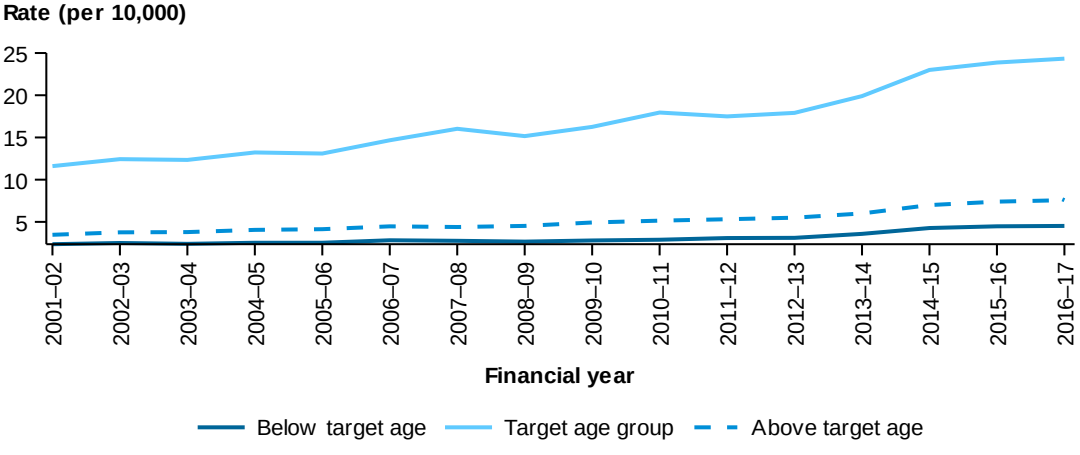


Figure E2: Age-standardised rate of colonoscopies with a principal reason for care of non-malignant colorectal tumours, for the target NBCSP age range of 50–74 and other ages, 2016–17

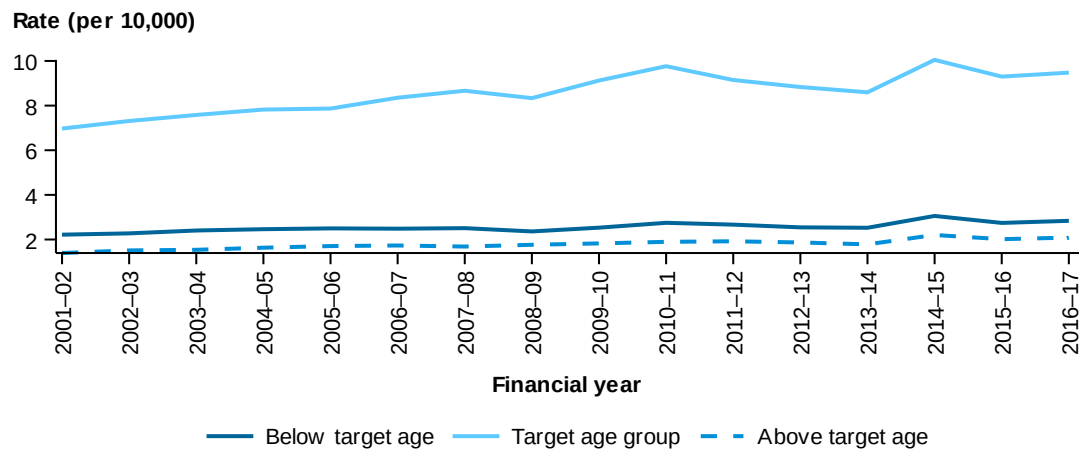


Figure E3: Age-standardised rate of colonoscopies with a principal reason for care of polyp of the colon, for the target NBCSP age range of 50–74 and other ages, 2016–17

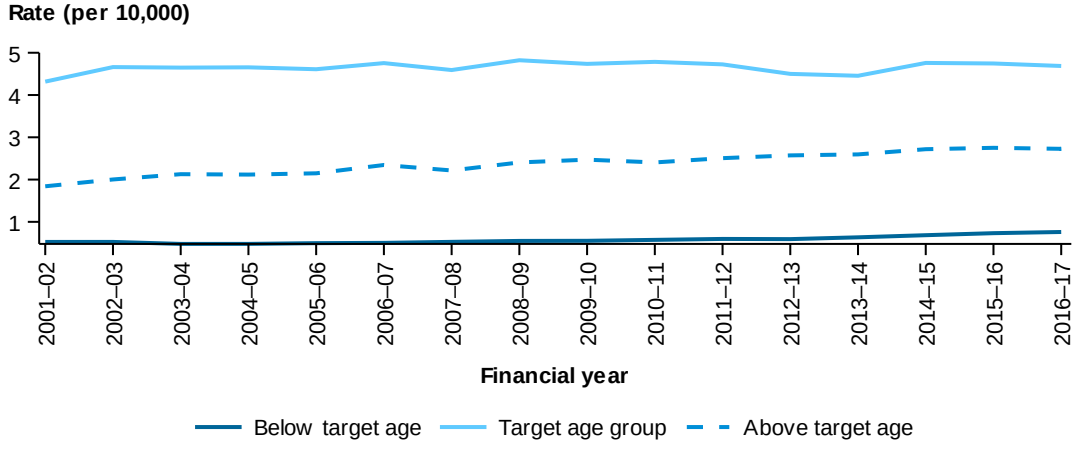


Figure E4: Age-standardised rate of colonoscopies with a principal reason for care of follow-up after treatment for cancer, for the target NBCSP age range of 50–74 and other ages, 2016–17

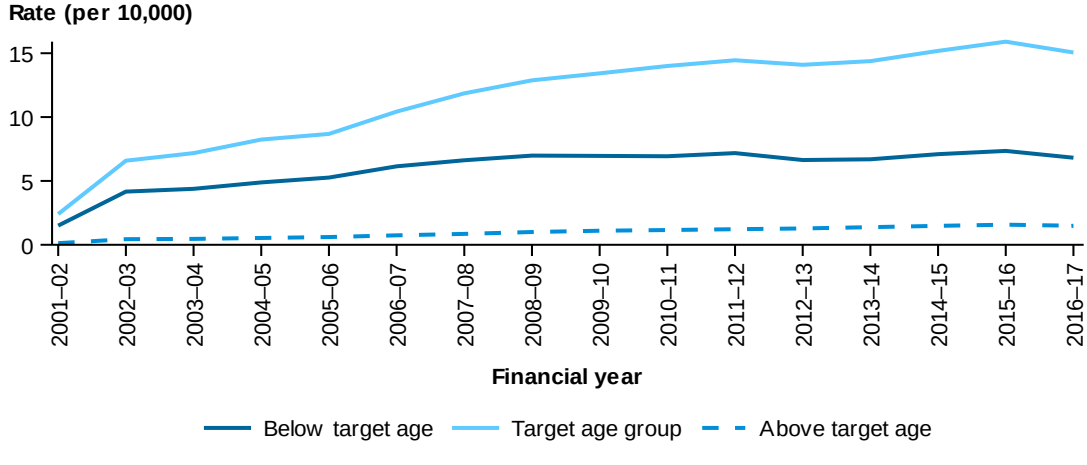


Figure E5: Age-standardised rate of colonoscopies with a principal reason for care of cancer surveillance, for the target NBCSP age range of 50–74 and other ages, 2016–17

Glossary

additional diagnosis: A diagnosis established after study to be a contributing factor to, or affecting, the patient's episode of care in hospital (or attendance at the health-care facility). Compare with **principal diagnosis**.

adenocarcinoma: A malignant tumour originating in glandular epithelium.

admitted patient: A person who undergoes a hospital's formal admission process to receive treatment and/or care. Such treatment or care can occur in hospital and/or in the person's home (as a 'hospital-in-home' patient).

age-standardisation: A method of removing the influence of age when comparing populations with different age-structures. This is usually necessary because the rates of many diseases vary strongly (usually increasing) with age. The age structures of the different populations are converted to the same 'standard' structure, and then the disease rates that would have occurred with that structure are calculated and compared.

age-standardised rate: A rate that results from removing the influence of age by converting the age-structures of the different populations to the same 'standard' structure. This provides a more valid way of comparing rates from populations with different age-structures.

anastomosis: The surgical union of parts, especially if hollow or tubular.

benign: Term that describes non-cancerous tumours that may grow larger but do not spread to other parts of the body.

cancer: (also called **malignancy**), is a term for diseases in which abnormal cells divide without control and can invade nearby tissues. Cancer cells can also spread to other parts of the body through the blood and lymph systems.

carcinoma: A malignant tumour of epithelial origin.

colectomy: Surgical removal of part or all of the colon.

chemotherapy: The use of drugs (chemicals) to prevent or treat disease, with the term usually being applied to treatment for cancer rather than for other uses.

cholecystectomy: Surgical removal of the gallbladder.

cirrhosis: Widespread disruption of normal liver structure by degeneration of cells, inflammation and fibrous thickening of tissue.

colostomy: Surgical formation of an artificial anus by connecting the colon to an opening in the abdominal wall (stoma).

death due to cancer: A death where the underlying cause is indicated as cancer.

diabetes mellitus: A condition in which the body's ability to produce or respond to the hormone insulin is impaired, resulting in abnormal metabolism of carbohydrates and elevated levels of glucose in the blood.

disability-adjusted life year (DALY): A year of healthy life lost, either through premature death or equivalently through living with disability due to illness or injury. It is the basic unit used in *burden of disease and injury* estimates.

endoscopy: Examination of the inside of the body using a fibre-optic flexible or rigid tubular instrument for visualising the interior of a hollow organ or part, usually the oesophagus, stomach and portions of the small intestine.

enterotomy: Surgical cutting into the intestines.

gastrectomy: Surgical removal of part or all of the stomach.

gastrostomy: An opening placed directly into the stomach.

gastroenterostomy: Surgical formation of an artificial opening between the stomach and the small intestine, usually at the jejunum.

hospitalisation: Synonymous with **admission** and **separation**; that is, an episode of hospital care that starts with the formal admission process and ends with the formal separation process. An episode of care can be completed by the patient being discharged, transferred to another hospital or care facility, or dying, or by a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute to rehabilitation).

incidence: The number of new cases (of an illness or event, and so on) occurring during a given period. Compare with **prevalence**.

International Classification of Diseases (ICD): The World Health Organization's internationally accepted statistical classification of death and disease. The 10th revision (ICD-10) is currently in use. The Australian modification of the ICD-10 (ICD-10-AM) is used for diagnoses and procedures recorded for patients admitted to hospitals.

ionising radiation: Radiation capable of producing ions, directly or indirectly, when passing through matter. Within living organisms this results in the death of cells, delay in their development, and/or the production of gene mutations and chromosome breaks.

malignant: A tumour with the capacity to spread to surrounding tissue or to other sites in the body.

Medicare: A national, government-funded scheme that subsidises the cost of personal medical services for all Australians and aims to help them afford medical care. The Medicare Benefits Schedule (MBS) is the listing of the Medicare services subsidised by the Australian Government. The schedule is part of the wider Medicare Benefits Scheme (Medicare).

melanoma: A tumour of melanin-forming cells; a malignant tumour associated with skin cancer.

metastatic: The spread of a disease from the primary site of disease to another part of the body.

mortality: Death.

mortality rate: The number of deaths in a given period, adjusted to take account of population age-structure, expressed per 100,000 population.

neoplasm: An abnormal ('neo', new) growth of tissue. Can be 'benign' (not a cancer) or 'malignant' (a cancer). Same as a **tumour**.

neuroendocrine: Relating to a hormonal substance that influences the activity of nerves.

oesophagectomy: Removal of part or the entire oesophagus (food pipe, or gullet) and replacement with another organ.

oesophagogastric (Heller) myotomy: Incision or division of external muscular tissue in the lower oesophagus and stomach.

pancreatectomy: Surgical removal of part or all of the pancreas.

pancreatitis: Inflammation of the pancreas.

polyp: A growth projecting from a mucous membrane.

prevalence: The total number of people alive at a specific date who have been diagnosed with a particular disease (such as cancer) within a defined period.

principal diagnosis: The diagnosis listed in hospitals records to describe the problem that was chiefly responsible for the patient's episode of care in hospital.

proctectomy: Surgical removal of part or all of the rectum.

proctocolectomy: Surgical removal of the rectum and part or all of the colon.

radiotherapy: Radiation directed at a localised area to kill or damage cancer cells. There are several types of radiotherapy. This report focuses on megavoltage external beam radiotherapy delivered by linear accelerator machines.

rate ratio: A relative difference measure used to compare the incidence rates.

rectosigmoidoscopy: Examination of the rectum and pelvic colon with an endoscope designed to be passed through the anus in order to permit inspection, diagnosis, treatment and photography (sigmoidoscope).

rectosigmoidectomy: Surgical removal of the rectum and sigmoid colon.

relative survival: A measure of the average survival experience of a population of people diagnosed with cancer, relative to the 'average' Australian of the same sex and age, at a specified interval after diagnosis (usually 5 or 10 years).

resection: Surgical removal of part or all of a damaged organ or structure, particularly the removal of a tumour.

separation: An episode of care for an **admitted patient** which may include a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay that begins or ends in a change of type of care (for example, from acute to rehabilitation). In this report, separations are also referred to as **hospitalisations**.

stent: A short narrow plastic or metal tube, often a mesh, inserted into the lumen of an anatomical vessel (for example, bile duct, artery), often to keep a previously blocked passageway open.

stoma: An artificial opening made in surgical procedures, kept open for drainage or other purposes.

tumour: See neoplasm.

vagotomy: A surgical procedure that involves removing part of the vagus nerve.

years lived with disability (YLD): A measure of the years of what could have been a healthy life but were instead spent in states of less than full health. YLD represent non-fatal burden.

years of life lost (YLL): Years of life lost due to premature death, defined as dying before the global ideal life span at the age of death. YLL represent fatal burden.

References

ABS (Australian Bureau of Statistics) 2017. Cause of death, Australia 2015. ABS cat. no. 3303.0. Canberra: ABS. Viewed August 2018, <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2015~Main%20Features~Complexities%20in%20the%20measurement%20of%20bowel%20cancer%20in%20Australia~7>.

ACCD (Australian Consortium for Classification Development) 2014. The International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM). 9th edn. Tabular list of diseases, and alphabetic index of diseases. Adelaide: Independent Hospital Pricing Authority.

ACCD 2015. The Australian Classification of Health Interventions (ACHI). 9th edn. Tabular list of interventions, and alphabetic index of interventions. Adelaide: Independent Hospital Pricing Authority.

Agudo A, Gonzalez CA, Marcos G, Sanz M, Saigi E, Verge J et al. 1992. Consumption of alcohol, coffee, and tobacco, and gastric cancer in Spain. Cancer Causes and Control 3(2):137–143.

AIHW (Australian Institute of Health and Welfare) 2012. Cancer incidence projections: Australia, 2011 to 2020. Cancer series no. 66. Cat. no. CAN 62. Canberra: AIHW.

AIHW 2016a. Australian Burden of Disease Study: impact and causes of illness and death in Australia 2011. Australian Burden of Disease Study series no. 3. Cat. no. BOD 4. Canberra: AIHW.

AIHW 2016b. Australian Burden of Disease Study 2011: methods and supplementary material. Australian Burden of Disease Study series no. 5. Cat. no. BOD 6. Canberra: AIHW.

AIHW 2017a. Admitted patient care 2016–17: Australian hospital statistics. Health services series no. 84. Cat. no. HSE 201. Canberra: AIHW.

AIHW 2017b. Australian Cancer Incidence and Mortality (ACIM) books. Cat. no. WEB 206. Canberra: AIHW.

AIHW 2017c. Burden of cancer in Australia: Australian Burden of Disease Study 2011. Australian Burden of Disease Study series no. 12. Cat. no. BOD 13. Canberra: AIHW.

AIHW 2017d. Cancer in Australia 2017. Cancer series no. 101. Cat. no. CAN 100. Canberra: AIHW.

AIHW 2017e. Impact of overweight and obesity as a risk factor for chronic conditions: Australian burden of disease study. Australian burden of disease study series no. 11. Cat. no. BOD 12. Canberra: AIHW.

AIHW 2017f. Impact of physical inactivity as a risk factor for chronic conditions: Australian Burden of Disease Study. Australian Burden of Disease Study series no. 15. Cat. no. BOD 16. Canberra: AIHW.

AIHW 2018a. Australia's health 2018. Australia's health series no. 16. Cat. no. AUS 221. Canberra: AIHW.

AIHW 2018b. Analysis of bowel cancer outcomes for the National Bowel Cancer Screening Program 2018. Cat. no. CAN 113. Canberra: AIHW.

AIHW 2018c. Impact of alcohol and illicit drug use on the burden of disease and injury in Australia: Australian Burden of Disease Study 2011. Australian Burden of Disease Study series no. 17. Cat. no. BOD 19. Canberra: AIHW.

AIHW 2018d. National Bowel Cancer Screening Program: monitoring report 2018. Cat. no. CAN 112. Canberra: AIHW.

AIHW 2018e. Radiotherapy in Australia 2016–17. Cat. no. HSE 209. Canberra: AIHW. Viewed September 2018, <https://www.aihw.gov.au/reports/hospitals/radiotherapy-in-australia-2016-17/contents/radiotherapy-activity-and-collection-participation>.

Alam N, Chen W, Baker D & Bishop J 2009. Liver cancer in New South Wales. Sydney: Cancer Institute NSW.

American Cancer Society 2018. Chemotherapy for liver cancer. Atlanta, Georgia: American Cancer Society. Viewed September 2018, <https://www.cancer.org/cancer/liver-cancer/treating/chemotherapy.html>.

Amin J, Law MG, Bartlett M, Kaldor JM & Dore GJ 2006. Causes of death after diagnosis of hepatitis B or hepatitis C infection: a large community-based linkage study. The Lancet 368:938–945.

Bagnardi V, Blangiardo M, La Vecchia C & Corrao G 2001a. Alcohol consumption and the risk of cancer: a meta-analysis. Alcohol Research and Health 25(4):263–270.

Bagnardi V, Blangiardo M, La Vecchia C & Corrao G 2001b. A meta-analysis of alcohol drinking and cancer risk. British Journal of Cancer 85:1700–1705.

Bailey CE, Tran Cao HS, Hu CY, Chang GJ, Feig BW, Rodriguez-Bigas MA, et al. 2015. Functional deficits and symptoms of long-term survivors of colorectal cancer treated by multimodality therapy differ by age at diagnosis. Journal of Gastrointestinal Surgery 19:180–188.

Beasley RP, Hwang LY, Lin CC & Chien CS 1981. Hepatocellular carcinoma and hepatitis B virus. A prospective study of 22,707 men in Taiwan. The Lancet 2(8256):1129–33.

Benedict C, Rodriguez VM, Carter J, Temple L, Nelson C & DuHamel K 2016. Investigation of body image as a mediator of the effects of bowel and GI symptoms on psychological distress in female survivors of rectal and anal cancer. Support Care Cancer 24:1795–1802.

Birgisson H, Påhlman L, Gunnarsson U & Glimelius B 2007. Late adverse effects of radiation therapy for rectal cancer—a systematic overview. Acta Oncologica 46(4):504–516.

Bowel Cancer Australia 2017. Bowel cancer staging. Sydney: Bowel Cancer Australia. Viewed June 2018, <https://www.bowelcanceraustralia.org/bowel-cancer-staging>.

Bray F, Colombet M, Mery L, Piñeros M, Znaor A, Zanetti R et al. (eds). 2017. Cancer incidence in five continents. Vol. XI (electronic version). Lyon, France: International Agency for Research on Cancer. Viewed June 2018, <http://ci5.iarc.fr>.

Brenner H & Gefeller O 1996. An alternative approach to monitoring cancer patient survival. Cancer 78:2004–10.

Bruix J, Barrera JM, Calvet X, Ercilla G, Costa J, Sanchez-Tapias JM et al. 1989. Prevalence of antibodies to hepatitis C virus in Spanish patients with hepatocellular carcinoma and hepatic cirrhosis. The Lancet 2(8670):1004–06.

Cancer Australia 2017. Principles of cancer survivorship. Sydney: Cancer Australia. Viewed August 2018, <https://canceraustralia.gov.au/system/tdf/publications/principles-cancer-survivorship/pdf/pocs_-_principles_of_cancer_survivorship.pdf?file=1&type=node&id=5341>.

Cancer Council New South Wales 2007. Liver cancer—what is liver cancer? Sydney: Cancer Council NSW. Viewed November 2011, <http://www.cancercouncil.com.au/editorial.asp?pageid=2638>.

Cancer Council Victoria 2016. Treatment for anal cancer. Melbourne: Cancer Council Victoria. Viewed August 2018, <https://www.cancervic.org.au/cancer-information/cancer-types/cancer_types/anal_cancer/anal-cancer-treatment.html>.

Cancer Council Victoria 2017. Treatment for oesophageal cancer. Melbourne: Cancer Council Victoria. Viewed July 2018, <https://www.cancervic.org.au/cancer-information/cancer-types/cancer_types/stomach_and_oesophageal_cancer/treatment_for_oesophag.html>.

Cancer Research UK 2018. Small intestine cancer incidence statistics. London: Cancer Research UK. Viewed July 2018, <https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/small-intestine-cancer/incidence#heading-Two>.

Carey S, Laws R, Ferrie S, Young J & Allman-Farinelli M 2013. Struggling with food and eating—life after major upper gastrointestinal surgery. Support Care Cancer 21:2749–2757.

Chen Y, Liu L, Wang X, Wang J, Yan Z, Cheng J et al. 2013. Body mass index and risk of gastric cancer: a meta-analysis of a population with more than ten million from 24 prospective studies. Cancer Epidemiology, Biomarkers & Prevention 22(8):1395–1408.

Clodfelter KH, Holloway MG, Hodor P, Park SH, Ray WJ & Waxman DJ 2006. Sex-dependent liver gene expression is extensive and largely dependent upon signal transducer and activator of transcription 5b (STAT5b): STAT5b-dependent activation of male genes and repression of female genes revealed by microarray analysis. Molecular Endocrinology 20(6):1333–51.

Colombo M, Kuo G, Choo QL, Donato MF, Del Ninno E, Tommasini MA et al. 1989. Prevalence of antibodies to hepatitis C virus in Italian patients with hepatocellular carcinoma. Lancet 2(8670):1006–08.

Forman D & Burley V 2006. Gastric cancer: global pattern of the disease and an overview of environmental risk factors. Best Practice & Research Clinical Gastroenterology 20:633–49.

Gane E 2009. Screening for hepatocellular carcinoma. Cancer Forum 33(2):115–119.

Ganem D & Prince AM 2004. Hepatitis B virus infection—natural history and clinical consequences. New England Journal of Medicine 350:1118–29.

GBD (Global Burden of Disease Study) 2015 Collaborators 2016. Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. The Lancet 388(10053):S1–4070. doi:10.1016/S0140-6736(16)31679-8.

GESA (Gastroenterological Society of Australia) 2010. Information about *Helicobacter pylori* (*H. pylori*). Melbourne: GESA. Viewed August 2018, <http://cart.gesa.org.au/membes/files/Consumer%20Information/H_Pylori.pdf>.

Gusani NJ, Schubart JR, Wise J, Farace E, Green MJ, Jiang Y, et al. 2009. Cancer survivorship: a new challenge for surgical and medical oncologists. Journal of General Internal Medicine 24(Suppl. 2):456–458.

Guy GP, Yabroff KR, Ekwueme DU, Smith AW, Dowling EC, Rechis R et al. 2014. Estimating the health and economic burden of cancer among those diagnosed as adolescents and young adults. Health Affairs 33(6):1024–1031.

Harvard University 2017. Life after cancer. Harvard Health Publications. Special Health Reports. Boston MA, USA: Harvard Health Publications.

Hassan MM, Bondy ML, Wolff RA, Abbruzzese JL, Vauthey JN, Pisters PW et al. 2007. Risk factors for pancreatic cancer: case-control study. The American Journal of Gastroenterology 102(12):2696–2707.

Hundal R & Shaffer EA 2014. Gallbladder cancer: epidemiology and outcome. Clinical Epidemiology 6:99–109.

Huxley R, Ansary-Moghaddam A, de Gonzalez AB, Barzi F & Woodward M 2005. Type-II diabetes and pancreatic cancer: a meta-analysis of 36 studies. British Journal of Cancer 92:2076–83.

IARC (International Agency for Research on Cancer) 2014. World cancer report 2014. Lyon, France: IARC.

Islami F, Ferlay J, Lortet-Tieulent J, Bray F & Jemal A 2016. International trends in anal cancer incidence rates. International Journal of Epidemiology 46(3):924–938.

Jain K, Sreenivas V, Velpandian T, Kapil U & Garg PK 2013. Risk factors for gallbladder cancer: a case-control study. International Journal of Cancer 132(7):1660–1666.

Jefford M, Karahalios E, Pollard A, Baravelli C, Carey M, Franklin J, et al. 2008. Survivorship issues following treatment completion—results from focus group with Australian cancer survivors and health professionals. Journal of Cancer Survivorship 2:20–32.

Kabat GC, Ng SKC & Wynder EL 1993. Tobacco, alcohol intake, and diet in relation to adenocarcinoma of the esophagus and gastric cardia. Cancer Causes and Control 4(2):123–132.

Kale HP & Carroll NV 2016. Self-reported financial burden of cancer care and its effect on physical and mental health-related quality of life among US cancer survivors. Cancer 122(8):283–289.

Kendall BJ, Wilson LF, Olsen CM, Webb PM, Neale RE, Bain CJ et al. 2015. Cancer in Australia in 2010 attributable to overweight and obesity. Australian and New Zealand Journal of Public Health 39(5):452–457.

Kent EE, Forsythe LP, Yabroff KR, Weaver KE, Moor JS, Rodriguez JL et al. 2013. Are survivors who report cancer-related financial problems more likely to forgo or delay medical care? Cancer 119(20):3710–3717.

Kirby Institute 2016a. Hepatitis B. New South Wales. Sydney: University of New South Wales—Kirby Institute. Viewed July 2018, <https://data.kirby.unsw.edu.au/hepatitis-b>.

Kirby Institute 2016b. Hepatitis C. New South Wales. Sydney: University of New South Wales—Kirby Institute. Viewed July 2018, <https://data.kirby.unsw.edu.au/hepatitis-c>.

Lim SS, Vox T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H et al. 2012. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. The Lancet 380:2224–2260.

Lochan R, Daly AK, Reeves HL & Charnley RM 2007. Genetic susceptibility in pancreatic ductal adenocarcinoma. British Journal of Surgery 95(1):22–32.

Lynch BM, Steginga SK, Hawkes AL, Pakenham KI & Dunn J 2008. Describing and predicting psychological distress after colorectal cancer. CA: A Cancer Journal for Clinicians 112(6):1363–1370.

MacInnis RJ, English DR, Hopper JL & Giles GG 2006. Body size and composition and the risk of gastric and oesophageal adenocarcinoma. International Journal of Cancer 11:2628–2631.

Macmillan Cancer Support 2018. Radiotherapy for oesophageal cancer. London, UK: Macmillan Cancer Support. Viewed July 2018, <https://www.macmillan.org.uk/information-and-support/oesophageal-gullet-cancer/treating/radiotherapy/radiotherapy-explained/radiotherapy-oesophageal-cancer.html>.

Mitchell H & Katelaris P 2016. Epidemiology, clinical impacts and current clinical management of *Helicobacter pylori* infection. The Medical Journal of Australia 204(10):376–380.

Morgan MA 2009. Cancer survivorship: history, quality-of-life issues, and the evolving multidisciplinary approach to implementation of cancer survivorship care plans. Oncology Nursing Forum 36:429–436.

Morris CR, Ramirez CN, Cook SN, Parikh-Patel A, Kizer KW, Bates JH, et al. 2013. Cancer stage at diagnosis. Sacramento CA, USA: California Department of Public Health, California Cancer Registry.

Nagle CM, Wilson LF, Hughes MCB, Ibiebele TI, Miura K, Bain CJ et al. 2015. Cancers in Australia in 2010 attributable to the consumption of red and processed meat. Australian and New Zealand Journal of Public Health 39(5):429–433.

Naugler WE, Sakurai T, Kim S, Maeda S, Kim K, Elsharkawy AM et al. 2007. Gender disparity in liver cancer due to sex differences in MyD88-dependent IL-6 production. Science 317(5834):121–124.

Parkin DM 2001. Global cancer statistics in the year 2000. The Lancet Oncology 2:533–43.

Perz JF, Armstrong GL, Farrington LA, Hutin YJF & Bell BP 2006. The contributions of hepatitis B virus and hepatitis C virus infections to cirrhosis and primary liver cancer worldwide. Journal of Hepatology 45:529–538.

Public Health England 2016. Stage at diagnosis 2012–2014 and one-year cancer survival in England. London, UK: Public Health England. Viewed August 2018, <http://www.ncin.org.uk/publications/survival_by_stage>.

Ramsey S, Blough D, Kirchhoff A, Kreizenbeck K, Fedorenko C, Snell K et al. 2013. Washington State cancer patients found to be at greater risk for bankruptcy than people without a cancer diagnosis. Health Affairs 32(6):1143–1152.

Sheth S, Bedford A & Chopra S 2000. Primary gallbladder cancer: recognition of risk factors and the role of prophylactic cholecystectomy. American Journal of Gastroenterology 95(6):1402–1410.

Stone DS, Ganz PA, Pavlish C & Robbins WA 2017. Young adult cancer survivors and work: a systematic review. Journal of Cancer Survivorship 11:765–781.

Tangkijvanich P, Mahachai V, Suwangool P & Poovorawan Y 2004. Gender difference in clinicopathologic features and survival of patients with hepatocellular carcinoma. World Journal of Gastroenterology 10(11):1547–1550.

Tawk HM, Vickery K, Bisset L, Lo SK, Selby W, Cossart YE et al. 2006. The current pattern of hepatitis B virus infection in Australia. Journal of Viral Hepatitis 13:206–215.

Terrault NA 2002. Sexual activity as a risk factor for hepatitis C. Hepatology 36(5 Supplement 1):S99–105.

Tian J, Chen ZC & Hang LF 2007. Effects of nutritional and psychological status in gastrointestinal cancer patients on tolerance of treatment. World Journal of Gastroenterology 13(30):4136–4140.

Tsunoda A, Nakao K, Hiratsuka K, Yasuda N, Shibusawa M & Kusano M 2005. Anxiety, depression and quality of life in colorectal cancer patients. International Journal of Clinical Oncology 10:411–417.

Tyson GL & El-Serag HB 2011. Risk factors for cholangiocarcinoma. Hepatology 54(1):173–184.

UICC (Union for International Cancer Control) 2016. TNM classification of malignant tumours 8th edn. Chichester, UK: John Wiley and Sons.

van der Zee RP, Richel O, de Vries HJC & Prins JM 2013. The increasing incidence of anal cancer: can it be explained by trends in risk groups? The Netherlands Journal of Medicine 71(7):401–411.

Vaughan TL, Davis S, Kristal A & Thomas DB 1995. Obesity, alcohol, and tobacco as risk factors for cancers of the esophagus and gastric cardia: adenocarcinoma versus squamous cell carcinoma. Cancer Epidemiology, Biomarkers and Prevention 4(2):85–92.

Wallace MC, Preen DB, Short MW, Adams LA & Jeffrey GP 2018 (in press). Hepatocellular carcinoma in Australia 1982–2014: increasing incidence and improving survival. Liver International.

Waxman DJ & Holloway MG 2009. Sex differences in the expression of hepatic drug metabolizing enzymes. Molecular Pharmacology 76(2):215–228.

WCRF/AICR (World Cancer Research Fund/American Institute for Cancer Research) 2007. Food, nutrition, physical activity, and the prevention of cancer: a global perspective. Washington DC, USA: American Institute of Cancer Research.

WCRF/AICR 2018. Body fatness and weight gain and the risk of cancer. Washington DC, USA: American Institute of Cancer Research.

WCRF (World Cancer Research Fund) 2018. Diet, nutrition, physical activity and cancer: a global perspective. Third expert report. London, UK: WCRF. Viewed July 2018, <https://www.wcrf.org/dietandcancer>.

Weitz J, Koch M, Debus J, Hohler T, Galle PR & Buchler MW 2005. Colorectal cancer. The Lancet 365:153–65.

Wilson LM 2017. After colorectal cancer (CRC) treatment, there is a need for survivorship care. What information do people require who have been treated for CRC, how should it be delivered and by whom? Journal of Stomal Therapy Australia 73(3):13–15.

Yang JD & Roberts LR 2010. Hepatocellular carcinoma: a global view. Nature Reviews: Gastroenterology and Hepatology 7:448–458.

Yang P, Zhou Y, Chen B, Wan HW, Jia GQ, Bai HL et al. 2009. Overweight, obesity and gastric cancer risk: results from a meta-analysis of cohort studies. European Journal of Cancer 45(16):2867–2873.

List of tables

Table 1: Incidence and mortality of all digestive-tract cancers combined, 2018 x

Table 2: Rate ratio by sex and digestive-tract cancers, 2018 x

Table 3: Rate ratio by population groups and digestive-tract cancers, 2018 xiii

Table 4: Summary of digestive-tract cancers in Australia xv

Table 5: Trend summary for incidence, mortality and 5-year relative survival xv

Table 2.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), colorectal cancer, by sex 4

Table 2.2: Hospitalisations related to colorectal cancer, by sex, 2016–17 13

Table 2.3: Number of surgical procedures, colorectal cancer, by sex, 2016–17 14

Table 2.4: Limited-duration prevalence of colorectal cancer, by sex, as at end of 2013 15

Table 2.5: Burden of disease from colorectal cancer, by sex, 2011 16

Table 2.6: Colorectal cancer burden attributed to selected risk factors, 2011 18

Table 3.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), pancreatic cancer, by sex 19

Table 3.2: Hospitalisations related to pancreatic cancer, by sex, 2016–17 24

Table 3.3: Number of surgical procedures, pancreatic cancer, by sex, 2016–17 25

Table 3.4: Limited-duration prevalence of pancreatic cancer, by sex, as at end of 2013 26

Table 3.5: Burden of disease from pancreatic cancer, by sex, 2011 27

Table 3.6: Pancreatic cancer burden attributed to selected risk factors, 2011 27

Table 4.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), stomach cancer, by sex 29

Table 4.2: Hospitalisations related to stomach cancer, by sex, 2016–17 34

Table 4.3: Number of surgical procedures, stomach cancer, by sex, 2016–17 35

Table 4.4: Limited-duration prevalence of stomach cancer, by sex, as at end of 2013 36

Table 4.5: Burden of disease from stomach cancer, by sex, 2011 37

Table 4.6: Stomach cancer burden attributed to selected risk factors, 2011 37

Table 5.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), liver cancer, by sex 40

Table 5.2: Hospitalisations related to liver cancer, by sex, 2016–17 44

Table 5.3: Number of surgical procedures, liver cancer, by sex, 2016–17 45

Table 5.4: Limited-duration prevalence of liver cancer, by sex, as at end of 2013 46

Table 5.5: Burden of disease from liver cancer, by sex, 2011 47

Table 5.6: Liver cancer burden attributed to selected risk factors, 2011 48

Table 6.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), oesophageal cancer, by sex 49

Table 6.2: Hospitalisations related to oesophageal cancer, by sex, 2016–17 54

Table 6.3: Number of surgical procedures, oesophageal cancer, by sex, 2016–17 55

Table 6.4: Limited-duration prevalence of oesophageal cancer, by sex, as at end of 2013 56
Table 6.5: Burden of disease from oesophageal cancer, by sex, 2011 57
Table 6.6: Oesophageal cancer burden attributed to selected risk factors, 2011 58
Table 7.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), cancers of the gallbladder and extrahepatic bile ducts, by sex 59
Table 7.2: Hospitalisations related to cancer of the gallbladder and extrahepatic bile ducts, by sex, 2016–17 64
Table 7.3: Number of surgical procedures, cancer of the gallbladder and extrahepatic bile ducts, by sex, 2016–17 65
Table 7.4: Limited-duration prevalence of cancer of the gallbladder and extrahepatic bile ducts, by sex, as at end of 2013 66
Table 7.5: Burden of disease from gallbladder and extrahepatic bile duct cancers, by sex, 2011 67
Table 7.6: Gallbladder cancer burden attributed to selected risk factors (DALYs and proportion), 2011 68
Table 8.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), cancer of the small intestine, by sex 70
Table 8.2: Hospitalisations related to cancer of the small intestine, by sex, 2016–17 74
Table 8.3: Number of surgical procedures, cancer of the small intestine, by sex, 2016–17 75
Table 8.4: Limited-duration prevalence of cancer of the small intestine, by sex, as at end of 2013 76
Table 9.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), anal cancer, by sex 78
Table 9.2: Hospitalisations related to anal cancer, by sex, 2016–17 82
Table 9.3: Number of surgical procedures, anal cancer, by sex, 2016–17 84
Table 9.4: Limited-duration prevalence of anal cancer, by sex, as at end of 2013 84
Table 10.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014), cancer of unspecified digestive organs, by sex 87
Table 10.2: Hospitalisations related to cancer of unspecified digestive organs, by sex, 2016–17 89
Table 10.3: Limited-duration prevalence of cancer of unspecified digestive organs, by sex, as at end of 2013 89
Table A1: Estimated age-specific incidence and mortality rates of upper and lower digestive-tract cancers, by age at diagnosis, 2018 90
Table A2: Estimated incidence and mortality of digestive-tract cancers, by site, 2018 90
Table A3: Trends in incidence (1982–2014) and mortality (1982–2016) age-standardised rates of upper and lower digestive-tract cancers, with projections to 2018 91
Table A2.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for colorectal cancer, by age group 92
Table A2.2: Incidence (1982–2014) and mortality (1982–2016) trends, colorectal cancer, with projections to 2018 93
Table A2.3: Five-year relative survival from digestive-tract cancers and all cancers combined, 1985–1989 to 2010–2014 94
Table A2.4: Incidence (2013) and 5-year relative survival (2010–2014) for colorectal cancer, by subsite 94

Table A2.5: Incidence (2013) and 5-year relative survival (2010–2014) for colorectal cancer, by histology group 95
Table A2.6: Age-standardised incidence rates (2011) and 5-year relative survival (2011–2016) of colorectal cancer, by RD stage and sex, 2011 95
Table A2.7: Five-year relative survival (%) of colorectal cancer, by RD stage and age group, 2011–2016 95
Table A2.8: Age-specific incidence rates of colorectal cancer, by RD stage and age group, 2011 96
Table A2.9: Incidence (2009–2013), mortality (2012–2016) and 5-year relative survival (2007–2014) for digestive-tract cancers, by Indigenous status and cancer type, selected jurisdictions 97
Table A2.10: Incidence (2009–2013) of digestive-tract cancers, by remoteness and cancer type 98
Table A2.11: Mortality (2011–2016) of digestive-tract cancers, by remoteness and cancer type 99
Table A2.12: 5-year observed survival for digestive-tract cancers, by cancer type and remoteness area, 2010–2014 100
Table A2.13: Incidence (2009–2013) of digestive-tract cancers, by socioeconomic quintile and cancer type 101
Table A2.14: Mortality (2011–2016) of digestive-tract cancers, by socioeconomic quintile and cancer type 102
Table A2.15: 5-year observed survival for digestive-tract cancers, by cancer type and socioeconomic group, 2010–2014 102
Table A2.16: Colonoscopies in an admitted patient setting, 2016–17 103
Table A2.17: Age-specific rate of colorectal tumour related colonoscopies, by age group and principal diagnosis 104
Table A2.18: Top 10 additional diagnoses listed for colonoscopies for cancer surveillance, 2016–17 104
Table A2.19: Age-standardised rate of colorectal tumour related colonoscopies, 2001–02 to 2016–17 105
Table A2.20: Number of cancer-related hospitalisations, by sex and cancer type, 2016–17 106
Table A2.21: Age-specific rates for hospitalisations related to colorectal cancer, by age group and sex, 2016–17 107
Table A2.22: Age-standardised rates for all hospitalisations related to colorectal cancer, by sex, 2001–02 to 2016–17 107
Table A2.23: Number of digestive-tract cancer chemotherapy procedures, by sex and cancer type, 2016–17 108
Table A2.24: Number of digestive-tract cancer radiotherapy procedures, by sex and principal diagnosis, 2016–17 108
Table A2.25: Five-year prevalence of colorectal cancer, by age group and sex, as at end of 2013 109
Table A2.26: Non-fatal cancer burden (YLD), by cancer phase, 2011 109
Table A2.27: Burden of disease from digestive-tract cancers, by age group, 2011 110
Table A3.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for pancreatic cancer, by age group 111
Table A3.2: Incidence (1982–2014) and mortality (1982–2016) trends, pancreatic cancer, with projections to 2018 112

Table A3.3: Incidence (2013) and 5-year relative survival (2010–2014), pancreatic cancer, by subsite 113
Table A3.4: Incidence (2013) and 5-year relative survival (2010–2014), pancreatic cancer, by histology....113
Table A3.5: Age-specific rates for hospitalisations related to pancreatic cancer, by age group and sex, 2016–17 114
Table A3.6: Age-standardised rates for all hospitalisations related to pancreatic cancer, by sex, 2001–02 to 2016–17 115
Table A3.7: Five-year prevalence of pancreatic cancer, by age group and sex, as at end of 2013....115
Table A4.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for stomach cancer, by age group....116
Table A4.2: Incidence (1982–2014) and mortality (1982–2016) trends, stomach cancer, with projections to 2018....117
Table A4.3: Incidence (2013) and 5-year relative survival (2010–2014), stomach cancer, by subsite 118
Table A4.4: Incidence (2013) and 5-year relative survival (2010–2014), stomach cancer, by histology....118
Table A4.5: Age-specific rates for hospitalisations related to stomach cancer, by age group and sex, 2016–17 119
Table A4.6: Age-standardised rates for all hospitalisations related to stomach cancer, by sex, 2001–02 to 2016–17 120
Table A4.7: Five-year prevalence of stomach cancer, by age group and sex, as at end of 2013 ...120
Table A5.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for liver cancer, by age group....121
Table A5.2: Incidence (1982–2014) and mortality (1982–2016) trends, liver cancer, with projections to 2018 122
Table A5.3: Incidence (2013) and 5-year relative survival (2010–2014), liver cancer, by subsite 123
Table A5.4: Incidence (2013) and 5-year relative survival (2010–2014), liver cancer, by histology....123
Table A5.5: Age-specific rates for hospitalisations related to liver cancer, by age group and sex, 2016–17 123
Table A5.6: Age-standardised rates for all hospitalisations related to liver cancer, by sex, 2001–02 to 2016–17 124
Table A5.7: Five-year prevalence of liver cancer, by age group and sex, as at end of 2013 124
Table A6.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for oesophageal cancer, by age group....125
Table A6.2: Incidence (1982–2014) and mortality (1982–2016) trends, oesophageal cancer, with projections to 2018....126
Table A6.3: Incidence (2013) and 5-year relative survival (2010–2014), oesophageal cancer, by subsite 127
Table A6.4: Incidence (2013) and 5-year relative survival (2010–2014), oesophageal cancer, by histology....127

Table A6.5: Age-specific rates for hospitalisations related to oesophageal cancer, by age group and sex, 2016–17 128
Table A6.6: Age-standardised rates for all hospitalisations related to oesophageal cancer, by sex, 2001–02 to 2016–17 129
Table A6.7: Five-year prevalence of oesophageal cancer, by age group and sex, as at end of 2013 129
Table A7.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for gallbladder and extrahepatic bile duct cancers, by age group 130
Table A7.2: Incidence (1982–2014) and mortality (1982–2016) trends, gallbladder and extrahepatic bile duct cancers, with projections to 2018 131
Table A7.3: Incidence (2013) and 5-year relative survival (2010–2014), gallbladder and extrahepatic bile duct cancers, by subsite 132
Table A7.4: Incidence (2013) and 5-year relative survival (2010–2014), gallbladder and extrahepatic bile duct cancers, by histology 132
Table A7.5: Age-specific rates for hospitalisations related to cancer of the gallbladder and extrahepatic bile ducts, by age group and sex, 2016–17 133
Table A7.6: Age-standardised rates for all hospitalisations related to cancer of the gallbladder and extrahepatic bile ducts, by sex, 2001–02 to 2016–17 134
Table A7.7: Five-year prevalence of cancer of the gallbladder and extrahepatic bile ducts, by age group and sex, as at end of 2013 134
Table A8.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for small intestine cancer, by age group 135
Table A8.2: Incidence (1982–2014) and mortality (1982–2016) trends, small intestine cancer, with projections to 2018 136
Table A8.3: Incidence (2013) and 5-year relative survival (2010–2014), small intestine cancer, by subsite 137
Table A8.4: Incidence (2013) and 5-year relative survival (2010–2014), small intestine cancer, by histology 137
Table A8.5: Age-specific rates for hospitalisations related to cancer of the small intestine, by age group and sex, 2016–17 138
Table A8.6: Age-standardised rates for all hospitalisations related to cancer of the small intestine, by sex, 2001–02 to 2016–17 139
Table A8.7: Five-year prevalence of cancer of the small intestine, by age group and sex, as at end of 2013 139
Table A9.1: Estimated incidence and mortality (2018) and 5-year relative survival (2010–2014) for anal cancer, by age group 140
Table A9.2: Incidence (1982–2014) and mortality (1982–2016) trends, anal cancer, with projections to 2018 141
Table A9.3: Incidence (2013) and 5-year relative survival (2010–2014), anal cancer, by subsite 142
Table A9.4: Incidence (2013) and 5-year relative survival (2010–2014), anal cancer, by histology 142
Table A9.5: Age-specific rates for hospitalisations related to anal cancer, by age group and sex, 2016–17 143
Table A9.6: Age-standardised rates for all hospitalisations related to anal cancer, by sex, 2001–02 to 2016–17 144

Table A9.7: Five-year prevalence of anal cancer, by age group and sex, as at end of 2013 144
Table A10.1: Incidence (1982–2014) and mortality (1982–2016) trends, cancer of unspecified digestive organs, with projections to 2018 145
Table A10.2: Age-standardised rates for all hospitalisations related to cancer of unspecified digestive organs, by sex, 2001–02 to 2016–17.....146
Table B1: Subsites for digestive-tract, by cancer type 147
Table B2: Histology groupings for digestive-tract cancers, by cancer type.....149
Table C1: Data sources 150
Table D1: Definition of digestive-tract cancer-related hospitalisations 154
Table D2: Definition of colonoscopies.....154
Table D3: Definition of principal and additional diagnosis codes for colorectal tumour-related colonoscopies.....155
Table D4: Definition of surgical procedures for colorectal cancer 155
Table D5: Definition of surgical procedures for pancreatic cancer 157
Table D6: Definition of surgical procedures for stomach cancer 157
Table D7: Definition of surgical procedures for liver cancer 157
Table D8: Definition of surgical procedures for oesophagus cancer 158
Table D9: Definition of surgical procedures for cancer of the gallbladder and extrahepatic bile ducts 159
Table D10: Definition of surgical procedures for small intestine cancer.....160
Table D11: Definition of surgical procedures for anal cancer.....160
Table D12: Definition of chemotherapy procedures for digestive-tract cancer-related hospitalisations.....160

List of figures

Figure 1: Estimated age-specific incidence and mortality rates of upper and lower digestive-tract cancers, by age at diagnosis, 2018 xi

Figure 2: Estimated incidence and mortality of digestive-tract cancers, by site, 2018 xi

Figure 3: Age-standardised incidence rates of colorectal cancer, by RD stage, 2011 xii

Figure 4: Incidence trends (1982–2014) and mortality trends (1982–2016) for upper and lower digestive-tract cancers, with projections to 2018 xii

Figure 5: Five-year relative survival from digestive-tract cancers and all cancers combined, 1985–1989 to 2010–2014 xiii

Figure 1.1: The organs of the digestive-tract system 2

Figure 2.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for colorectal cancer, by age group 5

Figure 2.2: Incidence trends for colorectal cancer, 1982–2014, with projections to 2018 5

Figure 2.3: Mortality trends for colorectal cancer, 1982–2016, with projections to 2018 6

Figure 2.4: Five-year relative survival from colorectal cancer, all digestive-tract cancers combined and all cancers combined, 1985–1989 to 2010–2014 6

Figure 2.5: Incidence (2013) and 5-year relative survival (2010–2014) for colorectal cancer, by subsite 7

Figure 2.6: Incidence (2013) and 5-year relative survival (2010–2014) for colorectal cancer, by histology 8

Figure 2.7: Age-standardised incidence rates (2011) and 5-year relative survival (2011–2016) of colorectal cancer, by RD stage and sex 8

Figure 2.8: Age-specific incidence rates of colorectal cancer, by RD stage and age group, 2011 9

Figure 2.9: Five-year relative survival of colorectal cancer, by RD stage and age group, 2011–2016 9

Figure 2.10: Age-specific rate of colorectal tumour related colonoscopies, 2016–17 12

Figure 2.11: Age-standardised rate of colorectal tumour-related colonoscopies, 2001–02 to 2016–17 12

Figure 2.12: Age-specific rates of hospitalisations related to colorectal cancer, by age group and sex, 2016–17 13

Figure 2.13: All colorectal cancer-related hospitalisations, by sex, 2001–02 to 2016–17 14

Figure 2.14: Five-year prevalence of colorectal cancer, by age group, as at end of 2013 16

Figure 3.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for pancreatic cancer, by age group 20

Figure 3.2: Incidence trends for pancreatic cancer, 1982–2014, with projections to 2018 20

Figure 3.3: Mortality trends for pancreatic cancer, 1982–2016, with projections to 2018 21

Figure 3.4: Five-year relative survival from pancreatic cancer, all digestive-tract cancers combined and all cancers combined, 1985–1989 to 2010–2014 21

Figure 3.5: Incidence (2013) and 5-year relative survival (2010–2014) for cancer of the exocrine pancreas, by subsite 22

Figure 3.6: Incidence (2013) and 5-year relative survival (2010–2014) for pancreatic cancer, by histology 22

Figure 3.7: Age-specific rates for hospitalisations related to pancreatic cancer, by age group and sex, 2016–17 24
Figure 3.8: All pancreatic cancer-related hospitalisations, by sex, 2001–02 to 2016–17 25
Figure 3.9: Five-year prevalence of pancreatic cancer, by age group, as at end of 2013 26
Figure 4.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for stomach cancer, by age group 30
Figure 4.2: Incidence trends for stomach cancer, 1982–2014, with projections to 2018 30
Figure 4.3: Mortality trends for stomach cancer, 1982–2016, with projections to 2018 31
Figure 4.4: Five-year relative survival for stomach cancer, all digestive-tract cancers combined and all cancers combined, 1985–1989 to 2010–2014 31
Figure 4.5: Incidence (2013) and 5-year relative survival (2010–2014) for stomach cancer, by subsite 32
Figure 4.6: Incidence (2013) and 5-year relative survival (2010–2014) for stomach cancer, by histology 32
Figure 4.7: Age-specific rates of hospitalisations related to stomach cancer, by age group and sex, 2016–17 34
Figure 4.8: All stomach cancer-related hospitalisations, by sex, 2001–02 to 2016–17 34
Figure 4.9: Five-year prevalence of stomach cancer, by age group, as at end of 2013 36
Figure 5.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for liver cancer, by age group 40
Figure 5.2: Incidence trends for liver cancer, 1982–2014, with projections to 2018 41
Figure 5.3: Mortality trends for liver cancer, 1982–2016, with projections to 2018 41
Figure 5.4: Five-year relative survival for liver cancer, all digestive-tract cancers combined and all cancers combined, 1985–1989 to 2010–2014 42
Figure 5.5: Incidence (2013) and 5-year relative survival (2010–2014) for liver cancer, by subsite 42
Figure 5.6: Incidence (2013) and 5-year relative survival (2010–2014) for liver cancer, by histology 43
Figure 5.7: Age-specific rates of hospitalisations related to liver cancer, by age group and sex, 2016–17 44
Figure 5.8: All liver cancer-related hospitalisations, by sex, 2001–02 to 2016–17 45
Figure 5.9: Five-year prevalence of liver cancer, by age group, as at end of 2013 46
Figure 6.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for oesophageal cancer, by age group 50
Figure 6.2: Incidence trends for oesophageal cancer, 1982–2014, with projections to 2018 50
Figure 6.3: Mortality trends for oesophageal cancer, 1982–2016, with projections to 2018 51
Figure 6.4: Five-year relative survival for oesophageal cancer, all digestive-tract cancers combined and all cancers combined, 1985–1989 to 2010–2014 51
Figure 6.5: Incidence (2013) and 5-year relative survival (2010–2014) for oesophageal cancer, by subsite 52
Figure 6.6: Incidence (2013) and 5-year relative survival (2010–2014) for oesophageal cancer, by histology 52

Figure 6.7: Age-specific rates of hospitalisations related to oesophageal cancer, by age group and sex, 2016–17 54
Figure 6.8: All oesophageal cancer-related hospitalisations, by sex, 2001–02 to 2016–17 54
Figure 6.9: Five-year prevalence of oesophageal cancer, by age group, as at end of 2013 56
Figure 7.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for cancer of the gallbladder and extrahepatic bile ducts, by age group 60
Figure 7.2: Incidence trends for cancer of the gallbladder and extrahepatic bile ducts, 1982–2014, with projections to 2018 60
Figure 7.3: Mortality trends for cancer of the gallbladder and extrahepatic bile ducts, 1982–2016, with projections to 2018 61
Figure 7.4: Five-year relative survival from cancer of the gallbladder and extrahepatic bile ducts, all digestive-tract cancers combined and all cancers combined, 1985–89 to 2010–14 61
Figure 7.5: Incidence (2013) and 5-year relative survival (2010–2014) for cancer of the gallbladder and extrahepatic bile ducts, by subsite 62
Figure 7.6: Incidence (2013) and 5-year relative survival (2010–2014) for cancer of the gallbladder and extrahepatic bile ducts, by histology 62
Figure 7.7: Age-specific rates of hospitalisations related to cancer of the gallbladder and extrahepatic bile ducts, by age group and sex, 2016–17 64
Figure 7.8: All hospitalisations related to cancer of the gallbladder and extrahepatic bile ducts, by sex, 2001–02 to 2016–17 65
Figure 7.9: Five-year prevalence of cancer of the gallbladder and extrahepatic bile ducts, by age group, as at end of 2013. 66
Figure 8.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for cancer of the small intestine, by age group 70
Figure 8.2: Incidence trends for cancer of the small intestine, 1982–2014, with projections to 2018 71
Figure 8.3: Mortality trends for cancer of the small intestine, 1982–2016, with projections to 2018 71
Figure 8.4: Five-year relative survival for cancer of the small intestine, all digestive-tract cancers combined and all cancers combined, 1985–1989 to 2010–2014 72
Figure 8.5: Incidence (2013) and 5-year relative survival (2010–2014) for cancer of the small intestine, by subsite 72
Figure 8.6: Incidence (2013) and 5-year relative survival (2010–2014) for cancer of the small intestine, by histology 73
Figure 8.7: Age-specific rates of hospitalisations related to cancer of the small intestine, by age group and sex, 2016–17 74
Figure 8.8: All hospitalisations related to cancer of the small intestine, by sex, 2001–02 to 2016–17 75
Figure 8.9: Five-year prevalence of cancer of the small intestine, by age group, as at end of 2013 76
Figure 9.1: Estimated age-specific incidence and mortality (2018) rates and 5-year relative survival (2010–2014) for anal cancer, by age group 79
Figure 9.2: Incidence trends for anal cancer, 1982–2014, with projections to 2018 79

Figure 9.3: Mortality trends for anal cancer, 1982–2016, with projections to 2018 80
Figure 9.4: Five-year relative survival for anal cancer, all digestive-tract cancers combined and all cancers combined, 2010–2014 80
Figure 9.5: Incidence (2013) and 5-year relative survival for anal cancer (2010–2014), by subsite 81
Figure 9.6: Incidence (2013) and 5-year relative survival (2010–2014) for anal cancer, by histology 81
Figure 9.7: Age-specific rates of hospitalisations related to anal cancer, by age group and sex, 2016–17 83
Figure 9.8: All anal cancer-related hospitalisations, by sex, 2001–02 to 2016–17 83
Figure 9.9: Five-year prevalence of anal cancer, by age group, as at end of 2013 85
Figure 10.1: Incidence trends for cancer of unspecified digestive organs, 1982–2014, with projections to 2018 87
Figure 10.2: Mortality trends for cancer of unspecified digestive organs, 1982–2016, with projections to 2018 88
Figure 10.3: Five-year relative survival from cancer of unspecified digestive organs, all digestive-tract cancers combined and all cancers combined, 2010–2014 88
Figure 10.4: All hospitalisations related to cancer of unspecified digestive organs, by sex, 2001–02 to 2016–17 89

Related publications

The following AIHW publications relating to cancer might be of interest:

- AIHW 2018. Cancer in Aboriginal and Torres Strait Islander people of Australia. Web report. Cat. no. CAN 109. Canberra: AIHW. Viewed September 2018, <https://www.aihw.gov.au/reports/cancer/cancer-in-indigenous-australians/contents/table-of-contents>.
- AIHW 2018. Cancer in adolescents and young adults in Australia. Cat. no. CAN 110. Canberra: AIHW.
- AIHW 2017. Brain and other central nervous system cancers. Cat. no. CAN 106. Canberra: AIHW.
- AIHW 2017. Cancer in Australia 2017. Cancer series no. 101. Cat. no. CAN 100. Canberra: AIHW.
- AIHW 2016. Skin cancer in Australia. Cat. no. CAN 96. Canberra: AIHW.
- AIHW 2015. Breast cancer in young women: key facts about breast cancer in women in their 20s and 30s. Cancer series no. 96. Cat. no. CAN 94. Canberra: AIHW.
- AIHW 2014. Head and neck cancers in Australia. Cancer series no. 83. Cat. no. CAN 80. Canberra: AIHW.

Digestive-tract cancers are estimated to account for about 2 in 10 of all cancers diagnosed and nearly 3 in 10 cancer deaths. A person's chance of surviving depends on the type of digestive-tract cancer: colorectal cancer (the most common digestive-tract cancer) had the highest 5-year relative survival rate (69%), while pancreatic cancer (the second most common digestive-tract cancer) had the lowest 5-year relative survival of all specified digestive cancers (8.7%).

aihw.gov.au

AIHW

Stronger evidence,
better decisions,
improved health and welfare