



The current state of male health in Australia

Informing the development of the National Male Health Strategy 2020–2030

July 2018

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List of abbreviations used in this report

ABS	Australian Bureau of Statistics
AIDS	Acquired Immune Deficiency Syndrome
AIHW	Australian Institute of Health and Welfare
ART	Assisted Reproductive Technologies
BRCA1/2	Breast cancer related gene mutation also related to prostate cancer
CALD	Culturally and linguistically diverse
CHD	Coronary heart disease
COPD	Chronic obstructive pulmonary disease
CVD	Cardiovascular disease
DALY	Disability-adjusted life years
DNA	Deoxyribonucleic acid
LGBTIQA+	Lesbian, gay, bisexual, transgender, intersex, queer, asexual, other
HDL	High density lipoprotein
HIV	Human Immunodeficiency Virus
ICSI	Intracytoplasmic sperm injection
iFOBT	Faecal occult blood test
IVF	In vitro fertilisation
LUTS	Lower urinary tract symptoms
MATeS	Men in Australia Telephone Survey
OECD	Organisation for Economic Cooperation and Development
PBS	Pharmaceutical Benefits Scheme
PSA	Prostate specific antigen
PYLL	Potential years of life lost
STI	Sexually transmitted infection
WHO	World Health Organisation
YLL	Years of life lost

Terms used in this report

The term male is used throughout this report referring to boys and men across the life course

Aboriginal and Torres Strait Islander males, females or people are used to describe people who identify themselves as Aboriginal and/or Torres Strait Islander

Non-Indigenous is the descriptor used for Australians who do not identify as Aboriginal and/or Torres Strait Islander

Executive Summary

In global terms, Australian men and boys experience good health and wellbeing, with the eighth highest male life expectancy (80.4 years) of the Organisation for Economic Co-operation and Development (OECD) countries in 2016.¹ Australia is one of only 12 countries to have a male life expectancy over 80 years. As is true for all Australians, the health of Australia's males has improved over time as evidenced by many indicators tracking health over time; however, there are specific areas of male health where gains have not been made and these require particular focus, either across the whole population or for specific population groups.

Why we need a male health strategy

Australian males are diverse in age, social and economic circumstances, culture, language, education, beliefs and a range of other factors that influence health behaviours and outcomes, and access to health care and education. These factors, as well as biological differences, mean that the health experience of males can be different to females and in some areas males experience poorer health.

There are multiple areas in which Australian males are experiencing ill health and premature mortality. Males experience a greater share of the total fatal and non-fatal burden of disease – dying at younger ages than Australian females and more often from preventable causes.

There are also population groups of males with poorer health outcomes who require targeted interventions. These groups include Aboriginal and Torres Strait Islander males, migrants and those from culturally and linguistically diverse (CALD) backgrounds, males experiencing socioeconomic disadvantage and males residing in rural and remote areas. Other groups with specific health needs include gay, bisexual, transgender, other gender and sexually diverse males and males with disabilities.

The need to systematically address the health of males has been recognised globally; notably Australia is one of only four countries in the world with a national male health policy.

“Better health for all cannot be achieved if the many challenges currently facing men are left hiding in plain sight.”²

It is important that this is not viewed as a binary choice between tackling male or female health. To the contrary, a complementary approach is advocated for whereby a gendered lens is applied to assess specific needs. The resultant male, female and general health policies, programs and services and their potential for meaningful and lasting impact is thus optimised and, through their implementation, will contribute to the health of all – Australian males, females, our families and communities.

The good news

In this review, promising trends were observed in recent years across a series of conditions contributing to the health burden experienced by Australian males and associated risk factors. These include decreases in:

- Deaths from coronary heart disease, stroke, lung cancer, bowel cancer, road accidents, work-related accidents and prostate cancer
- Hospitalisations due to assault, accidental poisoning, thermal causes and drowning
- Gonorrhoea and hepatitis B infections in Aboriginal and Torres Strait Islander males and HIV diagnoses in the general population
- Smoking rates.

The challenge

Despite these promising changes, the health burden experienced by Australian males remains high and premature mortality from injuries, suicide and a series of chronic diseases remain at levels that are significantly higher than what we see in Australian females. For example:

- Older males have a high burden due to coronary heart disease and growing burden due to dementia and falls
- Young adult males have high levels of mental ill-health and deaths from preventable causes such as suicide and accidents. Low levels of risk perception and high levels of risk taking are contributing to many years of life unnecessarily lost
- Aboriginal and Torres Strait Islander males have higher rates of fatal and non-fatal burden for almost every condition considered in this review, and have a high prevalence of risk factors and risk taking behaviours.

The way forward

There are multiple clear areas for consideration emerging from this evidence review whereby meaningful progress can be charted towards healthier lives for Australian males. They include:

- Improving awareness of healthy lifestyles, risks to health and wellbeing (for males themselves as well as the impact on families and communities)
- Promoting self-determination – healthy choices and healthy behaviours: reducing risk and preventing disease, injury and premature mortality; increasing engagement of males as fathers, future fathers and as positive role models in their families and communities
- Destigmatising mental ill-health and help-seeking
- Improving access to services including male-focussed health and service promotion and provision to break down the barriers to male engagement with their own health and the health system
- Focussing efforts on closing the health burden gap between males from different population groups and life stages
- Identifying gaps in our knowledge about the health of Australian males and determine priorities for research that can contribute to the evidence base for effective interventions in male health
- Defining a vision and targets for male health and associated measures that can be tracked over time to monitor progress and inform priority setting.

Introduction

To reduce the health burden in Australian males in a meaningful way, we must consider: the specific health issues and needs of males; the social contexts and norms influencing male health and wellbeing; and the health-related knowledge and practices of Australian boys and men.

The first ever Australian National Male Health Policy was launched in 2010.³ In 2018, it is timely to reassess the health of males, to reflect on gains and areas of current need, and to prepare for the health challenges facing men and boys now and into the future.

This paper has been developed as part of a process to inform the development of the National Male Health Strategy 2020–2030. A parallel process is being undertaken to develop the National Female Health Strategy for the same time period. This paper draws on an evidence review process designed to capture evidence of male health trends, issues and needs since 2010. It is designed to inform a Roundtable discussion to be held in August 2018 where Key Opinion Leaders will discuss and debate the opportunities to reduce the burden of illness, injury and premature mortality for Australian males. Outcomes will form the basis for the development of a draft Strategy that will undergo a period of public consultation in November 2018 before it is finalised in early 2019.

Methods and limitations

This evidence review was undertaken over a six-week period in June and July 2018. Due to the volume of evidence and the breadth of subject material to cover, pragmatic choices were made about methods and scope for this review. It was not possible to undertake a comprehensive systematic literature review and so targeted searches were undertaken seeking updated statistics across the areas defined in the 2010 National Male Health Policy, in addition to some new areas that were identified as a priority for consideration in this review. This was focused on informing consultations into the key focus areas identified for the National Male Health Strategy: mental health; chronic disease and preventive health; injuries and risk-taking behaviour; diseases that exclusively or disproportionately affect males; healthy ageing and research needs.

Key sources were accessed from the Australian Bureau of Statistics (ABS) and Australian Institute of Health and Welfare (AIHW) and equivalent bodies (depending on the topic area). Literature searches were undertaken to supplement material accessed through these core datasets or studies, and to seek information to create the picture for each condition or issue: current prevalence; trends over time; population groups specifically affected; and risk factors. Where rates are reported in this document they are age-standardised unless otherwise specified.

The following limitations are noted:

- It is possible that more current data are available that are not included in this document due to the targeted rather than systematic approach to data collection
- In some instances, recent data were not available and so older data sources (pre-2010) were used
- In the data accessed, reporting of statistics and stratification of variables (such as age ranges, population groups) were not always consistent, which at times hindered the potential for comparison between data reported over time
- Health data for men from specific population groups is not easily accessible for all health indicators; much of the data in ABS and AIHW reports for specific population groups are presented for males and females combined. In instances where only combined data for males and females were accessed, these data are presented using the general terms of Australians or people
- It is important to remember that some of the characteristics used to separate men into population groups overlap as different groups share common risk factors for ill-health. For example, Aboriginal and Torres Strait Islander males are more likely to live in remote locations with poorer access to services, less educational and employment opportunities and more socioeconomic disadvantage, all factors potentially contributing to poorer health outcomes

- Accurate incidence and prevalence data for certain health conditions (e.g. dementia, mental ill-health) are not always available. Dementia estimates are based on international information, adjusted for the Australian context.⁴ Much of the mental health data rely on self-reporting
- When considering non-fatal burden or morbidity, data on hospitalisations can provide an important snapshot on an issue but it does not reflect the whole story. There are gaps in core datasets for people who are not hospitalised for their condition including those seen in emergency departments only, as well as those who receive care in primary health and community health settings, or in private specialist or allied health services
- Suicide and self-harm data are reflected in two sections: Mental health and Injuries. This reflects government reporting of those conditions
- It is important to note that the male and female evidence reviews that are being undertaken have occurred in parallel and so different approaches may have resulted.

The demographics of Australian males in context

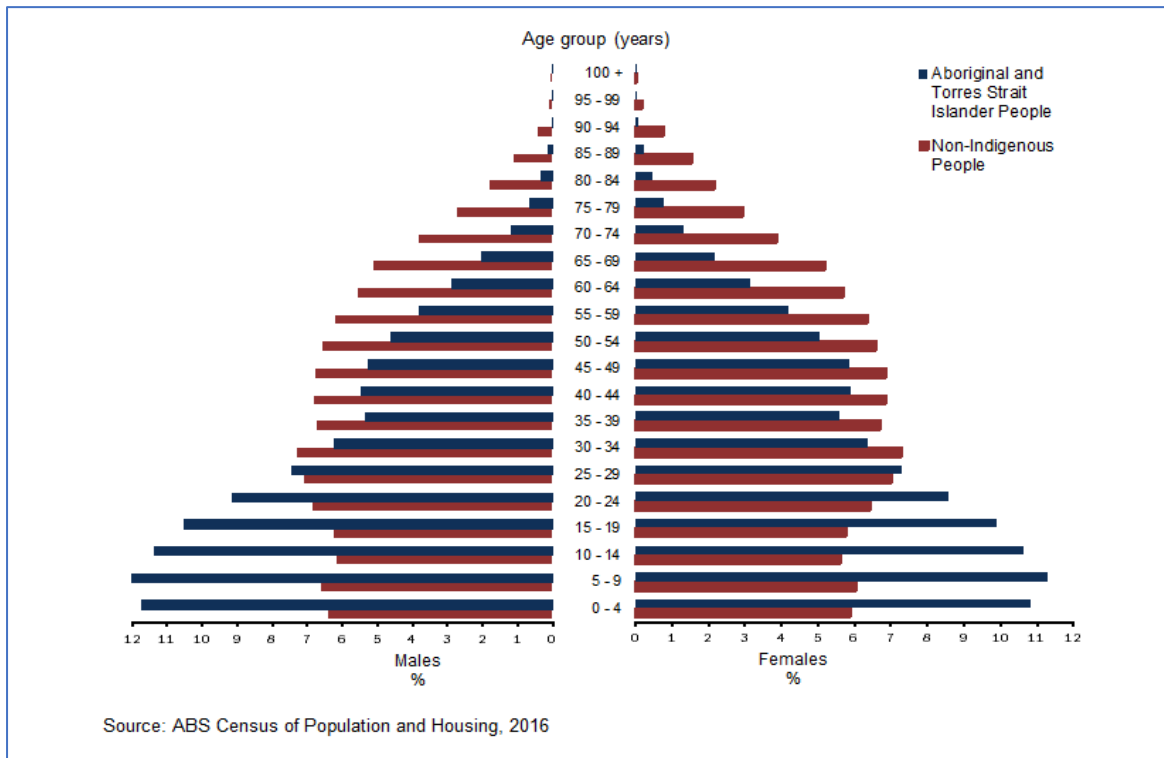
Some key statistics are outlined in Box 1 framing the demographics of the Australian male population.

Box 1: Demographic snapshot of Australian males

- In June 2017, an estimated 12.2 million males were living in Australia (49.6% of the population)⁵
- Sixty-eight per cent of males in 2017 were younger than 50 years of age and 14.5% were 65 years of age or older. Australian males, overall, had a younger age distribution than Australian females (see Figure 1)⁵
- An estimated 373,000 or 3.1% of Australian males identified as Aboriginal and/or Torres Strait Islander in the 2016 Census. Thirty-four per cent were under 15 years of age, compared to 19% of non-Indigenous males (**Figure 1**). In the age group 65 years and over there were 85 males for every 100 females, reflecting earlier mortality amongst Aboriginal and Torre Strait Islander men⁶
- The 2011 Census showed that more males than females live in remote locations (116 males for every 100 females) although the vast majority of our population live in major cities (69%) or inner regional areas (19%); 9.3% live in outer regional areas and 2.5% in remote or very remote areas^{a 6}
- Twenty-seven per cent of Australian males in 2016 were born overseas – with the main countries of birth being: United Kingdom, New Zealand and China⁶
- Just under 22% of males indicated in 2016 that the main language spoken at home was not English⁷
- Significant numbers of males experience high levels of socioeconomic disadvantage. In 2016, 13% of males lived in poverty, about 59,000 were homeless and 36,000 males were in adult corrective services custody⁶
- In 2017, 66% of males aged 15 years and over were employed and 60% of males aged 15–74 years had a non-school qualification⁶
- In 2015, 18% of Australian males were reported as living with a disability⁸

^a Note, the 2016 Census remoteness data stratified by sex will be published later in 2018; data is presently only for 'persons'.

Figure 1: The Australian population in context: age distribution by sex and Indigenous status⁹



A health snapshot - Australian males in 2018

A snapshot of the health of Australian males in 2018 is presented below drawn from the most recently available data. Different dimensions were captured to assist in the consideration of the relative health burden (fatal and non-fatal), life expectancy, causes of burden and changes over time. Box 2 provides a general snapshot reflecting self-assessed health status, life expectancy and disability-free life expectancy of Australian males.

Box 2: Health status and life expectancy of Australian males

Self-assessed health status gives a general picture at one point in time of a person's perceived health status and provides a broad measure of a population's health

- In 2014/15,¹⁰ 55% of males aged 15 years and over rated their health as excellent or very good. The response from females was similar with 58% rating their health as excellent or very good
- In 2014/15,¹⁰ younger men rated themselves as having better health than did older men: 64% of males 25–34 years old and 32% of males aged 75 years and over rated their health as excellent or very good, slightly lower than females – 67% and 36%, respectively
- Self-assessed health status has stayed fairly constant over time with similar proportions of Australians rating their health as excellent or very good in 2011–12 and 2007–08¹⁰

Life expectancy for males has increased over time and the gap between female and male life expectancy has decreased

- For males born in 2005–07 life expectancy was 78.7 years¹¹ increasing to 80.4 years for males born in 2016⁶
- In the same time period, life expectancy for Australian females also increased but the gap in life expectancy between males and females has narrowed slightly (from 5.0 to 4.2 years)^{11; 12}
- It is important to note that a similar sex discrepancy in life expectancy is evident in many other countries; the average life expectancy at birth for males across OECD countries in 2015 was 77.9 years compared to 83.1 years for females, a gap of 5.2 years¹

Disability-free life expectancy reflects the life and health expectancies at age 65 – an important indicator of healthy ageing

- In 2013–2015, life expectancy for men aged 65 years was just under 20 years; nine of those years are expected to be free of disability and 10 years with some disability, including three years with severe disability⁶
- For the purposes of comparison, for women aged 65 years in 2013–2015, life expectancy was just over 22 years; 10 years free of disability and 12 years with some disability, including six years with severe disability¹²

Almost 82,000 Australian males died in 2016 with the ten leading causes comprising over half of male deaths (**Figure 2**). The fatal burden is further explored in Figure 3 where data are presented for Years of Life Lost (YLL). This measure includes the number of deaths but also the age at death, reflecting diseases contributing to a higher level of premature mortality.^{13; 14}

Figure 2: Ten leading causes of death in Australian males in 2016^{b 13}

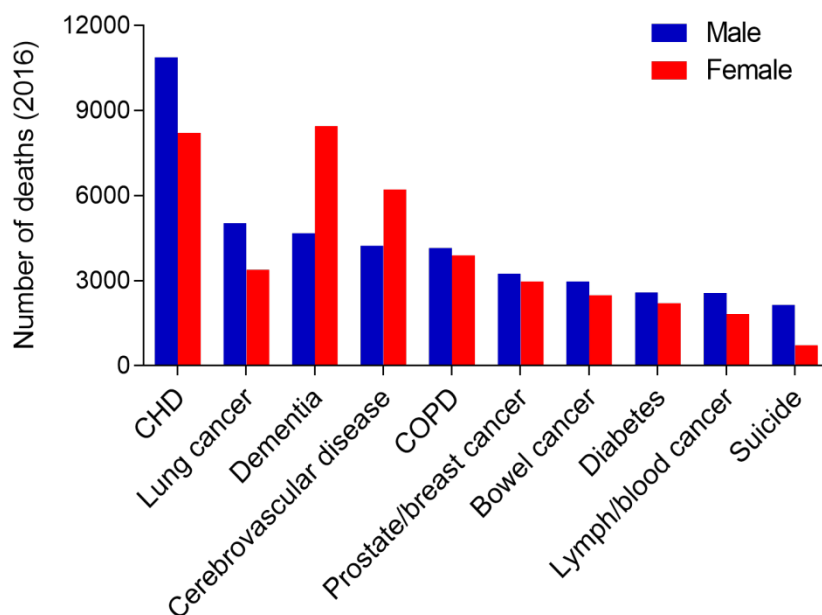
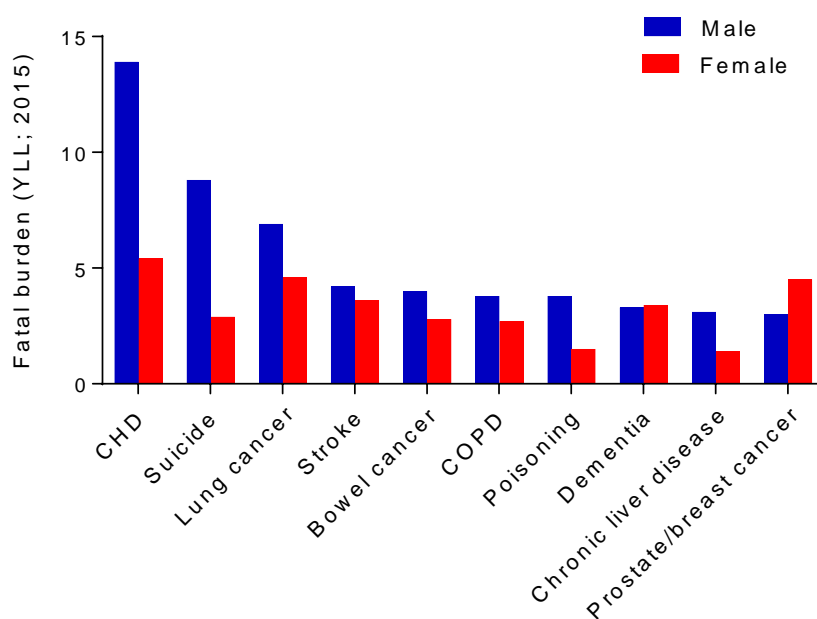


Figure 3: Ten leading causes of fatal burden (YLL) in Australian males in 2015¹⁴



^b Female data included as comparator for each of the top ten causes in males; CHD = coronary heart disease; COPD = chronic obstructive pulmonary disease

Box 3: Causes of death in Australian males – an overview and trends

Australian males are dying at higher rates than females from suicide, coronary heart disease and lung cancer

- The top causes of death are similar for males and females, although occur in a different ranking order (including prostate cancer and breast cancer as the sixth leading cause of death in males and females respectively and tenth ranked causes of fatal burden)¹³
- Suicide does not appear within the top ten, nor in fact, in the top 20 causes of death in females. Like in other developed countries, there are especially high rates of suicide in Australian males compared to females – in 2015, the male suicide rate was more than three times the rate in females after adjusting for age^{6; 15}
- Males died from coronary heart disease (CHD) and lung cancer at twice the rate of females after adjusting for age, in 2015⁴

There are important trends to note over time

- In the decade 2006–2016, encouraging trends show decreasing deaths from CHD; cerebrovascular disease (stroke) and lung cancers, whilst deaths from chronic obstructive pulmonary disease (COPD), dementia and type 2 diabetes have increased.⁴ Bowel cancer deaths have also decreased over time (1982–2017) as have deaths due to prostate cancer (2010–2015)^{4; 6}
- Dementia has emerged in these data as a significant cause of death in Australian males. This was not highlighted within the 2010 National Male Health Policy and has been impacted on by changes to the coding of deaths leading to more causes of death due to dementia being counted.¹⁶ The result is the recognition of dementia as the third leading cause of death in Australian males. Whilst the burden of dementia is higher in females, it reflects an area of significant burden of disease and death in males that requires consideration⁶
- Specific trend data for age-standardised rates of suicide are not available but deaths from suicide have been noted as increasing in the rankings of causes of death since 2006⁴

Premature and preventable mortality provides an important area for focus and intervention to improve the health of Australian males. Box 4 outlines key statistics and trends in preventable mortality and their causes.

Box 4: Premature and preventable deaths in Australian males

Australian males are dying at younger ages than females and more often from preventable causes

- The 25–64 years age group is where most preventable deaths occur. In 2016, 20% of all male deaths occurred in this age group compared to 13% of female deaths. This was slightly lower than in 2006 (22% of male deaths and 14% of female deaths)¹⁷
- Of all premature mortality in 2016, 62% occurred in males⁶ and 38% in females. This was similar to the sex breakdown in 2013¹⁸
- In 2005, males experienced 75% more potential years of life lost (PYLL – an indication of premature mortality^c) than females¹⁹

^c A measure of premature mortality based on the number of years between the age at death and 75 years, assuming 75 is an average age of dying

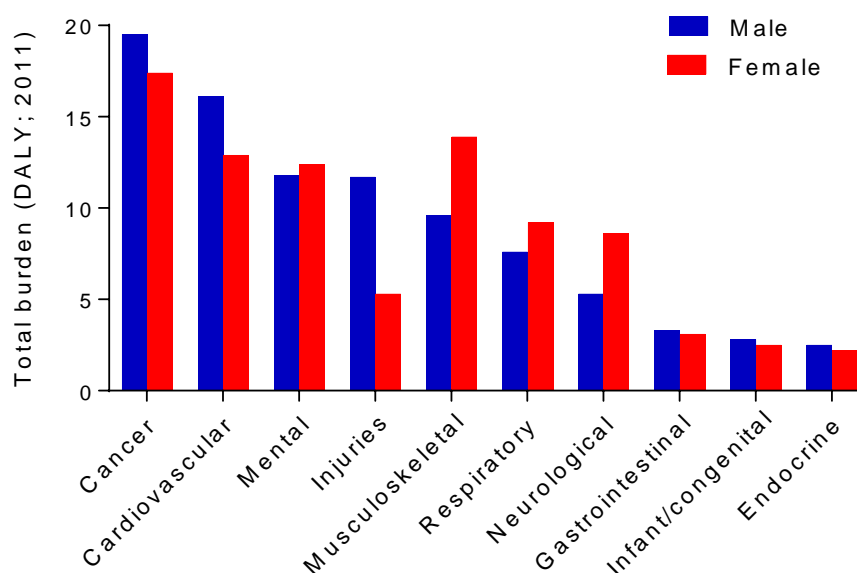
Box 4: Premature and preventable deaths in Australian males (continued)

- In 2011, males had 1.6 times the rate of fatal burden of disease than females after adjusting for age (measured by YLL)²⁰
- In 2011, the major contributors to fatal burden of disease (YLL) in males were: cancers (33% of fatal burden, 1.4-times higher than females), cardiovascular diseases (23% of fatal burden, 1.8-times higher than females) and injuries (17% of fatal burden, 2.6-times higher than females)²⁰

Mental ill-health and substance use disorders accounted for just under 1% of the years of life lost in Australian males; however, after adjusting for age, these were 2.2-times higher than in females.²⁰

The final lens through which we look at the snapshot of male health in Australia is the overall burden of disease (fatal and non-fatal burden) as measured by disability-adjusted life years (DALY)^d. Figure 4 shows the ten leading causes of total health burden that are further described in Box 5.

Figure 4: Ten leading causes of health burden by disease group in Australian males in 2011^{e 20}



^d A measure of years of healthy life lost through premature death or living with ill health due to illness or injury

^e Female data included as comparator for each of the top ten causes in males

Box 5: Total burden of disease in Australian males²⁰

Australian males experience a greater share of the total burden of disease than females

- In 2011, 54% of total DALYs were experienced by males and, after adjusting for age, was 1.3-times higher than for females
- Exploring the specific causes of overall burden highlights three conditions that comprise almost half of the burden experienced by males: cancer (19.5%); cardiovascular disease (16.1%); and mental and substance use disorders (11.8%)
- Comparing the causes of burden between males and females, injuries emerge as a fourth significant cause of burden. Males experience 72% of the burden from injuries and at a rate that is 2.7-times higher than females. Cardiovascular disease and cancer burden is 1.8- and 1.4 times higher in males than females, respectively
- The disease groups responsible for the total burden of disease differ according to the relative contribution of fatal and non-fatal burden. The burden from cancer was predominantly fatal (94%) as was true for cardiovascular disease and injuries (80% and 79%, respectively). The burden from mental ill-health and substance use disorders in contrast was predominantly non-fatal (97%)

In the coming sections, the current data for health and wellbeing in Australian males are analysed in a range of ways:

- **By condition** – a focussed look at conditions with a high burden in Australian males
- **By risk factors** – a profile of key risk factors that contribute to the health burden experienced by Australian males including health literacy and health seeking behaviours as important determinants
- **By population group** – examining the available data describing the health of population sub-groups where the burden of disease is greater than for the general population
- **By life stage** – taking a view across the life course and identifying critical issues that are highlighted by the data for males in different stages of their lives.

Delving into specific causes of health burden in Australian males

In this section, a snapshot is provided for a series of conditions identified as contributing to the health burden experienced by Australian males. This includes:

- Chronic diseases
- Mental health
- Injuries
- Sexual and reproductive health (including diseases that exclusively or disproportionately affect males).

For each of these areas, the snapshot provides:

- Key messages that have emerged from the evidence review
- A brief overview of key statistics reflecting burden and trends over time
- Priority populations or life stages where the prevalence and burden is of particular concern
- Risk factors – modifiable and non-modifiable.

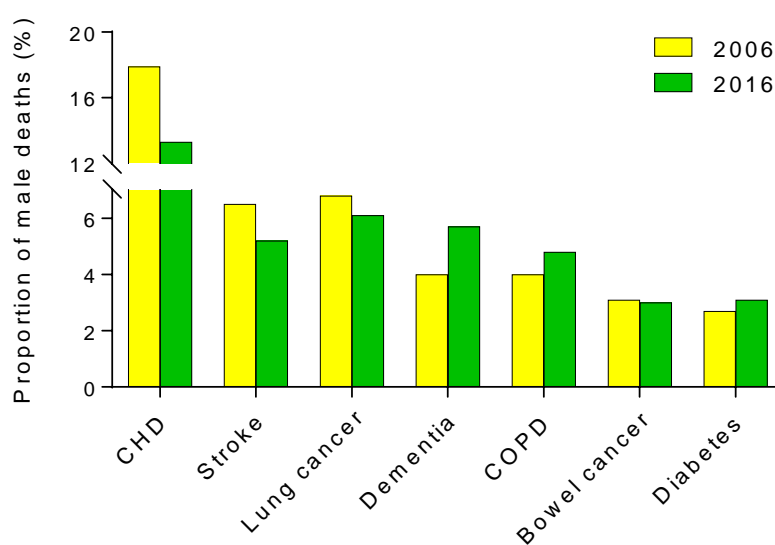
Chronic disease - overview

Key messages

- Seven conditions (coronary heart disease (CHD), cerebrovascular disease, Type 2 diabetes, bowel cancer, lung cancer, chronic obstructive pulmonary disease (COPD), and dementia) account for almost half of all adult male deaths⁴
- Among Indigenous and non-Indigenous males over 35 years of age, 85% of the mortality gap is due to chronic diseases²¹
- Having a profound disability increases the risk of cardiovascular disease and diabetes by 10 times the national average¹⁰

The National Male Health Policy 2010³ focussed on five key health areas responsible for high levels of fatal and non-fatal burden in Australian men. These included CHD, stroke, Type 2 diabetes, bowel cancer and lung cancer. In the current review, evidence relating to these five conditions was explored in addition to COPD and dementia. The rationale for the inclusion of these additional conditions is that: they represent leading causes of male death – dementia third and COPD fifth; and they represent chronic conditions where deaths in Australian males have increased in the past decade (**Figure 5**). Taken together, these seven conditions contribute to almost half of all adult male deaths.⁴

Figure 5: Trends in deaths from major chronic diseases in Australian males – 2006–2016^{f 4}



^f Note that data for dementia presented in Figure 5 are for 2010 (yellow bar) and 2016 (green bar)

Chronic disease – Cardiovascular disease and Type 2 diabetes

Coronary heart disease, cerebrovascular disease and Type 2 diabetes share common risk factors. Type 2 diabetes itself also represents a key risk factor for CHD and stroke:

- **Cardiovascular Disease (CVD):**
 - **Coronary Heart Disease (CHD)** – angina, blocked arteries and heart attacks – the most common form of cardiovascular disease
 - **Cerebrovascular Disease** – stroke – the second most common form of cardiovascular disease
- **Type 2 Diabetes** – also referred to as non-insulin dependent diabetes mellitus.

Box 6: Cardiovascular disease and Type 2 diabetes – a snapshot

From 2006 to 2016 there were noteworthy improvements in CVD mortality although the burden remains very high

- A decrease in male deaths is observed from 2006–2016 for CHD (26%) and stroke (20%), although these conditions remain the leading and fourth leading cause of death in Australian males, respectively. When overall burden is considered (fatal and non-fatal), CHD and stroke represent the highest and fourth leading cause of health burden in Australian males⁴

From 2006 to 2016 the burden from Type 2 diabetes has grown

- In the same time period, deaths from Type 2 diabetes rose by 15% with this condition ranked seventh in leading causes of death in Australian males and sixth in overall health burden.⁴ In 2014–15, almost 1 in 16 males over the age of 18 were diagnosed with, and 1 in 8 reported that they were living with Type 2 diabetes.¹⁰ In this same time period, almost 10% of hospitalisations in Australia were related to Type 2 diabetes²²

The burden of cardiovascular disease and Type 2 diabetes is higher in specific population groups

- Deaths and overall burden are higher in Australian **males** than females and impaired fasting glucose, an indicator of pre-diabetes, is twice as common in males²³
- The prevalence of CVD and Type 2 diabetes and associated burden increases with **age**²⁰
- CHD, stroke and Type 2 diabetes are estimated to contribute to more than 50% of the gap in life expectancy between **Aboriginal and Torres Strait Islander males** and non-Indigenous males in Australia.^{24; 25} This translates into significant differences such as death rates from Type 2 diabetes in Aboriginal and Torres Strait Islander males that are four-times higher than non-Indigenous males⁴
- The burden of these conditions differs by area of residence with higher rates recorded in males living in **rural or remote** areas (in comparison to major cities)⁴
- **Socioeconomic status** is a highly significant factor in CVD and diabetes with overall burden and deaths generally following a gradient with higher burden in Australian males experienced with higher levels of disadvantage^{10; 22}
- Profound **disability** increases the risk of CVD and Type 2 diabetes to ten times the national average¹⁰
- **Education level** is associated with risks of CVD and Type 2 diabetes with incidence five- and three-times higher respectively for those educated to Year 10 level or below compared to Year 12 level¹⁰

Box 6: Cardiovascular disease and type 2 Diabetes – a snapshot (continued)

- **Incarcerated males** have higher levels of cardiovascular risk factors than age-matched similarly disadvantaged males in the community. Incarcerated Aboriginal and Torres Strait Islander males have higher rates of cardiovascular risk factors than non-Indigenous males in prison populations in New South Wales and Queensland²⁶

Risk factors for cardiovascular disease and type 2 diabetes are largely modifiable

Behaviours: Insufficient physical activity; smoking

Disease-based or metabolic factors: Overweight or obesity; high cholesterol; hypertension

Non-modifiable factors: Other chronic diseases, including diabetes and COPD

Other factors: Depression; social isolation

Chronic disease – Respiratory disease

Two conditions are outlined in this section, both have smoking or exposure to second hand smoke as a leading cause:

- **Lung cancer** – non-small cell and small cell lung cancer usually present at an advanced stage with poor survival
- **COPD** – symptoms include shortness of breath, coughing and mucus build up in the lungs. COPD is strongly linked to other chronic diseases (CHD, stroke, lung cancer, dementia and diabetes).²⁷

Box 7: Respiratory disease – a snapshot

From 2006–2016, lung cancer deaths declined by 11% in males whilst COPD deaths increased by 20%

- Despite the decrease in deaths, lung cancer remains: the fifth most commonly diagnosed cancer; the second ranking cause of death; and the third leading cause of health burden in Australian males.^{4; 28} Survival rates from lung cancer are poor with 1-year and 2-year survival rates of just 40% and 14% respectively^{28; 29}
- COPD is the fifth highest cause of death and sixth leading cause of health burden in Australian males with more than 300,000 males estimated to be living with COPD^{10; 20}

The burden of respiratory diseases is higher in specific population groups

- Prevalence and the fatal and non-fatal burden of respiratory diseases are higher in Australian **males** than females^{27; 28; 29}
- Respiratory diseases increase with **age**. 2017 estimates indicate: 75% of lung cancers are diagnosed in males over 65 years; lung cancer rates double between males aged 45–49 to 50–54 years; rates double once more from 50–54 to 55–59 years.²⁸ COPD rates increase from 1.7% in males aged 40–54 years to over 24% in males aged over 75 years³⁰
- **Aboriginal and Torres Strait Islander males** are more than twice as likely to be diagnosed with lung cancer as non-Indigenous males, regardless of remoteness or age. Aboriginal and Torres Strait Islander males are 40% more likely to die from lung cancer than non-Indigenous males with this gap widening to more than 90% for those living in regional and remote Australia.³¹ Despite overall reductions in the death rate from lung cancer from 1998–2013, the incidence of lung cancer rose by 16% in Aboriginal and Torres Strait Islander males²⁸ and death rates are three-times higher than for non-Indigenous Australians²⁷
- The incidence of COPD was three times higher in areas with the highest levels of **socioeconomic disadvantage** in 2014/15¹⁰
- Rates of COPD for people with profound **disability** were 1.6-times higher than those with a restrictive health condition and 9-times higher than people without a disability¹⁰
- **Education level** is associated with COPD with the incidence reported as more than three-times higher for those educated to Year 10 level or below compared to Year 12 level¹⁰

Risk factors for lung cancer and COPD are largely modifiable

Behaviours: Smoking (current or ex-smokers); exposure to second hand smoke

Non-modifiable factors: Genetic predisposition

Other factors: Exposure to air pollution, chemicals, dusts and fumes (often workplace-associated)

Chronic disease – Bowel cancer

Bowel or colorectal cancer, develops from the inner lining of the bowel. It is usually preceded by polyps that become malignant if undetected and untreated. Screening, using the faecal occult blood test (iFOBT), is recommended for all Australians aged 50–74 years who do not have symptoms of bowel cancer. Colonoscopy is used to investigate positive screening results, to diagnose symptoms and as a tool for monitoring in people with a strong family history of bowel cancer.

Box 8: Bowel cancer – a snapshot

Bowel cancer trends are promising with reductions in deaths and improved 5-year survival over time despite steady incidence

- Bowel cancer is the second most common cancer diagnosed in Australian males with over 9,200 diagnoses estimated for 2018 and is ranked seventh in causes of death and 12th in causes of overall health burden^{18; 28}
- Mortality from bowel cancer declined by 56% from 1982 to 2017 with 5-year survival increasing to 68% in that timeframe²⁸

The burden of bowel cancer is higher in specific population groups

- **Males** are diagnosed at 1.4-times higher rates than females in Australia. Death rates are 1.2-times higher.^{20; 28} Males are also less likely to participate in bowel cancer screening than females (39% compared with 43% respectively)³²
- Bowel cancer diagnoses increase with **age** with 68% of males diagnosed when 65 years or older²⁸
- Bowel cancer is diagnosed at lower rates in Aboriginal and Torres Strait Islander males than non-Indigenous males. However, participation in bowel cancer screening is less than half the rate for non-Indigenous Australians and screening positivity rates are higher. **Of Aboriginal and Torres Strait Islander males** who screen positive, the median time to colonoscopy was 22 days longer than for non-Indigenous males³²
- There does not appear to be an association between demographic factors and stage at diagnosis of bowel cancer (age, sex, socioeconomic status, country of birth, language spoken at home);³³ however, similarly to Aboriginal and Torres Strait Islander males, there are longer median times observed between positive screening results and colonoscopy for: people living in **rural and remote** Australia and for those with the greatest level of **socioeconomic** disadvantage³²

Risk factors for bowel cancer are partly modifiable and screening can lead to earlier diagnosis and improved outcomes

Behaviours: High intake of processed meats; physical inactivity; smoking; alcohol consumption at high levels

Disease-based or metabolic factors: Excess body fat

Non-modifiable factors: Family history of bowel cancer

Other factors: Exposure to ionising radiation

Chronic disease – Dementia

Dementia is not a specific disease; rather, it is a group of conditions characterised by the gradual impairment of brain function. It commonly affects the ability to think, remember and reason, as well as affecting personality and impairing other core brain functions such as language and movement. The condition is degenerative and irreversible.³⁴

The most common types of dementia are Alzheimer’s disease, vascular dementia, dementia with Lewy bodies, and frontotemporal dementia.

Dementia does not feature in the 2010 National Male Health Policy, partly due to previous dementia coding practices. It has been included in this evidence review because the prevalence and impact of dementia on male health has increased over time, and is predicted to increase further.

Box 9: Dementia – a snapshot

Dementia has emerged as a considerable cause of fatal and non-fatal burden in Australian males

- Dementia was the third leading cause of death and tenth leading cause of health burden for males in 2016⁴
- The prevalence of dementia is expected to increase by 90% over the next 20 years, and by 2.75-times to 2056. This equates to over 760,000 and over 1.1 million Australians respectively projected to be living with dementia³⁵

The burden of dementia is higher in specific population groups

- Whilst the burden of dementia is high in males, it is less common and has a significantly lower burden in males than females in Australia (mainly due to females living for longer)⁴
- Dementia is a disease of **ageing** with 43% of people with dementia being over 85 years of age³⁶
- Reliable population-level data are not available, however studies have indicated that **Aboriginal and Torres Strait Islander** people have higher rates of dementia and an earlier age at onset than non-Indigenous people^{37; 38}
- Higher levels of **education** in early life reduce the risk of dementia³⁹

Risk factors for dementia

Behavioural: Physical inactivity; smoking; alcohol consumption at high levels

Disease-based or metabolic factors: Hypertension; obesity; atrial fibrillation; diabetes; CHD; stroke; chronic kidney disease

Non-modifiable factors: Increasing age; family history of dementia

Mental health and wellbeing

Key messages

- Around 1.5 million Australian males aged 18 years and over (17%) self-reported a mental or behavioural condition in 2014/15
- Almost 1 in 4 (23%) males aged 16–24 years have experienced symptoms of a mental disorder
- Death by suicide is more than three times more common in males than females
- Aboriginal and Torres Strait Islander males are at particularly high risk of suicide
- Males with mental ill-health display low levels of help-seeking behaviour and access to services

Mental health is a state of wellbeing in which an individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to contribute to their community.⁴⁰ While most Australians enjoy good mental health, a significant proportion of the population will experience mental ill-health at some time throughout their lives.

Box 10: Mental health and wellbeing – a snapshot

Mental health conditions are a major contributor to the non-fatal and fatal burden of disease in Australian males

- On average, one in eight males will have depression and one in five males will experience anxiety at some stage of their lives. In 2014/15, around 1.5 million males aged 18 years and over self-reported a mental health or behavioural condition^{10; 41}
- Mental ill-health and substance use disorders were ranked third in the burden of disease in Australian males in 2011 contributing 12% of total burden and 25% of non-fatal burden²⁰
- Suicide was the tenth most common cause of death in males in 2016, resulting in over 2,149 deaths^{g 13}

The burden of mental ill-health is higher in specific population groups

- **Males** are more than twice as likely to have substance use disorders and more than three-times more likely to commit suicide than females^{20; 42}
- **Young people** experience high rates of mental ill-health. In 2013–14, 16.5% of young males aged 4–17 years had experienced symptoms of a mental disorder in the previous 12 months.⁴³ In 2010, four in every 1,000 males aged 18–24 years had been diagnosed with a psychotic disorder⁴⁴
- Reported rates of depression are higher and suicide is the second leading cause of death in **Aboriginal and Torres Strait Islander males** with over 88% of suicides occurring in those aged 15–44 years. The suicide rate is 1.7-times higher than in non-Indigenous males and 2.4-times higher than in Aboriginal and Torres Strait Islander females⁴⁵

^g Information on suicide is included both in this section and also in the section on injuries (data on self-inflicted injuries and deaths is routinely included in data describing the profile of injuries in Australia). It is important to acknowledge that there is a body of thought that ‘situational distress’ may result in self-harm and suicide without the presence of a specific mental disorder.

Box 10: Mental health and wellbeing– a snapshot (continued)

- Higher rates of mental ill-health occur in people living in **rural or remote** areas (in comparison to major cities). Likewise, suicide rates increase with **remoteness**, with rates for males in rural Australia significantly higher than for females in rural Australia, and for males and females living in major cities^{45; 46}
- Rates of mental ill-health and substance use disorders and suicide follow a **socioeconomic** gradient with rates increasing for those at higher levels of disadvantage^{20; 45}
- Young people with **disabilities** have poorer mental health than their non-disabled peers⁴⁷
- In 2015, almost half of new male entrants to adult **prisons** reported having been told by a health professional that they had a mental illness, 25% reported they were currently taking mental health-related medication and 29% reported high or very high levels of psychological distress⁴⁸
- It is estimated that the **LGBTIQA+** community^h are four- to six-times more likely to suffer from major depressive episodes than the general population⁴⁹
- **Refugees and asylum seekers** are at greater risk of mental ill-health and suicidal behaviours than the general Australian population⁵⁰
- More than half (54%) of serving members of the **Australian Defence Force** reported anxiety, affective or alcohol use disorder at some stage in their lifetime compared with 49% in the general Australian community. Suicide rates for serving males were lower than the rates in the community, however, for ex-serving males aged 18–29 years, rates of suicide were 1.7-times higher^{4; 51}
- **Males who were never married** had a higher prevalence of mental ill-health than those in married or *de facto* relationships⁵²
- Almost 10% of **fathers in the postnatal period** reported symptomatic or clinical levels of psychological distress and over the early parenting years, fathers were 1.4-times more likely to experience psychological distress than the Australian male population. Depressed fathers exhibit poorer parenting behaviours, lower likelihood of child engagement, and increased likelihood of parenting stress and child neglect, than fathers without depression^{53; 54}
- Being **retired or unemployed** is associated with higher levels of psychological distress than being in paid employment for males aged 45–74 years, and unemployed males commit suicide at a rate that is 4.6-times higher than their employed counterparts^{55; 56}
- Experiences of **bullying** in young people are linked to mental disorders, substance use and increased risk of suicide.⁵⁷ The Young Minds Matter Survey found that 34% of young people aged 11–17 years had been bullied in the prior year⁴³

^h LGBTIQA+: Lesbian, gay, bisexual, transgender, intersex, queer, asexual, other

Box 10: Mental health and wellbeing– a snapshot (continued)

Help-seeking is impacted by how mental ill-health is perceived in society, and by the personal experiences of those with mental ill-health

- **Knowledge** of mental health conditions and their symptoms is higher in females than males⁴¹
- A **reluctance to speak with others** or a health professional was noted by 26% and 22% of young people aged 12–25 years, respectively. More than half of young people with an identified mental health issue in the past year reported embarrassment in relation to speaking to others and almost half worried about what other people would think⁵⁸
- These issues of **stigma** are more potentiated for those in rural communities, as are issues of access to services to respond⁵⁹
- Males are more likely than females to hold **negative views** towards people with depression, with many considering that people with severe depression should ‘pull themselves together’ (31% vs 20%) and ‘have themselves to blame’ (13% vs 5%) – this can contribute to perceptions of stigma and influence help-seeking⁴¹
- Despite the higher prevalence of substance abuse and suicide in males, the rates of mental health-related GP encounters are 1.4-times higher in females⁶⁰ and an estimated 72% of males **don’t seek help** for mental ill-health⁴²
- It is encouraging to note a three-fold increase in mental health care services received under Medicare for children and young adults between 2006/07 and 2011/12. This includes an increase from 1.1% to 5.5% of those aged 12–17 years and from 2.2% to 7.5% of those aged 18–24 years⁴²

Risk factors for mental ill-health

Behavioural: Alcohol and other substance abuse; low resilience/ability to cope with stressful situations and manage anxiety and difficult emotions

Non-modifiable factors: Family history of some mental health disorders

Other factors: Stressful life events: serious illness; death of a family member or close friend; unemployment; retirement; separation or divorce; becoming a father; being a victim of bullying; family dysfunction; experiences of trauma

Social isolation can be both a risk factor and a symptom of mental ill-health

Also, stigma relating to speaking about mental health concerns or seeking help (both self-stigma and related to societal and specific social norms); lack of access to services; low levels of help-seeking behaviour and access to services (young males; immigrants, refugees and asylum seekers)

Injuries

Key messages

- Injuries represent a significant level of non-fatal and fatal burden in Australian males
- The prevalence of injuries is higher for males than females, for Aboriginal and Torres Strait Islander males, for those living in rural and remote Australia and for those most socially disadvantaged
- Alcohol and other drugs contribute to the burden of injuries in Australian males, as does risk perception and risk-taking behaviours, particularly in young adult males.

Injuries comprise a range of types of accidental and intended harm from a range of causes with non-fatal and fatal consequences. This includes self-inflicted injuries and suicide, assault and homicide, poisoning, transport accidents (as a driver, passenger or pedestrian), thermal injuries such as burns, drowning and falls.

Box 11: Injuries – a snapshot

Injuries contribute a significant level of burden in Australian males primarily due to fatal burden

- Injuries resulted in almost 7,000 deaths in 2011/12 and 510,000 hospitalisations in 2015/16 in Australian males. They represented 12% of the overall health burden (as measured by DALYs) and were the fourth highest cause of burden overall in Australian males in 2011/12. Almost 80% of the burden from injuries is due to fatal burden^{4; 20; 45}
- Reviewing the top 20 causes of total burden in Australian males in 2011 reveals four injury types that contributed to over 203,000 healthy years of life lost: suicide and self-inflicted injuries (ranked 4); poisoning (ranked 16); falls (ranked 17); and road traffic accidents (ranked 20)²⁰
- Almost 1,000 males died in road accidents in 2016: 74% as a driver of a car or motorcycle; 13% as pedestrians; and 3% as pedal cyclists⁶¹
- In 2016 there were 168 work-related deaths with almost 90% due to vehicle accidents, being hit by moving objects and slips/falls. The estimated cost of work-related injuries and disease in 2012/13 in Australia was \$62 million with most of that cost borne by workers (77%)⁶²
- There are promising trends in some injury types observed over time: a reduction in serious claims and work-related fatalities from 2007 to 2016 by 29% and 49%, respectively; an over 50% reduction in road deaths in the past 30 years; a 38% decline in road deaths in road users aged 17–25 years in the decade to 2016; decreasing trends in hospitalisations due to assault, accidental poisoning, thermal causesⁱ and drowning^{61; 63; 64}

The prevalence of injuries is higher in specific population groups

- **Males** experienced 72% of the health burden related to injuries in 2011 (2.7-times higher than females). Death rates from injury were higher for males than females for every age group and almost 3-times higher than females for those aged 15–24 years. Work-related fatalities also occurred at a 9-times higher rate in Australian males^{20; 45; 62}

Box 11: Injuries – a snapshot (continued)

ⁱ Thermal causes of injury include: exposure to smoke, fire, flame, heat and hot substances

- **Across the life course**, injuries represent a significant cause of health burden from a number of injury types. Table 1 shows the level of burden and types of injuries contributing to that burden for males of different ages
- **Aboriginal and Torres Strait Islander males** are twice as likely to be hospitalised for injury or to die of injury as non-Indigenous males. When reviewing specific causes of injury-related hospitalisations, the largest gaps occur in: assault (8-times higher than non-Indigenous males); thermal causes (3-times higher); and intentional self-harm (3-times higher). For injury-related deaths, the largest gaps occur in: homicide (7-times higher than non-Indigenous males); thermal causes (6-times higher); accidental poisoning – other^l (5-times higher); and drowning (3-times higher)^{45; 63}
- Injuries and injury-related deaths follow a gradient for **area of residence**. **Males living in very remote areas of Australia** were twice as likely to be hospitalised for, or to die from injuries, than males living in major cities. For specific causes of injury hospitalisations, the largest gaps for males living in remote compared to urban areas were in: assault (14-times higher in remote areas than major cities); thermal causes (4-times higher); transport accidents (4-times higher); and exposure to animate mechanical forces^k (3-times higher). For injury-related deaths, the largest gaps were in: transport accidents (6-times higher in remote areas than major cities); accidental poisoning – other (5-times higher); homicide (3-times higher); suicide (2-times higher); accidental poisoning – pharmaceuticals (2-times higher); transport accidents (2-times higher); and drowning (2-times higher)^{45; 63}
- Injuries and injury-related deaths follow a **socioeconomic** gradient. Males living in the most disadvantaged areas of Australia are 1.3 times more likely to be hospitalised for and 1.2 times more likely to die from injuries than those with the lowest levels of disadvantage. The patterns are similar for males living in rural and remote Australia^{45; 63}
- **Occupations** that are commonly associated with work-related injuries and fatalities include: Machinery operators and drivers; labourers; managers; and community and personal service workers⁶²
- The **industries** contributed 69% of fatalities and 28% of work-related injury claims in 2016: agriculture, forestry and fishing; construction; and manufacturing⁶²

Risk factors for injuries

Behavioural: Alcohol and illicit drug use (linked to road traffic accidents; poisoning/overdose; self-inflicted injuries and suicide; violence and homicide); driving while unlicensed; travelling in a vehicle without a restraint; using a mobile phone whilst driving or as a pedestrian

Other factors:

Inter-relationship between job risks and life risks – job risks: working conditions; job stress; safety risks; exposure to hazardous substances; and life risks: health behaviours such as smoking; sedentary behaviour; poor diet and alcohol consumption

Lower risk perception and lower inhibition of potentially risky behaviour and impulsiveness in teenage and young adult males⁶⁵

^j Non-pharmaceutical poisoning: alcohol, solvents, gases, vapours, pesticides and chemicals

^k Exposure to animate mechanical forces include: unintentionally hit, crushed contacted or bitten by people and animals

Table 1: Injuries across the life course – total health burden and injury types^{20; 62}

Age range	Type of injury	Ranking (within causes of total burden)
15–24 years	Suicide and self-inflicted injuries Motor vehicle accidents	1 3
25–44 years	Suicide and self-inflicted injuries Accidental poisoning	1 4
45–64 years	Suicide and self-inflicted injuries	5
65–84 years	Injuries were not one of the top 10 causes of burden in this age group	
85–94 years	Falls	8
95 years and older	Falls	9

Male sexual and reproductive health

Key messages

- Reproductive health conditions are common among Australian males and represent a high economic and social cost
- Reproductive health conditions in men do not occur in isolation from other chronic disorders but are associated with or predispose to them
- Sexually transmitted infections (STIs) are prevalent among males in present day Australia and some are increasing
- All STIs are preventable and many are curable with simple treatments
- HIV, hepatitis B and C, chlamydia and syphilis are much more common in Aboriginal and Torres Strait Islander people than in the non-Indigenous population
- Males with reproductive and sexual health concerns, particularly Aboriginal and Torres Strait Islander Men, and men in rural and remote locations experience barriers to accessing services

A series of snapshots are provided in this section of key issues and conditions related to:

- The sexual and reproductive health of Australian males (prostate cancer, lower urinary tract symptoms (LUTS), testicular cancer, erectile dysfunction, male infertility, androgen deficiency, sexually transmitted infections (STIs))
- Blood-borne viruses (viral hepatitis).

Prostate cancer

The prostate is a small gland in the male reproductive system which surrounds the urethra and sits and the base of the bladder. The prostate secretes fluid that contributes to semen volume. Prostate cancer is diagnosed mainly in men over the age of 60 years and occurs when abnormal prostate cells divide leading to the growth of a tumour.

Box 12: Prostate cancer – a snapshot

Prostate cancer accounts for one quarter of cancer diagnoses in males and there are promising trends in incidence and survival over time

- There have been significant advances in the mechanisms for detection and treatment of prostate cancer in the past decade resulting in changes to incidence and mortality as well as to decreasing morbidity with less aggressive approaches to treatment now being standard practice
- Prostate cancer is the second most commonly diagnosed cancer in males with an estimated incidence of 16,665 cases in 2017^{28; 66}
- The incidence of prostate cancer rose in the 2000s primarily due to prostate specific antigen (PSA) testing. The incidence has trended downwards since 2010²⁸
- The five-year survival from prostate cancer is high (95% for 2009–13) and has also improved since 2010. Despite this, and due to the number of males affected, prostate cancer remains the sixth leading cause of death in Australian males²⁸

The prevalence and impact of prostate cancer varies among population groups

- Prostate cancer incidence increases with **age** with almost 80% of diagnoses in males aged older than 60 years^{28; 66}
- Prostate cancer incidence is 1.4-times lower in **Aboriginal and Torres Strait Islander** males than in non-indigenous males. Despite the lower incidence, the risk of death from prostate cancer is only 1.2-times lower in **Aboriginal and Torres Strait Islander** males than non-Indigenous people²⁸
- Prostate cancer mortality differs by **country of birth** with higher mortality seen in males born in Australia, New Zealand, and Western, Northern and Southern Europe, and lower in males born in Eastern Europe, the Middle East and Asia, consistent with international patterns⁶⁷
- The rates of diagnosis of prostate cancer are lower in males living in remote and very remote areas. Mortality rates were 1.3-times higher in males living in **outer regional areas** than those living in major cities²⁸
- Mortality rates from prostate cancer are highest among men who live in areas with the highest levels of **socioeconomic disadvantage**⁶⁸

Risk factors for prostate cancer

Disease-based or metabolic factors: Overweight and obesity

Non-modifiable factors: Increasing age; family history of prostate cancer; mutations in BRCA1 and BRCA2 genes⁶⁹

Other factors: Prolonged night or shift work⁷⁰

Lower urinary tract symptoms

Lower urinary tract symptoms (LUTS) include a range of symptoms related to the prostate, bladder and urethra. LUTS are often but not exclusively associated with benign prostate hyperplasia (BPH).

Box 12b: Lower urinary tract symptoms (LUTS) – a snapshot

LUTS are common and the symptoms are burdensome

- In 2003, 16% of males aged 40 years or older reported moderate to severe LUTS with the prevalence increasing with age to 29% for those aged 70 years or older⁷¹
- LUTS can significantly impact on quality of life, daily activity and general health⁷²
- A bidirectional relationship has been shown between depression and anxiety and the incidence of irritative LUTS⁷³
- There is increasing evidence of links between LUTS and other reproductive health conditions and there are common risk factors^{72; 74}
- BPH is the most common prostate disease. BPH represents a significant burden to quality of life and health care costs. Expenditure on BPH treatments is similar to prostate cancer^{72; 75}

Risk factors for LUTS

Disease-based or metabolic factors: Abdominal fat; depression; diabetes; obstructive sleep apnoea; HDL cholesterol; testosterone level; erectile dysfunction

Behavioural: Physical inactivity

Testicular cancer

Most testicular tumours are derived from germ cells (seminoma and non-seminoma germ cell testicular cancer). A cancer will usually appear as a painless lump in a testis. The majority of patients are diagnosed with stage I disease (pT1).

Box 12c: Testicular cancer – a snapshot

Testicular cancer is one of the most common cancers in young males with the highest survival rate of all cancers

- In males aged 20–39 years, testicular cancer is the second most common cancer diagnosis (second to skin cancer)^{28; 76}
- Survival is higher for testicular cancer than any other cancer with a 5-year survival rate of 98%^{28; 76}
- Given the high survival rate and young age at diagnosis and treatment, survivorship issues emerge in relation to morbidity from the experience of disease and its treatment. Related issues can include: androgen deficiency; decreased fertility; endocrine effects predisposing to metabolic syndrome; impacts on psychological wellbeing and quality of life^{77; 78}
- Fertility preservation via sperm or testicular tissue banking is possible for males having cancer treatments from mid puberty onwards.

Risk factors for testicular cancer

Disease-based or metabolic factors: History of undescended testicles; previous testicular cancer

Non-modifiable factors: Family history of testicular cancer

Erectile dysfunction

Sexual difficulties in males occur at all ages and are under-recognised due to their sensitive nature, despite their impact on quality of life and reported high levels of concern by men. Erectile dysfunction, defined as the persistent inability to achieve and/or maintain an erection sufficient for satisfactory sexual activity, is considered to have predominantly physical causes but it is also associated with psychological problems. It is also increasingly being recognised as a marker of future or underlying cardiovascular disease and links with other chronic diseases is an area of increasing research.⁷¹

Box 12d: Erectile dysfunction – a snapshot

Erectile dysfunction is common and increases with age

- Reliable population-level data are not available on erectile dysfunction but some large studies have been undertaken of self-reported rates by age
- In 2013/14, 11% of males aged 18–24 years reported they had trouble getting or keeping an erection, compared to 20% of males aged 45–55 years.⁷⁹ A study of 35 80-year-old males in South Australia reported a prevalence of 18% for moderate to severe and 35% for mild erectile dysfunction⁸⁰
- In a large NSW study of people aged 45 years and over, 25% of the male participants without a history of prostate cancer reported mild erectile dysfunction, 19% moderate and 17% complete erectile dysfunction⁸¹
- As erections require adequate blood flow to the penis and normal penile endothelial and nerve function as well as sexual arousal, erectile problems are more prevalent in men with cardiovascular, neuropathic and mental health conditions. Erectile dysfunction confers about 1.5-times increased risk for incident cardiovascular disease^{82; 83}
- Erectile dysfunction is strongly associated with depression or depressive symptoms in Australian males^{74; 79; 80; 81}
- Males with diabetes are at greater risk of erectile dysfunction and other sexual problems⁸⁴

Erectile dysfunction and other sexual problems are also common in Aboriginal and Torres Strait Islander males and in males from specific ethnic groups

- The only study on reproductive health in **Aboriginal and Torres Strait Islander** males reported moderate to severe erectile dysfunction report by 10% of males under the age of 35 years, increasing to 28% of men aged 55–74 years⁸⁵
- The Men in Australia Telephone Survey (MATeS) found that males **born in Middle-Eastern and Asian countries** reported lower rates of erectile dysfunction and males from Italy and Eastern Europe reported higher rates, than Australian-born males⁷¹

Risk factors for erectile dysfunction

Disease-based or metabolic factors: Hypertension; diabetes; insulin resistance; overweight and obesity; high cholesterol; depression or depressive symptoms

Behavioural: Smoking; physical inactivity

Non-modifiable factors: Increasing age

Other factors: Stress

Male infertility

Infertility is often defined as the inability to achieve a pregnancy after one year of regular, unprotected, sex. Despite ongoing research and advances in assisted reproductive technologies (ART) such as in vitro fertilisation (IVF) and intracytoplasmic sperm injection (ICSI), the underlying causes of male infertility are often unknown and specific treatment to restore natural fertility is unavailable. As a means to 'bypass' poor semen quality, ART is frequently employed, thereby placing the burden of treatment on the female partner and leaving the underlying cause of male infertility unknown. Importantly, almost half of all ART treatments relate solely or partly to a male factor.⁸⁶

Box 12e: Male infertility – a snapshot

Male infertility contributes to a significant burden for Australian couples seeking to have children

- Male infertility affects 5–7% of all males^{87; 88} and almost half of all infertile couples – as the sole problem or whereby both the male and female partner have fertility issues⁸⁹
- Male infertility (specifically sperm and semen quality) is a biomarker for overall health and is associated with: lower life expectancy;⁹⁰ androgen deficiency and testicular cancer risk⁸⁸
- An estimated 18% of men are not included in infertility investigations (US data).⁹¹
- Meta-analyses suggest that modern-day sperm counts in Western countries have decreased significantly in the past 50 years linked to the risk factors outlined below⁹²
- There is emerging data on the impact of pre-conception environmental exposures, including heavy drinking, smoking and obesity, on sperm DNA which is then inherited by the next generation. This speaks to the importance of pre-conception health checks for males^{93; 94}
- Male knowledge of fertility, its causes and treatment are poor and males have a lower likelihood of seeing a health professional to access fertility-related information⁹⁵

Risk factors for male infertility

Disease-based or metabolic factors: Diabetes; overweight and obesity; inadequate diet

Behavioural: Heavy alcohol consumption; smoking; illicit drug use; anabolic steroid use

Other factors: Occupational exposure to pesticides and heavy metals; environmental exposure to endocrine disruptors

Androgen deficiency

Androgens are a group of male sex hormones that include testosterone and other metabolites. Androgens are responsible for masculinising changes during foetal development and puberty, while in adulthood, androgens have wide ranging effects on reproductive function, mood and libido (sex drive) and on muscle, bone, metabolism and vascular health. Androgen deficiency is caused by a defect in testosterone production by the testes (primary hypogonadism) or a deficiency in hormone production from the hypothalamus or pituitary (secondary hypogonadism) leading to low testosterone production by the testes.⁹⁶

Box 12f: Androgen deficiency – a snapshot

Klinefelter's syndrome is the most common cause of primary androgen deficiency

- Klinefelter's syndrome is a genetic disorder in which males carry an extra X-chromosome (XXY). The symptoms include: undescended testes; delayed speech in babies and infants; behavioural and learning difficulties in childhood; poor pubertal progression; small testes and breast growth in adolescents; sperm production failure and infertility. Klinefelter's is also associated with an increased risk of metabolic syndrome and diabetes⁹⁷
- One in 450 males are estimated to be born with Klinefelter's syndrome with the majority of diagnoses occurring in males aged 25–39 years – long after therapeutic treatment could have begun. Around 50% of cases are estimated to remain undiagnosed representing around 10,000 Australian males who are deprived of the benefits of treatment⁹⁸
- Other less common causes of primary androgen deficiency include: other chromosomal disorders; undescended testes; cancer treatments (chemotherapy and radiotherapy); and testicular trauma⁹⁹

Secondary androgen deficiency is related to a series of other biological or disease factors^{88; 96; 99}

- Low testosterone levels are a 'biomarker' of health. Renal, metabolic (obesity, diabetes, hypertension, stroke) and inflammatory disease, cognitive decline, mental health disorders and frailty are associated with low testosterone. These men experience premature mortality^{96; 100}

Risk factors for androgen deficiency

Disease-based or metabolic factors: Overweight and obesity; diabetes; depression; elevated prolactin levels; iron overload; androgen deprivation therapy; hypothalamic or pituitary tumours; Kallmann's syndrome; obstructive sleep apnoea; physical inactivity

Behavioural: Use of opioids, glucocorticoid medications or anabolic steroids

Non-modifiable factors: Increasing maternal and paternal age

Sexually-transmitted infections and blood borne viruses

Sexually transmitted infections (STIs) and blood-borne viruses represent a substantial public health burden, with several types being more commonly diagnosed in males than females. Unsafe sex is noted as accounting for 0.4% of the total burden of disease and injury in Australia in 2011.²⁰

Knowledge of STI-related health consequences and transmission is improving in Australians, and rates of STI testing are relatively high, but higher in females than males.¹⁰¹ A recent study suggests many older Australians lack knowledge of STIs and safer sexual practices.¹⁰²

A series of snapshots are included below for STIs (Human Immunodeficiency Virus (HIV), chlamydia, gonorrhoea and syphilis) and for blood borne viruses (viral hepatitis – hepatitis B and C).

HIV

HIV is transmissible by sexual and blood contact as well as from mother to child. If untreated, HIV infection can progress to Acquired Immune Deficiency Syndrome (AIDS). With advancements in the treatment of HIV over time, the progression from HIV to AIDS has become so low that AIDS rates are no longer recorded in Australia. HIV and its management remains a significant health issue.¹⁰³

Box 13a: HIV – a snapshot

HIV is primarily diagnosed in males; however, there are promising overall trends in diagnoses and treatment

- In 2016, it was estimated that there were 23,230 males living with HIV in Australia in 2016, 11% of whom were thought to be unaware of their HIV status¹⁰³
- The HIV notification rate remained steady from 2012–2016. In 2016 there were 1,013 new HIV diagnoses in Australia: 920 males (91%) and 88 females (9%)¹⁰³
- The largest number of HIV notifications in 2016 was in the age group 20–29 years, with the median age for HIV diagnosis in males being age 34¹⁰³
- Initiatives to promote and improve access to testing have led to higher levels of testing among gay and bisexual men. Treatment coverage among people diagnosed with HIV has increased considerably. Treatment advances have led to 72% of all males living with HIV having a suppressed viral load in 2016, reducing their risk of onward transmission to zero¹⁰³

The prevalence of HIV differs across population groups

- The trend in HIV notifications among **Aboriginal and Torres Strait Islander people** is very different from that in non-Indigenous people. In 2016, the age-standardised HIV notification rate among Aboriginal and Torres Strait Islander people was 2.2-times higher than in non-Indigenous people. The rate of notifications among Aboriginal and Torres Strait Islander people also increased by 33% from 2012–2016 while notifications declined by 22% in the non-Indigenous population¹⁰³
- The prevalence of HIV is concentrated in **gay and bisexual males** with male-to-male sex continuing to be the major HIV risk exposure in Australia – of cases diagnosed in 2016 the following were reported: male-to-male sex for 70% of cases; heterosexual sex for 21% of cases; both male-to-male sex and injecting drug use for 5% of cases; and injecting drug use alone for 1% of cases¹⁰³
- Consistent condom use with casual partners among **gay and bisexual males** has been declining. In 2016, according to the Gay Community Periodic Surveys, 44% of gay and bisexual men who had casual partners in the past six months reported condomless anal intercourse with casual partners, an increase from 38% in 2012¹⁰³

Risk factors for HIV

Behavioural: Unsafe sex (without a condom); injecting drug use (needle sharing)

Chlamydia

Chlamydia is an STI caused by the bacterium *Chlamydia trachomatis* with infection causing no symptoms in about 80% of cases. In people with symptoms, the infection causes inflammation of the urethra which can lead to pain and penile discharge in males. Complications of chlamydia can be serious for females, including pelvic inflammatory disease, ectopic pregnancy and infertility. Chlamydia is curable by antibiotics.¹⁰³

Box 13b: Chlamydia - a snapshot

Chlamydia is the most frequently notified STI in Australia and incidence rates have increased in recent years

- Chlamydia was the most frequently notified STI in Australia in 2016 with almost 72,000 notifications including 32,415 (45%) in males¹⁰³
- Testing and diagnoses of chlamydia have increased in the past five years. However, the vast majority of infections in young people (15–29 years) remain undiagnosed and untreated, highlighting the need for testing to be routinely offered to sexually active adolescents and young adults¹⁰³

The prevalence of chlamydia differs across population groups

- Whilst males account for 45% of notifications of chlamydia, testing rates are relatively lower, with **females** in 2016 being tested at a rate 2.2-times higher than men¹⁰³
- Chlamydia is most common in **young people** aged 15–29 years; this group accounts for 75% of notifications¹⁰³
- Notifications of chlamydia in **Aboriginal and Torres Strait Islander people** in the Northern Territory, Queensland, South Australia and Western Australia were 2.8-times higher than in non-Indigenous people in 2016.¹⁰³ A study of people attending sexual health clinics around Australia showed that higher chlamydia positivity in Indigenous males was associated with younger age, being heterosexual and living in regional areas.¹⁰⁴

Risk factors for chlamydia

Behavioural: Unsafe sex (without a condom)

Gonorrhoea

Gonorrhoea is an STI caused by the bacterium *Neisseria gonorrhoeae*; infection causes no symptoms in about 80% of females and 50% of males. Symptoms are similar to those of chlamydia, as are the complications. Gonorrhoea can be cured with antibiotics.¹⁰³

Box 13c: Gonorrhoea - a snapshot

Gonorrhoea affects over 17,000 males each year and the incidence is rising substantially over time

- Gonorrhoea notification rates increased by 63% from 2012–2016, with increases in both males (72%) and females (43%) seen in this period¹⁰³

The prevalence of gonorrhoea differs across population groups

- In 2016, almost three-quarters of gonorrhoea notifications were in **males** (17,325 cases)¹⁰³
- Gonorrhoea is diagnosed primarily in **gay and bisexual males in urban settings**, and in **young heterosexual Aboriginal and Torres Strait Islander people in remote areas**¹⁰³
- The rate of notification of gonorrhoea in **Aboriginal and Torres Strait Islander people** was 6.9-times higher than in non-Indigenous people in 2016 (582 per 100,000 compared to 84 per 100,000). Encouragingly, there was a 17% decrease in the annual notification rates for gonorrhoea in Aboriginal and Torres Strait Islander people between 2012 and 2016¹⁰³
- Gonorrhoea is occurring at **younger ages in Aboriginal and Torres Strait Islander people** where 32% of notifications in 2016 were in people aged 15–19 years, compared with 7% in non-Indigenous people of the same age¹⁰³

Risk factors for gonorrhoea

Behavioural: Unsafe sex (without a condom)

Syphilis

Infectious syphilis is caused by the bacterium *Treponema pallidum* and is transmitted via sexual contact as well as from mother to child. Congenital syphilis occurs when the foetus is infected during pregnancy. Infectious syphilis is defined as infection of less than two years' duration. The main symptoms include a painless ulcer at the site of infection within the first few weeks of infection, followed by other symptoms (e.g. rash) a couple of months later. Often symptoms are not detected. In the absence of treatment, there will then be a period of several years without any symptoms, with a chance of a range of complications over decades that can involve the skin, bone, central nervous system and cardiovascular system. Infectious syphilis is fully curable with a single injection of long-acting penicillin.¹⁰³

Box 13d: Syphilis – a snapshot

Almost 90% of syphilis cases occur in males with increasing diagnoses over time

- In 2016, there were 2,945 new notifications of infectious syphilis in Australian males¹⁰³
- From 2012–2016, the notification rate for infectious syphilis increased 107% with increases found in both males (103%) and females (157%)¹⁰³

The prevalence of syphilis differs across population groups

- The notification rate for infectious syphilis was seven times higher in **males** than in females in 2016¹⁰³
- Syphilis infections were the highest in adults aged **20–39 years** – with the highest prevalence in the **25–29** year age group¹⁰³
- Since January 2011, an ongoing outbreak of new syphilis infections has affected **Aboriginal and Torres Strait Islander people** living in rural and remote areas of northern and central Australia. Around 1,950 cases have been associated with the infectious syphilis outbreak (as at 31 January 2018) of which around two-thirds occurred in people aged **15–29 years**¹⁰⁵
- Compared to non-Indigenous people, the rate of notification of infectious syphilis is 5.4-times higher in **Aboriginal and Torres Strait Islander people** in 2016¹⁰³
- This resurgence of infectious syphilis in young **Aboriginal and Torres Strait Islander people** in remote communities after years of declining rates, along with cases of congenital syphilis, emphasises the need to enhance culturally appropriate health promotion, testing and treatment strategies¹⁰³

Risk factors for syphilis

Behavioural: Unsafe sex (without a condom)

Hepatitis B

The hepatitis B virus is transmitted via blood and sexual contact, from mother to child at birth, and in institutional settings. Most healthy adults will not have any symptoms and are able to clear the virus without any problems. For those who are unable to clear the virus a chronic infection results, leading to chronic liver disease and raising the risk of death from cirrhosis of the liver and liver cancer. The hepatitis B vaccination is about 95% effective.^{103; 106}

Box 13f: Hepatitis B – a snapshot

There were an estimated 230,000 people living with chronic hepatitis B in Australia by the end of 2016

- Over 3,500 males were newly diagnosed with hepatitis B and an estimated 230,034 people were living with the disease in 2016⁴

The prevalence of hepatitis B differs across population groups

- **Males** comprised 54% of the newly diagnosed cases of hepatitis B in 2017⁴
- **People born in Southeast Asia and Northeast Asia and Aboriginal and Torres Strait Islanders** represent 3%, 4% and 3% of the Australian population respectively, however, they account for half of all people living with chronic hepatitis B¹⁰³
- In 2016, newly diagnosed hepatitis B cases occurred at a rate 1.4-times higher in **Aboriginal and Torres Strait Islander people** when compared with non-Indigenous people in Australia. Encouragingly, the hepatitis B notification rate in Aboriginal and Torres Strait Islander people decreased by 50% between 2012 and 2016¹⁰³

Risk factors for hepatitis B

Behavioural: Unsafe sex (without a condom); contact with infected blood; injecting drug use (sharing needles, syringes, spoons and tourniquets)

Hepatitis C

Hepatitis C is a viral infection transmitted by blood-to-blood contact. Most healthy adults will not have any symptoms and are able to clear the virus. For those who are unable to clear the virus, chronic infection occurs. The hepatitis C landscape in Australia changed in 2016 when the Pharmaceutical Benefits Scheme (PBS) made new hepatitis C treatments available. This has led to both increased notifications and increased numbers of people receiving treatments.

Box 13g: Hepatitis C – a snapshot

Rising rates of hepatitis C in recent years have been driven by the availability of new treatments on the Pharmaceutical Benefits Scheme (PBS)

- In 2016 there were almost 8,000 diagnoses of hepatitis C in males Australian males¹⁰³
- Hepatitis C notifications remained stable from 2012–2015, but increased by 12% in 2016. This pattern was found in males and females and is likely due to increased testing in the context of new hepatitis C treatments, rather than population-level increases¹⁰³

The prevalence of hepatitis C differs across population groups

- **Males** represented 67% of diagnoses of hepatitis C in 2016¹⁰³
- The hepatitis C notification rate in **Aboriginal and Torres Strait Islander people** in Northern Territory, Queensland, South Australia, Tasmania and Western Australia was 3.8-times higher than in non-Indigenous people in 2016 and increased from 2012–2016, while rates in the non-Indigenous population remained stable¹⁰³
- In **Aboriginal and Torres Strait Islander people** aged under 25 years, there was a 50% increase in the hepatitis C notification rate from 2012–2016¹⁰³
- The primary route of transmission of hepatitis C is by the sharing of injecting equipment. The prevalence of hepatitis C among **people who inject drugs attending needle and syringe programs** was 51% in 2016¹⁰³
- In 2015, one in three (31%) **prison entrants** tested positive to hepatitis C, 16-times higher than the general population aged 18–54 years estimated to be living with hepatitis C⁴

Risk factors for Hepatitis C

Behavioural: Contact with infected blood; injecting drug use (sharing needles, syringes, spoons and tourniquets)

Risk factors and health-seeking behaviours

The risk factors that were described for the conditions presented in the previous chapter are explored further here. They are analysed across condition/issue and their prevalence in Australian males is described as well as for specific population groups. Modifiable risk factors are emphasised as potential areas for focussed effort to reduce the health burden. Evidence relating to health literacy and health seeking behaviours are also described as important factors influencing the health of Australian males.

A range of behavioural factors have been identified for the conditions contributing to significant burden in Australian males. Many are risk factors for multiple conditions and represent important opportunities for prevention. Table 2 maps the behavioural risk factors identified in the evidence review for each condition/issue.

Table 2: Behavioural risk factors by condition

Condition	Smoking	High alcohol intake	Insufficient physical activity	Substance use	Unsafe sex	Sharing drug injecting equipment	Other
CVD	✓		✓				
Type 2 diabetes	✓		✓				
COPD and lung cancer	✓						
Bowel cancer	✓	✓	✓				High intake of processed meats
Dementia	✓	✓	✓				
Mental ill-health		✓		✓			Low resilience/capacity to cope with stressful life events/manage emotions
Injuries		✓		✓			Driving unlicensed; driving under the influence; using a mobile phone while driving or as a pedestrian; no seatbelt
Prostate cancer							
LUTS			✓				
Erectile dysfunction	✓		✓				
Male infertility	✓	✓	✓	✓*			*Illicit drugs/anabolic steroids
Androgen deficiency			✓	✓*			*Opioids, glucocorticoid medications, anabolic steroids
HIV					✓	✓	
STIs					✓		
Hepatitis B					✓	✓	
Hepatitis C						✓	

Disease-based or metabolic factors contributing to the burden of disease in Australian males are summarised in Table 3 for the conditions covered in this review (only those conditions where a factor was identified). Note that some of these factors are modifiable whilst others are not.

Table 3: Disease-based or metabolic factors by condition

Condition	Overweight /Obesity	Hypertension	High cholesterol	Diabetes	Depression and/or anxiety	Obstructive sleep apnoea	Other
CVD	✓	✓	✓				Diabetes
Type 2 diabetes	✓	✓	✓				COPD; Erectile dysfunction; Klinefelter's syndrome
Bowel cancer	✓						
Dementia	✓	✓					Atrial fibrillation; coronary heart disease; stroke; kidney disease
Prostate cancer	✓						
LUTS	✓		✓	✓	✓	✓	Obstructive sleep apnoea; testosterone level; erectile dysfunction
Testicular cancer							History of undescended testes; prior history of testicular cancer; male infertility
Erectile dysfunction	✓	✓	✓	✓	✓		Insulin resistance; CVD; neuropathic conditions
Male infertility	✓			✓			Undescended testes at birth; Klinefelter's syndrome; exposure to cancer treatments; heat; testicular trauma and infections; sperm autoantibodies; congenital defects; hormone deficiencies; erectile dysfunction; retrograde ejaculation
Androgen deficiency	✓			✓	✓	✓	Elevated prolactin; iron overload; androgen deprivation therapy; hypothalamic or pituitary tumours; Kallmann's syndrome; male infertility

Increasing age was noted as a risk factor for: dementia; prostate cancer and erectile dysfunction. Specific genetic predisposition or family history was also noted in: COPD; lung cancer; bowel cancer; dementia; mental ill-health; prostate cancer; and testicular cancer.

Other risk factors that don't fit into the categories above were noted as follows:

- Social isolation (risk factor for CVD, Type 2 diabetes and mental ill-health)
- Exposure to air pollution, chemicals, dust and fumes, primarily occurring in the workplace (risk factors for COPD)
- Exposure to ionising radiation (risk factor for bowel cancer)
- Exposure to stressful life events (serious illness; death of a loved one; unemployment; retirement; separation or divorce; becoming a father; family dysfunction; trauma) and experiences of bullying (risk factors for mental ill-health)
- Work-related stress – work conditions; stress; safety risks; exposure to hazardous substances (risk factor for injuries)
- Prolonged night or shift work (risk factor for prostate cancer)
- Occupational exposure to pesticides and heavy metals (risk factor for male infertility)
- Environmental exposure to endocrine inhibitors (risk factor for male infertility)
- Increased maternal and paternal age (risk factor for androgen deficiency).

Prevalence of key risk factors in Australian males

An assessment of the risk factors that contribute to ill-health and mortality in Australian males offer insight into areas for intervention that can improve health outcomes. Trends over time for some risk factors suggest that more needs to be done to have a real impact on male health, while in other areas there have been improvements.

The risk factors that are amenable to change (modifiable) are associated with the lifestyles of Australian males. Physical activity, diet, maintenance of a healthy weight, smoking, drinking alcohol, and substance use are all areas where health interventions can have an impact. This includes through population-level interventions (systemic) and those aimed at individual behaviours and circumstances.

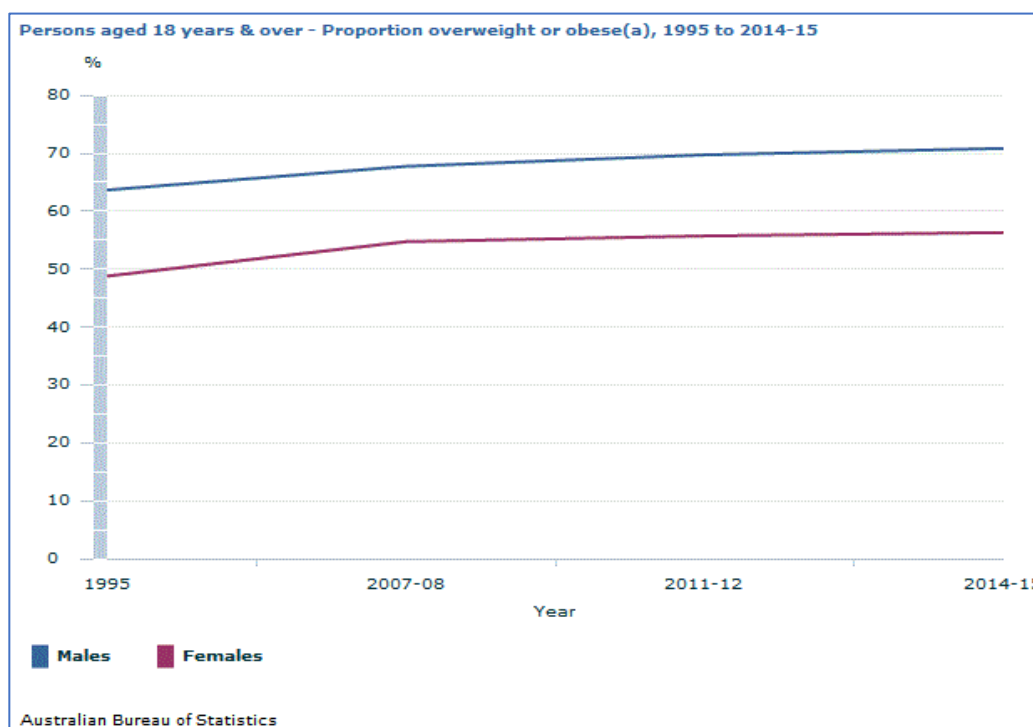
For various reasons, both biological and social, young males are much more likely to engage in **risky behaviours** than females and these contribute to poorer health status, injuries and accidents. These behaviours include violence (both as perpetrators and victims), alcohol and other drug abuse, and tobacco smoking.

Biological and genetic factors are also important contributors to health outcomes but are not as obviously amenable to change. The importance of knowing family history should not be underestimated as this can help males understand their risk of certain diseases and conditions and take appropriate preventive action. Prevalence data are described below for key lifestyle and modifiable risk factors.

Overweight and obesity

The proportion of adult males who are overweight or obese has increased over time and males are 20% more likely to be overweight or obese than females at all ages (**Figure 6**).¹⁰

Figure 6: Proportion of adults overweight and obese from 1995 to 2014/15, by sex¹⁰



- In 2014–15, 71% of adult males were overweight or obese: 42% overweight and 28% obese¹⁰
- Overweight increases across age-groups: 44% of 20–24-year-old males were overweight or obese compared to 82% of males aged 55–64 years¹⁰

- Twenty-eight per cent of boys aged 5–17 years were overweight or obese (similar to females (26%)¹⁰
- A comparison between measured and perceived weight in Australian adults showed that men were almost twice as likely as women to underestimate their weight status (34.0% vs 17.7%, respectively). Underestimation in men was associated with low education levels and being on a diet¹⁰⁷
- More than half (58.8%) of all men aged 18 years and over had a waist circumference that put them at an increased risk of developing chronic diseases; two in three (65.4%) women had an increased risk¹⁰
- The AusDiab study reported that between the ages of 25–64 years, males were almost twice as likely as females to have metabolic syndrome^{l, 108}

Intake of fruit and vegetables

- In 2014/15, 44% of males aged 18 and over met the fruit intake guidelines compared to 55% of females; only 4% of males met the vegetable intake guidelines compared to 10% of females¹⁰
- In general, older people were more likely to meet the fruit and vegetable intake guidelines than younger people.

Physical activity^m

- In 2014/15, 49% of men aged 18–64 exercised sufficiently (compared to 51% of women); rates were highest among men aged 25–34 (56%) and lowest among men aged 45–54 (43%)¹⁰
- Only 27% of men (23% of women) aged 65 and over were sufficiently active (ABS, 2015).¹⁰

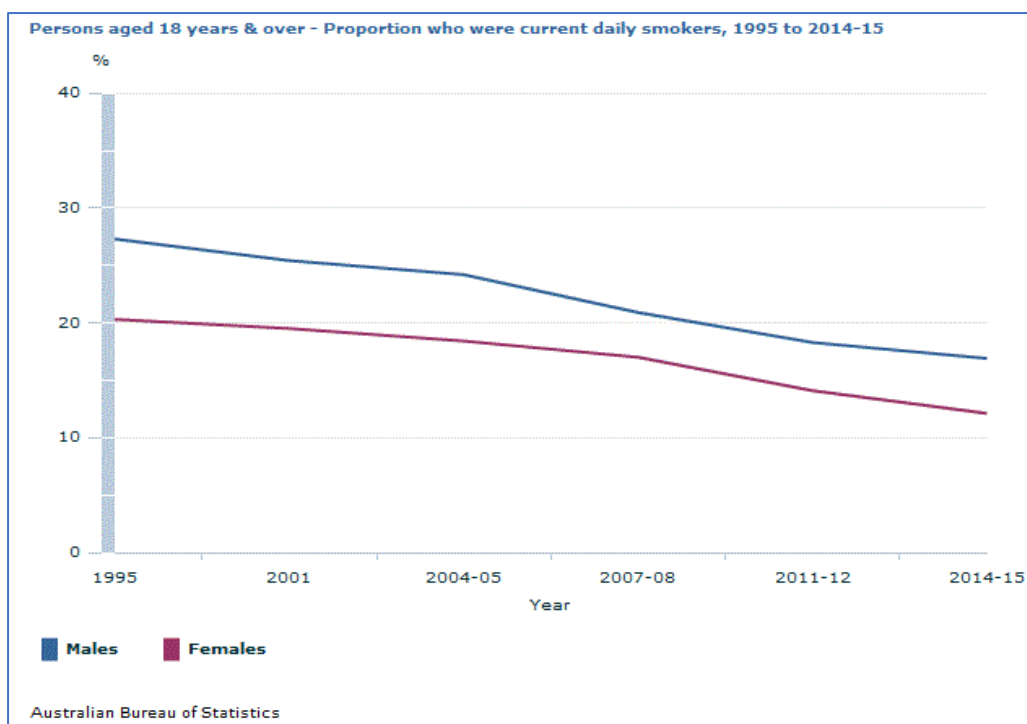
Tobacco smoking

- Smoking rates have declined significantly for both males and females since 1995 (**Figure 7**) although rates are still higher in males than females
- In 2014–15, 17% of adult males and 12% of adult females smoked daily; 4% of boys aged 15–17 years smoked daily¹⁰
- In 2014–15, 19.4% of younger males (aged 18–44) smoked daily, compared with 14.6% of older males (aged 45 or over)¹⁰
- Higher smoking rates are seen in some specific population groups: males living in rural areas compared to those in major cities (1.4-times higher); **Aboriginal and Torres Strait Islander** males, compared to non-Indigenous (two-times higher); males living in the **Northern Territory** compared to the national average (1.75-times higher); **gay and bisexual** males compared to heterosexual males (almost two-times higher).^{4; 109}

^l Metabolic syndrome comprises a range of co-morbidities including obesity, pre-diabetes, elevated cholesterol and triglycerides, and increased blood pressure

^m Sufficient activity for 18–64 year olds is defined as: completing at least 150 minutes of physical activity across 5 or more sessions each week. For males aged 65 and over: completing at least 30 minutes of exercise on most days each week (reported as 5 or more days)

Figure 7: Proportion of adults who were current daily smokers, 1995 to 2014–15, by sex¹⁰



Risky alcohol consumption

- In 2014/15, 57% of males aged 18 and over exceeded the single occasion risky drinking threshold (more than 4 standard drinks in one session) at least once in the past year compared to 32% of females¹⁰
- In 2014/15, 26% of adult males exceeded the lifetime risk guideline (drinking more than two standard drinks per day on average), almost three times the rate for adult females (9%), but slightly lower than in 2011/12 (29%)¹⁰
- The rates of lifetime and single occasion risky drinking vary by age-group: 19% of males aged 18–24 years exceeded the lifetime risk guidelines compared to 31% of males aged 55–64 years. The proportion of males engaging in single occasion risky drinking was higher in younger compared to older age-groups.⁶

Unsafe sex

- Unsafe sex accounted for 0.4% of the total burden of disease and injury in Australia in 2011.²⁰
- Knowledge of STI-related health consequences and transmission is improving in Australians, and rates of STI testing are relatively high, but higher in women than in men.¹⁰¹ A recent study suggests many older Australians' lack knowledge of STIs and safer sexual practices.¹⁰²

Illicit drug use

- The 2016 National Drug Strategy Household Survey report¹¹⁰ reported that the proportion of people who have ever used an illicit drug in their lifetime has increased over recent years but the proportion reporting recent use (last 12 months) has not changed much since the previous survey
- Males are generally more likely to use illicit drugs than females¹¹⁰
- In 2016, 18% of Australian males aged 14 years and over had used an illicit drug in the previous 12 months¹¹⁰
- The pattern of illicit substance use differs by age groups: 32% of men aged 20–29 had recently used illicit drugs, compared with 8% of men aged 60 or over.⁶

Health literacy, access and help-seeking in Australian males

Health literacy is the knowledge and skills needed to understand and use information relating to health issues such as drugs and alcohol, disease prevention and treatment, safety and accident prevention, first aid, emergencies and staying healthy. Lower levels of health literacy are associated with lower levels of preventive health behaviour and poorer health outcomes.

Levels of health literacy were last measured in the Adult Literacy and Life Skills Survey in 2006¹¹¹ and another survey is planned following the National Health Survey 2017/18.

- In 2006, only 43% of males and 48% of females aged 15–44 years achieved a health literacy score considered to be at least the minimum level required to function in the modern world¹¹¹
- Mental health awareness, measured in surveys by *beyondblue*, is lower for males than females. However, it appears that awareness of mental health problems is improving over time for both males and females.⁴¹

Access to health care and help-seeking: males generally access health care less than females for a variety of reasons, including health system access issues and differing help-seeking behaviours.

The AIHW⁴ has highlighted that there are currently gaps in national primary health-care data. The available data, including Medicare data and self-reported data from the National Health Survey, give a broad picture of current primary health care for males.

- In 2016/17, males received an average of 14 Medicare services per person compared to 18 for females.¹¹² This was higher than in 2010/11 for both sexes (12 for males, 17 for females)
- In 2016/17, males aged 75–84 years received an average of 43 Medicare services (41 for females) and in those aged under 45 years, less than 10 services per person (less than 18 for females)¹¹²
- In 2014–15, 82% of males reported seeing a GP in the previous 12 months compared to 89% of females¹¹³
- Men over the age of 50 years reporting prostate cancer testing increased from 48.4% to 58.2% from 2010/11 to 2014/15; bowel cancer testing increased from 33.6% to 54.8%¹¹⁴
- Cost barrier: In 2016/17, of those who needed to see a GP in the last 12 months, females were more likely to delay seeing or not see a GP due to cost (5%) than males (3%).¹¹⁵

The Ten to Men Australian Longitudinal Study on Male Health showed that in 2013/14:⁷⁹

- Eighty-one per cent of males aged 18–55 years reported seeing a GP in the previous 12 months, similar to the National Health Survey reported above;¹¹⁴ 89% saw at least one health-care provider in the previous 12 months
- There was a trend towards increasing odds for visiting a GP in the last 12 months with increasing age. In 2014/15, 71% of males aged 15–24 years reported consulting a GP in the previous 12 months, rising to 96% of males aged 65 years and over¹¹⁴
- Eight per cent of men indicated they were unable to access health care when they needed it in the previous 12 months.

Health equity across population groups of Australian males

Specific population sub-groups in Australia emerge strongly from this evidence review as being at greater risk of disease and injury and resultant premature mortality. The many gaps between the health status of males across population sub-groups provide important areas for consideration where targeted interventions may assist in closing the gap.

Table 4 maps, for each condition/issue considered in this review, the population sub-groups where data were identified indicating a higher health burden than in the general population. Note that the gaps do not necessarily reflect the lack of an association but may reflect a lack of specific data captured or reported for that population group.

Table 4: Population sub-groups with increased risk of key conditions

	Aboriginal and Torres Strait Islanders	Socio-economic disadvantage	Rural and remote areas of residence	Low levels of education	Males living with disability	LGBTIQ+	Incarcerated males
CVD	✓	✓	✓	✓	✓		✓
Type 2 diabetes	✓	✓	✓	✓	✓		✓
COPD	✓	✓		✓	✓		
Lung cancer	✓	✓		✓	✓		
Dementia	✓			✓			✓
Mental ill-health	✓	✓	✓		✓	✓	
Injuries	✓	✓	✓				
Prostate cancer		✓	✓				
HIV	✓					✓	
Chlamydia	✓						
Gonorrhoea	✓					✓	
Syphilis	✓						
STIs	✓						
Hepatitis B	✓						
Hepatitis C	✓						✓

In addition to those outlined in Table 4, the following other associations were identified:

- Risk of mental ill-health in: refugees and asylum seekers; in males who were never married; new fathers; retired and unemployed males; Australian Defence Force serving and past members
- Risk of injuries linked to specific occupations (machinery operators and drivers; labourers; managers; community and personal services) and industries (agriculture; forestry and fishing; construction and manufacturing)
- Risk of Hepatitis B linked to country of birth.

Some specific statistics relating to Aboriginal and Torres Strait Islander males and males living in rural and remote Australia are further outlined below.

Aboriginal and Torres Strait Islander males

Figure 8 shows the top ten causes of overall burden of disease (as measured by DALYs) for Aboriginal and Torres Strait Islander males with Aboriginal and Torres Strait Islander female data provided for those conditions as a comparator. Figure 9 shows fatal burden (as measured by YLL).

Figure 8: Total burden of disease in Aboriginal and Torres Strait Islander males (compared to females) in 2011²⁰

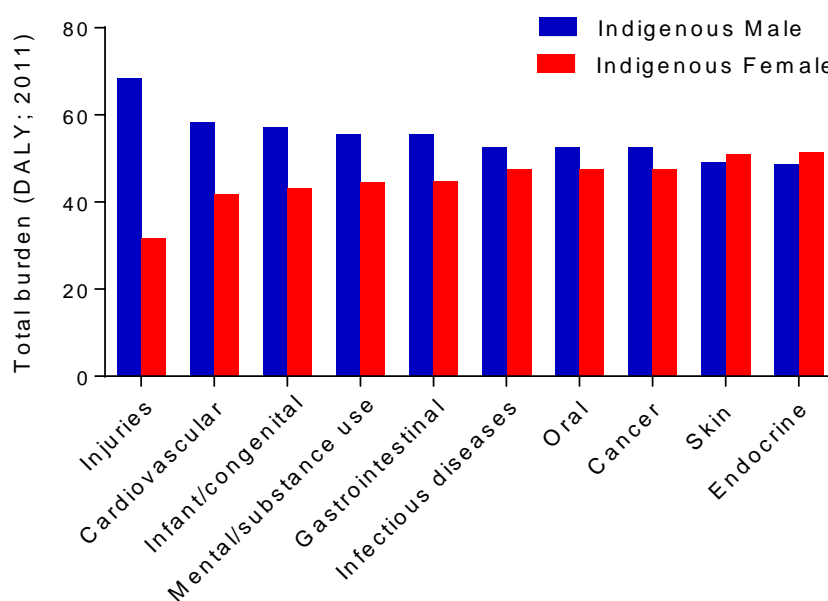
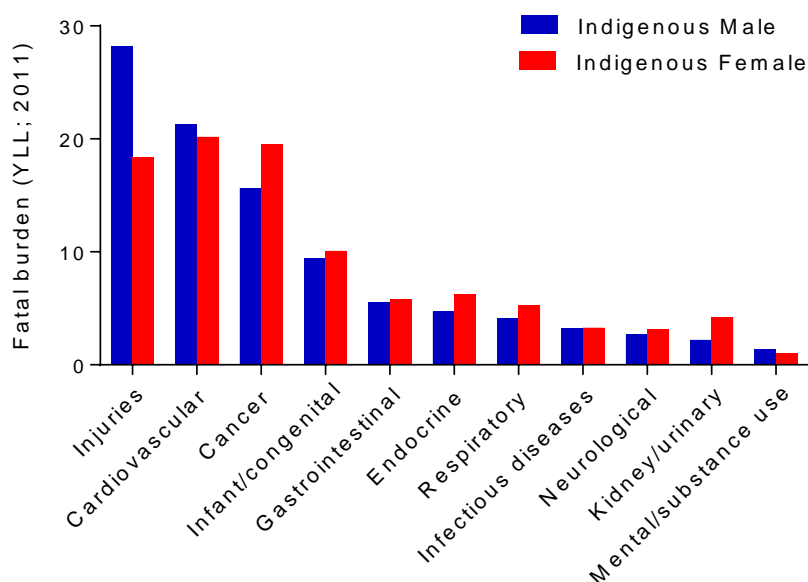


Figure 9: Years of life lost for Aboriginal and Torres Strait Islander males (compared to females) in 2011²⁰

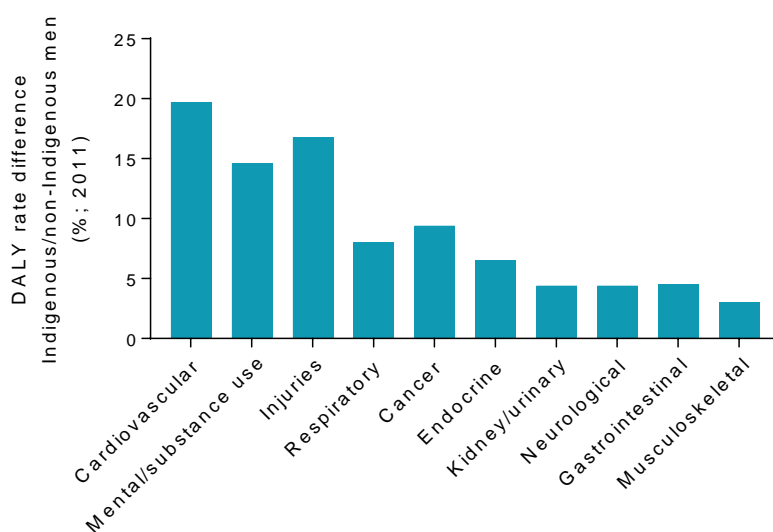


Life expectancy for Aboriginal and Torres Strait Islander males has, for many years, been significantly lower than for non-Indigenous males, although the gap has narrowed slightly.

- In 2005–2007, life expectancy for Indigenous males was 67.2 years, compared to 78.7 years for non-Indigenous males (11.5 years gap)¹¹
- In 2010–2012, life expectancy had increased for all males but the gap was still 10.6 years lower for Aboriginal and Torres Strait Islander males compared to non-Indigenous males (69.1 and 79.7 years respectively)⁴
- In 2011–2015, Aboriginal and Torres Strait Islander males had a 3-times higher likelihood of premature mortality than non-Indigenous males¹¹⁶
- In 2012–2013, it was estimated that Indigenous males were 40% more likely to be obese than non-Indigenous males²⁴
- In 2012–2013, more Aboriginal and Torres Strait Islander people aged 18 years and over living in non-remote areas were insufficiently active compared with non-Indigenous Australians of the same age living in the same areas (64% compared with 56%)⁴
- In 2014/15 44% of Aboriginal and Torres Strait Islander males smoked daily, compared to 17% of non-Indigenous males, after adjusting for differences in age.⁶

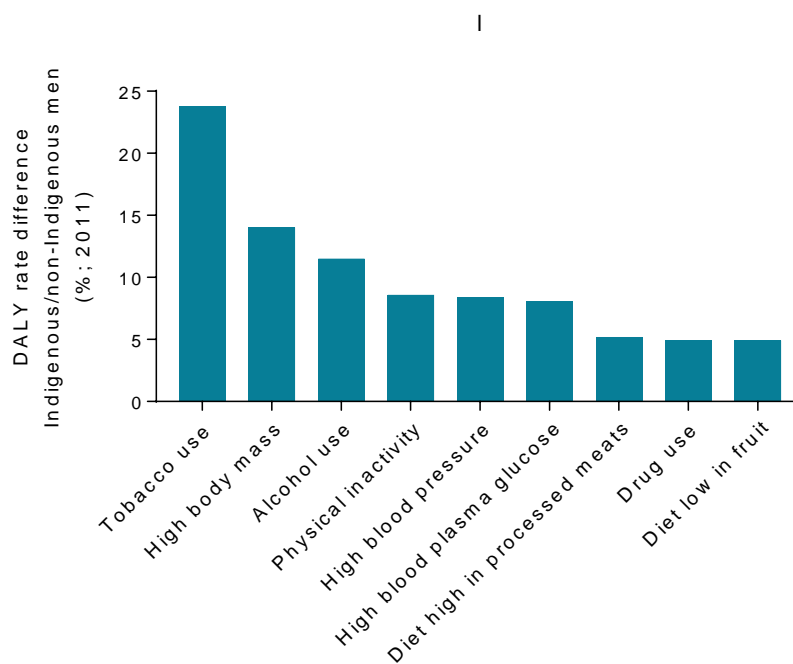
Figure 10 shows the percentage contribution of the leading disease groups to the gap in total disease burden between Aboriginal and Torres Strait Islander males and non-Indigenous males in Australia.

Figure 10: Percentage contribution of leading disease groups to the gap in total disease burden (DALY) between Aboriginal and Torres Strait Islander and non-Indigenous males²¹



Finally, Figure 11 shows the leading risk factors contributing to the gap in attributable burden of disease (as measured by DALYs) for Aboriginal and Torres Strait Islander males compared with non-Indigenous males in Australia.

Figure 11: Percentage contribution of leading risk factors to the gap in total disease burden (DALY) between Aboriginal and Torres Strait Islander and non-Indigenous males²¹



Males living in rural and remote Australia

The 2011 Burden of Disease Study²⁰ reported that people in major cities experienced the least burden of disease per population while those in very remote areas experienced the highest burden; fatal burden makes up a higher proportion of the total burden of disease in very remote areas compared to major cities.

Many health indicators show a trend across level of remoteness including mortality rates, potentially avoidable deaths, and hospitalisations:⁴

- **Life expectancy:** In 2004–2006, life expectancy was 80 years for males in the major cities but only 72 years in very remote areas.¹¹⁷ When only non-Indigenous males were considered the gap was smaller, with males in very remote areas having a life expectancy of almost 78 years
- **Potentially avoidable premature deaths:** In 2015, 61% of premature deaths in very remote areas were potentially avoidable compared to 50% in major cities⁶
- **Hospitalisations:** Males in outer regional areas were least likely to be hospitalised in 2009/10 while those in very remote areas had most hospitalisations¹¹⁸
- **GP visits:** The Ten to Men study reported a significant inverse relationship across remoteness areas with a trend towards increasing odds for visiting a GP in the last 12 months as level of remoteness decreased⁷⁹
- **Health Literacy:** In 2006, males living in inner regional and outer regional/remote areas were 22% less likely than men in major cities to possess an adequate level of health literacy¹¹⁷
- **Overweight and obesity:** In 2014/15, 75% of males living in inner regional areas were overweight or obese, compared with 69% of males living in major cities⁶
- **Physical activity:** In 2014/15, 60% of adults aged 18–64 years living in outer regional and remote areas of Australia were insufficiently active compared with 50% in major cities⁴
- **Tobacco smoking:** In 2014/15, 25% of men living in outer regional and remote areas smoked daily, compared with 15.5% of males living in major cities⁶
- Rates of daily smoking have decreased across all remoteness areas over the past 10–15 years; however, the smoking rate for outer regional and remote areas is still much higher than inner regional areas or major cities.

Health across the life course of Australian males

To ensure equity in health outcomes and health care access across the life course, interventions targeting specific health issues for different age-groups are required. When the conditions considered in this review are viewed through the lens of age, the following pattern emerges:

- Conditions more likely to affect adult males earlier in life (18 to 39 years): mental ill health (including suicide); injuries; HIV; chlamydia; gonorrhoea; syphilis; Hepatitis B and C; testicular cancer
- Conditions more likely to affect males later in life (65 years and older): CVD; Type 2 diabetes; COPD; lung cancer; bowel cancer; dementia; prostate cancer.

The major causes of burden of disease change across the life course are summarised below.⁴

Young males, birth to 24 years

- There were more males than females in this age-group in 2017 (105 males to 100 females)¹¹⁹
- Fifty-seven per cent of the Aboriginal and Torres Strait Islander male population was aged 0–24 years at the 2011 census⁵⁷
- **Birth to five years** of age: birth complications and congenital conditions are the leading cause of total burden of disease⁴
- **Five to fourteen years** of age: Asthma and anxiety disorders were the leading two causes of burden in males⁴
- **Fifteen to twenty-four years** of age: Suicide and self-inflicted injuries and alcohol use disorders were the two leading causes of burden in males⁴
- Over half of all chlamydia notifications in males occur in the 15–24 years age-group.⁵⁷

Males 25–74 years (working age)

- Suicide and self-inflicted injuries continue to be the leading cause of total burden of disease (and fatal burden) in males 25–44 years of age, followed by back problems and alcohol use disorders⁴
- Coronary heart disease, lung cancer and musculoskeletal disorders are the leading causes of burden in males aged 45–64 years⁴
- Coronary heart disease, lung cancer and COPD were the leading causes of burden in men aged 65–74 years⁴
- Reproductive health problems are experienced by one-third of men aged 40 years or over⁷¹
- In 2011, 68% of all syphilis notifications were in males aged 25 years and older¹²⁰

Males 75 years and older

- Coronary heart disease, dementia and falls are the leading causes of total burden of disease in this age-group.⁴

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