



Australian Government  
Cancer Australia

# Report to the Nation

Lung Cancer 2011

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## Report to the Nation – Lung Cancer 2011

This report provides a summary of national statistics on lung cancer in Australia from the Australian Institute of Health and Welfare & Cancer Australia report *Lung Cancer in Australia: an overview*.<sup>1</sup> The most current national statistics on incidence, mortality and survival for invasive lung cancer in men and women are derived from data up to 2007.\*

### About Cancer Australia

Cancer Australia was established by the Australian Government in 2006 to provide national leadership in cancer control to improve outcomes for Australians affected by cancer, and their families and carers.

Cancer Australia works to reduce the impact of cancer and improve the wellbeing of those diagnosed by ensuring that evidence informs cancer prevention, screening, diagnosis, treatment and supportive care.

With funding provided by the Australian Government over four years, 2009-2013, Cancer Australia is undertaking a range of initiatives in lung cancer to:

- build the evidence base to support clinical best practice
- increase support and guidance for health professionals
- improve data and reporting for lung cancer.

### Lung cancer: did you know?

- Around 6000 men and 3800 women were diagnosed with lung cancer in Australia in 2007.
- Lung cancer was the leading cause of cancer deaths in both men and women in 2007.
- Lung cancer accounts for around one in five deaths from cancer.
- While incidence and mortality rates have decreased for men, they have increased for women over the past 26 years.
- Survival has increased over the last 26 years, but remains very low; only 13 out of 100 people with lung cancer survive five years beyond their diagnosis.
- Tobacco smoking is the largest single cause of lung cancer; about 90% of lung cancer in males and 65% in females is estimated to be a result of tobacco smoking.<sup>2</sup>

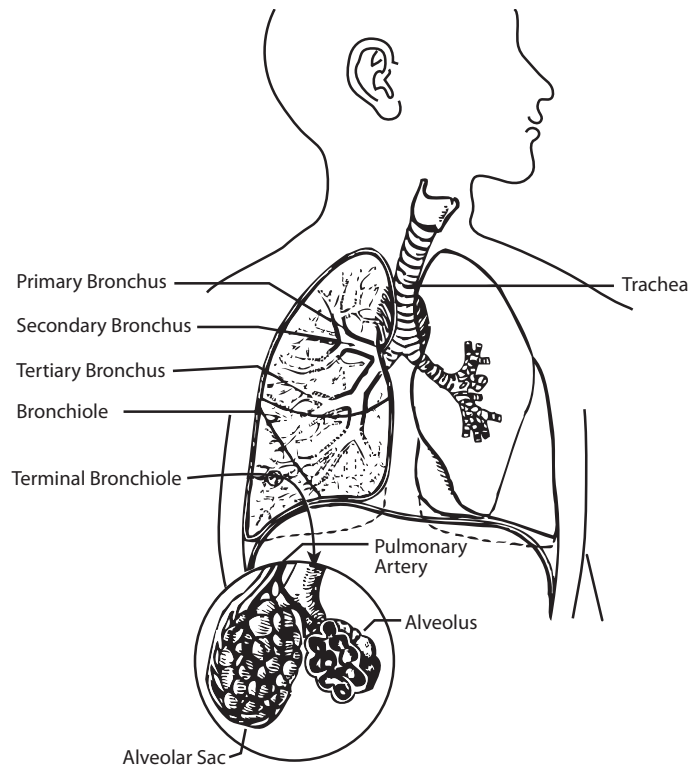
\* All data including the data presented in graphs are from the Australian Institute of Health and Welfare and Cancer Australia report *Lung Cancer in Australia: an overview*,<sup>1</sup> unless otherwise specified.

## What is lung cancer?

Lung cancer occurs when cells in the tissue of one or both lungs grow abnormally. The abnormal cells form growths called cancers. These cancers can originate anywhere in the lungs including the trachea, bronchi, bronchioles and alveoli.

There are several types of lung cancer, each beginning in a different type of cell in the lung.

Small cell carcinoma (around 12% of lung cancer) usually arises from epithelial cells that line the surface of the centrally located bronchi. Non-small cell carcinoma (over 60% of lung cancer) consists of a different group of cancers that tend to grow and spread more slowly than small cell carcinoma. It mainly affects cells lining the bronchi and smaller airways. Other types account for around 25% of lung cancer.



Adapted from National Cancer Institute 2011

## Risk factors

Having certain risk factors increases the chance of developing lung cancer, but does not mean an individual will definitely develop cancer. Some of the risk factors for lung cancer are beyond individual control but there are some factors which can be modified. Some key risk factors for lung cancer include:

### Lifestyle factors

#### Tobacco smoking

The largest single cause of lung cancer is tobacco smoking; about 90% of lung cancer in males and 65% of lung cancer in females is estimated to be a result of tobacco smoking.<sup>2</sup>

## **Environmental factors**

### **Passive smoking**

Exposure to tobacco smoke, or the chemicals in tobacco smoke, without actually smoking is referred to as passive smoking. Research studies have shown that passive smoking can cause lung cancer.<sup>3</sup>

### **Radon exposure**

Radon is a naturally occurring radioactive gas released from the normal decay of uranium rocks and soil. While exposure to radon gas is a risk factor for lung cancer,<sup>4</sup> at low levels it is not dangerous.

### **Occupational exposure**

Inhalation of a range of industrial and chemical carcinogens including asbestos, radiation, diesel exhaust fumes and certain metals associated with specific occupations and industries can be a risk factor for lung cancer.<sup>3</sup>

### **Air pollution**

Outdoor pollution occurs when the air contains gases, dust or fumes in amounts which are considered harmful to the health and comfort of humans and animals. Outdoor air pollution may increase the risk of lung cancer.<sup>5</sup> Indoor air pollution may arise from incoming outdoor air or from household products, combustion from heating and cooking, tobacco smoke, building materials and soil gases. Indoor air pollutants which may affect lung cancer risk include asbestos and second-hand smoke.<sup>6</sup>

## **Biomedical factors**

### **Family history of lung cancer**

People with first degree relatives with lung cancer (parents or siblings) are at increased risk; the risk is higher for people with more than one first degree relative who has developed lung cancer.<sup>7</sup>

### **Previous lung diseases**

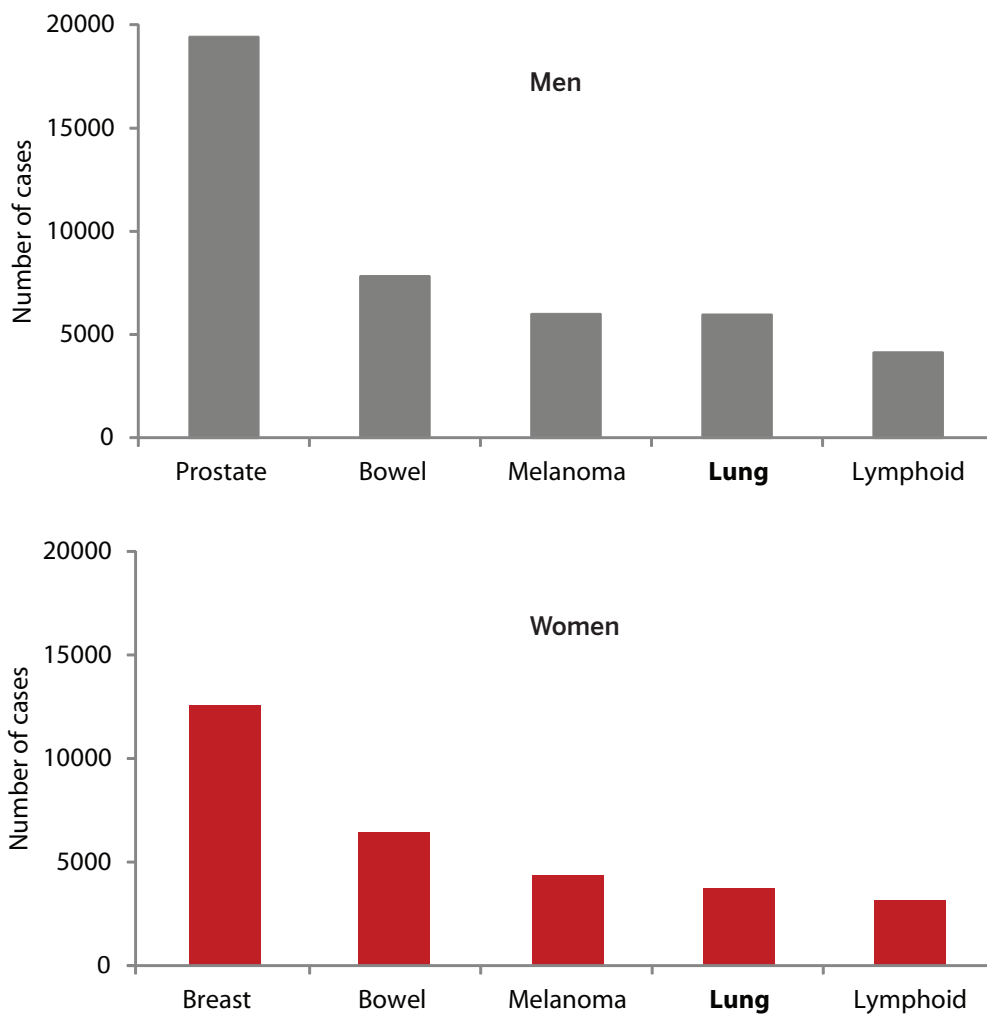
Diseases such as lung fibrosis, chronic bronchitis, emphysema and pulmonary tuberculosis may be associated with an increased risk of lung cancer.<sup>3</sup>

While some of the common risk factors are presented above, Cancer Australia is currently undertaking a systematic review of the risk factors associated with lung cancer. This review will provide health professionals and the community with the best available evidence on risk factors.

## Incidence

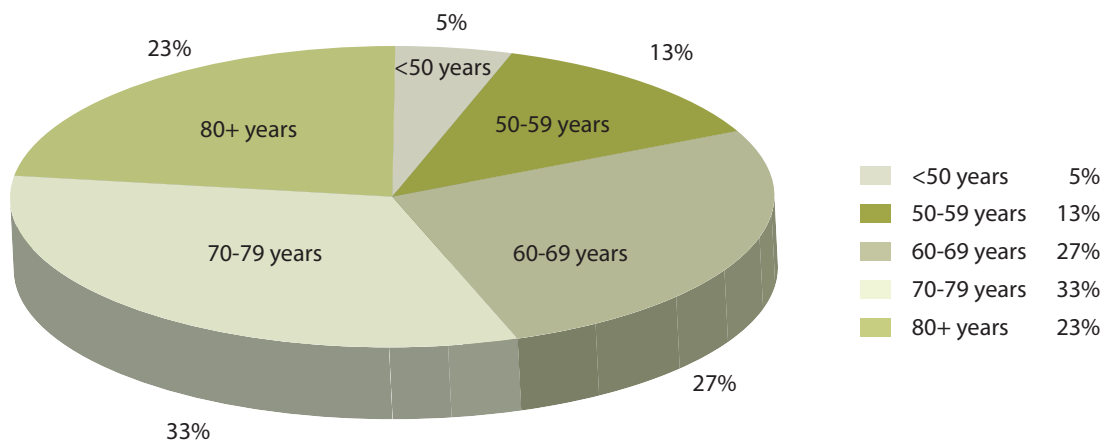
- Lung cancer was the fourth most common cancer in both men and women in Australia, with a total of 9703 lung cancers diagnosed in 2007.
- The incidence rate was almost twice as high for men (58 cases per 100,000) than women (31 cases per 100,000) in 2007.
- On average, 16 men and 10 women were diagnosed with lung cancer each day in 2007.
- Over the past 26 years (1982-2007) incidence rates have decreased by 32% in men but increased by 72% in women.
- In 2007, the risk of being diagnosed with lung cancer by the age of 85 years was 1 in 12 for men and 1 in 23 for women.
- The mean age at lung cancer diagnosis is 71 years for men and 70 years for women.

### Most commonly diagnosed cancers in Australia, 2007



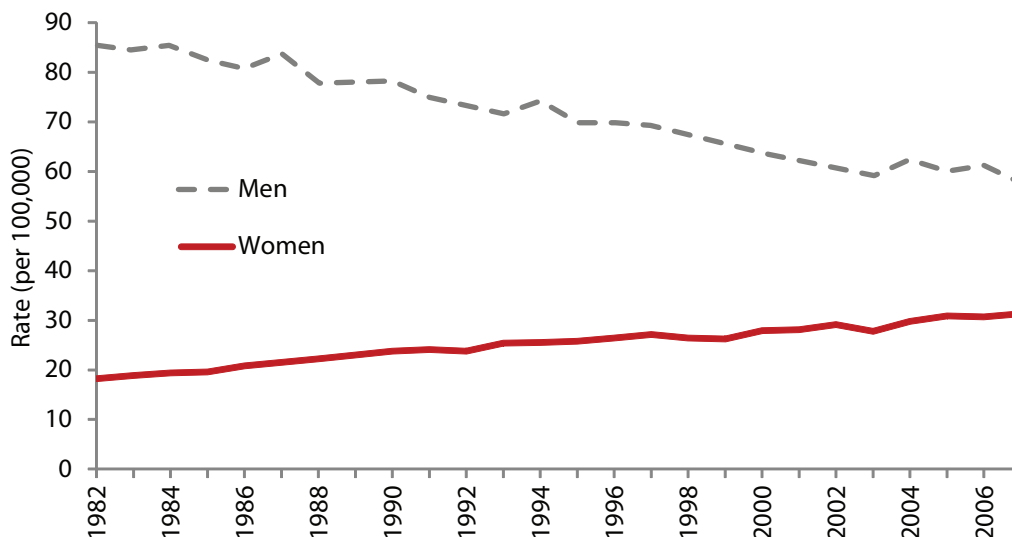
The incidence of lung cancer is strongly related to age. In 2007 over 80% of new lung cancers were diagnosed in people aged 60 years and older. Only 5% of all lung cancers were diagnosed in people under the age of 50 years.

### Age at diagnosis of lung cancer in Australia, 2007



Between 1982 and 2007, the incidence rate of lung cancer *decreased* by 32% in men (from 85 to 58 cases per 100,000) but *increased* by 72% in women (from 18 to 31 cases per 100,000). The rate of smoking in men began to decline in the middle of the 20th century while the prevalence of smoking in women peaked much later. These different patterns of tobacco smoking over time are likely to have contributed to the differences in lung cancer incidence rates between men and women.

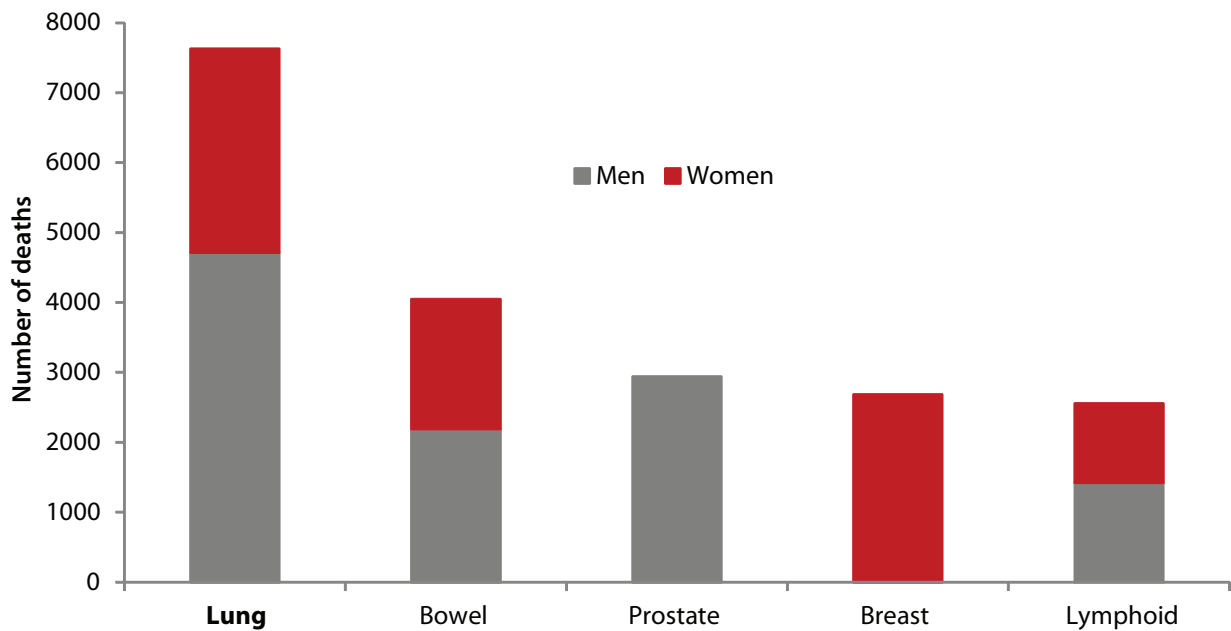
### Incidence of lung cancer, Australia, 1982-2007



## Mortality

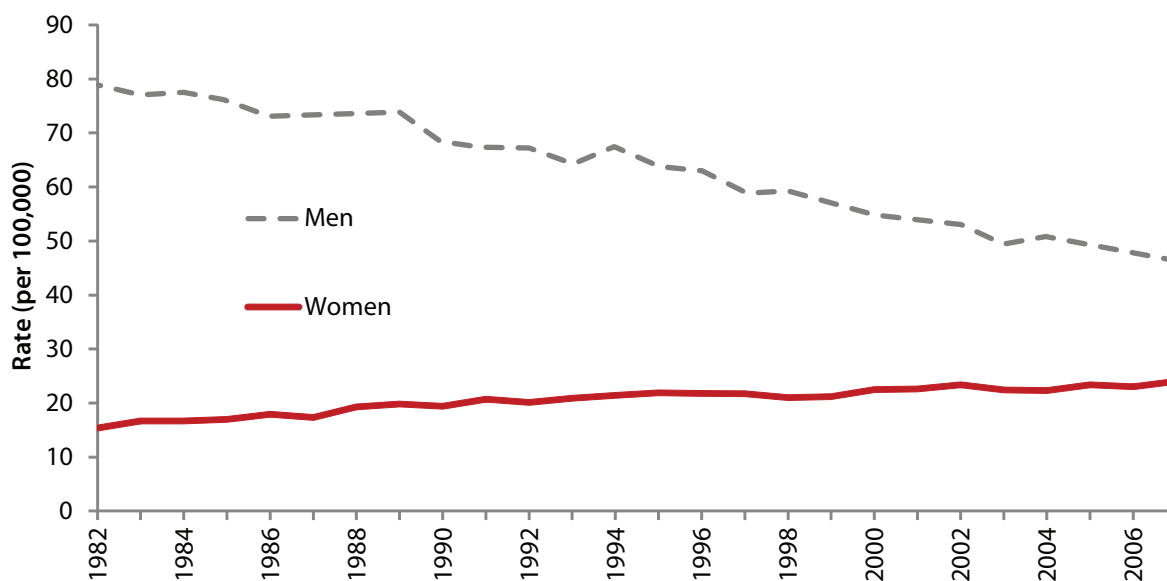
- Lung cancer was the leading cause of cancer deaths in both men and women in Australia in 2007.
- On average, 13 men and eight women die from lung cancer every day in Australia (with a total of 7626 deaths from lung cancer in 2007).
- The mortality rate was almost twice as high for men (46 deaths per 100,000) than women (24 deaths per 100,000) in 2007.
- Over the past 26 years (1982-2007) mortality rates have decreased in men but increased in women.
- Lung cancer accounts for 1 in every 14 deaths in men and 1 in every 25 deaths in women from any cause.<sup>8</sup>

Most common causes of death from cancer, Australia, 2007



Similar to the trend seen with incidence rates, between 1982 and 2007 the mortality rates from lung cancer for men *decreased* by 41% (from 79 to 46 deaths per 100,000), while the mortality rates for women *increased* by 56% (from 15 to 24 deaths per 100,000).

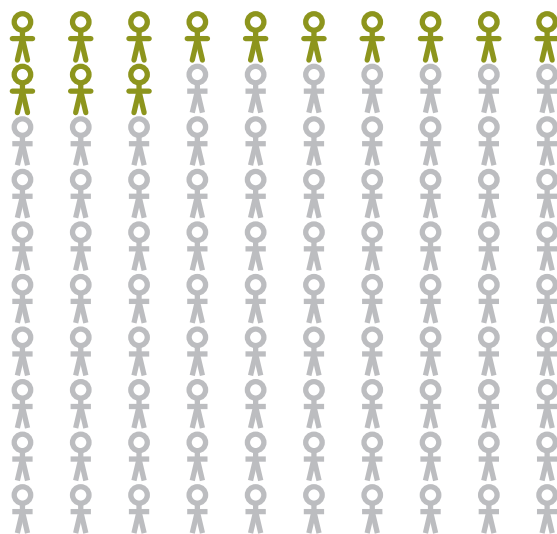
### Mortality from lung cancer, Australia, 1982-2007



## Survival

*Relative survival* compares the survival of a group of people diagnosed with cancer to the expected survival of similarly aged people in the general population. Survival rates provide information on the likelihood that a person will still be alive at a specified point in time (such as five years) following a diagnosis of cancer.

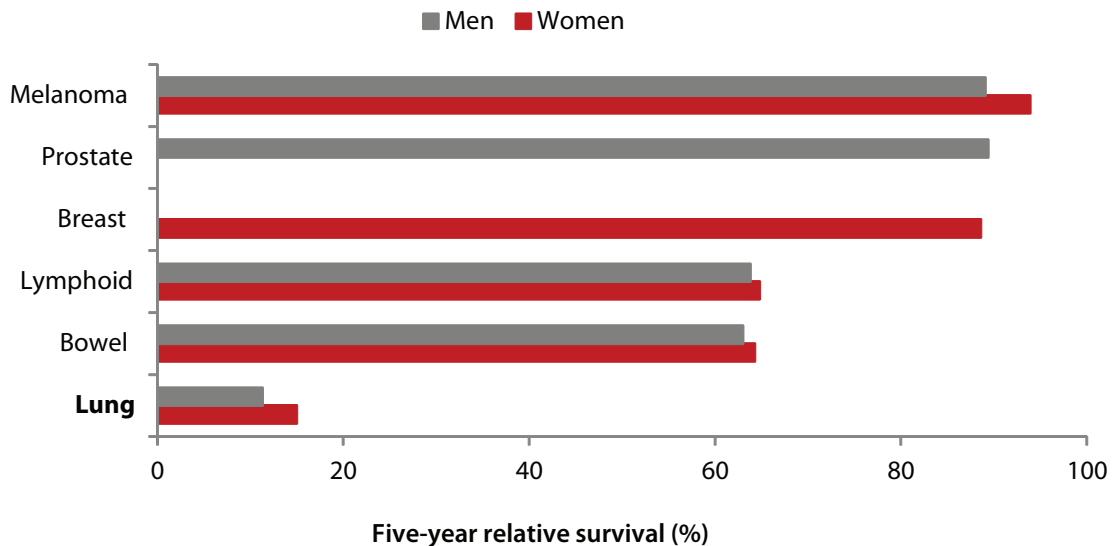
### Five-year relative survival for lung cancer, Australia, 2000-2007



- Only 13 out of 100 individuals with lung cancer survive five years beyond their diagnosis.
- Five-year *relative survival* was higher in women (15%) than in men (11%) in 2000-2007.
- From 1982–1987 to 2000–2007 in Australia, five-year *relative survival* increased from 8% to 11% for men diagnosed with lung cancer and from 10% to 15% for women.

The survival rates for those diagnosed with lung cancer are considerably lower than survival rates for other common cancers.

### Survival for most commonly diagnosed cancers, Australia, 2000-2007



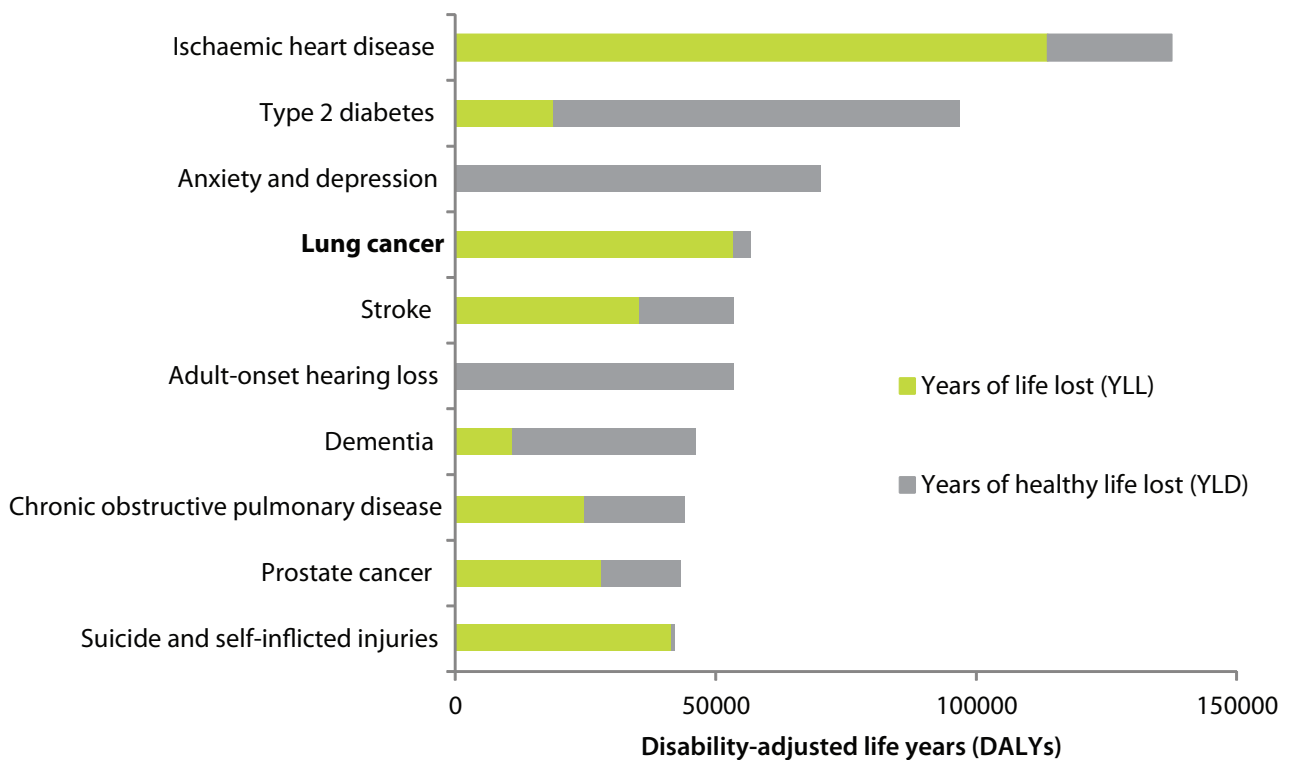
## Burden of disease

Burden of disease indicates the impact of disease and is measured in disability-adjusted life years (DALYs). The DALY combines information about people who die prematurely (the number of years of life lost (YLL) due to disease) *and* the number of years of healthy life lost due to disease, disability or injury (YLD).

For lung cancer the vast majority (94% for men and 93% for women) of the burden of disease is due to premature death.

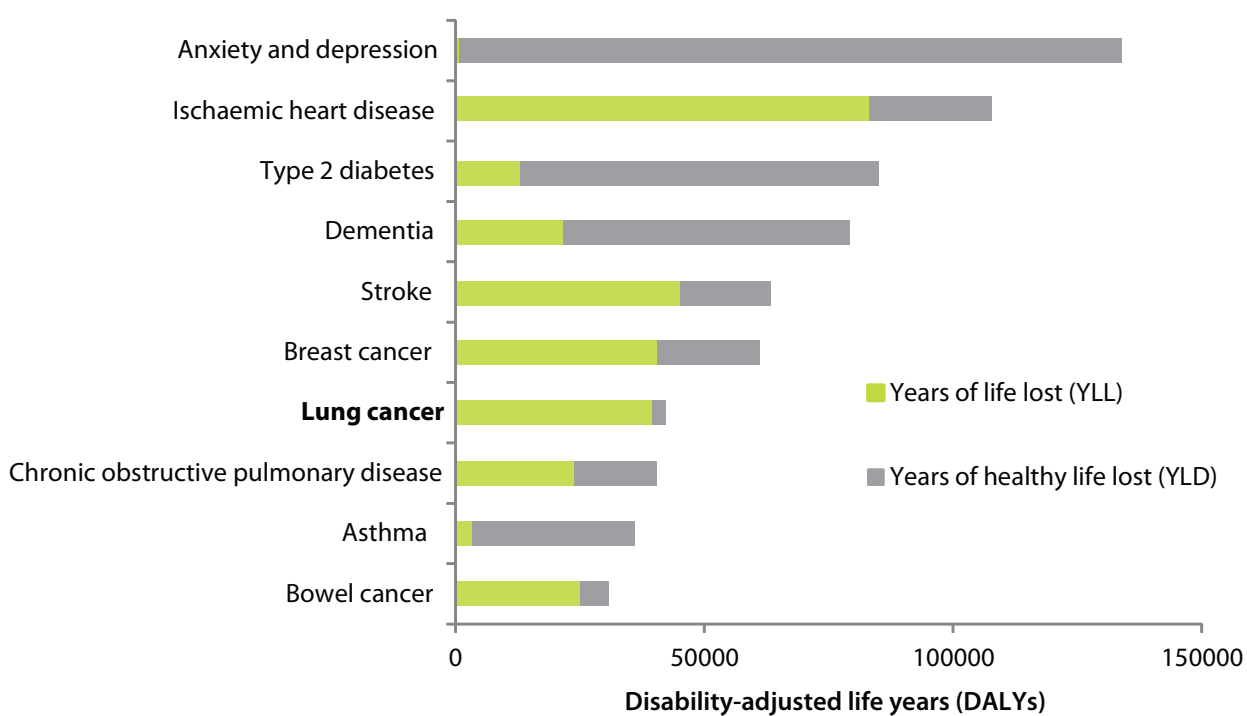
In men lung cancer is expected to be the leading cause of the burden of disease due to cancer (20% of the burden due to cancer) and the fourth leading cause of the burden of disease for men from all causes (4% of the total burden) in 2011.

### Estimated leading causes of burden of disease in men, Australia, 2011



In women, lung cancer is expected to be the second leading cause of the burden of disease due to cancer (17% of the burden due to cancer), only exceeded by breast cancer, and the seventh leading cause of the burden of disease for women from all causes (3% of the total burden) in 2011.

### Estimated leading causes of burden of disease in women, Australia, 2011



## Differences across groups

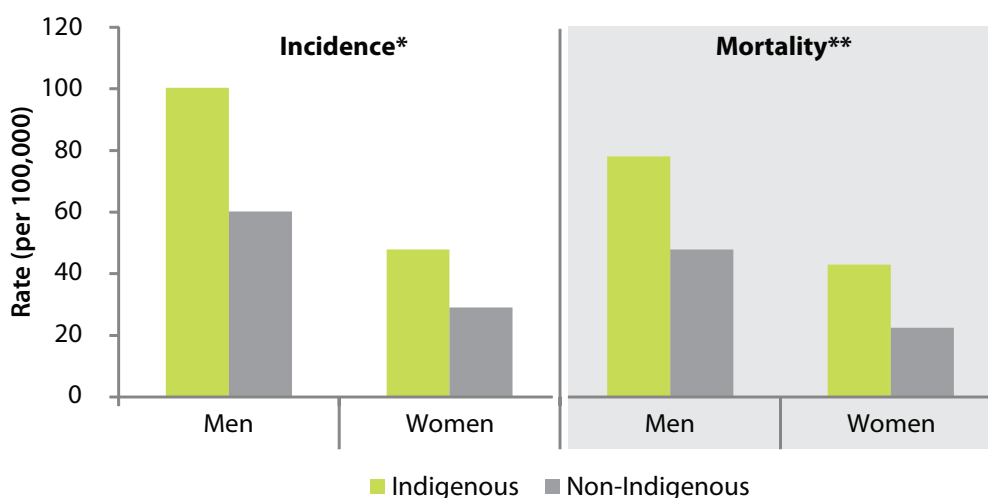
Observed differences in lung cancer incidence, mortality and survival across groups may result from a number of factors including variations in population characteristics, prevalence of risk factors (such as smoking) and availability of diagnostic services.

### Aboriginal and Torres Strait Islander status

Lung cancer is the most common cancer in Indigenous men and the second most common cancer in Indigenous women.

Incidence and mortality rates of lung cancer were higher for Indigenous than for non-Indigenous Australians for 2003-2007. However, five-year *crude survival*<sup>†</sup> estimates were not significantly different between Indigenous and non-Indigenous Australians diagnosed with lung cancer. While Indigenous Australians have a shorter life expectancy than non-Indigenous Australians<sup>9,10</sup> and are diagnosed with lung cancer at an earlier age, it is not known how these underlying differences may affect the *crude survival* estimates.

### Lung cancer incidence and mortality by Indigenous status, 2003-2007



Reliable data on the incidence and mortality for lung cancer for Indigenous Australians are available for some states but are not available nationally:

\* Incidence of lung cancer by Indigenous status is based on data from four states and territories – Queensland, Western Australia, South Australia and the Northern Territory

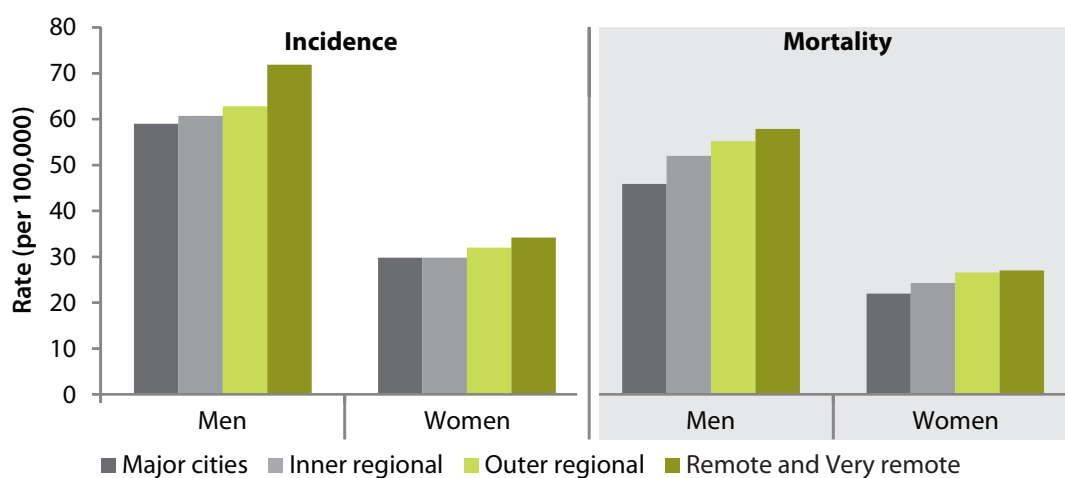
\*\* Mortality from lung cancer by Indigenous status is based on data from five states and territories – New South Wales, Queensland, Western Australia, South Australia and the Northern Territory

<sup>†</sup> Note – *Crude survival* is the proportion of individuals alive at a specified point in time (eg five years) after a diagnosis of lung cancer

## Remoteness area

Men living in *remote and very remote* areas had higher lung cancer incidence rates than those living in less remote areas for 2003-2007. There was little variation in the incidence rate for women by remoteness. The mortality rate was higher in *remote and very remote* areas than in *major cities* for both men and women.

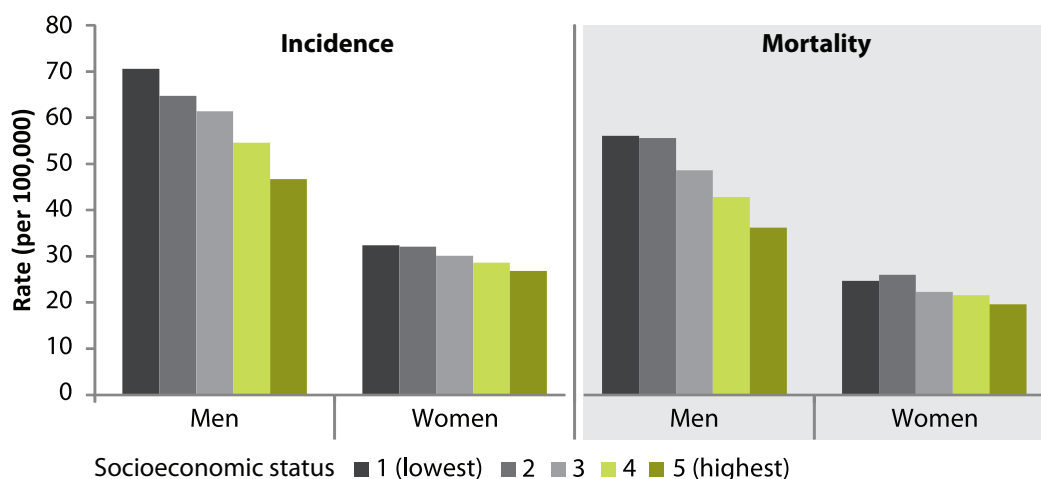
Lung cancer incidence and mortality by remoteness area, Australia, 2003-2007



## Socioeconomic status

Men and women living in areas with higher socioeconomic status had lower incidence and mortality rates of lung cancer compared to those living in lower socioeconomic status areas for 2003-2007. The differences between the highest and lowest socioeconomic status were greater for men than for women.

Lung cancer incidence and mortality by socioeconomic status, Australia, 2003-2007



## Hospitalisations

In the 2008–09 financial year, lung cancer was responsible for one in 19 cancer-related hospitalisations and one in 187 hospitalisations for all causes in Australia. The number of hospitalisations for lung cancer increased by 29% between 2000–01 and 2008–09. Most of the increase related to a substantial increase in the number of same-day hospitalisations.

Sixty per cent of all lung cancer-related hospitalisations were undertaken in public hospitals. Chemotherapy was the most commonly reported procedure for same-day lung cancer-related hospitalisations. A surgical procedure was reported for approximately 12% of all overnight lung cancer-related hospitalisations.

## Expenditure

In the 2004–05 financial year, four-fifths (79%) of the total health expenditure<sup>‡</sup> on lung cancer was spent on hospital admitted patient services. Men accounted for 61% of the total health expenditure on lung cancer and women accounted for 39%. Between 2000–01 and 2004–05, the total expenditure on lung cancer grew by 33% from \$125 to \$166 million.

## Cancer Australia's lung cancer initiatives

Cancer Australia is undertaking a range of initiatives in lung cancer and specific projects include:

- updating the 2004 *Clinical Practice Guidelines for the Prevention, Diagnosis and Management of Lung Cancer* to guide health professionals in delivering best practice care
- developing clinical guidance material for general practitioners to support early diagnosis and referral of patients who have, or may have, lung cancer
- undertaking a systematic review of the risk factors associated with lung cancer to inform health professionals and the community
- undertaking research on the stigma associated with a diagnosis of lung cancer and nihilistic approaches to treatment (the view that medical treatments are of no value) to enhance the care and support of people with lung cancer
- developing a lung cancer dataset specification to better monitor lung cancer outcomes and identify gaps to inform cancer control strategies
- undertaking research to identify current models of care in relation to the management and care of people with lung cancer in Australia
- translation of a consumer information DVD *Lung Cancer: Understanding, Managing, Living* into twelve languages other than English.

For more information about Cancer Australia's lung cancer initiatives, visit the Cancer Australia website: [www.canceraustralia.gov.au](http://www.canceraustralia.gov.au)

<sup>‡</sup> Including direct health care costs for lung cancer such as hospital admitted patient services, out-of-hospital medical expenses and prescription pharmaceuticals

## Lung cancer research and clinical trials

### Cancer Australia

Cancer Australia provides support for a range of lung cancer research and clinical trials activities:

- Cancer Australia supports lung cancer research through its national project grant scheme, the Priority-driven Collaborative Cancer Research Scheme (PdCCRS). Specific research priorities in lung cancer for the PdCCRS include occupational hazards, timely and appropriate diagnosis and referral, use of biomarkers, and addressing issues for groups with poorer outcomes. Between 2007 and 2010 Cancer Australia has funded six grants in lung cancer and mesothelioma totalling \$2.1 million through the PdCCRS.
- Cancer Australia supports clinical trials in lung cancer through its Support for Cancer Clinical Trials program. This program provides funding to Australia's Multi-site, Collaborative National Cancer Clinical Trials Groups, including the Australasian Lung Cancer Trials Group (ALTG). The ALTG is a multidisciplinary cooperative lung and thoracic cancer clinical research group with members in Australia and New Zealand. Cancer Australia funds ALTG to increase participation in clinical trials by people affected by lung cancer, increase the number of lung cancer clinical trials conducted in Australia and increase the number of clinical sites actively participating in lung clinical trials.
- *Australian Cancer Trials* is a national website developed by Cancer Australia and its National Consumer Advisory Group, in partnership with the University of Sydney, the Australian New Zealand Clinical Trials Registry and Cancer Voices. The website provides easy access to information about cancer clinical trials, enabling consumers to make informed decisions about participating in clinical trials. *Australian Cancer Trials* lists lung cancer clinical trials available in Australia; further details of specific trials can be found at: [www.australiancancertrials.gov.au](http://www.australiancancertrials.gov.au)

### National Health and Medical Research Council

The National Health and Medical Research Council (NHMRC) is Australia's peak body for supporting health and medical research; for developing health advice for the Australian community, health professionals and governments; and for providing advice on ethical behaviour in healthcare and in the conduct of health and medical research. Between 2007 and 2010, the NHMRC provided over \$22.4 million supporting 153 grants in the area of lung cancer.

### Other funders of lung cancer research

Lung cancer research in Australia is also funded by other cancer control, government and non-government organisations, including the Australian Lung Foundation.

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