

Lung Disease in Australia

Each year lung disease causes 19,200 deaths in Australia.¹ While many lung diseases are incurable, if identified early there are things that can be done to improve quality of life.

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What is lung disease?

Lung disease incorporates a range of diseases including:

- **Chronic obstructive pulmonary disease (COPD)** – a deadly long term disease of the lungs which causes shortness of breath and has no cure.² COPD is an umbrella term that includes emphysema and chronic bronchitis. There are four stages (I to IV) of COPD which rank the condition in terms of severity, with IV being the most severe.
- **Lung cancer** – a malignant tumour in the tissue of one or both lungs, which usually starts in the lining of an airway (bronchus). There are many different types of lung cancer, and these are classified according to the type of cell affected. They can be grouped into two main types: small cell lung cancer and non-small cell lung cancer.³
- **Interstitial lung disease (ILD)** – also known as *diffuse parenchymal* lung disease, this is the name given to a group of conditions which predominantly affect the tissue around the air sacs of the lungs (interstitium).⁴ Many types of ILD are progressive or cause severe disability. Common types include idiopathic pulmonary fibrosis and sarcoidosis.⁴
- **Orphan lung diseases** – the term given to rare lung diseases. In Australia, a rare disease is defined as one with a prevalence of less than one in 10,000. It is estimated that there are approximately 8000 rare diseases (not just lung disease), which affect 6-10% of the population in Australia – this equates to 1.2 million Australians.⁵
- **Pulmonary arterial hypertension (PAH)** – a condition where the flow of blood from the heart to the lungs is severely restricted. This increases pressure in the pulmonary arteries, putting the heart under increasing strain to maintain blood flow to the lungs.⁶
- **Asthma** - inflammation of the air passages in the lungs that affect the sensitivity of the nerve endings in the airways so they become easily irritated. In an attack, the lining of the passages swells, causing the airways to narrow and reducing the flow of air in and out of the lungs.⁷
- **Respiratory infectious diseases (RID)** – may involve the upper airway, the lower airway and / or the lung itself. Infections range from the commonplace (such as influenza or pneumonia) to the rare (such as alveolar proteinosis or pulmonary amyloidosis), with the impact ranging from minor to very severe.⁸
- **Chronic cough** – a cough that persists for longer than three weeks. In some instances it can cause uncomfortable complications such as pain, fatigue and sleeping difficulty.⁹

What are the symptoms of lung disease?

- The symptoms of lung disease may not be obvious at first and may be mistaken as signs of ageing or lack of fitness. Broadly, the most common early signs of lung disease can include:
 - Breathlessness/ wheeze^{2-4,6,8, 10-13}
 - Persistent, new, or changed cough^{2-4,9,13}
 - Chest pain and/or tightness^{2-4,12}
 - Coughing up blood, mucus or phlegm^{2-4,13}
 - Fatigue^{2,3,11, 14}
- Symptoms may vary depending on which condition a person with lung disease has. Below is a breakdown of the common symptoms for different conditions:

Disease	Symptoms
COPD	<ul style="list-style-type: none"> • Shortness of breath on minimal exertion, a repetitive cough which may have phlegm or mucus. • Tends to creep up gradually and the decline continues until simple daily activities like showering, dressing or making a cup of tea, become almost impossible.²
Lung cancer	<ul style="list-style-type: none"> • New cough, chest pain, breathlessness or coughing up blood.³ • In advanced lung cancer, symptoms can also include fatigue, weight loss, extreme shortness of breath, hoarseness, coughing or spitting up blood and difficulty swallowing.³
ILD	<ul style="list-style-type: none"> • Breathlessness on exertion (dyspnoea) and a nonproductive cough are the most common.⁴
PAH	<ul style="list-style-type: none"> • Breathlessness, chest tightness and fatigue - can be mild and are common to many other conditions.^{6,10}
Asthma	<ul style="list-style-type: none"> • Wheezing, coughing (particularly at night), chest tightness, difficulty in breathing and shortness of breath.⁷
Chronic cough	<ul style="list-style-type: none"> • Unproductive cough, pain, fatigue, difficulty sleeping.⁹

What causes lung disease?

- Cigarette smoking has been linked to a number of respiratory diseases and is the single largest cause of developing COPD and lung cancer.^{2,3,13}
 - Despite being the highest risk group for COPD, regular smokers are less likely than the rest of the population to consider themselves at risk of developing COPD.²
 - Studies show that smoking (or exposure to smoke) causes up to 90% of lung cancers.³ About one in 10 smokers develop lung cancer, while people who have never smoked have about a one in 200 risk.³
- In other lung diseases, it is likely that the presence of particular genes play a large role. For example in ILD, it is likely that the presence of certain genes makes individuals more susceptible to the effects of environmental dusts that cause scarring of the lungs.¹⁴ In children, ILD is sometimes caused by a rare gene abnormality which affects the production of the fluid which keeps the airways open. However, in 50% of ILD cases affecting children, the cause is unknown.¹⁵
- Other known lung disease risk factors are passive smoking, exposure to environmental agents, including indoor and outdoor air pollutants and occupational dusts and chemicals.^{2,3}
- Women may be at greater risk of COPD from exposure at work than men and are more susceptible to COPD due to smaller lungs and airways and more sensitive airways.¹²

Prevalence of lung disease

- Lung disease is a significant and growing health issue in Australia with **2.6 million** cases of lung disease reported in 2007 – 2008.¹⁶ In fact:

COPD

- COPD is more common in any year than most common types of cancer, road traffic accidents, heart disease or diabetes.¹⁷
- Approximately 2.1 million Australians have some form of COPD.^{17,18} By 2050, this figure is expected to more than double to 4.5 million Australians.¹⁷
- Of those with COPD, 1.2 million Australians^{17,18} have COPD (Stages II – IV), a stage at which symptoms are already affecting their daily lives.
- Nearly 900,000 Australians^{17,18} have a mild form (Stage I) of COPD where symptoms are often ignored. Many of these will go on to develop more severe COPD if they do not take appropriate action to manage their condition.

Lung cancer

- More than 9,100 Australians are diagnosed with lung cancer each year.¹⁹
- More women die of lung cancer than breast cancer²⁰ and the number of new lung cancer cases for women has been projected to increase by 38% from 2,891 in 2001 to 4,001 in 2011.²⁰
- The number of new lung cancer cases for men is projected to increase by 17% from 5,384 in 2001 to 6,301 in 2011.²⁰

ILD and orphan lung diseases

- There is no current register of people with ILD or rare lung disease in Australasia and therefore the incidence of these conditions is unknown.
- The Australian Lung Foundation in conjunction with the Thoracic Society of Australia and New Zealand (TSANZ) has created a Registry to collect data on the incidence and prevalence of these diseases in Australasia. Data collection is currently focused on 16 different types of orphan lung disease, although there are many more.

Asthma

- More than 2 million Australians reported having asthma during 2007 – 2008.¹⁶
- The prevalence of asthma in Australia is relatively high, by international standards:
 - 11.3% of children aged 0 to 15 have asthma²¹
 - Between 9.9% and 15.1% of adults have asthma²¹

RID

- Viral infections of the upper airway affect nearly every Australian. Although these infections are usually just an irritation for the individual, they are associated with substantial costs to the community in terms of hospitalisation, absenteeism and loss of productivity.⁸

Burden of lung disease

- Each year, lung disease causes nearly 350,000 hospitalisations in Australia.²²
 - COPD is the second leading cause of avoidable hospital admissions in Australia.²³
 - Upper respiratory tract infections account for 3-4 million visits to GPs each year (ie: six per 100 of all GP consultations) and cost more than \$A150m in direct costs.⁸

- Between 50 - 90% of hospital admissions for bronchiolitis and 5 - 40% of hospital admissions for pneumonia are due to respiratory syncytial virus infection.⁸
- Approximately 14% of all deaths each year in Australia are a result of lung disease.¹
 - More than 7,500 Australians die from lung cancer each year – that equates to 20 people per day, every day of the year.¹⁹
 - Lung cancer remains the third leading cause of death since 1998. Deaths due to this cause have increased from 6,742 in 1998 to 7,626 in 2007, representing an increase of 13%.²⁴
 - COPD is also a leading cause of death and disease burden after heart disease, stroke and cancer²⁵
- In terms of economic burden of lung disease in Australia:
 - COPD is more costly overall per case than cardiovascular disease, osteoporosis or arthritis.¹⁷
 - In 2008, the total economic impact of COPD is estimated to be \$98.2 billion of which \$8.8 billion is attributed to financial costs and \$89.4 billion to the loss of wellbeing.¹⁷
 - The total annual health expenditure on lung cancer is estimated to be \$136 million by the Australian Institute of Health and Welfare.²⁶
 - Health system expenditure on lung cancer was over \$107 million per annum in 1993-94, with hospital care alone costing the Australian economy \$81 million.²⁶

Lung disease diagnosis and management

- Treatment of lung disease plays a critical role in many conditions:
 - COPD
 - If COPD is diagnosed early and optimally managed, lower costs and burden of disease can be achieved, especially as treatment can significantly reduce hospitalisations.^{18,28-32}
 - Lung Cancer
 - Delays in diagnosis and treatment, limited treatment options and inadequate investment into lung cancer research have contributed to the poor outcomes experienced by most lung cancer patients.
 - Only half the patients suffering from lung cancer get treatment each year.²⁷
 - Treatment depends on many things, including the type of lung cancer, where it is, how big it is, whether it has spread, and the general health of the patient. Different types of treatments or combinations may be used to control lung cancer and/or to improve quality of life by reducing symptoms.³
- While many lung diseases are incurable, if identified early there are things that can be done to improve management of the disease and quality of life.
 - Medical evidence shows that early diagnosis of COPD, combined with disease management programs at the early stages of the disease (Stages I & II) could reduce the burden of COPD, improving quality of life, slowing disease progression, reducing mortality and keeping people out of hospital.²
 - Prognosis for lung cancer patients could be improved by earlier diagnosis. Many lung cancer patients are diagnosed when their condition has already progressed to an advanced stage.

- Respiratory physicians recognise they need assistance with the diagnosis of chronic cough. Lack of an effective diagnostic approach means most patients receive treatment prior to firm diagnosis (being treated for asthma, nasal disease or gastro-esophageal reflux disease).

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