Mesothelioma in Australia 2018

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Each year in Australia, between 700 and 800 people are diagnosed with mesothelioma. In 2018, 699 people died from this rare and aggressive cancer, based on Australian Mesothelioma Registry (AMR) data at 1 May 2019.

Australia has one of the highest measured incidence rates of mesothelioma in the world (Bray et al. 2017). According to analysis of the AMR, the 'average' Australian with mesothelioma:

• was male

• was diagnosed at around 75 years of age

• was exposed to asbestos in both occupational and non-occupational settings

• lived for around 11 months after diagnosis.

This report presents the latest available information from the AMR, supplemented by data from the National Mortality Database (NMD), the Australian Cancer Database (ACD) and the National Death Index (NDI).

What is mesothelioma?

Mesothelioma is a form of cancer in the mesothelium—the protective lining on the inside of body cavities and the outside of internal organs. In 2018, around 94% of cases reported to the AMR (where tumour location information was available) were pleural mesothelioma, which occurs around the lungs, and 6% of cases were mesothelioma in other areas of the body. More information on the diagnostic characteristics of cases of mesothelioma diagnosed in 2018 is available in *Mesothelioma in Australia 2018: Data tables*. Despite most commonly occurring in the chest, mesothelioma is not a lung cancer and receives different forms of treatment (Cancer Council 2019a). The predominant cause is exposure to asbestos—a group of naturally occurring fibrous silicate materials that are invisible to the naked eye and can be inhaled into the lungs (AMR 2017) where they do not readily break down.

4 in 10 people diagnosed are aged 70–79.

Since 1986, the 5-year relative survival rate has remained stable at around 5.5%.

In 2018, 699 people died from mesothelioma— a rate of 2.8 per 100,000 population.

Australia has one of the highest measured incidence rates of mesothelioma in the world.

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Australia's use of asbestos

Australia's consumption of asbestos peaked at around 700,000 metric tonnes during the period 1970–1979 (Soeberg 2016; Leigh et al. 2002). Australia both mined and imported asbestos, which was used in the construction industry due to its durability and fire and chemical resistance. Asbestos-containing materials (ACMs) were used in over 3,000 products in the construction industry (ASEA 2018), including insulation and flooring materials, wall and roof sheeting and brake linings (Forster 1997), as well as in ships, trains and cars (ASEA 2018). Australia banned the use of all forms of asbestos in 2004, however a large amount of asbestos still remains in the built environment today (ASEA 2017).

The Australian Mesothelioma Registry

The AMR collects information on new cases of mesothelioma diagnosed in Australia from 1 July 2010. The Registry's main goals are to better understand the relationship between asbestos exposure and mesothelioma, to assist in the development of policies to best deal with asbestos still in the environment, and to provide information to policy makers and researchers. The AMR has been managed by the AIHW since 2017 (before that, it was managed by the Cancer Institute New South Wales). For more information on the AMR, see *Mesothelioma in Australia 2018: Methodology paper*.

How many people are diagnosed with mesothelioma?

Around 700–800 cases of mesothelioma are diagnosed each year in Australia. Because not all cases are reported to the AMR in the year that they are diagnosed, the number of cases for recent years is expected to rise in future as more notifications are received by the Registry (Table 1).

At 1 May 2019, 662 cases of mesothelioma diagnosed in 2018 had been reported to the AMR (Table 1). From 2011 to 2018, males have been consistently more likely to be diagnosed than females—this is expected because the majority of cases are from exposure to asbestos in the type of environments in which males more commonly work. After adjusting for age, the highest rate was 2.9 cases per 100,000 people (in 2012 and 2014); for males it was 5.3 per 100,000 (in 2011), and for females it was 1.1 per 100,000 (in 2015).

Table 1: Number and rate (per 100,000 population) of people diagnosed with mesothelioma, by year and sex, 2011 to 2018

Year of diagnosis	Males		Females		People	
	No.	Rate	No.	Rate	No.	Rate
2011	598	5.3	106	0.8	704	2.8
2012	610	5.2	129	0.9	739	2.9
2013	579	4.9	136	1.0	715	2.7
2014	624	5.1	145	1.0	769	2.9
2015	583	4.6	162	1.1	745	2.7
2016	615	4.7	158	1.0	773	2.7
2017	631	4.7	128	0.8	759	2.6
2018	520	3.7	142	0.9	662	2.2

Note: Rates have been age-standardised to the 2001 Australian Standard Population.
Source: AMR data at 1 May 2019.

Because mesothelioma notifications are fast tracked from state and territory cancer registries to the AMR, it is the most up-to-date source of mesothelioma incidence data in Australia. However, due to the delay between a person being diagnosed with mesothelioma and the AMR receiving the notification, the number of cases continues to increase for most years dating back to 2011. Possible reasons for this delay include delays in confirmation of diagnosis or notification by pathology laboratories to cancer registries, and delays in cancer registry processes. Most notifications are received in the year after diagnosis. For more information on AMR processes, see *Mesothelioma in Australia 2018: Methodology paper*.

For example, of the 769 cases of mesothelioma diagnosed in 2014 and notified to the AMR, 64% of the notifications were received in the year they were diagnosed, 27% in 2015, and 9% were received between 2016 and 2018. Since the AMR's 2011 data were first published, another 92 people diagnosed in 2011 had been notified to the Registry by 1 May 2019 (Table 2).

Table 2: Difference in number of mesothelioma cases between first and last reporting years, 2011 to 2017

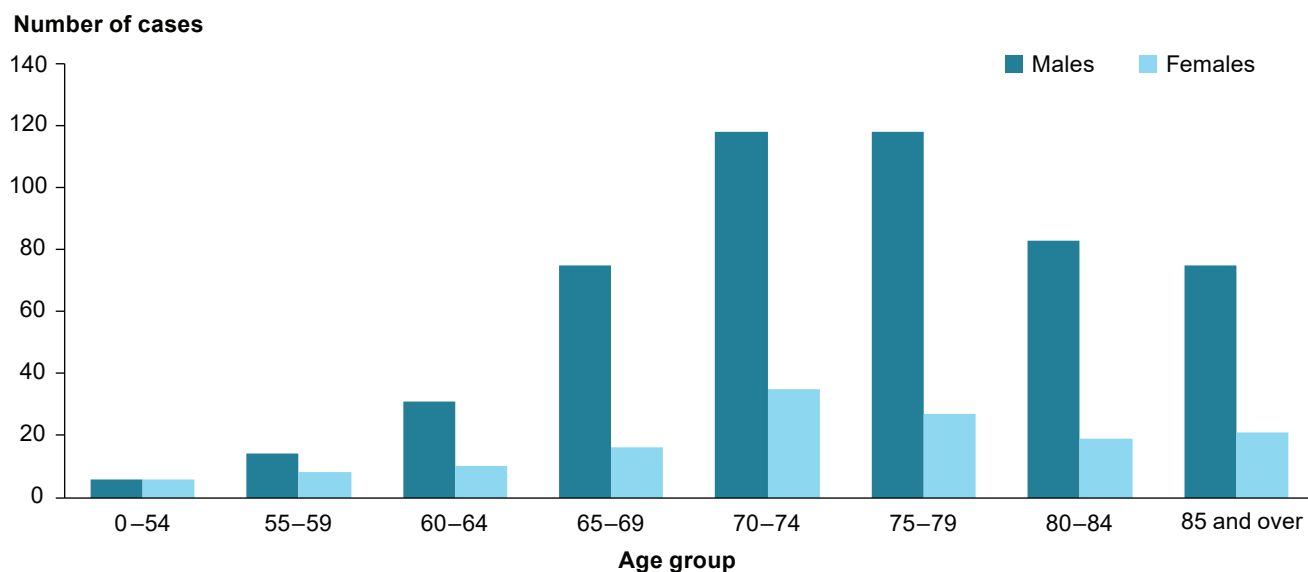| Year of diagnosis	Original report	Current report	Increase change over time (%)
2011	612	704	15
2012	619	739	19
2013	575	715	24
2014	641	769	20
2015	650	745	15
2016	700	773	10
2017	710	759	7

Sources: AMR 2012, 2013, 2014, 2015, 2016, 2017; AIHW 2018b; AMR data at 1 May 2019.

The median age at diagnosis is 75

The age of people in the AMR diagnosed in 2018 ranged from 22 to 101 years. People aged 70–79 (45%) were more likely to be diagnosed than any other age group (Figure 1). The median age at diagnosis was about 75 for both males and females. A greater number of males than females were diagnosed with mesothelioma across most age groups.

Mesothelioma has a long and highly varied latency period (Marinaccio et al. 2007), with symptoms typically appearing decades after a person has been exposed to asbestos. A study by Reid et al. (2014) analysed the data of more than 22,000 people who had been exposed to asbestos, and found that for people with mesothelioma, the median time since first exposure was 38.4 years. A similar study by Olsen et al. (2011) reported a mesothelioma latency period of between 33 and 44 years, based on data from people diagnosed in Western Australian between 1960 and 2008. These results indicate that most mesothelioma diagnoses are usually made later in life.
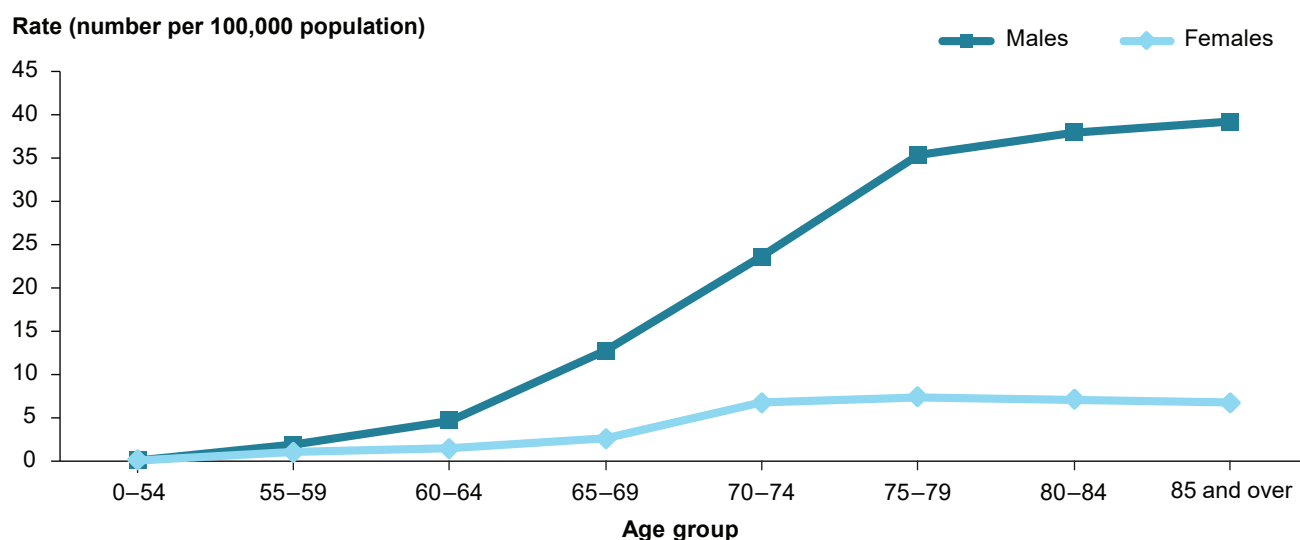
Figure 1: Number of people diagnosed with mesothelioma, by age and sex, 2018

Number of cases

Source: AMR data at 1 May 2019.

In 2018, age-specific incidence rates (that is, the number of new cases per 100,000 population in a specific age group) of mesothelioma increased with age up to 85 and over for males (39 cases per 100,000 population) and to age 75–79 for females (7.4 cases per 100,000 population). Males generally had higher rates than females across all age groups, with males aged 85 and over being 6 times as likely to be diagnosed as their female counterparts (Figure 2).

Figure 2: Rate (number per 100,000 population) of people diagnosed with mesothelioma, by age and sex, 2018

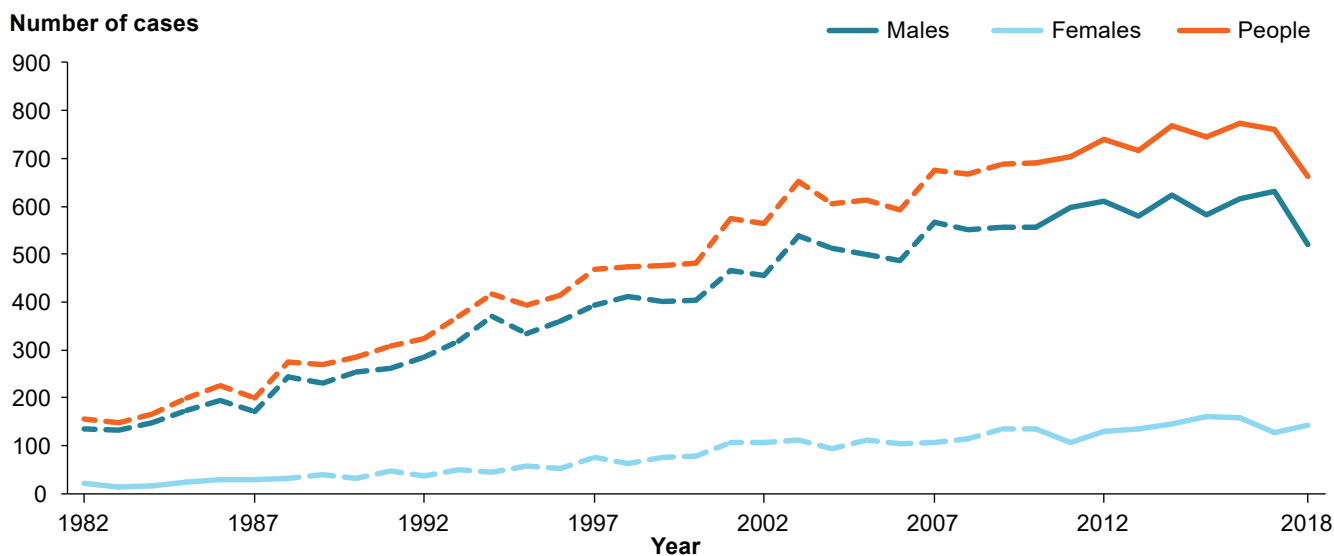Rate (number per 100,000 population)

Source: AMR data at 1 May 2019.

The number of cases of mesothelioma has risen in recent decades

Because AMR data collection started in July 2010, reporting using AMR data is only possible after that date. However, to produce a longer time series, trends in the incidence and rate of cases of mesothelioma can be reported using data from the ACD for 1982–2010 and the AMR for 2011–2018, because state and territory cancer registries provide mesothelioma cases to both collections.

Between 1982 and 2017, the number of new cases of mesothelioma steadily increased—from 135 to 631 for males and 22 to 128 for females (Figure 3). To date, the highest overall number of cases (773) were those with a date of diagnosis in 2016. However, it is important to note that the apparent fall in cases in 2018 is likely due to delays in the AMR receiving notifications—the number of cases for 2018 is expected to rise during 2019 and subsequent years.
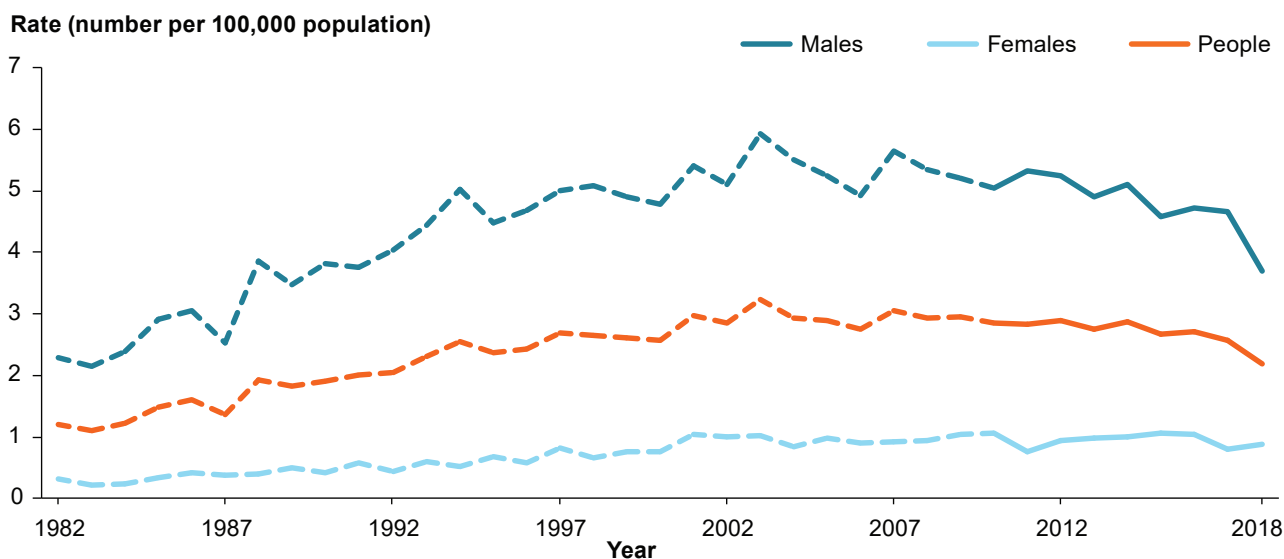
Figure 3: Number of people diagnosed with mesothelioma, by year and sex, 1982 to 2018

Sources: 1982–2010 (dotted line): AIHW 2018a; 2011–2018 (solid line): AMR data at 1 May 2019.

Between 1982 and 2003, the incidence rate (adjusted for age) rose for both males (2.3 to 5.9 cases per 100,000 population) and females (0.3 to 1.0 cases per 100,000 population), then fluctuated between 2004 and 2018 (Figure 4). The overall incidence rate rose from 1.2 to a peak of 3.2 cases per 100,000 population in 2003, and has since remained at around 2.8 cases per 100,000 population.

Figure 4: Rate (number per 100,000 population) of people diagnosed with mesothelioma, by year and sex, 1982 to 2018

Note: Rates have been age-standardised to the 2001 Australian Standard Population.
Sources: 1982–2010 (dotted line): AIHW 2018a; 2011–2018 (solid line): AMR data at 1 May 2019.

Incidence rates vary by state and territory

Due to low cell counts across many age groups in some states and territories, data have been grouped into the years 2011–2014 and 2015–2018 to enable the data to be directly age standardised to remove the effect of differing age structures between the populations, which can affect incidence rates. In 2015–2018, age-standardised rates of mesothelioma varied across states and territories from 4.4 cases per 100,000 people in Western Australia to 1.1 cases per 100,000 people in Tasmania (Table 3). Rates of mesothelioma by state and territory are available for 2011–2014 and 2015–2018 in *Mesothelioma in Australia 2018: Data tables*.

Table 3: Number and rate (per 100,000 population) of people diagnosed with mesothelioma, by sex and state/territory, 2015–2018

State of diagnosis	Males		Females		People	
	No.	Rate	No.	Rate	No.	Rate
NSW	748	4.3	175	0.8	923	2.4
Vic	516	3.8	126	0.8	642	2.2
Qld	461	4.4	125	1.1	586	2.6
WA	382	7.5	98	1.7	480	4.4
SA	174	4.0	56	1.1	230	2.4
Tas	27	1.9	6	0.4	33	1.1
ACT	31	4.3	3	0.3	34	2.1
NT	10	3.9	1	0.2	11	2.0
Australia	**2,349**	**4.4**	**590**	**1.0**	**2,939**	**2.5**

Note: Due to small counts in some states and territories, data have been grouped into the years 2015–2018, to enable rates to be directly age-standardised to the 2001 Australian Standard Population.

Source: AMR data at 1 May 2019.

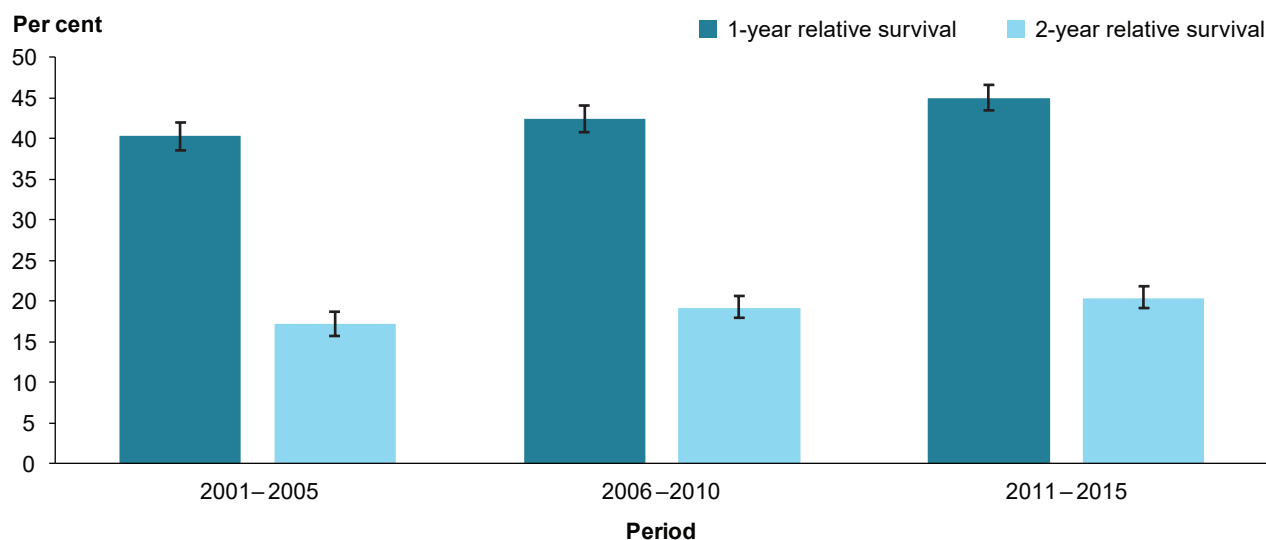# Survival rates lower than other cancers

Due to its aggressive nature, most cases of mesothelioma have a poor prognosis. This situation has shown little improvement over time (Faig et al. 2015). The condition is often diagnosed at advanced stages, because early symptoms can go unnoticed or be mistaken as symptoms for similar conditions or diseases (Asbestos Diseases Research Institute 2019; Cancer Council 2019a). The data presented in this section of the report are from the ACD, which is linked to the NDI to enable survival to be calculated for people diagnosed with mesothelioma. Additional statistics on survival are available in *Mesothelioma in Australia 2018: Data tables*.

Between 1986–1990 and 2011–2015, 5-year relative survival (see Glossary) for mesothelioma has fluctuated between 4.7% and 6.1%, which is very low compared with other cancers such as thyroid (96%), kidney (77%), stomach (30%) and lung (17%) in 2011–15 (AIHW 2019). The 5-year survival rate for mesothelioma decreased with increasing age: from 13% for those aged 55–59, to 2.7% for those aged 75 and over (AIHW 2019).

From 2001–2005 to 2011–2015, the 1-year relative survival rate increased from 40% to 45% and the 2-year relative survival rate increased from 17% to 20% (Figure 5)—both of which are statistically significant increases.

Many factors can affect survival among people with mesothelioma, including their age at diagnosis and overall health status, the type of mesothelioma they have, and their exposure to asbestos (such as whether it was occupational or non-occupational and the duration of exposure) (Burgers & Damhuis 2004).

Figure 5: 1 and 2-year relative survival of people with mesothelioma, 2001–2005, 2006–2010 and 2011–2015

Notes

1. Survival was calculated by the period method using the periods shown. Note that the final period does not include 2015 diagnoses for NSW because the data were not available.

2. Rates have been age-standardised to the 2001 Australian Standard Population.

3. The error bars presented in this figure represent 95% confidence intervals. A 95% confidence interval (CI) implies that there is 95% confidence that the true value will be included in this interval.

Sources: AIHW Australian Cancer Database 2015; National Death Index.

Most people diagnosed with mesothelioma die from it

The AMR was linked to the NDI to determine how many people with mesothelioma had died between 2012 and 2018. Date and cause of death information from state and territory cancer registries was used to supplement where NDI data was not available. For 2018, 699 deaths of people with mesothelioma with any cause of death were recorded on the AMR, at a rate of 2.3 deaths per 100,000 population (Table 4)—this rate has remained relatively consistent since 2012. The number of deaths is expected to increase as more information becomes available.

Where cause of death information was available for the years 2012–2017, mesothelioma was the primary (or 'underlying') cause for 90%–93% of deaths among people with mesothelioma each year.

Table 4: Number and rate (per 100,000 population) of deaths among people with mesothelioma, by year and sex, 2012 to 2018

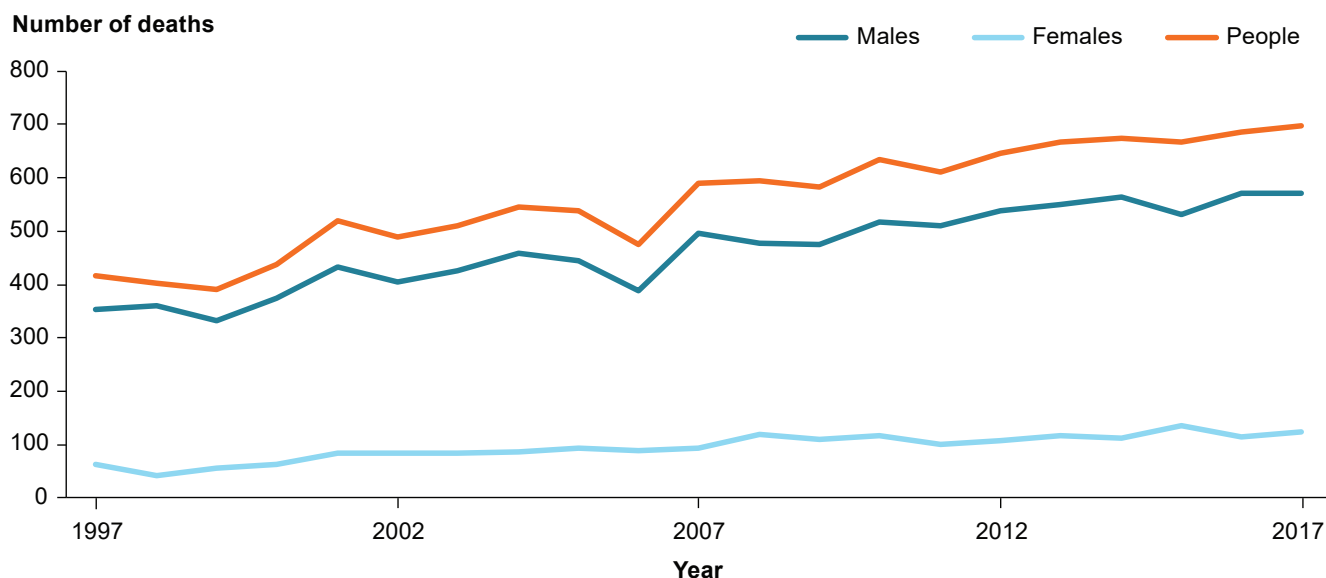| Year of death	Males		Females		People	
	No.	Rate	No.	Rate	No.	Rate
2012	490	4.2	93	0.6	583	2.3
2013	544	4.5	98	0.7	642	2.4
2014	579	4.7	118	0.8	697	2.6
2015	549	4.3	146	1.0	695	2.5
2016	569	4.4	118	0.8	687	2.4
2017	602	4.5	131	0.8	733	2.5
2018	569	4.1	130	0.8	699	2.3

Notes

1. The total number of deaths for 2018 are preliminary and are expected to rise as more information becomes available.

2. Rates have been age-standardised to the 2001 Australian Standard Population.

Source: AMR data at 1 May 2019.

This report uses the NMD to report on long-term mortality trends for mesothelioma. The number of deaths from mesothelioma has increased from 416 in 1997 to 697 in 2017—the highest number of deaths during that period. Deaths from mesothelioma among males fluctuated over the period, while those among females rose gradually (Figure 6).

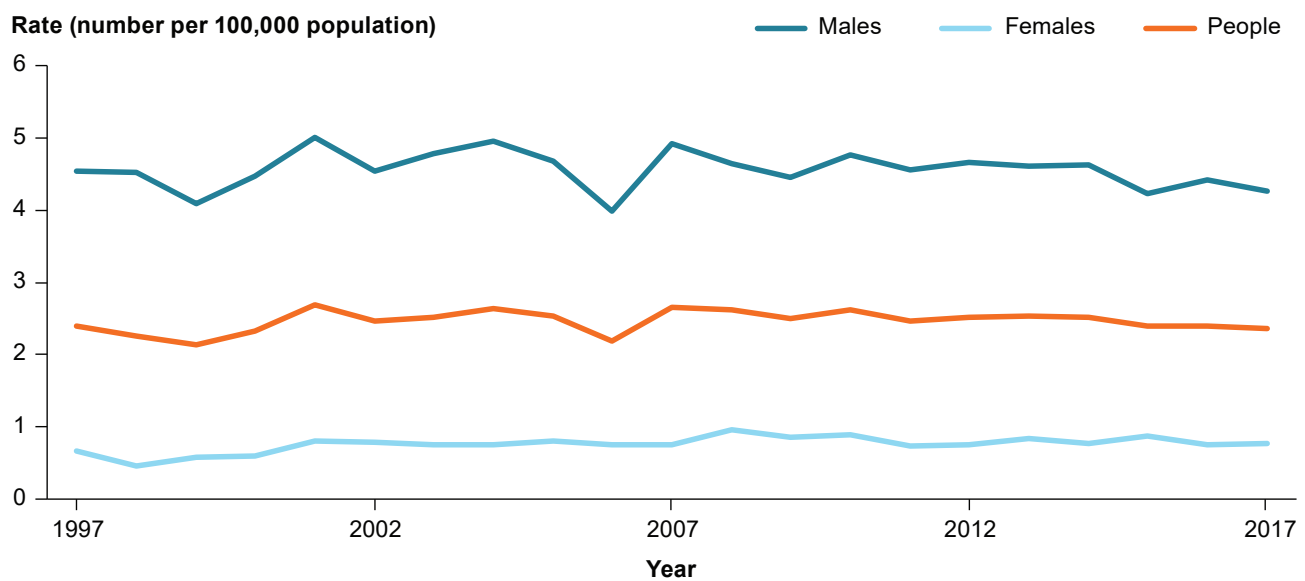**Figure 6: Number of deaths from mesothelioma, by year and sex, 1997 to 2017**

Notes

1. Cause of Death Unit Record File data are provided to the AIHW by the Registries of Births, Deaths and Marriages and the National Coronial Information System (managed by the Victorian Department of Justice) and include cause of death coded by the Australian Bureau of Statistics (ABS). The data are maintained by the AIHW in the NMD.

2. Deaths registered in 2014 and earlier are based on the final version of cause of death data; deaths registered in 2015 are based on revised version; and deaths registered in 2016 and 2017 are based on preliminary versions. Revised and preliminary versions are subject to further revision by the ABS.

3. Year is year of death for 1997–2016 and year of registration of death for 2017.

Source: AIHW National Mortality Database.

Although the number of deaths from mesothelioma has increased over time, the age standardised rate of deaths has remained fairly stable. Reasons for this may include Australia's increasing and ageing population (where older Australians are accounting for an increasing proportion of the population).

From 1997 to 2017, the mortality rates (adjusted for age) for deaths caused by mesothelioma fluctuated between 2.1 and 2.7 deaths per 100,000 population (Figure 7). Rates for males fluctuated—the highest rate was 5.0 deaths per 100,000 population in 2001 and 2004, and the lowest was 4.0 deaths per 100,000 in 2006. Rates for females were around 0.8 deaths per 100,000 over the period. It is important to note that the apparent stabilisation of deaths in recent years may be due to the delays in notifications of deaths to the AMR (for reasons relating to confirmation of death or notification to cancer registries, or to the processes within cancer registries), rather than an actual decrease in the mortality rates.

Mesothelioma in Australia 2018

Figure 7: Rate of deaths (number per 100,000 population) from mesothelioma, by year and sex, 1997 to 2017

Rate (number per 100,000 population)

Notes

1. Cause of Death Unit Record File data are provided to the AIHW by the Registries of Births, Deaths and Marriages and the National Coronial Information System (managed by the Victorian Department of Justice) and include cause of death coded by the ABS. The data are maintained by the AIHW in the NMD.
2. Deaths registered in 2014 and earlier are based on the final version of cause of death data; deaths registered in 2015 are based on revised version; and deaths registered in 2016 and 2017 are based on preliminary versions. Revised and preliminary versions are subject to further revision by the ABS.
3. Rates have been age-standardised to the 2001 Australian Standard Population.
4. Year is year of death for 1997–2016 and year of registration of death for 2017.

Source: AIHW National Mortality Database.

Asbestos exposure among people with mesothelioma

Previous research has shown mesothelioma to be associated with both occupational and non-occupational exposure to asbestos, and, historically, occupational exposure has been dominated by asbestos mining, manufacturing and use of asbestos-containing materials (enHealth 2013; Safe Work Australia 2014).

Nearly 1,000 people (791 men and 206 women) diagnosed with mesothelioma since 1 July 2010 consented to participate in the voluntary asbestos exposure assessments at 1 April 2019. Of these people, 891 (702 men and 189 women) completed both the questionnaire and telephone interview components of the assessment.

The first part of the asbestos exposure assessment was based on the jobs held by the participant during their working life using job-specific questionnaire modules—for example, participants who have worked in jobs such as electrician, plumber and carpenter may be allocated the 'Trades' module. Participants' lifetime exposure in non-occupational settings (such as their home) was also evaluated with a non-occupational module. For the purposes of this assessment, potential exposures were then classified according to the likelihood that they were above background levels of 0.0001 f/ml (fibres of asbestos per millilitre) (Brown 2001). Probability of exposure was assessed as either 'probable', 'possible' or 'unlikely', and level of exposure as either 'high', 'medium' or 'low'. For more information, see *Mesothelioma in Australia 2018: Methodology paper*.

9 in 10 participants were assessed as having some exposure to asbestos

Of the 891 people with mesothelioma who participated in the exposure assessment data collection, 93% (830 people) were assessed as having possible or probable exposure to asbestos (Table 5). For men with mesothelioma who participated in the exposure assessment, the most common circumstances of exposure identified were occupational, which is typically associated with higher frequency, dose and duration of exposure than non-occupational exposure.

Of the 830 people for whom exposure was detected:

- 79% (524) of men provided information indicating possible or probable occupational exposure (comprised of 'occupational exposure only' and 'both occupational and non-occupational exposure'), compared with 6.7% (11) of women.

- 99% (164) of women provided information indicating non-occupational exposure (comprised of 'non occupational exposure only' and 'both occupational and non-occupational exposure'), compared with 85% (565) of men.

Table 5: Occupational and non-occupational exposure assessment, by sex, 2010–2019

Any exposure indicated	Men		Women		People	
	No.	%	No.	%	No.	%
Occupational exposure only	100	15.0	1	0.6	101	12.2
Non-occupational exposure only	141	21.2	154	93.3	295	35.5
Both occupational and non-occupational exposure	424	63.8	10	6.1	434	52.3
Total	**665**	**100**	**165**	**100**	**830**	**100**

Notes

1. Although it was not possible to identify asbestos exposure among participants in the 'Neither occupational nor non-occupational exposure' category, this should not be taken to mean that these participants have never been exposed to asbestos; rather it means that no evidence of above background exposure was obtained by the exposure assessment methods used.

2. 61 participants (37 men and 24 women) were assessed as having neither occupational nor non-occupational exposure.

Source: AMR data at 1 April 2019, based on interviews completed among people who were diagnosed with mesothelioma between 1 July 2010–31 December 2018.
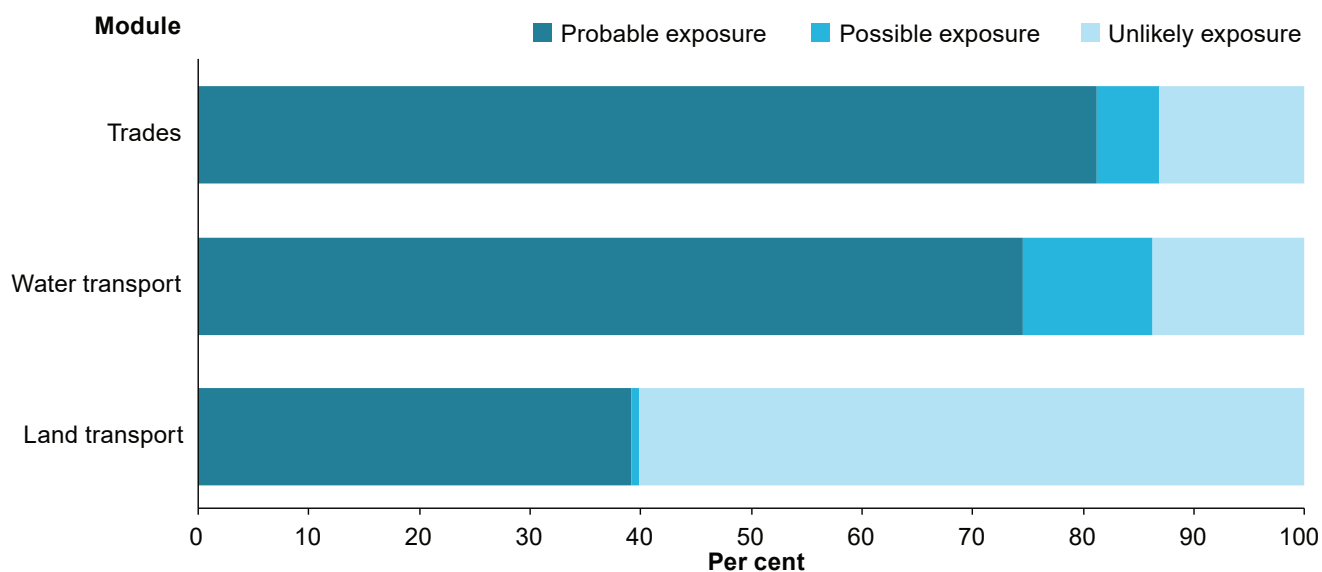
Occupational asbestos exposure

Figure 8 shows the estimated likelihood of exposure among the most commonly allocated job-specific interview modules. Results are based on the responses people gave to each specific module.

- Around 4 in 5 of the 517 people (81%, or 420 people) assigned the trades interview module were assessed as probably exposed based on the information they provided in response to that module. This module was used for people with jobs in building, engineering trades and telecommunications fields such as carpenters, joiners, bricklayers, builders, electricians, plumbers, boilermakers, welders, metal fitters/turners and other engineering machinists, and telecommunications technicians.

- Occupational exposure to asbestos was also assessed as probable for the majority of people (75%, or 76 people) allocated the water transport JSM for jobs in marine engineering, ship- or boat-building, water vessel maintenance or dockside freight handlers.

- Occupational exposure was considered likely for 39% of people (52) working in land transport in jobs related to driving and/or auto-mechanical work.

Participants are typically assigned multiple job-specific modules for different jobs, so the numbers presented do not equal the total number of participants.

Figure 8: Exposure assessment results by most commonly used job-specific modules, 2010–2019

Source: AMR data at 1 April 2019, based on interviews completed among people who were diagnosed with mesothelioma between 1 July 2010–31 December 2018.

Non-occupational asbestos exposure

All 891 participants completed the non-occupational questionnaire module. Of these, 729 (82%) were assessed as having had possible or probable exposure in non-occupational contexts, based on data collected.

Among the 891 participants who completed the asbestos exposure assessment, it was common to have indications of exposure in more than one non-occupational context—for this reason, a number of participants are counted in more than one category, so the categories are not additive.

The most common contexts in which non-occupational asbestos exposure was assessed as possible or probable were among those who reported ever having:

- undertaken major home renovations that involved asbestos products (including paid work) (43% assessed as possible exposure, 7.9% assessed as probable exposure)

- lived in a house undergoing renovations (39% assessed as possible exposure)

- serviced car brakes/clutch (excluding paid work) (30% assessed as probable exposure)

- other self-reported non-occupational exposure (18% assessed as possible exposure)

- lived in the same home as someone with a job where they were exposed to asbestos and who came home dusty (13% assessed as possible exposure).

- lived in a house made of fibro that was built between 1947 and 1987 (10% assessed as probable exposure).

No asbestos exposure

For 61 participants (7% of all participants—37 men and 24 women), the exposure assessment found no information to indicate asbestos exposure above background levels in either occupational or non-occupational contexts. However, this does not mean that these participants have never been exposed to asbestos; rather it means that no evidence of exposure about background levels was obtained using the exposure assessment methods.

What are the challenges in collecting data and reporting on mesothelioma?

Confirming a diagnosis of mesothelioma is often very challenging for a variety of reasons such as the following:

- Symptoms of mesothelioma are common to many other conditions, and mesothelioma cells can often look similar to cells of other cancers (Cancer Council 2019b).

- Because mesothelioma symptoms are not specific to the condition, diagnosis is often complicated. Diagnostic confirmation of mesothelioma generally involves a number of clinical investigations, including biopsies, radiology and clinical examinations conducted by a multidisciplinary team (van Zandwijk et al. 2013).

- Diagnostic and treatment practices for mesothelioma are not equally distributed across Australia (van Zandwijk et al. 2013).

If a mesothelioma diagnosis is not established for any reason, the AMR is not notified and the case remains unrecorded. Other challenges in collecting data and reporting on mesothelioma include:

- Although state and territory cancer registries fast track mesothelioma notifications, there is still a time lag between a person's diagnosis, their inclusion in the AMR data set and (if consent is given) when they are interviewed for the AMR's asbestos exposure collection. Reasons for this lag include the time it takes to make a definitive diagnosis, the time between diagnosis and notification to cancer registries and to the AMR. Case verification and recruitment processes also vary between state and territory cancer registries.

- The participation rate in the asbestos exposure assessment of the AMR is low, at around 15% of people with mesothelioma. This is partially due to people dying or being too unwell to participate.

- The asbestos exposure assessments do not take into account the duration or frequency of exposure.

Where do I go for more information?

More information on the AMR is available at www.mesothelioma-australia.com/home. The report Mesothelioma in Australia 2018 and previous annual reports are available at www.mesothelioma-australia.com/publications-and-data/publications. People diagnosed with mesothelioma can choose to self-notify by contacting the AMR via email at amr@aihw.gov.au or via the toll-free information line on 1800 378 861.

Glossary

age standardisation: A way to remove the influence of age when comparing populations with different age structures. This is usually necessary because the rates of many diseases vary strongly with age (usually increasing with increasing age). The age structures of the different populations are converted to the same 'standard' structure and then the disease rates that would have occurred with that structure are calculated and compared. This report uses the direct method of age standardisation. For more information, refer to *Mesothelioma in Australia 2018: Methodology paper*.

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

age-specific rate: The rate for a specific age-group. The numerator and denominator relate to the same age group.

Australian Cancer Database (ACD): The ACD contains data on all new cases of cancer diagnosed in Australia (except basal and squamous cell carcinomas of the skin) since 1982.

incidence: The number of new cases (of an illness or event, and so on) occurring during a given period, often expressed as a rate (number per population).

mortality: The number or rate of deaths in a population during a given time period.

National Death Index (NDI): The NDI is a catalogue of death records used in data linkage for epidemiological studies.

National Mortality Database (NMD): The NMD holds records for all deaths in Australia since 1964.

non-occupational exposures: Chemical, biological, psychosocial, physical and other factors from places other than the workplace that can potentially cause harm. Examples include contact with asbestos during private house renovations and living in the same home as someone with an asbestos-exposed occupation who came home dusty.

occupational exposures: Chemical, biological, psychosocial, physical and other factors in the workplace that can potentially cause harm.

relative survival: the probability of being alive for a given amount of time after diagnosis compared with the general population. A 5-year relative survival figure of 100% means that the cancer has no impact on the person's chance of still being alive 5 years after diagnosis, whereas a figure of 50% means that the cancer has halved that chance.

underlying cause of death: The disease or injury that initiated the sequence of events leading directly to death.

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Acknowledgments

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