

# 12 Asthma

## Disease characteristics

Asthma is an inflammatory disease of the air passages that makes them prone to narrow too easily and too much in response to many 'triggers'. The triggers include exercise, pollens, the house dust-mite, cold weather, throat and chest infections, tobacco smoke and other factors. The airway narrowing causes attacks of shortness of breath because it is difficult to move air in and out of the lungs. Other symptoms include wheezing, chest tightness and cough.

Asthma is a common and growing problem in Australia and worldwide. In Australia, it is estimated that one in four primary school children, one in seven teenagers and one in ten adults have asthma (DHAC 2000b). The condition is more common among those with 'allergic' features at an early age (e.g. hay fever, eczema), those with an asthmatic parent, those who have had severe chest illness in infancy and those infants whose mothers smoked during pregnancy.

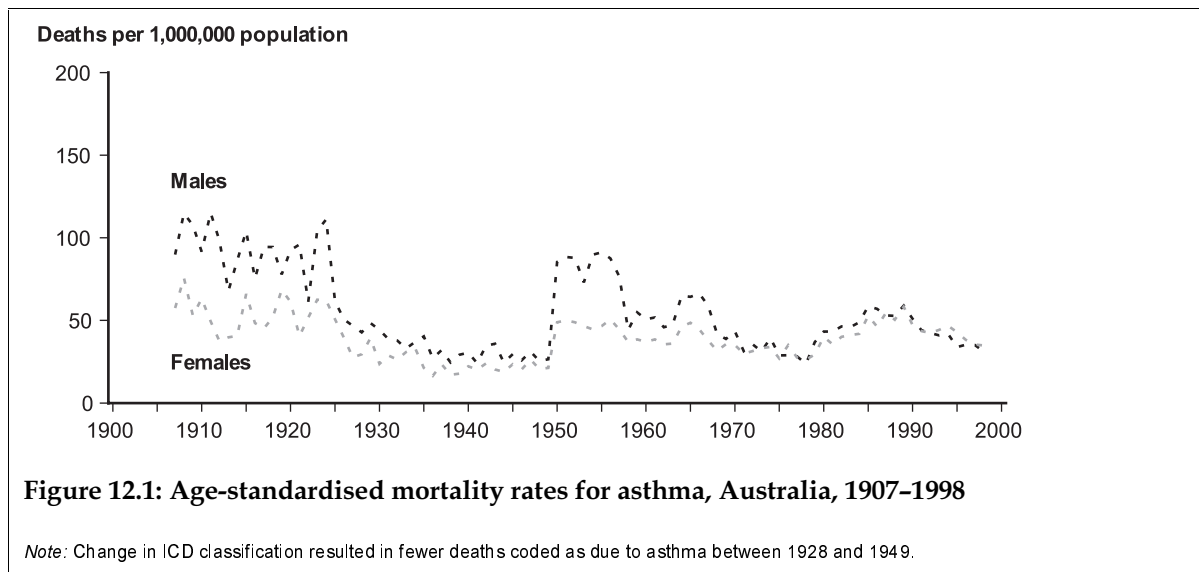
Although asthma is not a major cause of death it is a prime cause of disability and of hospitalisation, especially among those of school age and younger. Despite evidence that the condition may be growing more severe in Australia, mortality rates have fallen markedly in the past decade. This suggests that treatment is improving, at least for severe attacks.

Asthma patients are treated by avoiding trigger factors, checking their lung function regularly, using regular 'preventer' medication through an inhaler and using a 'reliever' inhaler if necessary.

It is estimated that each year there are about 7,000 PYLL before the age of 75 due to death from asthma.

## Historic view

The collection of asthma mortality statistics commenced in 1907. During the 1907–1998 period the definition of asthma changed within the ICD system. During the 3rd to the 5th revisions the mortality rate from asthma was less than a third of that for the surrounding periods. Before these revisions the mortality rate fell from 90 and 57 deaths per million population for males and females respectively in 1907 to 43 and 29 deaths in 1928. It remained at about this level until the 6th revision of the ICD in 1949, when it jumped markedly to 85 and 50 deaths per million population for males and females respectively in 1951. The rate declined from the 1950s until 1980, reaching a low of 26 deaths per million population for both males and females. The rates doubled again by 1986 to 58 deaths per million population for both males and females, after which it fell to 32 and 36 deaths per million population for males and females respectively, by 1998 (Figure 12.1). There were 284 male deaths and 415 female deaths in 1998, one half of one per cent of all deaths.



## Age–sex distribution

In 1998, 77% of male deaths occurred from the age of 60 and 38% occurred from age 75. For females, 75% of deaths occurred from age 60 and 49% from age 75.

The number of females dying from asthma was far greater than the number of males for the period 1987–1998, mostly due to the higher numbers of females living into older ages compared with males, when the risk of asthma death increases.

In 1998 the rate of death was similar for males and females (32 and 36 deaths per million population) (Table 12.1).

## Twelve-year trends 1987–1998

Mortality rates from asthma decreased significantly over the 1987–1998 period (Figure 12.2). The mortality rate for males decreased by 4.3% each year with significant decreases in males aged 40–44 and males aged 50–79 years. For females, the overall decrease was also significant, 2.1% each year, with significant decreases for those aged 15–19, 35–74 and 85 years and older (Table 12.1).

## Geographic differences in mortality

As discussed in Chapter 4, geographic differences are a complex interplay of many factors including socioeconomic status, occupational and environmental risk, migrant population, Aboriginal and Torres Strait Islander population, and proportion of the population living in rural and remote areas. Areas with a higher proportion of Aboriginal and Torres Strait Islander people will have higher mortality rates because of the higher mortality rates experienced by the Aboriginal and Torres Strait Islander population. Some of these factors are discussed separately below.

## State and Territory comparison

The rates of asthma deaths decreased between the periods 1987–1991 and 1994–1998 for males and females in all States and Territories except for females in Tasmania and the Northern Territory (Table 12.2). The mortality rates for asthma also showed some variation among the States and Territories. During the 1987–1991 period, compared with the national asthma mortality rate:

- The mortality rate for males in Victoria was significantly higher.
- The mortality rate for males in Western Australia was significantly lower.
- The mortality rate for females in Victoria was significantly higher.
- Mortality rates for females in Western Australia, South Australia and Tasmania were significantly lower.

During the 1994–98 period:

- The mortality rate for males in Victoria was significantly higher.
- Mortality rates for males in Western Australia and the Australian Capital Territory were significantly lower.
- The mortality rate for females in the Northern Territory was significantly higher.
- The mortality rate for females in Western Australia was significantly lower.

## Geographic category (by metropolitan, rural and remote area)

While the mortality rate for males was higher in remote areas, there were no significant differences by area in the 3 years 1995–1997.

For females, the mortality rate was significantly higher (about 28% higher) in rural areas (46 deaths per million population) than in metropolitan areas (36 deaths per million population) (Table 12.3; Figure 12.3). Possible factors influencing the differences in regional rates include differences in exposure to allergens (increasing the number of asthma attacks) and the distance from acute medical care facilities (increasing the possibility that an asthma attack will prove fatal).

## Country of birth

For the period 1992–1994, the world-standardised mortality rate for asthma for Australian males and females born in Australia was 31 deaths per million population for males and 32 deaths per million population for females (Table 12.5).

- Of the 25 countries of birth analysed for Australian males and females, none had significantly higher mortality rates for asthma than Australian males and females born in Australia.
- Mortality rates for Australian males born in Hungary, Germany, Greece, New Zealand, the Netherlands and Italy were significantly lower than for Australian males born in Australia.
- Mortality rates for Australian females born in Austria, Poland, the Netherlands and Italy were significantly lower than for Australian females born in Australia.

## **Socioeconomic status**

In the 3 years 1995–1997, the mortality rate from asthma was inversely related to socioeconomic status for males, while for females an inverse relationship was not evident. Using the SEIFA Index of Relative Socioeconomic Disadvantage, of the five SEIFA groups the mortality rate for:

- Males in the highest socioeconomic group (28 deaths per million population) was significantly lower than for the two lowest socioeconomic groups, at 38 and 41.
- Females in the highest socioeconomic group (29 deaths per million population) had a significantly lower mortality rate compared with those in the lowest three socioeconomic groups.

Females in the middle socioeconomic group had the highest mortality rate with 47 deaths per million persons, significantly higher than in the other SES groups (Table 12.4) (see Appendix D).

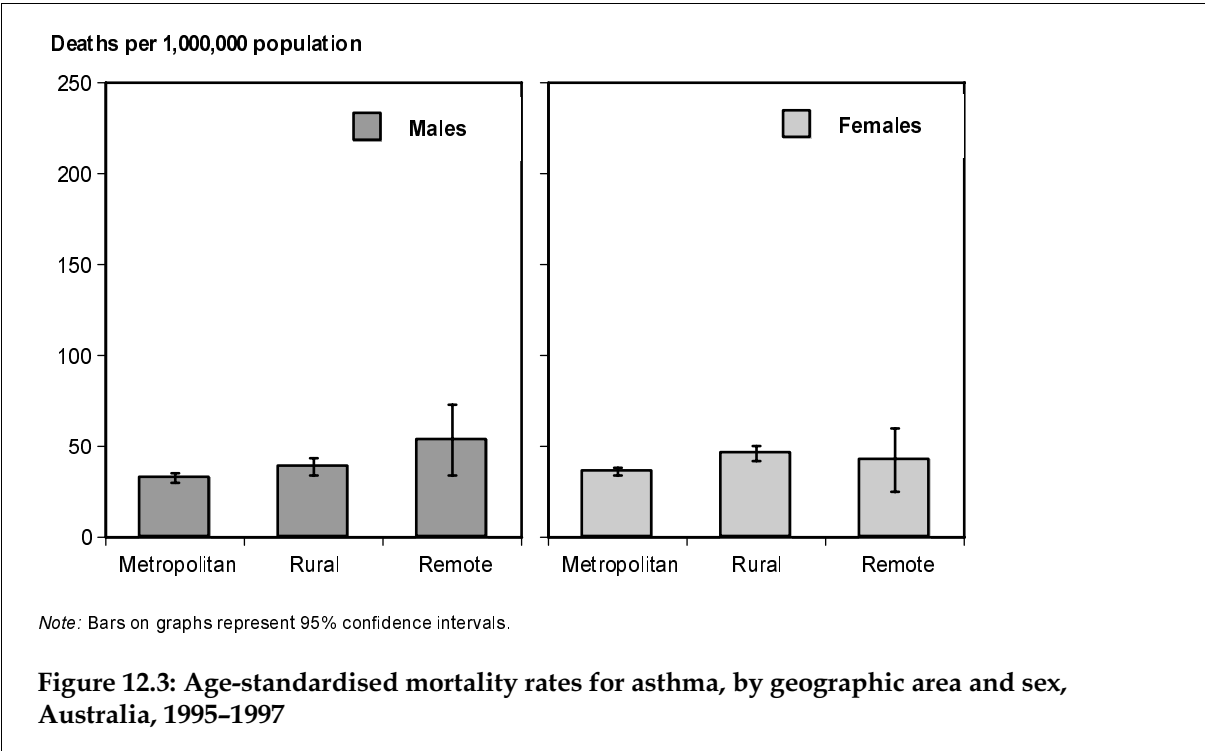
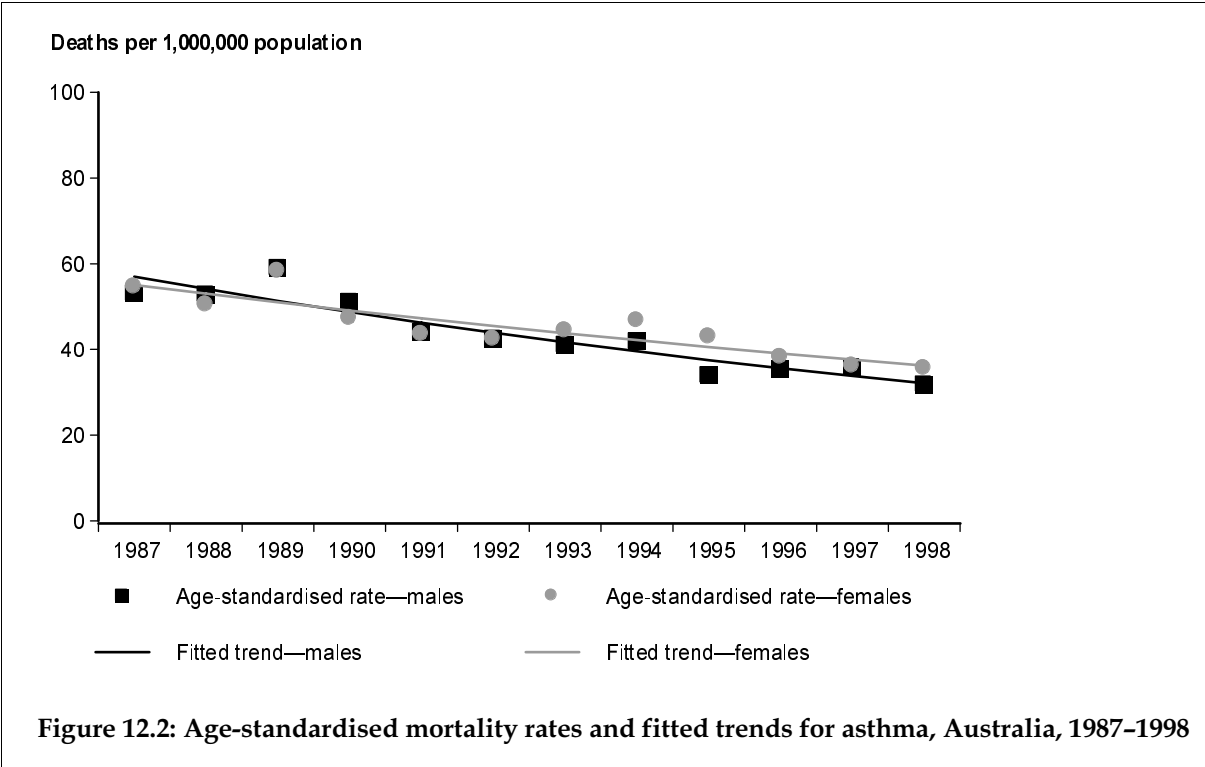


Table 12.1: Age-specific and age-standardised mortality rates for asthma per million population, Australia, 1987–1998

Year	Age																	ASMR			
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Crude rate	Augst 1991	
	<b>Males</b>																				
1987	2	8	8	13	21	13	20	13	23	20	55	97	127	183	263	283	369	469	47	53	
1988	0	3	9	13	19	20	12	19	20	28	41	80	144	161	240	293	434	554	46	53	
1989	2	3	14	12	21	20	9	12	23	31	39	110	107	182	330	421	493	475	52	59	
1990	2	8	9	13	13	11	10	14	25	30	48	60	125	182	216	259	483	601	45	51	
1991	2	2	9	10	10	11	8	9	20	25	28	44	109	162	201	327	272	588	39	44	
1992	5	2	3	10	4	10	10	10	15	21	45	64	105	111	205	327	373	422	38	42	
1993	5	5	6	18	14	4	8	9	12	22	33	68	78	124	156	263	429	516	37	41	
1994	3	3	3	9	4	9	10	3	8	13	27	58	82	114	190	220	457	976	37	42	
1995	1	3	8	9	6	6	7	10	6	11	18	39	76	113	193	224	331	405	31	34	
1996	5	4	4	9	10	3	4	7	7	11	29	45	48	116	163	239	368	630	33	35	
1997	3	2	9	6	10	4	7	11	15	13	31	42	59	124	113	279	329	590	34	36	
1998	0	5	8	9	3	7	7	1	6	12	19	34	64	125	153	183	380	433	30	32	
	<b>Females</b>																				
1987	2	5	5	27	15	15	17	22	35	43	79	82	149	164	251	246	307	432	58	55	
1988	3	5	10	13	15	7	11	20	23	64	53	91	122	128	221	287	318	511	54	50	
1989	0	3	7	20	15	11	12	33	23	46	62	89	159	192	245	303	426	581	63	58	
1990	2	0	7	15	19	13	16	17	23	23	62	72	103	135	200	299	294	568	52	47	
1991	2	2	10	12	16	9	13	12	19	22	36	75	105	157	181	266	303	464	48	43	
1992	2	2	5	6	1	6	6	4	19	26	52	44	47	156	226	349	357	605	49	42	
1993	3	0	8	16	7	9	10	7	22	31	37	67	95	124	227	239	417	574	51	44	
1994	0	0	10	13	6	13	14	13	14	20	38	60	78	135	233	299	407	808	55	47	
1995	6	2	11	6	4	6	7	8	9	21	27	63	76	167	173	278	441	692	51	43	
1996	0	0	6	6	9	3	4	8	13	27	36	44	76	124	135	271	362	699	47	38	
1997	5	2	2	8	5	7	11	4	22	13	15	63	56	122	134	227	354	677	45	36	
1998	3	2	2	10	9	15	10	11	6	17	39	54	69	85	158	198	346	569	44	36	

Note: ASMR = age-standardised mortality rate.

**Table 12.2: Number of deaths and age-standardised mortality rates for asthma per million population, States and Territories, 1987-1991 and 1994-1998**

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
<b>Males</b>									
<b>Deaths</b>									
1987-1991	715	572	284	123	142	44	14	14	1,908
1994-1998	532	445	236	95	137	38	9	13	1,506
<b>Deaths per million population</b>									
1987-1991	55	62	46	36	46	42	33	49	52
1994-1998	36	43	31	25	37	33	15	44	36
<b>Confidence intervals (95%)</b>									
1987-1991	51-59	57-67	41-52	30-42	38-54	30-55	12-54	22-76	50-54
1994-1998	33-39	39-47	27-35	20-30	31-44	23-44	5-26	17-71	34-37
<b>Females</b>									
<b>Deaths</b>									
1987-1991	892	671	361	158	154	32	19	14	2,301
1994-1998	833	600	369	154	176	54	20	19	2,227
<b>Deaths per million population</b>									
1987-1991	55	57	50	38	40	26	39	76	51
1994-1998	43	42	39	31	36	37	32	94	40
<b>Confidence intervals (95%)</b>									
1987-1991	51-59	53-61	45-55	32-44	33-46	17-35	21-57	26-126	49-53
1994-1998	40-45	38-45	35-43	26-36	31-42	27-47	18-45	45-143	38-41

**Table 12.3: Age-standardised mortality rates for asthma per million population, by geographic area, 1995–1997**

Geographic area	Males		Females	
	ASMR	95% confidence interval	ASMR	95% confidence interval
Metropolitan	33	30–35	36	34–39
Rural	39	34–43	46	42–51
Remote	53	34–73	42	25–60

Note: ASMR = age-standardised mortality rate.

Source: AIHW Mortality Database, based on *Statistical Local Area* resident population estimates compiled by the ABS.

**Table 12.4: Age-standardised mortality rates for asthma per million population, by socioeconomic status, 1995–1997**

SEIFA quintile	Males		Females	
	ASMR	95% confidence interval	ASMR	95% confidence interval
1 High SES	28	23–32	29	25–33
2	33	28–39	34	30–39
3	34	29–39	47	42–53
4	38	33–43	40	35–45
5 Low SES	41	35–46	43	38–48

Notes

1. ASMR = age-standardised mortality rate; SES = socioeconomic status.

2. A description of the SEIFA Index of Relative Socioeconomic Disadvantage may be found in Appendix D.

Source: AIHW Mortality Database, based on *Statistical Local Area* resident population estimates compiled by the ABS.



**Table 12.5: Age-standardised mortality rates per million population for asthma, Australians by birthplace, 1992–1994**

Males			Females		
Country of birth	ASMR (world)	95% CI	Country of birth	ASMR (world)	95% CI
Japan	110	0–327	Switzerland	193	0–525
France	82	0–198	Finland	72	0–173
Finland	56	0–164	Japan	72	0–189
Canada	53	0–126	New Zealand	51	27–74
USA	43	0–102	Hungary	47	10–83
United Kingdom and Ireland	33	25–41	Korea	45	0–132
<b>Australia</b>	<b>31</b>	<b>29–34</b>	Canada	40	0–105
Mauritius	30	0–88	Singapore	34	0–101
Malta	26	0–54	<b>Australia</b>	<b>32</b>	<b>30–35</b>
China	23	4–42	United Kingdom and Ireland	30	25–35
Austria	18	0–43	Hong Kong and Macau	23	0–68
Italy	15	9–21	China	22	6–37
Hong Kong and Macau	14	0–43	Greece	21	8–34
Poland	14	0–29	Germany	20	9–32
Netherlands	14	0–28	Italy	20	12–28
New Zealand	14	3–25	Portugal	19	0–56
Greece	13	2–24	Malta	17	0–36
Germany	10	0–21	Netherlands	16	5–28
Hungary	6	0–16	Poland	10	1–19
Chile	—	—	Austria	4	0–13
Israel	—	—	Chile	—	—
Korea	—	—	France	—	—
Portugal	—	—	Israel	—	—
Singapore	—	—	Mauritius	—	—
Switzerland	—	—	USA	—	—

*Notes*

1. ASMR = age-standardised mortality rate; CI = confidence interval.
2. Age-standardised mortality rates have been standardised to the World Standard Population.