

11 Chronic obstructive pulmonary disease

Disease characteristics

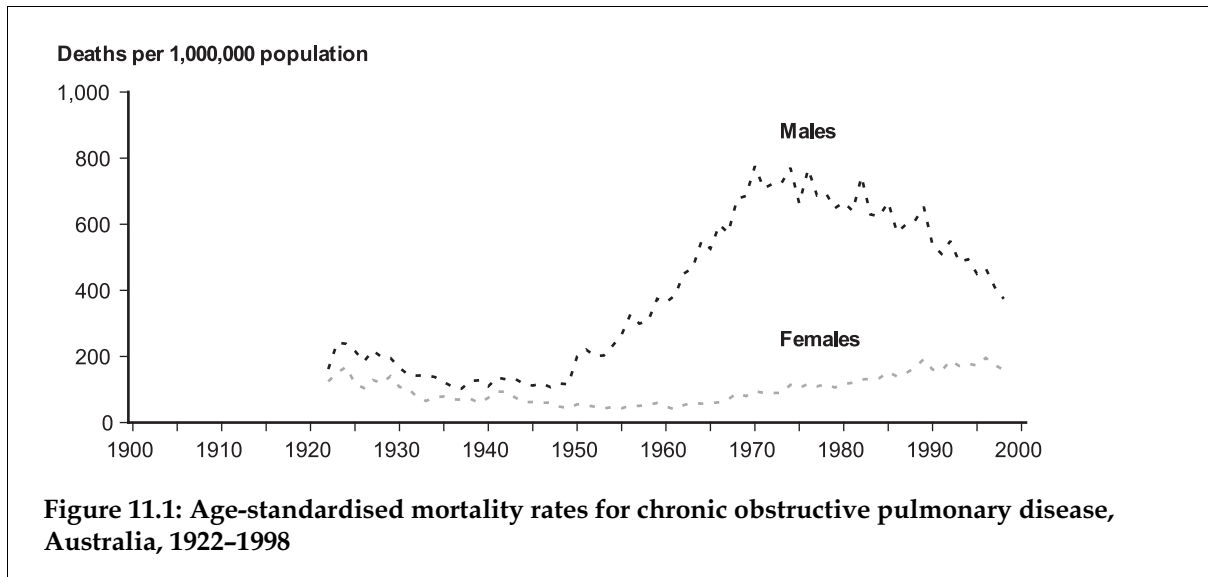
Chronic obstructive pulmonary disease (COPD), also referred to as chronic obstructive airways disease or chronic obstructive lung disease, is a term used to describe different but related diseases, chronic bronchitis and emphysema. COPD is a progressive and irreversibly disabling disorder marked by difficulty in breathing. Emphysema is a long-term lung disease where over-expansion or destruction of the lung tissues blocks oxygen intake, leading to shortness of breath and other problems. Bronchitis is inflammation of the mucous membrane of the main air passages.

As for lung cancer, tobacco smoking is the main cause of COPD. It is estimated that there were almost 300,000 Australians with COPD in 1996, and more than 20,000 new cases occurring every year, a large proportion of these being males (AIHW 2000a). It is also estimated that there are about 16,000 PYLL before the age of 75 each year, making this a major cause of premature death for males and females.

Historic trend

The collection of information on emphysema began in 1907 while the collection of information on chronic bronchitis began in 1922.

Due to the link with smoking it is not surprising that mortality rates for COPD have followed a pattern similar to that for deaths from lung cancer in both males and females. COPD mortality rates decreased between 1922 (when this time series began) and 1937 for males. After stabilising during the 1940s, mortality rates in males increased steadily from the early 1950s, peaking in 1970 at 776 deaths per million population. Between 1970 and 1998, the male mortality rate declined again, by 1.9% per year, and since 1993 the decline has been 4.2% per year. Between 1970 and 1998 the rate had more than halved to 402 deaths per million population. COPD mortality rates for females also decreased from 1922, and continued to decrease until the early 1950s. From 1961 onwards the female mortality rate began to increase at almost 4.5% per year, and unlike the rate for males, it has continued to increase, peaking at 195 deaths per million population in 1996. It is interesting to note that for females the COPD mortality rate in 1998 (171 deaths per million population) is similar to that in 1924 (168 deaths per million population). In 1998 there were 3,500 male deaths and 2,075 female deaths due to COPD (Figure 11.1).



Age–sex distribution

The age distribution for mortality rates due to COPD has been consistent over the 1987–1998 period, with most deaths occurring after the age of 75.

- In 1998, the overall risk of death was significantly higher in males (402 deaths per million population) than females (171).
- Age-specific rates for males aged 80 years or more were about three times that of females in the same age groups.
- In 1998, 96% of male deaths occurred from the age of 60 and 59% occurred from age 75.
- For females, 95% of deaths occurred from age 60 and 60% occurred from age 75 (Table 11.1).

Twelve-year trends 1987–1998

The more recent trends in mortality rates from COPD parallel those for lung cancer, with decreases in rates for males and increases in rates for females. The downward trend for males has been at 1.7% per year and the upward trend for females has been 2.6% per year (Figure 11.2). For males, there were significant decreases in age-specific mortality rates for those aged 45 years and older. For females, age-specific mortality rates increased significantly for females aged 70 years and older (Table 11.1).

Geographic differences in mortality

As discussed in Chapter 4, regional 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.

State and Territory comparison

Mortality rates for COPD decreased between the two periods (1987–1991 and 1994–1998) for males, while for females the mortality rates increased in all States and Territories except in Western Australia and the Northern Territory. The mortality rates for COPD also showed some variation among the States and Territories. During the 1987–1991 period, compared with the national COPD mortality rate:

- Mortality rates for males in Victoria, Tasmania and the Northern Territory were significantly higher.
- The mortality rate for males in Western Australia was significantly lower.
- Mortality rates for females in New South Wales, Victoria, Tasmania and the Northern Territory were significantly higher.
- Mortality rates for females in Queensland, Western Australia and South Australia were significantly lower.

During the 1994–1998 period:

- Mortality rates for males in Victoria, Tasmania and the Northern Territory were significantly higher.
- Mortality rates for males in Western Australia and the Australian Capital Territory were significantly lower.
- Mortality rates for females in Tasmania and the Northern Territory were significantly higher.
- Mortality rates for females in Queensland and Western Australia were significantly lower.

Geographic category (by metropolitan, rural and remote area)

For the period 1995–1997, males and females living in remote areas had significantly higher COPD mortality rates (600 and 308 deaths per million population, respectively) than males and females living in metropolitan (427 and 183) and rural areas (496 and 181).

The mortality rate for males in remote areas was 41% higher than for males in metropolitan areas and 21% higher than for males living in rural areas.

There was little difference in mortality rates between females living in metropolitan areas and those living in rural areas, while for females living in remote areas the mortality rate was 68% higher than the rate for metropolitan areas (Table 11.3).

Country of birth

For the period 1992–1994, the world-standardised mortality rate for COPD for Australian males and females born in Australia was 340 deaths per million population for males and 148 deaths per million population for females (Table 11.5).

- Of the 25 countries of birth analysed for Australian males and females, none had significantly higher mortality rates for COPD than Australian males and females born in Australia.

Socioeconomic status

For the period 1995–1997, there was an inverse relationship between socioeconomic status and death due to COPD. The much higher proportion of people in lower socioeconomic groups who smoke, compared with those in the higher socioeconomic groups, is the main reason for this inverse relationship (Winstanley et al. 1995) (Table 11.4; Figure 11.3) (see Appendix D).

- The mortality rate for male was significantly lower for those in the highest SEIFA Index group (328 per million), using the SEIFA Index of Relative Socioeconomic Disadvantage, compared with the remaining lower SEIFA Index groups (ranging from 437 to 514 per million).
- The mortality rate for females were also significantly lower for those in the highest SEIFA group (148 per million). The differences between the remaining lower SEIFA groups were not as marked as with males (ranging from 179 to 217 deaths per million population).

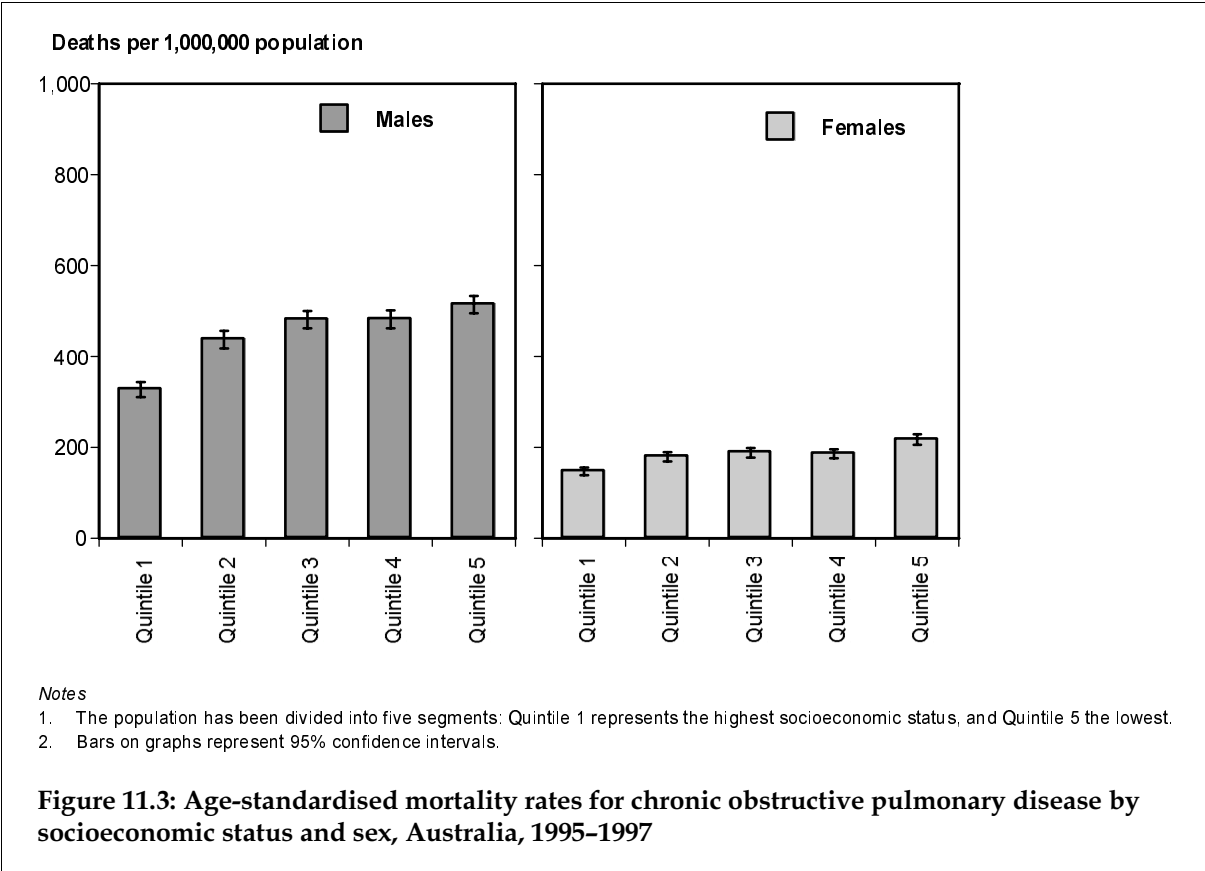
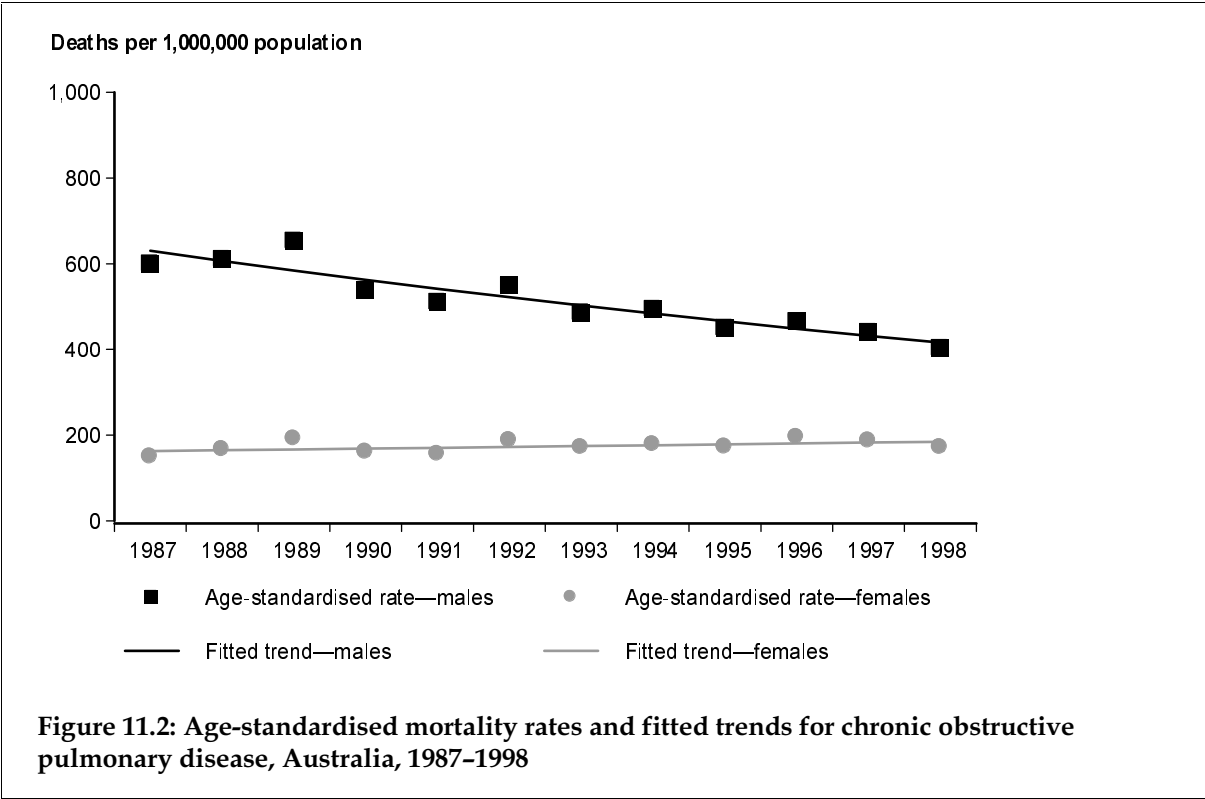


Table 11.1: Age-specific and age-standardised mortality rates for chronic obstructive pulmonary disease per million population, Australia, 1987–1998

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	Aust 1991
	Males																			
1987	0	0	2	0	1	0	0	5	16	25	104	337	824	1,721	3,434	5,898	9,095	13,598	449	599
1988	2	0	0	0	1	1	2	5	7	33	107	330	856	1,745	3,296	5,874	9,772	14,016	461	610
1989	0	0	0	0	0	1	0	2	8	33	123	342	844	1,753	3,888	6,255	9,901	15,633	500	652
1990	0	0	0	0	1	0	0	8	3	26	83	275	737	1,517	3,070	5,034	8,629	12,510	419	538
1991	3	0	0	0	0	3	0	0	8	13	101	242	698	1,584	2,972	5,076	7,226	11,759	409	510
1992	0	0	0	0	0	0	0	1	6	16	78	225	711	1,619	2,980	5,590	8,386	13,095	447	549
1993	0	0	0	2	0	0	1	0	5	30	103	250	679	1,498	2,610	4,734	7,232	11,420	407	486
1994	2	0	0	0	1	0	0	0	3	21	67	239	631	1,459	2,858	4,820	7,063	12,256	421	494
1995	0	0	0	0	1	0	0	1	8	25	54	224	577	1,292	2,626	4,313	7,105	10,358	393	450
1996	0	0	0	0	0	0	0	3	6	14	75	179	605	1,286	2,633	4,243	7,501	11,774	414	465
1997	0	0	2	2	0	0	0	4	6	17	60	201	579	1,377	2,743	4,095	6,650	9,830	403	440
1998	0	0	0	0	0	1	0	3	2	11	60	186	548	1,203	2,508	3,700	6,066	9,352	376	402
	Females																			
1987	0	0	0	0	0	0	0	0	9	14	65	155	334	547	1,037	1,272	1,745	2,264	166	149
1988	0	0	0	0	0	0	0	5	16	28	79	201	354	665	1,047	1,375	1,999	2,415	186	166
1989	2	0	0	0	0	0	1	2	8	26	80	227	418	744	1,204	1,755	2,175	2,810	216	191
1990	2	0	0	0	1	0	1	0	8	17	67	148	343	625	1,068	1,509	1,715	2,452	182	160
1991	2	0	0	0	1	0	1	3	5	28	36	151	338	567	971	1,481	1,871	2,463	181	156
1992	0	0	0	0	0	0	3	0	2	9	80	186	367	776	1,258	1,794	1,948	2,862	219	187
1993	0	0	0	0	1	0	0	1	11	35	32	138	342	653	1,209	1,735	1,857	2,438	204	171
1994	0	0	0	0	0	0	1	0	5	15	62	171	325	717	1,138	1,633	2,213	2,847	217	178
1995	0	0	0	0	0	0	0	0	1	11	42	142	362	692	1,115	1,542	2,210	2,717	212	172
1996	3	0	0	0	1	1	0	1	6	16	64	182	348	696	1,327	1,743	2,435	3,390	246	195
1997	2	0	0	2	0	0	0	0	3	12	58	182	329	758	1,143	1,682	2,391	3,180	238	187
1998	0	0	0	0	2	1	0	4	5	17	58	122	311	595	1,222	1,493	2,384	2,660	221	171

Note: ASMR = age-standardised mortality rate.

Table 11.2: Number of deaths and age-standardised mortality rates for chronic obstructive pulmonary disease per million population, States and Territories, 1987–1991 and 1994–1998

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Males									
	Deaths								
1987–1991	6,723	4,951	3,191	1,373	1,564	664	129	146	18,739
1994–1998	6,495	4,769	3,183	833	1,510	643	142	122	18,259
	Deaths per million population								
1987–1991	589	612	577	461	581	708	490	1,349	580
1994–1998	455	476	443	222	437	572	353	871	449
	Confidence intervals (95%)								
1987–1991	575–604	595–629	556–597	436–486	551–610	653–763	400–581	1,088–1,611	572–589
1994–1998	444–466	463–490	428–459	207–237	415–459	527–616	293–413	700–1,042	442–455
Females									
	Deaths								
1987–1991	3,077	2,200	1,080	516	547	266	74	81	7,841
1994–1998	3,873	2,862	1,532	456	805	382	115	84	10,420
	Deaths per million population								
1987–1991	179	177	144	113	140	204	182	636	165
1994–1998	189	190	163	84	167	247	197	568	181
	Confidence intervals (95%)								
1987–1991	173–185	169–184	135–153	103–122	128–152	180–229	141–224	485–786	161–168
1994–1998	183–195	183–198	155–171	76–92	155–179	222–273	161–233	439–696	177–184

Table 11.3: Age-standardised mortality rates for chronic obstructive pulmonary disease per million population, by geographic area, 1995–1997

Geographic area	Males		Females	
	ASMR	95% confidence interval	ASMR	95% confidence interval
Metropolitan	427	417–437	183	178–189
Rural	496	480–513	181	172–189
Remote	600	530–670	308	258–357

Note: ASMR = age-standardised mortality rate.

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

Table 11.4: Age-standardised mortality rates for chronic obstructive pulmonary disease per million population, by socioeconomic status, 1995–1997

SEIFA quintile	Males		Females	
	ASMR	95% confidence interval	ASMR	95% confidence interval
1 High SES	328	311–344	148	139–156
2	437	418–457	179	169–190
3	481	462–501	189	178–199
4	482	462–501	186	176–197
5 Low SES	514	495–534	217	206–228

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 11.5: Age-standardised mortality rates per million population for chronic obstructive pulmonary disease, Australians by birthplace, 1992–1994

Males			Females		
Country of birth	ASMR (world)	95% CI	Country of birth	ASMR (world)	95% CI
Australia	340	332–347	Israel	273	0–584
USA	319	170–469	New Zealand	162	119–204
New Zealand	315	255–374	Australia	148	143–153
Portugal	304	0–621	United Kingdom and Ireland	135	124–145
United Kingdom and Ireland	301	286–316	Korea	115	0–283
Canada	268	111–424	USA	100	23–176
Netherlands	256	204–308	Chile	93	0–200
Switzerland	229	25–433	Germany	80	56–104
Austria	213	114–312	Malta	78	36–120
France	187	32–343	France	75	0–162
Germany	187	137–238	Netherlands	70	46–94
Malta	187	117–257	Portugal	69	0–165
Italy	177	154–201	Hungary	66	24–108
Singapore	177	0–388	China	64	34–94
Finland	167	0–334	Poland	59	34–84
China	151	101–200	Finland	39	0–116
Poland	147	104–191	Canada	37	0–110
Hungary	137	78–196	Singapore	37	0–109
Greece	112	80–144	Austria	31	0–62
Mauritius	109	0–259	Italy	26	18–35
Israel	104	0–308	Hong Kong and Macau	23	0–68
Hong Kong and Macau	69	0–147	Mauritius	22	0–64
Korea	58	0–172	Greece	12	3–21
Chile	0	—	Japan	0	—
Japan	0	—	Switzerland	0	—

Notes

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