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Aboriginal and Torres Strait Islander people

Aboriginal and Torres Strait Islander peoples suffer a greater burden of chronic disease than the rest of the Australian population and the current diabetes epidemic has had a disproportionate impact on the Australian Indigenous population compared with the total Australian population (Daniel et al. 1999). The greater burden of diabetes in the Australian Indigenous population is largely due to higher rates of modifiable risk factors, such as obesity, which are related to the social disadvantage experienced by Aboriginal and Torres Strait Islander peoples. Reduced or limited availability and accessibility of health-care services for diagnosis and treatment may also adversely influence health outcomes for Indigenous people with diabetes and related complications.

Aboriginal and Torres Strait Islander people do not use health services with the same frequency as other Australians, and many communities and individuals may not have ready access to services. Difficulties with spoken and written English, lack of available transport, financial difficulties and the proximity of culturally appropriate health-care services present barriers to Aboriginal and Torres Strait Islander people accessing health care, and feelings of marginalisation also present barriers to the efficacy of diabetes prevention strategies and treatment (ABS & AIHW 2005).

Box 5.1: Age standardisation

In this chapter survey data are directly standardised. Hospitals and mortality data are indirectly age standardised, except for reporting of trends and comparisons between socioeconomic groups. For a detailed discussion on age-standardisation methods and reference populations, see Appendix 1.

Incidence

A recent population-based study among 180,481 Indigenous and nearly 5 million non-Indigenous adolescents, aged 10–18 years, in New South Wales has shown that Indigenous adolescents are diagnosed with Type 2 diabetes at 6 times the rate of non-Indigenous adolescents. The incidence of Type 1 diabetes was not different between the two populations (incidence rate ratio=0.7) (Craig et al. 2007).

Prevalence

According to self-reported data from the 2004–05 NATSIHS, neary 30,000 Indigenous people (6.3% of the total Indigenous population) had diabetes: 57% of whom were male.

When the different age structures of the populations were taken into account, the rate of diabetes among Indigenous people was just over 3 times that of non-Indigenous people. The age-adjusted rate of diabetes among Indigenous males was 3 times the rate of non-Indigenous males and the rate among Indigenous females was 4 times that of non-Indigenous females (Figure 5.1).

Notes
1. Based on self-reported data.
2. Directly age-standardised to the 2001 Australian population.

Source: AIHW analysis of ABS 2004–05 NATSIHS data.

Figure 5.1: Prevalence of diabetes by Indigenous status and sex, 2004–05

Risk factors

National data on diabetes risk factors for Aboriginal and Torres Strait Islander people are available for body weight and diet. Data on tobacco smoking—which is a risk factor for some diabetes complications—are also presented.

According to data from the 2004–05 NATSIHS, 57% of Aboriginal and Torres Strait Islander people aged 15 years and over were overweight

or obese. Of all Indigenous people aged 12 years and over, 5% did not eat vegetables on a daily basis and 14% did not eat fruit on a daily basis. In 2004–05, 50% of Indigenous people aged 18 years or over were current daily smokers.

The age-standardised rates indicate that a higher proportion of Indigenous people aged 15 years and over were overweight or obese compared with non-Indigenous people (62% compared with 51%). Indigenous people aged 12 years and over ate fewer fruit and vegetables each day compared with non-Indigenous people: Indigenous people were 7 times as likely as non-Indigenous people not to eat vegetables and twice as likely not to eat fruit. The rate of current daily smoking among Indigenous adults was more than twice that of non-Indigenous adults.

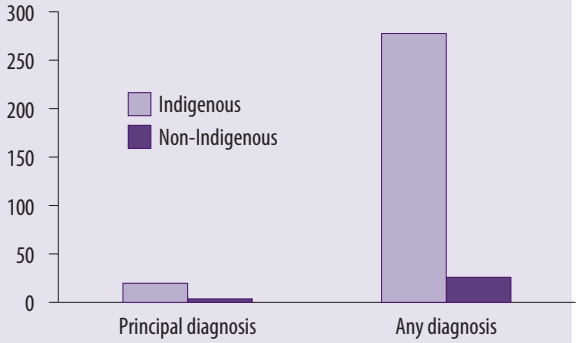
Self-reported data from the Well Person's Health Check study, which was undertaken in Queensland between 1998 and 2000, showed that 30% of Indigenous males and 33% of Indigenous females with diabetes consumed inadequate serves of fruit (fewer than 2 serves per day) (McCulloch et al. 2003). Also, 55% of Indigenous males and 60% of Indigenous females with diabetes did not do adequate exercise in the week before the survey (less than 3 days with 30 minutes of activity per day). The same survey indicated that 48% of Indigenous males and 36% of Indigenous females with diabetes smoked tobacco.

For more national information on specific risk factors, refer to Chapter 3.

Hospitalisations

In 2004–05, in Qld, WA, SA and the NT, there were approximately 2,900 hospitalisations of Aboriginal and Torres Strait Islander people where diabetes was a principal diagnosis. This accounted for 1.5% of all hospitalisations among Indigenous people. Diabetes was an additional diagnosis in a further 27,182 Indigenous hospitalisations, inceasing the total diabetes hospitalisations to 30,055 or 16% of all Indigenous hospitalisations. Indigenous people were hospitalised with diabetes as a principal diagnosis at 6 times the rate and with diabetes as any diagnosis at 11 times the rate of other Australian persons in 2004–05 (Figure 5.2).

Hospitalisation rates among Indigenous people were higher that among other Australians for all types of diabetes: twice as high for a diagnosis of Type 1 diabetes, 15 times as high for a diagnosis of Type 2 diabetes and 6 times as high for a diagnosis of other/unspecified diabetes. Indigenous women were hospitalised for gestational diabetes at more than 5 times the rate of other Australian women.



Notes

1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. Indirectly age-standardised to the 2004–05 non-Indigenous population.
3. Data are from Queensland, Western Australia, South Australia and public hospitals in the Northern Territory only.

Source: AIHW National Hospital Morbidity Database.

Figure 5.2: Diabetes hospitalisations by Indigenous status, 2004–05

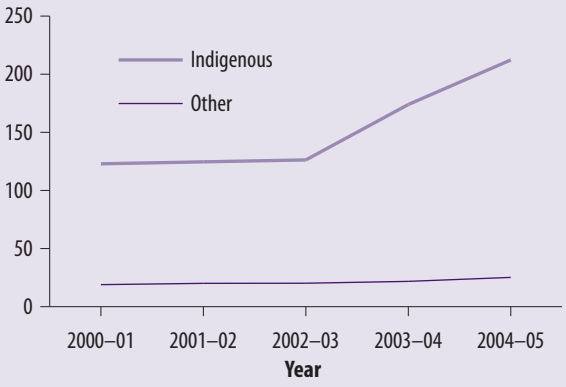
Trends

In 2000–01 the rate of hospitalisation with any diagnosis of diabetes among Indigenous Australians was 8 times that for other Australians. In 2004–05 this increased to 11 times the rate of hospitalisation for other Australians (Figure 5.3).

Deaths

Among Aboriginal and Torres Strait Islander people, diabetes was the underlying cause of 346 deaths, and an associated cause of a further 492 deaths in Queensland, Western Australia, South Australia and the Northern Territory, for the years 2003–2005. Diabetes deaths among Indigenous persons accounted for 9% of total diabetes deaths and nearly 8% of all Indigenous deaths in the four jurisdictions during this period. Indigenous

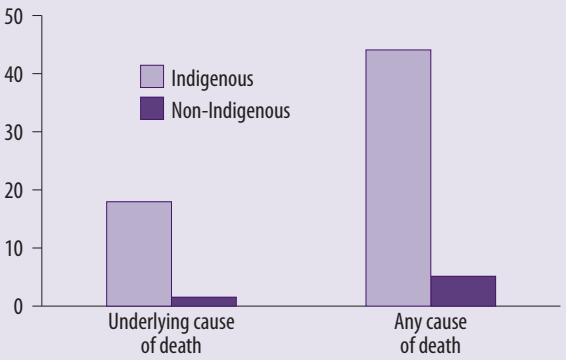
Australians died from diabetes as an underlying cause of death at 12 times, and from diabetes as any cause of death at 9 times the rate of non-Indigenous Australians (Figure 5.4).



Notes
1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. Directly age-standardised to the 2001 Australian population.
3. Data are from Queensland, Western Australia, South Australia and public hospitals in the Northern Territory only.

Source: AIHW National Hospital Morbidity Database.

Figure 5.3: Diabetes hospitalisations by Indigenous status, 2000–01 to 2004–05



Notes
1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Indirectly age-standardised to the 2003–2005 non-Indigenous population.
3. Data are based on year of registration of death in Queensland, Western Australia, South Australia and the Northern Territory.
4. Data with missing/not stated Indigenous status were excluded from this analysis.

Source: AIHW National Mortality Database.

Figure 5.4: Diabetes deaths by Indigenous status, 2003–2005

Trends

Between 2000 and 2005 there was no consistent pattern in diabetes deaths among Indigenous people.

Complications

Common complications of diabetes include cardiovascular disease and kidney disease, and the prevalence rates of these diseases in the Australian community are presented in Chapter 4.

Prevalence

According to the self-reported 2004–05 NATSIHS, approximately 53% of Aboriginal and Torres Strait Islander people with diagnosed diabetes also had heart and circulatory disease and 10% also had kidney disease.

The age-standardised rate of heart and circulatory disease in the Indigenous population was 1.3 times that of the non-Indigenous population. For kidney disease, the prevalence was 10 times that of their non-Indigenous counterparts.

Hospitalisations

Of the approximately 30,100 diabetes hospitalisations among Aboriginal and Torres Strait Islander Australians in 2004–05, just over 18,300 (61%) also involved kidney complications of diabetes (including chronic kidney failure), and nearly 2,300 (8%) also had coronary heart disease (CHD). When the different age-structures of the two populations were accounted for, hospitalisation rates for kidney complications among Indigenous people were nearly 30 times as high and CHD hospitalisation rates were 8 times as high as those among other Australians (Table 5.1). One of the highest disparities in hospitalisation rates was for oral complications of diabetes, for which hospitalisations among Indigenous people were 17 times that among other Australians.

Deaths

Diabetes deaths where complications were mentioned were much higher among Indigenous persons than among non-Indigenous Australians (Table 5.2).

During the period 2003–2005, Indigenous people had a diabetes death rate with kidney complications 19 times that of the non-Indigenous Australians. Diabetes deaths with CHD, stroke, PVD and lower limb ulcers among Indigenous people were about 7 times as high as that of non-Indigenous people.

Table 5.1: Hospitalisations for diabetes complications among Indigenous Australians, 2004–05

Complication	Observed	Expected	Standardised hospitalisation ratio
CHD	2,289	278	8.1[(a)]
Stroke	314	34	9.1[(a)]
PVD	604	129	4.7[(a)]
Kidney	18,319	620	29.5[(a)]
Eye	758	138	5.5[(a)]
Nervous system	359	76	4.7[(a)]
Oral	26	1	17.4[(a)]
Limb ulcer	424	41	10.3[(a)]

(a) Denotes that the rate of hospitalisations for any diagnosis of diabetes complications is significantly higher among Indigenous Australians than among Other Australians.

Notes

1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. Indirectly age-standardised to the 2004–05 Other Australian population.
3. Data are based on hospitalisations in Queensland, South Australia, Western Australia and public hospitals in the Northern Territory only.
4. Diabetes hospitalisations include those for which diabetes is a principal or additional diagnosis.
5. A single diabetes hospitalisation may include multiple complication types among the diagnoses.

Source: AIHW National Hospital Morbidity Database.

Table 5.2: Deaths from diabetes complications among Indigenous Australians, 2003–2005

Type of complication	Observed	Expected	Standardised mortality ratio
CHD	347	47	7.3[(a)]
Stroke	97	14	7.0[(a)]
PVD	37	5	6.7[(a)]
Kidney	216	11	19.3[(a)]
Limb ulcer	55	8	7.3[(a)]

(a) Denotes that the rate of deaths with any mention of diabetes complications are significantly higher among Indigenous Australians than among other Australians.

Notes

1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Indirectly age-standardised to 2003–2005 non-Indigenous Australian population.
3. Data are based on year of registration of death in Queensland, South Australia, Western Australia and the Northern Territory.
4. A total of 141 deaths in 2003–2005 where diabetes was mentioned as any cause of death had a missing/not stated Indigenous status and were excluded from the analysis.
5. A single person may have multiple complication types listed as a cause of death.

Source: AIHW National Mortality Database.

Socioeconomic position

Socioeconomic position is a complex concept, and it is well established that it has a strong influence on health. It is often conceptualised around three main features: education, employment status and income. Disadvantage in any of these areas has the potential to have an impact on the prevalence of diabetes and diabetes risk factors, as well as diabetes morbidity and mortality.

The measure of socioeconomic disadvantage—the ABS Socioeconomic Index for Areas (SEIFA)—used in this section is a measure constructed at the level of geographic area of residence. Although it does not necessarily represent the socioeconomic position of all households or individuals living within that area, it is a valid measure of socioeconomic position (Dutton et al. 2005). For the analysis presented here, the population was divided into five equal-sized groups based on the area-measure of socioeconomic position. That is, the group with the lowest socioeconomic position is the fifth of the population living in the least-well-off areas. And similarly, the highest socioeconomic group is the fifth of the population living in the most-well-off areas.

Prevalence

In 2004–05, the NHS showed a pattern of increasing diabetes prevalence with decreasing socioeconomic position. The age-adjusted prevalence rate of diabetes was 2.3% for people from the highest socioeconomic group. The prevalence of diabetes in the lowest socioeconomic group was nearly twice this rate. Across all socioeconomic groups males had higher rates of diabetes compared with females.

Risk factors

The prevalence of diabetes risk factors such as overweight and obesity and physical inactivity is higher in groups with lower socioeconomic position compared with groups with higher socioeconomic position. Based on data from the 2004–05 NHS, a higher proportion of people in the lowest socioeconomic groups were overweight or obese (53%) and physically inactive (76%), compared with people in the highest socioeconomic group (47% and 62%, respectively) (Table 5.3).

The pattern was mixed in relation to diet. While the proportions not eating sufficient amounts of vegetables were similar across all socioeconomic groups, a higher proportion of people in the least well-off group (54%) ate insufficient amounts of fruit compared with people in the most well-off group (44%).

People with diabetes were 20–50% as likely to be overweight or obese compared with those without diabetes across all socioeconomic groups. Except for those from the highest socioeconomic group, a higher proportion of people with diabetes than those without diabetes in all other socioeconomic groups were estimated to be physically inactive.

For more information on specific risk factors, refer to Chapter 3.

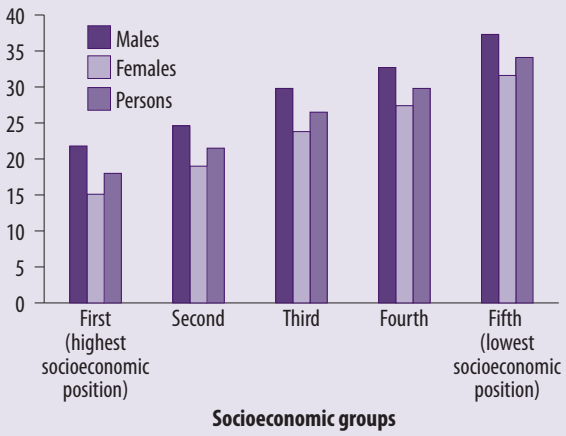
Table 5.3: Prevalence of diabetes risk factors by socioeconomic position, 2004–05 (per cent)

	Socioeconomic groups				
	First (highest socioeconomic position)	Second	Third	Fourth	Fifth (lowest socioeconomic position)
Overweight/obese	46.7	50.8	52.2	54.1	53.0
Physical inactivity[(a)]	62.3	68.0	71.0	72.3	75.9
Insufficient fruit[(b)]	43.7	47.3	50.2	52.6	54.0
Insufficient vegetable[(c)]	84.9	84.1	83.4	83.1	85.5

(a) Sedentary or low exercise level.
(b) Insufficient fruit is fewer than 3 serves per day for children aged 12–18 years, and fewer than 2 serves per day for adults aged 19 years and over.
(c) Insufficient vegetable is fewer than 4 serves per day for children aged 12–18 years, and fewer than 5 serves per day for adults aged 19 years and over.
Note: Directly age-standardised to the 2001 Australian population.
Source: AIHW analysis of ABS 2004–05 National Health Survey data.

Hospitalisations

In 2004–05, diabetes hospitalisations increased with decreasing socioeconomic position (Figure 5.5). When diabetes was considered as any diagnosis, the rate of diabetes hospitalisation among people from the lowest socioeconomic group (341 per 10,000) was nearly twice as high as that among people from the highest socioeconomic group (180 per 10,000). When diabetes was the principal diagnosis, the rates ranged from 25 per 10,000 people among the most well-off to 47 per 10,000 for the least well-off.



Notes

1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. Directly age-standardised to the 2001 Australian population.

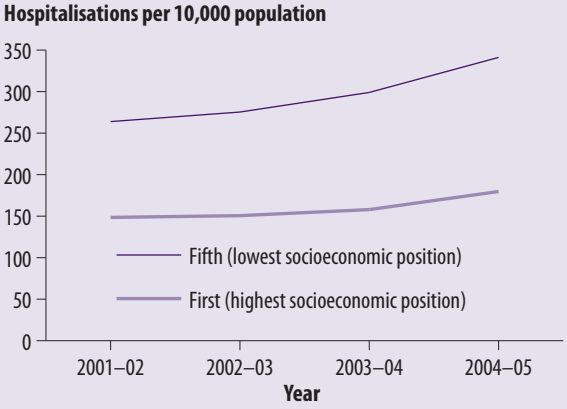
Source: AIHW National Hospital Morbidity Database.

Figure 5.5: Diabetes hospitalisations by socioeconomic position and sex, 2004–05

In 2004–05, hospitalisation rates for Type 2 diabetes among people from the lowest and the highest socioeconomic groups were 152 and 291 per 10,000 people, respectively. Females from the lowest socioeconomic group had hospitalisation rates for gestational diabetes that were twice that of females from the highest socioeconomic group (22 and 11 per 10,000 females, respectively).

Trends

Across the period 2001–02 to 2004–05, the diabetes hospitalisation rate increased for all socioeconomic groups (Figure 5.6). People from the highest socioeconomic group were hospitalised at a rate of 149 per 10,000 in 2001–02. This rate increased by 21% to 180 per 10,000 in 2004–05. In 2000–01, people from the lowest socioeconomic group were hospitalised with diabetes at a rate of 264 per 10,000, and this increased by 29% to a rate of 341 per 10,000 in 2004–05.



Notes

1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. Directly age-standardised to the 2001 Australian population.

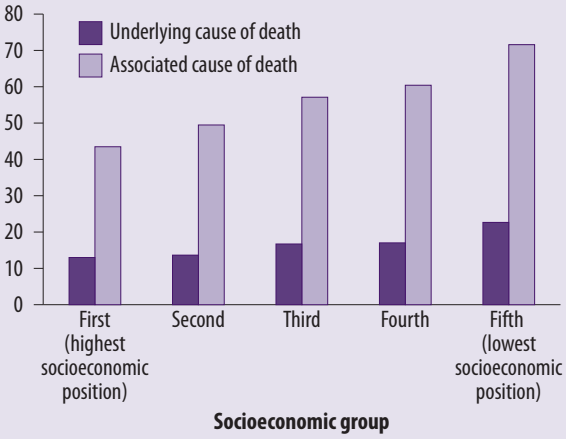
Source: AIHW National Hospital Morbidity Database.

Figure 5.6: Diabetes hospitalisations by socioeconomic position, 2000–01 to 2004–05

Deaths

In the period 2003–2005, lower socioeconomic position correlated with higher diabetes mortality. When diabetes was the underlying cause of death, there were 1,589 deaths among people in the highest socioeconomic group (13 deaths per 100,000) and 2,623 deaths among people in the lowest socioeconomic group (23 deaths per 100,000). There were 5,305 deaths from diabetes as an underlying or associated cause among people in the highest socioeconomic group—a rate of 40 deaths per 100,000. In the lowest socioeconomic group 8,298 deaths were recorded in 2003–2005—a rate of 72 per 100,000 (Figure 5.7).

During the period 2003–2005, people in the lowest socioeconomic group died from Type 1 diabetes at 1.4 times the rate, and Type 2 and other/unspecified diabetes at 1.7 times the rate of people in the highest socioeconomic group.



Notes

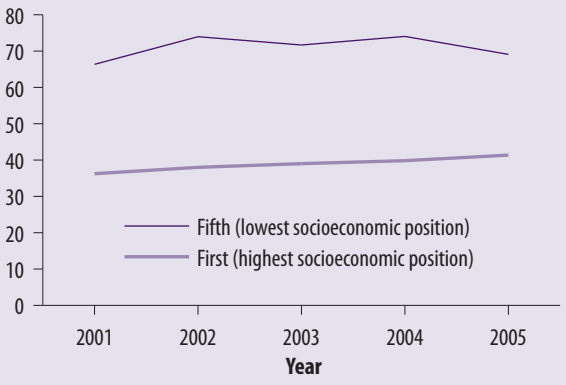
1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Directly age-standardised to the 2001 Australian population.

Source: AIHW National Mortality Database.

Figure 5.7: Diabetes deaths by socioeconomic position, 2003–2005

Trends

The diabetes death rate increased for all socioeconomic groups, by between 4% and 16%, across the period from 2001 to 2005 (Figure 5.8).



Notes

1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Directly age-standardised to the 2001 Australian population.

Source: AIHW National Mortality Database.

Figure 5.8: Diabetes deaths by socioeconomic position, 2001 to 2005

Complications

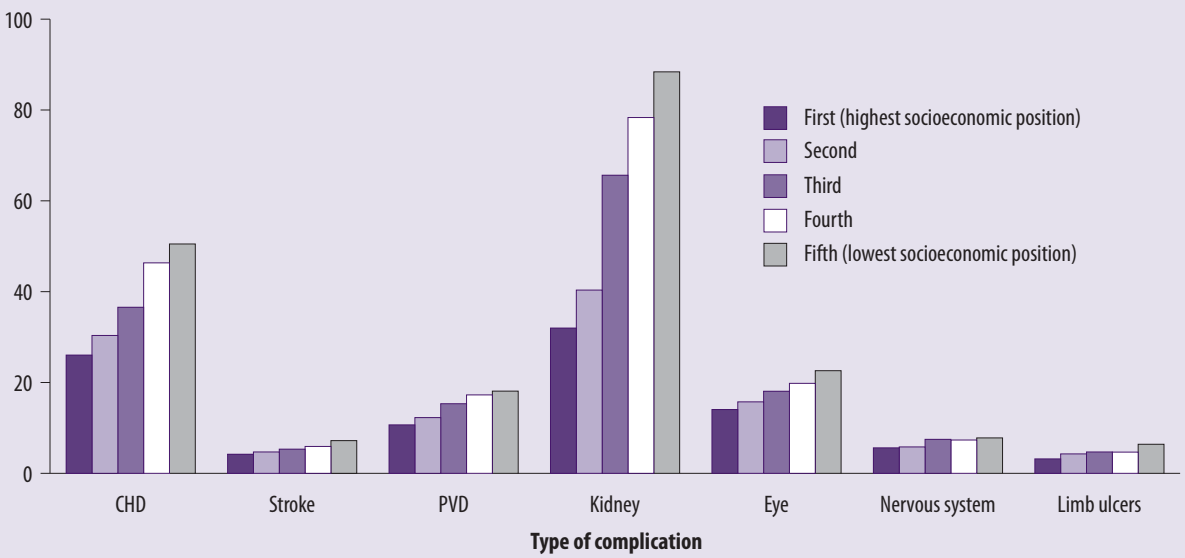
Hospitalisations

There was a consistent pattern of higher hospitalisation rates in lower socioeconomic groups for all complication types (Figure 5.9). Of the 75,741 hospitalisations for diabetes among people in the lowest socioeconomic group, 29% were also treated for coronary heart disease (CHD) and 46% were treated for kidney complications (including chronic kidney failure). These were twice and 3 times the corresponding rates among people in the highest socioeconomic group.

Deaths

Over the period 2003 to 2005, there was a consistent pattern of higher diabetes-related death rates in lower socioeconomic groups compared with higher socioeconomic groups for all complication types (Figure 5.10). The difference was greater for some complications than for others. For example, the diabetes death rate with kidney complications was twice as high among people in the lowest socioeconomic group as among those in the highest group. Similarly, the rate of diabetes deaths with CHD was also higher in the lowest socioeconomic group compared with the highest group (35 and 19 deaths per 100,000, respectively).

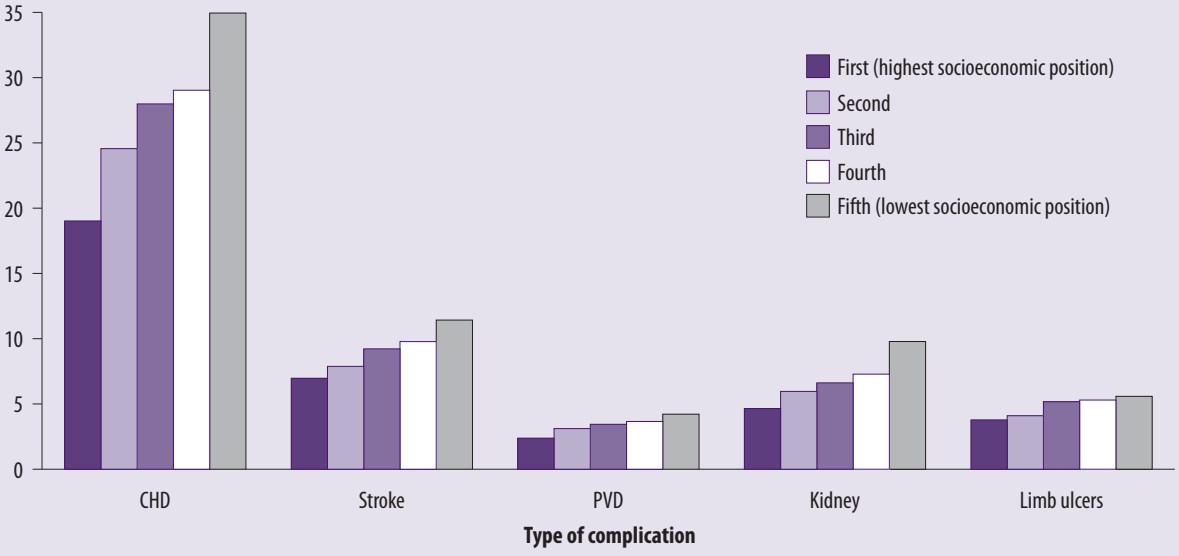
For more information on specific complications of diabetes, see Chapter 4.



Notes
1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. Directly age-standardised to the 2001 Australian population.
3. These data include hospitalisations for any diagnosis of diabetes, and related complications as either principal or additional diagnosis.

Source: AIHW National Hospital Morbidity Database.

Figure 5.9: Hospitalisations for diabetes complications by socioeconomic position, 2004–05



Notes
1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Directly age-standardised to the 2001 Australian population.
3. These data include deaths with diabetes as any cause, and related complications as either underlying or additional cause of death.

Source: AIHW National Mortality Database.

Figure 5.10: Deaths from diabetes complications by socioeconomic position, 2003–2005

Geographical location

Persons living in rural and remote regions of Australia generally have worse health, in terms of mortality, hospitalisation rates and risk factors compared with those living in metropolitan regions (Wilkinson & Blue 2002). This difference may be related to fewer educational and employment opportunities, poorer access to health services and the availability of necessities such as sewerage, clean water and a safe food supply (AIHW 2006a).

The relatively large proportion of Indigenous people living in Remote and Very Remote areas (12% and 45%, respectively) compared with Major Cities, together with their poorer overall health, is reflected in high rates of death in Remote areas (AIHW 2006a; Draper et al. 2004; Coory 2003). In 2005, 57% of diabetes deaths registered in Remote areas were for persons of Aboriginal and Torres Strait Islander origin, compared with only 3% of diabetes deaths registered in Major Cities or regional areas. Similarly, 78% of diabetes hospitalisations in 2004–05 among people from Remote areas were for Aboriginal and Torres Strait Islander persons, compared with only 9% of diabetes hospitalisations among people from Major Cities or regional areas.

Prevalence

According to self-reported data from the 2004–05 NHS, there were small differences in diabetes prevalence between regions: the age-adjusted rate was 3.4% in Major Cities, 3.5% in Inner Regional Australia and 3.6% in all other regions (Outer Regional, Remote and Very Remote combined). The prevalence of Type 2 diabetes was 2.9% for all regions.

As data for persons living in Remote and Very Remote Australia needed to be combined in the analysis, the influence of remoteness on diabetes prevalence could not be determined.

Risk factors

Based on the estimates from the 2004–05 NHS, a number of differences in diabetes risk factors were seen among people from different geographical regions. Over 50% of people living in Major Cities, Inner Regional and other areas were overweight or obese, thus being at increased risk of diabetes. Approximately a third of the Major Cities and Inner Regional population—and four out of ten people in other areas—were estimated to be sedentary or exercising at a low level. Just under one half of people in Major Cities, half of people in Inner Regional areas and 54% of people in other areas consumed insufficient fruit in 2004–05. The amount of vegetables consumed by those living in all geographical areas were much less than the level recommended by Australian dietary guidelines. Over three-quarters of the populations in these areas consumed insufficient amounts of vegetables, with people living in Major Cities having the highest rate of 87%.

When the risk factors for diabetes in populations with and without diabetes in different geographical regions were compared, the proportion that was overweight or obese was consistently higher among people in all areas with diabetes than among those without diabetes (Table 5.4). For people with diabetes, higher rates of overweight were seen in the Major Cities, but for people without diabetes the situation was reversed.

While people with diabetes in Major Cities and Inner Regional areas had higher rates of physical inactivity than their counterparts without diabetes, there was no difference between the two groups in other areas (Table 5.4).

People with diabetes living in other areas were less likely to eat insufficient fruit and vegetables each day, compared with their counterparts without diabetes. People with diabetes in Major Cities and Inner Regional areas had higher rates of insufficient vegetable consumption compared with their counterparts without diabetes; however people without diabetes in these areas had higher rates of insufficient fruit consumption. (Table 5.4).

For more information on specific risk factors, refer to Chapter 3.

Hospitalisations

Hospitalisation rates for diabetes rose with increasing remoteness. In 2004–05, hospitalisation rates for diabetes as a principal diagnosis in Very Remote areas were 3 times as

Table 5.4: Risk factors by diabetes status and geographical location, 2004–05 (per cent)

	General population			With diabetes			Without diabetes		
	Major Cities	Inner Regional	Other areas[a]	Major Cities	Inner Regional	Other areas[a]	Major Cities	Inner Regional	Other areas[a]
Overweight/obese	50.6	51.9	54.4	75.0	63.4	65.2	49.6	51.5	53.9
Physical inactivity[b]	32.0	35.0	39.7	39.9	36.2	38.6	31.7	34.6	39.8
Insufficient fruit[c]	48.6	49.9	53.9	42.5	31.6	45.3	48.6	50.1	53.7
Insufficient vegetables[d]	86.8	79.3	78.4	86.8	79.5	78.1	75.1	59.7	86.5

(a) Other areas include Outer Regional, Remote and Very Remote Australia.
(b) Sedentary or low exercise level.
(c) Insufficient fruit is fewer than 3 serves per day for children aged 12–18 years, and fewer than 2 serves per day for adults aged 19 years and over.
(d) Insufficient vegetable is fewer than 4 serves per day for children aged 12–18 years, and fewer than 5 serves per day for adults aged 19 years and over.
Note: Directly age-standardised to the 2001 Australian population.
Source: AIHW analysis of ABS 2004–05 National Health Survey data.

high as in Major Cities (Table 5.5). Hospitalisation rates for any diagnosis of diabetes in Remote areas were nearly twice the rate in Major Cities and in Very Remote areas they were 3 times as high as in Major Cities. This may partly be a reflection of the high proportion of Indigenous people living in Remote and Very Remote areas, which contributes to but does not completely account for, the poorer health of people living in remote areas. As shown in the previous section of this chapter, the prevalence of diabetes is high among Indigenous people compared with the non-Indigenous population across all geographic areas.

In 2004–05 in Remote and Very Remote areas, females were hospitalised for diabetes at higher rates than males, either as the principal diagnosis or as any diagnosis (Table 5.5).

The majority of diabetes hospitalisations in all regions were for Type 2 diabetes. People living in Very Remote areas had hospitalisation rates for Type 2 diabetes over 3 times that of people living in Major Cities. There was a 4-fold difference for gestational diabetes. Hospitalisations for Type 1 diabetes among people living in Very Remote areas is significantly lower than among people living in Major Cities. (Table 5.6).

Trends

There was a significant increase in the diabetes hospitalisation rate in all regions of Australia between 2000–01 and 2004–05 (Figure 5.11). Major cities, Remote and Very Remote Australia had a 38% increase and regional Australia had a 36% increase over the period. Remote and Very Remote areas had higher hospitalisation rates than Major Cities and the difference between these areas has lessened in recent years.

Table 5.5: Diabetes hospitalisations by sex and geographical location, 2004–05 (per 10,000)

	Males	Females	Persons
	Principal diagnosis		
Major Cities	32.8	35.3	34.1
Inner Regional	36.9	33.0	34.8
Outer Regional	45.6	18.7	43.6
Remote	46.9	50.3	48.5
Very Remote	76.8	139.0	105.8
	Any diagnosis		
Major Cities	268.8	240.2	254.3
Inner Regional	292.5	211.0	249.3
Outer Regional	319.4	126.0	301.1
Remote	419.4	534.6	474.5
Very Remote	582.6	899.1	729.2

Notes
1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. Indirectly age-standardised to the 2004–05 Major Cities population.

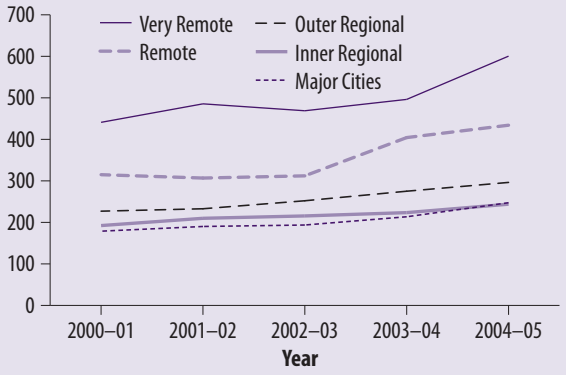
Source: AIHW National Hospital Morbidity Database.

Table 5.6: Diabetes hospitalisations by geographical location and type of diabetes, 2004–05

	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote
			Number		
Type 1	33,695	13,771	7,314	747	296
Type 2	290,895	99,797	55,758	11,778	7,797
Gestational[(a)]	10,767	2,263	1,290	228	308
Other/unspecified	5,147	1,966	1,068	235	159
			Standardised hospitalisation ratio		
Type 1	1.0	1.2[(b)]	1.4[(b)]	1.0	0.8[(b)]
Type 2	1.0	1.0	1.2[(b)]	2.0[(b)]	3.3[(b)]
Gestational[(a)]	1.0	1.6[(b)]	0.9	1.8[(b)]	4.2[(b)]
Other/unspecified	1.0	1.1[(b)]	1.3[(b)]	2.1[(b)]	3.0[(b)]

(a) Females only.
(b) Significantly different to Major Cities.
Notes
1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. Indirectly age-standardised to the 2004–05 Major Cities population.

Source: AIHW National Hospital Morbidity Database.



Notes
1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. Directly age-standardised to the 2001 Australian population.

Source: AIHW National Hospital Morbidity Database.

Figure 5.11: Diabetes hospitalisations by geographical location, 2000–01 to 2004–05

Deaths

In the period 2003–2005, the death rate from diabetes as the underlying cause of death for people living in Major Cities was 16 per 100,000 people. The rate increased with increasing remoteness, with people in Remote areas experiencing deaths rates nearly twice that of people in Major Cities while people in Very Remote areas had rates over 4 times the rate in Major Cities (Table 5.7).

Deaths where diabetes was the underlying or an additional cause of death were also high in more remote areas than in Major Cities or regional areas. During 2003–2005, the diabetes death rate in Very Remote areas was 3 times the rate in Major Cities (Table 5.7).

Again, the disparity in death rates by region could be a reflection of the higher proportion of Indigenous Australians in Remote and Very Remote areas compared with urban and regional centres. In 2001, 13% of people living in Remote areas and 44% of people living in Very Remote areas of Australia were of Indigenous origin. As discussed earlier in this chapter, the higher proportion of Indigenous Australians in remote areas does not completely account for the generally poorer health of people living in remote areas.

In 2003–2005, death rates from Type 2 and Other/Unspecified types of diabetes were significantly higher in Remote and Very Remote areas compared with Major Cities (Table 5.8). There is also evidence of some rates being higher in regional areas than in Major Cities.

Trends

There was no major change in diabetes death rates for any region across the six year period 2000 to 2005 (Figure 5.12). There were small reductions for regional and Very Remote areas and a 15% increase in remote areas.

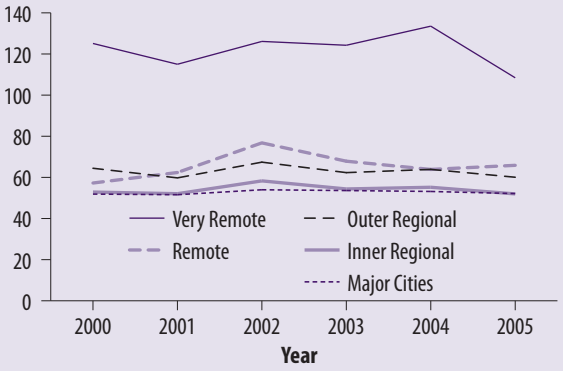
Across the same period, there was no significant change in the relative difference in diabetes death rates for people living in regional areas compared with people in Major Cities. However, there was a significant increase (18%) in the difference between Remote areas and Major Cities and a 13% decrease for Very Remote Australia compared with Major Cities.

Table 5.7: Diabetes deaths by sex and geographical location, 2003–2005 (per 100,000)

	Males	Females	Persons
Underlying cause of death			
Major Cities	16.4	15.0	15.7
Inner Regional	20.6	14.9	17.3
Outer Regional	26.1	18.1	21.6
Remote	36.9	28.7	32.6
Very Remote	68.9	61.7	65.3
Any cause of death			
Major Cities	57.7	50.7	54.2
Inner Regional	70.6	45.8	56.4
Outer Regional	83.6	52.9	66.5
Remote	97.4	71.7	84.1
Very Remote	159.4	165.9	162.6

Notes
1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Indirectly age-standardised to the 2003–2005 Major Cities population.

Source: AIHW National Mortality Database.



Notes
1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Directly age-standardised to the 2001 Australian population.

Source: AIHW National Mortality Database.

Figure 5.12: Diabetes death rates by geographical location 2000 to 2005

Table 5.8: Diabetes deaths as any cause of death, by geographical location and type of diabetes, 2003–05

	Major Cities	Inner Regional	Outer Regional	Remote	Very Remote
			Number		
Type 1	1,695	717	336	41	16
Type 2	10,114	3,800	2,048	283	242
Other/unspecified	9,830	3,472	1,802	266	170
			Standardised mortality ratio		
Type 1	1.0	1.2[(a)]	1.2[(a)]	1.3	1.3
Type 2	1.0	1.1	1.3[(a)]	1.6[(a)]	3.7[(a)]
Other/unspecified	1.0	1.0	1.2[(a)]	1.5[(a)]	2.6[(a)]

(a) Significantly different to Major Cities.

Notes
1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Indirectly age-standardised to the 2003–2005 Major Cities population.

Source: AIHW National Mortality Database.

Complications

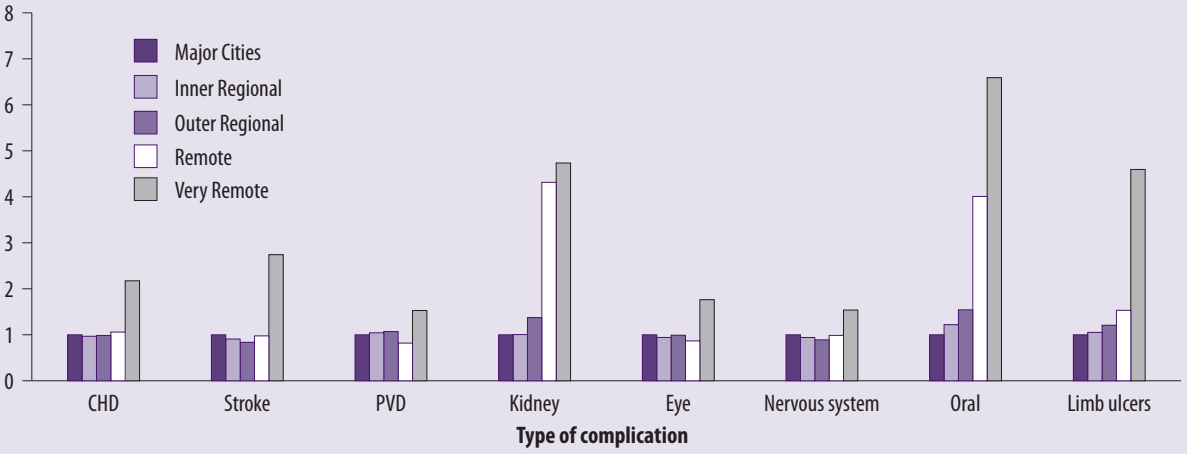
Hospitalisations

In 2004–05, hospitalisation rates for various diabetes complications in most regions were similar. The notable difference was in Very Remote areas where rates for nearly all diabetes complications were substantially higher than in other areas. The exception is for kidney complications where the rates for both Remote and Very Remote areas were higher than in other regions (Figure 5.13).

Deaths

There is inequality in death rates from diabetes complications across regions, particularly between people in Very Remote areas compared with other regions. Compared with people living in Major Cities, people living in Very Remote Australia were 7 times as likely to die with both diabetes and kidney complications as causes of death and 3 times as likely to die with diabetes and any of CHD, stroke and lower limb ulcers in 2003–2005 (Figure 5.14).

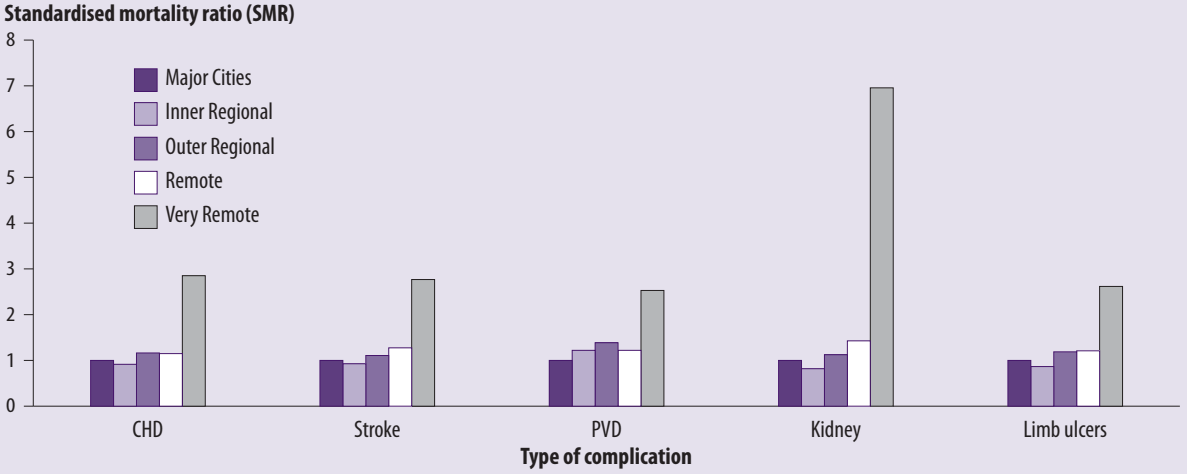
For more information on specific complications of diabetes, see Chapter 4.



Notes
1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. 2004–05 Major Cities males, females and persons used as the standard population in the calculation of the rates.

Source: AIHW National Hospital Morbidity Database.

Figure 5.13: Hospitalisations for diabetes complications by geographic location, 2004–05



Notes
1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Indirectly age-standardised to the 2003–2005 Major Cities population.

Source: AIHW National Mortality Database.

Figure 5.14: Deaths from diabetes complications by geographic location, 2003–2005

Overseas-born

Australia is a multicultural nation, with 28% of its population having been born overseas. However, previous analysis has shown that proportionally more overseas-born people than Australian-born people have diabetes. Rates of diabetes, hospitalisations and/or mortality are more common among people born in the South Pacific Islands, Southern Europe, Middle East, North Africa and Southern Asia (AIHW 2003a).

Data on ethnicity are not commonly collected in Australian health statistics, and so country of birth is used as a proxy for ethnicity in this section.

Prevalence

In 2004–05, according to NHS self-reported data, the age-adjusted prevalence of diabetes was 3% for people born in Australia and 4% for those born overseas. However, people born in specific country groups (regions) had much higher rates of diabetes than those born in Australia. For example, the prevalence among people born in North Africa and the Middle East was about 7%. For those born in South-East Asia it was close to 6% and for people born in both Oceania (excluding Australia) and Southern and Eastern Europe the prevalence of diabetes was around 5%.

Risk factors

According to the 2004–05 NHS data, the age-adjusted prevalence of overweight and obesity among people born in Australia was estimated to be 63%. In the same survey, 58% of those born in the United Kingdom, 62% born in other Oceania and 67% born in Southern and Eastern Europe were estimated to be overweight or obese (Table 5.9).

Over two-thirds of people born in Australia (69%), other Oceania (68%),the United Kingdom (66%) and over three-quarters of those born in Southern and Eastern Europe (79%) were estimated to be physically inactive.

Other risk factors for diabetes, such as poor dietary habits, as measured by low intake of fruit and vegetables, also appeared to be of concern among these populations. In 2004–05, just over half the Australian-born population consumed less than the daily requirement of fruit and 83% consumed fewer vegetables than their daily requirement. Of those born overseas, fewer than half the population from each region consumed insufficient amounts of fruit each day; however, over 80% consumed insufficient amounts of vegetables (Table 5.9).

For more information on specific risk factors, refer to Chapter 3.

Hospitalisations

In 2004–05, there were almost 42,100 hospitalisations among people born in Australia where diabetes was the principal diagnosis—a rate of 27 hospitalisations per 10,000. Hospitalisation rates for diabetes among people born in South-East Europe and in Africa and the Middle East were 20% higher than that among Australian-born people. People born in North-Western Europe and the Americas had lower rates of diabetes hospitalisations than Australian-born people.

Table 5.9: Prevalence of diabetes risk factors by region of birth, 2004–05 (per cent)

	Overweight/ obesity	Physical inactivity[a]	Insufficient fruit[b]	Insufficient vegetables[c]
Australia	62.9	68.7	50.5	82.6
Oceania (excluding Australia)	61.8	67.5	46.9	88.5
United Kingdom	58.1	66.3	49.1	86.8
Southern and Eastern Europe	67.2	78.9	36.0	88.6

(a) Sedentary or low exercise level.
(b) Insufficient fruit is fewer than 3 serves per day for children aged 12–18 years, and fewer than 2 serves per day for adults aged 19 years and over.
(c) Insufficient vegetable is fewer than 4 serves per day for children aged 12–18 years, and fewer than 5 serves per day for adults aged 19 years and over.
Note: Directly age-standardised to the 2001 Australian population.
Source: AIHW analysis of ABS 2004–05 National Health Survey data.

People born in Oceania (excluding Australia) and Asia had similar hospitalisation rates compared with people born in Australia. This pattern was similar for hospitalisations where any diagnosis of diabetes was considered (Figure 5.15).

In 2004–05, hospitalisations for Type 1 diabetes among people born overseas were only half those of Australian-born people. Hospitalisations for Type 2 diabetes among overseas-born people were 10% higher than those among people born in Australia. However, women born overseas had hospitalisation rates for gestational diabetes 3 times that of women born in Australia (Table 5.10).

Trends

Between 2000–01 and 2004–05, the rate of diabetes hospitalisations increased for both Australian and overseas-born people, by around 40% (Figure 5.16).

Deaths

In the period 2003–2005, there were 6,693 deaths from diabetes as the underlying cause of death among people born in Australia: a rate of 15 deaths per 100,000. In contrast, people born overseas had a slightly higher diabetes death rate of 18 deaths per 100,000.

Table 5.10: Hospitalisations by type of diabetes, Australian and overseas-born populations, 2004–05

Type of diabetes	Number		Standardised hospitalisation ratio (Overseas-born/ Australian-born)
	Australian-born	Overseas-born	
Principal diagnosis			
Type 1	12,050	2,321	0.6[(b)]
Type 2	25,645	13,883	1.1[(b)]
Gestational[(a)]	3,485	1,865	3.3[(b)]
Other/ unspecified	901	372	1.0
Any diagnosis			
Type 1	44,538	11,431	0.6[(b)]
Type 2	300,223	166,878	1.1[(b)]
Gestational[(a)]	9,522	5,341	3.4[(b)]
Other/ unspecified	6,033	2,568	1.0[(b)]

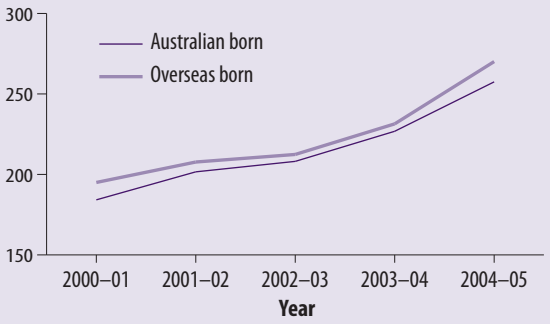
(a) Females only.
(b) Significantly different compared with Australian-born rates.
Notes
1. Diabetes is classified according to ICD-10-AM codes: E10–E14 and O24.
2. Indirectly age-standardised to the 2004 Australian-born population.
Source: AIHW National Hospital Morbidity Database.

Notes
1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. Indirectly age-standardised to the 2004 Australian-born population.
Source: AIHW National Hospital Morbidity Database.

Figure 5.15: Diabetes hospitalisations by region of birth, 2004–05

Diabetes was the underlying or an associated cause of death in 22,259 deaths (48 per 100,000 people) among people born in Australia. (Figure 5.17). There were 12,741 deaths (58 per 100,000) among overseas-born people with diabetes as a cause of death. Specifically, people born in South-East Europe or Africa and the Middle East had the highest rates of death from diabetes (76 and 74 deaths per 100,000, respectively).

In 2003–2005, Australian-born and overseas-born people had similar rates of death from Type 1 diabetes. Death rates from Type 2 and other/unspecified diabetes among people born overseas were 20% higher than those among Australian-born people (Table 5.11).



Notes
1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. Directly age-standardised to the 2001 Australian population.

Source: AIHW National Hospital Morbidity Database.

Figure 5.16: Diabetes hospitalisations, Australian-born and overseas-born people, 2000–01 to 2004–05

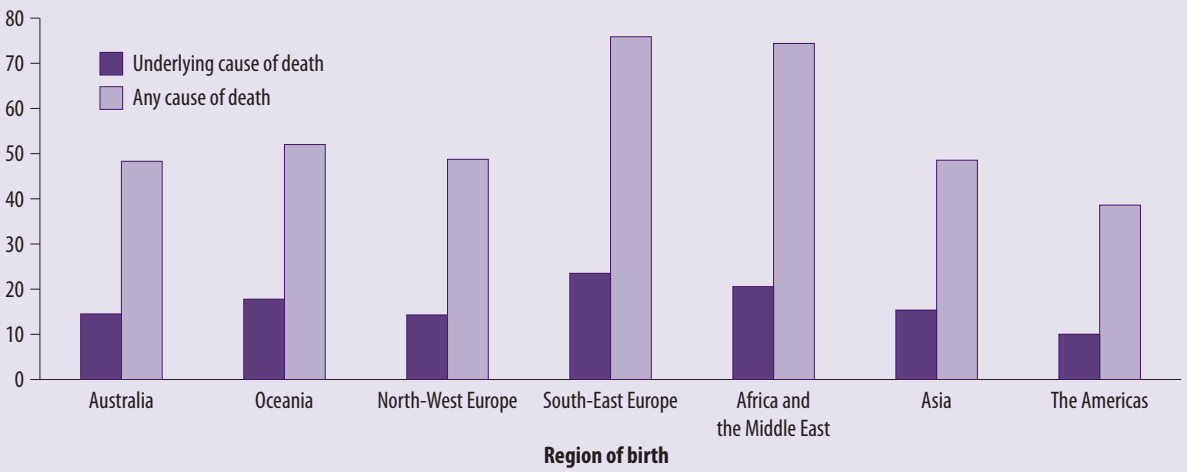
Table 5.11: Diabetes deaths for overseas-born and Australian-born people by type of diabetes, 2003–2005

	Number		Standardised Mortality Ratio (Overseas-born/ Australian-born
	Australian-born	Overseas-born	
Underlying cause of death			
Type 1	704	350	1.0
Type 2	2,642	1,516	1.2[(a)]
Other/ unspecified	3,347	1,950	1.2[(a)]
Any cause of death			
Type 1	1,887	927	1.0
Type 2	10,452	6,114	1.2[(a)]
Other/ unspecified	9,930	5,699	1.2[(a)]

(a) Significantly different compared with Australian-born rates.

Notes
1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Indirectly age-standardised to the 2003–2005 Australian-born population.

Source: AIHW National Hospital Morbidity Database.



Notes
1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Indirectly age-standardised to the 2003–2005 Australian-born population.

Source: AIHW National Mortality Database.

Figure 5.17: Diabetes deaths by region of birth, 2003–2005

Trends

Diabetes death rates among Australian and overseas-born populations remained largely unchanged over the period 2000–2005. However, overseas-born people experienced higher rates of deaths from diabetes than did people born in Australia, across all years (Figure 5.18). A large part of the disparity in deaths between the two populations can be attributed to the high rates of diabetes mortality experienced by people born in Africa and the Middle East.

Notes

1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Directly age-standardised to the 2001 Australian population.

Source: AIHW National Mortality Database.

Figure 5.18: Diabetes deaths as any cause of death, selected regions of birth, 2000 to 2005

Complications

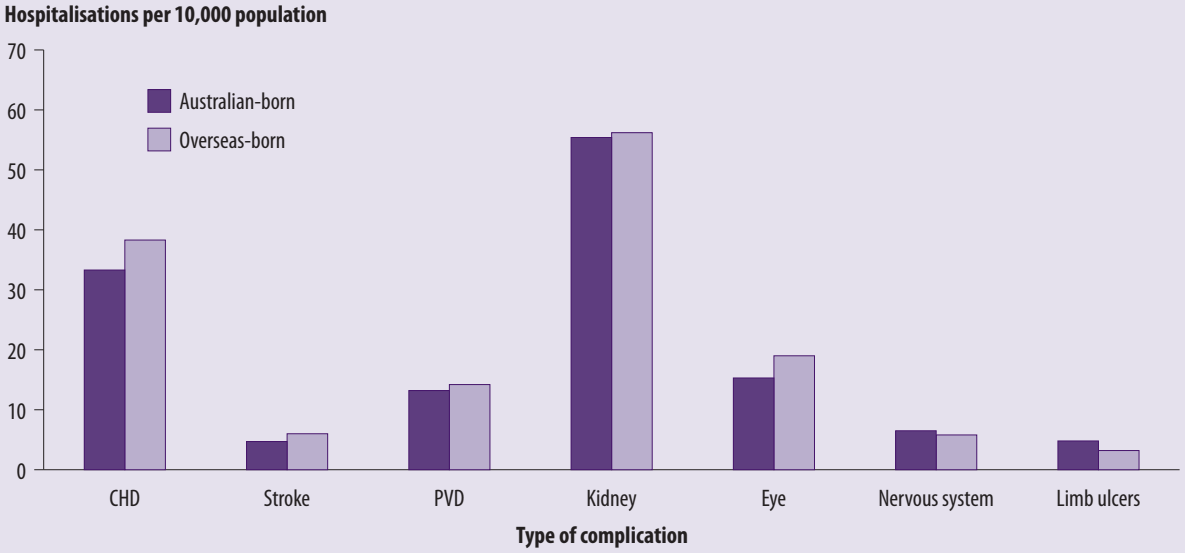
Hospitalisations

Of the 360,348 diabetes hospitalisations among Australian-born people in 2004–05, almost one quarter (24%) also had a diagnosis of kidney complications (including chronic kidney failure) and 14% had a coronary heart disease (CHD) diagnosis. There is very little difference in the hospitalisation rates between the Australian-born and overseas-born populations when the different age-structure of the two populations are accounted for (Figure 5.19).

Deaths

In the period 2003–2005, death rates from certain diabetes complications were significantly higher among people born overseas compared with that among people born in Australia; including CHD, stroke, kidney complications and lower limb ulcers (Figure 5.20). The highest mortality rates were for diabetes deaths with CHD: a rate of 24 deaths per 100,000 persons born among Australian-born people, and a rate of 28 deaths per 100,000 for people born overseas.

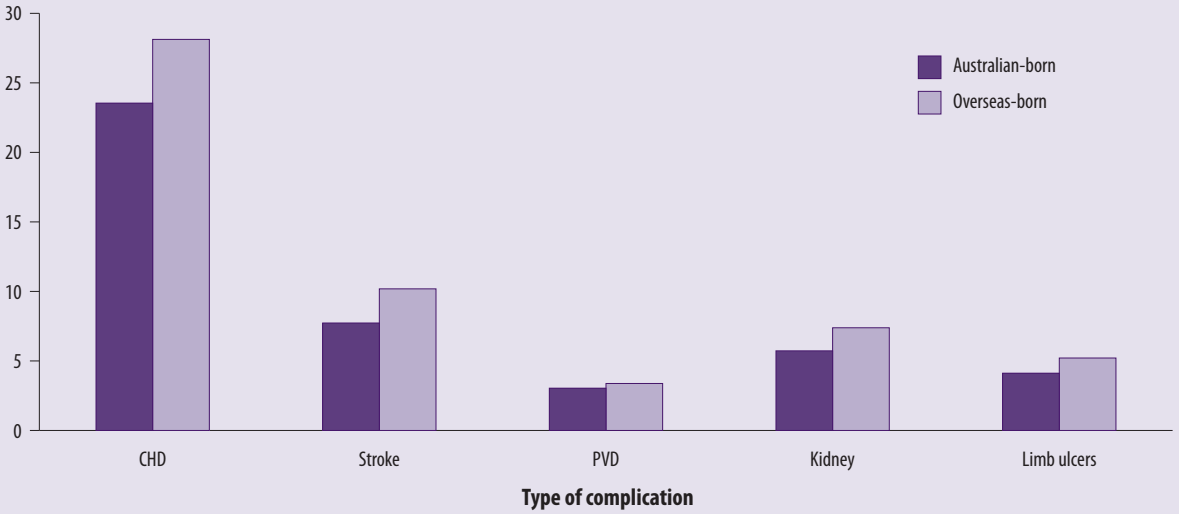
For more information on specific complications of diabetes, see Chapter 4.



Notes
1. Diabetes and related complications are classified according to ICD-10-AM codes. See Appendix 1.
2. Indirectly age-standardised to the 2004 Australian-born population.
3. Hospitalisations with diabetes as any diagnosis, and related complications as either principal or additional diagnosis.

Source: AIHW National Hospital Morbidity Database.

Figure 5.19: Diabetes hospitalisations among Australian-born and overseas-born people, by type of diabetes-related complication, 2004–05



Notes
1. Diabetes and related complications are classified according to ICD-10 codes. See Appendix 1.
2. Indirectly age-standardised to the 2003–2005 Australian-born population.
3. Deaths with diabetes as any cause, and related complications as either underlying or additional cause of death.

Source: AIHW National Mortality Database.

Figure 5.20: Diabetes deaths among Australian-born and overseas-born persons, by type of diabetes-related complication, 2003–2005