CHAPTER 7   DIABETES

INTRODUCTION

In previous editions of this publication a 'feature chapter' has been dedicated to a detailed review of an issue of particular importance in Indigenous health or welfare. In this edition, the feature chapter examines diabetes and its effects on Australia's Aboriginal and Torres Strait Islander people. Diabetes was chosen because of its significance as a health issue among the Indigenous population.

The disease exists in two primary forms, known as Type 1 and Type 2 diabetes (see inset 7.1). While Type 1 diabetes is relatively rare among Indigenous people, available data suggest that the Indigenous population has very high prevalence rates of Type 2 diabetes (McCarty et al. 1996). Type 2 diabetes in the Indigenous population is characterised by its early onset, which has serious implications for diabetic complications (O'Dea 1992a).

Diabetes is associated with a number of other major health conditions. It has been associated with cardiovascular disease (Eastman & Keen 1997), and is a major cause of nephropathy (kidney disease) (Disney 2001), neuropathy (nerve damage) (Eastman in eds. Harris et al. 1995), retinopathy resulting in blindness (Klein & Klein in eds. Harris et al. 1995), and is associated with peripheral vascular disease, causing ulceration, gangrene and, ultimately, amputation (Palumbo & Melton in eds. Harris et al. 1995). In addition, diabetes in pregnant women is associated with fetal abnormalities (Martinez-Frias et al. 1998, Kamath et al. 1998), and may also increase the risk of infants developing insulin resistance and other diabetes-related conditions later in life (Plagemann et al. 1997).

Data in this chapter are presented from hospital separations data, death registrations, surveys and from a number of small area studies.

7.1   DIABETES: TERMS AND DEFINITIONS

Diabetes is a chronic disease caused by 'deficient insulin production and/or resistance to its action' (NHMRC 2000, p. 153). Two primary forms of diabetes have been distinguished: Type 1 diabetes, or Insulin-Dependent Diabetes Mellitus (IDDM) and Type 2 diabetes, or Non-Insulin-Dependent Diabetes Mellitus (NIDDM).

Type 1 diabetes is currently understood to be caused by the destruction of beta-cells in the pancreas leading to an inability to produce insulin, and is characterised by a sudden onset of symptoms. To control the disease, people with Type 1 diabetes must inject insulin to maintain their blood sugar levels at non life-threatening levels (Harris & Zimmet in Alberti et al. (eds),1992).

Type 2 diabetes is caused by 'a combination of abnormalities of insulin action and insulin secretion' (NHMRC 2000, p. 153). Type 2 diabetes is thought to be an hereditary disease, with environmental and behavioural risk factors, such as low physical activity levels and rapid lifestyle change also being contributing factors. There is also a strong association between Type 2 diabetes and obesity, and a person's diabetic condition often improves in response to weight reduction, increased physical activity and dietary changes. In severe cases, insulin may be required to control hyperglycaemia (high blood glucose levels) during later stages of the disease (Harris & Zimmet in Alberti et al. (eds), 1992).

Another form of the disease, gestational diabetes, is very similar to Type 2 diabetes, although it is usually only present for the duration of pregnancy. A number of obstetric complications for mother and baby may arise as a result of diabetes during pregnancy, including an increased risk of difficulties associated with labour and delivery. Other obstetric complications may include hypertension (high blood pressure), urinary tract infections, uterine bleeding, and premature birth (McMahon et al. 1998). Children born to women with diabetes are at increased risk of fetal malformations, fetal distress, and neonatal complications (Martinez-Frias et al. 1998, Kamath et al. 1998). They also appear to be at greater risk of developing susceptibility to IGT (Impaired Glucose Tolerance) and insulin resistance later in life (Plagemann et al. 1997).

In January 1999 the International Classification of Diseases 9th Revision (ICD-9) was replaced by ICD-10 for cause-of-death coding. For reporting of hospital diagnoses, an Australian Modification of ICD-10 was introduced in NSW, Victoria, NT and ACT in July 1998, and in the remaining Australian States in July 1999. The changes included a move from the treatment-based classification of insulin-dependent diabetes and non-insulin-dependent diabetes to the cause-based classification of Type 1 and Type 2 diabetes. Hospitalisation and mortality data presented in this chapter have been mapped to correspond with the ICD-10 classification (see Explanatory Notes).

PREVALENCE OF DIABETES   Data about the prevalence of diabetes within the Australian community have recently been published in the Australian Diabetes, Obesity and Lifestyle (AusDiab) Report (International Diabetes Institute 2001). AusDiab is the first national study of the prevalence of diabetes in the Australian population. At this stage, reliable information about the prevalence of the disease in the Aboriginal and Torres Strait Islander population is not available at the national level because of data quality and availability problems (see below). The information presented in this section comes from a range of sources that, despite the data limitations, provide a substantial amount of evidence indicating the prevalence of diabetes is considerably higher among Aboriginal and Torres Strait Islander people than the whole of the Australian population.

Hospital visits for diabetes   Hospitalisation statistics provide insights into the level of diabetes in the community but are not a measure of prevalence, as not all people with diabetes are hospitalised. It should also be noted that hospitalisation statistics are affected by the fact that the number of Indigenous people who are correctly identified is lower than the true number of Indigenous patients (see Chapter 6).

Nationally, in 1998–99, there were more than 1,600 separations from hospital (see Glossary for definitions) for Type 1 and Type 2 diabetes for people who were identified as Indigenous. Nearly 75% of these were for Type 2 diabetes. Based on rates for the total Australian population, there were 10 times as many hospital separations as expected for Type 2 diabetes for Indigenous males, and nearly 15 times as many for Indigenous females (see inset 8.1 for an explanation of 'expected').

7.2   HOSPITAL SEPARATIONS FOR DIABETES — 1998–99(a)

	Indigenous males			Indigenous females		
	Observed separations			Observed separations		
	no.	%	Age-standardised hospital separation ratio(b)	no.	%	Age-standardised hospital separation ratio(b)
Type 1 diabetes	194	27	1.8	222	24	2.0
Type 2 diabetes	523	72	10.3	693	75	14.5
Diabetes mellitus(c)	**722**	**100**	**4.6**	**928**	**100**	**5.9**

(a) Based on principal diagnosis. Data are from public and most private hospitals.

(b) Age-standardised hospital separation ratio is calculated as observed hospital separations divided by expected hospital separations, based on all Australian age-, sex-, and cause-specific rates.

(c) Includes other types of diabetes mellitus and unspecified types of diabetes mellitus. Excludes hospitalisation for gestational diabetes.

Source: AIHW National Hospital Morbidity Database.

Deaths from diabetes

The number of deaths due to diabetes provides an indication of the burden of the disease in the population. There are, however, data quality issues in relation to the way diabetes is recorded on cause-of-death forms (see below 'Data quality and availability') as well as underestimation of the numbers of Indigenous people recorded in overall death registration data (see Chapter 8).

In 1997–99, in Queensland, South Australia, Western Australia and Northern Territory, diabetes was recorded as the underlying cause of death for 328 people identified as Indigenous. These deaths represented 6% of all male deaths and 10% of all female deaths recorded as Indigenous, in these jurisdictions. A further 423 deaths of Indigenous people were reported with diabetes as an associated cause (see Chapter 8 for an explanation of 'underlying' and 'associated' cause). For the period 1997–99, the identification of Indigenous people in the death registrations data of other States and Territories was of insufficient quality to be included (see Chapter 8).

Table 7.3 shows that the standardised mortality ratio (SMR) for diabetes was 10 for Indigenous males and 13.5 for Indigenous females. The SMR for Type 2 diabetes was much higher than for Type 1 diabetes (see inset 8.1 for an explanation of SMR).

7.3　DEATHS FROM DIABETES(a)—1997–99

	Indigenous males			Indigenous females		
	Observed deaths			Observed deaths		
	no.	%	SMR(b)	no.	%	SMR(b)
Type 1 diabetes	10	7	4.4	11	6	5.9
Type 2 diabetes	66	44	16.5	71	40	19.7
Other diabetes(c)	74	49	8.4	96	54	12.5
Diabetes mellitus(d)	**150**	**100**	**10.0**	**178**	**100**	**13.5**

(a) Based on underlying cause of death. Data from Queensland, South Australia, Western Australia and the Northern Territory combined. Based on year of registration.

(b) Standardised mortality ratio is calculated as observed deaths divided by expected deaths, based on all Australian age, sex, and cause-specific rates.

(c) Includes deaths due to other types of diabetes mellitus and unspecified types of diabetes mellitus.

(d) Excludes deaths due to gestational diabetes.

Source: ABS data available on request, Deaths Registration Database.

Deaths from diabetes
continued

Graph 7.4 shows that from age 25 onwards, the death rate for Indigenous people is higher than the death rate for the total population. This reflects the earlier onset of diabetes for Indigenous people.

7.4　AGE SPECIFIC DEATH RATES—DIABETES MELLITUS(a)
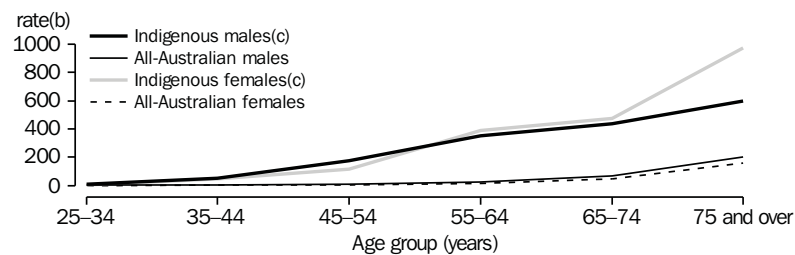
(a) Based on underlying cause of death. Data are for the years 1997-99 combined, based on year of registration.
(b) Per 100,000 people.
(c) Indigenous data are for usual residents of Queensland, South Australia, Western Australia and the Northern Territory combined.

Source: Data available on request, ABS Deaths Registration Database.

Of 328 deaths recorded with diabetes as the underlying cause, 41% had ischaemic heart disease listed as an associated cause, 26% listed other forms of heart disease and renal disease was an associated cause in 38% of deaths (ABS data available on request, Deaths Registration Database).

Surveys and other studies

Some 3.5% of males and 4.7% of females in the 1994 National Aboriginal and Torres Strait Islander Survey (NATSIS) reported having diabetes as a long-term health condition. After age 45, however, this figure increased to 17% for Indigenous males and 23% for Indigenous females. Although results for non-Indigenous people are not available from the NATSIS, the 1995 National Health Survey (NHS) estimates the prevalence rate of diabetes (reported at any time during the respondent's life) to be 6.2% for all Australian males over 45 and 5.3% for all Australian females over 45 (ABS 1996, ABS 1997b).

The age-standardised reported rate of diabetes among Indigenous people aged 15 years and over living in non-remote areas (11%), was four times higher than for the general population (2.7%)(ABS, data available on request, NHS 1995). For Indigenous people aged between 25 years and 55 years, diabetes was reported at rates 7–8 times higher than those for non-Indigenous people (graph 7.5) (ABS 1999c—refer to Explanatory Notes for NHS definition of 'non-remote').

7.5 REPORTED DIABETES(a)—1995
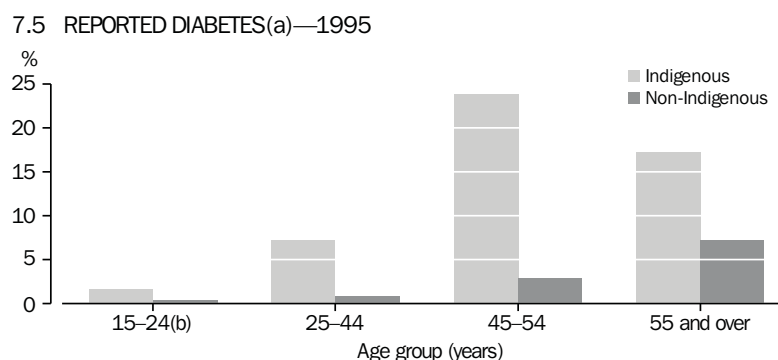
(a) Excludes persons living in remote areas.
(b) Some data values too small to graph.

Source: ABS 1999c.

Both the NATSIS and NHS figures are likely to underestimate the true prevalence of diabetes because health conditions were self-reported in these surveys, and it is likely that many respondents who had the disease were unaware of their condition. The AusDiab Report estimates the prevalence of diabetes in the Australian population aged 25 years and over at 7.5%, rising to 24% in people aged 75 years and over (International Diabetes Institute 2001). The study found that there was one undiagnosed case of diabetes for every diagnosed case. Plans to conduct a similar study, to estimate the prevalence of diabetes in an urban Aboriginal and Torres Strait Islander population are currently being developed.

In 1998, a systematic review of the published evidence concerning diabetes in Aboriginal and Torres Strait Islander populations was undertaken for the Department of Health and Family Services (de Courten et al. 1998). The review examined a large number of small area studies and, despite difficulties in comparability due to different methodologies and diagnostic criteria, found evidence suggesting the overall prevalence rate of diabetes for Indigenous people of all ages lies between 10% and 30%. Another study found the prevalence of diabetes among the 20–50 year age group in six Indigenous communities in northern and central Australia to be 10 times higher than among the Australian non-Indigenous population (O'Dea 1996).

From 1 January 1999, the National Diabetes Register was established. It records new cases of insulin-treated diabetes. In 1999 and 2000, there were 51 Indigenous people per 100,000 registered, compared with 34 non-Indigenous people per 100,000 (age standardised, National Diabetes Register, AIHW). Aboriginal and Torres Strait Islander people are considered to be under-represented on the Register.

Diabetes has also been found to be prevalent at rates which exceed the general population in indigenous communities in other industrialised nations (inset 7.6).

7.6   DIABETES AND OTHER INDIGENOUS PEOPLES

In the USA, approximately 9% of American Indians and Alaskan Natives have been diagnosed with Type 2 diabetes. On average, they are approximately three times more likely to be diagnosed with the disease than other Americans of a similar age (excluding Hispanic people). It has been suggested, however, that the data available underestimate the true extent of diabetes in this population. For example, a study across three geographic areas found that 40–70% of American Indians aged 45–74 had Type 2 diabetes (National Diabetes Information Clearinghouse 2000).

In Canada, diabetes has been estimated to be three times more prevalent in Aboriginal peoples than in the rest of the population, with women accounting for two-thirds of those people diagnosed with the disease (Diabetes in Canada 2000).

According to the 1996–97 New Zealand Health Survey, Maori and Pacific Islander people were more than twice as likely to report having been diagnosed with diabetes than other New Zealanders. A review of studies in New Zealand suggests that the prevalence of diabetes in the Maori population is 5–10%, with Maori people more likely to be diagnosed with diabetes at an earlier age than non-Maori people. Mortality and hospitalisation data suggest that deaths from diabetes among Maori people are 4.5 times higher than for non-Maori people, and that the rate of hospitalisation for diabetes is 3.3 times higher. The higher prevalence of diabetes among Maori may be partially explained by the fact that they are more likely to be overweight than non-Maori people. A survey in 1989–90 revealed that 29% of Maori men were obese, compared with 9% of non-Maori men. Similarly, 27% of Maori women were obese compared with 12% of non-Maori women (Ministry of Health 2000).

RISK FACTORS FOR DIABETES

A number of factors have been suggested as influencing the development of diabetes. The following section examines these factors and the roles they play in the prevalence of diabetes in the population.

Genetic risk factors

A family history of diabetes is a risk factor for both Type 1 and Type 2 diabetes, suggesting that genetic factors may play a role in the development of the disease. The appearance of Type 1 diabetes is thought to occur after an auto-immune attack against the insulin-producing beta-cells in the pancreas, which may be caused by a genetic predisposition to the disease and exposure to environmental triggers (de Courten et al. 1998). Similarly, genetic factors play a role in the development of Type 2 diabetes, but their interaction with lifestyle and environmental factors is complex and not yet well understood (O'Dea 1992b). High rates of Type 2 diabetes are often found in populations undergoing rapid changes to their lifestyle. A complex array of environmental and lifestyle factors may 'unmask' a possible genetic susceptibility to the disease in these circumstances (O'Dea 1992b).

Obesity Type 2 diabetes is more common in people who are obese than in those who are not (Perry et al. 1995, Shaten et al. 1993). Aspects of obesity that may be important in the development of Type 2 diabetes include the distribution of fat on the body, the timing of onset and the duration of obesity, and gender differences (de Courten et al. 1998).

Results from the 1994 NATSIS show that approximately 25% of Indigenous males (aged 18 years and over) and 29% of Indigenous females (aged 18 years and over) were obese. This compares with about 19% of all Australian males and females aged 19 years and over, as reported in the 1995 National Nutrition Survey (NNS) (ABS 1997c). Graphs 7.7 and 7.8 show the proportion of males and females in different age groups who were classified as obese.
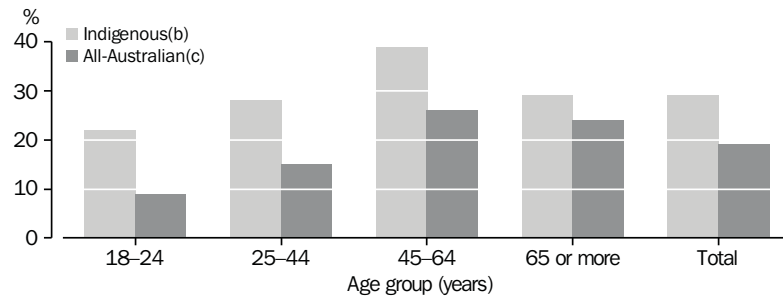
7.7 OBESITY(a) IN ADULT MALES
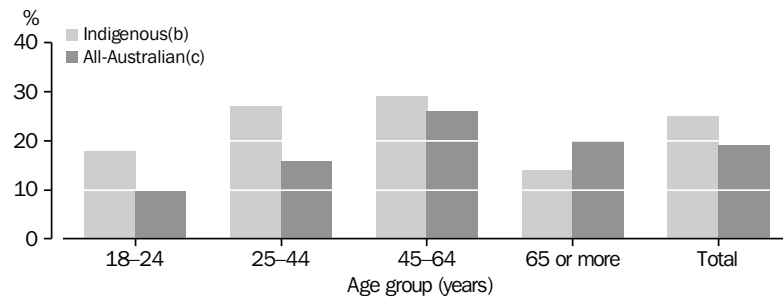
(a) Based on body mass index (BMI) (see Glossary).
(b) 1994 NATSIS.
(c) 1995 NNS. Data from the NNS are for adults aged 19 years or more.

Source: Cunningham and Mackerras 1998.

7.8 OBESITY(a) IN ADULT FEMALES

(a) Based on body mass index (BMI) (see Glossary).
(b) 1994 NATSIS.
(c) 1995 NNS. Data from the NNS are for adults aged 19 years or more.

Source: Cunningham and Mackerras 1998.

Obesity *continued*   Results from the 1994 NATSIS show that Indigenous people who were obese were more likely to report diabetes as a long term health condition (11%) than those who were overweight (7%), or of 'acceptable' weight (3%) (ABS 1996). A longitudinal study of Aboriginal people in Central Australia examining the association between body mass index (BMI—see Glossary) and the incidence of diabetes, found that the diabetes incidence rates for each category of BMI were among the highest in the world. Even in the lowest BMI category, the rate of diabetes was two to five times higher than the rate for the non-Aboriginal population (Daniel et al. 1999). O'Dea (1996) and Daniel et al. (1999) have suggested that Aboriginal people may need to achieve a lower BMI than non-Aboriginal people, in order to reduce the risk of diabetes.

While poor diet and low levels of physical activity are risk factors for Type 2 diabetes, through their contribution to obesity, they are also considered to be independently associated with the disease. Increased levels of physical activity are thought to contribute to improvements in the effectiveness of insulin, even where obesity is present (Kriska et al. 1993).

Physical activity   Physical activity has been shown to lessen the risk of developing diabetes (Perry et al. 1995). From the few data available about the physical activity levels of Aboriginal and Torres Strait Islander people, it appears that Indigenous adults are less likely to exercise than the rest of the adult population. Results from the 1995 NHS show that Indigenous people aged 18 years or more, living in non-remote areas, were less likely than their non-Indigenous counterparts to report having taken exercise for sport, fitness or recreation in the two weeks prior to the survey (59% compared with 66%) (ABS data available on request, 1995 NHS). Indigenous females were more likely (42%) than Indigenous males (38%) to report undertaking no exercise (ABS 1999c). It should be noted that the question about physical activity used in the NHS asked only about exercise undertaken for sport, recreation or fitness and did not reflect total physical activity. NHS data should therefore be treated with caution when taken as an indicator of the level of physical activity among Indigenous people.

Nutrition   Diet plays a crucial role in the development of Type 2 diabetes. In general, the diet of Aboriginal and Torres Strait Islander people has undergone rapid change, from a low energy, low density diet to a diet high in energy derived from refined carbohydrates and saturated fats (O'Dea 1992b). Evidence suggests that a diet of this kind leads to weight gain and increased insulin resistance, particularly in populations which have undergone rapid lifestyle transition (NHMRC 2000; see also Chapter 6 for a discussion of 'Syndrome X'). The association between diet and diabetes-related conditions was examined in a study involving a group of urban-dwelling Aborigines who spent seven weeks as 'hunter-gatherers' in their homelands in the Kimberley region of northern Western Australia (O'Dea 1984). Dietary changes, including the consumption of food low in saturated fat and high in complex carbohydrates, were accompanied by increased levels of physical activity. Metabolic abnormalities associated with Type 2 diabetes that were observed in the group were reported to be 'greatly improved or completely normalised' (O'Dea 1984).

Inset 7.9 describes two programs aimed at reducing the onset and impact of diabetes in Indigenous communities.

7.9   MANAGING DIABETES

Kimberley

Looma Healthy Lifestyle, initiated in 1993, is an example of an Aboriginal community-directed diabetes prevention program. Looma is a community of 500 people in the Kimberley region of northern Western Australia. Community concern about high rates of illness and mortality from diabetes, and the prevalence of diabetes-related complications, resulted in the establishment of the program. Initially a diabetes nurse-educator was employed, followed later by several Aboriginal health workers who assisted Looma community members with the design and implementation of the program.

The first stage of the program involved voluntary screening of adults in the community to identify those with diabetes and those at risk of developing diabetes. The results were discussed with the participants and they were given information on how to manage, or reduce the risk of developing, the disease. The next stage involved taking action within the community to encourage weight reduction and increased physical activity. Local bush tucker and traditional open fire cooking methods were promoted as healthy, low-fat dietary options. Cooking classes and store tours were held to inform people about choosing, preparing and cooking low-fat foods. Physical activity was encouraged through organised hunting trips, participation in sport and regular walking groups. Informal education sessions were held each week to increase people's awareness and understanding of diabetes in the community.

After the program had been in place for four years, improvements were noted in insulin levels although there was no change in the prevalence rates of obesity and diabetes. Reductions in cardiovascular risk factors were also reported. The proportion of older members in the community reporting that they were undertaking regular physical activity and attempting to reduce their intake of fats and sugars, increased markedly over the course of the study.

The keys to the successful long-term operation of the program are considered to be the community's widespread support and commitment, as well as its ownership of the program. Community-wide outcomes included the appointment of local diabetes workers, and the appointment of a community worker to manage the store, instituting a policy emphasising fresh, healthy foods and reducing sales of high-fat and high-sugar products. Health issues were also promoted through sporting and art competitions, and the appointment of a sport and recreation officer. (Rowley et al. 2000b, Spinks & White in Dignan & Sharp (eds) 1996).

Torres Strait

The Torres Strait has a very high prevalence of diabetes (24% of adults over the age of 15) and increasing rates of hospitalisation and death from diabetes complications (Queensland Health 1999). There is good evidence that improved care of people with diabetes, in a community setting, can reduce these complications. A study (McDermott et al. 2001) was undertaken to find the best way of translating this research evidence into practice in the remote clinics of the Torres Strait and Northern Peninsula Area Health Service District.

At the beginning of the study patients receiving diabetes care in 21 clinics were reviewed to determine how good their care was from the point of view of routine checkups, and how often they had been hospitalised in the previous year. A diabetes outreach service was then established to provide direct assistance to the communities involved. In addition, eight of the centres were randomly selected for the establishment of a paper-based recall and reminder system which was used for routine diabetes care and managed by local health workers. The health workers, who had been given basic training in diabetes care, were supported by visits from the project manager, and through weekly phone calls, a bi-monthly newsletter and a mid-project workshop.

After one year, a repeat audit of medical files showed that most measures of good diabetes care had improved in all centres, and that the clinics where the recall and reminder system was in place had performed 21% better than those that did not have the system in place. People with diabetes who were treated at clinics with the recall system in place were 40% less likely than those treated at other centres to have been hospitalised for a diabetes-related condition in the previous 12 months. There was a 32% reduction in hospital admissions for diabetes-related conditions from intervention sites, compared with a 2% reduction from other sites.

The dramatic improvement in diabetes care and outcomes in sites where recall systems were managed by local health workers, suggests that greater health gains can be made by supporting local Indigenous management of community-based chronic disease care systems. In 2001 these systems are being trialled in other North Queensland Indigenous communities, as part of the Chronic Disease Strategy of the Queensland Health Department (McDermott et al. 2001).

DATA AVAILABILITY AND
DATA QUALITY

As noted, reliable national figures for the incidence and prevalence of diabetes in the Indigenous population are not currently available. Diabetes data for Indigenous people from national surveys such as the NATSIS and the NHS are limited because they are obtained through self-reporting, and are therefore likely to underestimate the number of people with the condition. AusDiab (International Diabetes Institute 2001) estimates there are as many people in the general population with 'undiagnosed diabetes' as those who have had the condition diagnosed. A further limitation of both the NATSIS and the NHS is that neither distinguishes between Type 1 and Type 2 diabetes. Data from the NHS, while allowing an Indigenous/non-Indigenous comparison, exclude responses from people living in remote (sparsely settled) areas because of data quality problems (see Explanatory Notes). The NHS also had only a small sample of Indigenous people, reducing the possibility of investigating the characteristics of people who reported diabetes. While the NATSIS had a larger sample size than the NHS, and covered all areas of Australia, it did not provide data that allowed comparisons between Indigenous and non-Indigenous people to be made. The NHS is being run again in 2001 and in 2004/5 (see Chapter 9 for further details). The 2004/5 survey will have a larger Indigenous sample size, which may permit more detailed analysis of self-reported diabetes.

In addition, diabetes may be under-reported in mortality data, as certifying doctors do not always record diabetes as an underlying cause on death certificates. For example, a study of 374 Central Australian Aboriginal adults previously diagnosed with diabetes found that 44% of the death certificates of those subjects who died during the follow-up period did not mention diabetes at all, and diabetes was only mentioned as the underlying cause of death in 50% of cases (Phillips et al. 1995). It is likely that the coding of other conditions associated with diabetes is affected by similar limitations.

In addition, the overall number of deaths registered as Indigenous is likely to be an underestimate because not all death registration records correctly identify Indigenous people. The number of Indigenous people receiving hospital treatment is similarly underestimated. See Chapters 6, 8 and 9 for further details concerning the under-estimation in both mortality and morbidity statistics.

SUMMARY

This chapter deals primarily with Type 2 diabetes, a disease generally confined to adult populations, and which poses serious health problems for many Indigenous Australians. Type 2 diabetes is characterised by early onset in the Indigenous population and is associated with cardiovascular disease, kidney disease, nerve damage, eye damage, ulceration and gangrene. There are more episodes of hospitalisation for and more deaths from diabetes than expected, for Indigenous people based on rates for the total population. Obesity, poor nutrition and lack of physical activity are all considered risk factors for the disease in a population and there are indications that Indigenous people are more likely to be exposed to these health risks.

Reliable data for deriving national prevalence rates of diabetes in the Aboriginal and Torres Strait Islander population are currently not available. Self-reported data underestimate the prevalence of the disease in both the Indigenous and the total population because many people (an estimated 50%, based on AusDiab estimates) who have diabetes are unaware of their condition. The quality and availability of data about the level of diabetes in the Aboriginal and Torres Strait Islander population are also limited because Indigenous people are often not accurately identified in administrative records, which results in an undercount of their numbers.