

Hauora: Māori Standards of Health IV

I went to see the diabetic nurse at the hospital for my own blood count thing so I can learn how to prick my finger and test your own blood. So I want to do it myself instead of every time I've got to go the doctor. Then I've got to pay \$20 ... and sometimes I'm going there just for him to prick my finger. I read somewhere what you apply for and you get it for nothing. And they would have to teach me how to do my own blood count.

I had to wait for three weeks and I got it. The only thing is no-one has time to come out to teach me. So I haven't yet learnt how to ... I've only been shown once.

So I like to study it anyway. Because I feel as if I should know when I'm eating the right things. Whether sometimes it's high, sometimes it's low. It all depends on if I've just had a meal. I wanted to learn so I could balance it.

Kuia, Hawke's Bay

9 DIABETES

Matire Harwood, David Tipene-Leach

Diabetes is an area where there are huge disparities in prevalence and outcome. If it is found early and managed well, through exercise, diet, regular checks and sometimes medications, people with diabetes can lead full and healthy lives. It is also preventable. However, diabetes can have potentially serious complications and therefore good quality diabetes care is especially important. While there is huge scope to reduce inequalities, the complex nature of diabetes means a comprehensive and sustained approach that tackles all levels of health determinants (including causes, management and complications) is required.

There are three types of diabetes – type 1, type 2, and gestational diabetes (see box below). This chapter focuses mainly on type 2 diabetes because the majority of Māori with diabetes have type 2.

What is diabetes mellitus?

To understand diabetes we need to understand the normal process for getting energy from food. When we eat a sugar called glucose is absorbed from the intestine into our bloodstream. An organ called the pancreas sits near the intestine and makes insulin, which helps to move the glucose from the bloodstream into cells of our body—specifically our muscle, fat, and liver cells. These cells use the glucose for energy or store it for later use. So think of insulin as a key to unlock the door and move glucose from the bloodstream into cells.

In diabetes either:

- the pancreas doesn't make enough insulin and/or
- the muscle, fat and liver cells don't let insulin in to store the glucose.

Type 1 diabetes occurs when the pancreas makes little or no insulin, and type 2 diabetes is a combination of these problems. The result is a build up of glucose in the bloodstream and not enough of it in the cells to help them work properly. A long-term consequence of high blood glucose is damage to small blood vessels (microvascular disease) causing eye problems (cataracts, blindness), kidney disease (including renal failure requiring dialysis), and leg and foot problems (ulcers, reduced feeling). Narrowing of blood vessels (macrovascular disease) causes heart attacks, strokes, or gangrene.

Hauora: Māori Standards of Health IV

Type 2 Diabetes Mellitus (DM)
<p>The most common diabetes in the world (more than 90% of all diabetes) and the most common diabetes for Māori.</p> <p>Usually diagnosed in middle age, but increasingly occurring in young adulthood and adolescence or older people too.</p> <p>It is diagnosed by blood test. This blood test should be offered to all Māori and Pacific people aged 35 years and older.</p> <p>Diabetes is often associated with obesity, high blood pressure, gout, high cholesterol, and heart disease.</p> <p>People may experience effects of high blood glucose long before diabetes is diagnosed, although often there are no symptoms at all. Some common symptoms include increased thirst, increased need to mimi, short-term weight loss, blurred vision, or more infections than usual (e.g., skin or bladder infections and vaginal thrush).</p> <p>Weight loss and increased physical activity can halt or reverse early type 2 diabetes, but there is no cure as such. When it is diagnosed the immediate goals are to stabilise blood sugar and eliminate the symptoms of high blood sugar. In the long term, the aim is to prevent and/or manage complications.</p>
Gestational diabetes (GDM)
<p>A type of diabetes that occurs for the first time during pregnancy.</p> <p>It is more common in Māori and Pacific women than Pākehā women.</p> <p>Gestational diabetes goes away at delivery, but the baby and mother are at much higher risk than others of getting type 2 diabetes later in life.</p>
Type 1 Diabetes Mellitus
<p>Also known as IDDM or juvenile onset diabetes.</p> <p>More common in Pākehā than Māori.</p> <p>Usually starts in childhood or in teenage years (7–12 years) but can occur at any age.</p> <p>An autoimmune condition meaning that the body sets up an attack against the cells in the pancreas that make insulin.</p> <p>Is treated with insulin injections.</p>

The impact of diabetes

For no other disease are significant health inequalities more obvious than when we look at diabetes. Diabetes is almost three times more common in Māori than non-Māori. In addition, for Māori aged 45–64 years death rates due to diabetes are nine times higher than for non Māori New Zealanders of the same age. Māori are diagnosed younger and are more likely to develop diabetic complications such as eye disease, kidney failure, strokes and heart disease.

Prevalence estimates for diabetes in New Zealand are complicated by the issue of undiagnosed diabetes mellitus in the community. Some commentators estimate that there is one undiagnosed diabetic for every one known. The management of pre-diabetes and those with the insulin resistance-obesity related complex of diseases is also coming to the fore. The issue of population screening for impaired carbohydrate metabolism is a complex public health issue, the policy implications of which are predicated upon how much resources can be devoted to this area of health endeavour.

Incidence and mortality rates for type 2 diabetes are expected to significantly increase over the next 20 years (along with pre-diabetes, insulin resistance, and obesity) with the biggest impact being on Māori, Pacific people, and those living in deprived neighbourhoods.

Diabetes

Important diabetes disparities for Māori

Ethnic inequalities exist in rates of type 2 diabetes, including prevalence, age at onset, mortality, and hospitalisation.

- The estimated average age at diagnosis of type 2 diabetes for Māori was 47.8 years in 1996, six years younger than New Zealand Europeans (54.2 years) (Ministry of Health 2002).
- The self-reported prevalence of diabetes in 2002/03 was 2.5 times higher among Māori than among non-Māori (Ministry of Health 2006).
- The estimated lifetime risk of being diagnosed with diabetes for Māori in 1996 was more than twice that for New Zealand Europeans (Ministry of Health 2002).
- Mortality rates for Māori with type 2 diabetes are seven times higher than for non-Māori with type 2 diabetes (see Table 9.1).
- The disparity in mortality rates is highest in the 45–64 age group, where Māori women die from type 2 diabetes at 13 times the rate of non-Māori women and Māori men at 10 times the rate of non-Māori men.
- The risk for hospitalisation because of type 2 diabetes is 4 times higher for Māori than non-Māori (see Table 9.1).

Table 9.1: Type 2 diabetes mellitus, deaths (2000–2004) and hospitalisations (2003–2005) by ethnicity and sex

	Māori		Non-Māori		Rate ratio (95% CI)
	Number	Rate (95%CI)	Number	Rate (95%CI)	
Total					
Deaths	825	27.0 (25.2–28.9)	2,738	3.6 (3.5–3.8)	7.40 (6.81–8.03)
Hospitalisations	3,854	193.4 (187.1–199.9)	13,389	44.4 (43.1–45.7)	4.36 (4.17–4.55)
Females					
Deaths	369	22.0 (19.9–24.4)	1,351	2.8 (2.7–3.0)	7.76 (6.86–8.78)
Hospitalisations	1,743	164.1 (156.2–172.4)	6,145	37.2 (35.5–38.8)	4.42 (4.13–4.72)
Males					
Deaths	456	31.9 (29.1–35.0)	1,387	4.5 (4.2–4.7)	7.17 (6.42–8.00)
Hospitalisations	2,110	222.8 (213.0–232.9)	7,245	51.6 (49.7–53.6)	4.32 (4.07–4.58)

Note: Rates are calculated per 100,000; rates for ages 65 years and over were age-standardised to the 2001 Māori population.

Higher complication rates

Ethnic disparities for diabetic complications (renal failure, lower limb amputation, eye problems, and heart disease) are disproportionately higher than for prevalence. This suggests that Māori are much more likely to suffer complications from diabetes than non-Māori.

- The proportion of Māori on dialysis for whom diabetes was the cause of end-stage renal failure is much higher than for New Zealand Europeans (55% versus 14%) (New Zealand Guidelines Group [NZGG] 2003).

- In a prevalence survey in South Auckland, Māori with diabetes compared to New Zealand Europeans were two to three times more likely to report blindness, laser treatment, or cataracts in one or both eyes (Simmons et al 1996).
- Māori with diabetes are twice as likely to have a major lesion in the lower limb, requiring amputation, than New Zealand Europeans (Simmons et al 1995).
- Māori admitted to hospital with ischaemic heart disease (IHD) are twice as likely to have type 2 diabetes as non-Māori with IHD (based on secondary diagnosis on index IHD admission) (NZGG 2003).

Unequal access to and quality of diabetes care

Although there may be many reasons to explain disparities in rates of death and complications from type 2 diabetes, there is evidence that ethnic inequalities in access to and quality of care may play a role. Steps in the type 2 diabetes care pathway and examples of unequal treatment for each step are presented here.

1 Prevention

Prevention of diabetes at a community level is predicated upon promotion of healthy diet, exercise and, therefore, weight control. Presently, however, policy and practice relies mostly upon behaviour change at the individual level. It is unlikely that this will address the diabetic epidemic, and structural change at the level of advertising, food regulation, and taxation incentives for healthy changes in manufacturing will be needed – in much the same way as the public health approach to cigarette smoking.

Ngāti Porou Hauora (NPH) on the East Coast is implementing a programme called Ngāti and Healthy, aimed at reducing the risk of type 2 diabetes mellitus by promoting a lifestyle characterised by healthy eating and regular exercise (Tipene-Leach et al 2004; Ngāti Porou Hauora 2007). The programme also aims to increase awareness of diabetes and pre-diabetic conditions both amongst those at high risk of developing diabetes and the community at large. In particular, the programme aims to reduce the prevalence of insulin resistance before it progresses to impaired glucose tolerance or impaired fasting glycaemia. A prevalence survey of carbohydrate metabolism was conducted in 2003, preceding the intervention, and it will be repeated again after the intervention has been in place for two, five, and ten years to provide an evaluation of the programme. Further information can be found on www.otago.ac.nz/diabetes/pdf/ngati_and_healthy.pdf.

2 Screening and early diagnosis

Screening and early diagnosis are essential in order to start effective management and prevent complications in the long term. Most screening is carried out in primary care. Current guidelines recommend that Māori over the age of 35 years have a blood test to check for diabetes. This blood test is free in many areas. However in 2002 80% of New Zealand Europeans thought to have diabetes had a free check whereas only 35% of Māori thought to have diabetes received a free check (Ministry of Health 2006). Many Māori providers have now committed to ensuring early testing as part of well health checks at enrolment, undertaking comprehensive follow-up, and opportunistic tests.

3 Maintain normal glycaemia

Maintaining normal glycaemia is achieved through appropriate nutrition, exercise and, in some cases, medicines (tablets or insulin). Effective information and support is essential for the maintenance of normal blood sugar levels.

Projects to improve the quality of diabetes care have been developed overseas, with significant improvements in HbA1c values (also called the glycosylated haemoglobin level) and the number of people achieving HbA1c less than 8 (National Diabetes Education Program 2006).

Other activities include diabetes support groups and diabetes action groups such as the Porirua group including clinicians, educators, and town planners.

4 Screen for and aggressively treat complications

Screening for complications should be done each year, including tests for eyes, kidney (blood and urine tests), feet, and heart. If any problems are identified, referrals to a specialist should be made. The Get Checked Programme launched in June 2000 aims to improve the health of people with diabetes through regular free checks of the person's physical health, lifestyle, and disease management. Access to the Get Checked Programme was lower for Māori than non-Māori with diabetes (37% Māori, 66% non-Māori – estimated by modelling) (Ministry of Health 2006). Once in the programme, Māori received similar access to the recommended tests for people with diabetes including blood tests, retinal screening, and blood pressure checks (Ministry of Health 2006). However the programme may not be as effective for managing diabetes among Māori as among non-Māori. Effectiveness may be measured by an HbA1c equal to or less than 8; 77% of New Zealand European had an HbA1c less than 8 compared with only 57.8% of Māori (Ministry of Health 2006). Māori admitted to hospital with diabetes appear to have more severe disease than non-Māori, suggesting less than adequate management in the community and differential treatment in primary care (Jeffreys et al 2005).

Tackling root causes

Type 2 diabetes is not a sudden illness. The disease reflects complex and reciprocal interactions between our body and our environment, including the social determinants of health. Low socioeconomic status, stress, and racism are associated with the development of Type 2 diabetes (Pickup 2004; Stumvoll et al 2005; Paradies 2006). These root causes need to be tackled in efforts to eliminate disparities.

To what extent genes contribute to the development of type 2 diabetes is unknown. A family history of type 2 diabetes is one of the strongest risk factors for the disease. Familial and twin studies confirm an increased risk of a person developing it if a parent or twin has the disease. However, genetic explanations for type 2 diabetes in groups disproportionately affected by the disease can lead to the misinterpretation of ethnic health disparities as geneticised and, therefore, natural in origin, rather than recognising such disparities as being due, largely or solely, to social disadvantage. (Paradies 2006). Therefore, a broad public health approach to the disease is required.

Summary

In summary, type 2 diabetes is a *major* health issue for Māori. Māori experience higher rates, are more likely to die from type 2 diabetes, and more likely to carry the burden of its complications than non-Māori. Its impact on quality of life for Māori is huge. Urgent action is required at all levels. Effective strategies to address ethnic disparities in diabetes and diabetes care require a global view, innovative models, partnerships, and accountability to all stakeholders (Centers for Disease Control and Prevention 2007). Interventions need to have a multi-factor, multi-system, and multi-level approach.

The first step to improving diabetes care to Māori is to ensure primary prevention and early detection of diabetes in Māori. Secondly, regional and local services could undertake analyses of access and quality issues in their service delivery to Māori, develop strategies to improve service delivery, and then monitor the effectiveness of those changes. Broader, contextual issues including structural barriers and socioeconomic barriers must also be addressed (Baxter 2002).

References

- Baxter J. 2002. *Barriers to Health Care for Māori with Known Diabetes: A literature review and summary of issues*. Dunedin: Te Rōpū Rangahau Hauora a Ngāi Tahu.
- Centers for Disease Control and Prevention (CDC). 2007. Diabetes Projects. URL: <http://www.cdc.gov/diabetes/projects/index.htm>. Accessed 18 September 2007.
- Diabetes New Zealand. 2001. *Type 2 Diabetes: Managing for better health outcomes*. Wellington: Diabetes New Zealand. URL: <http://www.diabetes.org.nz/resources/files/report2001.pdf>. Accessed 18 September 2007.
- Jeffreys M, Wright C, t'Mannetje A, Huang K, Pearce N. 2005. Ethnic differences in cause specific mortality among hospitalised patients with diabetes: a linkage study in New Zealand. *Journal of Epidemiology and Community Health* 59(11): 961-966.
- Ministry of Health. 2002. *Modelling Diabetes: A summary*. Wellington: Ministry of Health.
- Ministry of Health. 2003. *DHB Toolkit Diabetes. To reduce the incidence and impact of diabetes*. Wellington: Ministry of Health. URL: [http://www.moh.govt.nz/moh.nsf/pagesmh/5505/\\$File/diabetes-toolkit.pdf](http://www.moh.govt.nz/moh.nsf/pagesmh/5505/$File/diabetes-toolkit.pdf). Accessed 18 September 2007.
- Ministry of Health. 2006. *Tatau Kahukura: Māori health chart book*. Wellington: Ministry of Health.
- National Diabetes Education Program. 2006. *Making Systems Changes for Better Diabetes Care: How to make systems changes for improved care*. URL: <http://www.betterdiabetescare.nih.gov/HOWqualityimprovement.htm>. Accessed 18 September 2007.
- Ngāti Porou Hauora. 2007. *Ngāti and Healthy Prevent Diabetes Project*. URL: http://www.ngatiporouhauora.org.nz/site_files/index.php?option=content&task=view&id=32&Itemid=32. Accessed 18 September 2007.
- New Zealand Guidelines Group (NZGG). 2003. *Management of type 2 diabetes*. Wellington: New Zealand Guidelines Group.
- Paradies Y. 2006. *Race, Racism, Stress and Indigenous health*. Unpublished doctoral dissertation, University of Melbourne, Australia.
- Pickup JC. 2004. Inflammation and activated innate immunity in the pathogenesis of type 2 diabetes. *Diabetes Care* 27(3): 813-23

Diabetes

Simmons D, Scott D, Kenealy T, Scragg R. 1995. Foot care among diabetic patients in South Auckland. *New Zealand Medical Journal* 108(996): 106-108.

Simmons D, Gatland BA, Leakehe L, Fleming C. 1996. Ethnic differences in diabetes care in a multiethnic community in New Zealand. *Diabetes Research and Clinical Practice* 34(Suppl): S89-93.

Simmons D, Weblemoe T, Voyle J, Prichard A, Leakehe L, Gatland B. 1998. Personal barriers to diabetes care: lessons from a multi-ethnic community in New Zealand. *Diabetic Medicine* 15(11): 958-64.

Stumvoll M, Goldstein BJ, van Haeften TW. 2005. Type 2 diabetes: principles of pathogenesis and therapy [review]. *Lancet* 365(9467): 1333-46.

Tipene-Leach D, Pahau H, Joseph N, Coppell K, McAuley K, Booker C, Williams S, Mann J. 2004. Insulin resistance in a rural Māori community. *New Zealand Medical Journal* 117(1207). URL: <http://www.nzma.org.nz/journal/117-1207/1208>. Accessed 5 September 2007.