Improving Māori Access to Diabetes Health Care: Literature review

Prepared for the Ministry of Health, 2014
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1. Leadership
2. Knowledge
3. Commitment
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Glossary of Māori Terms

Aotearoa New Zealand, we acknowledge that this often is used to refer to the North Island only with the South Island known as Te Waipounamu

Māori ordinary, normal; Indigenous peoples of Aotearoa

whānau extended family

Abbreviations

BMI body mass index
BP blood pressure
CVD cardiovascular disease
DBP diastolic blood pressure
DHB District Health Board
GP general practitioner
HbA1c glycated haemoglobin
HDL high-density lipoprotein
LDL-C low-density-lipoprotein cholesterol
PHARMAC Pharmaceutical Management Agency
RCT random control trial
REACH Racial and Ethnic Approaches to Community Health
SBP systolic blood pressure
I Executive Summary

According to the World Health Organization, ‘in both poor and industrialised countries in which they live, the health status of indigenous peoples is invariably lower than that of the overall population’ (World Health Organization 2011). In Aotearoa New Zealand the unequal health outcomes experienced by Māori have been documented in a number of academic and government documents (Ministry of Health 2010b; Robson, B & Harris, R (Eds.) 2007). The focus of the present research was the contribution that health services can make to the reduction of Māori health inequalities through ensuring equity of access to health care (Ministry of Health 2002: 21). The aim of this project was to answer the question, How can access to health services be improved for Māori? The focus of the project was on diabetes (reported here), cardiovascular disease and cancer, and had three objectives.

- Increase the health sector’s understanding of the issues affecting Māori access to health services.
- Provide an evidence base for action to improve access to health services for Māori.
- Provide solutions to improve access to health services for Māori.

Background

Diabetes was one of the top five causes of death for Māori men and women in 2004-2006 whereas it did not feature in the top five causes of death for non-Māori men and women (Ministry of Health 2010b). In addition, the prevalence of both type 1 and type 2 diabetes is increasing in children (Ministry of Health 2007). Diabetes can be prevented (Harwood and Tipene-Leach 2007). Preventative programmes such as those related to diet and physical exercise need to attend to the cultural beliefs, values and practices of intended recipients (Hindelang 2006). Similarly, Spencer and colleagues (2006: 88) note that diabetes programmes for those with diabetes need to understand the ‘personal, family and community context of living with diabetes’ if they aim to contribute to the reduction of disparities.

Of Māori with diabetes the majority have type 2 diabetes, with this being diagnosed through a blood test that is offered to Māori and Pacific people from the age of 35 years (Harwood and Tipene-Leach 2007). Māori are diagnosed with diabetes at a younger average age than non-Māori, and Māori are admitted to hospital with more severe diabetes compared to non-Māori (Harwood and Tipene-Leach 2007).

Diabetes increases people’s risk of heart attack, stroke, and gangrene (Harwood and Tipene-Leach 2007). Increasing access to diabetes services will improve rates of cardiovascular disease. Likewise, improving access to cardiovascular disease risk assessment will improve screening and diagnosis of diabetes (Ministry of Health 2007). Herman and Zimmet (2012: 944) describe the processes that must be put in place to successfully address the diabetes epidemic; namely that ‘we must measure it, understand its risk factors, develop valid and efficient approaches to screening and diagnosis, and develop and implement culturally specific interventions for prevention and treatment’.

The Ministry’s Statement of Intent includes ‘More heart and diabetes checks’ as one of six health targets for 2012/13 (Ministry of Health 2013: 12). The Statement of Intent also reiterates the Ministry’s commitment to working collaboratively across government, and with communities (via the 2011 Kia Tūtahi/Standing Together Relationship Accord, and the Office for the Community and Voluntary Sector) (Ministry of Health 2013).

Method

The review examined the recent (2007-2013) literature on interventions to improve access to diabetes health care for Māori, Indigenous peoples, and ethnic minority (largely Hispanic American and African American) groups. These interventions were profiled across the continuum of care.

Findings

This review has focused on both personal and structural interventions that improve the access of minority people with diabetes to health care.

Aggressively treating hypertension, hyperglycaemia and hyperlipidaemia was ‘considerably more cost-effective’ for African Americans with diabetes, compared to general population diabetics. The burden of diabetes in the Māori population is similar to the African American population, suggesting that such aggressive treatment will also be cost-effective for Māori.
Self-management is difficult for people with type 2 diabetes to sustain. Success in managing risk factors is possible if interventions are culturally appropriate and relevant, community-based, and focused on small changes over time.

Community health workers provide practical help, health education, and emotional and motivational support to those with diabetes within the community and in health clinics. Their success is due to their socio-cultural characteristics, combined with their personal qualities and training.

Nurses have an important role to play in supporting people with diabetes maintain normal glycaemia (blood sugar). When diabetes nurses can also adjust medication, patients report satisfaction and less referrals are made to general practitioners – thereby decreasing their workloads.

The cultural-tailoring of health clinic policies, organisation and health care models is also important, as individual health practitioners can only do so much to improve access to health care without organisational back-up.

The importance of cultural responsiveness to the success of interventions is now well accepted. This has been reiterated by the interventions examined in this review. Table 1 below summarises these interventions.

Table 1. Intervention strategies to reduce diabetes health care disparities

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitate patients’ health literacy and ability self-manage diabetes</td>
<td>Initiatives improve the health literacy, understanding of interventions, and the self-management ability, confidence and motivation of patients with diabetes. Initiatives include the provision of information and reminders.</td>
<td>Culturally appropriate education, support and fellowship (e.g., shared meal preparation and dining)³ Screening for depression Home-based tools: Web-based diabetes self-management programme Peer-to-peer social networking</td>
</tr>
<tr>
<td>Engage community health workers to work closely with patients</td>
<td>Community-based health workers (including promotoras, community nurses) assist patients with education, self-management, and access to health services by being a bridge between the community and health clinic.</td>
<td>Community health workers provide culturally appropriate: Community conversations Assistance and support (e.g., encouragement, motivation) Mentoring and advocacy Education about and practice of skills (e.g., healthy living, blood glucose monitoring) Community-based libraries of resources</td>
</tr>
<tr>
<td>Build a culturally competent health workforce</td>
<td>Health practitioners are supported to deliver culturally competent clinical care (including the use of reminders and protocols, as well as professional development).</td>
<td>Culturally responsive community health worker training curriculum developed with the target community, following a needs assessment Formalised training of community health workers and outreach nurses, including skills to recognise depression in patients</td>
</tr>
<tr>
<td>Reorganise health clinics to improve accessibility</td>
<td>Changes are implemented to the way clinics organise and provide services.</td>
<td>Strong community partnerships, for example: Valuing of self-management as central to diabetes management and part of the continuity of care Collaboration of clinic staff, including community workers, to develop self-management interventions Policies (e.g., about structure and processes) that promote quality, consistency and safety, for example: Decision support that includes evidence-based guidelines supported by champions Oversight of the quality assurance process Use of monitoring and evaluation information to refine programmes and services Dissemination of successful practices Use of dashboards for on-going reports and evaluation A delivery system that defines team structure, roles and delivery methods, for example: Clear roles and responsibilities for community health workers or outreach nurses</td>
</tr>
<tr>
<td>Strategy</td>
<td>Description</td>
<td>Interventions</td>
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<tr>
<td><strong>Interventions</strong></td>
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<td>Consistency of key messages being given by all staff to patients about diabetes</td>
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<td></td>
<td></td>
<td>Clinic staff as self-management mentors</td>
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<td>Proactive identification and then stratification of patients based on risks-assessment</td>
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<td>Appropriate information technology system to support sharing of patient information among care team members</td>
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<td></td>
<td></td>
<td>Active support for patient self-management; for example:</td>
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<td></td>
<td></td>
<td>A package of culturally-responsive self-management activities (e.g., classes, drop-in, breakfast club, individual and whānau nurse consultations)</td>
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<tr>
<td><strong>Health system</strong></td>
<td>The health system can respond through funding formulas and strategies that reduce the barriers imposed by patient financial resource limitations.</td>
<td>Authority for pharmacists or nurse case-managers to adjust patients diabetes medications</td>
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<tr>
<td></td>
<td></td>
<td>District-wide programmes to support chronic care management, including:</td>
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<td></td>
<td></td>
<td>Community-based management</td>
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<td></td>
<td></td>
<td>Supports for provision of nursing care</td>
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<td></td>
<td></td>
<td>Coordination of primary and secondary care</td>
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</tbody>
</table>

**Note.** 1. Culturally appropriate health education was defined as ‘education that is tailored to the cultural or religious beliefs and linguistic skills of the community being approached, taking into account likely literacy skills’ (Hawthorne et al 2010: 4-5).

**Source.** Inspired by (Chin et al 2012: 996 Table 3)
2 Background

According to the World Health Organization (WHO), ‘in both poor and industrialised countries in which they live, the health status of indigenous peoples is invariably lower than that of the overall population’ (World Health Organization 2011). In Aotearoa New Zealand the unequal health outcomes experienced by Māori have been documented in a number of academic and government documents (Ministry of Health 2010b; Robson, B & Harris, R (Eds.) 2007).

In 1995 Benzeval, Judge and Whitehead proposed a framework for tackling socioeconomic inequalities in health. This framework stressed the importance of changing behavioural risk factors by reducing the barriers to people adopting healthy lifestyles, improving the physical environment and addressing social and economic factors, and improving people’s access to effective health services. The Ministry of Health’s (2002) Intervention Framework to Improve Health and Reduce Inequalities also called for comprehensive strategies to:

- address the structural causes of inequalities
- mediate the effect of socioeconomic position on health, and of poor health on socio-economic position
- reduce health service barriers to equitable access to effective health care.

In their 2008 report, ‘Closing the Gap in a Generation’, the WHO Commission on the Social Determinants of Health placed the health-care system within this broader context as a way of understanding the multiple aspects of people’s lived reality that impact upon their health and well-being (CSDH, 2008). Being treated equitably and fairly in the many aspects of this broader context is part of people’s right to health; that is, the ‘…entitlement to a system of health protection, including health care and the underlying determinants of health, which provides equality of opportunity for people to enjoy the highest attainable level of health’ (Hunt and Bueno De Mesquita 2007: 7).

There is now international recognition that social and economic determinants play a large part in health inequalities (CSDH 2008). Access to health services needs to also be considered within a determinants framework. This will take into account the factors that facilitate or compromise the ability of Māori to make it to the door of a health service (i.e., ‘access to’ health care), and then journey safely within that service (i.e., ‘access through’ health care) (Ellison-Loschman and Pearce 2006: 614).

The focus of the present research was the contribution that health services can make to the reduction of Māori health inequalities through ensuring equity of access to health care (Ministry of Health 2002: 21). Since the 1970s authors have noted the difficulties in, and debate about, how ‘access’ or ‘equitable access’ to health care is defined. Goddard and Smith (2001), for example, note that a focus on equity of access is only responsive to the issue of supply, with demand being overlooked even though the preferences, perceptions and barriers experienced by patients are an important aspect of access. The New Zealand Human Rights Commission uses the ‘interrelated and essential elements’ outlined in ICESCR General Comment 14 (United Nations 2000) to assess the promotion and protection of the right to health. These are:

**Availability** envisages a sufficient number of functioning public health services, facilities and programmes being available.

**Accessibility** means that the services and facilities are available to everyone without discrimination. They also have to be physically accessible and affordable, and people should be aware of their existence.

**Acceptability** means that the services must respect medical ethics, be culturally appropriate and respect confidentiality.

**Quality** means that health services must be scientifically and medically appropriate, and of good quality (Human Rights Commission 2004).

While ‘accessibility’ is defined here as one component of the right to health it is proposed that ‘access’ to health services encompasses all four of the above components.

The aim of this project was to answer the question: How can access to health services be improved for Māori? The project focused on cardiovascular disease, diabetes and cancer, and had three objectives:

- Increase the health sector’s understanding of the issues affecting Māori access to health services.
- Provide an evidence base for action to improve access to health services for Māori.
- Provide solutions to improve access to health services for Māori.
3 Introduction

Herman and Zimmet (2012: 944) describe the processes that must be put in place to successfully address the diabetes epidemic; namely that ‘we must measure it, understand its risk factors, develop valid and efficient approaches to screening; and diagnosis, and develop and implement culturally specific interventions for prevention and treatment’. This section looks briefly at Māori diabetes disparities before discussing how disparities are being accounted for by genetics. This is followed by an overview of some of the barriers to diabetes health care for Māori, and some of the legislative and strategic drivers of improving access for Māori to diabetes health services. Interventions that aim to improve access to diabetes health services for Māori, Indigenous and ethnic minority peoples are then canvassed.

3.1 Māori Diabetes Disparities

There are four reasons for diabetes being a well-established health priority in this country (Ministry of Health 2007: 21).

1. ‘The prevalence of diabetes is increasing, at an accelerating rate’. This is largely attributed to the growing prevalence of type 2 diabetes in the adult population, one third of which is linked to increasing obesity.
2. ‘Diabetes is the major preventable cause of renal failure and dialysis, lower-limb amputation and avoidable blindness (in working age adults)’.
3. ‘Diabetes is a major risk factor for cardiovascular disease’.
4. ‘Diabetes is a major contributor to inequalities in life expectancy, cardiovascular outcomes and diabetes-specific health outcomes for Māori and Pacific peoples and Asian’.

Diabetes can be prevented (Harwood and Tipene-Leach 2007). Preventative programmes such as those related to diet and physical exercise need to attend to the cultural beliefs, values and practices of intended recipients (Hindelang 2006). Similarly, Spencer and colleagues (2006: 88) note that diabetes programmes for those with diabetes need to understand the ‘personal, family and community context of living with diabetes’ if they aim to contribute to the reduction of disparities.

Diabetes was one of the top five causes of death for Māori men and women in 2004-2006. In contrast it did not appear in the top five causes of death for non-Māori men and women (Ministry of Health 2010b). Robinson and colleagues (2006, p.2) noted that ‘although Māori men are 3.5 times more likely to develop diabetes than European men, they are 6.5 times more likely to die of diabetes’. The prevalence of both type 1 and type 2 diabetes is increasing in children (Ministry of Health 2007).

The majority of Māori with diabetes have type 2 diabetes, with this being diagnosed through a blood test that is offered to Māori and Pacific people from the age of 35 years (Harwood and Tipene-Leach 2007). Māori are diagnosed with diabetes at a younger average age than non-Māori, and Māori are admitted to hospital with more severe diabetes compared to non-Māori (Harwood and Tipene-Leach 2007). Māori with Type 2 diabetes are also more likely to smoke, to be obese, and have poor glycaemic control compared with Europeans (Agban et al 2008).

Diabetes increases people’s risk of heart attack, stroke, and gangrene (Harwood and Tipene-Leach 2007). Increasing access to diabetes services will improve rates of cardiovascular disease. Likewise, improving access to CVD risk assessment will improve screening and diagnosis of diabetes (Ministry of Health 2007). Type 2 diabetes is associated with kidney failure, blindness, lower limb amputations, and amputation-related mortality (Bhattacharya 2012), and lower limb ulcers (Jackson et al 2009). Cavicchia and colleagues (2013) also found that compared to American patients without type 2 diabetes, patients with type 2 diabetes were more than twice as likely to be diagnosed with colon cancer. This likelihood increased for African American patients with type 2 diabetes. Māori and Pacific peoples with diabetes are at more risk of diabetes complications, including lower limb amputations, end-stage renal disease caused by diabetic nephropathy, and are at more risk of dying from end-stage renal disease (Hotu et al 2010; Ministry of Health 2010b).

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1 Ranked both by age-standardised mortality rates, and by years of lost life.
2 Glycaemic (blood glucose level) control in people with diabetes is assessed through the measurement of glycated haemoglobin (HbA1c), with the target being an HbA1c of less than or equal to 7.0. Higher levels place people with diabetes at risk of complications (Ministry of Health 2012).
If diabetes is diagnosed early and well managed people can lead healthy lives. Management includes routine medical management and behavioural (e.g., diet, exercise) self-management. The increase of the prevalence of diabetes has meant that diabetes medical management has become an important part of primary health care in this country, with this supported by secondary care specialists. The New Zealand Guidelines Group (2003, 2012) recommends that the healthcare of patients with type 2 diabetes be reviewed every three-six months, with lipids initially monitored every three months until they are stable. Secondary care services focus on treating more advanced diabetes and its complications (Jackson et al. 2009).

Simmons and Fleming (2000) reported that in South Auckland Māori with diabetes were the least likely ethnic group to have on-going care. Pacific people with diabetes, on the other hand, had good access to care (i.e., comparable to other New Zealanders). Risks from diabetes could therefore be related to lack of care, or to differences in the quality of care provided to Māori patients who seek care. From their audit of general practice diabetes care in South and West Auckland in 2003 Robinson and colleagues (2006) found that compared with European New Zealanders with diabetes, Māori with diabetes who attended primary care had a higher average number of consultations and were more likely to be on some medications (aspirin, two or more antihypertensives). There was no disparity for regular examinations and investigations. The authors acknowledge that a limitation of their study is that it looked only at those patients who were receiving care, when it was known that Māori were over-represented in the six percent of people with diabetes in South Auckland who had no on-going health care. They also state that it was difficult to assess whether the intensity of care provided to Māori patients with diabetes was appropriate to meet their clinical need. Māori patients included in the audit were also more likely to be smokers, and to have high blood glucose (HbA1c>8%) and microalbuminuria, with these risk factors contributing to poor outcomes. Some of the reasons for these risk factors among Māori with type 2 diabetes will be beyond the control of general practice, however Robinson et al. (2006: 9) state that even so, ‘Medical management with well-proven therapies is one important way that these poor outcomes need to be addressed. The challenge for primary care and the New Zealand health system is to ensure that all people with diabetes, particularly those groups who currently have poor outcomes, are appropriately supported to more aggressively manage their condition’.

Tomlin and colleagues (2006) analysed the information collected by 242 general practices during patients’ first visit to the diabetes Get Checked programme run by Southlink Independent Practitioner Association. Māori and Pacific Island patients with type 2 diabetes were younger, were more likely to smoke, had poor glycaemic (blood glucose) control, and a higher mean body mass index and higher mean diastolic blood pressure compared to European patients. Māori and Pacific patients with type 2 diabetes were more likely to be on oral medication without insulin, and to use ACE inhibitors. The authors explain the higher prescription of ACE inhibitors among Māori and Pacific patients as possibly related to their higher levels of microalbuminuria, as ACE inhibitors are the recommended first-line therapy. No explanation is offered as to why more New Zealand Europeans were prescribed statins, or that Māori and Pacific patients with type 2 diabetes were less likely than European patients to have foot checks and retinal examinations. These disparities in health care were not evident for patients with type 1 diabetes. This research raises a similar issue to Robinson et al. (2006); namely, is the level of health care being provided to Māori and Pacific patients with type 2 diabetes commensurate with their greater vulnerability?

Elley and colleagues (2008) go some way to answering this question in their analysis of 2004 Get Checked data from 24 primary care or diabetes organisations, representing over half the country’s population and geographic area. They found there was no disparity in appropriate CVD and renal preventative drug therapy for Māori and Pacific patients with type 2 diabetes attending primary care, compared to European patients. Māori and Pacific patients were on average 10 years younger than European patients, had higher rates of obesity and smoking, and raised HbA1c and albuminuria. The authors therefore call for more aggressive, rather than equivalent, medical treatment of Māori and Pacific patients with type 2 diabetes, as well as non-drug preventative measures to reduce diabetes-related morbidity and mortality. The authors also note the Ministry of Health’s (2006) estimate that only

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3 Only the patients of GPs who agreed to be involved in the audit were included. This is described by the authors as a ‘significant limitation’ (p.8) as the difference between the care provided by these GPs and those who did not participate is unknown.
4 Also called high blood sugar or hyperglycemia.
5 Microalbuminuria is ‘a subtle increase in the urinary excretion of the protein albumin...In diabetes, microalbuminuria is an early sign of diabetic kidney disease’. (www.merck.com)
6 Combined in this analysis because of small patient numbers.
7 Increasing the prescription of statins to Māori patients with CVD risk is one of the rationale behind PHARMAC’s ‘One Heart Many Lives’ campaign so this disparity may be attributable to GPs’ reluctance, for whatever reasons, to prescribe statins to Māori patients (Leow, et al., 2011).
38 percent of Māori with diabetes had a Get Checked review in 2005. Elley et al. (2008: 472) describe this as a ‘major concern’ and concluded that ‘Concerted efforts should be made to address this disparity in access to care’.

In 2007 the Ministry of Health reported that equilibrium had been reached in the proportion of people with diabetes receiving annual check-ups and that there was a persistent inequity for Māori (just over 50 percent of Māori with diabetes received annual check-ups compared to over 80 percent for non-Māori, non-Pacific people with diabetes). This inequity was also observed in the proportion of people who were screened having an HbA1c of less than or equal to 8 percent, but not in retinopathy screening. More recently the self-reported prevalence of diabetes and the rate at which those with diabetes accessed the Get Checked programme has been similar for Māori and non-Māori. (See below, ‘Screening/early detection and management’ for more on the Get Checked programme.)

Jackson and colleagues (2009) examined discharges from Counties Manukau DHB from 1996-2007 and found that Pacific, Māori and Indian patients aged 45-64 years were three times more likely than European/Other patients (10%) to have a diabetes-related admission. Māori (31%) and Pacific (52%) people also experienced a substantial increase in admission rates over this time period. This increase can be partially accounted for by improvements in, and prioritising of diabetes detection by Counties Manukau DHB. This is evidenced by the ratio of ‘unknown’ to known diabetes steadily falling over this time period (from estimated ratios as high as 1:1 in the early 1990s to 1:4 for Māori aged over 35 years). Another reason given for the increase in admissions is the rise in diabetes that is linked to increasing obesity. The growing burden of disease in Māori and Pacific populations, combined with greater morbidity and longer hospital stays, is putting pressure on hospital services to reconfigure to meet increasing demands. Jackson et al. (2009) also endorse cross-sectoral strategies such as Let’s Beat Diabetes (see below).

‘For health planners and funders dealing with the incidence and impact of diabetes, the challenge is considerable and is still growing. Planning to meet this challenge requires a view of diabetes across the full spectrum of disease progression, and identifying where people flow through different parts of the care system, where the critical points of intervention are, and how flows of information can support optimal patient care’ (Jackson et al 2009: 20).

The long-term impact of diabetes on patients and their whānau will have implications for health service provision, as well as patient self-management. Kenealy, Kyle and Simmons (2007) reported on a 5-year follow-up of European and Polynesian patients with diabetes from the South Auckland Diabetes Survey. They found that contrary to expectations the personal impact of diabetes on patients had decreased at the five-year mark, even though their physical condition had deteriorated as a result of their diabetes. Patients were also more knowledgeable about their diabetes, and in more control of their condition. The authors recommended that rather than guessing health practitioners ask patients how their diabetes is impacting upon their lives, and that there are both opportunities and challenges in the findings for patient self-management education. For example, patients’ change in attitude to become more accepting of their condition should be associated with a shift from pre-contemplative to a contemplative stage of behaviour change, making patients more receptive to behaviour change messages. The authors state that nurses are well placed to work with these patients to jointly construct knowledge about the best medical and self-management of their diabetes.

3.2 Genetic Accounting for Disparities

Ethnic/genetic factors play a role in diabetes and may be relevant for understanding Māori diabetes risk and diabetes disparities. Findings from the American Diabetes Prevention Program suggested that ethnic disparities in diabetes are expressed in the progression of people from normal glucose tolerance to impaired glucose tolerance (IGT).9 Thus, the ethnic/genetic factors that predispose people to diabetes must have exerted their maximal effects during the transition from normal metabolism to IGT (Dagogo-Jack 2003: 782). In addition ethnic disparities in access to health care and disparities in diabetes complications largely disappear when glycaemic control across ethnic groups is controlled for (or equalized).

Dagogo-Jack (2003) states that effective prevention of progression to diabetes of prediabetes with the syndrome can be achieved by lifestyle modifications (e.g., increasing physical activity, reducing caloric intake and intake of saturated fats). More recently Castro and colleagues (2009) include genetic variations in their discussion of the

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9 This does not take into account undiagnosed diabetes (Harwood & Tipene-Leach, 2007).
10 Impaired glucose tolerance has its own International Classification of Disease (ICD) code as the Metabolic Syndrome.
multiple pathways by which race-related variables impact upon dietary behaviour and therefore diabetes risk.\textsuperscript{10} So while genetic predisposition may be most prominent in the normal glucose tolerance to impaired glucose tolerance pathway, genetic influence is still exerted upon risk factors through dietary and possibly other lifestyle pathways. Herman and Zimmet (2012) also raise the importance of the interuterine environment and epigenetic variables, as playing a role in adult obesity and diabetes.

Hsu and colleagues (2012) call for more research to understand diabetes pathophysiology in Asian Americans, Native Hawaiians and Pacific Islanders. For example, they suggest that using HbA1c as the sole diagnostic test may delay the diagnosis of type 2 diabetes among Asian Americans, Native Hawaiians and Pacific Islanders (p.1192). Similarly differences among ethnic groups in BMI (body mass index), weight, and fat differences may impact upon the diagnosis of diabetes as well as self-management and therapy recommendations (Hu 2011).

The genetic predisposition, or otherwise, of Māori to diabetes was not a focus of this project. However, understanding the role of Māori insulin resistance in Māori diabetes disparities will be important for knowing when and how to intervene to improve Māori access to diabetes health care.

### 3.3 Barriers to Access

In her review of known barriers to diabetes health care, Baxter (2002: 48-49) summarised the general barriers to access for people with diabetes, including Māori.

- Societal factors (e.g. barriers mediated through socio-economic factors such as financial costs)
- Specific service factors (e.g. range and availability of services locally)
- Individual factors (e.g. knowledge and awareness of diabetes; level of support to make lifestyle change)
- Illness factors (e.g. severity of illness, barriers related to disability)

Baxter (2002: 48-49) noted the additional barriers for Māori with known diabetes.

- Service locality and availability
- Poor understanding by some health practitioners of diabetes within the context of Māori lives
- Lack of Māori health practitioners working in the area of diabetes
- Timing of advice and information
- Diabetes education not responsive to the impact of diabetes on the lives of Māori, as Māori
- Lack of high quality Māori specific resources on diabetes readily available to all Māori with diabetes
- Inadequate levels of knowledge and community awareness about diabetes
- Patients’ emotional responses to diabetes and health services (e.g., discomfort)
- Cost barriers

Tripp-Reimer, Choi, Kelley and Enslein (2001: 14) inverted the issue of patient barriers by examining the beliefs and values of biomedical culture that may underpin practitioner barriers to minority patients receiving diabetes health care.

- ‘Patients who do not practice health behaviours “don’t care about their health.”’
- Personal health is the most important priority for each family member.
- Biomedicine is “right.”
- Science is the only appropriate basis for practice.
- Traditional beliefs should be changed rather than built upon.
- Everyone understands the concept of “chronic illness.”
- People should and will follow directions given by health practitioners.
- Adherence failure is the patient’s problem.
- Patients have autonomy – except with regard to adherence.
- Health care is available and accessible to all’.

The authors write that instead of health providers having fatalistic attitudes about their patients, they need knowledge-based strategies for the delivery of diabetes care in a culturally skilled way to minority patients. This includes communications, assessments, and education, and developing partnerships with ethnic communities (Tripp-Reimer et al 2001).

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\textsuperscript{10} They distinguish race from ethnicity, using McGoldrick and Giordano’s (1996, p.1) cultural definition of ethnicity as ‘a common ancestry through which individuals have evolved shared values and customs. It is deeply rooted to the family through which it is transmitted.’ It also confer a sense of belonging, connectedness and identity.
3.4 Current Approaches to Reducing Diabetes Disparities

The management of diabetes in New Zealand is largely undertaken within primary health care (Agban et al 2008). The Get Checked diabetes programme was launched in 2000. The aim of the programme was to provide free annual check-ups and planning for people with diabetes. Three indicators were used as national targets for the programme (Ministry of Health 2007: 47).

- ‘Diabetes detection and follow-up’ – number of people with diabetes having annual check divided by the expected number of people with diagnosed diabetes
- ‘Diabetes management’ – percentage of people in Get Checked with good or satisfactory diabetes control (HbA1c < 8 percent)
- ‘Retinal screening uptake’ – percentage of people in Get Checked who have had their eyes screened in the last two years’.

Statins were made more widely available by PHARMAC in 2002, leading to a 65 percent increase in statin prescribing in 2003 (PHARMAC press release). In December 2003 the New Zealand Guidelines Group released practice guidelines for the management of Type 2 diabetes, and the management of cardiovascular risk. The guidelines made specific recommendations for treating Māori patients with diabetes (New Zealand Guidelines Group 2003: 77).

- ‘Always treat the person with diabetes and their whānau. If the person agrees, encourage whānau to come to appointments. Education, dietary advice and lifestyle advice should always include whānau.
- Be sensitive to different styles of communication and to Māori protocol. Appropriate communication is very important.
- Consider that socioeconomic circumstances are likely to be difficult. Consultation fees, medication costs and access to transport or a telephone may be issues.
- Find out what the person’s attitudes and beliefs are concerning their diabetes, and their ability and willingness to implement change. Find out what the barriers to change are for that individual and whānau, and negotiate the changes that are possible and achievable. Expectations of dietary change need to be realistic and culturally acceptable.
- Māori with diabetes may prefer to see Māori providers’.

The New Zealand Primary Care Handbook 2012 updated the guidelines for screening and managing type 2 diabetes (New Zealand Guidelines Group 2012). Screening of Māori, Pacific Island and South Asian obese children and young adults is recommended, as is more frequent monitoring for Māori, Pacific Island and South Asian peoples with type 2 diabetes.

The Ministry’s Sol includes ‘More heart and diabetes checks’ as one of six health targets for 2013-2016 (Ministry of Health 2013: 12). The Sol also reiterates the Ministry’s commitment to working collaboratively across government, and with communities (via the 2011 Kia Tūtahi/Standing Together Relationship Accord, and the Office for the Community and Voluntary Sector) (Ministry of Health 2013).

In 2011/12 the Ministry required each DHB to produce a Māori health plan addressing nine national health issues. Diabetes was included as one of the nine national health priorities that DHBs were required to include in their 2011/12 annual Māori health plans. These health plans were subsequently revised early in 2013 for 2013/14.

The diabetes Get Checked programme was replaced with the Diabetes Care Improvement Package from 1 July 2012 (Diabetes New Zealand 2012). This programme is based in primary care with a view to building on the core services already being offered. The programme may therefore vary across different primary care contexts, depending on the care services they are already delivering.
4 Improving Access to Diabetes Health Care

4.1 Overview

The present review looked at phases 2 through 4 of the diabetes continuum of care.

1. Prevention
2. Screening/early detection and management (e.g., foot care, dialysis services)
3. Maintain normal glycaemia (e.g., dietary counselling services)
4. Screen for and aggressively treat complications (e.g., foot care, eye checks)
5. Palliative support for those with limited mobility and eyesight

This review does not address the modification of individual risk factors and behaviours (e.g., smoking, diet) related to the primary prevention of diabetes. The focus is on improving access to health care during screening, diagnosis, treatment and care. The review did not include initiatives to improve data, or build research and evaluation capacity although the importance of both are noted (CSDH 2008). (See Appendix A for the review method.)

4.2 Screening/Early Detection and Management

Aotearoa New Zealand

The New Zealand Get Checked Programme was launched in June 2000 and provided for regular checks for people living with type 1 and type 2 diabetes. In 2009 the Office of the Auditor-General (2010) asked DHBs to report on their progress with implementing the recommendations made by the Office of the Auditor-General in their 2007 report to Parliament on the Get Checked programme’s effectiveness. The Office of the Auditor-General (2010) reported that DHBs had taken steps to identify people with diabetes and find out whether they were getting checked, part of which was ensuring that DHB diabetes registers were up-to-date and there was follow up of people not getting checked. By 2009 most DHBs were also enabling regular reporting to general practitioners (GPs), the checking of treatment plans and their effectiveness, and the identification of programme improvements (especially related to removing barriers for Māori and Pacific peoples).

A review of the Get Checked programme in 2011 found that it was ‘not making any appreciable improvement for people with diabetes’ (Ryall 2011). The review, by Orr-Walker (2011), cited a 2008 study that found that over two years there had only been small improvements in glycaemic control for Māori and Pacific patients, in spite of their poor baseline statistics (Agban et al 2008). Agban and colleagues (2008, p.181) did, however, report that ‘By the two-year follow-up, over 75% of Māori and Pacific patients received appropriate treatment with anti-hypertensive and lipid lowering medication and many of the ethnic disparities in risk factors for complications were reduced’.

From their audit of the diabetes annual review data for 3397 patients Kenealy and colleagues (2012: e217) concluded that ‘metabolic control improved over time but this was largely independently of the diabetes annual review, which appears to add little clinical value to existing New Zealand general practice care processes’.

Clendon and colleagues (2011) surveyed 748 people, the majority of whom were nurses, about the impact of the Get Checked programme on nursing practice. They found the programme had a ‘substantial impact on the practice of nurses, enabling the development of new models of nursing care, improved educational levels among nurses (and doctors), improved confidence in the management of diabetes, and increased satisfaction in their work’ (Clendon et al 2011: 2). While most respondents considered the programme to be a success, they also identified difficulties that included inconsistent implementation of the programme.

The Get Checked programme was replaced with the Diabetes Improvement Package from 1 July 2012 (Diabetes New Zealand 2012).

4.3 Maintain Normal Glycaemia

According to the Institute of Medicine, self-management is ‘the task that individuals must undertake to live with one or more chronic conditions’ (Institute of Medicine 2003: 57). Pemu and colleagues (2011) conceptualise this self-management as including medical, behavioural and emotional management. Most, if not all of the interventions described here are about self-management.

An overview of interventions to decrease diabetes disparities in the maintenance of glycaemic control is provided in Table 1. These interventions are described in more detail below.
## Table 2. Interventions to decrease diabetes disparities in the maintenance of glycaemic control

<table>
<thead>
<tr>
<th>Ref</th>
<th>Loc</th>
<th>Eth</th>
<th>Continuum</th>
<th>Intervention(s)</th>
<th>Design</th>
<th>Control</th>
<th>n, Duration</th>
<th>Outcome(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson et al. 2012</td>
<td>USA</td>
<td>AA, HP, WA</td>
<td>Maintain normal glycaemia</td>
<td>Education – culturally tailored telephonic disease management provided by specialist nurses</td>
<td>RCT</td>
<td>Usual care</td>
<td>n=295</td>
<td>No significant difference in HbA1c, or secondary clinical, outcomes, behavioural outcomes, perceived health status, or self-reported physical activity at 6 months.</td>
</tr>
<tr>
<td>Chan et al. 2006</td>
<td>Australia</td>
<td>I</td>
<td>Maintain normal glycaemia</td>
<td>Education – culturally appropriate lifestyle programme to improve diet and physical activity</td>
<td>Pre-Post</td>
<td></td>
<td>n=101</td>
<td>At 6 month follow-up waist circumference and DBP had significantly reduced</td>
</tr>
<tr>
<td>Davis et al. 2007</td>
<td>USA</td>
<td>HP</td>
<td>Maintain normal glycaemia</td>
<td>Community health workers – providing assistance and teaching skills</td>
<td>Data review</td>
<td>Patient interviews</td>
<td>n=47</td>
<td>Assistance being provided was most often encouragement and motivation; Patients reported demonstrations of how to incorporated diabetes self-management into their lives</td>
</tr>
<tr>
<td>Gadzow et al. 2012 PILOT USA AA</td>
<td>Maintain normal glycaemia</td>
<td>Education – Neighbourhood Health Talkers trained to hold community conversations and established community educational resource libraries</td>
<td>CS</td>
<td>n=13 trainees</td>
<td>Increased knowledge about diabetes gained by Neighbourhood Health Talkers from training; 700 conversations held in 3 months; 8 community libraries established</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hawthorne et al. 2008 Cochrane REVIEW All EM</td>
<td>Maintain normal glycaemia</td>
<td>Health education – culturally appropriate health education and Type 2 diabetes. 11 trials included</td>
<td>RCT</td>
<td>n=1603, most short-term follow-up</td>
<td>Intervention group improvement in HbA1c at 3 &amp; 6 months post-intervention; Intervention group improvement in knowledge scores at 6 months post-intervention; No impacts on patient-centred measures (e.g., QoL), or other clinical measures (e.g., BP)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Hotu et al. 2010 New Zealand Māori Pacific Hypertension</td>
<td>Organisational – integrated community-based care model involving education and monthly nurse visits</td>
<td>RCT</td>
<td>Usual care + education</td>
<td>n=65, 12 months</td>
<td>Intervention group at 12 months had a reduction in SBP and 24-hour urine in intervention group; no progression of LV mass and left atrial volume; and more prescribed antihypertensive medication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hsu et al. 2012 Hawaii &amp; Pacific Islands I</td>
<td>Maintain normal glycaemia</td>
<td>Education – culturally responsive education combining classroom teaching, social support and reconnection of participants with the land</td>
<td>Pre-Post</td>
<td></td>
<td>Reduction in participants HbA1c and SBP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ingram et al. 2007 USA HP</td>
<td>Maintain normal glycaemia</td>
<td>Community health workers / Promotoras – one year programme to provide support</td>
<td>Pre-Post</td>
<td>n=70</td>
<td>Significant decreases in HbA1c and SBP; Significant increase in HDL cholesterol; Increased comfort discussing their diabetes.</td>
<td></td>
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<tr>
<td>Ref</td>
<td>Loc</td>
<td>Eth</td>
<td>Continuum</td>
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<td>Outcome(s)</td>
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</tr>
<tr>
<td>Joshu et al. 2007</td>
<td>USA</td>
<td>HP</td>
<td>Maintain normal glycaemia</td>
<td>Clinic – integration of <em>promotoras</em>, with policies to provide role clarity and professional development Patient intervention delivered by <em>promotoras</em> – lessons, buddy system, telephone contact</td>
<td>Pre-Post</td>
<td>2½ hour lessons for patients, 10 weeks</td>
<td>80% of enrolled patients completed the course Significant lowering of HbA1c levels maintained for 12 months after course</td>
<td></td>
</tr>
<tr>
<td>Kattelmann et al. 2009</td>
<td>USA</td>
<td>AI</td>
<td>Maintain normal glycaemia</td>
<td>Health education – nutrition lessons based on the Medicine Wheel, developed in collaboration with tribal leaders, delivered by tribal member</td>
<td>RCT</td>
<td>Usual care</td>
<td>n=114, 6 lessons, 6 months</td>
<td>Intervention group had significant weight loss and decrease in BMI No impact on energy, carbohydrate, protein, and fat intake and physical activity No impact on clinical measures (HbA1c, lipid levels)</td>
</tr>
<tr>
<td>Kenealy et al. 2010</td>
<td>NZ</td>
<td>Māori Non-Māori</td>
<td>Maintain normal glycaemia</td>
<td>Clinic – implementation of systematic care within primary health organisation</td>
<td>Open, prospective cohort</td>
<td></td>
<td></td>
<td>Improved HbA1c levels of Māori patients, to in line with non-Māori patients Decreased SBP for both Māori and non-Māori patients No change in smoking rates and BMI</td>
</tr>
<tr>
<td>Liebman et al. 2007</td>
<td>USA</td>
<td>HP</td>
<td>Maintain normal glycaemia</td>
<td>Clinic – implementation of culturally responsive self-management activities, including bilingual community health workers</td>
<td>Pre-Post</td>
<td>n=200+</td>
<td></td>
<td>Patients’ HbA1c unchanged during first three years of implementation Patients’ HbA1c steadily declined in years 4-6 of implementation Proportion of clinic patients with well-controlled glucose levels rose from 30% to &gt;46% over six years; poor control declined from 18-10.8%</td>
</tr>
<tr>
<td>Look et al. 2008</td>
<td>USA</td>
<td>HW PI</td>
<td>Maintain normal glycaemia</td>
<td>Workforce – course to upskill community health workers for follow-up and support of Hawaiian and Pacific Island patients</td>
<td>Pre-Post</td>
<td>n=111, mostly Hawaiian &amp; Pacific workers, 4 hour course</td>
<td></td>
<td>Increase diabetes knowledge</td>
</tr>
<tr>
<td>Mendenhall et al. 2010</td>
<td>USA</td>
<td>AI</td>
<td>Maintain normal glycaemia</td>
<td>Education – support, education and fellowship for groups of patients and their families, tribal elders, and health providers</td>
<td>Pre-Post</td>
<td>n=36 patients with Type 2 diabetes +; fortnightly meetings, 6 months</td>
<td></td>
<td>Significant improvements in weight, BP, and metabolic control (HbA1c) at 3- and 6-months during programme</td>
</tr>
</tbody>
</table>
### Improving Māori Access to Diabetes Health Care: Literature review

<table>
<thead>
<tr>
<th>Ref</th>
<th>Loc</th>
<th>Eth</th>
<th>Continuum</th>
<th>Intervention(s)</th>
<th>Design</th>
<th>Control</th>
<th>n, Duration</th>
<th>Outcome(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norris et al. 2006</td>
<td>ALL</td>
<td>EM</td>
<td>Maintain normal glycaemia</td>
<td>Community health workers – review of 18 studies, 1986 to March 2004</td>
<td>Syste- matic review</td>
<td></td>
<td></td>
<td>5 of 7 studies reported significant increases in participant knowledge of diabetes and self-care. Improvements in diet, physical activity, self-monitoring of glucose, and other self-care reported in many studies. 2 studies reported improved provider monitoring of patients’ glycaemic control and retinopathy screening. 4 of 11 studies reporting HbA1c found a significant improvement. Lipid levels improved in 2 of the five studies reporting on this measure. Blood pressure improved in 2 of the four studies reporting on this measure. Four studies reported health utilization outcomes: a) 2 noted decreased emergency department attendance. b) 1 noted decrease in hospital admissions. c) 1 noted decrease in hospital admissions via emergency department.</td>
</tr>
<tr>
<td>Sixta &amp; Oswald 2008</td>
<td>USA</td>
<td>HP</td>
<td>Maintain normal glycaemia</td>
<td>Clinic – promotoras training to lead a diabetes self-management programme within a community clinic</td>
<td>Case study</td>
<td></td>
<td></td>
<td>Increased provider support and referrals, with some providers becoming mentors. Increase promotoras knowledge about diabetes. 80% patient graduation from programme, high patient satisfaction scores.</td>
</tr>
<tr>
<td>Thompson et al. 2007</td>
<td>USA</td>
<td>HP</td>
<td>Maintain normal glycaemia</td>
<td>Clinic – integration of community health workers into primary care setting</td>
<td>Pre- Post n=142</td>
<td></td>
<td></td>
<td>Improvements in clinical markers at 6 and 12 months. Improvements better for female patients and those with higher engagement.</td>
</tr>
<tr>
<td>Walker et al. 2010</td>
<td>USA</td>
<td>AA</td>
<td>Maintain normal glycaemia</td>
<td>Health education – based on the Health Promotion Model and the Transtheoretical Model</td>
<td>Pre- Post n=195, 3 sessions</td>
<td></td>
<td></td>
<td>Intervention group improvement in knowledge only. No impact on clinical measures (HbA1c, BMI, weight).</td>
</tr>
</tbody>
</table>

**Note.** AA=African American; AI=American Indian; CS=Case Study; DBP=diastolic blood pressure; EM=Minority; Eth=Ethnicity; HDL=high-density lipoprotein; HP=Hispanic; HW=Hawaiian; Loc=location; n=number; QoL=Quality of Life; PI=Pacific Island; RCT=Randomised Control Trial; Ref=Reference; SBP=systolic blood pressure; WA=White American
4.3.1 Health Education

Walker, Stevens and Persaud (2010) reported increased diabetes knowledge from their intervention of three diabetes educational sessions with African Americans to promote diabetes self-management. However the intervention did not have any impact on HbA1c, BMI or weight.

A Cochrane Collaboration review was conducted of culturally appropriate health education for type 2 diabetes in ethnic minority adult groups (i.e., over 16 years of age) living in middle or high-income countries, up until August 2007. Culturally appropriate health education was defined as ‘education that is tailored to the cultural or religious beliefs and linguistic skills of the community being approached, taking into account likely literacy skills’ (Hawthorne et al 2010b: 4-5). The authors included 11 trials involving 1603 people. Intervention group glycaemic control (HbA1c) improved at three- and six-months after the intervention, but was not significantly different from control group (‘usual care’) levels at one year following the intervention. Interventions also led to improved knowledge at 3, 6, and 12 months. Interventions showed no significant impact on patient centred measures (e.g., quality of life), or on other clinical measures (e.g., lipid levels, blood pressure). The included studies were described as mostly short-term as longer outcome measures were not available. Hawthorne et al. (2010) concluded that the variability in the interventions meant that generalisation about what sort of interventions, beyond the broad ‘culturally appropriate health education’, were most effective was not possible from their review.

Kattelmann, Conti and Ren (2009) acted upon suggestions that ‘more culturally and tribally specific intervention approaches might lead to greater behavioural change’ by conducting a random control trial of nutrition lessons based on the Medicine Wheel, developed in collaboration with tribal leaders and delivered by a tribal member to Cheyenne River Sioux people with type 2 diabetes. The high participation in the study was attributed by the authors to the involvement of the tribe in the development and delivery of the intervention. Six months of monthly nutrition lessons, in addition to their usual dietary education, resulted in significant weight loss and BMI reduction in the intervention group compared to the control group. Dietary compliance was low among participants and there was no significant impact of the intervention on blood sugar or lipids. The authors suggest that a longer, more intense study may be required. They describe the family having more sway over food decisions than individuals, but they do not go as far as recommending a more family-focused intervention (which may have been a better fit with the culture and values of the tribe they were targeting in their intervention).

Mendenhall and colleagues (2010) developed and implemented their Family Education Diabetes Series (FEDS) within the context of Community-Based Participatory Research. FEDS is a six-monthly programme of fortnightly meetings that involve support, education and fellowship for groups consisting of patients, their families, tribal elders and health providers. The group cooks and eats together, and engages in activities and talking circles. Most participants arrive early and stay late for the ‘3 hour’ meetings. In a pilot test of the programme involving 36 American Indian patients with type 2 diabetes, participants’ blood pressure (systolic and diastolic) improved significantly at 3 months and remained improved at 6 months, as did their metabolic control (A1c). Their weight was significantly improved at six months.

A cultural health broker is ‘someone who advocates on behalf of the health of another individual or group by providing information in culturally sensitive ways and mediating between community members and the health care sector’ (Cadzow et al 2013: 101). The pilot of the Neighborhood Health Talker project in Buffalo, New York trained 13 cultural health brokers to hold community conversations about diabetes knowledge and self-management with the largely African American community. The knowledge and confidence of the cultural health brokers increased during training, and they went on to hold 700 conversations in a three-month period and establish eight community-based diabetes resource libraries. The pilot therefore demonstrated the successful implementation of the initiative (Cadzow et al 2013).

Hsu and colleagues (2012) describe culture-responsive diabetes education and self-management programmes operating in Hawaii and in the Pacific Islands that combine classroom teaching with activities to reconnect participants with the land (e.g., gardening). Both programmes embodied strong social support and had high retention rates. Both were effective at decreasing participants’ (pre- and post-measures) HbA1c and SBP. The success of the programmes was attributed to the provision of education that validated participants’ cultural identity, essentially allowing them to be themselves.

Two interventions reported modest or no improvements for participants. In the first intervention Chan and colleagues (2007) worked with Indigenous Elders and health workers to create a culturally responsive community-based education intervention to improve cardiovascular health among urban Indigenous Australians with and without diabetes. The Indigenous people involved declined to be part of a measurement-only control group, so the research examined pre- and post-test measures. At the six-month follow-up only waist circumference and diastolic blood pressure had significantly improved and the authors suggested that longer-term follow-up might
show more improvements. The second intervention was a 12-month trial of ‘telephonic disease management’ with a predominantly Hispanic sample of community health centre patients with type 2 diabetes. The intervention group of patients received regular telephone calls from a nurse who tailored the content of the call to respond to patients’ needs. The regularity of the calls was based on patients’ risk stratification, with higher risk patients receiving weekly calls, and others receiving fortnightly or monthly calls. Following each call the nurse mailed patients educational material related to the issues discussed. The intervention had no effect on primary (Hba1c) and secondary clinical outcomes, or behavioural outcomes (Anderson et al 2010).

4.3.2 Community Health Workers

In their review of 18 interventions using community health workers (CHWs), Norris et al. (2006) reported on the multiple roles CHWs performed, including educator, translator, coordinator, navigator, and peer mentor. The majority of the studies reviewed were of CHWs in Indigenous or ethnic minority communities. The findings from the interventions were mixed. The studies reviewed found improvements in participants’ knowledge and self-care, diet, physical activity, and self-monitoring of glucose. Two studies reported improved provider monitoring and screening. Only 11 studies measured glycaemic control, and only four of these found significant improvements in Hba1c as a result of their intervention. The authors concluded that more research was needed to determine the features of effective community health worker interventions and what the health and wellness benefits (in addition to increased knowledge) for patients with diabetes are.

Davis and colleagues (2007) reviewed the work of CHWs working at four sites participating in the Diabetes Initiative of the Robert Wood Johnson Foundation, and serving predominantly low-income, Hispanic populations. Community health worker quantitative data were analysed and patients who had had interactions with a community health worker were interviewed. Most of the CHWs’ contact with individuals was about providing assistance (38%) (e.g., providing encouragement or motivation), or teaching/practicing a skill (29%) (e.g., healthy eating, blood glucose monitoring). Patients found the assistance of the CHWs helpful, and it gave them encouragement and confidence. No medical outcomes from CHW contact with patients were reported.

Ingram and colleagues (2007) found that community-based promotoras (from Spanish term for lay community educator) operating in a farmworker community on the US-Mexico border were able to provide support to over 100 people with diabetes, many of who had poor glycaemic control (Hba1c>6.9%) at the start of the one-year programme. Pre- and post-intervention clinical data on 70 participants showed significant decreases in Hba1c levels (mean difference=-0.58%) and SBP (mean difference=-5.8%), and a significant increase in HDL cholesterol, (mean difference=+3.2 mg/dL). The high-risk group (N=45) experienced an even greater decrease in Hba1c levels (mean=-1.0) as well as a significant decrease in LDL-C (mean=8.6 mg/dL). The promotoras provided support, encouragement, advocacy or education on self-management. Those receiving support reported being more comfortable talking with family and friends about diabetes, and more comfortable talking to their physician.

Look and colleagues (2008) developed a culturally relevant diabetes curriculum using a Community Based Participatory Research framework. The curriculum was in response to a needs assessment with 20 community health agencies, designed in collaboration with these agencies, and delivered to 111 (mainly Hawaiian and Pacific) community health workers in Hawaii over 3 years. The course was developed to up skill CHWs for follow-up and support of Hawaiian and Pacific patients’ diabetes management. The four-hour course resulted in increased CHW’s diabetes knowledge, demonstrating that ‘the culturally tailored curriculum gives CHW the relevant knowledge and tools necessary to assist in the delivery of diabetes self-care and management information to Native Hawaiian and other Pacific Island community members’ (Look et al 2008: 838).

Hotu and colleagues (2010) conducted a random-control trial of a community-based model of care for Māori and Pacific patients with type 2 diabetes and chronic kidney disease (CKD) (majority of patients in stage 3, with a smaller number in stage 4). Sixty-five patients all received a detailed education package and an individual education session with a research nurse. In addition, the intervention group were visited each month in their homes, for 12 months, by a Māori or Pacific health-care assistant (HCA), and were offered transport assistance to the local pharmacy or laboratory. Compared to the control group, at 12 months the intervention home care group

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11 Community-Based Participatory Research is based on the building of collaborative research relationships, based on mutual respect and power sharing, between researchers and communities. Researchers work with communities to identify issues for research, design studies, and interpret and disseminate findings (Wallerstein & Duran 2006).

12 Look et al. (2008: 835) defines a community health worker ‘as a member of a particular community who works as a bridge between the healthcare system and community members. Commonly, [community health workers] do not have formal health training and serve in roles to provide cultural mediation, informal counseling and social support, culturally appropriate health education, advocating for individual and community needs, increasing access to care, and building individual and community capacity’.
had a significantly greater reduction in SBP and 24-h urine protein. They were also been prescribed significantly more antihypertensive medications. While the left ventricular mass and left atrial volume had progressed at 12 months for the usual care control group, these remained stable for the home care intervention group. There was no significant difference between the intervention and control groups for changes in DBP, HbA1c, serum creatinine, or total cholesterol. The researchers concluded that optimal utilization of current therapies for Māori and Pacific patients with diabetes and CKD can be achieved through the provision of ‘culturally appropriate face to face clinical care, allowing patients to have a more frequent follow-up in the community, frequent prompting to take their medications and reduced costs to the patient because of home visits’ (Hotu et al., 2010: 3265).

4.3.3 Health Care Clinics, Including Community Health Workers

Community health workers have also been integrated into health care clinics to promote patients’ self-management. Joshu and colleagues (2007) report on the results achieved in a clinic serving a predominantly Hispanic population when promotora-led (community health worker) self-management services were integrated into the clinic’s operations. The clinic’s staff, including the promotoras, collaborated to develop the self-management intervention that provided promotoras with professional development and training. The clinic also developed policies that gave promotoras a clear role, and procedures that ensured patient safety. The patient intervention consisted of weekly 2½ hour lessons over ten weeks, combined with a buddy system, weekly telephone contact from the promotores, and more follow-up for patients with depression. Eighty percent of patients who were enrolled in the self-management course completed it, and had significantly lower HbA1c levels at the end of the course that they then maintained over 12 months (N=255; 63% had HbA1c values ≤7.5%). The authors concluded that the ‘integration of self-management support into a primary care system and the use of promotoras for program delivery can provide more comprehensive and culturally appropriate services, leading to better patient outcomes’ (Joshu et al 2007: 157S).

Liebman, Hefferman and Sarvela (2007) reported on a package of culturally-responsive self-management activities (e.g., classes, drop-in, breakfast club, individual nurse consultations) that were gradually implemented over three years in a community health centre serving a low-income Latino community as part of the Robert Wood Johnson Diabetes Initiative. Bilingual community health worker services were part of these activities. Patients’ HbA1c levels remained unchanged (8.1-8.4) during the initial three years of implementation, and then steadily declined over the next three years (to 7.5) for the 200+ patients who were participating. The proportion of patients who were well-controlled rose in these subsequent years from 30 percent to more than 46 percent, while those with extremely poor control declined from around 18 percent to 10.8 percent. Engagement with patients and their subsequent involvement in the programme was attributed by the clinic to the CHWs. The achievement of good patient outcomes was attributed to the combination of good patient self-management facilitated by the activities, and ‘excellent clinical care that is responsive to the needs of patients’ (Liebman et al 2007: 137S). Early findings from another community health worker initiative in a primary care setting serving a Mexican American population also reported improvements in clinical markers at six months and one year (N=142 patients), with these being better for female patients and for those with higher engagement with a community health worker (Thompson et al 2007).

Another health centre serving a diverse, low-income community also instigated a self-management intervention under the Robert Wood Johnson Diabetes Initiative (Soto et al 2007). Peer educators provided the direct link to the community, and the clinic made other organisational changes including the development of strong community partnerships. Over two years 1603 patients (and 415 guests) had attended support groups. Early findings of the changes for 67 patients suggested that the intervention led to improvements on clinical markers.13 The authors highlight critical success factors from this intervention that

‘...include developing a system that made efficient use of limited staff resources...; finding an educational approach appropriate for the population served...; involving patients in self-management support roles by providing them the opportunity and training to become peer mentors; and developing strong community partnerships to complement and reinforce self-management’ (Soto et al 2007: 171S).

Sixta and Ostwald (2008) also describe the implementation of a clinic-based, promotoras-led diabetes self-management programme to help bridge cultural barriers and facilitate patient access to self-management education. The outcomes from the implementation of the programme included increased practitioner support and referrals to the self-management programme, with some practitioners ‘who had never understood or supported patient self-management’ becoming mentors and experts (Sixta & Ostwald, 2008, p.235). Promotoras gained skills and knowledge and a more expanded and meaningful role within the clinic. Patients were able to access

13 No follow-up research about this programme has been located.
self-management education, with courses achieving an 80 percent graduation rate and receiving high patient satisfaction scores. Patients’ self-management also improved as evidenced by their ‘sustained weight loss and exercise regimens, and unprecedented levels of knowledge, skills, ability, and confidence in controlling the disease’ (Sixta and Ostwald 2008: 287). Several recommendations were made by the authors about successfully facilitating the teaching of self-management by CHWs to culturally diverse patients. These included clinics employing CHWs, the provision of professional development for CHWs undertaking educator roles, designing and good oversight of quality programmes, and supporting and evaluating the education courses.

The Robert Wood Foundation funded self-management programmes in 14 sites in its Diabetes Initiative. Fisher, Brownson, O’Toole and Anwuri (2007) identified key features of these programmes.

- **On demand** Support needs to be both readily and conveniently available through channels that are attractive to the individual (p. 203S). Suggested channels include both open events such as health fairs and group medical visits.
- **Proactive** Low demand, proactive contact will signal caring and help maintain contact with people, including those who might otherwise ‘fall between the cracks’
- **Personal connection** involves the person with diabetes knowing that there is someone who is familiar with them and cares about them, and who can link them into other care team members if and when the need arises.
- **Motivational** Non-directive, accepting and encouraging support is especially important for those who have had diabetes for many years.
- **Consistency of key messages** Common terminology among care team members is important to prevent confusion and contradictions.
- **Not limited to diabetes** Support is about being available and willing to hear about and discuss other aspects of people’s lives, beyond diabetes management.
- **Inclusive of a wide range of resources and settings** Linkages should be made to community resources, including non-health agencies (e.g., churches, tribal institutions).

Working on the same Diabetes Initiative information, Fisher, Brownson, O’Toole, Anwuri and Shetty (2007) identified perspectives on self-management. The two key lessons were the central role played by community health workers, and the importance of on-going follow-up and support. The authors also identify other lessons, including the importance of paying attention to depression in patients; having a health care organisational infrastructure that supports self-management; and building supports for patients through clinic-community partnerships. General emergent themes that can guide programme development strategy included the provision of choice for participants, and the realisation that there are many models and approaches to self-management; developing dimensions of self-management rather than dichotomous categories (e.g., yes/no, good/bad); valuing self-management as central to diabetes management and also as part of continuity of care that includes clinical care and physicians; and that the dissemination of successful practices takes teamwork.

Cherrington and colleagues (2008) also looked at the lessons learned from the implementation of the community health worker model with diabetes management in the United States. Twenty-three programmes were included following a systematic search of published and unpublished literature, and key informants from 16 of these programmes were interviewed. The authors attributed programme variability and many of the barriers to programme implementation to the lack of community health worker role clarity. They proposed the explicit placement of the community health worker model within a Chronic Care Model framing (see Diagram 1). The authors write, ‘As trusted members of their communities, CHWs could play a pivotal role within the Chronic Care Model, serving to bridge its multiple components and facilitate the development of sustainable and culturally appropriate diabetes management interventions’ (Cherrington et al 2008: 832).

The expansion of the Chronic Care Model framework was also the focus of a REACH case study conducted by Jenkins et al. (2010). The REACH initiatives work in a collaborative, strengths-based way with communities, families and individual patients to implement community and systems changes to reduce health disparities. They highlight the importance of information systems; a delivery system design that defines team structure, roles and delivery methods; decision support including evidence-based guidelines supported by champions; and patient self-management support.

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14 The next group of reports about clinic adaptations to be more culturally responsive to patients with diabetes largely report on lessons learned and models developed. They are not included in the table summary of interventions.
Diagram 1. Integration of the Community Health Worker Model into the Chronic Care Model

Functional and Clinical Outcomes

Source. Cherrington et al. (2008: 832 Figure 2)

Philis-Tsimikas and colleagues (2012) reported on their 15 years of testing, translating and implementing Project Dulce, a community-based, culturally tailored diabetes management programme that incorporates elements of the Chronic Care Model. Project Dulce operates in 15 locations San Diego with a largely Latino/Hispanic enrolled population of more than 18,000 patients. Patients with diabetes are stratified by risk and then provided evidence-based care by multi-disciplinary teams that are led by trained diabetes nurses. Peer education about diabetes self-management is provided by trained promotoras who are people from the same communities who are successfully managing their own diabetes. Over the 15 years of its operation it has achieved positive behavioural, physiological, and cost-effectiveness outcomes. This includes findings from an RCT where Project Dulce care was significantly more effective at improving Mexican-American patients’ glycaemic control (HbA1c), diastolic blood pressure and cholesterol, compared to patients in the standard care control group. All patients in this study had high HbA1c levels of more than 10%. The intervention group attended self-management classes (weekly two-hour classes, for eight weeks) followed by monthly, peer educator-led support groups. Those who attended more classes had larger HbA1c reductions. In the classes ‘patients are taught the meaning of their clinical values, informed of targets for optimal health outcomes, and encouraged to communicate with their physicians if their values are not at target levels’ (Philis-Tsimikas et al 2011: 1930). The researchers propose that the standardised preparation of promotoras, the curriculum’s focus on glucose control and the prevention and management of comorbidities, and the sharing of success stories among patients were important success factors (Philis-Tsimikas et al 2011). From their research Philis-Tsimikas et al. (2012) propose a four-tiered disease care management system based upon the initial assessment of patient risk (see Diagram 2).

Funding from the Special Diabetes Program for Indians has enabled American Indian and Alaska Native communities to develop and deliver their own diabetes prevention and treatment programmes. At the core of the treatment initiatives is the provision of quality, culturally appropriate individual and group-based diabetes education, including nutrition education and tailored physical activity programmes. Programmes also link people to psychosocial supports and screen patients for depression. In their 2011 report to Congress the Special Diabetes Program for Indians reported on the achievement and maintenance of key clinical outcomes (i.e., blood sugar, cholesterol, blood pressure, use of ACE inhibitors and ARBs for blood pressure control; compared to baseline measures) by community-directed programmes (Indian Health Service 2011).

Zeh and colleagues (2012) conducted a broader systematic review of culturally competent diabetes care interventions, and included 11 papers. Of the interventions seven were scored as highly culturally competent and four as moderately competent. ‘A consistent finding from 10 of the studies was that any structured intervention, tailored to ethnic minority groups by integrating elements of culture, language, religion and health literacy skills, produced a positive impact on a range of patient-important outcomes’ (p. 2).
Improving Māori Access to Diabetes Health Care: Literature review

Diagram 2. Proposed disease management model for diabetes

<table>
<thead>
<tr>
<th>Centralized Function Quality Group</th>
<th>Linked With PCP Office/Medical Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Proactive identification of patients via registry or referral from hospital</td>
<td>High-risk Patients requiring complicated medical management, managed by NP, APN or Pharmacist + Education</td>
</tr>
<tr>
<td>2. Stratification based on HEDIS or other risk level methods</td>
<td>3-4 visits until stable</td>
</tr>
<tr>
<td>3. Outreach to schedule patients into disease care management program</td>
<td>Moderate-risk Patients requiring medical management, managed with preformatted orders + PCP signoff and RN + Education</td>
</tr>
<tr>
<td>4. Dashboards for ongoing reports and evaluation</td>
<td>Quarterly visits for maintenance Group medical visits/telephonic/remote monitoring are options</td>
</tr>
<tr>
<td></td>
<td>Low-risk patients and maintenance managed with Peer-Led Self Management Education 8 weekly sessions + ongoing support groups</td>
</tr>
<tr>
<td></td>
<td>Positive PHQ-9 Social Worker Depression Care Manager 8 sessions + PCP or psychologist for medical management</td>
</tr>
</tbody>
</table>

**Note.** APN, advanced practice nurse; HEDIS, Healthcare Effectiveness Data and Information Set; NP, nurse practitioner; PCP, primary care provider; PHQ-9, Patient Health Questionnaire 9; RN, registered nurse.

**Source.** Philis-Tsimikas et al. (2012: 162 Figure 2) The Indian Health Service Special Diabetes Program For Indians has also been running for several years after being established by Congress in the Balanced Budget Act of 1997.

Roubideaux and colleagues (2008) ranked a sample of Indian Health Services using the HIS Integrated Diabetes Education Recognition Program. They then compared programmes with different rankings on quality-of-care indicators. The majority of the 86 programmes were rated at developmental level (89%). Nine programmes were rated more highly at educational (N=4, 5%) or integrated (N=5, 6%) levels. The odds of patients completing five of the 15 quality-of-care indicators (e.g., LDL, HbA1c tests, triglycerides) were significantly higher for those in services rated at higher levels (i.e., educational or integrated) than lower (i.e., developmental). The odds ratios were all close to 1 for patients achieving recommended levels of intermediate outcomes (i.e., HbA1c<7.0%, SBP<130mmHg, DBP<80mmHg, LDL-C<100mg/dL). The authors concluded that there was a ‘trend towards better quality of care in higher-level programs’ (Roubideaux et al 2008: 2083).

**Aotearoa New Zealand**

Kenealy and colleagues (2010) examined outcomes from the implementation of Care Plus in Manaia Primary Health Organisation (PHO) in Northland. Care Plus is part of the Primary Health Care Strategy, providing better-coordinated care to those with high needs or receiving high levels of care. Care Plus aims to ‘improve management of chronic conditions, reduce inequalities, improve teamwork within PHOs, [and] provide lower-cost services for high-need primary health users’ (Ministry of Health 2004: 4). Manaia PHO provided education and training for nurses prior to the implementation of the programme, and with the introduction of Care Plus the bulk of patient care went from being provided by GPs to being provided by these nurses. This included an initial one hour patient visit, followed by up to four free half hour visits per year. A patient wellness plan was prepared and used during these visits, along with a template that contained patient data and recommended guideline care. The Care Plus coordinator visited each general practice in the PHO at least monthly to provide feedback, encouragement and education. Kenealy et al. (2010) report that the implementation of systematic care within a Primary Health Organisation improved HbA1c levels of Māori patients with diabetes to be in line with those of non-Māori patients with diabetes, and decreased SBP for both Māori and non-Māori patients (at two years following implementation). Patients smoking rates and BMI did not change. In addition, ‘Care Plus patients perceived improved understanding of their condition and medications, improved medication management, and expressed an appreciation of regular health monitoring and support for goal setting’ (Kenealy et al 2010: 260).
4.3.4  Treatments

A meta-analysis by Shojania et al. (2006) found that medication adjustments by a pharmacist or nurse case-manager resulted in HbA1c improvements that were greater than those from interventions that did not include these adjustments. Curtis and colleagues (2009) examined in a retrospective cohort study whether this effect held for American Indian patients at an Indian Health Service, where four of the five nurse managers were of Native American heritage. They found the rate of hypoglycaemia was highest in the intensively managed group (nurse care manager (NCM)+medication adjustment (MA)), although the overall prevalence of hypoglycaemia was low. This led the authors to conclude that the interventions were safe. There were incremental improvements in glycaemic control from the usual primary care provider (PCP) group, to the PCP+NCM group, to the PCP+NCM+MA group. Only the difference between the PCP and PCP+NCM+MA groups was significant.

From their systematic review of exercise training in high-risk populations with type 2 diabetes, Sukala, Page and Cheema (2012) concluded that ‘exercise training can significantly improve chronic glucoregulation (HbA1c) in some ethnic populations’. They also speculate that ‘Polynesian people’ may be able to tolerate a more intensive exercise regime, and respond correspondingly, on the basis that their genotype expression has been influenced by physical exercise as part of day-to-day living. Their systematic review did not attend to the cultural appropriateness of the exercise interventions included.

An exploratory study of the ACCORD trial data (participants with type 2 diabetes plus CVD (or at least two risk factors)) for three separate Hispanic groups (Mexican, Puerto Rican, Dominican) found that Mexicans were 38 percent more likely than the other two ethnic groups to achieve the intensive (support and care) arm’s glycated haemoglobin goal (6.5%) (Getaneh et al 2012). Although the association between place of birth or education with goal achievement was significant, the authors raise questions about the validity of such broad measures of acculturation and health literacy. They go on to recommend ‘clinical vigilance to identify such potential influences of diabetes self-care as low level of health literacy and understand health beliefs that are shaped by unique cultures and degree of acculturation among distinct Hispanic groups’ (Getaneh et al 2012: online).

Aotearoa New Zealand

In 2011 four six-month demonstration projects (Auckland, Hutt Valley, Hawke’s Bay, MidCentral) tested a Diabetes Nurse Specialist prescribing initiative, under the auspices of the NZ Society for the Study of Diabetes Incorporated and funded by Health Workforce New Zealand and the Ministry of Health’s Nursing Innovations Team (Ministry of Health 2010a). The evaluation of the projects endorsed the safety, quality and clinical appropriateness of Diabetes Nurse Specialist prescribing, and found that there were fewer referrals to diabetes physicians and that patients were satisfied. Patients’ (N=1178, 17% Māori) HbA1c also showed an overall improvement. The lessons learned were about the importance of excellent project management from someone with clinical credibility, and the provision of an electronic backbone (e.g., information technology) (Wilkinson et al 2011).

4.4  Screen For and Aggressively Treat Complications, Including Quality of Life and Survivorship, and Palliative and End of Life Care

Australia, Canada, USA

A systematic review of interventions to promote screening for diabetic retinopathy (up to May 2005) included 48 studies (12 RCTs, four nonrandomized studies, and 32 pre-post studies) and found that system based change resulted in significant increases in screening. Other single or multiple component interventions also had positive effects (Zhang et al 2007). The authors note that ethnicity or race information was not provided in most of the studies reviewed. Two studies targeted African American patients only. Overall they found that interventions were less successful with ethnic minorities, possibly because the patients’ lack of health insurance (due to the links between being an ethnic minority and being poor) was a barrier to increased screening.

The SANDS randomised trial was a 3-year US trial running from April 2003 to July 2007. Participants were 499 American Indian men and women 40 years of age and older, with type 2 diabetes, randomised to aggressive and standard treatment groups (Howard et al 2008). Aggressive treatment was to target levels of LDL-C of 70 mg/dL or lower and SBP of 115 mm Hg or lower. This treatment group ‘had an improvement (decrease) in intimal medial thickness and thus a regression of atherosclerosis, whereas the standard treatment group had a worsening (increase) in intimal medial thickness. There was also a greater decrease in LDMI in the aggressive group. Few CVD events occurred overall, with on intergroup statistical difference’ (Howard et al 2008: 1684).
Aotearoa New Zealand

Counties Manukau Let’s Beat Diabetes district-wide programme supports the Chronic Care Management programme out of primary health care. Chronic Care Management ‘supports community-based structured management of people with advanced and complicated diabetes, as well as cardiovascular disease, congestive heart failure, chronic obstructive pulmonary disease, and depression’, by focusing on improved coordination between primary and secondary care (Jackson et al 2009). The patients with diabetes participating in this programme experienced improved HbA1c levels that were, on average, down from 9.0% on their entry to the programme and 8.4% at their 5-year review. Their blood pressure, total cholesterol, and LDL cholesterol levels also improved (Kenealy et al 2007).

5 Discussion

This review has focused on both personal and structural interventions that improve the access of minority people with diabetes to health care.

An important part of secondary prevention in diabetes is the aggressive management and control of glycaemia as key to delaying the progression of diabetes complications (Pemu et al 2011). Tacosa and colleagues (2010) found that aggressively treating hypertension, hyperglycaemia and hyperlipidaemia was ‘considerably more cost-effective’ for African Americans with diabetes, compared to general population diabetics. The burden of diabetes in the Māori population is similar to the African American population, suggesting that such aggressive treatment will also be cost-effective for Māori.

The other component of secondary prevention is self-management. This requires patients to adhere to a complex, lifelong management routine that involves self-monitoring of blood glucose, nutrition management, and being physically active (White et al 2009). As White and colleagues explain,

‘...what providers often attribute to someone being a “difficult patient” very well could represent a manifestation of other intrinsic patient factors such as self-efficacy, disease knowledge, or health literacy or quantitative skills (i.e., numeracy) (White et al 2009: 106)

Interventions are often designed to facilitate patients’ ability to self-manage by increasing patients’ knowledge and confidence, and providing them with support services. This can, in turn, lead to improved blood glucose levels (Hawthorne et al 2010a).

Research in the United States suggests that self-management is difficult for people with type 2 diabetes to sustain. The Strong Heart Study, involving over 4500 American Indians aged 45-74 years, found high levels of knowledge among participants about risk factors and concluded that ‘changing high-risk behaviours is very difficult at both the individual and community level’. Bhattacharya (2012) studied type 2 diabetes self-management among 31 adult African Americans and concluded that the asymptomatic or nonspecific symptoms of type 2 diabetes underpinned participants’ low awareness of the chronic nature of their disease and their non-adherence to medication. Participants also felt their exercise and dietary regimes were impractical or culturally irrelevant. Bhattacharya (2012: 161) concluded that ‘To develop culturally-targeted interventions to advance self-management outcomes, we must understand from and with African Americans the strengths of social-cultural contexts in which they live and make their health behavior choices’.

A study of the epidemiology of diabetes in the Manitoba First Nations population also recommended primary prevention programmes drawing on customs and ways of life and targeting youth, and secondary prevention and support systems (Green et al 2003). Similarly Spencer and colleagues (2006) point out the importance of considering the impact of negative life events and the more general hassles of everyday life on people’s ability to manage their diabetes. To this evidence New Zealand might add spiritual and whānau management from Māori models of health (Durie 1994).

The importance of cultural responsiveness to the success of interventions is now well accepted. In their 2012 commentary in Diabetes Care Herman and Zimmet (2012: 9544) write that

What is clear is that all interventions, whether for… [Asian Americans, Native Hawaiians, Pacific Islanders] populations or other at risk populations, must be grounded in a knowledge of the values, norms, knowledge, beliefs, practices, experiences, and languages of the culture.

This has been reiterated by the interventions examined in this review. Table 2 below summarises these interventions.
Table 3. Intervention strategies to reduce diabetes health care disparities

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facilitate patients’ health literacy and ability self-manage diabetes</strong></td>
<td>Initiatives improve the health literacy, understanding of interventions, and the self-management ability, confidence and motivation of patients with diabetes. Initiatives include the provision of information and reminders.</td>
<td>Culturally appropriate education, support and fellowship (e.g., shared meal preparation and dining)(^1) Screening for depression Home-based tools: Web-based diabetes self-management programme Peer-to-peer social networking</td>
</tr>
<tr>
<td><strong>Engage community health workers to work closely with patients</strong></td>
<td>Community-based health workers (including promotoras, community nurses) assist patients with education, self-management, and access to health services by being a bridge between the community and health clinic.</td>
<td>Community health workers provide culturally appropriate: Community conversations Assistance and support (e.g., encouragement, motivation) Mentoring and advocacy Education about and practice of skills (e.g., healthy living, blood glucose monitoring) Community-based libraries of resources</td>
</tr>
<tr>
<td><strong>Build a culturally competent health workforce</strong></td>
<td>Health practitioners are supported to deliver culturally competent clinical care (including the use of reminders and protocols, as well as professional development).</td>
<td>Culturally responsive community health worker training curriculum developed with the target community, following a needs assessment Formalised training of community health workers and outreach nurses, including skills to recognise depression in patients</td>
</tr>
<tr>
<td><strong>Reorganise health clinics to improve accessibility</strong></td>
<td>Changes are implemented to the way clinics organise and provide services.</td>
<td>Strong community partnerships, for example: Valuing of self-management as central to diabetes management and part of the continuity of care Collaboration of clinic staff, including community workers, to develop self-management interventions Policies (e.g., about structure and processes) that promote quality, consistency and safety, for example: Decision support that includes evidence-based guidelines supported by champions Oversight of the quality assurance process Use of monitoring and evaluation information to refine programmes and services Dissemination of successful practices Use of dashboards for on-going reports and evaluation A delivery system that defines team structure, roles and delivery methods, for example: Clear roles and responsibilities for community health workers or outreach nurses Consistency of key messages being given by all staff to patients about diabetes Clinic staff as self-management mentors Proactive identification and then stratification of patients based on risks-assessment Appropriate information technology system to support sharing of patient information among care team members Active support for patient self-management; for example: A package of culturally-responsive self-management activities (e.g., classes, drop-in, breakfast club, individual and whānau nurse consultations)</td>
</tr>
</tbody>
</table>
Strategies for health systems to respond to improved Māori Access to Diabetes Health Care: 

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health system</td>
<td>The health system can respond through funding formulas and strategies that reduce the barriers imposed by patient financial resource limitations.</td>
<td>Authority for pharmacists or nurse case-managers to adjust patients diabetes medications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>District-wide programmes to support chronic care management, including:</td>
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<tr>
<td></td>
<td></td>
<td>Community-based management</td>
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<td></td>
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<td>Supports for provision of nursing care</td>
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<td></td>
<td></td>
<td>Coordination of primary and secondary care</td>
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</tbody>
</table>

**Note.** 1. Culturally appropriate health education was defined as 'education that is tailored to the cultural or religious beliefs and linguistic skills of the community being approached, taking into account likely literacy skills' (Hawthorne et al., 2010: 4-5).

**Source.** Inspired by (Chin et al., 2012: 996, Table 3)

The use of methodologies such as Community Based Participatory Research helps develop and strengthen collaborative relationships between health services and communities. These relationships then underpin the development of programmes and services for people with diabetes that connect with them and their families within the context of their cultural values, language, and lived realities.

In the 1990s the South Auckland Diabetes Project successfully trained long-term unemployed people from South Auckland communities to be diabetes educators in their own communities (Tregonning et al 2001). This initiative addressed cultural barriers to diabetes education as well as providing a local training and employment option. Culturally appropriate, peer self-management education for people with diabetes is not a new or unproven concept in this country.

At the beginning of 2012 the American Association of Diabetes Educators (AADE) published its Position Statement on ‘Cultural sensitivity and diabetes education’ (American Association of Diabetes Educators 2012). This statement called on diabetes educators to give consideration to culture as an essential component of quality care and diabetes education, and to work with communities and individuals from a place of cultural humility. This might equally apply to all levels of healthcare for people with diabetes.

Gilliland, Perez, Azen and Carter (2002) have also found that success in managing risk factors among those with diabetes is possible if interventions are culturally appropriate and relevant, community-based, and focused on small changes over time. Castro, Shaibi, and Boehm-Smith (2009), however, note the challenge of replicating successful prevention programmes in underserved populations that may lack necessary resources and community organisation. They argue that this infrastructure needs to be part of any intervention. Spencer and colleagues (2006) stress the importance of health providers’ support for and communications with African American and Hispanic patients with diabetes. Ashton and colleagues (2003), for example, proposed that the incongruence in patients and health providers’ explanatory models of illness underpinned communication disconnects that contribute to disparities in health care. Likewise White, Beech and Miller (2009: 110) describe the key role that health providers can play in the reduction of disparities in diabetes care ‘through understanding and addressing patient factors such as health literacy and focusing on improved patient communication and cultural competence’.

The particular roles of community health workers and health care clinics are discussed next.

### 5.1 Community Health Workers

Community health workers or promotoras (as they are known in Hispanic communities) figured large in the interventions reviewed. These people are often of the communities that health services are trying to reach, or trained with the skills needed to engage those communities (although this figured less prominently in the literature). Initially there was resistance to the implementation of a community health worker workforce from community health practitioners (e.g., community nurses). However the rise in the prevalence of diabetes in communities has created more work for health services, and therefore a greater role for a workforce that assists and educates people with diabetes about self-management, and helps strengthen people’s links to health services (Cherrington et al 2008).

Community health workers are trained to provide this support to communities, and culturally tailored curriculum are being developed that recognise the learning styles of both the CHWs and the people they will be seeking to assist (Look et al 2008). Within clinic settings the CHWs help link people from their communities to educational and other self-management assistance being provided by health services. Peer educators work in many of the same ways as CHWs, providing a direct link between health clinics and communities. While it was not noted from
the interventions reviewed it would be interesting to find out whether these direct links into communities by CHWs, promotoras and peer educators had additional influence in supporting the prevention of diabetes.

Reinschmidt and colleagues (2006) found that practical help, health education, and emotional and motivational support are key to patients’ self-reliance, and that the success of promotoras is about their socio-cultural characteristics, combined with their personal qualities and training that enable them to offer the combination of these supports to people in the community.

*In general, clients accepted the support because they accepted the promotora as a bridge to the clinic. The promotora established relationships that were at the center of her success. Clients perceived the promotora as a community member who embodied the characteristics of a natural helper. They responded to the promotoras efforts and her different types of social support because they related well to her socio-cultural and personal characteristics. These characteristics built the foundation for trust (Reinschmidt et al 2006: 261).*

### 5.2 Culturally-Tailored Clinic Care

The importance of culturally tailored care is highlighted in the interventions reviewed. This might be health education or, as above, a community health worker who can bridge the gap between health providers and what are often described as ‘hard to reach’ populations (Hawthorne et al 2010a). Nurses have an important role to play in supporting people with diabetes maintain normal glycaemia. When diabetes nurses can also adjust medication, patients report satisfaction and less referrals are made to general practitioners – thereby decreasing their workloads. While Curtis et al. (2009) found that this could also result in glycaemia management; the demonstration project in New Zealand did not run long enough for this to be assessed. The introduction of Care Plus within the Manaia PHO offers more comprehensive evidence about the effectiveness of nurse-led care for people with type 2 diabetes (Kenealy et al 2010).

In addition, the cultural-tailing of clinic policies, organisation and health care models was also seen as important, as individual health practitioners can only do so much without organisational back up and support. The development and implementation of the Ngātā Porou 2-year community-based intervention to reduce the prevalence of insulin resistance is an example of a culturally tailored, community responsive intervention that was successful at engaging the community (Pahau et al 1980). Other successful interventions highlight a range of success factors, many of which are related to the Chronic Care Model. These include good information systems, clearly defined team structures, roles and responsibilities, health practitioner decision support, segmenting of patient populations by need, and patient self-management support (Jenkins et al 2010). The importance of the cultural and clinical competence underpinning all these factors was also stressed (Roubideaux et al 2008; Zeh et al 2012)

### 5.3 Limitations of the Present Review

The prevalence of type 1 diabetes is increasing in children and this needs to be addressed in this review by an examination of what interventions might work to improve access to healthcare for the whānau of Māori children with diabetes. In addition, the increasing prevalence of young Māori people with type 2 diabetes indicates that diabetes self-management education for adults needs to be expanded, and include family members (Atkinson and Radjenovic 2007). Research by Dodge and Chino (2012) also supports the development of education programmes for Indigenous youth within the school curriculum.

Jack, Jack and Hayes (2012) criticise linear and tightly controlled diabetes-related interventions that are often about changing people’s behaviour in the belief that individual adoption and maintenance of such changes are key to chronic disease prevention and control. They argue that such interventions do not reflect the lived reality of their intended recipients. López and Seligman (2012), for example, make recommendations for the clinical management of food-insecure patients with diabetes. Such a challenge is not considered by interventions that offer even culturally-appropriate dietary education. Jack et al. (2012) also argue that interventions disregard the role of socio-environmental characteristics (e.g., neighbourhoods, sidewalks, public policy) as drivers of health disparities.

Many of the interventions profiled here have a reach into neighbourhoods and communities through the provision of community health workers or navigators. They still rest, however, on this predominant paradigm of individuals changing behavioural patterns. Some researchers have posited the important influence of the family, and family-based lifestyle changes to support chronic disease management but such interventions are rare in the literature. Chelsea and colleagues (2003: 376), for example, stress the importance of understanding culturally relevant family dynamics, especially conflict resolution as “the family is a primary source of illness beliefs and serves as the key
social influence in sustaining disease management in chronic conditions. Their ecological approach to long-term condition management focuses on personal and family resources, combined with a health provider relationship based on trust. The researchers argue that patients’ families are important in how long term conditions are conceptualised and managed, suggesting that coaching families to stay involved and working with couples on conflict resolution may be appropriate interventions, with family therapy as an option for families with more persistent difficulties. This recommendation fits well with a Māori focus on the importance of whānau.

Jack, Jack and Hayes (2012) explore the importance of issues such as access to healthy/fast foods, and the leverage to be found in public and economic policies that create systemic changes that support ‘self’-management of chronic conditions. Intervention studies that manipulate environmental characteristics may be unrealistic, but evidence-informed policy changes to recognise these determinants of people’s health and ability self-manage is not beyond the scope of a relatively small nation like Aotearoa New Zealand.

Finally, this review has included interventions studies published in peer review journals. This has allowed for the inclusion and consideration of a range of intervention evaluation methodologies, including random control trials and community based participatory research. It is appreciated that the range of studies included may have different ‘quality’ implications for different audiences. It is anticipated that the intervention summary tables and descriptions of the studies will provide enough information for those who want to be more selective about what they consider to be a quality study.
6 References


Appendix

Appendix A. Method - Literature Search, Quality Rating, and Abstraction

General Framing

Multiple electronic databases were searched (MEDLINE, the Cochrane Register of Controlled Trials, etc.) for evaluation studies of interventions designed to improve access to care, along the continuum of care, for those suffering from diabetes. The search covered the last eight years, from 2006 to 2012. Indigenous peoples (Māori, native, indigenous, Aborigine, First Nations, Indian) or ethnic minority groups (Hispanic, African American) had to be either the main focus (comprising more than 50% of the study participants), or a subgroup in a larger trial.

It is acknowledged that ‘the commonality of ‘being Indigenous’ [or minorities] overrides the distinctly different historical, political and cultural contexts in which these populations live’ (Cormack et al 2010: 91). However, as Shaouli and Thompson (2010) argue, there are enough commonalities in the experiences of the Indigenous peoples of Australia, New Zealand, Canada and the United States of America to warrant comparative analyses as well as the close examination of what ‘works’ for the lessons to be learned. Although research on interventions involving other ethnic minorities may be more tangential to the experiences of Indigenous peoples some of this literature has also been included here for insights it might provide.

MEDLINE MeSH terms used related to:

• Evaluation studies of interventions (Evaluation Study, Clinical Trial), or
• Comparative study or guideline (Guideline, Practice Guideline, Guideline Adherence) or meta-analysis (Meta-Analysis) or multicenter study (Multicenter Studies) or validation study (Validation Studies));
• Designed to improve access to health services (Health Services Accessibility, Delivery of Health Care, Quality of Health Care)
• For Indigenous peoples (indigenous or maori or aboriginal or aborigine or native or first nations), or
• Minority ethnic groups (e.g., African Continental Ancestry Groups, African Americans, Hispanic Americans, Mexican Americans)

Search Terms

MEDLINE MeSH terms for Diabetes mellitus (Diabetes Mellitus; Diabetes Mellitus, Type 1; Diabetes Mellitus, Type 2)

Journal, reference lists, citations and author searches

This initial search was followed up by hand searches of the last two years of key journals for content relating to improving access to health services for Indigenous peoples, and ethnic and minority groups. The reference lists of located articles were also scanned for other relevant papers and follow-up was done of citations of key articles, and other articles written by key authors/researchers.

Organisational Search

The publication lists of organisations working to improve access and/or reduce disparities for Indigenous and minority peoples were scanned for relevant publications. Strategic and policy documents were also scanned for relevant publications. Organisations and documents were located from an initial Google search using similar terms to those used above, and then following leads from located items, portals, government and research websites, to search for further information.
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Inclusion & Exclusion criteria

Included:
- Indigenous people or ethnic minorities were the main focus of an intervention (defined as >50% of the participants), or a key focus of an intervention such that the authors specifically describe findings for Indigenous/ethnic minority participants.
- ‘Culturally tailored’ (i.e., ‘utilizing individualized programming that takes into account participants’ personal preferences that are rooted in culture’ (Peek et al. 2007)), as well as mainstream interventions.
- All studies that were published in peer reviewed journals were considered not to be fatally flawed and have been included (Dixon-Woods et al. 2006). This has expanded the inclusion to pilot studies, along with a range of research methods.
- Systematic reviews of interventions to reduce ethnic health disparities
- Meta-analyses of Indigenous or minority disparities and explanatory frameworks, including implications for intervening to improve access to health services.
- Evidence-informed strategic documents to improve Indigenous peoples access to health services.

Excluded:
- Interventions not based in health care settings, apart from those delivered by health practitioners in the communities and homes of participants.

A large number of abstracts were identified in the initial search of the academic literature. The abstracts of these articles were read and the full papers for a number of abstracts were located. These papers were more fully reviewed and 32 were subsequently included in this review.

Data Abstraction

An abstraction form was adapted from Zaza et al. (2000). Information was collected on disease type, country location, motivation for intervening, approach/definition of ‘access’, type of and rationale for intervention, study design, target (e.g., provider, patient/family), participant numbers (intervention, control), ethnic/racial composition & demographic information (e.g., SES, location), setting (e.g., home, general practice, hospital), process measures, outcomes (including patient, workforce, system, family, community outcomes).

Study Quality Assessment

Cooper, Hill and Powe (2002: 477) list several limitations of studies examining initiatives designed to reduce disparities in health care and health status. These include ‘the lack of control groups, nonrandom assignment of subjects to experimental interventions, and use of health outcome measures that are not validated’. By comparison, those instigating initiatives from a Community-Based Participatory Research perspective argue that adhering to this traditional view of research ‘quality’ is antithetical to the community-up, collaborative implementation of interventions within tribal communities in the United States. The approach taken to quality in this project was the inclusion of peer-reviewed research of interventions to improve access to diabetes health care (Dixon-Woods et al. 2006). By far the majority of these studies include control groups and/or pre-post-intervention assessments that use validated outcome measures.