Diabetes prevention and management

A strategic framework for Victoria 2007–2010

Published by Victorian Government Department of Human Services, Melbourne, Victoria.

July 2007

Also published on www.dhs.vic.gov.au/rrhacs/

Authorised by the Victorian Government, 50 Lonsdale Street, Melbourne 3000

Contents

Acknowledgements iv

Introduction 1

A context for action 2
The diabetes epidemic 2
Risk factors for diabetes 2
Impact of diabetes 3
Guiding principles 4
Strategic approach 6

Strategic directions 7
Health development in all policies 7
Community-wide primary prevention programs 8
Accessible services for the prevention of diabetes in individuals at increased risk 9
Accessible services for the optimal early detection and management of diabetes 10
Integrated care for people living with diabetes 11
Workforce 13
Enhanced surveillance systems 13
Research and evaluation and knowledge exchange 14

Next steps 16

List of abbreviations 17

Bibliography 18

Acknowledgements

This Framework was developed in consultation with key Department of Human Services program areas and with the valuable assistance of service providers and experts from medicine and health care, the community sector and universities. It was also informed by the work of the Public Health Agency of Canada, which has recently undertaken similar work.

Introduction

The Victorian Diabetes Strategic Framework provides a way to mobilise the Victorian health system to develop, implement and evaluate coordinated and integrated approaches and services to reduce the impact of diabetes. The social, human and economic impacts of diabetes are considerable. Tackling them all will require investments in prevention, disease management and research to inform and strengthen practice in the field.

Within this context the Framework will:

- aim to *prevent the onset of type 2 diabetes* through population-based primary prevention initiatives and intensive lifestyle interventions for people at increased risk
- aim to *achieve better management and reduced complications* of all types of diabetes by effective early detection and early intervention
- increase capacity in diabetes monitoring, surveillance, evaluation and research to inform effective prevention and management, and policy and practice.

The Framework sets out the imperative for effective action on diabetes and underpinning principles to guide action to achieve improved health outcomes. Eight strategic directions offer a holistic and integrated approach to the prevention and management of diabetes and include a number of capacity building areas that have system-wide relevance. It concludes with an indication of the way forward in both diabetes-specific action as well as in an integrated response to the challenges that chronic diseases pose for individuals and their families, communities and the health system.

Finding a cure for type 1 and type 2 diabetes remains a goal for medical researchers in Victoria, nationally and internationally, towards which some progress has been made. However, a cure will not reduce the need for prevention.

A context for action

The diabetes epidemic

An estimated 1.5 million people in Australia are living with diabetes. Of these, almost one in two people is unaware of their disease. Approximately 275 Australian adults are thought to develop diabetes every day. Obesity, hypertension, abnormal lipid levels and physical inactivity all increase the risk for developing diabetes.

Diabetes is characterised by an inability of the body to sufficiently produce and/or properly use insulin. There are three main types of diabetes: type 1, type 2 and gestational diabetes. The majority of people with diabetes (around 85–90 per cent) have type 2 diabetes.

Diabetes has no known cure; it is a permanent and chronic condition.

- **Type 1 diabetes** is caused when the body does not produce sufficient insulin due to damaged insulin-producing cells. Type 1 diabetes is the most common type of childhood diabetes, affecting 10–15 per cent of people with diabetes. Rates of incidence increase with age. This diabetes type usually develops at an early age, so these individuals are at high risk of complications because of the duration of the disease.
- In people with **type 2 diabetes**, the body produces insufficient insulin or is resistant to its action. It is more common among people aged 45 years or above but its incidence is increasing in younger adults, adolescents and children. The majority of people with diabetes have type 2 diabetes. Many people with type 2 diabetes have no symptoms; consequently almost half of the people with type 2 diabetes are unaware that they have it, although the disease is not benign during this period.
- **Gestational diabetes mellitus (GDM)** occurs during pregnancy in some women who develop a deficiency of insulin. It occurs in approximately 1 in 20 pregnant women in Australia and is a transient form of diabetes, which usually disappears after the baby is born. Women who have GDM have an increased risk of developing type 2 diabetes in later life. Babies of women with GDM have an increased risk of complications during and after birth, and in the longer term.

New knowledge about diabetes is emerging continually. Links between lifestyle and the metabolic syndrome and other diseases or conditions, and new links between certain factors in living conditions and society and the onset of diabetes, are becoming better understood. The Framework recognises the flexibility that will be required to incorporate new knowledge and approaches.

Diabetes complications

Diabetes may cause damage to many tissues, resulting in widespread complications. Hyperglycaemia (increased blood glucose levels) in people with diabetes is associated with microvascular (e.g., kidney and eye disease) and macrovascular (e.g., stroke and ischaemic heart disease) complications. As a result, inadequately controlled diabetes may lead to a range of complications responsible for disabilities and shortened life expectancy. However, diabetes-related complications can be prevented or delayed with early intervention and proper control of blood glucose levels.

- People with diabetes are two to four times more likely to develop cardiovascular disease
- A higher proportion of people with diabetes report cataracts, glaucoma and blindness, compared to people without diabetes.
- Self-reports indicate that kidney disease is more prevalent among people with diabetes than those without diabetes

Risk factors for diabetes

Diabetes shares risk factors with other chronic diseases including cardiovascular disease. The onset of type 2 diabetes can be significantly delayed and possibly prevented by intervening early to reduce obesity and inactivity. The identified risk factors used to reduce the incidence of type 2 diabetes are also the risk factors for gestational diabetes and used in post-gestational prevention of type 2 diabetes.

Currently, type 1 diabetes cannot be prevented. Type 1 diabetes is primarily referred to within this Framework under the strategic directions relating to treatment, workforce, surveillance, research and evaluation.

Risk factors for type 2 diabetes include:

- **Overweight and obesity**. There is evidence that the prevalence of overweight and obesity is increasing in Australia. Obesity is also on the rise among children and adolescents. The risk of type 2 diabetes can be reduced by weight loss in those who are overweight and obese.
- **Physical activity**. Increased levels of physical activity can reduce the risk of type 2 diabetes. Optimal risk reduction is seen among those who are inactive becoming at least moderately active.

- **Pre-diabetes** is a risk factor for type 2 diabetes. This term refers to a condition of individuals who have either impaired glucose intolerance or impaired fasting glucose. Individuals with pre-diabetes are 10 to 20 times more likely to develop diabetes than those with normal blood glucose levels.
- **History of gestational diabetes**. GDM substantially increases the lifetime risk for developing type 2 diabetes. GDM is more common in women aged over 30 years, women with a family history of diabetes or women from certain ethnic groups (Aboriginal and Torres Straits Islander, Polynesian, Middle Eastern, Indian and Asian). Maternal obesity and age are also considered to be risk factors for both developing gestational diabetes and its severity. Systematic efforts to increase gestational diabetes case finding and long term monitoring post-birth would improve outcomes and possibly prevent or delay onset of type 2 diabetes in both mother and infant.
- **Increasing age**. The risk of developing type 2 diabetes increases significantly with age.
- In 2004–2005, three times as many **Aboriginal and Torres Strait Islander peoples** than other Australian adults reported having diabetes. This prevalence reflects other health inequalities. They have higher rates of diabetes, and efforts to further enhance access to the primary care sector are required. Diabetes contributes substantially to the excessive morbidity of Aboriginal people, whose life expectancy is 15 to 20 years less than that of non-Aboriginal Australians.
- **Certain ethnic groups** are at especially high risk, and in Australia these include people of Pacific Islander, Indian, Chinese, Southern European, Middle Eastern and North African background. The onset of type 2 diabetes often occurs at a younger age.
- **Psychosocial stress** (occurring in the workplace or at home). People reporting a high level of psychological stress are more likely to report being physically inactive than those with a low level (47 per cent compared with 30 per cent).
- **Prolonged exposure to stress** affects both the cardiovascular and immune systems, making people more vulnerable to a range of conditions including diabetes, high blood pressure, infections, heart attack and stroke.
- **Major depressive episodes**. Depression has been cited as a risk factor for diabetes, and it is associated with adverse diabetes outcomes.
- **Contribution of poor physical health to poor mental health**. For example, people with a chronic disease, such as cancer, hypertension or stroke, suffer markedly higher rates of depression than the general population. The rate of depression for people with diabetes is nearly three times higher.
- **Socioeconomic factors**. Characteristics of the social environment are linked closely with population health. Diabetes affects people of all socioeconomic and cultural backgrounds, but with an uneven distribution across society. Evidence is now emerging about the complex relationship between social inequalities and type 2 diabetes. Social conditions associated with low income and lower levels of education have an impact on both people's risk of developing type 2 diabetes and their ability to manage this disease. There is a clear socioeconomic gradient in the prevalence of type 2 diabetes, with a rate almost twice as high in the lowest socioeconomic group compared with the highest. Rates of diabetes are higher outside the metropolitan area in Victoria.

Impact of diabetes

The burden of diabetes is increasing rapidly. The costs to the person with diabetes, to family members, to the health care system and society are significant. Although some types of diabetes are preventable, some are incurable and progressive. When a person has diabetes, they have certain ongoing needs that range well beyond the provision of clinical services. From the time of being diagnosed, people with diabetes and their carers may face a lifetime of physical, psychosocial and economic hardship. Diabetes has broad lifelong social implications for the individual.

The St Vincent Declaration and the Istanbul Commitment of the WHO (Europe) and the International Diabetes Federation recognises diabetes as a major and growing public health problem; the need to create conditions to achieve reductions in the burden of disease caused by diabetes; and the need to work in active partnership with people with diabetes, their families, friends and workplaces. Similarly, the core functions of the World Health Organization's Diabetes Programme are to set norms and standards, promote surveillance, encourage prevention, raise awareness and strengthen prevention and control.

The financial cost of diabetes is a combination of the financial burden of long-term management of the disease, inpatient episodes of care and the less measurable social costs of lost productivity because of absenteeism and lost years of life (premature mortality).

Two-thirds of the total costs of type 2 diabetes are incurred by individuals, but there is also a significant impact on governments in terms of higher health services and welfare costs and lower tax revenues. Government health expenditure on type 2 diabetes in Australia is projected to increase by over 600 per cent between 2000–2001 and 2030–2031. Costs to state and territory governments are largely in the form of preventable hospital costs. Diabetes-related complications are the major source of preventable hospital treatments.

Even with successful prevention and management, costs in all areas will continue to grow. For example, there were 99,317 admissions for diabetes complications in Victoria in 2004–2005. In 2000–2001, 38,900 admissions were made for diabetes complications. This reflects an increase of approximately 255 per cent over the four-year period. Diabetes-induced renal failure is the most common reason for commencement of renal dialysis or transplantation in Australia. In addition to hospital services, there are significant ambulatory costs in the ongoing management of diabetes including outpatient and allied health services (such as education, podiatry, dietetics), and ancillary costs such as medications, blood glucose monitors and injecting equipment. Figures 1 illustrates the growth in the prevalence of diabetes by local government area between 2001 and 2006.

Comparison of the two maps illustrates the combined effect of obesity and ageing on diabetes prevalence in 2006. These effects are most pronounced in areas with low SES, e.g. outer western metropolitan.

Impact of diabetes on children

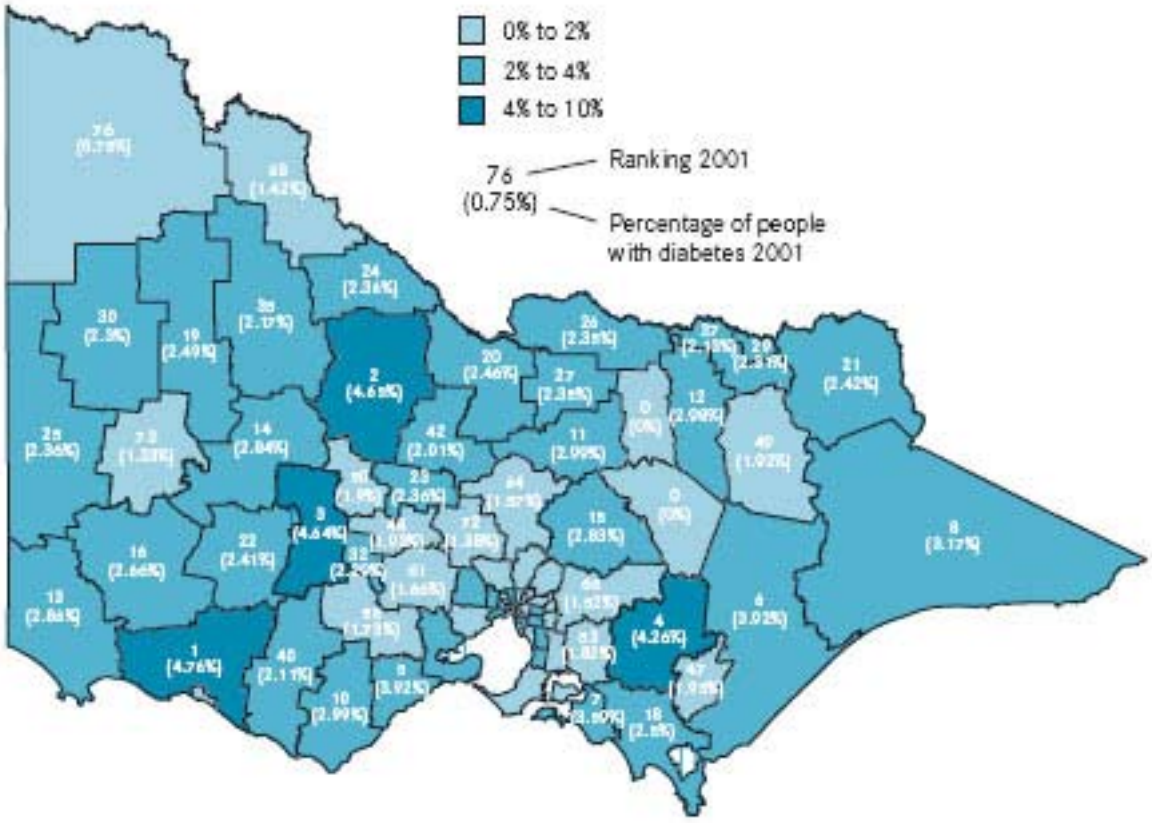
Diabetes in children is predominantly type 1 diabetes. More recently diabetes has become apparent among adolescents, especially young Aboriginal people, some ethnic groups and some from low SES backgrounds, who may develop early type 2 diabetes or gestational diabetes. The current areas of concern in the management of children with type 1 diabetes include an increasing incidence of the disease, transitional care from paediatric to adult service providers and the mental health of children with diabetes. Accordingly, as responses are developed it will be important to ensure that the needs of children are met – from prevention and management for type 2 diabetes to the coordinated clinical management of type 1 diabetes.

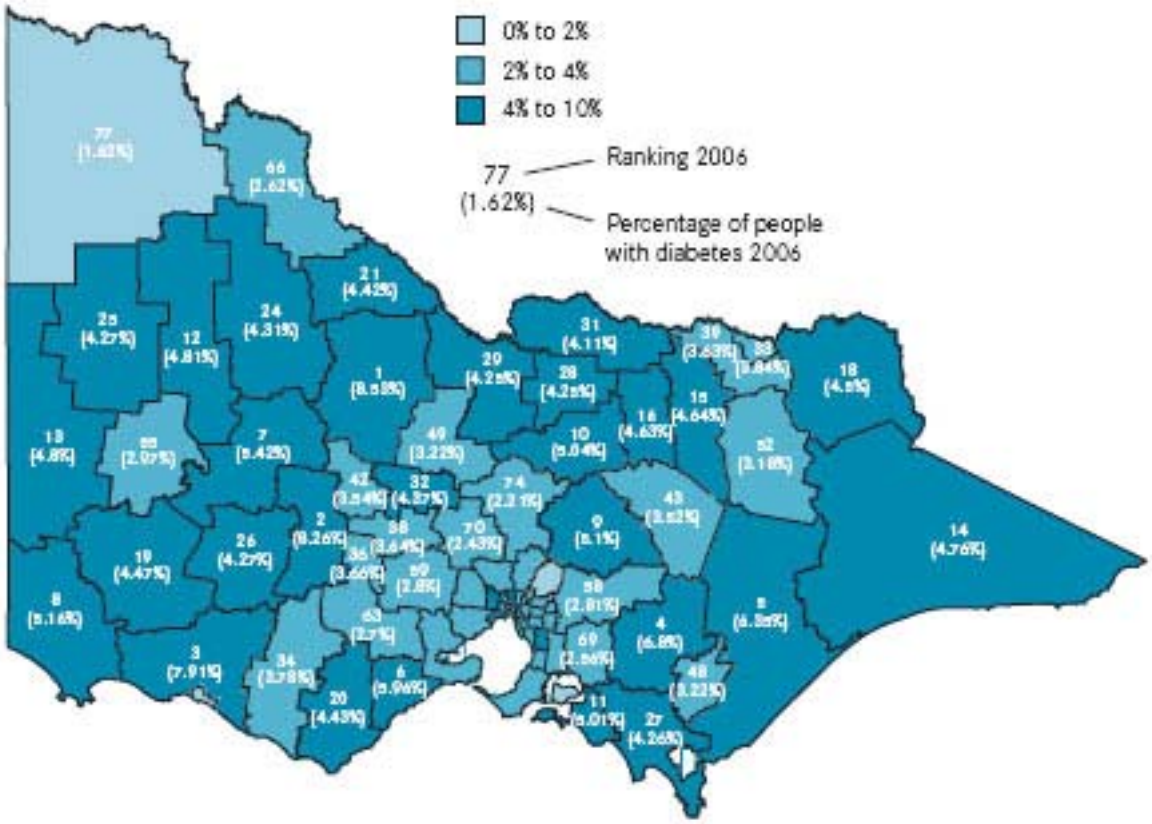
Guiding principles

The following principles underpin the Victorian Diabetes Strategic Framework. They share core features with national and international approaches and strategies.

- **A balanced approach to prevention.** Prevention should be broadly based from population-focused primary prevention to preventive services linked with treatment and care. People must be given the opportunity to lead a healthy lifestyle in all places where they live, learn, work and play – in a sustained effort over the long term to change individual behaviours, social norms and community and environmental structures.
- **Interdisciplinary models of care** that recognise patients as active partners. Treatment should be based in life-stage targeted strategies, promote patient self-management and linked to prevention. Teamwork means respecting the independence and autonomy of all partners while recognising the interdependence and shared commitment bringing them together.
- **Partnerships at all levels.** Dialogue and sharing of ideas, perspectives and experiences means recognising the broad intersectoral context for prevention, consumers as active partners and the interdisciplinary nature of disease management in different settings of care. The health sector must work with other sectors and services to influence the social and environmental factors that determine the burden of diabetes and chronic disease.
- **Equity-focused approaches** that recognise the social gradient of diabetes. A focus on health inequalities should be maintained to ensure that equity of access to services and of health outcomes is achieved.
- **Accessible and culturally appropriate diabetes prevention and management initiatives**, addressing individual and population needs. The approach must reflect that diabetes impacts on different communities in different ways, as do the appropriate mechanisms for its prevention, management and treatment.
- **An evidence-based approach** for action promoting research and supporting information for program planning and evaluation. Actions must build on existing knowledge and expertise and the evidence base must be grown through research and evaluation. Surveillance, monitoring, evaluation and research are essential components that will underpin diabetes prevention, management and treatment.

Figure 1: Diabetes mellitus, prevalence by local government area 2001 and 2006





Source: http://www.dav.org.au/epidemic/index.htm

Strategic approach

Good evidence supports a dramatic increase in the prevalence of diabetes in Australia. As the population ages, diabetes will affect more lives, with the number of people with diabetes expected to double by 2010. This makes prevention and management of diabetes a priority. The enormity of the task and long-term nature of diabetes bring many challenges.

In December 2006, the Australian Government supported a United Nations resolution to recognise diabetes as a significant threat to public health, aiming to draw attention to the seriousness of diabetes and encourage action to fight the epidemic.

The overall context for a Victorian Strategic Framework for Diabetes is provided by the National Chronic Disease Strategy 2006 (NCDS), to which all Commonwealth, state and territory governments agreed as a national direction for improving chronic disease prevention and management. It provides a high-level agenda for coordinated action on all chronic diseases. The NCDS is supported by the National Service Improvement Frameworks, which cover the five national health priority areas, including diabetes. The frameworks outline opportunities for improving prevention and care, while not prescribing the detail of individual services, which each state health system provides.

More recently, the Council of Australian Governments' (COAG) National Reform Agenda (NRA) has identified type 2 diabetes as a priority for initial action on chronic disease prevention and improvement of the future health and welfare of all Australians. *Victoria's plan to address the growing impact of obesity and type 2 diabetes* (*Victoria's plan*) under the NRA provides further direction for specific action in Victoria to improve prevention and management of type 2 diabetes. *Victoria's plan* has a greater focus on prevention, including early detection and intervention, while continuing to deliver quality management of diabetes. Consistent with the NCDS, the Plan acknowledges that although existing initiatives provide a useful foundation, opportunities exist across the continuum of care and the life cycle for improved action to deliver better health outcomes. Key gaps identified in the Plan include controlling exposure to risk factors for type 2 diabetes by integrating health concerns with a range of public policies, and providing effective early interventions for those at high risk of progressing to type 2 diabetes and for those newly diagnosed with type 2 diabetes.

The Victorian Government has identified a commitment to recurrent initiatives within health, including a number with direct implications for the prevention and management of diabetes. New commitments include:

- a range of primary prevention initiatives in community and school-based settings such as Free Fruit Friday, Better Pools Program and Community Sports Grants
- Men's Sheds to support middle-aged and older men to remain healthy and active
- *Go for your life* and *Life!* lifestyle change programs to help Victorians at risk of developing type 2 diabetes and children to control their weight
- more doctors for country Victoria
- better vision and dental health for seniors.

This enables Victoria to build on the NCDS, and the joint government investments under the COAG Australian Better Health Initiative (ABHI), which is linked to the NRA. The five priority areas for action under the ABHI are intended to shift the focus of health care, through prevention and reduction of the burden of chronic disease, to promotion of good health.

Many of the programs that form Victoria's contribution to these national initiatives build on the existing work under *Go for your life* and other state-level activities. The Victorian Diabetes Strategic Framework brings together national and local initiatives to form a cohesive agenda for diabetes prevention and management in Victoria. It also provides the structure for building a range of Victorian strategies for integrated action across the spectrum of care for chronic disease prevention and management, focusing in this instance on diabetes.

Strategic directions

The following strategic directions are a focus for comprehensive action on diabetes:

- health development in all policies
- community-wide primary prevention programs
- accessible services for the prevention of diabetes in individuals at increased risk
- accessible services for the optimal early detection and management of diabetes
- integrated care for people living with diabetes
- workforce
- enhanced surveillance system
- research and evaluation and knowledge exchange.

Health development in all policies

Both population and individual health outcomes are largely determined by factors outside the health care domain. Almost two decades ago, international recommendations on healthy public policy (the Adelaide Recommendations) noted that the main aim of healthy public policy is to create a supportive environment that makes health choices possible for people. There is a strong case for the health sector to engage and partner with other sectors to influence the social and environmental factors that determine the burden of chronic disease.

Healthy public policy is characterised by an explicit concern for health and equity in all areas of policy and by an accountability for health impact. The main aim of healthy public policy is to create a supportive environment to enable people to lead healthy lives. Such a policy makes health choices possible or easier for citizens. It makes social and physical environments health-enhancing. In the pursuit of healthy public policy, government sectors concerned with agriculture, trade, education, industry, and communications need to take into account health as an essential factor when formulating policy. These sectors should be accountable for the health consequences of their policy decisions.

Fundamental to this approach is an acknowledgement of the underlying determinants of health including the social, economic and physical environment as well as the individual's particular characteristics and behaviours. Factors such as poverty, poor education, social exclusion, unemployment and lack of or poor quality housing all contribute to health inequalities. Even within an individual disease focus a social gradient can be illustrated, and for diabetes this is reflected in the increased risk for Aboriginal and Torres Strait Islander peoples.

Many government policies have potential impacts on health. The key to 'health in all policies' is to ensure that, when public policies are developed, efforts to address those determinants of health that can be tackled within the scope of the specific policy do so with the aim of improving health outcomes for all people. For example, Victoria's *Go for your life* program recognises that the entire community needs to be involved in activities that encourage healthy eating and foster physical activity, and brings together initiatives funded by a range of government departments including Human Services, Education and Training, Sustainability and Environment, and Victorian Communities. It includes in its objectives 'structural changes to support healthy eating and physical activity'.

The need to promote and develop cross-sector and cross-department partnerships and approaches that make the best use of resources and strengthen a holistic approach to healthy lifestyles is important. Tools such as equity-focused health impact assessments within health and non-health policies, which include planned actions addressing the risk factors for diabetes prevention, allow practical application of these approaches.

Health, safety and access in the built environment can all be influenced by policy and guidelines. Putting health considerations on broader policy and planning agendas benefits the health of the population, for example:

- *Safer Design Guidelines for Victoria* which aim to increase community usage of public places; and
- *Healthy by Design* which facilitates the creation of healthy places to live, work and visit.

Potential areas of action

- Remove barriers to healthy environments (natural, built, social and economic) by supporting the contributions of local government and non-government organisations to primary prevention, for example with respect to local area planning.
- Explore the role of advocacy, regulation and social marketing, for example in the development of policies and incentives for the manufacture and distribution of healthy foods, and improved consumer understanding and demand for healthy foods.
- Engage industry, employers and employees to support development of workplace policies that support better worker health outcomes and link to integrated health promotion programs at the local level.
- Promote a specific focus on health outcomes for Aboriginal and Torres Strait Islander peoples in all policies.

Community-wide primary prevention programs

Historically, diabetes services have been centred on people who already have diabetes. The shift towards prevention has been given impetus by the NCDS and programs such as *Go for your life* and the ABHI.

Community-wide prevention programs are underpinned by a population health approach. This approach recognises the role of broader determinants of health and the importance of addressing the needs of the whole population, including the specific needs of those groups at highest risk.

A population health approach aims to improve health in the entire population (or large sub-populations). The underlying aim is healthy lifestyles in a healthy environment. An environment that promotes physical activity and optimum nutrition will help to develop and sustain healthy lifestyles as well as contributing to a reduction in the prevalence of risk factors associated with type 2 diabetes.

A population health approach is concerned with the root causes of ill health and the conditions that create health. Community-wide prevention requires people to act on the environments and conditions that influence lifestyle choices and health outcomes. Action to address environments and risk factors should be based on evidence and will require collaboration with other sectors. Important sectors that influence prevention of diabetes include the food industry, the recreation/health and fitness industry and sectors that provide educational and child and family services. Key settings for engagement include the home, early childhood, education, workplace, neighbourhood and community, and primary care settings. Primary prevention aimed at children and young people will be especially important because of the long-term nature of diabetes risk.

World-wide attention was focused on the results of Colac's Be Active Eat Well project. The project takes a community-wide approach to improve the health and wellbeing of individuals and strengthen the Victorian community of Colac through promotion of healthy eating and physical activity targeting children. Results included:

- reduction in weight gain by an average of one kilogram for children in the trial and a reduction in waist growth by three centimetres
- changes in lunch boxes: Servings of water doubled, consumption of sweet drinks halved, fruit increased slightly, no change to packaged snacks, and no change to total servings of junk food
- increased proportion of parents aware of key healthy living kids *Go for your life* messages

Even with these positive results, it appears that these changes have probably slowed but not stopped the rise in the obesity epidemic showing the complexity of the impact of behavioural change.

From a community-wide perspective, prevention of type 2 diabetes can be categorised into three broad areas:

- **Health promotion**: including health improvement measures aimed at promoting a healthy diet and increasing physical activity
- **Community education**: increasing public awareness of diabetes, the risk factors, its symptoms and its causes
- **Interventions tailored to high-risk groups**: targeting groups predisposed to diabetes.

Potential areas of action

- Pursue a strategic approach to risk factors utilising the evidence base by building on *Go for your life*.
- Implement Victorian health promotion priorities including action plans and resources for diabetes risk factors including developing the role of Primary Care Partnerships (PCPs) to strengthen a more coordinated approach to health promotion.

- Encourage health promoting service delivery by strengthening and growing the health promotion and chronic disease prevention workforce.
- Establish mechanisms to engage new settings for action, for example the workplace or in local government planning.
- Support a focus on vulnerable population groups, for example programs with the Aboriginal community to improve access to healthy eating, or targeted interventions for people living in low socioeconomic status areas.
- Support primary prevention as a policy and action priority, for example by identifying opportunities for social and economic gain, identifying ways to reduce health inequalities.

Accessible services for the prevention of diabetes in individuals at increased risk

Although there is no proven preventive therapy for type 1 diabetes, the onset of type 2 diabetes can be significantly delayed and possibly prevented in high-risk populations by reducing weight and inactivity.

In the case of type 2 diabetes and gestational diabetes, the health care system can identify those people at high risk of diabetes and help them to lower their risk by educating them about achievable lifestyle changes addressing nutrition, healthy weight and regular physical activity. A systematic, ongoing approach is needed to identify high, medium and low-risk people within the identified at-risk population.

The Council of Australian Governments has agreed to a number of initiatives to reduce the incidence of type 2 diabetes. These include the development of nationally agreed risk assessment tool, program standards and program/provider accreditation arrangements to provide evidence-based interventions for eligible persons at risk of progressing to type 2 diabetes and for people newly diagnosed with type 2 diabetes. Jurisdictions can draw from these initiatives in implementing risk reduction and early interventions at the local level.

The NCDS recommends that people at risk of type 2 diabetes should be given appropriate risk factor reduction advice to prevent progression to diabetes and cardiovascular disease. A recent study in Finland has demonstrated the efficacy of lifestyle modification programs for people identified at high risk (often referred to as 'pre-diabetes': impaired glucose tolerance and impaired fasting glucose) of progressing to type 2 diabetes. A number of similar studies in Australia are showing promising results following intensive intervention.

For the pre-diabetes phase, health professionals need more flexible access to the Medicare Benefits Schedule (MBS), and additional opportunities for other types of incentives need to be considered. As part of its contribution to the diabetes reforms under the NRA, the Commonwealth has introduced improved incentives for general practice to identify patients at high risk of type 2 diabetes. A new MBS item will encourage the development of a Diabetes Risk Plan for those aged 40–49 years assessed as at high risk with an option for the GP to refer these patients to accredited lifestyle modification programs.

To work towards accessible services for the prevention of diabetes in individuals at increased risk, the needs of each high risk target group should be identified. Also, barriers to service access need to be identified and addressed. For example transport and the cost of getting to service delivery points are often barriers for some community groups, as are language and cultural issues.

A number of large studies have demonstrated that diabetes can be prevented or delayed in overweight persons with pre-diabetes. Randomised control trials in Finland and USA found a reduced incidence of diabetes over 3 years in 58 per cent of participants with pre-diabetes who completed intensive interventions to improve their diet and levels of physical activity. An extended follow-up of the Finnish study showed that benefits were sustained over 7 years with a 36 per cent reduction in relative risk.

Potential areas of action

- Improve the systematic approach to early detection of those at risk of type 2 diabetes.
- Improve availability of effective interventions to reduce the risk of type 2 diabetes.
- Strengthen and extend existing initiatives to improve access to services for individuals at increased risk of diabetes, ensuring integrated service delivery across complementary state and Commonwealth funded initiatives.
- Foster innovative approaches to remove barriers to culturally competent and accessible services that reduce inequalities.
- Develop systematic recall and monitoring of gestational diabetes to prevent the development of type 2 diabetes.
- Improve access for primary health care for Victorians of Aboriginal and Torres Strait Islander decent.

Accessible services for the optimal early detection and management of diabetes

Early detection and effective management are critical to optimal health and quality of life outcomes for people with diabetes. Early detection and effective management of type 2 diabetes (see Figure 2) are important because they can be effective in avoiding or delaying complications. A large proportion of people with type 2 diabetes is undiagnosed and may be asymptomatic; however, the disease is not benign during this period.

Detection of diabetes in Victoria is primarily by medical practitioners both within community health services and by general practitioners (GPs), who can diagnose and initiate the management of diabetes, and provide/organise education and screening for complications. The majority of people with diabetes (around 85–90 per cent) have type 2 diabetes. There is no systematic screening for diabetes in Australia. Detection of type 2 diabetes is opportunistic and primarily through GPs. Detection is by pathology tests to screen for impaired blood glucose levels for those who present with risk factors associated with diabetes.

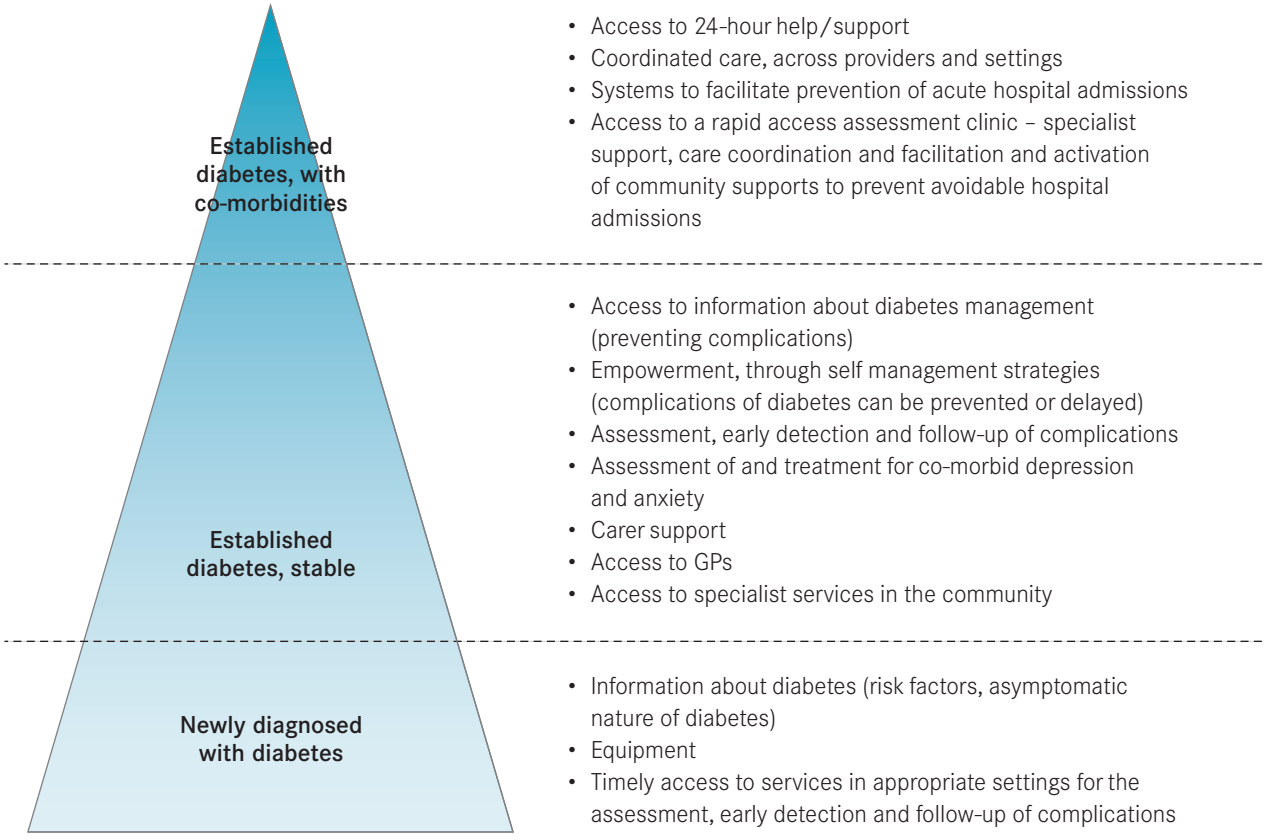
A number of new initiatives are being introduced that can be expected to improve detection rates for type 2 diabetes. These include the health check for persons aged between 45 and 49 years (inclusive) – the '45 year old health check' – with one or more risk factors for chronic disease and the risk assessment tool to support individuals to identify their risk status, some of whom are expected to already have diabetes.

A range of enhanced practice incentives exists for GP early detection and effective management of diabetes under the MBS; however, the MBS rules and narrow definitions in relation to complexity, service provider and service quota need to be further developed.

Increased detection of diabetes in Victoria is also facilitated by:

- provision of increased GP services through the GPs in Community Health initiative, which provides more accessible general practice services for disadvantaged communities

Figure 2: Needs of a person with diabetes by stage of diabetes



- increasing access by Aboriginal Victorians to primary health care services, including health promotion programs and chronic disease management programs via the Aboriginal Health Promotion and Chronic Care (AHPACC) partnership initiative.

Each year, approximately 15,000 Victorians are newly diagnosed with type 2 diabetes. A new program under development will provide information and support for newly diagnosed persons with type 2 diabetes to help manage their condition, minimise disease progression and improve their quality of life. This intensive diabetes self-management program will include one-on-one assessments with diabetes educators, personalised diabetes plans and lifestyle education programs.

Evidence-based guidelines for diabetes have been developed by NHMRC. The guidelines synthesise new and existing evidence to assist clinicians to identify and treat modifiable risk factors, accurately diagnose type 2 diabetes, assess metabolic control, provide effective routine care, and make appropriate and timely referrals.

Potential areas of action

- Work with the Commonwealth to ensure that initiatives such as the MBS and Pharmaceutical Benefits Scheme (PBS) better integrate with services in the field, especially as they focus on and enhance delivery of interdisciplinary coordination of services.
- Foster innovative approaches to services delivery that address the needs of vulnerable population groups.
- Focus on early detection through enhanced screening as part of an integrated approach.
- Empower people to manage their own chronic disease, for example by promoting education services for patient self-management.

Integrated care for people living with diabetes

Diabetes treatment and management aim to optimise glycaemia (blood glucose levels) control, prevent acute and chronic complications and maintain optimal quality of life. The trajectory of diabetes follows a continuum, requiring health-service responses by varied health professionals. As noted previously, severity (sub-optimal blood glucose control) and duration of diabetes (latent or undiagnosed diabetes) can lead to a number of complications including cardiovascular disease, eye diseases and nerve damage, kidney failure and diabetic foot disease.

Diabetes management strategies may require patients to learn a vast amount of information, master several skills and make multiple life adjustments. Management can be a complex process. Coordination and communication among the many agencies that address the needs of those with diabetes is vital and need to be established and supported through locally based planning processes. Ongoing care for people with established diabetes generally involves multiple health care providers across multiple settings. These include general practice, community health, hospitals, private providers and community and non-government organisations. Community and disability support, as well as support from family and carers, may also be required.

People with diabetes have individual and constantly changing specialist care needs. They may require specialist attention, for a single complication, from an endocrinologist, ophthalmologist, renal physician, surgeon or other specialist medical practitioner. They may develop more complex conditions that require treatment by a multidisciplinary diabetes team at a tertiary service. They may have an episode that requires them to receive acute care in a hospital.

The mental health of people with diabetes is becoming an increasing factor in the management of diabetes. Elevated rates of psychiatric disorder in adolescents and young adults with type 1 diabetes have been reported. Psychological factors also impact adherence to a person's ability to manage their diabetes.

Accordingly, integrated provision of diabetes care requires a flexible health system that can coordinate care across services, settings and sectors, and over time. This means commitment from a range of services and sectors, and the ability to work together to achieve shared goals. In addition, as people age and move from one service system to another, especially from paediatric to adult services, transition of care is crucial to successful management of diabetes. Multidisciplinary coordination of services must be person-centred, incorporate prevention, self-management and co-morbid conditions, and be responsive to changing patient needs.

The HARP Chronic Disease Management diabetes clinical co-management project is an example of how a model of care can enhance clinical management, care coordination, and support for people with diabetes. The program uses registered nurses as credentialled diabetes educators within general practices. The nurse educators collaborated with general practitioners in providing chronic disease management, integrated care across the health system, patient education and self-management support and after hours telephone advice. Outcomes for this and other HARP projects in 2004–05 for people with diabetes included:

- 38 per cent fewer emergency department attendances
- 73 per cent fewer emergency admissions
- 40 per cent fewer days in hospital.

Primary health care networks, which link primary, acute and specialist care within a broader network of allied health and community support services, are a key element in the provision of integrated multidisciplinary care to patients with complex needs. Health care practitioners operating in effective primary health care networks are best placed to provide a team-based approach.

Access to tertiary diabetes services is often problematic for Aboriginal, rural, culturally and linguistically diverse (CALD), socially disadvantaged and elderly populations due to geographic isolation, cultural factors or mobility. It is important to ensure the availability of specialists and multidisciplinary teams within integrated care in the management of diabetes.

Patient self-management is a core component of any integrated chronic disease service and refers to the patient (and their family/carers) working in partnership with their health care providers to deal with all that a chronic disease entails. The responsibility for day-to-day management of diabetes is borne by the person with diabetes, so optimal health services for people with diabetes will develop their self-management skills and provide clear care pathways and referral systems.

Health information currently exists in different formats in many service locations, from handwritten clinical notes to some electronic information. This has the potential to lead to inappropriate or uncoordinated treatment, medication errors and duplication of tests or procedures. The Victorian Health*SMART* program, coupled with HealthConnect and National E-Health Transition Authority (NEHTA) work programs, will build on work already progressed by PCPs on e-referral and form the basis for ongoing development of electronic health records. A national electronic health records system will allow health care providers, with their patients' consent, to communicate more easily, safely and securely with each other about patients and their health. Within the primary health sector, Service Coordination Reform and the implementation of standard tools are facilitating referral and feedback in an electronic format. E-referral across the sector is gaining momentum.

In Victoria, a major aim of PCPs has been to improve the way services are coordinated within and between agencies. Engagement of GPs through Divisions of General Practice is systematically occurring across the state. PCPs have broadened their scope over the past six years, collaborating with the acute sector around the Hospital Admissions Risk Program – Chronic Disease Management (HARP–CDM) and participating in a range of chronic disease initiatives including Care in Your Community, Early Intervention in Chronic Disease and Diabetes Prevention – *Go for your life*. At the same time, AHPACC partnerships supported by PCPs will provide increased access by Aboriginal Victorians to primary care services, health promotion programs and chronic disease management programs.

Potential areas of action

- Work with the Commonwealth to ensure that initiatives such as the MBS and PBS better integrate with services in the field, especially as they focus on and enhance delivery of interdisciplinary care planning and coordination.
- Foster innovative approaches to services delivery that address the needs of vulnerable population groups.
- Reduce the incidence of preventable complications by enhanced care monitoring and review, for example by ensuring that people's Annual Cycle of Care is implemented.
- Focus on and enhance delivery of interdisciplinary co-ordination of services, fostering and building on standard approaches and tools to facilitate optimum statewide system responses.

Workforce

Education for those who provide diabetes management services

A skilled and multidisciplinary workforce is fundamental to the provision of effective diabetes management services. Key health professionals include, but are not limited to, GPs, practice nurses, diabetes educators, nurse practitioners, endocrinologists, dieticians, podiatrists, nephrologists, obstetricians, midwives, psychologists, community health workers and Aboriginal health workers. In addition to clinical skills, service providers require a range of skills including communication, collaboration, advocacy, cultural awareness, social marketing, research, planning, management and evaluation.

The Victorian Government is committed to supporting the team of health care professionals, including Aboriginal health workers and refugee health nurses, involved in the provision of diabetes management services to develop and maintain relevant skills. It expects that health services will provide them with the opportunity to ensure their skills are as up to date as possible. It also expects that individual health care professionals will take responsibility to maintain and extend their skills.

In 2006 COAG recognised that health workforce policy will need to deal with the implications of changes in the nature and quantum of demand for health services. The nature of future health care demand is expected to change in line with the anticipated changes in the burden of disease facing the community, affecting the models of care employed in service delivery, the number and types of health care workers that will be required, and the development of multidisciplinary approaches to care.

Although most individual practitioners manage diabetes to a high standard, there are no agreed models for ongoing treatment. There is a need to promote clinical best practice as is being developed with the National Health and Medical Research Council (NHMRC) evidence-based guidelines for the management of diabetes, to disseminate best practice guidelines relevant to all populations, and to keep practitioners up to date on new developments.

Potential areas of action

- Support relevant diabetes training including in cultural competency opportunities for health and policy workers, and increase the number of Aboriginal health workers with diabetes prevention and management expertise.
- Work with medical colleges, universities, Divisions of General Practice and professional associations regarding the development of undergraduate programs and ongoing professional development.

Workforce development

Knowledgeable skilled service providers are vital to provision of effective prevention and management programs for diabetes.

Current and emerging health workforce shortages are a significant challenge for the health sector. Broadening the workforce field to include other service sectors and providers across the system, moving away from the biomedical approach, would assist with workforce shortages. In addition, human resource capacity needs to be developed through many approaches including initial training, effective recruitment and retention and continuing education to retain people. In particular, there should be an effective way of bringing new knowledge about diabetes and chronic illness into practice in the field.

Potential areas of action

- Work with the Commonwealth and other jurisdictions to develop national standards of accreditation and training and support the provision of a range of continuing diabetes education opportunities.
- Explore more flexible approaches by the current workforce by developing and training practitioners in key competencies required to effectively manage diabetes, for example by changes to existing curriculum and teaching settings.
- Provide relevant training opportunities and incentives for health, recreation and policy professionals for work in collaborative prevention and care models.
- Explore different workforce models that improve patient outcomes and make best use of available practitioner expertise, in particular by focusing on models of care rather than traditional, profession-specific approaches.

Enhanced surveillance systems

Surveillance is the ongoing systematic collection, analysis and interpretation of health population data, and the timely dissemination of this information to decision-makers. Public health surveillance of diabetes and its complications is critical to increase the recognition of the disease, identify high-risk groups, develop strategies to reduce the economic and human cost of this disease, formulate health care policy, and evaluate progress in disease prevention and control.

There is a need to build the evidence base for prevention interventions. A more integrated approach to collecting data would improve the ability to track progress and monitor performance. This needs to be agreed and coordinated across levels of government, and undertaken in collaboration with services and organisations that need to collect information. It is widely agreed that outcomes can be improved by building on, harmonising and complementing existing activities.

National developments in monitoring and surveillance, the NCDS and accompanying *Blueprint for chronic disease surveillance*, NRA health outcomes work and associated progress measures have implications for the development of monitoring and surveillance in Victoria. In response to these developments, it will be necessary to develop strategies to harmonise and coordinate developments, to address the governance of cross-jurisdictional monitoring and surveillance systems and to inform national developments by developmental surveillance work in Victoria.

Health Ministers endorsed the *Blueprint for chronic disease surveillance* in 2005. The Blueprint sets out the essential elements of a national surveillance system, describes an Australian Priority Setting Tool for agreeing information priorities and methods, and proposes immediate actions to establish the system.

The diabetes monitoring system in Australia has developed over the last decade. The Australian Institute of Health and Welfare (AIHW) is the home for the National Centre for Monitoring Diabetes and the National Diabetes Register. The AIHW also holds data on the uptake of the National Diabetes Services Scheme (NDSS). These datasets allow AIHW to analyse the characteristics and outcomes of people with diabetes.

Specific to Victoria, collections within DHS surveillance and monitoring systems that are relevant to diabetes and associated determinants include:

- Victorian Population Health Survey
- Victorian Admitted Episodes Dataset
- Victorian Ambulatory Classification Systems
- Victorian Integrated Non Admitted Health Minimum Dataset
- Victorian Emergency Management Dataset
- Victorian Health Information Surveillance System
- Victorian Perinatal Dataset
- Agency Information Management System
- System Wide Integrated Technology for Community Health
- Client Information Management System
- Victorian Child and Adolescent Monitoring System
- Victorian Survey of Child Health and Wellbeing
- Victorian Health Monitor (VHM) pilot study.

Victorian data is also captured in other sources, such as the NDSS, MBS and PBS.

Data collection systems within Victoria can be further developed to more effectively give information, including information around take-up and use of tools, e-referral, care planning, and integration and integrated disease management activity work with general practice.

Potential areas of action

- With reference to the Blueprint and meeting requirements under the COAG National Reform Agenda, develop a core set of accessible diabetes indicators, and identify and develop new data sources to fill gaps in surveillance data.
- Monitor trends in diabetes and its complications and provide projections by age, sex, race and geography, for example at regional level.
- Work with other jurisdictions, AIHW, Australian Bureau of Statistics and the Population Health Information Development Group to augment and consolidate development of national data collections to achieve a robust diabetes monitoring and surveillance system.

Research and evaluation and knowledge exchange

Research provides the basis for understanding the balance of approaches required to tackle diabetes; its causes, prevention and effective management, and its cure. The dissemination of research findings and supporting their use in community, clinical and policy settings will add to the effectiveness of cross-sector prevention programs, community-based prevention programs and clinical services.

There is significant investment in medical research for diabetes, with funding from a variety of sources including Department of Infrastructure and Industry and Regional Development, industry, philanthropic organisations and research bodies such as the National Health and Medical Research Council.

Research is currently underway to investigate ways to prevent type 1 diabetes, for example research around diabetes vaccines, and into islet cell transplantation. There are also various programs aimed at reducing the complications of type 1 diabetes including education campaigns and diet counselling.

Research evidence indicates that type 2 diabetes can be prevented and some research projects are currently underway that aim to translate this research evidence into practice.

In February 2006, the Australian Government Department of Health and Ageing commissioned the National Institute of Clinical Studies (NICS) to develop a national implementation plan for evidence-based guidelines for the prevention and management of diabetes. This implementation plan is due for completion shortly.

Within the Department of Human Services, research into diabetes or related health areas is ongoing. Examples are:

- evaluation of the Diabetes Prevention Program (DPP) – A *Go for your life* program currently underway, funded as part of the Australian Better Health Initiative. The objectives of DPP are to improve detection of pre-diabetes in high-risk individuals in pilot sites, and to provide an evidence-based intervention (the Healthy Living Course) for people identified with pre-diabetes in the pilot catchments
- assessing cost effectiveness (ACE) of interventions to prevent childhood obesity (ACE Obesity Study), which links to a larger ACE Prevention Study led by the University of Queensland
- the *Burden of disease* study
- analysis of diabetes complications as part of the Victorian Ambulatory Care Sensitive Conditions (ACSC) Study (proposed).

Research comes from many diverse sources due to the multiprofessional, multisector nature of diabetes care. The information from these sources needs to be reconciled. In addition, research needs to continue and grow, particularly in the area of building the evidence base for prevention programs.

A virtual centre for public health research and policy would provide a collaborative model for building and documenting the evidence for diabetes prevention. It would maintain systematic reviews of evidence, translate research into practices and programs that could be used in local communities and provide evaluation support for those designing and implementing programs.

Support through a 'virtual centre' for public health research and policy is suggested in *Victoria's plan to address the growth in impact of obesity and type 2 diabetes*.

Potential areas of action

Research

- Develop partnerships between government service providers and academic institutions to facilitate transfer of research outcomes to practice, and share and translate evidence to support and connect research and health system practice to inform state strategies and policy direction in diabetes prevention and management.
- Increase research on effective public policy that assists chronic disease prevention.
- Support research into the costs associated with diabetes, cost effectiveness of interventions and overall economic benefits of reducing the incidence of diabetes.
- Support research into the potential impact of screening on the early detection and preventability of diabetes.

Evaluation

- Improve evaluation by developing and using evaluation protocols.
- Evaluate interventions and dissemination of findings, building on the evidence base for community-wide prevention programs.
- Investigate the feasibility to reconcile information from many diverse sources into linked diabetes care records because of the multiprofessional, multisector nature of diabetes care.
- Identify capacity to capture data generated by community-based services to gain more detailed profiles of the community health services population and people with chronic disease including diabetes.

Next steps

The Department of Human Services will develop implementation plans based on this Framework, and will be seeking to work collaboratively with other groups in this process. Opportunities for joint projects will be explored and the formation of partnerships with non-government and industry groups, and capacity to leverage new projects and initiatives off existing activities.

As the evidence base develops, the range of projects currently underway or yet to be planned for diabetes will become increasingly focused on the best ways to prevent and manage diabetes.

The next steps will be to:

- develop implementation plans for the prevention of chronic diseases and the management of diabetes, which will include more detail of programs and initiatives, taking into consideration this Framework, Victoria's commitment to the National Reform Agenda and Labor's Financial Statement 2006
- work with stakeholders regarding the development of implementation plans for diabetes with DHS
- develop an evaluation framework to ensure that initiatives developed through or associated with the Department of Human Services Diabetes Strategic Framework are properly monitored and evaluated and can provide evidence on the best ways to ensure the maximum effectiveness of future investments.

List of abbreviations

AHPACC	Aboriginal Health Promotion and Chronic Care
ACE	Assessing cost effectiveness
ACSC	Ambulatory Care Sensitive Conditions
ABHI	Australian Better Health Initiative
AIHW	Australian Institute of Health and Welfare
CALD	culturally and linguistically diverse
COAG	Council of Australian Governments
DHS	Department of Human Services
DPP	Diabetes Prevention Program
GDM	gestational diabetes mellitus
HARP–CDM	Hospital Admissions Risk Program – Chronic Disease Management
MBS	Medicare Benefits Schedule
NCDS	National Chronic Disease Strategy
NDSS	National Diabetes Services Scheme
NEHTA	National E-Health Transition Authority
NHMRC	National Health and Medical Research Council
NICS	National Institute of Clinical Studies
NRA	National Reform Agenda
PBS	Pharmaceutical Benefits Scheme
PCP	Primary Care Partnership
VHM	Victorian Health Monitor

Bibliography

Adelaide recommendations on healthy public policy (WHO/HPR/HEP/95.2), outcome of the Second International Conference on Health Promotion, Adelaide, South Australia, 5–9 April 1998, http://www.who.int/hpr/NPH/docs/adelaide_recommendations.pdf

Australia's health 2006, Australian Institute of Health and Welfare cat. no. AUS 73. Canberra, 2006

Australia's health workforce, Productivity Commission Research Report, Canberra, 2005

Barr E, Magliano DJ, Zimmet PZ, Polkinghorne KR, Atkins RC, Dunstan DW, Murray SG, Shaw J, *The Australian diabetes, obesity and lifestyle (AusDiab) study*, International Diabetes Institute, Melbourne, 2005

Blueprint for nation-wide surveillance of chronic diseases and associated determinants, National Public Health Partnership (NPHP), Melbourne, 2006

Building a national diabetes strategy: a strategic framework, Vol 2, Public Health Agency of Canada, 2005

Chronic diseases and associated risk factors in Australia. Australian Institute of Health and Welfare cat. No. PHE 33. Canberra, 2002

Colac Be Active Eat Well project preliminary results, Deakin University, Unpublished, 2007

Council of Australian Governments' Meeting, Communique, 10 February 2006, http://www.coag.gov.au/meetings/100206/index.htm

Council of Australian Governments' Meeting, Communique, 14 July 2006, http://www.coag.gov.au/meetings/140706/index.htm

Council of Australian Governments' Meeting, Communique, 13 April 2007, http://www.coag.gov.au/meetings/130407/index.htm

Diabetes Australia – Victoria, Prevalence of diabetes in Victoria by local government area, http://www.dav.org.au/epidemic/index.htm

Diabetes in culturally and linguistically diverse Australians: Identification of communities at high risk, Australian Institute of Health and Welfare, Canberra, 2005.

Garrard J, Lewis B, Keleher H, Tunny N, Burke L, Harper S, Round R, *Planning for healthy communities: Reducing the risk of cardiovascular disease and type 2 diabetes, through healthier environments and lifestyles*, Department of Human Services, Melbourne, 2004

'Go for your life' Victoria – Leading the way to a healthy and active community, Strategic plan 2006–2010, Department of Human Services, Melbourne 2006

Healthy by design: A planners' guide to environments for active living, National Heart Foundation of Australia (Victorian Division), 2004

Improving care: Hospital admission risk program, public report, Department of Human Services, Melbourne, 2006

Investing in Mental Health, World Health Organization, Geneva, 2003

Knowler WC, Lindström J, Erksson J et al., *Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin, New England Journal of Medicine*, 2002, 346, 393–403

Lindström J, Louheranta A, Mannelin M, Rastas M, Salimen V, Eriksson J, Uusitupa M, Tuomilehto J, The Finnish Diabetes Prevention Study (DPS), *Diabetes Care* 2003, **26**, 3230–3236

Mathers C, Vos T, Stevenson C, *Burden of disease and injury in Australia*, Australian Institute of Health and Welfare, Canberra, 1999

National chronic disease strategy, National Health Priority Action Council (NHPAC), Australian Government Department of Health and Ageing, Canberra, 2006

National evidence based guidelines for the management of type 2 diabetes mellitus: Part 2 – Evidence based guideline for the primary prevention of type 2 diabetes, National Health and Medical Research Council, 2001

National evidence based guidelines for the management of type 2 diabetes mellitus: Part 3 – Evidence based guideline for case detection and diagnosis of type 2 diabetes, National Health and Medical Research Council, 2001

National Reform Agenda: Victoria's plan to address the growing impact of obesity and type 2 diabetes, Department of Premier and Cabinet, Melbourne, 2007

National service improvement framework for diabetes, National Health Priority Action Council (NHPAC), Australian Government Department of Health and Ageing, Canberra, 2006

The national system for monitoring diabetes in Australia, Australian Institute of Health and Welfare, Canberra, 2006, http://www.aihw.gov.au/publications/index.cfm/title/10219

Northam E A, Matthews L K, Anderson P J, Cameron F J, Werther G A, *Psychiatric morbidity and health outcome in type 1 diabetes – Perspectives from a prospective longitudinal study*. *Diabetic Medicine*, 2005, **22(2)**, 152–157

Rose G, *The prevention paradox: A large number of people exposed to a low risk is likely to produce more cases than a small number exposed to a larger risk*. *BMJ*, 1981, **282**, 1847–1851

Safer design guidelines for Victoria, Department of Sustainability and Environment, Melbourne, 2005

3 centres consensus guidelines on antenatal care, Mercy Hospital for Women, Southern Health and Royal Women's Hospital, Melbourne, 2006

Victorian Labor's Financial Statement 2006, ALP, Melbourne, 2006

Wilkinson R, Marmot M (eds), *Social determinants of health: The solid facts*, 2nd edn, World Health Organization, Geneva, 2003

Wu T, Brooks B, Yue D, *Macrovascular disease: The sword of Damocles in diabetes*, In Turtle J, Kaneko T Osato S (eds), *Diabetes in the new millennium,* Endocrinology and Diabetes Research Foundation, University of Sydney, Sydney, 1999

Your health, A report on the health of Victorians, Department of Human Services, Melbourne, 2005