



Diabetes New Zealand Inc

**Type 2 Diabetes
Managing for Better Health
Outcomes**

April 2001

Foreword

Diabetes in New Zealand has reached epidemic proportions. Thirty-six percent more people are predicted to have this complex disorder in the next 20 years. The World Health Organisation and the International Diabetes Federation, representing 125 countries, are concerned about the comparable trends worldwide.

This significant report highlights the need to develop improved health outcomes for people with diabetes.

An overall concept is developed for examining health services which is both visionary and strategic. It uses a locally identified but internationally referenced economic model. This identifies for government, policy makers and consumers cost savings in health whilst enhancing services.

I congratulate Diabetes New Zealand Inc, a group of consumers and health professionals, in commissioning this innovative initiative. I wish them success in their endeavours to drive and monitor this exciting approach which could greatly contribute to the international scene.

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Disclaimer

This report has concentrated on Type 2 diabetes, not in preference to the urgent and real needs for improved services and research in Type 1 diabetes, but for the following reasons:

1. Type 1 diabetes is a destructive process which wipes out the insulin producing β cells of the pancreas by an autoimmune process
2. Understanding and prevention of Type 1 diabetes depends upon huge investments in basic genetics, cell biology and chemical understanding of the insulin producing cells
3. Here in New Zealand, we cannot fully develop certain preventive strategies for Type 1 diabetes until there are resources for additional services which can be piloted and evaluated or until current and ongoing international basic research and clinical work on autoimmunity can be enhanced and come up with proposals
4. Type 1 diabetes, although increasing and often affecting young people with most of their still life ahead, represents only about 10-20% of all persons with diabetes
5. 80% + of New Zealanders with diabetes have loss of β cells (insulin producing machinery) from a combination of genes and lifestyle changes (Type 2 diabetes) – particularly in the last 50 years of their life
6. Many of these lifestyle disorders, such as lack of exercise, increasing weight gain during life, high animal fat diets and so on, can be modified. Indeed, these behaviours must be modified to reduce the huge increases in the numbers of those with Type 2 diabetes ahead of all Pacific countries
7. Hence, this report concentrates on early detection and hopefully, reduction or delay in the complications of high blood sugars in people with Diabetes
8. Diabetes NZ and PricewaterhouseCoopers staff have been guided by a wide body of consensus opinion in the conclusions and recommendations from the health professionals consulted
9. Those producing this report thus take no responsibility for areas of misinterpretations but thank and congratulate the listed persons and many others outside who have contributed to this report on “Type 2 Diabetes – Managing for Better Health Outcomes”, all of whom helped form the final recommendations.

Executive Summary

This study was commissioned by Diabetes New Zealand Inc and undertaken by PricewaterhouseCoopers. The overall purpose was to model the direct cost to the government's health appropriation of an improved services approach for diabetes and the beneficial impact this would have.

In 1985, the World Health Organisation estimated that 30 million people around the world had diabetes. By 2000 WHO then estimated that diabetes affects approximately 130 million people world-wide, predicting a rise to approximately 300 million by year 2020¹.

This rapid rise in the number of people with diabetes has affected New Zealand adversely. Recent Ministry of Health reports forecast that by 2021 approximately 60,000 more people will have diabetes, a total of nearly 167,000 with diagnosed Type 2 diabetes². A further number will have undiagnosed diabetes. A significant challenge is that Pacific Island and Maori people develop diabetes in substantially greater proportion than Europeans and other ethnic groups³. These two ethnic populations are growing at a much greater rate than Europeans.

Diabetes is a chronic condition that can lead to long term debilitating diseases such as blindness, lower limb amputation, heart disease, stroke and kidney failure and early death⁴. However, international research supports the view that there is potential to develop preventive strategies aimed at reducing the health complications for those with diabetes. Further, the research suggests that changes in lifestyles, including an increase in exercise and reductions in animal fats, may have an impact on reducing the number of New Zealanders who develop Type 2 diabetes⁵.

For many years New Zealand's health policy has relied on a rationing strategy as a way to manage, within a limited budget, the provision of publicly-funded health care to New Zealanders. This approach results in harsh outcomes for people with both Type 1 or Type 2 diabetes or with Impaired Glucose Tolerance (IGT) as it increases the likelihood that they will develop diabetes and/or its related complications.

Results of this study suggest that by implementing more services, which will prevent or better manage diabetes, the health outcomes for those with diabetes or the propensity for it will improve.⁶ Further, the net annual cost to the taxpayer for diabetes funded services will be less over the next 20 years than it would otherwise be.⁷

¹ International Diabetes Federation, 1999; King H, Aubert RE & Herman WH, 1995.

² Alberti K & Zimmet P, WHO Consultation Group, 1998.

³ Abbott W, Scragg R, Marbrook J, 1999; Collins VC & Zinnett P, 1994.

⁴ Fuller J, Shipley M, Rose G et alia, The Whitehall Study 1980; Abbott W, Scragg R, Marbrook J, 1999; Simmonds D, 1996.

⁵ Wei M, Gibbons L, Kampert J et alia, 2000; Scott RS, 1991.

⁶ UK Prospective Diabetes Study, UKPDS 34, UKPDS 38, UKPDS 46.

⁷ Ratner R, 1998.

There is overwhelming international evidence that some services can slow the increase in the incidence of diabetes and, more importantly, can assist in managing and delaying many of the worst complications⁸.

This study describes the specification and results of a simple model designed to project the implications of this research for service delivery. The model also estimates the cost to the taxpayer for Vote Health of an investment approach to managing diabetes.

At the base of the model is expenditure on diabetes services as identified by the former Health Funding Authority in its *Diabetes 2000* report. It estimated that expenditure was \$160 million in 1998/99. The recommended budget for 2001/02 is \$175 million for all people with diagnosed diabetes. Of those, 85% or 106,000 people have diagnosed Type 2 diabetes.

Estimate of Publicly-Provided Annual Health Costs for Diabetes Services (in 1998/99 dollars)						
	HFA estimate 1998 /99 (\$m)	Year 1 2001/02 (\$m)	Year 5 2006/07 (\$m)	Year 10 2011/12 (\$m)	Year 15 2016/17 (\$m)	Year 20 2021/22 (\$m)
HFA Official Diabetes Spending	160	175	200	225	250	275
(Type 2 #s)		(106,000) ^(a)	(119,000)	(133,000)	(150,000)	(167,000)
PricewaterhouseCoopers Model Estimated/Projections of Cost for Type 2 Diabetes						
Current Services (1)		247	398	588	809	1,066
Enhanced Services (2)		257	405	582	778	1,003
More Optimal Services (3)		287 (112,000)	414 (139,000)	540 (169,000)	657 (204,000)	746 (239,000)

(a) Brackets indicate numbers of people diagnosed with Type 2 diabetes and hence identified as using some government-funded services. PricewaterhouseCoopers estimates also include undiagnosed cases.

Current services are actually significantly bigger than the official estimates because of misclassification. They cover many cases where the cause of the disease was diabetes but the primary diagnosis was stroke, coronary conditions, amputation or infection.

PricewaterhouseCoopers estimates that diabetic current services will cost the taxpayer \$247 million for 2001/02. If current services are kept at similar levels, with continued gatekeeping and rationing, the estimated cost of diabetes health care will be over a billion dollars for 2021 (\$1,066 million in current dollar terms).

⁸ UK Prospective Diabetes Study, UKPDS 34, UKPDS 38, UKPDS 46; Campbell I, Sawarki P, 2000.

This is because of a projected increase in the numbers of people with (diagnosed and undiagnosed) Type 2 diabetes developing complications such as limb amputation, dialysis and blindness which require hospitalisation. If the total health appropriation remained the same (adjusted for inflation), diabetes services will account for approximately 12% of total health spending in 20 years.

Although the estimated health cost for 2021/22 appears high, it could well turn out to be conservative. In the United States, diabetes-hospital-related costs are already estimated to be between 10% to 12% of the health budget⁹ (compared to an estimated 3% in New Zealand).

This cost of service represents the direct medical cost of treating diabetes, much of it due to hospital treatment. There are other very real costs to diabetes as well, such as the crowding out of other health services, that could result from such increased demand for diabetes services. Further, the huge social cost of diabetes is not taken into account by the above table. If the cost of diminished quality of life and the cost of diminished productive capacity were to be taken into account, these figures would skyrocket.

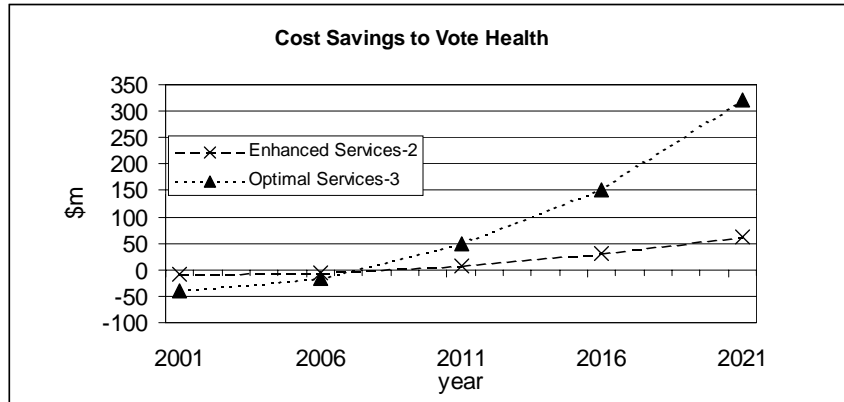
Our projections indicate that the total annual cost of diabetes can be reduced over 20 years (see cost savings graph below) if existing services are able to be widened as soon as possible. Under the enhanced services scenario, the budget for those with diabetes is increased by \$10 million each year with the funding going to specific, targeted services. The outcome over 20 years is for an improvement in the health condition of a larger proportion of those with diagnosed diabetes. This improvement in health condition is likely to reduce or delay complications and so the savings from fewer severe complications in later years offsets the additional spending in earlier years.¹⁰

The most surprising result of our model is that when the amount of spending on more optimal services, both for those with diabetes and for those with the pre-conditions of diabetes, is increased by \$40 million in the first year, the fall in health costs to the government are even greater. This more optimal scenario result is surprising because the only way to ensure that the larger numbers are treated is to increase the amount of contact time and the numbers of those using health services. Despite the large increase in the numbers attending and the frequency of use of primary services, education, prevention, research and monitoring costs, the average annual cost to the government is projected to become considerably lower over the 20 year period. This is because of the delay in more costly complications through better screening programmes which lead to better management of blood glucose levels.

⁹ American Diabetes Assn, Economic Consequences of Diabetes in the US in 1997, 1998.

¹⁰ Eastman R, Javitt J, Herman H et alia, NIDDM, 1997. Eastman R, Javitt J, Herman H et alia, NIDDM: II, 1997.

Graph 1: Cost Savings for Government-funded Services for People with Diabetes



Key Recommendations

Based on the literature review and the implications for New Zealand explored in this study, the following recommendations refer to the Ministry of Health’s accountability for personal and public health services in relation to Type 2 diabetes:

1. More appropriate, affordable, accessible services for people with Type 2 diabetes¹¹
2. More resources (in addition to (1.) above) for the implementation of a fully funded public health strategy focusing on diabetes prevention and education¹²
3. A screening programme to be set up to identify unknown Type 2 diabetes and by diagnosing complications sooner¹³
4. National registration to be established urgently of all people with diabetes
5. More research, auditing and monitoring of effective service delivery for people with diabetes is essential
6. An increase in the number of diabetologists (specialists in diabetes) who provide consulting services in diabetes.

Conclusion

Most of the complications of diabetes are able to be delayed and some may be prevented. Services designed to seek improved outcomes through prevention and self-management are not only likely to raise awareness but could lead to improved health and well-being. They are also likely to save direct costs over the medium-term and certainly into the longer-term.

¹¹ National Diabetes Working Group Annual Report, 1999-2000.

¹² Simmons D, Kenealy T, Scott D, 2000.

¹³ Campbell & Sawarki P, 2000.

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