



Performance audit report

Ministry of Health
and district health
boards:
Effectiveness of
the “Get Checked”
diabetes
programme





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This is the report of a performance
audit we carried out under section
16 of the Public Audit Act 2001

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Foreword

Poorly managed diabetes can result in debilitating complications, including blindness, kidney failure, heart disease, nerve damage, and conditions requiring lower limb amputations. However, diabetes is often responsive to effective management.

The “Get Checked” programme (the programme) gives people diagnosed with diabetes access to free annual health checks. These checks ensure that key tests (which assist in identifying diabetes complications early) have been completed for the year and treatment can be planned for the year ahead. The data collected from the programme is also important for providing care and for planning diabetes services.

I am pleased to note that the programme has resulted in improvements. More people are participating in the programme, and there is heightened awareness of diabetes and improved monitoring of patients at the primary health care level. Education and guidelines for treatment and referrals to specialist diabetes services have improved. Innovative programmes to remove barriers for people accessing diabetes care, particularly Māori and Pacific Island peoples, are being used.

In order to make the programme more effective, improvements need to be made to the quality of programme data and how the data is used. Better use can be made of the data to inform the provision of diabetes care at primary and secondary care levels. More evaluation should be carried out using the programme data to better understand how the programme and other factors contributing to diabetes are linked, and to identify further improvements in how diabetes is managed.

I thank staff from the Ministry of Health, district health boards, primary health organisations, and other community organisations that we spoke to for their help during my audit.



K B Brady
Controller and Auditor-General

11 June 2007

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Glossary

Blood glucose

The main sugar that the body makes from the three elements of food – proteins, fats, and carbohydrates (but mostly carbohydrates). Glucose is the major source of energy for living cells and is carried to each cell through the bloodstream.

BMI (Body Mass Index)

A measure of body fat based on height and weight. It is calculated using weight (in kilograms) and height (in metres), and is used to gauge whether a person is underweight, a healthy weight, overweight, or obese.

Clinical audit

The systematic peer evaluation of an aspect of patient care. The process, which may be multidisciplinary, involves a cycle of continuous improvement of care based on explicit and measurable indicators of quality.

Cohort analysis

Follows a defined population, in this case defined by the year the people started participating in the “Get Checked” programme, to establish whether there is any change in their recorded results over time.

Diabetes register

Database of information collected from annual diabetes checks, as set out in Appendix 2.

Diabetes mellitus

A group of metabolic diseases characterised by high blood sugar (glucose) levels, which result from defects in insulin secretion or action, or both. Diabetes mellitus is commonly referred to simply as diabetes.

District health boards

Health management units accountable to the Minister of Health. These have existed since 1 January 2001, when the New Zealand Public Health and Disability Act 2000 came into force.

Glycated haemoglobin (HbA1c) test

Provides an assessment of the degree to which blood glucose has been elevated over 120 days.

HbA1c

A “glycated haemoglobin” molecule made by glucose sticking to the haemoglobin in red blood cells. The more glucose in the blood, the more HbA1c will be present.

Health Funding Authority

Established in January 1998 after the four Regional Health Authorities were disestablished. It allocated government money to health and disability service providers in New Zealand, and was disestablished on 31 December 2000.

Incidence

The number of instances of a disease or other condition that occur in a population during a specified period of time. It is usually described as a rate, and is calculated by taking the number of new cases in a defined time period as a percentage of a defined population. This allows comparisons to be made over time and between different populations (as long as the rate is standardised to allow for different age structures in different populations).

Independent practitioners association

An association of general practitioners set up in response to the Health and Disability Services Act 1993, as an infrastructure for the provider side of primary health care funding arrangements. The associations are generally established as limited liability companies or trusts, and most are owned by the general practitioner members.

Local diabetes team

A group that includes clinicians and consumers that provides advice to district health boards, diabetes healthcare providers, and diabetes consumer support agencies on the effectiveness of healthcare services for people with diabetes within the district health board area.

Pacific Island peoples

The population identifying itself as Pacific Island ethnic origin, including people born in New Zealand and overseas.

Primary health care

The first level of contact that individuals, families, and the community have with the health system. The care given is therefore general (that is, not specialist), comprehensive (covers physical and mental well-being, and includes both preventative care as well as medical treatment), continuing (in that an individual often visits and establishes an ongoing relationship with a particular general practice), and accessible.

Primary health organisations

Not-for-profit provider organisations funded by district health boards to provide primary health care services for an enrolled population. They bring together general practitioners, nurses and other health professionals (such as Māori health workers, health promotion workers, dieticians, pharmacists, physiotherapists, psychologists and midwives) in the community to serve the needs of their enrolled populations. A primary health organisation provides services directly by employing staff or through its provider members.

Prevalence

The number of instances of a given disease or other condition in a population at a given time. It is usually described as a rate. Prevalence includes both new (incidence) and existing instances of a disease. It allows comparisons to be made over time and between different populations (as long as the rate is standardised to allow for different age structures in different populations).

Programme administrator

Refers to the organisation funded by a district health board to administer the “Get Checked” programme and maintain the diabetes register. This organisation may be a primary health organisation, an independent practitioners association, or a community organisation. Programme administrators collect data from general practitioners, enter it in a database (the diabetes register), analyse the data, and report the results to general practitioners. They also arrange for district health boards to pay general practitioners, provide general practitioners with resources for carrying out the annual check, and provide a summary of the data to local diabetes teams and the Ministry of Health.

Secondary care diabetes services

Services provided by medical specialists who generally do not have first contact with patients (for example, cardiologists, urologists, endocrinologists, ophthalmologists). Generally patients first seek care from primary care providers and are then referred to secondary providers as needed.

Summary

Diabetes is a major health issue for New Zealand. Reducing the incidence and effect of diabetes is one of the Government's population health priorities. Diabetes is also one of eight priority areas for improving Māori health.

The "Get Checked" programme (the programme) was set up in June 2000 by the Health Funding Authority to help people who have been diagnosed with diabetes better manage their condition and lower the risks of complications. DHBs are responsible for the programme and ensuring that it is delivered in their districts.

The programme entitles people who have been diagnosed with type 1 or type 2 diabetes to have a free annual health check from their general practitioner (GP) or appropriately trained registered primary healthcare nurse (diabetes nurse), who are usually members of primary health organisations (PHOs). The purpose of the check is to ensure that key tests (which assist in identifying diabetes complications early) have been completed for the year and to allow people to plan treatment for the year ahead.

The programme is part of the strategic direction for diabetes care set by the Ministry of Health (the Ministry) in 1997.

The programme's objectives are to:

- systematically screen for the risk factors and complications of diabetes to promote early detection and intervention;
- agree on an updated treatment plan for each person with diabetes;
- prescribe treatment and refer people for specialist or other care if appropriate;
- update the information in the diabetes register, which is used as a basis of clinical audit and for planning diabetes services in the area;
- improve the planning and co-ordination of services delivered by all healthcare providers; and
- decrease the barriers to accessing high quality care for Māori and Pacific Island peoples.

We carried out a performance audit to assess the effectiveness of the programme. We assessed the extent to which the programme's objectives were being met in a sample of six district health boards (DHBs) – Auckland, Counties Manukau, Tairāwhiti, Hawke's Bay, Capital & Coast Health, and Otago – and a selection of PHOs within these DHBs.

The DHBs had funding arrangements with various organisations to administer the programme (referred to as programme administrators in this report). The majority of programme administrators in our sample were PHOs, but they also included a community organisation, an independent practitioners association, and a DHB.

Programme administrators collect data from GPs, enter it in a database (the diabetes register), analyse the data, and report the results to GPs. They also arrange for DHBs to pay GPs, provide GPs with resources for carrying out the annual check, and provide a summary of the data to local diabetes teams (LDTs) and the Ministry of Health.

Five of the DHBs that we visited had an LDT that provided advice to the DHB on the effectiveness of healthcare services for people with diabetes within the district. The LDTs require data from the diabetes register to fulfil their function of reporting on the programme to the DHB and the Ministry of Health.

The programme operates alongside other national initiatives that contribute to caring for people with diabetes. For example, funding is available to PHOs and community groups to improve access to health services for people with high health needs by using innovative approaches to reach these people. Also, a national programme, Care Plus, was set up in July 2004 to provide co-ordination of care for people with chronic conditions and more complex needs.

Overall findings

Overall, we found that the programme has improved certain aspects of diabetes management. However, there are some issues that need to be addressed for the programme to operate more effectively.

Improvements made in diabetes management in primary care include:

- the numbers of people participating in the programme have increased;
- awareness of diabetes has heightened and monitoring of patients has improved;
- guidance provided to GPs on diabetes treatment and referrals to specialist diabetes services has improved; and
- innovative programmes to remove barriers for people accessing diabetes care, particularly Māori and Pacific Island peoples, are being used in some areas.

Issues that need to be addressed include:

- DHBs need to identify the population eligible to participate in the programme (that is, those people diagnosed with diabetes) so that the programme's coverage can be accurately assessed and progress towards targets can be measured with certainty.
- Two of the six DHBs that we visited need to resolve information technology (IT) system problems that affect the integrity of the data in their diabetes registers.
- DHBs need to carry out audits to ensure that general practices are preparing good quality treatment plans, in line with the relevant guidelines, and are giving the necessary support to patients so they can implement the plans.

- DHBs need to work with LDTs to collect data on specialist diabetes services and carry out supply and demand analysis to assess the adequacy of the services.
- DHBs need to carry out more cohort studies, using repeated measurement of people who have participated in the programme over several years, to identify how effective the programme is and how best to improve diabetes management.

The following section discusses our findings in more detail against the programme objectives.

Screening and coverage

Few of the PHOs and none of the DHBs in our sample knew the number of people diagnosed with diabetes in their district. This means that it was not possible to accurately assess the coverage of the programme, and also that PHOs and general practices could not be sure that all patients entitled to join the programme had been invited to do so.

In place of actual figures, the Ministry has developed a model to estimate the number of new cases of diabetes diagnosed each year and the total number of people diagnosed with diabetes by ethnicity. The DHBs, PHOs, and programme administrators that we interviewed had little confidence in the accuracy of these estimates. While they thought the estimates may have some validity at a national level, they felt that the model became increasingly inaccurate as populations became smaller – that is, at the district and general practice level.

Programme coverage (the percentage of the estimated number of people diagnosed with diabetes who are participating in the programme) had increased in the six DHBs that we visited, with large increases in some districts – two DHBs (Counties Manukau and Otago) were achieving more than 80% coverage by 31 December 2006. However, two other DHBs in our sample (Tairāwhiti and Hawke's Bay) were achieving programme coverage of less than 60%, and we expected these results would have been higher six and a half years into the programme.

Treatment plans

We were told that treatment plans were being prepared. However, we could not review the quality of those plans because of patient privacy issues.

We note the importance of annual treatment plans in assisting and motivating people with diabetes to change their lifestyles. We are concerned that, apart from work carried out as part of the Diabetes Care Support Audit in the Counties Manukau DHB area, there was inadequate monitoring and audit to ensure the quality and consistency of these plans in the DHBs that we visited. Data collected

as part of the programme indicates that people are generally not making lifestyle changes or may not be being given the appropriate support or treatment. Better monitoring and audit of the quality of treatment plans and the support provided to patients to implement the plans would help ensure that the plans fulfil their key role.

Treatment and referral to specialist diabetes services

We found that evidence-based best practice guidelines and national referral guidelines were available to assist GPs with diabetes treatment. The clinical staff in specialist diabetes services that we spoke to considered that GPs were not referring patients on all occasions recommended by the guidelines. However, they considered patients were being referred to them in an appropriate and timely manner, and strict adherence to the guidelines would result in a number of unnecessary referrals. This suggests that the guidelines need to be reviewed to ensure that they still reflect good practice.

We found that specialist diabetes services in the DHBs that we visited were finding it hard to cope with the demand for their services with the resources that they had available. However, the information that the specialist diabetes services were able to give us was not enough to accurately gauge the extent of any shortfall in resources. More detailed information needs to be kept to enable an analysis of supply and demand. This is especially important given the concerns of the specialist diabetes services that improved coverage of the programme and the diagnosis of more people with diabetes will increase the demand for their services.

Updating information in the diabetes register

We have concerns about the accuracy of the data in most of the diabetes registers that were included in our audit. IT system problems affected the reliability and accuracy of the data in most districts, especially in the Auckland area.

In the DHB districts that we visited, the information in some diabetes registers was being used to monitor results and report them to PHOs and GPs. The extent of this feedback and the timing varied significantly. In some cases, the feedback was provided quarterly or six-monthly, while for others it was done annually.

Improving planning and co-ordination of services

We found that only one of the DHBs that we visited (Capital & Coast Health) was using the information in the diabetes register to plan diabetes services in its district.

DHBs had set up LDTs, as recommended by the Health Funding Authority in Diabetes 2000, to identify the health needs of people with diabetes, their family/whānau, and their communities; to monitor the use of resources related to diabetes; and to recommend any improvements deemed necessary.

The LDT representatives that we spoke to were dedicated in their commitment to improving diabetes services. However, the LDTs varied in how effectively they were able to provide advice on the effectiveness of healthcare services for people with diabetes. The LDTs told us they were constrained by not having enough resources, information, and influence. Although all analysed the information available from the programme, only two looked at information on wider services and none analysed specialist diabetes care data.

The LDTs were receiving information recorded in the diabetes registers and reporting it to DHBs and the Ministry of Health. However, this was only part of the information they needed to evaluate and plan diabetes services in their districts. None of the LDTs that we spoke to were receiving information from specialist diabetes services. They were therefore not able to do a comprehensive analysis of the supply and demand for each diabetes service in their districts.

We found that the relationship between the LDTs and their respective DHBs varied significantly between the districts that we visited. Only three DHBs (Counties Manukau, Capital & Coast Health, and Hawke's Bay) had a constructive ongoing relationship with its LDT.

Decreasing the barriers for Māori and Pacific Island peoples

We found that some PHOs in our sample had identified barriers to Māori and Pacific Island peoples accessing the programme and put initiatives in place to remove these barriers.

The reported results from our sample showed that, while these initiatives were successful in increasing Pacific Island peoples' participation in the programme, the numbers of Māori participating in the programme still fell short of the target rates.

Is the programme improving how diabetes is managed?

We do not consider that the measures currently being reported by DHBs to the Ministry are enough to establish whether diabetes management is improving, or identify the reasons for improvements. We consider that DHBs need to carry out robust analysis of the data collected through the programme to enable continuing improvements to diabetes management.

The cohort analysis that has been performed over the data collected shows that drug-prescribing practices by GPs have improved, although this may not be directly attributable to the programme. However, better drug prescribing is only one aspect of improving the management of diabetes. The programme on its own cannot effectively improve the management of diabetes unless it is accompanied by support for patients to self-manage their condition by implementing lifestyle changes.

The poor glycosated haemoglobin (HbA1c) management that continues to be reported from the programme needs further analysis to understand what is driving current performance (that is, whether it is drug-prescribing practices or patient self-management) and where incentives need to be directed to improve results. This analysis will require further qualitative information on factors such as the quality of treatment plans and ongoing support for patients. This information can be obtained only through clinical audit.

Our recommendations

In making our recommendations we recognise that the arrangements for the administration of the programme differ among the DHBs that we audited. In implementing our recommendations, DHBs will need to work with the relevant organisations to resolve the issues that we have identified. The DHBs and the Ministry of Health will also need to ensure that a suitable mechanism is put in place to monitor that our recommendations are acted on.

To improve the quality of the programme data, we recommend that:

- district health boards work with programme administrators to identify those patients in patient management systems who have been diagnosed with diabetes (Recommendation 1, page 35);
- district health boards work with programme administrators to identify those people in the population diagnosed with diabetes who are not participating in the programme, ensure that they have been invited to join the “Get Checked” programme, and (if possible) note and address their reasons for declining (Recommendation 2, page 35);
- district health board specialist diabetes services maintain enough data on the numbers of patients attending their clinics, the complexity of patients’ conditions, and waiting times to enable the district health board to identify and plan for the funding and resources needed to provide adequate diabetes services at this level (Recommendation 5, page 42);
- district health boards ensure that the information in their diabetes registers is accurate and updated, and work with programme administrators to identify,

clarify, and resolve current problems affecting data quality (Recommendation 7, page 47); and

- district health boards ensure that enough audit processes are in place to verify that payments are being made for genuine annual checks, and that they work with their programme administrators to achieve this (Recommendation 8, page 47).

To improve the effectiveness of the programme, we recommend that:

- district health boards work with primary health organisations to monitor the preparation and audit the quality of treatment plans, and establish the effectiveness of these plans over time (Recommendation 3, page 39);
- the Ministry of Health review and, if necessary, update the national referral guidelines (Recommendation 4, page 42);
- those district health boards where there are shortfalls in specialist diabetes services investigate the shortfalls and provide additional services as considered necessary (Recommendation 6, page 42);
- district health boards work with programme administrators to ensure that the data from the “Get Checked” programme is thoroughly analysed and the results regularly reported back to general practices to improve diabetes care (Recommendation 9, page 50);
- district health boards work with primary health organisations and programme administrators to ensure that adequate clinical audit is carried out to provide assurance that general practices are providing diabetes care in line with the evidence-based best practice guidelines and national referral guidelines (Recommendation 10, page 50);
- district health boards work with local diabetes teams to carry out a more robust analysis of supply and demand for diabetes services at both the primary and secondary care levels, so that any shortages in services provided at both the primary and secondary care levels can be identified (Recommendation 11, page 55);
- the Ministry of Health and district health boards review the role of the local diabetes teams to establish how these teams are best able to adequately fulfil the role of providing advice on the effectiveness of healthcare services for people with diabetes (Recommendation 12, page 55);
- the Ministry of Health and district health boards consider how to improve the adoption of the local diabetes teams’ recommendations (Recommendation 13, page 56);

- district health boards work with primary health organisations to continue to focus on removing the barriers to Māori and Pacific Island peoples accessing the “Get Checked” programme (Recommendation 14, page 63);
- the Ministry of Health and district health boards work with primary health organisations to evaluate existing initiatives for removing barriers to accessing diabetes care, and ensure that there is a mechanism in place to disseminate successful initiatives throughout district health boards and primary health organisations (Recommendation 15, page 63);
- district health boards consider whether initiatives need to be put in place for populations within their districts other than Māori and Pacific Island peoples who also experience barriers to accessing diabetes care (Recommendation 16, page 63);
- district health boards and the Ministry of Health carry out further analysis (for example, cohort analysis) of the effect that the “Get Checked” programme has had on diabetes care and management, to better understand how the programme and other factors contributing to diabetes care are linked and to identify what further improvements can be made in diabetes care and management (Recommendation 17 page 68); and
- district health boards work with local diabetes teams and programme administrators to make more use of the data available from the “Get Checked” programme to plan their diabetes services (Recommendation 18, page 68).

Part 1

Introduction

- 1.1 Diabetes is a major health issue for New Zealand. Reducing the incidence and effect of diabetes has become one of the Government’s population health priorities. Diabetes is also one of eight priority areas for improving Māori health. The “Get Checked” programme (the programme) was started in June 2000 as part of the strategic response by the Ministry of Health (the Ministry) to diabetes management. (For more information on diabetes and the programme, see Part 2).
- 1.2 In this Part, we discuss:
- why we carried out our audit;
 - the scope of our audit;
 - our expectations; and
 - how we carried out our audit.

Why we audited the “Get Checked” programme

- 1.3 We carried out a performance audit of the programme because it is a key accountability mechanism for ensuring that general practices are adequately managing diabetes care. It gives people who have been diagnosed with diabetes access to a free annual health check, to help them better manage their condition and lower the risks of complications arising from having diabetes.
- 1.4 The failure to manage many preventable complications for diabetes means that those with the disease may require expensive medical interventions. A large portion of these costs is preventable through good management of diabetes.
- 1.5 The Ministry of Health describes the programme as the foundation for diabetes services, and it is designed to improve the co-ordination of services delivered by all health care providers.

The scope of our audit

- 1.6 Our audit assessed the effectiveness of the programme in achieving its objectives, which are to:
- systematically screen for the risk factors and complications of diabetes to promote early detection and intervention;
 - agree on an updated treatment plan for each person with diabetes;
 - prescribe treatment and refer people for specialist or other care if appropriate;
 - update the information in the diabetes register, which is used as a basis of clinical audit and for planning diabetes services in the area;
 - improve the planning and co-ordination of services delivered by all healthcare providers; and
 - decrease the barriers to accessing high quality care for Māori and Pacific Island peoples.

- 1.7 Our audit did not look at what was being done to identify those people with diabetes but who had not been diagnosed, and nor did it look at individual treatment and outcomes.

Our expectations

- 1.8 We developed our audit objectives and audit expectations from the programme's objectives.
- 1.9 Our first audit objective was to determine whether the programme was operating as intended. We expected that:
- people diagnosed with diabetes were being systematically screened through the programme for the risk factors and complications of diabetes to promote early detection and intervention;
 - an updated treatment plan was agreed for each person participating in the programme; and
 - participants in the programme were being prescribed treatment and referred for specialist or other care if appropriate.
- 1.10 Our second audit objective was to determine whether the information from the programme was being used to improve diabetes services. We expected that:
- programme administrators would be accurately entering information from the annual programme checks in the diabetes registers;
 - the information in the diabetes registers was being used to promote improvements in diabetes services and as a basis for clinical audit; and
 - local diabetes teams (LDTs) and district health boards (DHBs) would use the information in the diabetes register to co-ordinate and plan diabetes services in their districts.
- 1.11 Our third audit objective was to determine whether the programme was achieving the expected results. We expected that:
- the barriers to Māori and Pacific Island peoples accessing high quality care would have decreased; and
 - the programme would be improving the management of diabetes.

How we carried out our audit

- 1.12 District health boards are responsible for funding the programme and ensuring that it is delivered in their districts.
- 1.13 We selected six DHBs – Auckland, Counties Manukau, Tairāwhiti, Hawke's Bay, Capital & Coast, and Otago – and interviewed representatives of their planning and funding staff and their clinical staff in specialist diabetes services. We also interviewed staff from 12 primary health organisations (PHOs) within those DHB districts.

- 1.14 We spoke to staff from the programme administrators (the organisations funded by DHBs to administer the programme and maintain the diabetes registers – see the glossary for a fuller description). These organisations included nine of the 12 PHOs in our sample as well as a community organisation, an independent practitioners association, and one of the DHBs.
- 1.15 We interviewed members of five LDTs and staff from the Ministry of Health, and met with staff of the Royal New Zealand College of General Practitioners.
- 1.16 We also obtained copies of relevant documentation from all the organisations involved in the audit.
- 1.17 We selected our sample to give us access to districts where the programme was operating well and districts where the programme appeared to be having difficulty. We also selected districts with significant numbers of Māori and Pacific Island peoples. This was because one of the main objectives of the programme was to improve access to good quality care for these sectors of the population, which are particularly at risk of diabetes.
- 1.18 Throughout this report, we have named DHBs where findings are specific to particular DHBs. We have also highlighted some examples of good practice that we found in specific PHOs and programme administrators, and have named the organisations concerned.
- 1.19 The population sizes and ethnic profiles of the districts that we visited are set out in Figure 1.

Figure 1
District health board population size and ethnic profile for our sample

DHB	Total population	Māori	Pacific Island	Other
Auckland ^a	420,700	35,339	57,636	327,725
Capital & Coast ^b	270,000	26,730	20,520	222,750
Counties Manukau ^c	441,000	76,000	91,000	274,000
Hawke's Bay ^d	149,856	37,316	4,470	108,070
Otago ^e	180,220	11,290	2,600	166,330
Tairāwhiti ^f	43,974	20,404	1,187	22,383

a Auckland DHB website, www.adhb.govt.nz.

b *Capital & Coast District Health Board Health Needs Assessment Second Edition – Version One, September 2004*, page 14, and *Capital & Coast District Health Board 2005/06 Annual Report*, page 8.

c Counties Manukau DHB website, www.cmdhb.org.nz.

d *Hawke's Bay District Health Board District Annual Plan 2006-2007*, page 12.

e *Otago District Health Board District Strategic Plan 2005-2015*, page 10.

f *Strategic Health Plan for the Te Tairāwhiti District – Hauora Titiro Whakamua Health Looking Forward 2005-2010*, page 16.

Part 2

Background

- 2.1 In this Part we discuss:
- what diabetes is;
 - who it affects;
 - what its effects are;
 - the costs of diabetes;
 - the health sector's response to diabetes; and
 - the "Get Checked" programme.

What is diabetes?

- 2.2 Normally the amount of glucose (or sugar) in the blood stream is controlled by a hormone¹ called insulin,² which is made by the pancreas.³ Insulin controls the amount of glucose in the blood by enabling the cells in the body to take glucose from the blood and use it for energy.
- 2.3 People with diabetes have more glucose in their blood than normal because:
- The pancreas is not producing any or enough insulin (referred to as type 1 diabetes). Type 1 diabetes more commonly starts in children and younger adults, but it can occur at any age.
 - The body produces insulin, but stops responding to it (referred to as type 2 diabetes).

Who does diabetes affect?

- 2.4 Diabetes is a common condition that potentially affects all New Zealanders.⁴ The effect of diabetes on illness and mortality is significant, and will become more so as the prevalence increases. Forecasts by the Ministry estimate that the number of people diagnosed with diabetes will be 145,000 by 2011 (a 180% increase on the numbers in 1996).⁵
- 2.5 In 2005, an estimated 125,000 people had diagnosed diabetes. About 85% to 90% of these had type 2 diabetes. Potentially, an equal number of people have undiagnosed diabetes. Insulin-making capacity falls steadily with age, so diabetes

1 A hormone is a chemical substance secreted by certain glands in the body, which can stimulate certain organs of the body.

2 Insulin is a hormone that helps the body use glucose (sugar) for energy. When the body cannot make enough insulin on its own, a person can inject insulin made from other sources.

3 The pancreas is a large digestive gland behind the stomach that produces insulin and assists with the breakdown of complex proteins and fats.

4 Health Funding Authority (2000), *Diabetes 2000*, Wellington, page 3.

5 Ministry of Health (2002), *Modelling Diabetes: Forecasts to 2011*, Public Health Intelligence Occasional Bulletin No. 10, page 7. The forecasts were based on epidemiological modelling. The baseline year of the model is 1996.

prevalence increases with age. Up to one in six of those aged over 60 years has diagnosed diabetes.

2.6 Some population groups, including Māori and Pacific Island peoples, are more predisposed to diabetes and its complications. The 2002/03 National Health Survey⁶ of people over 15 years of age suggests a prevalence of diagnosed diabetes of:

- 3.4% for males and 2.4% for females of European or other origin;
- 9.5% for males and 6.7% for females among Māori; and
- 8.1% for males and 11.9% for females among Pacific Island peoples.

2.7 The risk of developing type 2 diabetes increases with a number of factors. These include:

- being overweight;
- lack of physical activity; and
- having a family/whānau history of diabetes.

The effects of diabetes

2.8 In New Zealand, diabetes is a leading cause of blindness, kidney failure, and complications leading to lower extremity amputation. It is also a major risk factor for nerve damage (leading to problems with, for example, a person's feet, bowel, bladder, and digestion), stroke, heart attack, heart failure, and early death. Diabetes is a leading cause of congenital abnormalities, stillbirth, and miscarriage. It is also a major cause of admission to hospital with infections. (Refer to Appendix 1 for some of the complications that people with diabetes are predisposed to.)

2.9 The damage caused by diabetes is directly related to glucose, lipid,⁷ and blood pressure control. Good diabetes care reduces the rate of complications and the high cost of hospitalisation. It was reported in 1997 in *Strategies for the Prevention and Control of Diabetes in New Zealand* (the 1997 Diabetes Strategy) that "Access to good diabetes care is poor and inequitable".⁸

The costs of diabetes

2.10 The 1997 Diabetes Strategy noted that there was only limited information on the costs of diabetes. It said that people who had diabetes bore a major part of the costs of diabetes, and this had not been calculated. There were also significant indirect costs, both to the individual and to society. In 1997, the only elements of

6 Ministry of Health (2004), *A Portrait of Health: Key Results of the 2002/03 New Zealand Health Survey*, Wellington, pages 66 to 67.

7 Lipid is a term for some forms of fat.

8 Public Health Group (1997), Ministry of Health, Wellington, page 11.

direct costs that could be estimated were the inpatient costs (estimated at \$95 million per year) and some prescription costs (estimated at \$29 million per year).

- 2.11 In 2000, Diabetes New Zealand⁹ commissioned PricewaterhouseCoopers to develop an economic model to predict the costs of diabetes. The model predicted that:
- the services provided for diabetes would cost the taxpayers \$247 million for 2001/02; and
 - the estimated costs, if services were maintained at the 2001/02 level, would be more than a billion dollars each year by 2021.
- 2.12 This increase was based on the projected increase in the numbers of people developing conditions requiring hospitalisation, such as blindness, kidney failure, or complications that lead to limb amputation.
- 2.13 A study reported in December 2006¹⁰ looked at the cost of preventable kidney failure and assessed the cost to be \$90 million each year. The study noted that the data in the “Get Checked” programme could provide a powerful mechanism for preventing or delaying chronic kidney disease.
- 2.14 However, there is still a lack of actual information in New Zealand on the current costs of diabetes.

The health sector’s response to diabetes

- 2.15 In 2000, the Ministry identified reducing the incidence and the effect of diabetes as one of the 13 immediate action priorities for population health.¹¹
- 2.16 The strategic direction for diabetes management set out by the Ministry of Health in the 1997 Diabetes Strategy advocated a disease management approach to diabetes care. The aims of the 1997 Diabetes Strategy were to improve co-ordination and information flows among stakeholders in diabetes care, and to improve diabetes services by integrating primary, secondary, and allied health services. There were four focus areas:
- preventing type 2 diabetes;
 - identifying people with diabetes and enrolling them into structured programmes in primary care;

9 Diabetes New Zealand is a non-governmental, non-profit organisation that supports its 39 member diabetes societies and health professionals involved with diabetes.

10 Zoltán, Endre, et al. (2006), “Preventable kidney failure: The cost of diabetes neglect?”, *The New Zealand Medical Journal*, Vol. 119, No. 1246, Wellington.

11 Ministry of Health (2000), *The New Zealand Health Strategy*, Wellington.

- monitoring people with diabetes through free annual health checks, and using this information for quality improvement and service planning; and
 - planning treatment throughout the range of services available.
- 2.17 The Health Funding Authority's *Diabetes 2000* implementation plan gave effect to this. *Diabetes 2000* notes that:
- There are measures that predict the "severity" or future impact of diabetes and its complications. These include blood HbA1c, blood lipids, and blood pressure.*¹²
- 2.18 *Diabetes 2000* then went on to note that, although some primary care organisations (in place before PHOs were set up) collected this data for their enrolled populations, it was not generally available for benchmarking or identifying trends. Three initiatives put in place under *Diabetes 2000* were aimed at addressing this problem.
- 2.19 First, *Diabetes 2000* supported the development of regional diabetes registers. It identified primary care organisations (now PHOs) as the appropriate place for the registers to be located, because their general practitioners (GPs) generally provided the initial diagnosis and treatment for almost all people with type 2 diabetes and its complications.
- 2.20 Secondly, one LDT was to be set up in each Regional Health Authority (now DHBs) throughout New Zealand to reflect the needs of each region. The teams were to include clinicians and consumers, and they were to be responsible for identifying the needs of the region, monitoring the use of resources, and recommending any improvements that needed to be made. The teams were to focus on the needs of rural communities, Māori, and Pacific Island peoples.
- 2.21 Thirdly, a free annual review was to be provided for each person diagnosed with diabetes. This initiative became the "Get Checked" programme. The intended benefits of the free annual review were:
- Patients diagnosed with diabetes could be systematically screened, to detect and treat complications at an early or preventable stage.
 - It provided an opportunity to review and update the patient's treatment and management plan.
 - The diabetes registers could be updated with a nationally consistent dataset of core information on each patient, which would then be used as a basis of clinical audit and for planning improvements to diabetes services. The results of this information were to be presented to the LDTs and reported by the LDTs to DHBs.
 - Patients could be prescribed new treatment, and referred for specialist or other care if appropriate.

- 2.22 In addition, increased funding was put into education and management services to try and make them nationally equitable, more eye screening was to be done, and primary prevention and screening of certain patients for diabetes was to be further investigated.

The “Get Checked” programme

- 2.23 The programme was launched in June 2000 at the beginning of a time of significant change in the health sector. For example, DHBs were established on 1 January 2001, and the Primary Health Care Strategy released in February 2001 resulted in the establishment of the current 81 PHOs between mid-2002 and April 2006.
- 2.24 The programme entitles people who have been diagnosed with type 1 or type 2 diabetes to a free annual health check, carried out by their GP or an appropriately trained registered primary healthcare nurse (diabetes nurse). The purpose of the check is to ensure that key tests (which assist in identifying diabetes complications early) have been completed for the year and to plan treatment for the year ahead.
- 2.25 Under the terms of the *Tier 3 Free Annual Review for People with Diabetes Service Specification*¹³ (the annual check service specification), the GP or diabetes nurse carrying out the annual check must:
- provide information about the service to the person with diabetes and receive consent from that person¹⁴ to forward identifiable clinical information to the programme administrator for the purpose set out in the service specification;
 - review symptoms and concerns raised by the person with diabetes or their family/whānau;
 - examine for risk factors and complications, including:
 - a check of smoking status;
 - an eye check, ensuring that retinopathy screening has been done;¹⁵
 - a blood pressure check;
 - a foot examination (according to clinical guidelines) and advice about basic foot care;
 - a fasting blood test for total cholesterol and HDL;¹⁶

13 Ministry of Health and District Health Boards New Zealand (2003), Wellington.

14 The requirements of the Health Information Privacy Code apply to this service. People with diabetes receiving this service should understand the purpose and use of their health information. Specific consent must be obtained from the patient to forward identifiable contact or clinical information from the PHO to other diabetes service providers.

15 Retinopathy is a disease of the small blood vessels in the retina of the eye, which, left untreated, leads to blindness.

16 High-density lipoproteins (HDL) form a class of lipoproteins that carry cholesterol from the body's tissues to the liver. They are sometimes called “good cholesterol”.

- a fasting blood test for triglycerides;
- a blood test for HbA1c;
- a urine test for early nephropathy,¹⁷ as indicated in clinical guidelines; and
- a review of medication and management, including prescriptions for medication, glucose test strips, and glucose monitors as required.

- 2.26 It is not intended that all tests and examinations be carried out at the time of the free annual check. Rather, the annual check is to ensure that the indicated tests and examinations have been done within the time frames indicated in clinical guidelines, and to arrange for any outstanding tests to be completed.
- 2.27 Data obtained as a result of the annual check must be entered into the diabetes register. The minimum data to be recorded – known as the minimum dataset – is set out in Appendix 2.
- 2.28 The Ministry reported that 70,456 people (56% of an estimated 125,000 eligible people) had participated in the programme during the year ended 31 December 2005.

Why have annual checks?

- 2.29 An important goal of diabetes treatment is to prevent complications. Over time, higher than normal blood glucose levels will damage the heart, blood vessels, eyes, kidneys, and nerves. However, the person may not know that the damage is taking place.
- 2.30 *Diabetes 2000* notes that:
- Diabetes is a direct cause of symptoms, but the significant burden of the disease (and the majority of costs) relates to the development of complications that typically lead to hospitalisation or death.¹⁸*
- 2.31 The free annual check aims to ensure that regular tests are carried out to identify and treat complications at an early stage, and to agree individual treatment plans for patients. The types of complications being tested for and the types of treatment are set out in Appendix 1.

What happens to the information collected?

- 2.32 The *Tier 3 Local Diabetes Team National Service Specification* (LDT service specification) sets out the required information flows:
- First, a GP or diabetes nurse carries out the free annual check. They review the

¹⁷ Diabetic nephropathy is the kidney disease that occurs as a result of diabetes. It is caused by damage to the small blood vessels or to the units in the kidneys that clean the blood. It begins with protein appearing in the urine and over 5 to 10 years can develop to a stage where the kidneys are unable to remove toxins from the blood and to end-stage kidney disease. The disease is more likely to occur if blood sugar is poorly controlled.

¹⁸ Page 13.

patient's treatment against guidelines, carry out any outstanding checks, agree a treatment plan for the next year, and refer the patient to other services if necessary. The general practice maintains records of the check on its patient management system. The general practices send a minimum dataset collected as part of this check to the programme administrator.

- Secondly, the DHB ensures that there are registers of data from the free annual checks (the diabetes registers, maintained by programme administrators). This information is used to improve the quality of diabetes care by giving feedback to general practices. Aggregated diabetes data is also reported to the LDT.
- Thirdly, each LDT combines all the information received from programme administrators and collects information from hospital and non-hospital specialist diabetes services. It analyses the information, develops recommendations for service improvements, prepares an annual report, and sends it to the DHB and the Ministry.
- Fourthly, the DHB considers the LDT report recommendations when planning diabetes services.

2.33 In addition to the data provided from the free annual check, the diabetes retinopathy eye screening service, and all hospital- and non-hospital-based specialist diabetes services, should provide feedback to the referring GP and should also provide information to the LDT.

2.34 The information flows are shown in Figure 2.

The “Get Checked” programme in relation to other services

2.35 The 1997 Diabetes Strategy recommended that team-delivered care for people with diabetes be developed by integrating primary and secondary diabetes services. It recommended developing patient-based diabetes services with enhanced co-ordination and improved access (for example, teams consisting of the GP, dietician, diabetes nurse specialist, diabetologist, podiatrist, psychologist, social worker, urologist, ophthalmologist,¹⁹ and community educators).

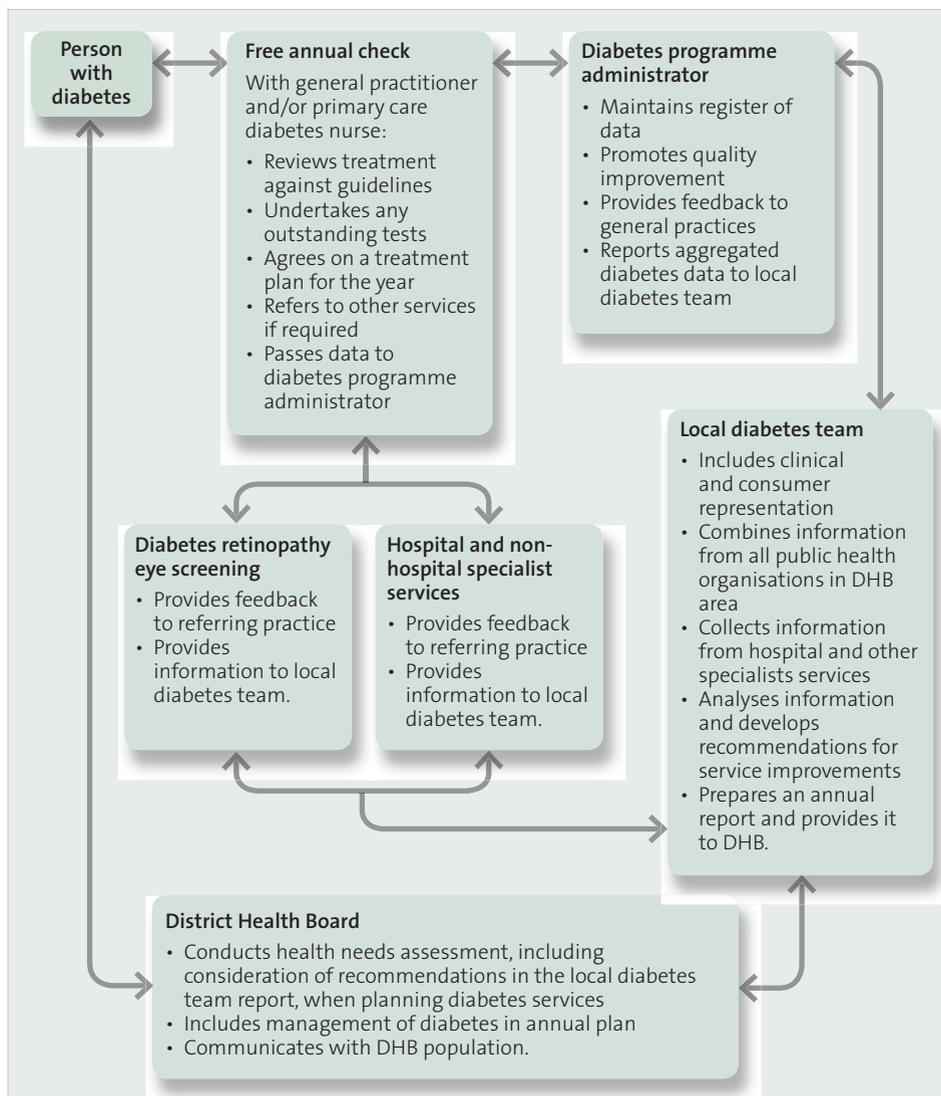
2.36 Quality diabetes care needs an integrated approach involving the patient, the patient's family/whānau, and health workers in both primary and secondary care.

2.37 This team relationship is set out in Figure 3.

2.38 The free annual check is an integral part of the work of primary care in diabetes management.

¹⁹ A diabetologist is a physician in internal medicine trained in diabetes; a podiatrist is a trained health professional who treats and takes care of people's feet; a urologist is a surgeon who specialises in surgery of the urinary tract; and an ophthalmologist is a doctor who sees and treats people with eye problems or diseases.

Figure 2
Information flows among the key stakeholders involved in diabetes care



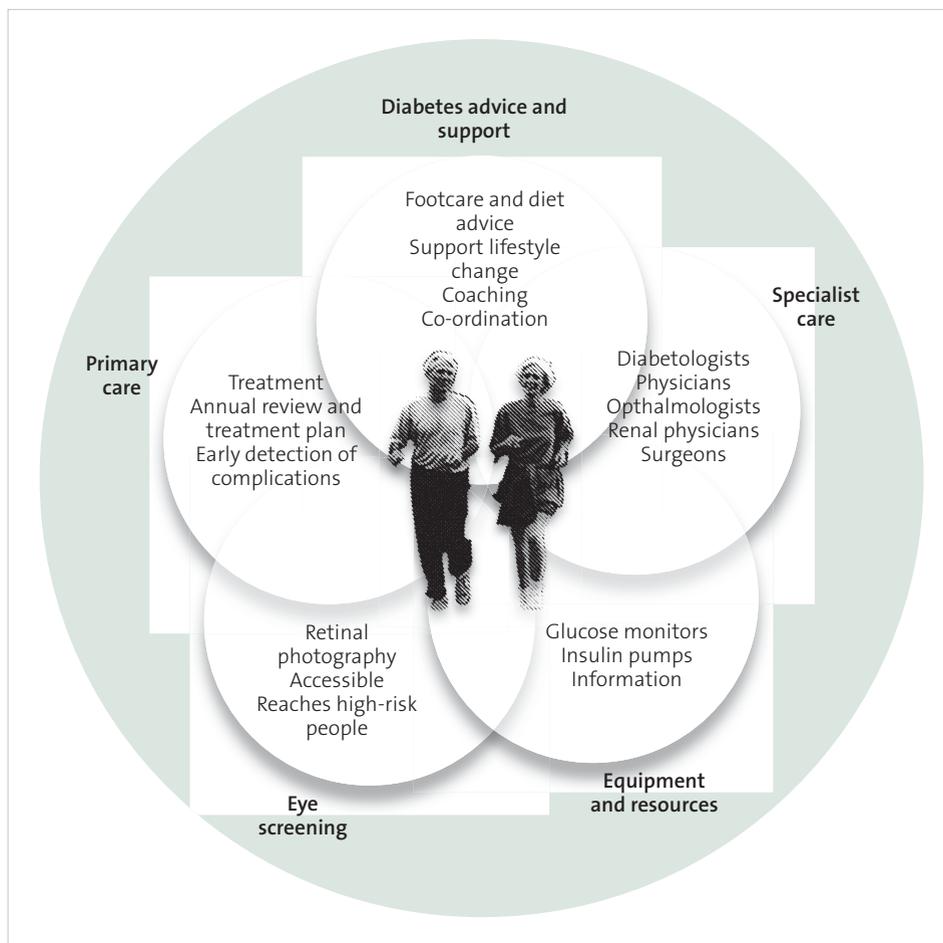
Source: Adapted from the New Zealand Health Strategy's *DHB Toolkit: Diabetes* (2003).

The “Get Checked” programme in relation to other chronic care programmes

2.39 Diabetes is a chronic condition.²⁰ The National Health Committee has recently released a report which “sets out the need for a comprehensive approach to

²⁰ A chronic condition is any ongoing, long-term or recurring condition that can have a significant effect on people's lives. Disabilities are not included in this definition, although many people with a disability have one or more chronic conditions and they are sometimes causally linked.

Figure 3
Relationship between providers



Source: Adapted from *Diabetes 2000*.

addressing the needs of people with chronic conditions in New Zealand”.²¹

- 2.40 During our audit, we noted that three other programmes were being used with the free annual check to assist people who needed to visit their GP or diabetes nurse more often because their diabetes was more complex. Two of these – Services to Improve Access and Care Plus – are national initiatives, and one – Chronic Care Management – is a local initiative. They all aim to increase access to health services to reduce inequalities and address chronic conditions.
- 2.41 Funding from Services to Improve Access enables PHOs and community groups to use innovative approaches to reaching people with high health needs. The

21 National Health Committee (2007), *Meeting the needs of people with chronic conditions – Hāpai te whānau mo ake ake tonu*, Wellington, page 1.

initiatives include providing outreach services from a bus, arranging transport for appointments, and providing services in community venues such as marae, schools, or workplaces.

- 2.42 The Care Plus programme is a Ministry of Health initiative set up on 1 July 2004 and offered through PHOs. It is intended to provide co-ordination of care for people with chronic conditions and more complex needs. It is offered to people who have been assessed by their GP or practice nurse as requiring at least two hours of care from the primary care team over the next six months and who have at least two chronic health conditions (which most people with complex diabetes problems have). Care Plus provides the patient with an initial comprehensive assessment and an individual care plan that sets goals related to health and quality of life, with regular follow-ups. Care Plus assists patients to better understand their conditions, and supports them in making lifestyle changes. The services are provided at a low or reduced cost.
- 2.43 The third programme, the Chronic Care Management programme, is a significant initiative within the chronic care model that Counties Manukau DHB uses as the framework for a number of chronic conditions, including diabetes. Initiatives within the chronic care model are determined by regional strategic priorities and plans as well as objectives from the national health and disability strategies. Individual disease projects are aligned to the model.
- 2.44 The Chronic Care Management programme is available to patients who are registered with a PHO in the Counties Manukau DHB. It is positioned as a step up from Care Plus, and focuses on patients at high risk who require a more intensive level of care and interaction with greater access. It aims to provide greater support to patients to make healthy lifestyle changes. The Chronic Care Management programme provides quarterly free visits for the patient. The free annual check has been integrated into this programme, in that the first visit for the year is classified as the free annual check.

Part 3

Is the “Get Checked” programme operating as intended?

- 3.1 In this Part, we report on:
- screening and coverage – whether those people who had been diagnosed with diabetes were being systematically screened (that is, whether they were being offered and encouraged to participate in the programme);
 - treatment plans – whether an updated treatment plan was being discussed and agreed annually with each person participating in the programme; and
 - treatment and referrals – whether participants were prescribed treatment and referred for specialist or other care if appropriate.

Screening and coverage

- 3.2 One of the main objectives of the programme is that people diagnosed with diabetes will be systematically screened for the risk factors and complications of diabetes to promote early detection and intervention. We expected that:
- general practices would be providing the programme and actively inviting all people diagnosed with diabetes to join the programme; and
 - the numbers participating in the programme would be monitored.

Are all general practices offering the “Get Checked” programme?

- 3.3 In the PHOs that we visited, most general practices offered a free annual check to patients diagnosed with diabetes. Most general practices were also taking measures to ensure that people diagnosed with diabetes had been invited to join the programme.
- 3.4 PHOs and programme administrators were using a variety of methods to advertise the programme – for example, leaflets, flyers, and stalls at community events and sporting venues. In some areas, PHOs used local churches to raise awareness of diabetes and the programme. One PHO, AuckPAC Trust Health Board, was also using community radio.
- 3.5 In addition, GPs and diabetes nurses were inviting patients newly diagnosed with diabetes to join the programme, sending annual reminders to patients who had previously attended the programme, and following up non-responding patients by telephone. Some general practices provided after hours clinics for people who worked and a home-visiting service for those who preferred it.
- 3.6 Wairoa District Charitable Health Trust is an example of a PHO that increased participation in the programme from 4% to almost 95% of those people diagnosed with diabetes over a 12-month period (see Figure 4). The Trust achieved this by ensuring that there was funding for delivering the programme and working closely with its GPs.

Figure 4**Wairoa District Charitable Health Trust**

Wairoa District Charitable Health Trust was set up on 1 January 2003 and has an estimated enrolled population of 8335.

During the 2004/05 year, there was confusion over whether funding was available for the Trust to deliver the free annual check. Only 15 checks were carried out during the year ended 31 December 2005.

The question of funding was resolved for the year ended 31 December 2006 when the Hawke’s Bay DHB awarded the Trust a contract to deliver the programme. The Trust worked closely with its GPs to increase the number of checks done. The Trust has the advantage of there being only four general practices in Wairoa. All used common patient management software, which allowed the Trust to:

- identify patients diagnosed with diabetes;
- monitor who has had the free annual check; and
- notify the general practices of patients who still need to be checked, so the practices, in turn, can notify the patients.

This meant that, over a 12-month period, the Trust was able to increase its coverage from 4% to almost 95% of people diagnosed with diabetes.

- 3.7 Some of the other PHOs that we visited were also taking measures to increase participation in the programme. In some cases, PHOs provided resources – for example, community clinics – to increase participation in the programme. In other cases, it involved PHOs providing community co-ordinators or case managers to assist people who had proved “difficult to reach” to attend the free annual check. For example, Total Healthcare Otara had appointed two case managers with the aim of increasing attendance rates (see Figure 5).

Is the programme being offered within the intended funding?

- 3.8 The programme provides for a payment of \$40 to GPs for each check. Some PHOs and programme administrators considered that this payment was insufficient and acted as a barrier for GPs to encourage their patients to participate in the programme.
- 3.9 We found that some general practices, especially in parts of Auckland and Counties Manukau, were not actively encouraging participation in the programme. We were told the main reason for their reluctance was that they believed the fee paid for carrying out the free annual check did not cover the costs of the check or the costs of completing the documentation that accompanied the check. In addition, problems with information technology (IT) systems sometimes resulted in the data not being submitted and the \$40 claim not being received by the general practice, even though the check had been carried out.

Figure 5
Total Healthcare Otara

Total Healthcare Otara was set up on 1 January 2003. At the time of our audit, the PHO had an enrolled population of 75,601, of which:

- 15% were Māori;
- 52.7% were Pacific Island peoples;
- 9.8% were European;
- 12.3% were Indian; and
- 10.2% were of other ethnicity.

The PHO includes both a medical and a community provider – East Tamaki Healthcare, with 33 GPs and 150 staff, and Otara Health Incorporated, with 10 community health workers and three health promotion staff.

This PHO is in the Counties Manukau DHB, and its practices therefore deliver a Chronic Care Management service to increase access. This service provides free quarterly visits to patients with chronic diseases. Diabetes is the second most prevalent chronic disease treated in the PHO. As at December 2006, 3718 people had been diagnosed with diabetes. The free annual check is built into the Chronic Care Management service.

Three years ago, the PHO decided that it would focus on improving Chronic Care Management attendance rates. It aimed to increase the rates to more than 70%. The PHO identified the main problem as getting people with chronic conditions to keep appointments with their GPs. Letters and phone calls were not proving an effective means of doing this.

At the end of July 2004, the PHO appointed two case managers to:

- establish how the PHO was managing diabetes;
- ensure that GPs and diabetes nurses had filled in the patient consultation templates;
- ensure that patients had their blood tests before they saw the GP; and
- remind patients of the benefits of attending for the free quarterly visits, including the free check.

Before the initiative, only 51.5% of patients with diabetes enrolled in Chronic Care Management were up to date with quarterly visits to their GP and 30.6% of patients had not been seen in the previous six months. By August 2005, as a result of the actions taken by the case managers, 78.6% of patients were up to date with quarterly visits to their GP and only 6.5% of patients had not been seen in the previous six months.

This initiative has also improved participation in the programme. The numbers participating in the programme increased from none at the beginning of 2004 to more than 2000 by 31 December 2005 (65.7% of patients diagnosed with diabetes). For the 12 months to December 2006, the number of annual checks increased to more than 2800 (75.5% of patients diagnosed with diabetes).

3.10 The Royal New Zealand College of General Practitioners and some PHOs and programme administrators told us that some GPs:

- saw the review as an information-collecting exercise; and
- believed that, as the free annual check was a health check with no immediately felt benefit, the number of people not attending for pre-arranged appointments was higher than patients with acute complaints needing

treatment for relief. For some general practices, this can have an economic effect as GPs are not paid for appointments that are made but which patients do not keep.

- 3.11 When we discussed with Ministry staff whether the payment was enough, they advised us that they considered \$40 to be enough to meet the cost of the review. We did not audit whether the payment was enough.
- 3.12 However, most DHBs allowed PHOs and programme administrators to increase or “top up” the payment out of their funding, so the amounts paid differed among PHOs and programme administrators. The Counties Manukau DHB had increased the fee paid for carrying out the free annual check for people who were not included in the Chronic Care Management service to \$60 (plus GST).
- 3.13 In addition, the Hawkes Bay PHO and the Auckland PHO Ltd were using increased payments as an incentive to increase the number of free annual checks carried out – that is, the additional payment was conditional on an increase in the number of checks.
- 3.14 The Hawkes Bay PHO had increased the payment to GPs for the annual checks to \$65, provided that:
- the higher payment to GPs was a pilot programme for one year;
 - the GPs reached a target case detection rate of 65%; and
 - the GPs focused on high needs Māori and Pacific Island peoples.
- 3.15 The Auckland PHO Ltd was also beginning a programme in 2007 – “Finding Diabetes” – that would identify the people diagnosed with diabetes in patient management systems and then work out the participation rate for practices. An extra \$1,000 would be paid to practices that have checked 95% of their Māori and Pacific Island peoples and 90% of others.

Are numbers participating in the programme being monitored?

- 3.16 One of the programme’s main performance measures is the coverage of the programme – that is, the percentage of people diagnosed with diabetes who received a free annual check during the year.¹
- 3.17 Some programme administrators that we visited were measuring this percentage for each general practice (a few were doing it at GP level), and were reporting the aggregated figures for each PHO to the DHB and the LDT.
- 3.18 All the DHBs that we visited (with the exception of Tairāwhiti in 2005) had set annual targets (by ethnicity) for the percentage of people diagnosed with diabetes

¹ The percentage of people participating in the programme is calculated by taking the number of people who have received the free annual check for the period 1 January to 31 December and dividing it by the expected number of people diagnosed with diabetes.

in their district who were expected to participate in the programme. The DHBs monitored achievement against the targets, and reported it in their annual reports.

Monitoring is based on predicted rather than actual figures

- 3.19 Because of the importance of measuring the coverage of the programme, we were concerned that only four of the PHOs that we visited were able to identify the number of patients enrolled in their practices who had actually been diagnosed with diabetes. This also meant that the DHBs did not know the number of people diagnosed with diabetes in their districts.
- 3.20 In place of actual figures, the Ministry had developed a model of diabetes² based on census data and diabetes prevalence data from the early and mid-1990s. DHBs were using this model to estimate the number of people diagnosed with diabetes in their populations and at the PHO level.
- 3.21 The staff from the programme administrators, PHOs, and DHBs that we spoke to said that they lacked confidence in the model. For example, one PHO noted that there were more people on its GP rolls than were recorded in census information. While some acknowledged that the model may have some validity across the total population, they believed that it was not accurate for district- and PHO-sized populations. The model itself states that:
- The accuracy and precision of our forecasts are constrained by a number of data deficiencies as well as limitations in the design of the model and its necessary assumptions.*³
- 3.22 One of the assumptions noted for the model is that:
- The 1996 diabetes prevalence data used to initiate the model comes from a limited survey base. In particular, data for Pacific peoples was inadequate. More recent data suggests that 1996 prevalence may have been under-estimated for Pacific peoples, leading to forecasts for this ethnic group being too low.*⁴
- 3.23 We acknowledge that it is difficult to identify people diagnosed with diabetes in GPs’ patient management systems. However, at the time of our audit, it was more than six years since the programme began, and most of the PHOs and programme administrators still did not know the actual number of people in the practices who had been diagnosed with diabetes. We consider that they should have known this information by this time. Without this information, the coverage of the programme cannot be accurately assessed, and PHOs, programme administrators, and GPs cannot be sure that all people diagnosed with diabetes have been offered

2 Ministry of Health (2002), *Modelling Diabetes: A multi-state life table model*, Public Health Intelligence Occasional Bulletin No. 9, Wellington.

3 *Ibid.*, page 20.

4 *Ibid.*, page 21.

the opportunity to participate in the programme. Conversely, they may be falsely assured that coverage is better than it really is.

- 3.24 In addition to there being a lack of confidence in the total number of people diagnosed with diabetes, there were also concerns, supported by the work that we carried out, about the accuracy of some of the data reported on the number of people receiving the free annual check. This is addressed in greater detail in paragraphs 4.9-4.19.

The programme is increasing its coverage

- 3.25 We acknowledge that estimates of the population eligible to participate in the programme may not be accurate. However, figures compiled by the Ministry show that the percentage of the estimated eligible population (those people diagnosed with diabetes) participating in the programme in the six DHBs that we visited had generally been increasing and targets for 2006 that DHBs set were being achieved in all but one DHB (Tairāwhiti), as shown in Figure 6.

Figure 6

The percentage of the estimated eligible population participating in the programme

DHB	31 Dec 2002 %	31 Dec 2003 %	31 Dec 2004 %	31 Dec 2005 %	31 Dec 2006 %	31 Dec 2006 target %
Auckland	24	34	42	50	68	60
Capital & Coast	50	61	60	66	71	70
Counties Manukau	15	56	65	70	81	72
Hawke's Bay*	77	50	41	41	59	58
Otago	72	77	78	72	81	81
Tairāwhiti	21	20	41	52	52	62

* The Hawke's Bay results for 2002/03 are likely to be overstated, reflecting data quality problems being experienced before 2003/04.

Conclusion

- 3.26 For the DHBs that we visited, the percentage of the estimated eligible population participating in the programme had generally increased over time. However, it was not possible to accurately assess the coverage of the programme because only four of the PHOs that we visited were able to identify the number of patients enrolled in their practices who had been diagnosed with diabetes. The true percentage of people diagnosed with diabetes participating in the programme was therefore not known. This makes it more difficult to ensure that people entitled to participate in the programme have been invited to do so.

Recommendation 1

We recommend that district health boards work with programme administrators to identify those patients in patient management systems who have been diagnosed with diabetes.

Recommendation 2

We recommend that district health boards work with programme administrators to identify those people in the population diagnosed with diabetes who are not participating in the programme, ensure that they have been invited to join the “Get Checked” programme, and (if possible) note and address their reasons for declining.

Treatment plans

- 3.27 Improved blood glucose control can significantly reduce the risk of complications. The Evidence-based best practice guideline – *Management of type 2 diabetes* (see paragraph 3.49) noted that a 1% reduction in HbA1c is likely to reduce the risk of developing complications by:
- 37% for retinopathy and nephropathy;
 - 14%-16% for heart attacks and heart failure;
 - 12% for strokes; and
 - 21% for any diabetes-related deaths.
- 3.28 Treatment plans are important for encouraging patients to effectively manage their diabetes and control their blood glucose levels. As *Diabetes 2000* has noted, “people with diabetes are ultimately responsible for managing the lifestyle changes and medication required to avoid or control diabetes”.⁵
- 3.29 The programme aims to achieve lifestyle changes and self-management. As part of the programme, the GP or diabetes nurse should prepare a personalised treatment plan with the patient (and, if appropriate, their family/whānau). This plan should include not only medication but, just as importantly, goals for lifestyle improvements – for example, increasing exercise and eating less and healthier foods.
- 3.30 We were limited in the audit work that we were able to do on the treatment plans, as we were not able to view a sample of treatment plans because of patient privacy. We therefore:
- looked for evidence that treatment plans were being prepared;
 - checked whether the PHOs or programme administrators monitored the

- preparation and quality of the treatment plans; and
- looked for evidence that the treatment plans were effective.

Are treatment plans being prepared?

- 3.31 We were told by the PHOs and programme administrators that we visited that treatment plans (also referred to as care plans or wellness plans) were being prepared and discussed with patients. We were shown templates of treatment plans that PHOs and programme administrators provided to GPs, and we were provided with details of templates in patient management systems. We were also told that the treatment plans were well received by patients.
- 3.32 The treatment plan templates that we looked at had some components in common, such as:
- a medication list (including the purpose of the medicine, the dosage, and the time it was to be taken);
 - personal health goals – for example, exercise, healthy eating, stopping smoking (where relevant), and learning more about diabetes. Some plans included major and minor goals and the dates when they would be achieved;
 - test results; and
 - appointments.
- 3.33 However, we were concerned to note that an interim evaluation of the Chronic Care Management programme carried out by Counties Manukau DHB in April 2005 noted that the average percentage of patients reported as being given wellness plans was 44% and only one of the 10 practices interviewed was using wellness plans. The evaluation report noted that:
- Since the wellness plan includes the development and recording of self management goals with patients this does call into question the extent to which the [CCM] programme has supported patients to improve their self management skills.*⁶
- 3.34 In addition to the treatment plans, the PHOs and programme administrators that we visited were also providing patients with, or giving patients access to, other education resources to help them understand how to manage their diabetes and the importance of a healthy diet and exercise. For example, South Link Health Inc, which provides programme administration services for a number of PHOs, published a booklet for patients entitled *Stay Well with Diabetes*. This booklet explains diabetes, how to measure blood glucose, and the effect of high and low blood glucose levels. It also discusses the advantages of physical activity (including a guideline as to how this should be done) and healthy eating, the annual

⁶ Counties Manukau District Health Board (2005), *Chronic Care Management Programme Interim Programme Evaluation Report*, page 25.

diabetes check, and the main measures that can be taken to prevent or reduce complications.

- 3.35 The booklets published by Diabetes New Zealand (about one million are printed yearly) and the National Heart Foundation were also popular resources.

Is the preparation and quality of treatment plans being monitored?

- 3.36 In the PHOs and programme administrators that we visited, we found only one example where treatment plans were being monitored as part of a wider quality improvement process. This was the Counties Manukau DHB, which was funding the Diabetes Care Support Service (DCSS) Audit in South and West Auckland (see Figure 7). This service was provided free to GPs. Waitemata DHB, which was not in our sample, was also funding this service.

Figure 7

The Diabetes Care Support Audit in South and West Auckland

The Diabetes Care Support Audit is run and managed by the Diabetes Project Trust, and 156 GPs participate in the programme, with over 10,000 records viewed in 2006.

The voluntary audit is free to practices, and involves trained nurses identifying all patients with diabetes, reviewing patient records, and filling out an audit tool. The audited practice receives:

- a patient register listing all patients with diabetes, pre-diabetes, or gestational diabetes;
- summary information about patients with diabetes in the practice;
- an individual report for each patient, with up-to-date “prompts”;
- personal feedback from the audit nurse (in some circumstances);
- special interest confidential reports; and
- Maintenance of Professional Standard credits for participating GPs.

The audit is designed as a quality improvement process. Its primary purpose is to help GPs to identify improvement opportunities in their practice, encourage GP behaviour change, and promote contemporary research-based practice, through feedback and clinical support from a specialised executive committee. It also gathers non-identifiable patient information for research and service development.

Is there evidence that treatment plans are improving self-management?

- 3.37 Indicators of improved self-management through lifestyle changes include reducing BMIs, decreasing numbers of people smoking, and improving HbA1c levels. We looked at these indicators in the DHB districts that we visited.
- 3.38 Two cohort studies have been conducted in the Otago DHB district to assess changes in diabetes care.

- 3.39 The first study, an evaluation of diabetes care for a six-year period from 1998 to 2003, was carried out using data from the Otago diabetes register.⁷ The regional diabetes register was established in 1998, as part of the Otago Diabetes Project, to monitor diabetes care in the Otago region.
- 3.40 The second study measured changes in the health status of patients returning for three annual general practice checks,⁸ using data from the diabetes register established by South Link Health Inc in August 2000. This register records the data from the annual checks.
- 3.41 We discuss the results of these reviews in more detail in paragraphs 5.26 to 5.33. In summary, these reviews established that there was no overall improvement in glycaemic control. HbA1c levels were, at best, remaining constant, but generally rising. BMIs were also constant at best but generally rising, and there was little evidence that people were giving up smoking. Some programme administrator staff that we spoke to considered that the HbA1c and BMI levels remaining constant and not increasing was a good result in most cases.
- 3.42 We note that one of the DHBs (Counties Manukau DHB) and one of the programme administrators (South Link Health Inc) that we visited were trying to improve HbA1c levels by providing incentive schemes.
- 3.43 Counties Manukau DHB had recently offered a payment to general practices for a trial period as an incentive to reduce HbA1c levels. The incentive covered patients who had been enrolled in the Chronic Care Management programme because of their poor glycaemic control (that is, because they had an HbA1c greater than 9% when enrolled) and who had been in the programme for at least one year. For each general practice, the DHB planned to calculate the average HbA1c for the group of qualifying patients at the time of their enrolment and pay an incentive payment of \$20 for each patient in the group whose HbA1c level decreased by at least 1.5%.
- 3.44 South Link Health Inc introduced an Enhanced Diabetes Programme on 1 April 2005. The programme provided an additional subsidised visit for patients who had an HbA1c greater than 8% for two consecutive free annual visits. The main purpose of this extra visit was to focus on lifestyle and medication changes.

Conclusion

- 3.45 We have some confidence that the general practices covered by the PHOs and programme administrators that we visited were preparing treatment plans.

7 Coppel, Kirsten J, et al. (2006), “Evaluation of diabetes care in the Otago region using a diabetes register, 1998-2003”, *Diabetes Research and Clinical Practice*, Vol. 71, Issue 3, pages 345-352.

8 Tomlin, Andrew, et al. (2007), “Health outcomes for diabetes patients returning for three annual general practice checks”, *The New Zealand Medical Journal*, Vol. 120, No. 1252.

However, we are concerned that the quality and consistency of treatment plans (which are an important part of the diabetes management strategy for promoting and encouraging beneficial lifestyle changes) is not being adequately monitored. We are also concerned that analysis of the data obtained from the programme that has been carried out in some districts has highlighted few positive lifestyle changes.

Recommendation 3

We recommend that district health boards work with primary health organisations to monitor the preparation and audit the quality of treatment plans, and establish the effectiveness of these plans over time.

Treatment and referral

- 3.46 One of the objectives of the programme is that participants are prescribed treatment and referred for specialist or other care if appropriate. We expected that:
- treatment and national referral guidelines would be available for GPs;
 - adequate specialist diabetes services would be available; and
 - the DHB would collect information on the numbers of patients, the type of specialist diabetes service that they were referred to, and when the specialist diabetes service was accessed.

Are guidelines available?

Guidelines for diabetes treatment

- 3.47 We found that comprehensive guidance was available to GPs for the treatment of diabetes.
- 3.48 Guidelines were first developed in 1998 when the Otago Diabetes Team, Comprehensive Health Services Limited, Mangere Health Resources Trust, and the South Auckland Diabetes Project developed best practice guidelines for four core aspects of diabetes management⁹ as part of the Diabetes Health Information Project. These guidelines for the management of core aspects of diabetes care were launched as part of the programme.
- 3.49 The Ministry and the New Zealand Guidelines Group¹⁰ issued an *Evidence-based best practice guideline – Management of type 2 diabetes* in December 2003. The guideline covered important aspects of the management of people with type

9 The guidelines covered primary care for glycaemic control, retinal screening, micro-albuminuria screening (for early detection of kidney problems), and foot screening.

10 A not-for-profit organisation set up to promote effective delivery of health and disability services, based on evidence.

2 diabetes, including lifestyle management, glycaemic control, cardiovascular¹¹ disease, diabetic renal¹² disease, diabetic eye disease, and diabetic foot disease.

3.50 In addition to the *Evidence-based best practice guideline*, the Best Practice Advocacy Centre¹³ has issued:

- *Diabetes POEMs* (Patient Orientated Evidence that Matters);
- *Laboratory Testing in Diabetes*; and
- *Diabetes Clinical Audit*.

3.51 As the *Evidence-based best practice guideline* is 117 pages long, both South Link Health Inc and Counties Manukau DHB have tried to make it more user-friendly for GPs. Aspects of the *Evidence-based best practice guideline* are also being incorporated into patient management systems to assist GPs.

Referral guidelines

3.52 The Ministry has issued national referral guidelines for diabetes, which set out when patients need to be referred to secondary care diabetes services, a dietician, diabetes nurse education services, the ophthalmology service, and the diabetes podiatry service.

3.53 The secondary care diabetes specialists that we spoke to considered that GPs were not referring patients on all occasions recommended by the national referral guidelines. However, they considered that patients were being referred to them in an appropriate and timely manner, and that strict adherence to the guidelines would result in a number of unnecessary referrals. This suggests that the guidelines need to be reviewed to ensure that they still reflect good practice.

Are there enough specialist diabetes services available?

3.54 Most of the specialist diabetes services that we spoke to felt under pressure. We were unable to conduct an analysis of the adequacy of the specialist diabetes services in all the DHBs we visited because the information required was not available. However, we found evidence that specialist diabetes services in the Hawkes Bay and Tairāwhiti DHBs were under pressure.

3.55 In Hawkes Bay, there had been two specialist diabetes physicians but this had been cut to one, who covered diabetes, endocrinology, and general medicine for a population of 150,000. The waiting time for a visit to the specialist diabetes physician had been 24-26 weeks. This pressure had been managed by ensuring

11 Cardiovascular refers to the heart (cardio) and the blood vessels (vascular). The cardiovascular system includes arteries, veins, arterioles, venules, and capillaries. Heart disease and stroke are the most common cardiovascular diseases.

12 The term “renal” refers to kidney, and renal failure means kidney failure.

13 An independent organisation that promotes healthcare interventions which meet patient needs and are evidence-based, cost effective, and suitable for the New Zealand context.

that patients had an interim visit with the specialist diabetes nurse, and the waiting time had reduced to 14-16 weeks.

- 3.56 The specialist diabetes physician also took the opportunity to educate GPs when he referred patients back to primary care, by making recommendations that could be applied to other patients. The specialist diabetes nurse also liaised with GPs, especially if insulin was being used.
- 3.57 In Tairāwhiti, the district did not have a diabetes specialist, and acute admissions were dealt with by the general medical service. The secondary diabetes services in this district were being run by a 0.6 full-time equivalent specialist diabetes nurse. In other districts, this service included a specialist diabetes physician. The nurse noted that she was able to get advice from the Hawkes Bay and Waikato DHBs. There was also a shortage of ophthalmology services, which were provided by the Hawkes Bay DHB. However, we were advised that a permanent ophthalmologist had been employed in March 2007. The laser treatment clinics were behind schedule and were doing only urgent work. The renal service had one physician available for 16 hours every three months, and the service was able to do only peritoneal dialysis.¹⁴ For haemodialysis,¹⁵ patients had to shift to the Waikato DHB.
- 3.58 The secondary care diabetes specialists that we spoke to also commented that, if the national referral guidelines were strictly adhered to, they would not have enough resources at the secondary care level to deal with the increased demand. They believed that they only had enough resources to deal with complex, difficult-to-manage cases.

Are district health boards collecting information on the demand for specialist diabetes services?

- 3.59 The information that was provided to us on the demand for specialist diabetes services and waiting times varied between DHBs. It was not possible to conduct a comprehensive analysis of demand for specialist diabetes services against those available for the DHBs that we visited. The data for this type of analysis was not readily available in the majority of the DHBs.

Conclusion

- 3.60 Treatment guidelines and national referral guidelines were available for GPs.
- 3.61 Our interviews with some specialist diabetes services suggested that referrals to specialist diabetes services were timely, but that the national referral guidelines

¹⁴ Peritoneal dialysis works by using the body's peritoneal membrane, which is inside the abdomen, as a semi-permeable membrane. Special solutions that help remove toxins are infused into the abdomen, remain in there for a time, and then are drained out. This form of dialysis can be performed at home, but must be done every day.

¹⁵ Haemodialysis works by circulating blood through special filters outside the body. The blood flows across a semi-permeable membrane (the dialyzer or filter), along with solutions that help remove toxins.

were not always being followed. If they were followed, specialist diabetes services believe they might not be able to cope with the extra demand.

- 3.62 The information that specialist diabetes services were able to give us on their resources, the demand for their services, and waiting times was not adequate to comprehensively analyse whether shortfalls existed in all the DHBs. However, we did find evidence that specialist diabetes services in Hawkes Bay DHB and Tairāwhiti DHB were under pressure. Specialist diabetes services will come under more pressure if the numbers of people participating in the programme increase or more people are diagnosed with diabetes.

Recommendation 4

We recommend that the Ministry of Health review and, if necessary, update the national referral guidelines.

Recommendation 5

We recommend that district health board specialist diabetes services maintain enough data on the numbers of patients attending their clinics, the complexity of patients’ conditions, and waiting times to enable the district health board to identify and plan for the funding and resources needed to provide adequate diabetes services at this level.

Recommendation 6

We recommend that those district health boards where there are shortfalls in specialist diabetes services investigate the shortfalls and provide additional services as considered necessary.

Part 4

Is the information from “Get Checked” being used to improve diabetes services?

4.1 In this Part, we report on whether:

- the information being collected from the programme was being entered into the diabetes registers;
- the information in the registers was being used to promote improvements in diabetes services and carry out clinical audit; and
- LDTs and DHBs were using the information in their diabetes registers to coordinate and plan diabetes care services in their districts.

Is the information from the programme being collected and entered into the diabetes registers?

4.2 An important goal in the 1997 Diabetes Strategy was to:

Establish information systems to collect data to enable identification of people with diabetes and to monitor the care provided.¹

4.3 *Diabetes 2000* introduced a requirement for diabetes registers to be maintained that include an agreed national minimum dataset of information, which is updated following an annual review. *Diabetes 2000* also considered that it was most logical for primary care organisations (now PHOs) to set up and update the main registers for diabetes and the health status of people with diabetes.

4.4 As noted in this report, the DHBs have funding arrangements with a number of different organisations to administer the diabetes programme. We refer to these organisations as programme administrators.

4.5 One of the roles of a programme administrator is to enter the information collected from the programme into the diabetes register. We expected that the information collected from the annual check:

- would be enough to monitor patient health status; and
- would be correctly entered in the diabetes register.

Is enough information collected?

4.6 The annual check service specification (see paragraph 2.24) requires:

- the programme administrator to record the data specified in the minimum dataset in its diabetes register; and
- aggregated data to be collected and reported to LDTs.

4.7 We set out in Appendix 2 the contents of the minimum dataset and the aggregated data that must be sent to the LDTs through the programme.

- 4.8 During our discussions with the DHBs, PHOs, and programme administrators that we visited, staff agreed that the minimum dataset was the right information to monitor patient health status and identify risks and complications. However, some of the people we interviewed expressed concern about using the aggregated data to assess the effectiveness of the programme at both a district and national level. This is discussed further in paragraphs 5.19 to 5.35.

Is the information correctly entered in the diabetes register?

- 4.9 Generally the GP or diabetes nurse enters the data in the patient management system (although some general practices still submit manual forms for entry by programme administrators), and then the information is sent electronically to the programme administrator. The programme administrator records the information in the diabetes register and arranges for the DHB or HealthPAC² to be invoiced for the cost of the check. Invoices are sent in batches and are usually sent monthly.
- 4.10 We were not able to audit general practices’ data entry (because of our mandate, the number of GPs and practice nurses, and patient privacy issues), but we did ask programme administrators about the systems that they had in place, to ensure that the data entered in their register was accurate. We found that some programme administrators had encountered problems in setting up and maintaining accurate registers and that, while some of the problems had been resolved, others continued.
- 4.11 Software for a diabetes register or database was not supplied when the programme was introduced. Programme administrators needed to develop or purchase software themselves. This had resulted in a variety of systems being set up with varying degrees of success.
- 4.12 South Link Health Inc and the Wellington Regional Diabetes Trust had well-established data collection systems.
- 4.13 On the other hand, smaller programme administrators have had difficulty establishing data collection systems because they have not had the required IT expertise. For example, a group of smaller programme administrators in the Auckland DHB obtained funding from the Auckland LDT to fund a “Get Checked” project manager for 2005 to assist the programme administrators with their IT systems. The programme administrators’ problems included:
- a lack of IT skills, which meant that the administrators were not able to fix problems when they occurred – for example, when information thought to have been sent to their server had not been received because general practices had not corrected data entry errors or had not filled templates in correctly;

2 The Health Payments, Agreements and Compliance Unit in the Ministry of Health, which supplies services to health funders.

- GPs using different patient management systems, making it difficult to get consistent results;
- data not being able to be sent to the Health Link server because of errors;
- the Health Link server not being able to communicate electronically with HealthPAC; and
- payment for the completed annual checks taking up to three months, and general practices having difficulty reconciling the checks that they had done to the payments.

4.14 The Hawke’s Bay DHB had only recently set up an electronic system that PHOs had confidence in. The DHB originally contracted out the management of the diabetes register. However, an audit of the register by the DHB identified problems with the records kept. At the beginning of 2003, the DHB entered into an interim 15-month funding arrangement with three independent practitioner associations to collect the data from their GPs. Problems continued, and the DHB assumed responsibility for collecting the data from March 2004, when PHOs were set up. The data was collected manually until an electronic database was finalised in February 2005. IT problems were still being experienced by some PHOs in the Hawke’s Bay at the time of our audit. One of the three PHOs that we visited advised us that the number of free checks reported as having been completed by their GPs was more than that reported by the DHB in the diabetes register. To resolve this issue, the DHB and the PHO had jointly appointed an IT liaison person to identify the problem.

4.15 Another PHO that we visited, that had its nine practices on the same patient management system, was still having difficulty identifying the numbers of patients that had attended for a free annual check. We were told that these difficulties resulted from reconciling its data with other Chronic Care Management data.

4.16 As payment invoices are generated on the basis of the data received from GPs, we were looking for assurance that the programme administrators were checking that the data received from GPs was accurate. We established that:

- Capital & Coast DHB had commissioned an independent auditor to audit whether its programme administrator (the Wellington Regional Diabetes Trust) was achieving the funding arrangement requirements, including those relating to data quality. The audit noted that occasional checks of data entry were carried out, but the Trust’s staff members were unsure of the DHB’s expectations regarding appropriate audit and quality assurance processes required under the funding arrangement.

- Some data validity checks were being done by a few programme administrators – for example, checking for valid National Health Index numbers, and business rules being applied at the front end of data capture to ensure that only one claim was submitted for each 12-month period. However, we do not consider that these checks are enough to establish that payments were legitimate. We also consider that the data was not being adequately audited.
- 4.17 Some LDTs had problems getting reliable information. For example, the groups performing the LDT function for the Counties Manukau DHB had expressed concerns about the quality of the data they had received in the past and had worked to improve this.
- 4.18 The Auckland LDT had also engaged an IT analyst during 2004 to help the smaller programme administrators to examine and improve their “Get Checked” reporting systems. The Auckland LDT noted in its 2004 annual report that the programme administrators would need ongoing support. The DHB and the past chairperson of the LDT were still not confident that the information being received from programme administrators was reliable when we visited in November 2006.
- 4.19 The Auckland DHB notes in its *2006 Annual Report* that:
- ADHB Diabetes Centre undertakes retinal screening. Their records indicate that there were 8590 visits for retinal photography from 7208 different individuals in the past 24 months. Approximately 90% of these patients are from ADHB (+/- 6500).*
- The Get Checked report on the other hand, noted that 2801 patients had undergone retinal screening within the past 2 years.*
- The vast difference between these numbers reflects the difficulties that primary care clinicians have with entering “Get Checked” data and also the numbers of diabetics undergoing routine care whose names are not submitted through “Get Checked”.³*
- 4.20 The Ministry has recognised that there have been problems with the existing software for collecting diabetes register information: it is difficult to use and maintain, it cannot be readily used to share information, and it cannot link to enrolment and other data in future.
- 4.21 Since March 2006, the Ministry has supported upgrading the software, including developing regional IT hubs. The Ministry considers that the new software will deliver most benefit if programme administrators choose to use a “hosted server” at a regional level.

Conclusion

- 4.22 After some initial difficulties, the information from the programme was being entered in the diabetes register in all the DHBs that we visited. However, we have concerns about whether the data recorded by some programme administrators is complete and accurate, because of IT system and usage problems. A variety of factors contributed to the problems. These included general practices needing to improve IT skills, programme administrators having to receive data from a variety of patient management systems, and programme administrators needing to improve IT skills. The upgraded system and development of regional IT hubs should help to resolve some of these issues.
- 4.23 We are also concerned, especially given the IT problems noted, that there is inadequate auditing of the payments made on the basis of the data entered in the diabetes register.

Recommendation 7

We recommend that district health boards ensure that the information in their diabetes registers is accurate and updated, and work with programme administrators to identify, clarify, and resolve current problems affecting data quality.

Recommendation 8

We recommend that district health boards ensure that enough audit processes are in place to verify that payments are being made for genuine annual checks, and that they work with their programme administrators to achieve this.

Is the information in the diabetes registers being used to promote improvements in diabetes services and carry out clinical audit?

- 4.24 We expected that:
- programme administrators would monitor the results for PHOs and GPs, and report a summary of the results and analysis to PHOs and GPs to allow them to benchmark their results;
 - programme administrators and PHOs would use the benchmarking information to identify educational and training opportunities; and
 - programme administrators and PHOs would carry out clinical audits.

Is monitoring and feedback carried out?

- 4.25 The use of the data in the diabetes registers and reporting back to PHOs and individual GPs varied significantly between the programme administrators that we visited. For example, South Link Health Inc did a detailed annual report which analysed data by GP, practice, the PHO, the DHB, and South Link Health Inc (which covers five DHBs). The feedback provided by South Link Health Inc included:
- tables that showed numbers and percentages of patients’ results broken down by demographic factors, treatments, process measures, and outcomes for each year from 2000;
 - a graph that showed the percentage of non-smokers, past smokers, and smokers by GP, practice, the PHO, the DHB, and South Link Health Inc;
 - cohort analysis that followed the same groups of patients for the past four years (which again was done at the practitioner, general practice, PHO, DHB, and South Link Health Inc levels);
 - tables that compared improvements in glycaemic control over time for patients with an HbA1c greater than 8% and 9%, by GP, practice, PHO, and DHB; and
 - a printout for each GP that gave details of each patient that the GP had enrolled in the programme, and which highlighted where the GP might target efforts to improve patient health.
- 4.26 The Wellington Regional Diabetes Trust produced six-monthly provider reports that gave details of the number of annual checks done and the results of the checks. The reports also highlighted where GPs should consider prescribing medication to reduce the risk of kidney and cardiovascular complications.
- 4.27 Counties Manukau DHB also sent monthly reports to PHOs covering the results of those people diagnosed with diabetes who had been included in the programme through its Chronic Care Management programme. The reports gave the average results for each item in the minimum dataset by ethnicity (Māori, Pacific Island peoples, and all). It showed the first visit, the latest data, and the results at one year. The DHB also sent a report to all PHOs showing comparative results for the programme for PHOs in the DHB against the minimum dataset. Counties Manukau DHB also generated monthly reports for PHOs on patients who were overdue for an annual check and those who had not attended for their annual check.
- 4.28 General practices in the Hawke’s Bay had not had feedback until about June 2006 because of problems with the IT systems (see paragraph 4.14). Under the new arrangement, in which the Hawke’s Bay DHB administered the diabetes register and programme data, the Hawkes Bay PHO advised us that it had limited access

to the monthly data recorded in the diabetes register and needed access to the actual performance and outcomes, not just the numbers of checks being done. The PHO noted that software problems and reliable access to good data were the biggest problems.

- 4.29 In the past, Auckland PHO Limited had used another programme administrator to manage its diabetes register, and had not been able to access the results at a GP level. The PHO had taken over managing the diabetes register itself this year using the new Ministry IT system, and was looking forward to being able to analyse the data and feed results back to individual GPs.

Do primary health organisations and programme administrators use the information to identify educational and training opportunities?

- 4.30 Some programme administrators and PHOs that we visited also provided feedback to GPs through continuing medical education sessions. For example, Total Healthcare Otara fed its results back to GPs and practice nurses in quarterly continuing education sessions. It analysed by general practice the attendance rates, trends in the HbA1c levels, and use of treatment plans. It chose to take this approach in recognition that diabetes management involves both diabetes nurses, practice managers, and GPs. Practice managers in the Counties Manukau DHB were also sent monthly reports with summary data about their patients in the Chronic Care Management Diabetes programme.

Are clinical audits carried out?

- 4.31 None of the programme administrators, PHOs, or DHBs that we visited used the information in diabetes registers to conduct regular clinical audits to provide assurance that general practices are providing diabetes care in line with the evidence-based best practice guidelines and national referral guidelines.
- 4.32 One programme administrator, South Link Health Inc, was supporting its GPs to carry out their own clinical audits. GPs hold the information, which was available to the DHBs and PHOs if requested. Some PHOs told us that they were keen to offer a clinical audit to GPs once they had access to better information from the programme.

Conclusion

- 4.33 The programme administrators that we visited were not monitoring data from the programme and feeding results back to PHOs and GPs on a consistent basis. While some programme administrators did it very well, others need to ensure that they do it on a regular basis.

- 4.34 None of the programme administrators, PHOs or DHBs that we visited were doing regular clinical audits using the information in diabetes registers. Although we acknowledge that there are difficulties with the data in some areas, this should not preclude programme administrators, PHOs, and DHBs using the base data that they do have available.

Recommendation 9

We recommend that district health boards work with programme administrators to ensure that the data from the “Get Checked” programme is thoroughly analysed and the results regularly reported back to general practices to improve diabetes care.

Recommendation 10

We recommend that district health boards work with primary health organisations and programme administrators to ensure that adequate clinical audit is carried out to provide assurance that general practices are providing diabetes care in line with the evidence-based best practice guidelines and national referral guidelines.

Are local diabetes teams and district health boards using the information in the diabetes registers to co-ordinate and plan diabetes services in their districts?

- 4.35 The first LDTs were set up in mid-2000 as part of the implementation plan in *Diabetes 2000*. At that time, an LDT service specification was included as part of their funding arrangement with LDTs (see paragraph 2.32). In summary, the terms of reference for LDTs are to identify the health needs of people with diabetes, their family/whānau, and their communities; to monitor the use of resources related to diabetes; and to recommend any improvements deemed necessary.
- 4.36 LDTs were set up and operating differently in the DHBs that we visited. Over time, some had changed how they operated. The LDT representatives that we spoke were dedicated in their commitment to improving diabetes services.
- 4.37 In 2003, the Counties Manukau DHB established a Diabetes/Cardiovascular Advisory Group in place of its LDT.⁴ This group provided advice to Counties Manukau DHB and to the broader Counties Manukau health sector on issues to do with designing and implementing health interventions for diabetes and cardiovascular disease. This group was responsible for preparing the annual report

4 For the purposes of our report, we have included this group as an LDT in our discussion on LDTs in paragraphs 4.46 to 4.53, because its functions included those of an LDT.

for the Ministry (as required under the programme), and produced quarterly reports to the DHB Board. It:

- was working with the PHOs to resolve IT issues and improve the timeliness and quality of the data;
- had completed a pricing review and recommended an increase to \$60 for each annual review that had been approved; and
- was to work with the social marketing team to develop strategies to improve the take-up of the programme.

4.38 There was a close relationship between the Hawke’s Bay DHB and its LDT. The role of the Hawke’s Bay LDT was different from that of other regions, in that the DHB collected the data from the free annual check. The Hawke’s Bay DHB prepared the LDT’s annual report, and the LDT was asked to comment on the report.

4.39 The Auckland LDT was in transition at the time of our audit. Diabetes Auckland’s contract as the LDT had finished in July 2006, and the new provider signed the contract at the end of April 2007.

4.40 The Tairāwhiti LDT was not meeting at the time of our audit and the Tairāwhiti DHB was considering the future of the LDT in its district. The DHB considered that there was a great deal of pressure for health professionals to attend committees and groups in its areas, and it was looking at how the various groups could be realigned or combined to take the pressure off the health professionals.

4.41 The Capital & Coast DHB considered that the work that its LDT did and the data from the programme were an important means of informing the DHB’s future direction in diabetes care and management.

4.42 The Otago LDT had been established in 2001, and the contract for administering it had changed hands in 2005. The LDT contracted a project co-ordinator to support it in its role. There was a DHB representative on the LDT, but the LDT operated largely at arms length to the DHB, and formally reported to the DHB through an annual report.

4.43 LDTs and DHBs should be using the information in the diabetes register to co-ordinate and plan services in their districts. We expected that:

- LDT annual reports review the effectiveness of diabetes healthcare services and recommend ways of improving service quality.
- The DHB or a committee of the DHB receive the LDT annual reports and give them due consideration.

Do local diabetes team annual reports review the effectiveness of diabetes services and recommend improvements?

- 4.44 The main output of the LDT is an annual report that covers the preceding calendar year, and which must be provided to the DHB and the Ministry by 14 February each year. The annual report should review the effectiveness of diabetes healthcare services and recommend ways of improving service quality. The LDT service specification requires the report to:
- specifically review the provision and management of diabetes services for all people with diabetes, but especially high-risk groups such as Māori and Pacific Island peoples;
 - estimate the incidence and prevalence of diabetes in the population by ethnicity;
 - include analysis of primary care data and other clinical information reported to the LDT by diabetes service providers;
 - review DHB accountability indicators and targets for the previous year by ethnicity, and recommend accountability indicator targets for the DHB for the coming year;
 - review progress toward the achievement of other targets and goals, both locally and nationally;
 - identify new service initiatives or changes implemented during the year and, if possible, review their effectiveness;
 - highlight services that are working well and identify problems and priorities; and
 - provide recommendations for ongoing service quality improvement.
- 4.45 We obtained copies of the LDT annual reports for five of the six districts that we visited. The Tairāwhiti district’s LDT had not produced an annual report. For the five LDTs that did produce reports, we reviewed the reports to establish whether the above requirements were being met. We focused on the most recent report available at the time of our visit, which was the report to 31 December 2005.
- 4.46 Overall, we found that, although two LDTs had gone a significant way to meeting the service specification requirements, none met the requirements in full. The remaining three LDTs still had some way to go.
- 4.47 We found that all five of the LDTs with annual reports had reported on the incidence and prevalence of diabetes (using information supplied by the Ministry), and had reviewed the DHB accountability indicators and targets for the preceding year by ethnicity. In the Tairāwhiti district, where the LDT had not produced a

report, the DHB had done this analysis for its district as well. However, the depth of analysis of the primary care data varied.

- 4.48 For the requirement that LDTs review the provision and management of diabetes services for all people with diabetes, especially high-risk groups such as Māori and Pacific Island peoples, we found that only two out of the five LDTs considered this issue in their annual reports.
- 4.49 For “other clinical information”, LDTs are required to collect information from specialist diabetes services (both hospital and non-hospital based). Only two LDTs included information on specialist diabetes services in their reports. However, this information was descriptive, and contained very little robust analysis of the supply and demand for specialist diabetes services in their districts. One diabetes specialist from secondary diabetes care services considered that this was a key issue – that, while a reasonable picture was being established of those patients seen in primary care, there was a gap for those patients being seen in secondary care (the patients with the more complex conditions). The diabetes specialist considered that it would be good to have data collected in a similar way in secondary care to complete the diabetes picture. This would also allow comparisons between secondary care units throughout the country.
- 4.50 One LDT report identified the new services introduced during the year, but the review of the effectiveness of these new measures was limited.
- 4.51 Only one LDT report identified “issues” where further resources were required or the quality of services needed to be improved. The report also recommended service improvements to the DHB.
- 4.52 One diabetes specialist from secondary diabetes care services advised us that LDTs did not circulate the programme data to all interested parties, and noted that diabetes specialists in secondary care did not get a chance to comment on the data. He also noted that LDTs needed access to someone with statistical or epidemiological expertise to ensure that programme data were robustly analysed.

Do district health boards give local diabetes team reports due consideration?

- 4.53 The LDT service specification requires that the LDT annual report and any supporting documents be presented to a meeting of the DHB, or appropriate subcommittee, and that any recommendations accepted be included in the DHB’s District Annual Plan.
- 4.54 We found that the relationship between the LDTs and their respective DHBs varied significantly between the DHBs that we audited. The annual reports of the

LDTs received different levels of consideration by the DHBs. Of the five LDTs that produced an annual report:

- one LDT’s recommendations had been incorporated by the DHB into the DHB’s District Annual Plan;
- one LDT had been replaced by a Diabetes/Cardiovascular Advisory Group which reported regularly to the DHB;
- one LDT reported on its annual report as part of quarterly reporting to the Community and Public Health Advisory Committee⁵ of the DHB, and told us that the committee was very interested in the report;
- one LDT had actively sought the DHB’s consideration of its most recent report and had referred the recommendations to the DHB’s management, who recommended to the DHB that they should not be actioned. The LDT was not told this, and subsequently read about it in the DHB’s newsletter after our visit in October 2006; and
- one LDT had not had any response from the DHB and told us that the DHB was preparing a cardiovascular disease/diabetes strategy, but the LDT had not had any input into its development.

- 4.55 One of the main concerns of the LDT chairpersons we interviewed was that the LDTs could only report. No-one had to listen to the LDTs, and they had no power to require action on any concerns that they had. One chairperson thought that there should be another loop where the data from the LDT reports was collected nationally.
- 4.56 The Health Funding Authority set up a National Diabetes Working Group in October 1999, just before LDTs were set up. Its role was to oversee the development of a disease management approach to diabetes in New Zealand, from primary prevention through to tertiary treatment, drawing on the best available evidence. One of the functions of the National Diabetes Working Group was to review the annual reports of LDTs and assist with identifying priority areas and effective initiatives. The National Diabetes Working Group was required to produce an annual report to the Ministry on diabetes in New Zealand, with recommendations for improving disease management approaches to diabetes and diabetes prevention. The National Diabetes Working Group was disbanded during 2003/04.
- 4.57 An Expert Advisory Group for Diabetes and Cardiovascular Disease was set up early in 2006. It is working on a quality improvement plan for diabetes and cardiovascular disease. Any national co-ordination role that this group might have is yet to be determined.

⁵ DHBs are required to establish a Community and Public Health Advisory Committee under the New Zealand Public Health and Disability Act 2000. It is a statutory advisory committee and may comprise both board members and members of the public. The committee provides a key means for community voices to be heard.

- 4.58 In the six DHBs that we visited, we found three examples where LDTs and DHBs working together had improved service provision – Hawke’s Bay, Auckland, and Counties Manukau DHBs.
- 4.59 Since June 2005, the Hawke’s Bay DHB and its LDT have been working to resolve the shortage of podiatry services. A podiatry subcommittee was set up to recommend a solution to the problem. The subcommittee assessed various models (for example, whether to provide a mobile podiatry service or a fixed service) to identify the best option. The selected scheme provided a list of providers for the patient to choose from and the patient was to be funded for up to four visits a year. The scheme was expected to cost \$150,000 for the first year.
- 4.60 The Auckland LDT obtained funding to appoint an IT analyst to work with the smaller Auckland PHOs to examine and improve their “Get Checked” data. The appointment was made during 2005 for a period of 12 months.
- 4.61 In 2002, the Counties Manukau LDT highlighted the low take-up and the long waiting time for the DHB’s retinal screening⁶ service. This resulted in the LDT reviewing the service and community-based retinal screening services being implemented. The LDT also addressed the high number of people that were not attending their scheduled appointment, which increased the efficiency of the DHB’s current service.

Conclusion

- 4.62 LDTs were collecting and reporting the information in the diabetes registers. However, this is only part of the information required to evaluate and plan diabetes services in their districts. None of the LDTs that we spoke to were receiving information on the numbers of patients attending specialist diabetes services or on the services’ capacity to deliver.
- 4.63 In addition, four LDTs were finding it difficult to get DHBs to listen to their recommendations. With the disbanding of the National Diabetes Working Group during the 2003/04 year, there is now no national analysis of, or “voice” for, the recommendations put forward by these teams.

Recommendation 11

We recommend that district health boards work with local diabetes teams to carry out a more robust analysis of supply and demand for diabetes services at both the primary and secondary care levels, so that any shortages in services provided at both the primary and secondary care levels can be identified.

⁶ Eye screening using retinal photography, done every two years for people with diabetes who do not have retinopathy (a disease in the retina of the eye).

Recommendation 12

We recommend that the Ministry of Health and district health boards review the role of the local diabetes teams to establish how these teams are best able to adequately fulfil the role of providing advice on the effectiveness of healthcare services for people with diabetes.

Recommendation 13

We recommend that the Ministry of Health and district health boards consider how to improve the adoption of the local diabetes teams’ recommendations.

Part 5

Is the “Get Checked” programme achieving the expected results?

5.1 In this Part, we report on whether:

- the barriers to Māori and Pacific Island peoples accessing high quality care had decreased; and
- the programme was improving how diabetes was managed.

Have barriers to accessing high quality care decreased?

5.2 Māori and Pacific Island peoples have prevalence rates for diabetes that are nearly three times higher than for Europeans, and their diabetes-related mortality rates in the 40-65 year age range are nearly ten times higher.

5.3 *Diabetes 2000* notes that:

Barriers to accessing high-quality treatment and care are reported by Māori and Pacific Island people. These barriers arise due to the costs of treatment, difficulty accessing services from the community, and the lack of choice in the services provided.¹

5.4 It also notes that Māori and Pacific Island peoples with diabetes are expected to benefit from the free annual review and treatment plans.

5.5 We expected that:

- PHOs would have identified barriers to Māori and Pacific Island peoples accessing high quality care;
- initiatives would have been put in place to remove these barriers; and
- the numbers of Māori and Pacific Island peoples accessing the programme would have increased.

Have barriers for Māori and Pacific Island peoples been identified?

5.6 One of the main problems being experienced by the PHOs that we visited was getting the patients into the clinic to participate in a free annual review. The majority of PHOs had identified the reasons Māori and Pacific Island peoples were not attending. These reasons included:

- difficulty in communication because English was a second language;
- a preference for a Pacific Island or Māori provider;
- lack of transport to clinics or specialist diabetes services (for example, if the podiatrist or ophthalmologist was located in the centre of Auckland);
- the cost – PHOs noted that, although the annual check provided by the programme was free, there were downstream costs (for example, the costs

- of medication, taking time off work to attend appointments, and follow-up appointments); and
- a feeling of denial or hopelessness about their ability to manage their diabetes.

Have initiatives been put in place to remove these barriers?

- 5.7 Many of the PHOs that we visited, especially those with Māori and Pacific Island peoples populations, were trying innovative methods to remove these barriers. These initiatives involved taking the programme to the community. The features they had in common included:
- improving the level of education in the community about diabetes, which was often done in conjunction with community activities (for example, sports events, church groups, hui, and fairs);
 - supporting lifestyle changes for not only the person with diabetes but their whole family/whānau; and
 - making it easier for patients to attend clinics (for example, providing transport, extending the time that the clinic was open, or providing home visits).
- 5.8 During our visits, most PHOs were interested in learning about initiatives carried out by other PHOs. They were also interested in setting up a mechanism for sharing good practice more effectively.
- 5.9 Initiatives were being implemented at both DHB and PHO levels. For example, Counties Manukau DHB was conducting a DHB-wide initiative, as shown in Figure 8.
- 5.10 The Tumai mo te Iwi PHO provides an example of an initiative that involves a PHO and community organisation working together (see Figure 9).
- 5.11 A third example is provided by the Hawke’s Bay DHB, which recently funded a newly established PHO for two initiatives to improve access, as shown in Figure 10.

Figure 8
Counties Manukau District Health Board

Counties Manukau DHB is implementing its own “Let’s Beat Diabetes” programme, which aims to stop people getting diabetes, slow the disease’s progression, and increase the quality of life for people with diabetes. The programme focuses on:

- including the community, institutions, and businesses that make up the social fabric of Counties Manukau;
- supporting health and preventing and managing diabetes at all stages of disease progression; and
- acknowledging that an individual is part of a family/whānau (or household) that has a direct influence on environmental risks, choices, and decisions. Wherever possible, working with families/whānau is central to the programme.

The DHB, in collaboration with the primary care sector, has identified four programme initiatives to:

- provide consistent and persuasive information to “at risk” people to support lifestyle change;
- improve the identification of people who have diabetes at an earlier stage of their disease’s progression;
- improve the level of education given to people newly diagnosed with diabetes to support improved self-management of both their diabetes and their cardiovascular risk; and
- trial a new approach to disease management in which the primary care team works with the whole family/whānau of a person with diabetes, to support better health for the whole family/whānau.

To date, Counties Manukau has commissioned the Whānau Support Evaluation Project, which was carried out from July to October 2006. The aim of this project is to work with Māori with diabetes and their family/whānau to investigate how the family/whānau can support:

- the person with diabetes to lead a healthy lifestyle and manage their diabetes; and
- the family/whānau members without diabetes to lead a healthy lifestyle and avoid developing diabetes.

Also, in December 2005 the implementation of a district-wide Self Management Education (SME) programme was endorsed with a staged implementation process with the initial focus on diabetes during 2006/07. Facilitators, who will deliver the structured SME programme to groups of people with a chronic condition (starting with diabetes), were trained in October 2006.

Figure 9 Tumai mo te Iwi Primary Health Organisation

Tumai mo te Iwi PHO (Tumai) is a not-for-profit charitable trust providing primary health care services to the communities of Porirua, from Tawa to Pukerua Bay. Tumai was set up in April 2003, and, at the time of our audit, about 48,500 people were registered with a Tumai practice. About 15% of those registered were Māori, and 12% were Pacific Island peoples.

The PHO has set up several initiatives to break down barriers to accessing diabetes care. The PHO and Greater Wellington Health Trust provide for:

- two free visits for people newly diagnosed with diabetes to help patients and their family/whānau understand what diabetes is and how they can help themselves, as well as how others can support them to understand and live with the condition;
- an outreach access nurse service in interim practices. This role is varied and includes chronic disease management, which for some patients includes weekly visits that monitor weight, blood glucose levels, blood pressure, and medications, and providing them with help liaising with the hospital, attending outpatient appointments, and co-ordinating care between services. From 1 July 2004 to 30 June 2005, 941 patients were visited for diabetes. In some cases impressive results were achieved.
- free prescriptions for high need Māori, Pacific Island peoples, and low-income households within the Tumai area;
- interpreting services for Tumai patients and general practice staff either on site or by telephone. This means that patients with English as a second language can seek the appropriate assistance for services if there is a language barrier;
- free nurse and GP services at the Tumai health clinic. The clinic provides diabetes education, nutrition advice, and physical activity advice. The clinic focuses on the Tumai population who currently have no GP or are not enrolled with a PHO or who are not accessing health services in a timely manner. The clinic assists patients to enrol with a primary health provider for ongoing care;
- specialist satellite clinics held in the Waitangirua Health Centre. The diabetes nurse educator and an access nurse support these clinics with patient follow-up. Building a rapport between the access nurse and patients attending the outpatient clinic is considered another means of removing barriers to health care and improved outcomes, especially for Pacific Island patients; and
- a free taxi service for people who need it to access health care within Tumai. Ten trips are allowed over a three-month period.

Figure 10 Tu Meke Primary Health Organisation

Tu Meke, a PHO that provides low cost access to primary health care, was set up on 1 October 2005. At the time of our audit, Tu Meke had an enrolled population of 12,000 to 13,000 people, of which 48% were Māori and 15% were Pacific Island peoples. Most of the population were from low socio-economic areas. In addition, during the fruit and grape picking season, the population in the district increased by about 10,000. There were more than 700 patients diagnosed with diabetes in Tu Meke’s enrolled patient list.

The PHO has identified the following barriers to access:

- patients are not aware that the free check is available;
- there are problems contacting people;
- patients have a blood test done but do not always attend follow-up appointments; and
- some patients will not accept or acknowledge that they have diabetes in the first place.

Tu Meke recognises that most of their people diagnosed with diabetes have poorly managed diabetes, which could be improved if patients were able to better self-manage. The DHB has provided funding to the PHO for a project aimed at changing attitudes and behaviours through increased awareness and knowledge of diabetes.

The project has two phases.

The first phase, which started in June 2006, is aimed at identifying 50 patients with an HbA1c greater than 8% and offering them alternative treatments such as being seen by a nurse at home or in an appropriate community setting, or in a support group of other people with similar problems.

The programme will attempt to affect change by:

- increasing awareness among participants and their family/whānau around the issues for people with diabetes;
- working with the participants and their family/whānau (as requested) within their cultural context/environment;
- educating participants and their family/whānau around self-care, nutrition, physical activity, and use of medication;
- motivating patients and their family/whānau to take responsibility for effective self-management of their condition; and
- providing opportunities to enter into physical activity, diet, and nutritional programmes, either individually or in a group setting.

The programme will also attempt to:

- monitor the patient’s current condition to prevent the disease from advancing further; and
- enhance current quality of life (in the eyes of the participant).

The second phase of the programme will focus on 150 people who are at high risk of developing diabetes, with the intention of identifying undiagnosed or recently diagnosed people with diabetes and entering them into appropriate care.

The PHO told us that it was worried it may not have enough resources to deal with people diagnosed as a result of the screening programme. At the time of our audit, two of its general practices had closed their rolls because of the high demand for all health services, not only diabetes.

Are the numbers of Māori and Pacific Island peoples accessing the programme increasing?

- 5.12 The numbers of Māori and Pacific Island peoples participating in the programme have generally increased over the duration of the programme in the districts that we visited.
- 5.13 The coverage rates (the percentage of the estimated eligible population participating in the programme) for Pacific Island peoples were high in 2006, with rates exceeding the DHB targets. The coverage rates for Māori continued to fall short of the annual targets set by the DHBs. Figure 11 sets out the coverage targets and results for the year ended 31 December 2006.

Figure 11

Coverage targets and actual results for the year ended 31 December 2006

DHB	Māori		Pacific Island	
	Target %	Actual %	Target %	Actual %
Auckland	60	31	60	105
Capital & Coast	45	39	80	83
Counties Manukau	63	53	100	125
Hawke's Bay	45	42	65	74
Otago	41	29	66	98
Tairāwhiti	60	46	90	163

Note: The target figures are based on population estimates derived from the Ministry of Health's model of diabetes which has some data deficiencies discussed earlier (see paragraphs 3.20 to 3.22) that affect the accuracy and precision of the forecasts from it. This is one reason the actual figures for Auckland DHB, Counties Manukau DHB, and Tairāwhiti DHB are more than 100% of the target.

- 5.14 We also noted during our audit that the New Zealand Health Survey 2002/03 recorded that the diabetes prevalence rate was 8.7% for Asian females and 8.1% for Asian males. The *Asian Health Chart Book 2006*² recorded the prevalence rates for each Asian ethnic group as:
- 3.4% for Chinese;
 - 9.4% for Indians; and
 - 5.7% for other Asians.
- 5.15 Some of the PHOs that we visited, especially those in the Auckland area, noted this growing incidence of diabetes in these ethnic groups. They noted that these cultures also have barriers – for example, a reluctance to acknowledge to others that they have diabetes – that could affect the management of their diabetes.

² Ministry of Health (2006), *Asian Health Chart Book 2006*, Public Health Intelligence Monitoring Report No. 4, page xvi.

Conclusion

- 5.16 Many of the PHOs that we visited, especially those with larger Māori and Pacific Island peoples populations, had identified barriers to these population groups using the programme, and had put in place initiatives to address these barriers. From the numbers and coverage rates reported by DHBs, it appears that these initiatives have been more successful with Pacific Island peoples. Although the numbers of Māori accessing the programme were increasing, the coverage rates continued to fall short of the target rate set by DHBs.

Recommendation 14

We recommend that district health boards work with primary health organisations to continue to focus on removing the barriers to Māori and Pacific Island peoples accessing the “Get Checked” programme.

Recommendation 15

We recommend that the Ministry of Health and district health boards work with primary health organisations to evaluate existing initiatives for removing barriers to accessing diabetes care, and ensure that there is a mechanism in place to disseminate successful initiatives throughout district health boards and primary health organisations.

Recommendation 16

We recommend that district health boards consider whether initiatives need to be put in place for populations within their districts other than Māori and Pacific Island peoples who also experience barriers to accessing diabetes care.

Is the programme improving how diabetes is managed?

- 5.17 One of the main benefits of the programme is the information that has been collected since the programme began, and the opportunity that this allows for analysis, reporting, and planning to better manage diabetes care.
- 5.18 In paragraphs 5.19 to 5.39, we discuss whether the data collected from the programme is being used to:
- analyse and report how the programme is improving diabetes management to enable continuing improvements; and
 - plan for future diabetes services.

Is the data from the programme being used to measure improvements in diabetes management?

- 5.19 We do not consider that the measures currently being reported by DHBs are enough to establish whether and how diabetes management is improving. We consider that DHBs need to carry out robust analysis of the data collected through the programme to enable continuing improvements to diabetes management.
- 5.20 DHBs are required to report their performance on the programme in their annual reports. One of the indicators is diabetes management. This is an indicator of the quality or effectiveness of care, and measures the proportion of people with poor diabetes management (that is, people with an HbA1c level greater than 8%) among people who have had a free annual check. The results reported show that, as at December 2006, the proportion of people with poor diabetes management has increased in seven out of 21 DHBs since the programme began, decreased in three, and remained largely unchanged in 11.
- 5.21 However, the public can have little confidence that this means diabetes management has improved. We have concerns that the figures are misleading in some respects. Where there is an increase in programme participants, the reduction in the proportion of participants with poor diabetes management may not show that the actual number of participants with poor diabetes management has increased. For example, Auckland DHB reported that the proportion of participants with poor diabetes management reduced from 39% to 32.5% between 2001/02 and 2004/05. However, the number of people participating in the programme in the Auckland DHB increased by 5122 over the same time, and the number of participants with poor diabetes management actually increased by 1627. Nor do the figures show whether diabetes management has improved (that is, whether HbA1c levels have fallen) for people who have been participating in the programme for some time, or whether new people joining the programme simply have lower HbA1c levels.
- 5.22 The programme alone may not improve how effectively diabetes is managed. Rather, this may depend on both the effectiveness of the programme and a co-ordinated package of care: support for patients to self-manage their condition through lifestyle changes, appropriate medication, advice, and specialist care where required. The information gathered from the programme should, however, enable identification of where management of diabetes cases needs to be improved at GP, practice, PHO, and DHB level.
- 5.23 Better indicators are needed to gauge whether the programme is leading to more effective management of diabetes. These should be based on tracking the HbA1c levels of a consistent group of people over a number of annual checks to

determine how and why they change over time. This type of analysis is known as cohort analysis.

- 5.24 Cohort analysis was being used by two of the programme administrators that we audited – Wellington Regional Diabetes Trust and South Link Health Inc. In addition, a research team that was using the programme’s data as part of the New Zealand Diabetes Cohort Study provided the Wellington Regional Diabetes Trust with cohort analysis. This study involved 3838 people who had been for four checks.
- 5.25 The analysis of the cohort data showed similar results, in that increased use of medication had meant better cholesterol and blood pressure levels. However, the HbA1c levels were at best remaining constant, but generally rising.
- 5.26 Two other evaluations had also been carried out in Otago which showed similar results.
- 5.27 The first was an evaluation of diabetes care for a six-year period from 1998 to 2003 using data from the Otago Diabetes Register which pre-dated the programme (see paragraph 3.39).
- 5.28 The study found that process measures (the proportion of patients completing the recommended clinical examinations and tests within time) could be improved and sustained. It also found that blood pressure and lipid levels could be improved and sustained by prescribing medications, which was likely to translate into considerable clinical benefit. However, the evaluation identified that it appeared more difficult to achieve reduced HbA1c levels. The mean HbA1c levels for both type 1 and type 2 diabetes patients increased over the six-year period. The study noted that the most likely explanation for the failure to improve glycaemic control, a pivotal component of diabetes management, was the failure to implement lifestyle changes. This was witnessed by the increase in body weight of both men and women.
- 5.29 The study noted that the following factors had played an important role in the improvement:
- GP and practice nurse education;
 - guideline implementation;
 - the provision of timely information to enable monitoring of patients; and
 - information to enable the timely recall of patients.
- 5.30 The study also noted that:
- A nationwide “Free Annual Get Checked” programme implemented at the end of 2000 in Otago, may have contributed to improved diabetes care in the region,*

but much of the improvement occurred prior to its implementation. However, the nationwide programme may have facilitated further improvements and helped to sustain the improvements.³

- 5.31 The second study (see paragraph 3.40) was an evaluation of the health outcomes for diabetes patients returning for three annual checks. This study was carried out using data from patients enrolled on the South Link Health Inc diabetes register which covered those patients who had completed three diabetes reviews by December 2005 (840 type 1 patients and 9998 type 2 patients).
- 5.32 The study concluded that the introduction of a structured and systematic general practice review process aimed at improving diabetes care and patient outcomes resulted in significant improvements in mean blood pressure, cholesterol levels, and albumin:creatinine ratio.⁴ There was, however, no overall improvement in glycaemic control (HbA1c levels).
- 5.33 The study also noted that there were significant increases in the proportion of patients prescribed antihypertensive and lipid-lowering medication. Statin⁵ use more than doubled from the first to the third diabetes review.
- 5.34 Counties Manukau DHB also carried out an interim programme evaluation of its Chronic Care Management programme in April 2005. The results of the evaluation showed that, for a cohort of 1544 patients enrolled in the programme for a year, their average HbA1c decreased by 0.34. Data for the cohort of 647 patients who had reviews at the end of two years showed an average decrease in the HbA1c of 0.32.
- 5.35 The University of Auckland and the University of Otago are carrying out a further diabetes cohort study. They expect to report the results of this study during 2007. The study aims to establish the relationship between risk factors and medical outcomes for people with diabetes in New Zealand, and develop ways to calculate cardiovascular and microvascular risk for people of different ethnic origins.

Is the data from the programme being use to plan future diabetes services?

- 5.36 We noted in paragraphs 4.50 to 4.53 that the information the LDTs were giving to the DHBs was not enough to establish whether the levels of specialist diabetes services meet the demand for these services.
- 5.37 We consider that the information and analysis of the data from the programme is not enough for DHBs to plan future diabetes services.

³ Coppell, Kirsten J., et al., page 350.

⁴ The urine albumin:creatinine ratio is a measure of kidney function used in diabetic kidney disease.

⁵ Statin or HMGCo-A reductase inhibitors are a class of hypolipidemic agents used as pharmaceutical agents to lower cholesterol levels in people with, or at risk of, cardiovascular disease.

- 5.38 The information the LDTs were giving to DHBs included:
- the number of people who had a free annual check over the past three years;
 - whether these people have had a retinal screen over the last two years;
 - the number of people with HbA1c levels between 7% and 8% and over 8%;
 - the number of smokers;
 - the number of people on ACE inhibitors⁶ and statins; and
 - the number of people whose cholesterol has been reported and whether the level of cholesterol was greater than nine⁷.
- 5.39 Although the HbA1c level is the best single measurement of the management of diabetes, and reducing this level significantly reduces the risk of getting complications, the measure in itself is not a good indicator of the type and volume of the potential complications from poor diabetes management. For example, data on the levels of potential diabetic kidney disease is one of the items being collected through the programme that was not generally being reported back to LDTs and therefore not being reported to DHBs. We consider that it is important DHBs receive analysis of this sort of data to inform their planning for the likely growth in diabetic kidney disease.

Conclusion

- 5.40 No clear conclusions can be drawn from current Ministry indicators on whether and to what extent the programme is improving the effectiveness of diabetes management.
- 5.41 The current indicator measuring the proportion of people with poor diabetes management (as indicated by an HbA1c level greater than 8%) among people who have had a free annual check could be misleading. This is because it is not based on a consistent population of people, and potentially disguises the increased numbers of people with poor diabetes management.
- 5.42 Not enough use is being made of the information available from the programme to inform future planning for diabetes services. Although the HbA1c level is an important indicator of the management of diabetes, further indicators of the types and volumes of likely complications need to be used to inform future planning for diabetes services at both the primary and secondary care levels.

6 ACE inhibitors, or inhibitors of Angiotensin-Converting enzyme, are a group of pharmaceuticals that are primarily used to treat hypertension and congestive heart failure.

7 Nine = ratio of total cholesterol to HDL cholesterol.

Recommendation 17

We recommend that district health boards and the Ministry of Health carry out further analysis (for example, cohort analysis) of the effect that the “Get Checked” programme has had on diabetes care and management, to better understand how the programme and other factors contributing to diabetes care are linked and to identify what further improvements can be made in diabetes care and management.

Recommendation 18

We recommend that district health boards work with local diabetes teams and programme administrators to make more use of the data available from the “Get Checked” programme to plan their diabetes services.

Appendix 1

Diabetes complications

The free annual check for people with diabetes aims to ensure that regular tests are carried out to identify and treat complications at an early stage and to agree individual treatment plans for patients. The types of complications being tested for and the types of treatment are set out below.

Kidneys and heart

In New Zealand, diabetes is the most common cause of kidney failure.

About 40% of people with type 1 diabetes and 5% to 10% of people with type 2 diabetes will develop progressive kidney failure. The prevalence of kidney disease and kidney failure is higher among Māori and Pacific Island peoples than among people of European origin.

Cardiovascular disease is the leading cause of death in people with diabetes. The presence of diabetes increases the risks of coronary artery disease two to three times in men, and four to five times in women, when compared to people without diabetes.

Controlling blood pressure through the use of ACE inhibitors or other medication to reduce the risk of developing both cardiovascular and kidney complications is very important for people with diabetes.

People with diabetes also need to monitor cholesterol, and they may need statins or other medication to reduce the level of cholesterol in the blood.

Eyes

Diabetes is the most common cause of avoidable loss of vision in people of working age in developed countries. International studies suggest that about 70 people in New Zealand become legally blind every year as a result of diabetes. The most significant effects of diabetes on vision are on the retina and the retinal blood vessels, a condition known as diabetic retinopathy. After 10 years with diabetes, about 40% to 50% of people will develop complications with their vision.

The effect of diabetes on the eyes is much more widespread in Māori and Pacific Island peoples.

Diabetic retinopathy can be detected reliably by screening programmes. It generally takes three years before loss of vision. New Zealand's best practice guidelines for diabetes treatment recommend retinal screening every two years.

Laser treatment is often used to treat diabetic retinopathy successfully at an early stage.

Nerves

The longer a person has diabetes, the greater the risk they have of developing damage to the nerves around the body. This is referred to as neuropathy. It can cause loss of sensation in the toes, feet, lower and upper legs, and the hands and arms. This can easily develop into ulcers, which can lead to amputation when poorly treated. About 15% of people with diabetes will have foot ulcers at some time in their life that will need specialised podiatry.

Nerve damage can also occur in other parts of the body and affect the functioning of the bowel and the bladder, digestion, perspiration, and sexual response.

Maintaining good glucose control to reduce the risk of getting nerve damage is important. Incidences of nerve damage are more common in patients with higher than normal blood glucose levels often with an HbA1c over 10%, who are overweight, who have higher levels of blood fat and blood pressure, and who are over the age of 40.

Appendix 2

Minimum diabetes dataset and aggregated dataset to be reported to LDTs

The items required to be recorded in the diabetes register are:

- NHI (national health index number);
- sex;
- date of birth;
- ethnic origin;
- date of annual review;
- type of diabetes;
- year of diagnosis;
- whether or not the patient is a smoker;
- height;
- weight;
- date of last retinal examination or ophthalmologist review;
- systolic blood pressure;
- diastolic blood pressure;
- HbA1c;
- urine albumin:creatinine ratio (micro-albuminuria) (if clinically indicated);
- dip-stick test for micro-albuminuria (if clinically indicated);
- total cholesterol;
- HDL-cholesterol;
- triglyceride;
- diabetes therapy (insulin, oral medication for glycaemic control, diet only);
- other relevant therapies (ACE inhibitor, anti-hypertensive medication other than ACE inhibitor, and HMGCo-A reductase inhibitor or statin); and
- other medication specifically for controlling hyperlipidaemia (not HMGCo-A reductase inhibitor).

The aggregated data to be reported to LDTs is:

- number of people with type 1 diabetes;
- number of people with type 2 diabetes;
- number of people with retinal screening or ophthalmologist examination in the last two years;
- number of people with HbA1c greater than 7%;
- number of people with HbA1c greater than 8%;
- number of current smokers;

- number of people on ACE inhibitor;
- number of people with total cholesterol reported;
- number of people with total cholesterol greater than nine; and
- number of people on statins.

Publications by the Auditor-General

Other publications issued by the Auditor-General recently have been:

- New Zealand Customs Service: Collecting customs revenue
- Guidance for members of local authorities about the law on conflicts of interest
- Managing conflicts of interest: Guidance for public entities
- Te Puni Kōkiri: Administration of grant programmes
- New Zealand Qualifications Authority: Monitoring the quality of polytechnic education
- Annual Plan 2007/08 – B.28AP(07)
- Waste management planning by territorial authorities
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