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diabetes australian facts 2002

Australian Institute of Health and Welfare

Health professionals

General practitioners (GPs) have a natural role in managing and monitoring diabetes and in coordinating the services that are needed because the condition and its complications affect several parts of the body. Patients and their carers also need education and support. Thus, a range of health professionals may be involved.

Visits to GPs

In 2000–01 GPs managed diabetes problems (excluding gestational diabetes) at a rate of 2.8 per 100 encounters, representing 1.9% of all problems. This equates to almost 2.9 million consultations for diabetes each year and makes diabetes the seventh most common problem managed in general practice.

GPs managed almost 32% of diabetes problems with clinical treatment and treated 55% of problems without medications. This included mainly providing advice on nutrition or weight, glucose tests done in the GP's rooms, and advice on treatment. Diabetes problems were referred relatively frequently to other

health professionals. About 2% of diabetes problems were referred to medical specialists (mainly ophthalmologists and endocrinologists) and 3% to allied health professionals (dietitians, diabetes education, diabetes clinics, podiatrists). GPs requested pathology tests in 26% of diabetes encounters, at a rate of 227 pathology orders per 100 diabetes problems with pathology. This means that when a diabetes problem required pathology tests, 2.3 tests were ordered on average.

Other health professionals

Diabetes complications may affect a number of the body's organs, necessitating treatment by specialists in areas such as endocrinology, cardiology, nephrology, obstetrics and ophthalmology.

Information from the 1995 National Health Survey indicates that people with diabetes were 2.8 times more likely than people without diabetes to have visited a specialist in the 2 weeks before the survey; 10.8% of people with diabetes visited a specialist, compared with 3.9% of those without diabetes.

Box 5.1: National Integrated Diabetes Program

In 2001 the Federal Government introduced the National Integrated Diabetes Program, which provides funding to ensure a national approach to improving the prevention, earlier detection and management of people with diabetes. The program includes:

- *incentives for GPs to develop systems of care to help detect diabetes earlier and manage it better, including monitoring blood pressure, HbA_{1c}, blood lipids, eyes, feet, overweight and microalbuminuria;*
- *infrastructure and support for Divisions of General Practice to work with GPs and other health professionals to remove barriers to better care of people with diabetes, such as inadequate access to community services and multidisciplinary care;*
- *information, education resources and tools for people at risk of or with diabetes, and their families, to learn self-care skills and enable them to better manage the condition; and*
- *support for changes in the practices of health professionals that improve the health outcomes of their patients with diabetes.*

Information is also available on referrals made by general practitioners to specialists and other health care professionals (Table 5.1). People with Type 1 diabetes were most frequently referred to endocrinologists, while those with Type 2 diabetes were referred most frequently to ophthalmologists.

Table 5.1: GP referrals for Type 1 and Type 2 diabetes, 1998–99

Referrals	Type 1 diabetes Rate ^(a)	Type 2 diabetes Rate ^(a)
Endocrinologist	3.8	0.8
Hospital admission	1.4	0.5
Ophthalmologist	1.2	1.9
Paediatrician	0.5	–
Diabetes clinic	0.4	0.8
Dietitian/nutrition	n.a.	1.2
Diabetes education	n.a.	0.9
Physician	n.a.	0.4
Podiatrist/chiropract	n.a.	0.4
Specialist	n.a.	0.2
Optometrist	n.a.	0.1

(a) Rate per 100 diabetes problems.

Source: AIHW: Senes and Britt 2001.

In addition to the care provided by medical specialists, people with diabetes may also seek the advice of diabetes educators, nutritionists and podiatrists. The services of physiotherapists, chiropractors, opticians, naturopaths, osteopaths, acupuncturists, herbalists, psychologists and chemists may also be used.

Results from the 1995 National Health Survey indicate that people with diabetes were more likely than people without diabetes to have sought advice from other health professionals (16.7% reported such a consultation, compared with 9.8% of people without diabetes).

Main data sources

1998–2000 Bettering the Evaluation and Care of Health Study (BEACH) (University of Sydney & Australian Institute of Health and Welfare).

1995 National Health Survey (Australian Bureau of Statistics).

References and further reading

AIHW (Australian Institute of Health and Welfare): Senes S & Britt H 2001. A general practice view of cardiovascular disease and diabetes in Australia. Cardiovascular Disease Series No. 18. AIHW Cat. No. CVD 17. Canberra: AIHW.

AIHW: Britt H, Miller G, Knox S et al. 2001. General practice activity in Australia 2000–01. General Practice Series No. 8. AIHW Cat. No. GEP 8. Canberra: AIHW.



Services for people with diabetes

Organisations in Australia that provide services and support to people with diabetes and coordinate diabetes management include consumer, professional, research and education organisations. A number of agencies or programs central to the provision of services for diabetes management are described below. In addition to these organisations there are numerous others that are crucial to the provision of support and care for people with diabetes in Australia.

Diabetes Australia

Diabetes Australia is a not-for-profit organisation offering a range of advocacy and support services to people with diabetes and their carers. A federation of eight State and Territory member organisations, the diabetes professional organisations and two foundations, Diabetes Australia has a significant involvement in research and in the development of national policies on diabetes care.

The National Diabetes Services Scheme (NDSS) provides important support for many people with diabetes. The NDSS is a Commonwealth government program that provides products for the self-management of diabetes, such as blood and urine testing strips, syringes and needles for special injection systems, at subsidised prices. Diabetes Australia has administered the NDSS for the Commonwealth since it was introduced in 1987. As at 7 March 2002, 526,631 people with diabetes were registered for NDSS benefits; 169,585 (32%) of these required insulin. The NDSS distributed more than 2.2 million packets of test strips and almost 430,000 boxes of syringes and pen needles during 2000–01.

From 2002, the NDSS will also provide a range of information and education services to people with diabetes. A variety of electronic and interpersonal communication strategies will be used to deliver programs to communities and individuals throughout Australia.

Diabetes centres and educators

Diabetes centres, often referred to as diabetes ambulatory care centres, provide services such as diabetes education, nutrition advice and complications assessment to adults and children. As well as clinical management of the disease, centres generally aim to improve personal management of diabetes to minimise the effect of diabetes on daily living. Most patients attending diabetes centres are referred by general practitioners (GPs) to receive specialist assessment and treatment, generally these are people whose diabetes is less likely to be managed well.

The staff in most diabetes centres include an endocrinologist, diabetes nurse educators, dietitians and podiatrists. Many centres also provide training in diabetes care to other health professionals, and may conduct research into medical or social aspects of diabetes.

In 2001, 71 diabetes centres were members of the National Association of Diabetes Centres (NADC), with an estimated total of 80 centres throughout Australia. The NADC promotes effective health care practice for people with diabetes. Over the past few years a number of the centres in the collective have participated in data collection, enabling assessment and review of diabetes management. Some of these data have been reported in other sections of this report.

National Divisions Diabetes Program

The National Divisions Diabetes Program (NDDP) is a coordinated national approach to diabetes care in Australian general practice. This program was set up to help national diabetes organisations and Divisions of General Practice share information on policy, best practice, quality assurance and other matters relating to diabetes. The NDDP represents the Divisions of General Practice and GPs on national diabetes

programs, and aims to improve awareness of the importance of the divisions and general practice in maintaining quality health care for people with diabetes.

As part of the NDDP Data Collation Project, 63 of 123 Divisions of General Practice reported having a diabetes program in 1999–00. At least 27% of GPs nationally participated in some aspect of a diabetes program (the 2000–01 annual survey of divisions reported that 84% of divisions had a diabetes program or activity).

These programs reported features such as register/recall systems (48%), GP education (56%), patient education (32%) and shared care (32%). Divisions also reported on services in their area, program highlights and barriers, advice to other divisions and future plans.

Juvenile Diabetes Research Foundation Australia

The Juvenile Diabetes Research Foundation (JDRF) is the world's largest international non-profit, non-government contributor to diabetes research. Its mission is to find a cure for diabetes and its complications through the support of medical research. The JDRF also provides support for those families affected by diabetes.

The JDRF was founded in 1970 by the parents of children with juvenile diabetes. Volunteers help define research priorities, select research grant recipients, lead advocacy efforts and provide guidance to overall operations. In 2002, over \$10 million of funding helps support Australian projects on:

- restoration of normal blood glucose levels
- reversal of diabetes-related complications
- prevention of diabetes and its recurrence.

References and further reading

Centre for General Practice Integration Studies 2002. National Divisions Diabetes Program. Viewed 17 April 2002, <<http://www.commed.unsw.edu.au/cgpis/>>.

Diabetes Australia 2002. Diabetes Australia National. Viewed 20 May 2002, <http://www.diabetesaustralia.com.au/da_national.htm>.

Effective Healthcare Australia & Australian Centre for Diabetes Strategies 2000. A plan for the dissemination and implementation of national evidence based guidelines for the prevention and management of Type 2 diabetes. Viewed 8 March 2002, <<http://www.diabetesaustralia.com.au/submission-documents.htm>>.

Juvenile Diabetes Research Foundation (JDRF) 2002. About JDRF. Viewed 1 May 2002, <http://www.jdrf.org.au/about_jdrf/aboutjdrf.html>.

Hospitalisations

In 1999–00, diabetes as a principal or additional diagnosis occurred in 336,976 hospitalisations, that is 5.7% of all hospital separations. Diabetes as a principal diagnosis accounted for 24,417 hospitalisations, or 0.4% of all hospital separations. However, it is important to note that often it is the condition responsible for the hospitalisation, not diabetes, that is recorded as the principal diagnosis, even when it is a complication of diabetes. Diabetes is more frequently recorded as an additional diagnosis, particularly when it is associated with coronary heart disease, stroke or kidney disease. The most frequent primary diagnosis with diabetes as an additional diagnosis was unstable angina with 11,773 hospitalisations.

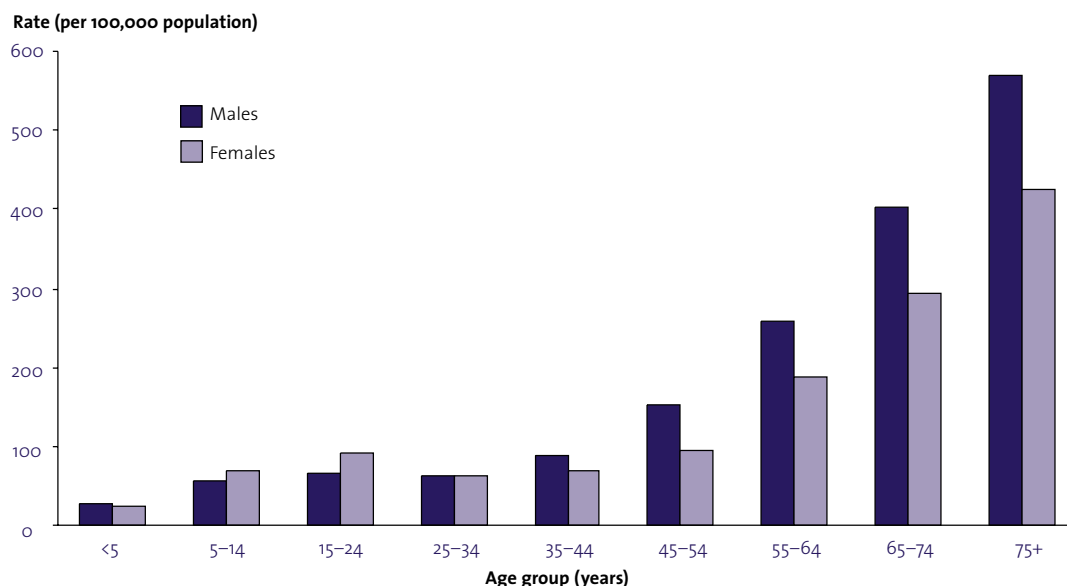
Age and sex

Males are more likely to be admitted to hospital for diabetes than females. Figure 5.1 shows that hospital use for a primary or additional diagnosis of diabetes increases with age.

Length of stay in hospital

The average length of stay in hospital when diabetes was the principal diagnosis was 6.6 days in 1999–00, compared with 3.8 days for people without diabetes as a principal diagnosis. When diabetes as an additional diagnosis was considered, the average length of stay increased to 7.0 days compared with 3.6 days for people without diabetes.

Figure 5.1: Hospitalisations for diabetes, 1999–00



Note: Includes principal and additional diagnoses of diabetes.

Source: AIHW National Hospital Morbidity Database.

Males with diabetes as a principal diagnosis tended to stay in hospital longer than females: on average, 6.8 days compared with 6.4 days.

Same-day separations for a principal diagnosis of diabetes represented 19% of the total.

Deaths in hospital

In 1999–00, there were 335 hospitalisations for diabetes as a principal diagnosis where the patient died in hospital (1.4% of all diabetes hospitalisations). There were no significant differences between males and females in this respect.

In the same year, there were 10,280 hospital deaths when diabetes was either the principal or additional diagnosis (3.1% of hospitalisations with a principal or additional diagnosis of diabetes).

Main data source

National Hospital Morbidity Database (Australian Institute of Health and Welfare).

Medication use

This section gives an overview of the use of prescription medicines for diabetes in Australia. According to the 1995 National Health Survey, 57% of adults who reported having diabetes were being treated for the condition, 18% were using insulin and 41% were on tablets to control their blood glucose levels. The survey also showed that adults with diabetes were more likely than those without diabetes to use certain medications such as aspirin, frusemide (a diuretic), ACE-inhibitors and digoxin but the problem for which the drugs were taken was not recorded.

The data in Figure 5.2 refer to the use of prescription drugs in the community only (non-public hospital). Medication use is expressed in the World Health Organization approved measurement unit—defined daily doses (DDD) per 1,000 population per day (DDD/1,000/day). This is based on the assumed average adult dose per day of a drug taken for its main purpose. The DDD enables valid comparisons between drugs independently of differences in price, preparation and quantity per prescription.

Insulins and insulin analogues

Insulin helps the body use or store the glucose it gets from food. People whose pancreas does not make insulin (Type 1 diabetes) need insulin injections to survive. Some people with Type 2 diabetes also require insulin injections to improve diabetes control. Giving suitable doses of insulin to people with diabetes temporarily restores their ability to process carbohydrates, fats and proteins, to store glycogen in the liver, and to convert glucose to fat.

Insulin is available in several types that differ in how soon the insulin starts working (onset), when it works most (peak time) and how long it lasts in the body (duration).

Fast-acting insulin reaches the blood within 15 minutes of injection, peaks 30–90 minutes later and may last for up to 5 hours. Human insulin was the fast-

acting type of insulin dispensed most commonly in 1998 (1.9 DDD/1,000/day), followed by insulin lispro (0.7 DDD/1,000/day).

Intermediate-acting insulin reaches the blood 2–6 hours after injection, peaks 4–14 hours later and stays in the blood for about 14–20 hours. Human intermediate-acting insulin was dispensed at a rate of 3.1 DDD/1,000/day in 1998.

Long-acting insulin takes 6–14 hours to start working. It has no peak or a very small peak 10–16 hours after injection and stays in the blood between 20 and 24 hours. Long-acting insulin was the type dispensed least frequently (0.2 DDD/1,000/day).

Some insulins come mixed together to make it easier to inject two kinds of insulin at the same time. Human intermediate-acting insulin combined with fast-acting insulin was the most common insulin dispensed overall in 1998 (3.1 DDD/1,000/day).

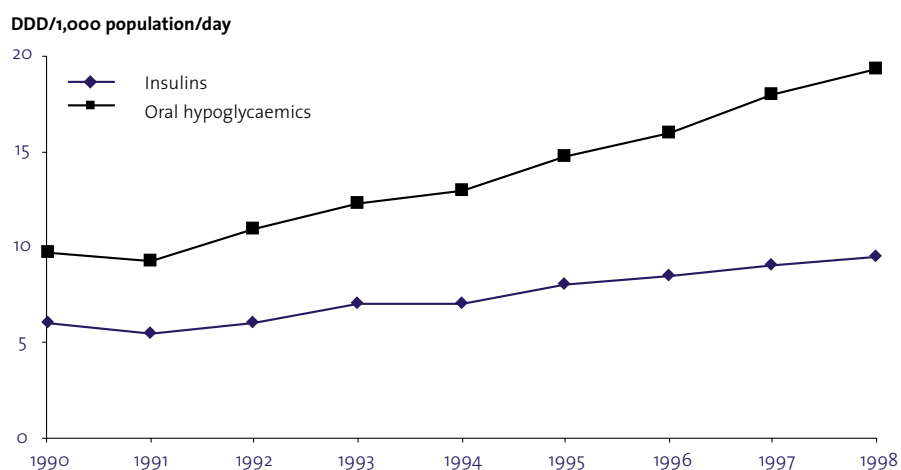
The use of insulins and oral blood glucose lowering drugs has increased during the 1990s, reflecting the increase in the number of people being diagnosed with diabetes.

Oral blood glucose lowering drugs

Only people with Type 2 diabetes can benefit from the use of pills to treat their diabetes. There are several classes of oral drugs that can lower blood glucose. They work in different ways so they may be used in combination if needed. Figure 5.3 shows community use of oral blood glucose lowering drugs from 1990–1998.

Sulphonylurea drugs stimulate the beta cells in the pancreas to release more insulin. Chlorpropamide, glipizide, glibenclamide, gliclazide and tolbutamide are members of this class. Gliclazide was the most commonly dispensed sulphonylurea in 1998 (6.2 DDD/1,000/day), followed by glibenclamide (4.1 DDD/1,000/day).

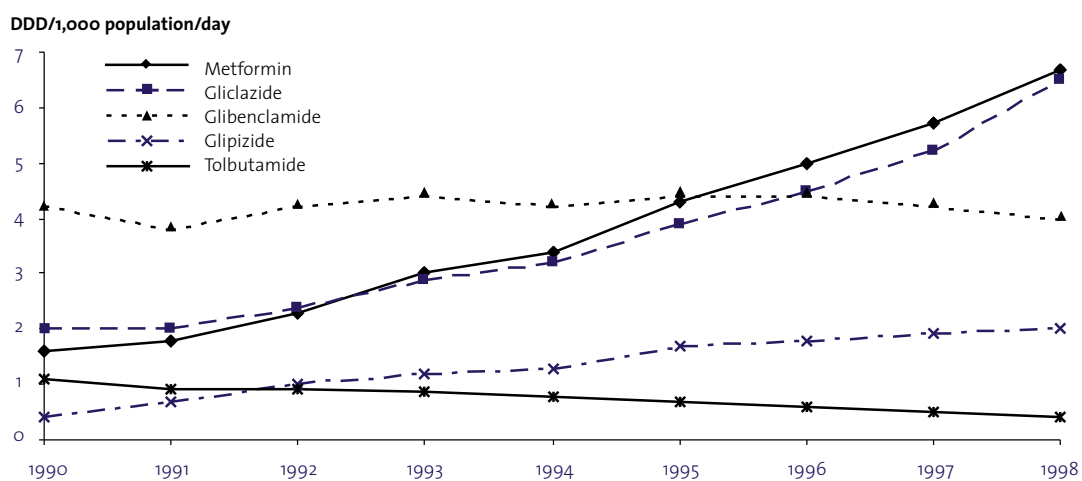
Figure 5.2: Community use of antidiabetic drugs, 1990–98



Note: DDD = defined daily dose.

Source: Department of Health and Aged Care 1999.

Figure 5.3: Community use of oral blood glucose lowering drugs, 1990–98



Note: DDD = defined daily dose.

Source: Department of Health and Aged Care 1999.



Biguanides lower blood glucose by suppressing glucose production in the liver. Metformin belongs to this class of drugs. It has become increasingly popular in the 1990s and in 1998 it was the most frequently used oral hypoglycaemic drug overall (6.6 DDD/1,000/day). Metformin is among the top 30 most commonly prescribed medications in general practice and in 2000 it accounted for 0.9% of all prescriptions issued by general practitioners.

Alpha glucosidase inhibitors help the body lower blood glucose by blocking the gut enzymes that break down starches (such as bread, potatoes and pasta) and certain sugars into glucose. Their action slows the rise in blood glucose levels after a meal. Acarbose is a member of this class and was dispensed at a rate of 0.1 DDD/1,000/day in 1998.

Thiazolidinedione antidiabetic agents lower blood glucose by improving cell response to insulin. Rosiglitazone and pioglitazone belong in this class. There are no figures on the use of these drugs in Australia because they are not listed on the Pharmaceutical Benefits Scheme.

Main data sources

1998–2000 Bettering the Evaluation and Care of Health Study (BEACH) (University of Sydney & Australian Institute of Health and Welfare).

1995 National Health Survey (Australian Bureau of Statistics).

References and further reading

2000 MIMS Annual. 24th edn, June 2000. St Leonards, NSW: MIMS Australia.

Australian medicines handbook 1998. 1st edn. Adelaide: Australian Medicines Handbook.

DHAC (Commonwealth Department of Health and Aged Care) 1999. Australian statistics on medicines 1998. Canberra: AGPS.

Pathology and other tests

There are a variety of pathology tests used in the diagnosis and management of diabetes. The more common tests include:

- glucose tolerance test, which is a diagnostic test to assess absorption of glucose after a dose is given;
- glycosylated haemoglobin (HbA_{1c}) and fructosamine, which monitor glucose control;
- microalbuminuria, which tests for amounts of protein (albumin) in the urine; and
- blood lipids tests, which include total cholesterol, triglycerides and HDL cholesterol.

Pathology tests processed by Medicare for people with diabetes

This section reports the tests undertaken by pathology labs and billed to Medicare. The figures do not include services provided to public patients in public hospitals, diabetes clinics or services that qualify for a benefit under the Department of Veterans' Affairs National Treatment Account.

Pathology tests billed to Medicare are subject to 'coning', that is, pathology companies charge Medicare for the three most expensive tests undertaken even where more tests were undertaken. Where a patient with diabetes is likely to receive multiple tests for monitoring the disease and its complications, the less expensive test may not be recorded in the Medicare data, i.e. it may 'drop' off the billing process due to coning (AIHW: Britt et al. 2001). The number of HbA_{1c} tests is likely to be underestimated in the Medicare data for this reason.

In 1999–00, there were 494,611 diabetes patients identified in the Medicare population (3.4%). Of these diabetes patients, 27.0% had an HbA_{1c} test in each of the last two 6 months of 1999–00, 18.1% had a microalbumin test in 1999–00, 62.9% had a lipid test in 1999–00 and 70.3% had an eye examination between 1998–99 and 1999–00.

The Health Insurance Commission's Diabetes Clinical Advisory Group has determined minimum testing frequencies for selected tests based on the New South Wales Health Department's *Principles of Diabetes Care and Guidelines for the Clinical Management of Diabetes Mellitus in Adults* (1996) and the National Health and Medical Research Council's *Management of Diabetic Retinopathy Clinical Practice Guidelines* (1997). Minimum testing frequencies reported in Figure 5.4 are:

- HbA_{1c}: two tests in the reporting period (one test in each 6 month period)
- blood lipids (total cholesterol, triglycerides and HDL cholesterol): once a year
- microalbumin: once a year
- eye examination: once every 2 years.

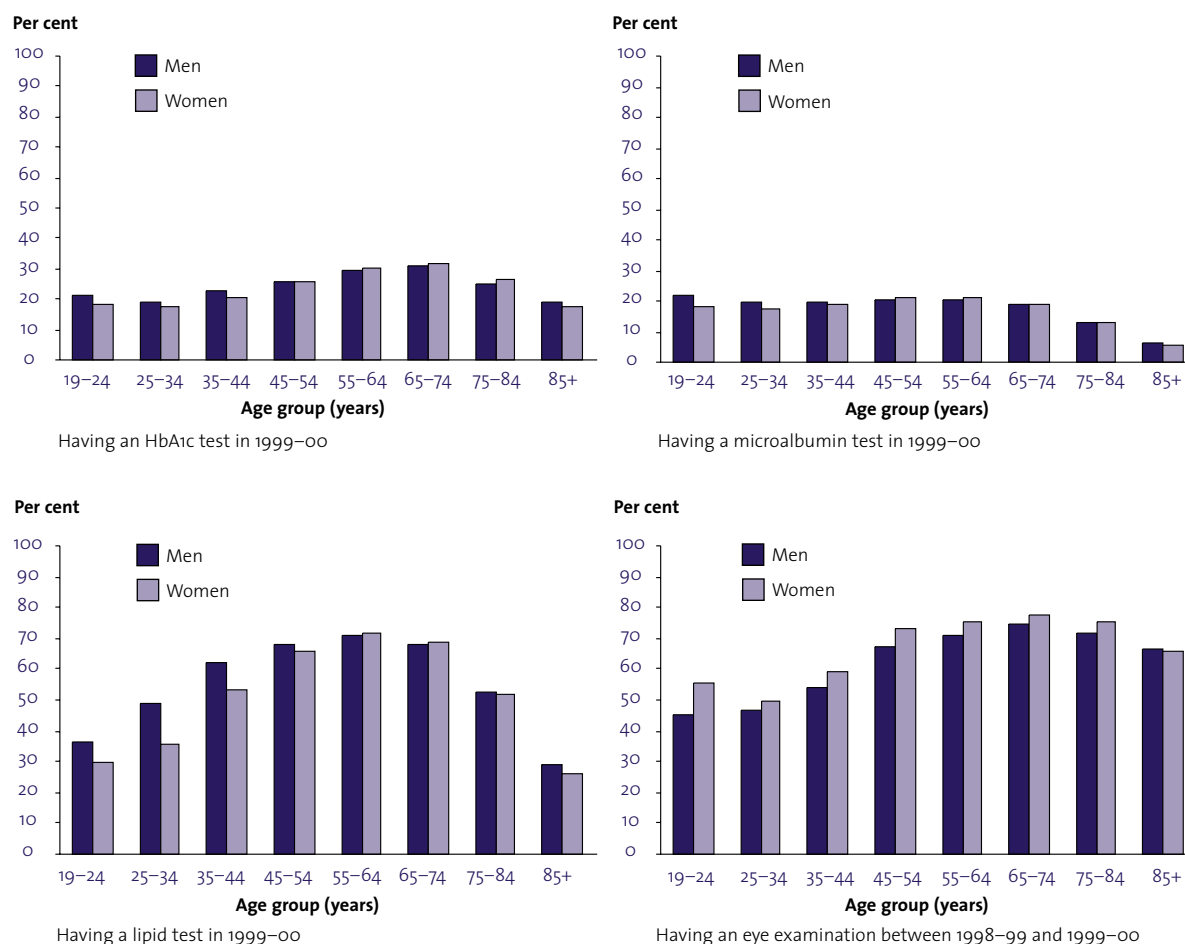
Pathology tests ordered by GPs

A survey of general practice activity (BEACH) found that, in 1998–99, general practitioners (GPs) ordered pathology tests for Type 1 diabetes problems relatively often (37.3 per 100 problems) compared with the average (17.0 per 100). Tests for HbA_{1c}, which monitor glucose control, were the most widely requested (11.9 per 100), followed by glucose tolerance test (7.2 per 100), electrolytes/urea/creatinine (4.2 per 100) and lipids tests (3.8 per 100).

Pathology tests were frequent in the management of Type 2 diabetes, at a rate of 48.5 per 100 problems compared with the average (17.0 per 100). As with Type 1 diabetes, GPs requested tests for HbA_{1c} (13.5 per 100), glucose tolerance (12.7 per 100), lipids (6.6 per 100) and electrolytes/urea/creatinine (3.8 per 100) (AIHW: Senes & Britt 2001).

The BEACH data do not capture whether a pathology test ordered by the GP is performed (AIHW: Britt et al. 2001).

Figure 5.4: Adults identified with diabetes meeting the minimum testing frequency for selected tests



Source: Health Insurance Commission 2001.

Pathology tests at diabetes clinics

According to the Australian National Diabetes Information Audit and Benchmarking survey in 2000, 83.2% of patients visiting specialist diabetes clinics had an HbA1c measurement in that year, and 48.5% had a microalbumin (or urinary protein level) recorded. Of the patients attending specialist diabetes clinics, 67.2% had a cholesterol level recorded, 43.4% had an HDL cholesterol level recorded and 64.1% had a triglyceride level recorded. A total of 53.1% of patients were recorded as having seen an ophthalmologist and 17.9% as having seen an optometrist in the last 12 months; 61.9% had seen either an ophthalmologist or an optometrist.

Main data sources

1998-2000 Bettering the Evaluation and Care of Health Study (BEACH) (University of Sydney & Australian Institute of Health and Welfare).

1998-2000 Australian National Diabetes Information Audit and Benchmarking (National Association of Diabetes Centres).

Health Insurance Commission General Practice Statistics—Diabetes (Health Insurance Commission).

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