



YORKSHIRE & HUMBER
PUBLIC HEALTH OBSERVATORY

NHS
National Diabetes Support Team



DIABETES Key Facts

March 2006

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How **common** is diabetes in England?

Diagnosed incidence

2.7 per 1,000 person years (crude rate 1994-2003).

After taking account of the ageing population, incidence of diabetes doubled between 1994 and 2003, from 1.8 to 3.3 per 1,000 age-standardised.

(QResearch, Diabetes in the UK 1994-2003)

Some of this large increase is probably due to increased screening, diagnosis and reporting of diabetes over the same time period.

Prevalence 2005

Estimated diabetes (diagnosed + undiagnosed) 4.67% of population of England (2,350,000 persons).

(PBS Diabetes Prevalence Model)

In 2005 there were 1,766,391 persons registered with diabetes in England, approximately 72% of the total estimated prevalence of diabetes.

(QMAS database 2004-05)

There was 12 times more type 2 diabetes than type 1. Type 2 made up 92% of of total (diagnosed + undiagnosed) diabetes.

(PBS Diabetes Prevalence Model)

Diagnosed prevalence doubled between 1994 and 2003.

(QResearch Diabetes in the UK 1994-2003)

Prevalence 2010

Forecast to be 5.05% of population of England

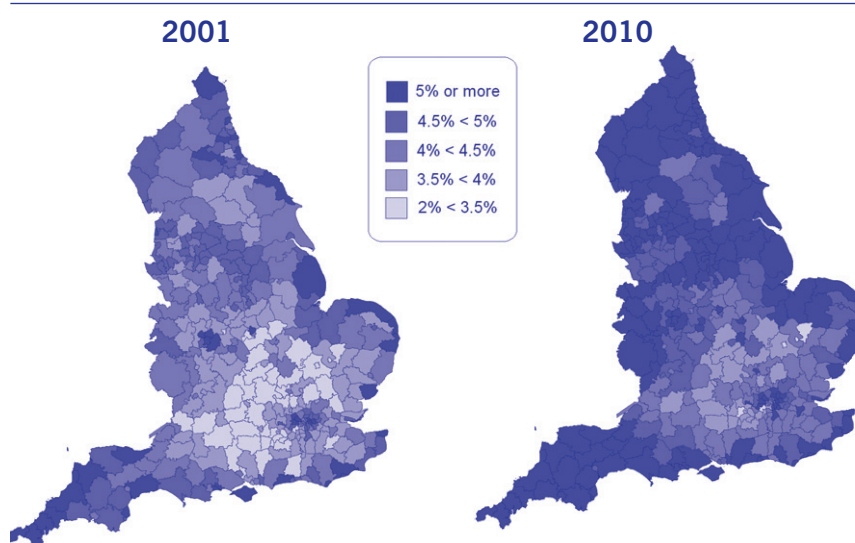
15% increase in prevalence between 2001 and 2010:

- 6% increase due to ageing population
- 9% due to increasing obesity.

(PBS Diabetes Prevalence Model)

Local variation

Estimated prevalence of diabetes by local authorities in England



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Areas with the highest 2001 prevalence have: high proportions of older people, greater deprivation, high proportions of non-white populations

2010 prevalence is highest in Leicester and Birmingham, lowest in Thames Valley.

(PBS Diabetes Prevalence Model)

What is the **health burden** of diabetes?

Life expectancy

Life expectancy is reduced, on average, by:

- At least 15 years in people with type 1 diabetes
- 5 years for males and 7 years for females with type 2 diabetes (at age 55 years).

According to US data, the reduction in life expectancy seen in people with type 1 diabetes is dependent on the age at diagnosis. At a minimum, life expectancy is shortened by 15 years.

(Panzram G. Epidemiologic data on excess mortality and life expectancy in insulin-dependent diabetes mellitus-critical review. Exp Clin Endocrinol 1984; 83:93-100)

(Portuese E, Orchard T, MD. Chapter 10: Mortality in Insulin-Dependent Diabetes in Diabetes in America, second edition, ed. NDDG NIH 1995).

At present, the average 55-year-old male in England has a remaining life expectancy of approximately 24.6 years. For females the equivalent figure is 28 years.

(Government Actuary, interim life tables 2002-04).

According to the UK Prospective Diabetes Study (UKPDS) model, a male who is newly diagnosed with type 2 diabetes at age 55, with an average likelihood of being a smoker, has a remaining life expectancy of 19.6 years. For a female the corresponding figure is 21.2 years.

(UKPDS, private correspondence, March 2006)

In Europe

Diabetes is responsible for:

- 2.4% of all deaths
- 1.9% of all years of life lost
- 2.4% of all years of life lost in disability
- 2.1% of all disability adjusted life years

(WHO. World Health Report 2003. Geneva)

In England

There were 5,404 deaths from diabetes in 2004.

More deaths of women (2,899) than men (2,505) - almost certainly an underestimate of deaths related to diabetes due to coding issues.

(Lakhani A, Olearnik H, Eayres D (eds). Compendium of Clinical and Health Indicators, 2005)

Morbidity

Life-long diabetes can have a profound impact on:

- Lifestyle
- Relationships
- Work
- Income
- Health and well-being.

Poorly-controlled diabetes can lead to range of complications, including:

- Blindness
- Heart attacks
- Strokes
- Kidney disease
- Amputation
- Depression.

Quality of Life

Efforts to prevent complications of diabetes often overlook the impact of the condition and its treatment on current quality of life.

Audit of Diabetes-Dependent Quality of Life (ADDQoL) is a diabetes-specific instrument that assesses the impact of diabetes on 18 life domains.

Use of the ADDQoL with people with type 1 or type 2 diabetes has shown, on average, almost universally the negative impact of diabetes on all domains.

The negative impact of diabetes on the 18 life domains are ranked below. The greatest negative impact was observed for the domain 'freedom to eat as I wish', indicating the strong influence of dietary restrictions on quality of life.

Weighted impact scores for quality of life domains

(ranked in descending order of impact on quality of life)

Life domain	Mean Weighted Score
Freedom to eat as I wish	-3.6
Enjoyment of food	-3
Family life	-2.6
Working life and work related opportunities	-2.6
Sex life	-2.6
The things I could do physically	-2.4
Worries about the future	-2.4
Holidays or leisure activities	-2.4
Freedom to drink as I wish	-2.1
Confidence in my ability to do things	-1.8
Friendships and social life	-1.8
Motivation to achieve things	-1.6
Ease of travelling (local or long distance)	-1.4
Physical appearance	-1.2
Finances	-1.2
Living conditions	-1.1
Unwanted dependence on others	-1.1
The way society reacts to me	-0.9

(Bradley C and Speight J. Patient perceptions of diabetes and diabetes therapy: assessing quality of life. Diabetes Metabolism Research and Reviews 2002; 18: S64-S69)

What is the **cost** of diabetes?

Healthcare expenditure in UK

Estimated at 5% of all NHS expenditure.

(Williams R, Gillam S, Murphy M, Holmes J, Pringle M, Bootle S, Bottomley J, Baxter H, Chandler F. The True Costs of Type 2 Diabetes in the UK - Findings from T2ARDIS and CODE-2 UK. Monograph of studies supported by GlaxoSmithKline. GlaxoSmithKline UK, Uxbridge, 2002)

The first Wanless report (2002) estimated the total annual cost of diabetes to the NHS to be £1.3 billion. Much is spent on dealing with avoidable diabetic complications.

The presence of diabetic complications increases NHS costs more than five-fold.

(Alexander W D, Diabetes Care in A UK Health Region: Activity, Facilities and Costs. Diabetic Medicine 1988; 5:577-81)

An extra £600 million per year would be needed to fully implement the Diabetes National Service Framework (NSF) for England by 2010-11, with much of this extra expenditure going on programmes to improve people's management of diabetes, and therefore reduce their risk of diabetic complications.

Assuming that the NSF was fully implemented in England, the review estimated an annual saving of £200 million in ten years time as a result of the extra £600 million spending.

(Wanless D. (2002) Securing Our Future Health: Taking a Long-Term View - Final Report. London: HM Treasury. Available from: www.hmtreasury.gov.uk/consultations_and_legislation/wanless/consult_wanless_final.cfm)

Hospital budgets

Estimated at 9% of hospital costs.

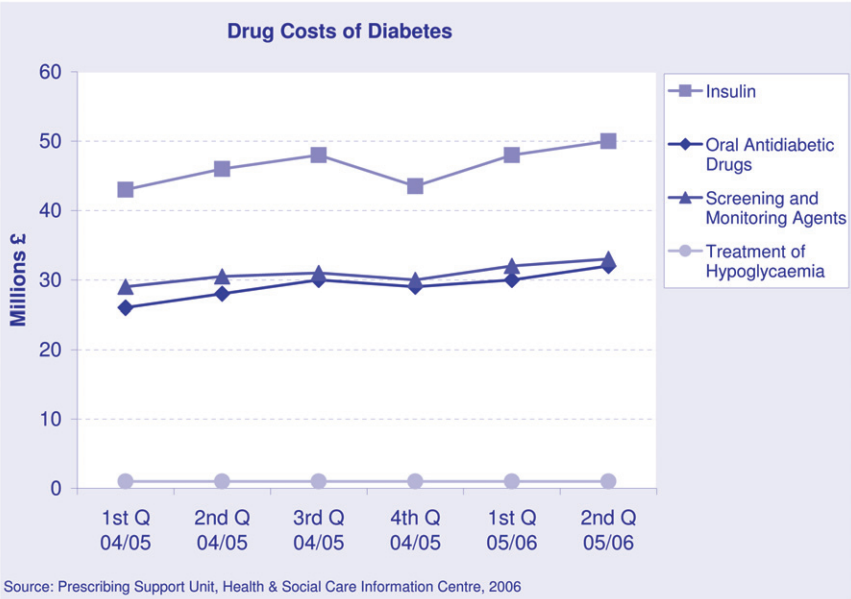
(Currie C J et al. NHS Acute Sector Expenditure for Diabetes: The Present, the Future and Excess In-patient Cost of Care. Diabetic Medicine, 1997;14:686-92)

Diabetes increases by five the chance of a person needing hospital admission. *(Diabetes NSF, Department of Health)*

Prescribing

Drugs used in diabetes are the second biggest cost on the national drugs bill. Between 2004 and 2005 costs of drugs used in diabetes grew by 11% and items prescribed by 10%.

The expenditure on insulin exceeds that on oral treatments and on screening and monitoring agents but all show increased rates of prescribing.



Social services

1 in 20 people with diabetes incurs social services costs.

More than three-quarters of these costs were associated with residential and nursing care, while home help services accounted for a further one-fifth.

The presence of complications increased social services costs four-fold.

(Kings Fund et al, 2000 TARDIS: Type 2 diabetes. Accounting for a major resource demand in society in the UK)

What makes people **at risk** of developing diabetes?

Age

Type 1 is more likely to be diagnosed at a young age

Type 2 usually develops after 45 years of age

(PBS Diabetes Prevalence Model)

Sex

Women with diabetes are more likely than men with diabetes to die prematurely.

The relative risk for fatal coronary heart disease associated with diabetes is 50% higher in women than it is in men.

(Huxley R, Barzi F, Woodward M. Excess risk of fatal coronary heart disease associated with diabetes in men and women: meta-analysis of 37 prospective cohort studies. BMJ 2006;332:73-6)

An important consequence of the increased earlier prevalence of type 2 diabetes is that it affects women during their reproductive lifetime.

Pregnancies of women with type 2 diabetes are associated with an increased risk of late intrauterine death, neonatal death and major congenital malformations.

(Dornhurst A. Female Gender and Diabetes - Working Group 4 Position Paper. EU Conference on Prevention of Type 2 Diabetes. 15/16th Feb 2006. Vienna)

Women who developed diabetes during pregnancy are at greater risk of type 2 diabetes later in life

Inheritance of diabetes

Most risk factors for diabetes (genetic and non genetic) are additive. This means if a person is Asian, obese and has a family history of diabetes they have an almost 100% chance of diabetes, while the risk associated with each factor on its own is much less than this.

Essentially genetics says which members of the population are at risk but the total number of the population that get diabetes is determined by environment, i.e. exercise and diet. This is important as it means that those who get diabetes are those with an inherited pancreatic dysfunction which means they can not cope with their level of insulin resistance. This does not mean that the best preventative measures are not public health ones, nor that most Type 2 patients will not be helped by weight loss and exercise, but it can help to alleviate the blame felt by people with diabetes.

Type 1 diabetes

Genetic inheritance is a major determinant of type 1 diabetes. In families where no member has type 1 diabetes, the risk of a child developing type 1 diabetes before 18 years of age is about 0.3%.

- If a parent is affected the risk increases 10-fold, (i.e. 2% chance if mother, 4% chance if father)
- If a sibling is affected the risk increases 20-fold (i.e. 6% chance)
- If an identical twin is affected the risk increases 100-fold (i.e. 30% chance)

Type 1 diabetes is present in most races but highest in Northern European populations.

Major susceptibility gene for type 1 is HLA but does not have a role in clinical care although high risk HLA can increase risk 2-3 fold.

Inheritance of diabetes

(continued)

Type 2 diabetes

Genetic inheritance is a major determinant of type 2 diabetes.

- In families where no member has type 2 diabetes, the lifetime risk of developing type 2 diabetes is approximately 10%
- If one parent is affected the risk increases 3-fold (i.e. 30% lifetime risk)
- If a sibling is affected the risk increases 4-fold (i.e. 40% lifetime risk)
- If both parents are affected the risk increases 7-fold (i.e. 70% chance)
- If an identical twin is affected the risk increases 9-fold (i.e. 90% chance)

These lifetime risks of type 2 diabetes are elevated if the affected family member was:

- Young at the age of onset or,
- The diabetes occurred in the absence of obesity.

Risk of type 2 diabetes varies considerably by race. In particular, prevalence is higher in Indian and Afro Caribbean populations.

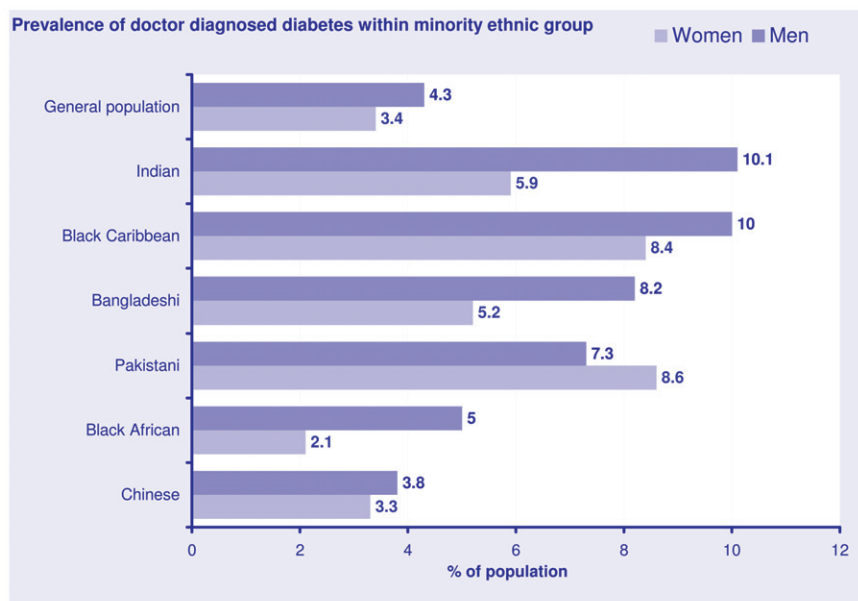
Major susceptibility genes for type 2 diabetes are not known but recently a variant in a gene known as TCF7L2 has been shown to consistently increase risk of diabetes by 80% if homozygous (8% of the population) and by 40% if heterozygous (40% of the population). This does not influence clinical practice at present.

Monogenic diabetes

There are rare types of diabetes that are very genetic resulting from a single mutation in a gene. These account for 1-2% of all diabetes. These usually present as familial, early-onset, non-insulin dependent diabetes and are rarely obese. Specialist advice is needed for diagnosis and genetic counselling (see www.diabetesgenes.org).

(Personal correspondence, Professor Andrew Hattersley, by email, March 2006)

Ethnicity



Source: Health Survey for England 2004

Ethnicity

(continued)

Diabetes is more common among people of African-Caribbean and Asian origin living in the UK. In these groups it tends to develop at a younger age and may be due to different underlying mechanisms.

Worldwide figures suggest that there exists a large range of type 2 diabetes prevalence even within the same or similar ethnic groups, when living under different conditions. Potentially, many of the differences between these rates reflect underlying behavioural, environmental and social risk factors, such as diet, level of obesity and physical activity.

Being obese

The risk of developing diabetes increases as body weight increases: diabetes is approximately three times more common in people who have gained around 10kg in weight during adulthood than in those who maintain their weight.

(UK Prospective Diabetes Study Group. Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). Lancet 1998; 352: 837-53)

The risk of type 2 diabetes is almost 13 times greater in obese women than in women of normal weight. For men the risk is 5 times greater.

The National Audit Office suggest that 47% of type 2 diabetes cases in England can be attributed to obesity.

(National Audit Office: Tackling Obesity in England, 2001)

Sedentary lifestyle

A sedentary lifestyle increases the risk of developing diabetes.

The risk of developing type 2 diabetes is increased by 30-40% in sedentary people, compared with people who are regularly physically active. The reduction in risk associated with increased activity levels is independent of body mass index.

(Chaturvedi N, Sjolie AK, Stephenson JM, et al. Effect of lisinopril on progression of retinopathy in normotensive people with type 1 diabetes. The EUCLID Study Group. EURODIAB Controlled Trial of Lisinopril in Insulin-Dependent Diabetes Mellitus. Lancet 1998; 351: 28-31)

(United Kingdom Prospective Diabetes Study UK Prospective Diabetes Study Group. Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes (UKPDS 38). BMJ 1998; 317: 703-712)

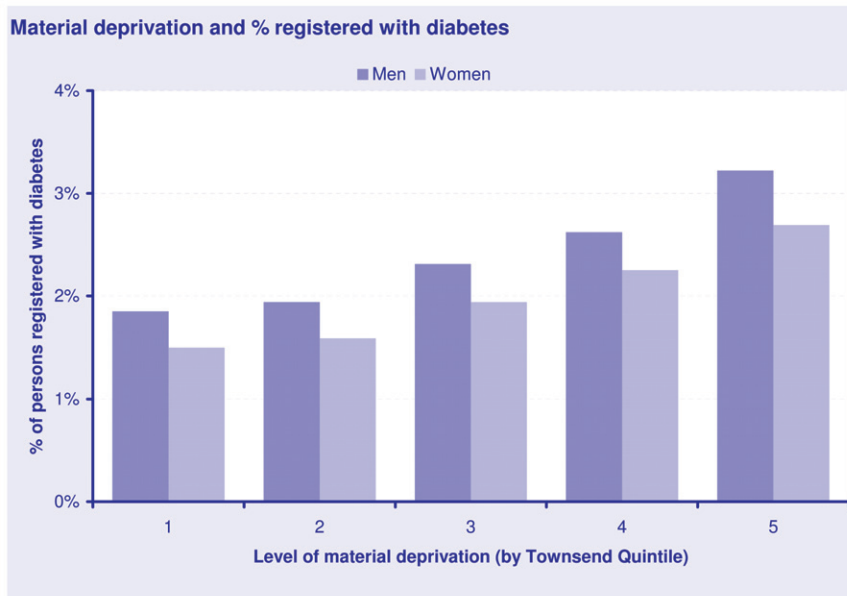
(UK Prospective Diabetes Study Group. Efficacy of atenolol and captopril in reducing risk of macrovascular and microvascular complications in type 2 diabetes (UKPDS 39). BMJ 1998; 317: 713-720)

Lifestyle interventions (such as exercise combined with dietary advice) have been found to reduce the incidence of diabetes by 58%.

To prevent one case of diabetes during a period of three years, 6.9 persons would have to participate in a lifestyle-intervention programme.

(Diabetes Prevention Program Research Group: Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. N Engl J Med 346:393-403, 2002)

Social deprivation



(Taken from <https://nww.pianotest.nhs.uk/diabetes>. NCASP (National Clinical Audit Support Programme)/NDA (National Diabetes Audit) Diabetes Toolkit. National Health Service Information Authority (NHSIA). 9 February 2005)

Both mortality and morbidity are increased by socio-economic deprivation. Mortality due to diabetes is higher in people from lower socioeconomic groups, the unemployed and those with a 'low attained level of education'.

(Robinson N, Lloyd CE, Stevens LK. Social deprivation and mortality in adults with diabetes mellitus. *Diabet Med* 1998; 15: 205-12)

(Nilsson PM, Johansson S-E, Sundquist J. Low educational status is a risk factor for mortality among diabetic people. *Diabet Med* 1998; 15: 213-19)

Both incidence and prevalence of diabetes is greater in areas of higher deprivation.

(PBS Diabetes Prevalence Model).

The complications of diabetes, e.g. retinopathy or cardiovascular disease, have been shown to be more prevalent in areas of high socio-economic deprivation. Also, the use of insulin in these areas has been shown to be less than elsewhere.

(Kelly WF, Mahmood R, Kelly MJ, Turner S, Elliott K. Influence of social deprivation on illness in diabetic patients. *BMJ* 1993; 307: 1115-16)

(Eachus J, Williams M, Chan P et al. Deprivation and cause-specific morbidity: evidence from the Somerset and Avon survey of health. *BMJ* 1996; 312: 287-92)

(Kelly WF, Mahmood R, Turner S, Elliott K. Geographical mapping of diabetic patients from the deprived inner city shows less insulin therapy and more hyperglycaemia. *Diabet Med* 1994; 11: 344-8)

Research based on GP registrations suggests that the prevalence of diabetes in the most deprived quintile of census output areas was 66% higher than the most affluent quintile (rate of 38.7 vs 23.2 per 1,000).

Social deprivation

(continued)

Trend analysis suggests that between 1994 and 2003 the prevalence of diabetes increased in all bands of deprivation but the greatest increase was found in the most deprived areas.

(QResearch, *Diabetes in the UK 1994-2003*)

What are the increased risks of complications in persons with diabetes?

Heart disease

Adults with diabetes have heart disease death rates about two to four times higher than adults without diabetes.

(Folsom AR, Szklo M, Stevens J, Liao F, Smith R, Eckfeldt JH: A prospective study of coronary heart disease in relation to fasting insulin, glucose, and diabetes. The Atherosclerosis Risk in Communities (ARIC) Study. *Diabetes Care* 1997; 20:935-942)

(Stamler J et al. Diabetes, other risk factors, and 12 year cardiovascular mortality for men screened in the Multiple Risk Factor Intervention Trial. *Diabetes Care* 1993; 16: 434-44)

(Nathan DM. Long-term complications of diabetes mellitus. *New England Journal of Medicine* 1993; 328:1676-85)

The additional risk of CHD in people with diabetes cannot be explained in terms of the 'classic' risk factors for CHD, i.e. smoking, hypertension and serum lipid concentrations.

(Garcia MJ, McNamara PM, Gordon T, Kannell WB. Morbidity and mortality in diabetics in the Framingham population. *Diabetes* 1974; 23: 105-11)

(Panzram G. Mortality and survival in type 2 (non-insulin-dependent) diabetes mellitus. *Diabetologia* 1987; 30:123-31)

(Turner RC, Millns H, Neil HAW et al. Risk factors for coronary artery disease in non-insulin dependent diabetes mellitus: United Kingdom prospective diabetes study (UKPDS: 23). *BMJ* 1998; 316: 823-8)

Retinopathy

Within 20 years of diagnosis nearly all patients with type 1 diabetes have a degree of retinopathy as opposed to approximately 60 per cent of individuals with type 2 diabetes.

(Fong DS et al. American Diabetes Association policy statement on diabetic retinopathy *Diabetes Care* 2003; 26: 226-9)

Blindness

In 1995 diabetes was the single largest cause of blindness in the UK.

(Evans J (1995) *Causes of blindness and partial sight in England and Wales, 1990-91*, Office of Population Censuses and Surveys, Studies on Medical and Population Subjects No. 57. London: HMSO.)

Stroke

The risk for stroke is two to four times higher among people with diabetes.

(Folsom AR, Rasmussen ML, Chambless LE, Howard G, Cooper LS, Schmidt MI, Heiss G. Prospective associations of fasting insulin, body fat distribution, and diabetes with risk of ischemic stroke. *Diabetes Care* 1999;22:1077-1083)

Lower limb amputation

Diabetes is the most common cause of non-traumatic lower limb amputation.
(Fox C and Mackinnon M, *Vital Diabetes, Class Health*, 1999)

15% of people with diabetes develop foot ulcers and 5% to 15% of people with diabetic foot ulcers need amputations.

(University of York NHS Centre for Reviews and Dissemination. *Complications of Diabetes. Effective Health Care Bulletin* 1999; 5:1-12)

Every 30 seconds a leg is lost to diabetes somewhere in the world.

(International Diabetes Federation, *World Diabetes Day: Diabetes and Footcare*, 2005)

Depression

Among people with diabetes, major depression is associated with more diabetic complications, lower medication adherence, and poorer self-care of diabetes.

(Lin EH, Katon W, Von Korff M, et al. *Relationship of depression and diabetes self-care, medication adherence, and preventive care. Diabetes Care*. 2004;27:2154-2160)

One American study suggests that the prevalence of depression is roughly twice as high among people with diabetes as among the general population.

(Katon W, von Korff M, Ciechanowski P, et al. *Behavioral and clinical factors associated with depression among individuals with diabetes. Diabetes Care*. 2004;27:914-920)

Erectile dysfunction

Impotence may affect up to 50% of men with longstanding diabetes.

(British Diabetic Association, *Diabetes in the UK 1996*, British Diabetic Association, 1996).

Diabetic men have a more than three-fold increased prevalence of erectile dysfunction compared with non-diabetic men.

(Dey J & Shepherd MD. *Evaluation and treatment of erectile dysfunction in men with diabetes mellitus. Mayo Clinic Proceedings* 2000; 77: 276-82)

This prevalence is probably increased by a greater incidence of vascular disease in this group and by the use of drugs such as antihypertensive agents.

(BMA (2004) *Diabetes mellitus - an update for healthcare professionals. BMA*)

Kidney failure

Diabetes has become the single most common cause of end stage renal disease.

(Ansell D et al. *The 2nd Annual Report of the UK Renal Registry. Bristol: the UK Renal Registry*, 1999)

(Cameron JS & Challah S. *Treatment of end-stage renal failure due to diabetes in the United Kingdom, 1975-84. The Lancet* 1986; 2: 962-6)

About 30% of patients with type 2 diabetes develop overt kidney disease.

(Viberti G C et al. *Report on Renal Disease in Diabetes. Diabetic Medicine* 1996; 13: S6-S12)

Problems in pregnancy

Babies of women with diabetes are:

- Five times as likely to be stillborn
- Three times as likely to die in their first months of life
- Twice as likely to have a major congenital anomaly.

A woman with diabetes is much more likely to be:

- Delivered early
- Require an induction of labour
- Be delivered by caesarean section.

Diabetes in pregnancy varies across the UK from 1 in 240 to 1 in 333 births.

(Confidential Enquiry into Maternal and Child Health: *Pregnancy in Women with Type 1 and Type 2 Diabetes in 2002-03, England, Wales and Northern Ireland*. London: CEMACH; 2005)

Nerve damage

Diabetic neuropathy, or nerve damage, affects about 60% to 70% of people with diabetes, ranging from mild to severe forms of nervous system damage.

The results of such damage include:

- Impaired sensation or pain in the feet or hands
- Slowed digestion of food in the stomach
- Carpal tunnel syndrome
- Other nerve problems
- Ongoing pain and discomfort.

(Dyck PJ, Katz KM, Karnes JL, Litchy WJ, Klein R, Pach JM: The prevalence by staged severity of various types of diabetic neuropathy, retinopathy and nephropathy in a population-based cohort: the Rochester Diabetic Neuropathy study. Neurology 1993; 43:817 -824)

Metabolic Syndrome (Syndrome X)

The metabolic syndrome is characterised by a group of metabolic risk factors in one person. They include:

- Abdominal obesity
- A decreased ability to process glucose (insulin resistance),
- Dyslipidemia (unhealthy lipid levels)
- Hypertension

The metabolic syndrome is very common. The British Nutrition Foundation estimate that, in the UK, 25% of the population may have it.

(British Nutrition Foundation, Obesity and disease in ageing, Report 2: The metabolic syndrome)

People with the metabolic syndrome are at increased risk of type 2 diabetes and coronary heart disease and other diseases related to plaque build-up in artery walls (e.g. stroke and peripheral vascular disease).

The dominant underlying risk factors for this syndrome appear to be abdominal obesity and insulin resistance. This is why the metabolic syndrome is also called the insulin resistance syndrome.

Other conditions associated with the syndrome include physical inactivity, aging, hormonal imbalance and genetic predisposition.

(American Heart Association, Metabolic Syndrome, 2005)

What **can** be done?

Prevention

Lifestyle interventions significantly reduce progression rates to diabetes in pre-diabetic individuals.

Trials have shown that sustained lifestyle changes in diet and physical activity can reduce the risk of developing type 2 diabetes. For example, the Finnish Diabetes Prevention Study showed that a better diet, increased physical activity and modest weight loss could substantially reduce the development of type 2 diabetes in middle-aged adults at high risk.

Progression to diabetes was reduced by:

- 58% in the Finnish Diabetes Prevention Study (Finland)
- 58% in the Diabetes Prevention Program (USA)
- 40% in the Da Qing study (China)

For people who are obese, losing a fairly modest amount of weight (up to 10kg) has been shown to reduce diabetes-related mortality by 30-40%.

(UK Prospective Diabetes Study Group. Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). Lancet 1998; 352: 837-53)

Policy

In all the studies conducted so far in people at high risk, lifestyle changes have been substantially more effective than the use of drugs.

The scale of the problem requires population-wide measures to reduce levels of overweight and obesity, and physical inactivity.

Informed policy decisions on:

- Transport
- Urban design
- Food pricing
- Advertising

can all play an important part in reducing the population-wide risks of developing type 2 diabetes.

(WHO - <http://www.who.int/diabetes/prevention>)

Early detection

Early diagnosis and treatment can reduce the risk of complications.

50% of people with type 2 diabetes have complications on diagnosis, which could have been prevented if diabetes had been detected earlier.

(UK Prospective Diabetes Study Group, Intensive Blood Glucose Control with Sulphonylureas or Insulin Compared with Conventional Treatment and Risk of Complications in Patients with Type 2 Diabetes (UKPDS 33). The Lancet 1998; 352:837-53)

Screening for retinopathy

Eye screening and treatment can reduce the risk of severe visual loss or blindness among people with diabetes to less than a half.

(University of York NHS Centre for Reviews and Dissemination. Complications of Diabetes. Effective Health Care Bulletin 1999; 5: 1-12)

The diabetes NSF target for diabetes retinopathy screening is for 80% to be offered screening by March 2006.

(Diabetes NSF, Department of Health)

Registration

People who have diabetes but do not have their diagnosis recorded on practice registers will be unlikely to receive the routine care and monitoring required to optimise wellbeing and minimise long-term complications.

Better blood pressure control

Better blood pressure control reduces the risk of:

- Death from long-term complications of diabetes by a third
- Strokes by more than a third
- Serious deterioration of vision by more than a third.

(Clarke PM. Gray AM. Briggs A. Stevens RJ. Matthews DR. Holman RR. UK Prospective Study Group United Kingdom Prospective Diabetes Study. Cost-utility analyses of intensive blood glucose and tight blood pressure control in type 2 diabetes (UKPDS 72). Diabetologia; 2005 48:868-77)

Angiotensin-converting enzyme (ACE) inhibitors are a class of drugs, which reduce blood pressure and ease the workload on the heart.

These drugs can help people with diabetes reduce their risk of heart attack, stroke, and premature death. They may also delay the onset and progression of kidney disease. In addition, ACE inhibitors can help reduce other complications of diabetes, such as foot ulcers and eye damage.

(HOPE Study Investigators. Effects of ramipril on cardiovascular and microvascular outcomes in people with diabetes mellitus: result of HOPE study and MICRO-HOPE substudy. Lancet 2000; 355: 253-259.)

Better blood glucose control

Better blood glucose control reduces the risk of:

- Major diabetic eye disease by a quarter
- Early kidney damage by a third.

(Clarke PM. Gray AM. Briggs A. Stevens RJ. Matthews DR. Holman RR. UK Prospective Study Group United Kingdom Prospective Diabetes Study. Cost-utility analyses of intensive blood glucose and tight blood pressure control in type 2 diabetes (UKPDS 72). Diabetologia; 2005 48:868-77)

The drug metformin lowers blood glucose in people with diabetes. In overweight people metformin had relative risk reductions (compared to lifestyle therapy alone) of:

- 32 % for any diabetes related endpoint
- 42 % for diabetes related death
- 36 % for all cause mortality.

(UK Prospective Diabetes Study Group. Effect of intensive blood-glucose control with metformin on complications in overweight patients with type 2 diabetes (UKPDS 34). Lancet 1998; 352: 854-865)

Improved self-management

95% of diabetes management is self-care; therefore patient education is essential.

Education, as part of intensification of treatment, produces improvements in diabetic control in type 1 diabetes. Mixed results in type 2 diabetes mean that no clear characterisation is possible as to what features of education may be beneficial.

(Loveman E, Cave C, Green C, Royle P, Dunn N, Waugh N. The clinical and cost-effectiveness of patient education models for diabetes: a systematic review and economic evaluation. Health Technol Assess 2003; 7: 22)

Improved self-management

(continued)

The NSF for diabetes highlights structured education programmes as a key part of systematic care. Various options exist, including:

- Type 1: DAFNE
- Type 2: DESMOND

Reduced number of amputations

Through a care strategy that combines:

- prevention
- the multi-disciplinary treatment of foot ulcers
- appropriate organisation
- close monitoring
- education of people with diabetes and healthcare professionals;

it is possible to reduce amputation rates by between 49% and 85%.

What is cost-effective?

Cost per Quality Adjusted Life Year (QALY)

The second Wanless report (2003) stated that, on the basis of the best available evidence, there are interventions that we know to be cost-effective using a £20,000 cost per QALY threshold. These are:

- Tight control of blood glucose and blood pressure for all diabetics
- ACE inhibitors for diabetics with one other risk factor not otherwise quantified (e.g. for tight control of blood pressure)
- Retinopathy screening for all diabetics
- Foot screening for those at high risk
- Screening obese people for impaired glucose tolerance and relevant treatment
- Multiple risk factor management
- Self-care including patient education
- Reduction of obesity and physical inactivity in high-risk groups.

Primary intervention

Lifestyle interventions in high-risk groups

Incremental costs/QALY of lifestyle interventions are around £11,600 to £22,100 and in the range £15,000 to £42,400 for metformin.

Secondary intervention

Control of Blood Pressure & Blood Glucose

There does not appear to be a cost/QALY estimate relating to blood glucose or blood pressure control. However, one estimate suggests that the cost per event-free life year gained is around £1,200 in relation to blood glucose control.

The UKPDS concluded that tight blood glucose control is highly effective and cost-effective. Central estimates of cost per life year gained for intensive blood pressure control are around £400.

Secondary intervention

(continued)

Control of Blood Lipids

Tight control of blood lipids is probably cost-effective, especially if used in combination with blood glucose and blood pressure control. For patients with a history of CHD there appears to be little debate about whether such secondary prevention is cost-effective; this is less certain for those with hyperlipidaemia but no history of CHD - with one cost/QALY estimate (from UKPDS) of £22,000.

Complications

Retinopathy screening

Almost certainly very cost-effective for all with type 2 diabetes, possibly as low as £1,400 cost/QALY.

Foot complications

screening and treatment might be highly cost-effective if targeted at those at high risk (around £4,000 cost/QALY), but cost-ineffective if untargeted (around £38,000 cost/QALY).

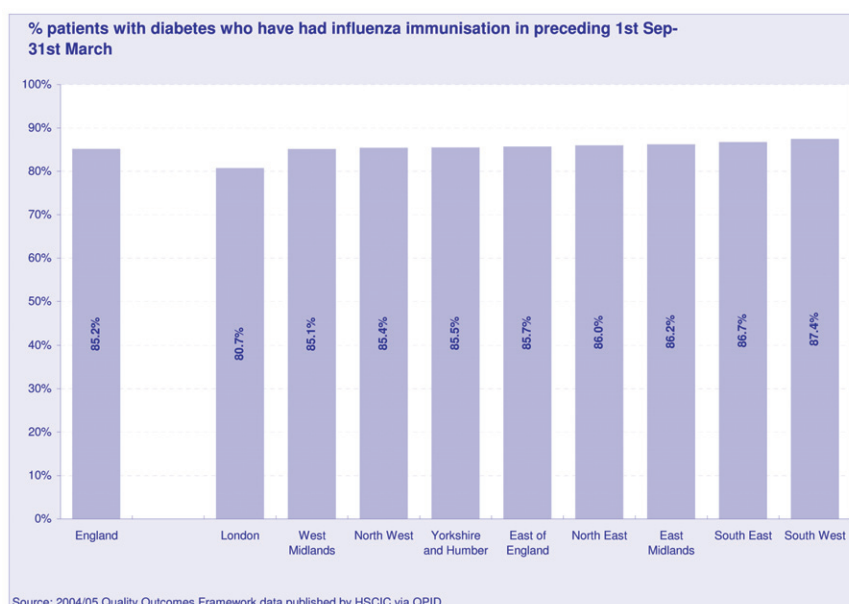
What is being done?

Prevention

Figures from QOF for the period 2004/2005 show that 15% of persons registered with diabetes are smokers. Of this group 93% were given smoking cessation advice/referral to specialist services in the previous 15 months.

91% of persons registered with diabetes had a record of their Body Mass Index (a measure of obesity) in their patient notes.

85% of persons registered with diabetes had influenza immunisation in the preceding period 1st September 2004-31st March 2005.



Retinopathy screening

NHS figures for the second quarter of 2005/2006 indicate that 57.3% of people registered with diabetes in England are receiving screening for retinopathy (1,052,592 out of 1,836,142 registered).

(DoH Q2 2005/06 - People with diabetes receiving screening for diabetic retinopathy - via National Screening Policy Team)

A Diabetes UK survey (2005) found that 56% of PCTs reported providing a systematic retinal screening programme using digital cameras, while 68% report that their programme meets National Screening Committee standards.

(Dr Foster and Diabetes UK. Your Local Care - Diabetes Services in England. November 2005)

Socially excluded groups

To achieve the goals of the NSF, diabetes services must be equitable, ensuring that services are planned to meet the needs of the population.

- 77% of PCTs have made specific provisions to meet the needs of people with diabetes in residential care.

PCTs have also attempted to meet the needs of people with diabetes by having strategies in place for specific groups.

- 48% of PCTs have strategies in place for prisons
- 60% of PCTs have strategies in place for black and minority ethnic communities.

(Dr Foster and Diabetes UK. Your Local Care - Diabetes Services in England. November 2005)

Registration

The number of persons with recorded diabetes is approximately three-quarters of the estimated total number of persons with diabetes.

There is considerable local variation with predicted registrations varying between approximately 50-90% across PCTs.

(PBS Diabetes Prevalence Model; QMAS database 2004-05)

Better blood pressure control

% patients with diabetes in whom last blood pressure measurement was 145/85 or less



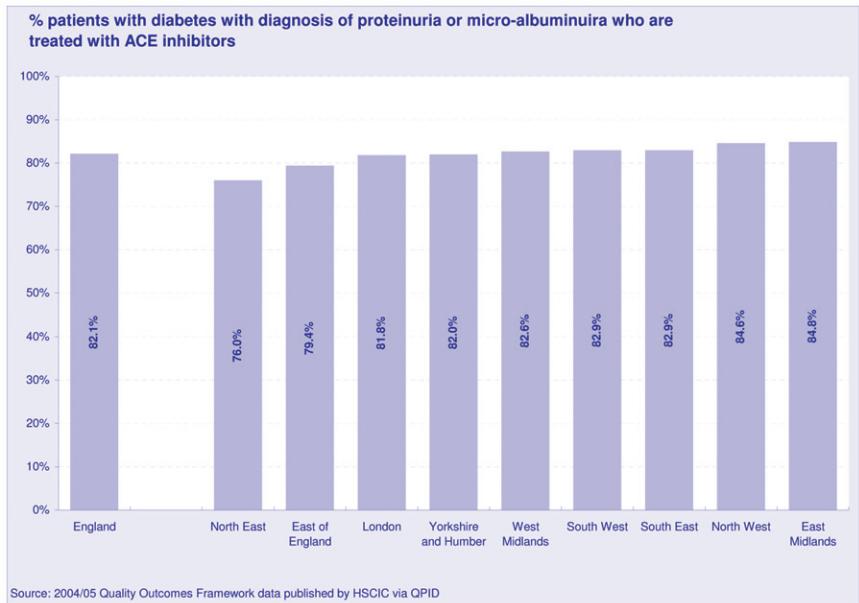
Source: 2004/05 Quality Outcomes Framework data published by HSCIC via QPID

Better blood pressure control
(continued)

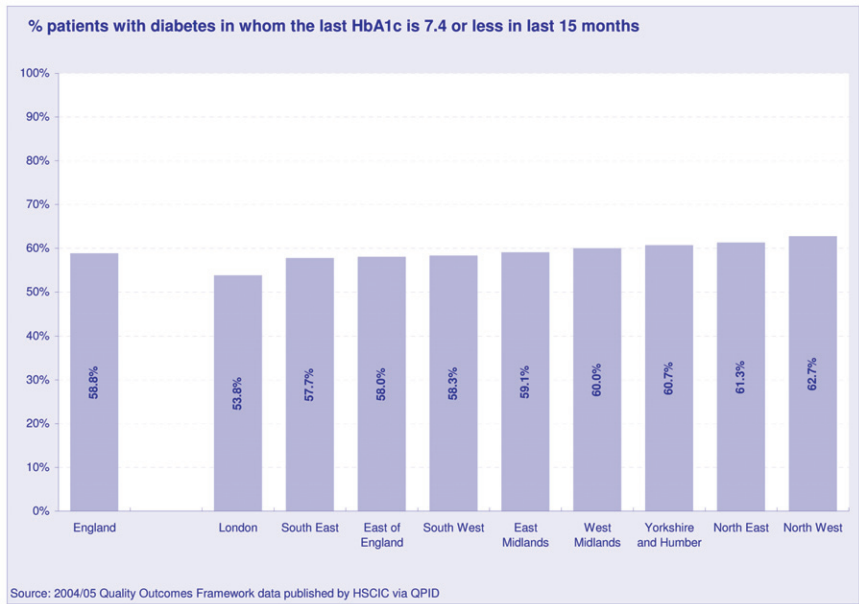
In 2004/05 70% of people registered with diabetes achieved a last blood pressure measurement of 145/85 or less (the target set in QOF).

97% of people registered with diabetes had a record of blood pressure in previous 15 months.

82% of patients with diabetes with diagnosis of proteinuria or micro-albuminuria were treated with ACE inhibitors.



Better blood glucose control



In 2004/05 59% of people registered with diabetes achieved a HbA1c of less than 7.5%, the primary target level of glucose control recommended in NICE clinical guidelines.

(2004/05 Quality Outcomes Framework data (as at June 2005) published by HSCIC via QPID)

Better blood glucose control

(continued)

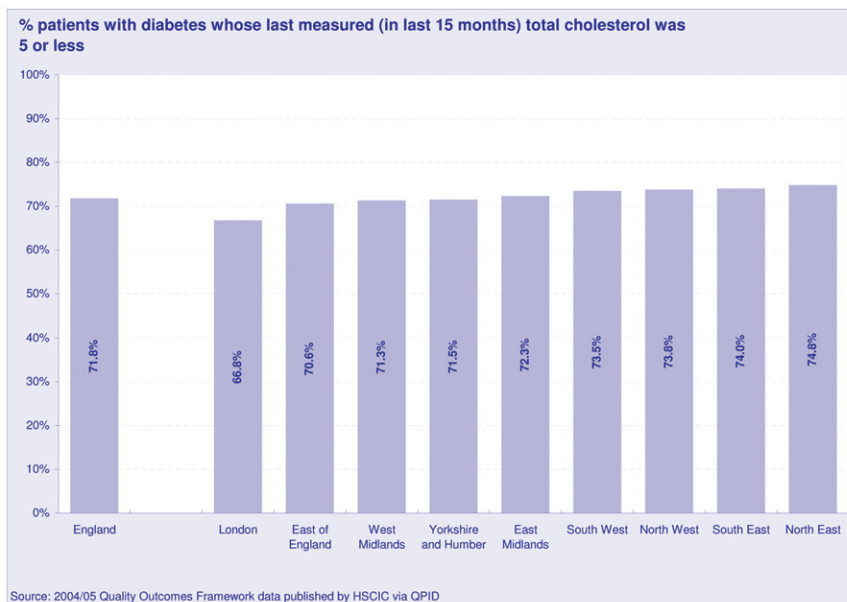
Over the period 2003/04 85% of children with diabetes in England were not reaching the recommended primary target level for blood glucose control.

(Health & Social Care Information Centre. National Diabetes Audit 2003/4)

Trends in the prescribing of and spending on rosiglitazone with metformin in General Practice in England have risen dramatically in the last 2 years.

See Appendix 1 for further information

Lowering cholesterol



In 2004/05 72% of people registered with diabetes had a last measured total cholesterol level of 5 or less.

(2004/05 Quality Outcomes Framework data (as at June 2005) published by Health and Social Care Information Centre via QPID)

93% patients with diabetes had a record of total cholesterol measurement in the previous 15 months.

(2004/05 Quality Outcomes Framework data (as at June 2005) published by Health and Social Care Information Centre via QPID)

Self-management

56% of PCTs responding to a Diabetes UK survey reported that the provision of structured education for people with diabetes is featured in their Local Development Plans.

(Dr Foster and Diabetes UK. Your Local Care - Diabetes Services in England. November 2005)

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On the behalf of the Association of Public Health Observatories, YHPHO is lead PHO for diabetes. Supporting resources are available from the YHPHO website, including a glossary and an electronic version of this document with web links to reference sources.

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Appendix 1

Better blood glucose control

% patients with diabetes in whom the last HbA1c is 7.4 or less in last 15 months



(Prescribing Support Unit, Health and Social Care Information Centre, Feb 2006)

In 2004/05 59% of people registered with diabetes achieved a HbA1c of less than 7.5%, the primary target level of glucose control recommended in NICE clinical guidelines.

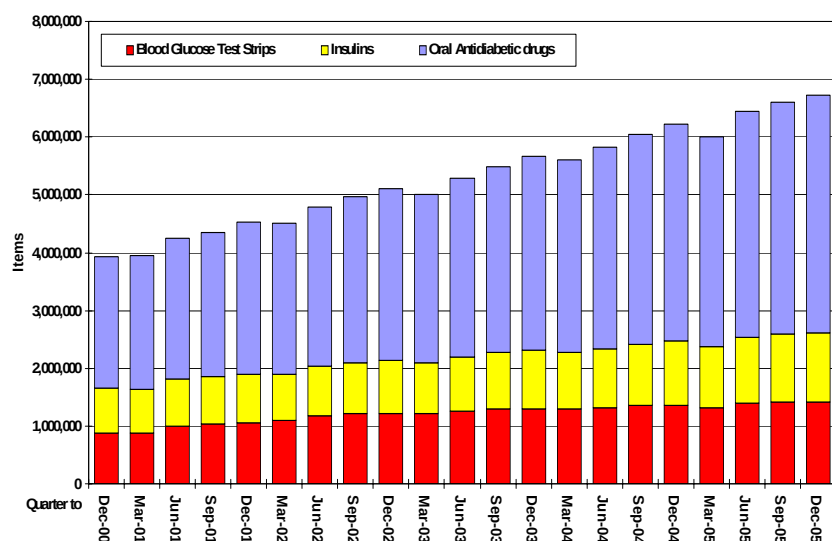
(2004/05 Quality Outcomes Framework data (as at June 2005) published by HSCIC via QPID)

Over the period 2003/04 85% of children with diabetes in England were not reaching recommended blood glucose levels.

(Health & Social Care Information Centre. National Diabetes Audit 2003/4)

Between 2000 and 2005 there occurred a steady increase in the prescribing of Blood Glucose Test Strips, Insulins and Oral Anti-diabetics in General Practice in England.

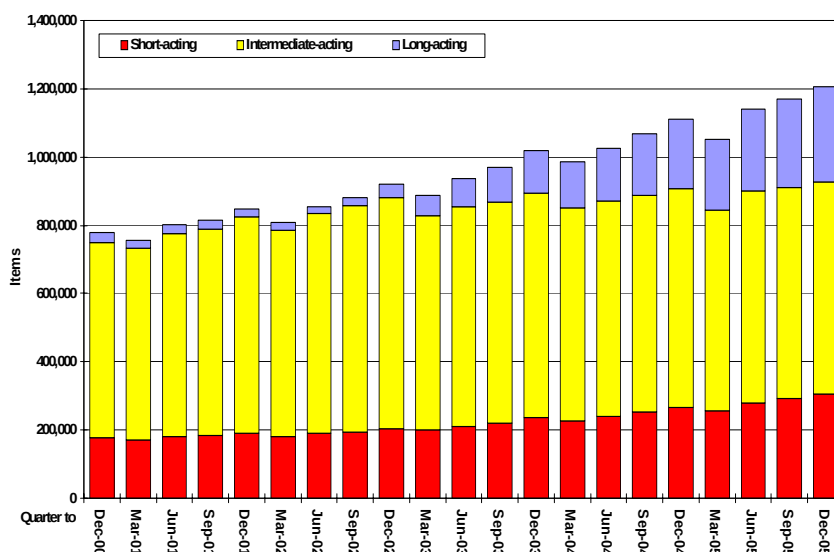
Trends in prescribing of blood glucose test strips, insulins and oral anti-diabetics in general practice in England.



(Prescribing Support Unit, Health and Social Care Information Centre, Feb 2006)

Over the last 5 years there has been a steady increase in the volume of insulin prescribed in general practice in England. The greatest increase is in the use of long acting insulins, though intermediate acting insulins are the most commonly used.

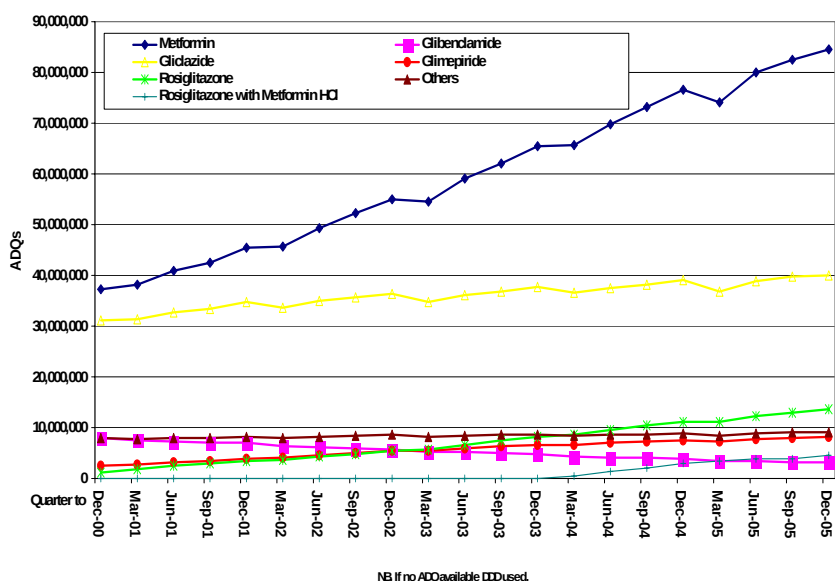
Trends in Prescribing of Insulins in General Practice in England



(Prescribing Support Unit, Health and Social Care Information Centre, Feb 2006)

Over the last 5 years there has also been increased use of oral treatments for type 2 diabetes. Metformin is the most commonly prescribed oral anti-diabetic drug in general practice in England. The usage of Metformin doubled between 2000 and 2005.

Trends in usage of oral anti-diabetic drugs in general practice in England



(Prescribing Support Unit, Health and Social Care Information Centre, Feb 2006)

ADQ = Average Daily Quantity - volume measure for drug utilisation