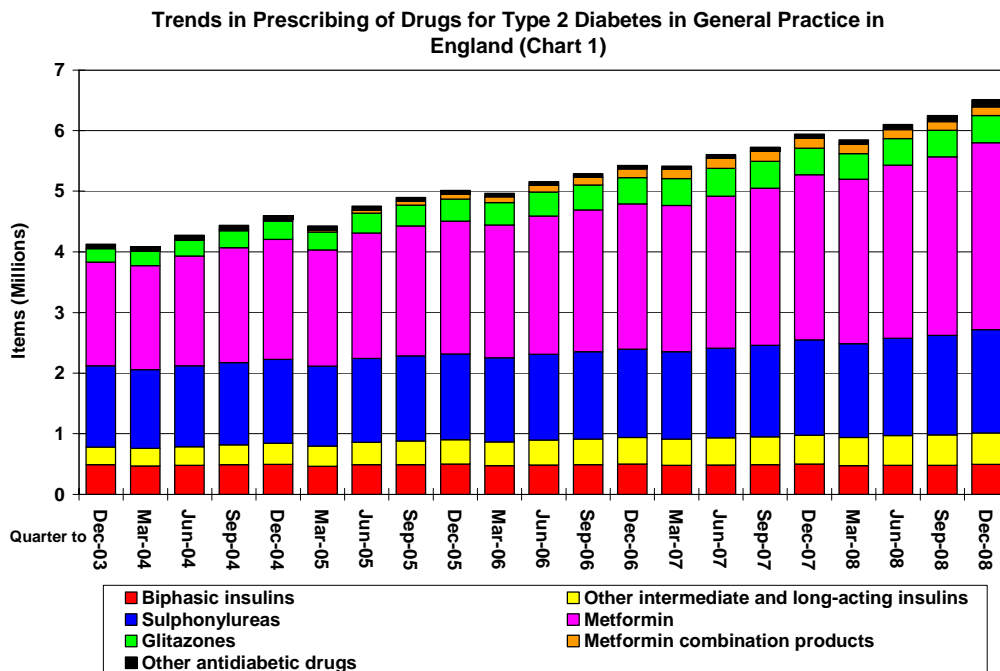


Type 2 Diabetes

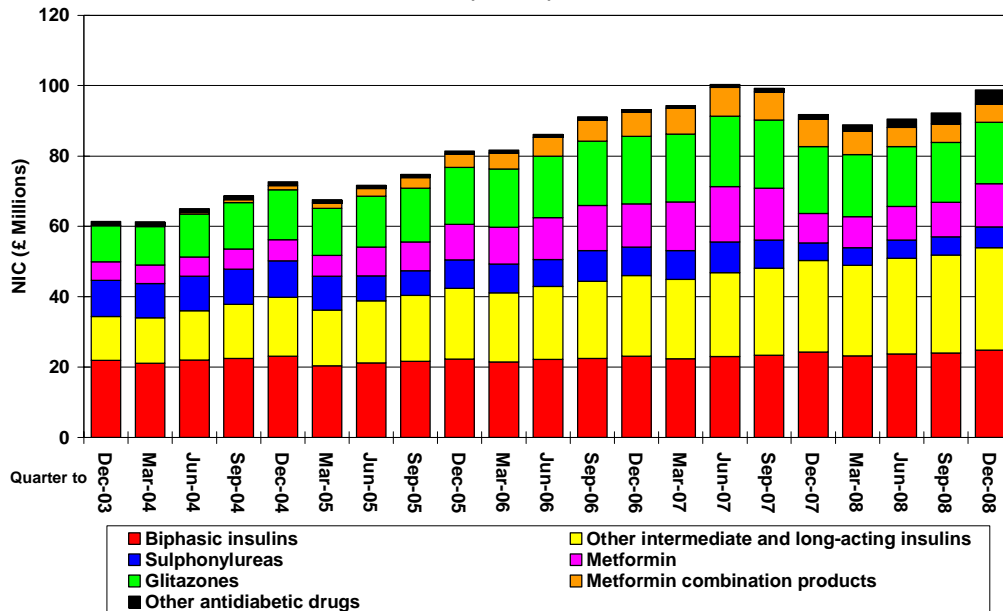
Type 2 diabetes is the most common form of diabetes, accounting for 90–95% of cases.¹ Charts 1 and 2 reflect the effect of increasing prevalence on prescribing and costs of products used in the management of type 2 diabetes. People with type 2 diabetes are at increased risk of developing microvascular (e.g. kidney and nerve damage) and macrovascular (e.g. cardiovascular and cerebrovascular disease) complications. These multiple vascular risk factors mean that diabetes care is typically complex and time-consuming. The necessary lifestyle changes, complexities of management and side effects of therapy make self monitoring and education for people with diabetes central parts of management.² In May 2008 NICE updated its clinical guidance on the management of type 2 diabetes. The key points and changes made from earlier guidance are discussed in this article.

Patient education and lifestyle management

Structured education should be offered to every person and/or their carer at or around the time of diagnosis, with annual reinforcement and review. A patient-education programme that meets the criteria laid down by the Department of Health and Diabetes UK Patient Education Working Group should be chosen.³ Individualised ongoing specialist nutritional advice should be provided and integrated into a personalised diabetes management plan combined with other aspects of lifestyle modification, such as increasing physical activity and losing weight. When setting a target glycated haemoglobin (HbA1c) level the person should be involved in decisions about their individual target level, which may be above 6.5% as recommended by the NICE clinical guideline.²



Trends in Spending on Drugs for Type 2 Diabetes in General Practice in England
(Chart 2)



From 1 June 2009 the reporting of HbA1c results in the UK will give the result in the current HbA1c-DCCT units (%) and in new HbA1c-IFCC units (mmol/mol). This dual reporting will continue until 31 May 2011 when only the new units will be used.

Blood pressure

NICE recommends offering lifestyle advice if blood pressure (BP) is confirmed as being consistently above 140/80mmHg or above 130/80 mmHg if there is kidney, eye or cerebrovascular damage. If lifestyle advice does not reduce BP to below these values then medication should be added. The first-choice antihypertensive drug is a once-daily ACE-inhibitor. For people of African-Caribbean descent or in people whose BP is not controlled to target on monotherapy a diuretic and/or calcium channel blocker should be added, with other drugs added as needed. A calcium channel blocker is recommended for women who may become pregnant. BP should be monitored every 4 to 6 months once a person has attained and consistently remained at their BP target.²

Anti-thrombotic therapy and lipid management

The NICE guidance also advises the use of aspirin 75mg daily in patients 50 years and older, whose BP is less than 145/90mmHg and under 50 years if significant other cardiovascular (CV) risk factors are present. However in October 2008 the results of the POPADAD⁴ trial were published. This study raises questions over the level of CV risk at which the benefits of aspirin use outweigh the gastrointestinal risks. Aspirin should still be given for secondary prevention of CV disease in people with type 2 diabetes. However, for primary prevention in type 2 diabetes, consideration on an individualized basis following an assessment of the benefits and risks may be more appropriate. Clopidogrel is recommended only in those with clear aspirin intolerance

except in the context of acute cardiovascular events and procedures.² NICE recommends simvastatin 40mg for most people aged 40 or older (unless their 10 year CV disease risk has been estimated at less than 20%), and younger people if their CV risk factors seem particularly poor. If a total cholesterol of less than 4 mmol/L or LDL-cholesterol of less than 2 mmol/L is not attained the dose can be increased to 80mg in line with the guideline recommendations.

Blood glucose management

In June 2008 two large randomised controlled trials of intensive glucose monitoring were published. ACCORD⁵ found no evidence of a lower risk of non-fatal myocardial infarction, non-fatal stroke or death from cardiovascular causes in the intensive treatment group in which HbA1c was lowered to a median of 6.4%, compared to the standard treatment group maintained at a median of 7.5%. The intensive blood sugar lowering treatment arm of the study was stopped 18 months early because of the higher mortality within this group. ADVANCE⁶ found that intensive control (HbA1c 6.5%) reduced the incidence of combined major macrovascular and microvascular events compared to standard control (HbA1c 7.3%). This was primarily because of a reduction in the incidence of nephropathy with no significant effect on retinopathy. There were no significant effects between intensive and standard control of blood glucose on major macrovascular events, death from cardiovascular causes or death from any cause. A further trial looking at the effects of intensive glucose control (HbA1c 6.9%) compared to standard glucose control (HbA1c 8.4%) on cardiovascular events in patients with long-standing type 2 diabetes was published in December 2008 (VADT⁷). It found that intensive control had no significant effect on the rates of major cardiovascular events, death or microvascular complications. These studies have stimulated considerable debate about the benefits of intensive glycaemic control in older adults with type 2 diabetes and whether there is an increased risk of adverse outcomes.

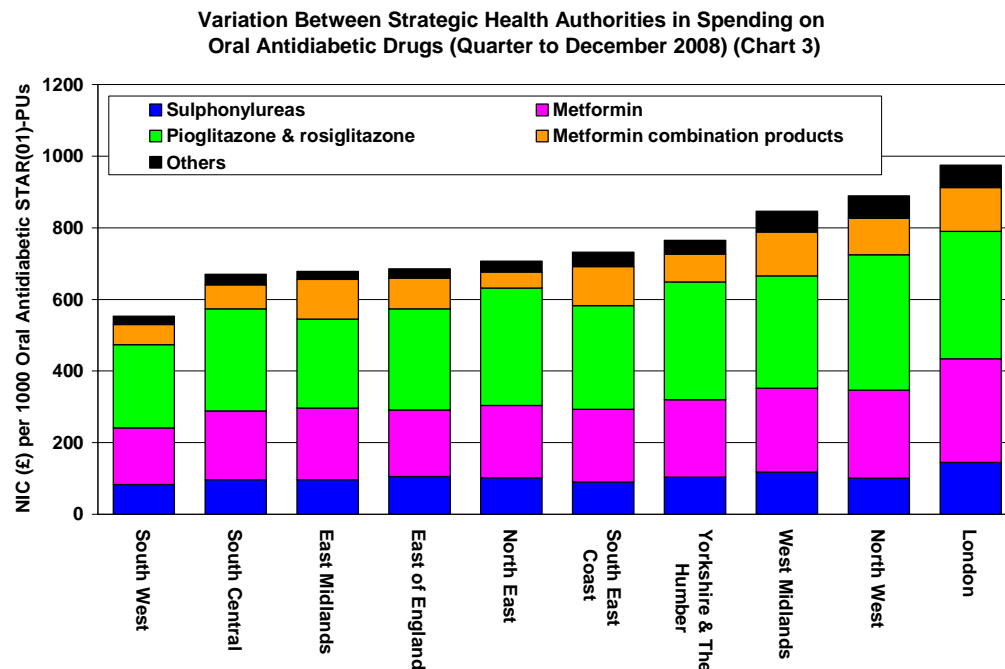
When oral glucose control therapies are required NICE recommends:

- Metformin as the first-choice oral hypoglycaemic. Sulphonylureas may be considered in the non-overweight or if metformin is contraindicated or not tolerated.
- If blood glucose control remains or becomes inadequate on metformin a sulphonylurea may be added. A rapid acting insulin secretagogue may be considered for people with non-routine daily lifestyle patterns. A thiazolidinedione (glitazone) should only be considered at this stage if hypoglycaemia on a sulphonylurea is a problem.
- The next stage would be to add in a thiazolidinedione or human insulin after discussion with the person.

A thiazolidinedione should not be commenced or continued in people who have evidence of heart failure or who are at higher risk of fracture.² When selecting a thiazolidinedione for initiation and continuation of therapy, account should be taken of up-to-date advice from the relevant regulatory bodies; the European Medicines Agency and the Medicines and Healthcare products Agency (MHRA).

Exenatide is not recommended in the NICE Clinical Guideline 66 for routine use in type 2 diabetes.² Reports of acute pancreatitis have been received by the MHRA in association with the use of exenatide leading to the MHRA issuing a Drug Safety Update in May 2008.⁸ NICE also made no recommendations on the use of gliptins in its guidance. A new guideline on the use of newer agents in type 2 diabetes mellitus is expected in May 2009.

Chart 3 shows a variation in spending on oral antidiabetic drugs by SHA with those areas of higher spending reflecting a higher prevalence of type 2 diabetes.



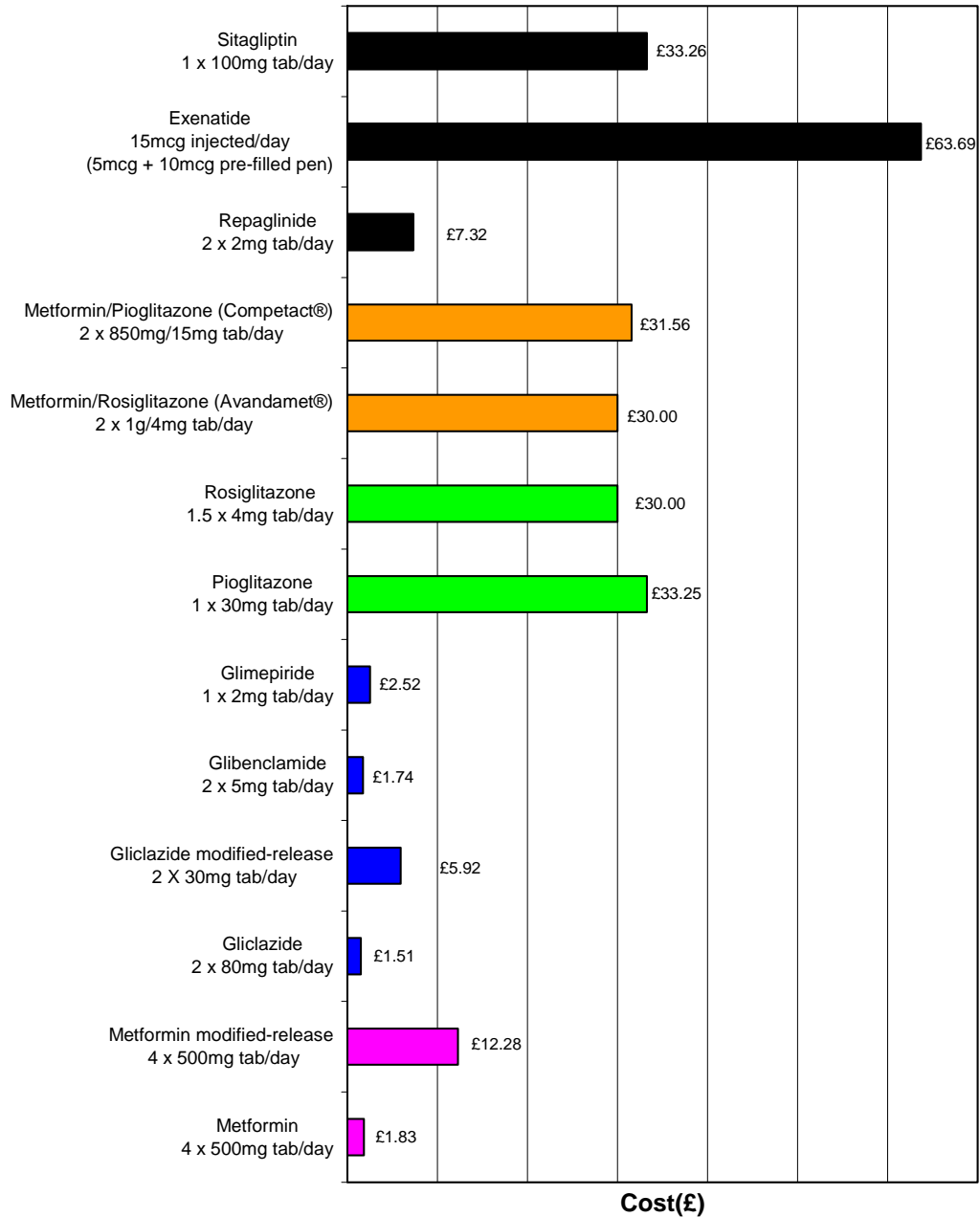
Self-monitoring of blood glucose

Self-monitoring of blood glucose should only be offered to a newly diagnosed patient as an integral part of their self-management education.² The purpose of self-monitoring should be discussed along with agreement about how the results should be interpreted and acted upon. There is a lack of good evidence that self-monitoring of blood glucose improves clinical outcomes in people with type 2 diabetes on oral therapy and yet the prescribing of blood glucose testing strips has risen by 11% to 1.4 million items per quarter and spending has risen 13% to £35.2 million over the last 5 years.

Complications of diabetes

Foot problems, kidney disease, and the presence of neuropathy should be assessed at diagnosis and at least annually thereafter. All people with diabetes should be referred for retinal screening at diagnosis as part of a formal screening programme.

Cost for 28 Days Treatment



Prices based on Drug Tariff May 2009 or Chemist and Druggist May 2009. Dose based on WHO DDDs where possible, otherwise BNF stated dose. The WHO DDD is a unit of measurement based on the assumed average maintenance dose in adults. It may not necessarily reflect the actual dose used.

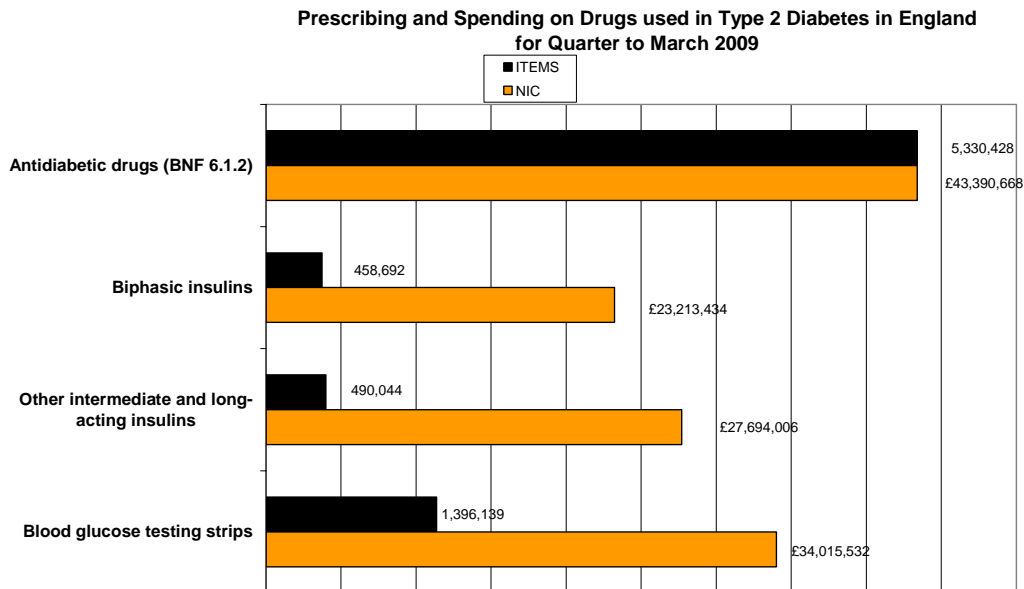
Prescribing Data (Reporting quarter = Oct - Dec 2008, Index quarter = Oct - Dec 2003)

Metformin prescribing has increased by 81% over the last 5 years, accounting for 56% (3.1 million items) of all antidiabetic drugs and 27% of the cost (£12.2 million). There has been a 27% increase in prescribing of sulphonylureas to 1.7 million items and cost has fallen by 42% to £5.9 million. Gliclazide accounts for 25% of all antidiabetic drugs and 10% of cost. At 1.4 million items (£4.5 million) it is the most commonly prescribed sulphonylurea. Glimepiride has risen 44% to 185,000 items whereas cost has fallen 44% to £931,000. Prescribing of rosiglitazone is 3% of all antidiabetic drugs (173,000) and 15% of the cost (£6.8 million). Pioglitazone accounts for 5% of antidiabetic drugs (275,000) and 24% of the cost (£10.6 million). Metformin combinations account for 144,000 items per quarter (3%), accounting for 12% of the cost on antidiabetic drugs (£5.3 million). In total the glitazones and glitazones combined with metformin represent 50% of the cost of antidiabetic drugs but only 11% of items. Repaglinide and nateglinide items are 27,300 and 7,800 (£365,000 and £215,000 respectively). Sitagliptin and vildagliptin prescribing is 36,000 and 1,500 items, costing £1.5million and £52,000 respectively. Intermediate- and long-acting insulins account for 71% of all insulin prescribing and 72% of cost (1 million items, £53.9 million). Of these, insulin glargine is the most commonly prescribed long-acting insulin, 304,000 items (30%) at £17.9 million (33%). Biphasic insulins account for 49% (492,000 items) of all prescribing of intermediate- and long-acting insulins, and 46% of the cost (£24.9 million).

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3. Structured patient education in diabetes: report from the patient education working group. www.dh.gov.uk
4. Belch J, MacCuish A, Campbell I et al. The prevention of progression of arterial disease and diabetes (POPADAD) trial: factorial randomized placebo controlled trial of aspirin and antioxidants in patients with diabetes and asymptomatic peripheral arterial disease. BMJ 2008;337:a1840
5. Action to Control Cardiovascular Risk in Diabetes study group. Effects of Intensive Glucose Lowering in Type 2 Diabetes. N Engl J Med 2008;358:2545-2559
6. ADVANCE Collaborative group. Intensive Blood Glucose Control and Vascular Outcomes in Patients with Type 2 Diabetes. N Engl J Med 2008;358:2560-2572
7. Duckworth W, Abraira C, Moritz T et al Glucose Control and Vascular Complications in Veterans with Type 2 Diabetes. N Engl J Med 2008;360:129-139
8. MHRA. Drug Safety Update. Exenatide (Byetta): risk of acute pancreatitis. Volume 1, Issue 10 May 2008.

SUMMARY

- Offer structured education, lifestyle modification advice and specialist nutritional advice.
- Involve the person in setting a target HbA1c.
- Use aspirin 75mg in higher-risk patients and those 50 years and older, whose BP is less than 145/90mmHg.
- First-choice antihypertensive is an ACE inhibitor (plus diuretic or calcium channel blocker for people of African-Caribbean descent). A calcium channel blocker is recommended for women who may become pregnant.
- Metformin is the first-choice oral hypoglycaemic.



Quarter to March 09

National

	ITEMS/1000 PUs	NIC/1000 PUs
Glitazone combination products	1.81	£64.00
Metformin	41.74	£177.22
Sulphonylureas	22.92	£78.03
Pioglitazone and rosiglitazone	5.97	£219.52
Exenatide	0.35	£28.54
Other oral antidiabetic drugs	1.47	£37.43