Prescribing of medicines for diabetes in primary care in England

Recently released government data have shed light on diabetes prescribing trends and cost pressures. Steve Chaplin reports.

The 2013 Health Survey for England (HSE) revealed a surprisingly high prevalence of medicines-taking, with 43% of men and 50% of women reporting they had taken a prescribed medicine within the previous week. Among participants aged 75 or older, around 90% were taking at least one medicine. The proportion of people using glucose-lowering medication for diabetes increased with age (Figure 1), BMI and, to a lesser extent, with declining household income.

However, the proportion of people being treated with glucose-lowering agents, though common, is dwarfed by the use of drugs to prevent or treat cardiovascular disease, and also by the use of antidepressants and analgesics. It is therefore not a surprise that polypharmacy is common and 70–80% of HSE participants aged 75 or older were taking three medicines. This level of medicines use poses a challenge to the treatment of type 2 diabetes, which itself requires long-term treatment to reduce risk factors for complications.

Prescribing statistics

Treatment options for diabetes have increased with the introduction of new classes of glucose-lowering drugs and the expansion of those classes with new alternatives. Prescribing of drugs for diabetes has been rising strongly over the past 10 years (Figure 2), and diabetes has long been the leading British National Formulary category by cost.

In 2014, general practitioners in England prescribed almost 48 million items for diabetes, including blood testing products, at a total cost of £849 million. Metformin is now the single most frequently prescribed glucose-lowering drug but insulins account for the greatest share of costs (Figure 3).

In the past decade, metformin prescribing more than doubled and that of ‘other antidiabetic drugs’ increased three-fold with the advent of GLP-1 agonists, DPP-4 inhibitors and SGLT-2 inhibitors. Other categories increased volume by a factor of about 1.5 with the exception of testing agents, which changed little. Spending on metformin and other antidiabetic drugs almost tripled over this period. Whereas the cost of insulins and testing agents rose by about a half and a quarter respectively, that of the sulphonylureas was almost unchanged.

Insulin prescribing

Insulins now account for 14% of volume and 39% of spending on products for diabetes, totalling 6.6 million prescriptions and £333 million in 2014. The growth in this category is almost entirely due to greater use of insulin analogues, especially the short-acting and biphasic products. About 30% of items and costs are for short-acting insulins, of which insulin aspart accounts for about 75% of both (Figure 4). Of the intermediate and long-acting insulins, the insulin analogues make up 76% of items and 84% of costs, with insulin glargine taking the largest share of each (Figure 5).

In 2013/14, insulin glargine ranked top and insulin detemir seventh among all drugs positively appraised by NICE and prescribed in the community.

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**Figure 1. Prevalence (%) of reported use of medicines to treat diabetes by sex and age**

**Figure 2. Diabetes prescribing 2005–2014**
Metformin prescribing
The use of metformin has increased over the past decade. In 2005, it accounted for 31% of items but this figure reached 40% in 2012 and has remained there since.

Almost 19 million metformin items were dispensed in 2014, costing a total of £96 million. Around two-thirds of prescribing was for generic immediate-release 500mg tablets, accounting for 49% of spending. Modified-release formulations, mainly prescribed generically, made up a further 25% by volume.

Other antidiabetic drugs
The DPP-4 inhibitors, GLP-1 agonists, SGLT-2 inhibitors and others (repaglinide, nateglinide, acarbose and pioglitazone) now make up about one-eighth of dispensed items and one-quarter of costs for antidiabetic drugs in primary care in England, despite the demise of rosiglitazone in 2010 (for which almost 1.2 million items were dispensed in 2007). Pioglitazone remains, after sitagliptin, the second most frequently prescribed product in this category (Figure 6), though it has declined from a prescribing peak of 1.7 million items in 2011 to 1.2 million in 2014.

The growth in this sector is due to the introduction of the DPP-4 inhibitors and the GLP-1 agonists.
Their use was subsequently consolidated by the availability of combined formulations with metformin, which now make up 6% of this category by cost and volume. As Figure 7 shows, the average cost per item is about £10 lower for the DPP-4 inhibitors than for the SGLT-2 inhibitors and far below that of the GLP-1 agonists, of which liraglutide is the most expensive. Figure 8 shows the increase in prescribing of DPP-4 inhibitors and GLP-1 agonists from their time of introduction (trends for costs are very similar), demonstrating the dominance of sitagliptin and the rapid uptake of liraglutide. The DPP-4 inhibitors account for 55% of items and costs of this category; the growth of sitagliptin prescribing has been rapid and it now makes up 70% of both volume and the £111 million spent on these drugs. The market for GLP-1 agonists is much smaller — prescribing volume is one-quarter of that of the DPP-4 inhibitors, though it is worth around £67 million. Liraglutide accounts for 64% of spending in this group with exenatide taking 30%. The rate of growth in prescribing volume of the GLP-1 agonists has been lower than that of the DPP-4 inhibitors since 2009. Prescribing of DPP-4 inhibitors is currently increasing at about 20% annually compared with 5% for GLP-1 agonists, though the rate of growth is now falling for both classes.

SGLT-2 inhibitors were introduced in 2012 and have gained only 3% of the market share of other antidiabetic drugs. First-in-class dapagliflozin currently accounts for almost all prescribing and spending; canagliflozin and empagliflozin were introduced only recently.

Acarbose and the prandial glucose regulators nateglinide and repaglinide have never been very popular in primary care. Prescribing of acarbose and nateglinide has been declining since 2005 and current volume is less than half what it was a decade ago (55 000 and 78 000 items respectively) with costs of about £600 000 each. Use of repaglinide peaked at 110 000 prescriptions in 2009 and has now fallen to 78 000, with a corresponding decrease in costs from £1.4 million to £639 000.

**Summary**

Glucose-lowering agents for diabetes are still the largest category of prescribed medicine in primary care in England. They are prescribed for people who take several other medicines to reduce their risk factors for diabetes complications and comorbidities, and this presents a challenge to effective management. Growth in prescribing of metformin continues and it remains the most frequently prescribed drug, but cost pressures come from growth in the use of insulin analogues, the DPP-4 inhibitors and GLP-1 agonists. The SGLT-2 inhibitors have yet to make an impact on these statistics.

Steve Chaplin, BPharm, MSc, Medical Correspondent

**References**

References are available online at www.practicaldiabetes.com.
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References