Major journals

BRITISH MEDICAL JOURNAL

The Quality and Outcomes Framework has not improved diabetes management

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

1 This study aimed to assess whether the improving quality of diabetes care in the UK is due to the Quality and Outcomes Framework (QOF), or to existing temporal trends.

2 Using a retrospective cohort design, the authors examined the data from people with type 1 or 2 diabetes across 300 general practices in the UK from 2001–07, of which 147 had usable data for the whole period.

3 Annual prevalence of diabetes and attainment of outcomes over the 3 years previous to, and the 3 years following, the introduction of the QOF were measured.

4 The prevalence of type 1 diabetes was stable across the study period, but the prevalence of type 2 diabetes increased. After the introduction of the QOF, existing trends of improvement in glycaemic control, cholesterol levels, and blood pressure were attenuated.

5 The QOF appears to have increased the number of individuals with type 2 diabetes with an HbA_{1c} ≤7.5% (≤58 mmol/mol; P=0.02).

6 The QOF has not improved the management of people with type 1 diabetes, and there has been no reduction in the number of people with type 2 diabetes with an HbA_{1c} >10% (>86 mmol/mol).

7 The authors concluded that the QOF, in its present form, fails to capture almost one third of people in whom care may be suboptimal, and may even lead to reduced levels of care for some.

Calvert M, Shankar A, McManus R et al (2009) Effect of the quality and outcomes framework on diabetes care in the United Kingdom: retrospective cohort study. *BMJ* **338**: b1870

Don't throw the baby out with the bath water! The effect of the Quality and Outcomes Framework on UK diabetes care

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I have long argued that the single greatest improvement in diabetes care over the past 10 years has been the Quality and Outcomes Framework (QOF). I usually lose these arguments. Calvert and colleagues (summarised alongside) set out to "assess whether changes in the quality of care reflect existing temporal trends or are a direct result" of the QOF. The discussion is heavily biased in supporting the former proposition. This is despite the evidence, in the paper, showing a substantial improvement in all clinical care audit parameters by the end of the first year of the QOF. It is inconceivable that such an improvement would have occurred without the imperative of linking financial incentives to higher quality care. There was also the distinct threat of loss of income for poorer quality care.

However, some conclusions and results in the study do resonate with my concerns about the QOF. It would appear that up to one third of people with diabetes may not have been counted in the QOF returns due to coding or individuals being exempted or not being followed up in primary care. It is probably also fair to conclude that individuals with type 1 diabetes have not seen the same overall improvement in care as those with type 2 diabetes. It is certainly evident that the upper threshold target for treatment of the practice cohort is set too low at 90% for parameters such as blood pressure, cholesterol and retinal screening. This means that 10% of people with diabetes can be inadequately treated and the full financial incentive still awarded.

Undoubtedly it is multifactorial intervention that reduces the long-term microvascular, macrovascular and death rates in type 2 diabetes, as exemplified in the Steno-2 study (Gaede et al, 2008). A QOF measure for the percentage of individuals with diabetes achieving all three targets of blood pressure <130/80 mmHg, total cholesterol <4 mmol/L and good glycaemic control (HbA_{1c} <7.5% [<58 mmol/mol]) would be far better at reducing future complications rather than a focus on single factors as in the current QOF.

Gaede P et al (2008) Effect of a multifactorial intervention on mortality in type 2 diabetes. *N Engl J Med* **358**: 580–91

ANNALS OF INTERNAL MEDICINE

CVD risk has improved but some differences still exist

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 This study assessed US trends in cardiovascular (CV) risk parameters from 1999–2006, to analyse any changes by race, ethnicity and education, and to investigate whether any differences are ameliorated at 65 years of age when Medicare coverage begins.

2 Data from adults aged 40–85 years in the National Health and Nutrition Examination Survey from 1999–2006 were used, and the authors measured blood pressure control (<140/90 mmHg) and mean systolic blood pressure in adults with hypertension; glycaemic control (HbA_{1c} <7.0% [<53 mmol/mol]) and mean HbA_{1c} in those with diabetes; total cholesterol (TC) control and mean TC levels in those with coronary heart disease, stroke or diabetes.

3 CV disease (CVD) control improved significantly between 1999 and 2006 for all measures (P<0.001). The trends observed in 1999 did not differ by race, ethnicity or by education in 2006. However, with the introduction of Medicare at age 65, the differences that exist between groups narrowed.

4 The authors concluded that expanding insurance coverage before 65 years of age may reduce racial, ethnic and socioeconomic differences in health outcomes for adults with CVD and diabetes.

McWilliams JM et al (2009) Differences in control of cardiovascular disease and diabetes by race, ethnicity, and education: U.S. trends from 1999 to 2006 and effects of medicare coverage. *Ann Intern Med* **150**: 505–15

"Severe hypoglycaemia is associated with increased risk of dementia, particularly for older people who have a history of multiple episodes."

BRITISH MEDICAL JOURNAL

QDScore predicts 10-year risk of diabetes

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 In this study, the authors describe the validation of their risk prediction engine for evaluating 10-year risk of developing diabetes.

2 The authors used data routinely QResearch collected from 355 general practices in England and Wales to develop the QDscore. The score was validated using data from 176 practices, with the main outcome being a diagnosis of diabetes.

3 The model takes into account ethnicity, age, sex, BMI, smoking status, family history of diabetes, deprivation, hypertension, cardiovascular disease and use of corticosteroids.

4 The risk of developing type 2 diabetes was increased 4- to 5-fold between different ethnic groups, with people of Caucasian origin being at the lowest risk.

5 QDScore is the first risk-prediction engine to estimate the 10-year risk of diabetes on the basis of a prospective cohort study, including both social deprivation and ethnicity. It can be used in the clinic, and does not require laboratory testing.

Hippisley-Cox J, Coupland C, Robson J et al (2009) Predicting risk of type 2 diabetes in England and Wales: prospective derivation and validation of QDScore. *BMJ* **338**: b880

AMERICAN JOURNAL OF MEDICINE

Serum phosphate linked to CV death

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 The authors of this study set out to determine how serum phosphorus, calcium and calcium-phosphorus levels are associated with cardiovascular (CV) event rates and mortality.

2 A post-hoc analysis of data from 950 participants of the Appropriate Blood Pressure Control in Diabetes study was carried out using Cox-regression.

3 The study participants were followed up for a mean of 4.8 years, and there were 42 deaths and 193 CV events.

4 An association was found between serum phosphorus and CV death and calcium phosphorus and CV death, but only serum phosphorus was significant (P=0.004).

5 The authors believe that serum phosphorus levels could be used to predict CV mortality in type 2 diabetes.

Chonchol M, Dale R, Schrier RW, Estacio R (2009) Serum phosphorus and cardiovascular mortality in type 2 diabetes. *Am J Med* **122**: 380–6

JAMA

Hypoglycaemia linked to dementia

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

1 The authors undertook this study to ascertain whether hypoglycaemic episodes severe enough to warrant hospitalisation increases the risk of developing dementia in older people with type 2 diabetes.

2 Hypoglycaemic events in 16 667 people with type 2 diabetes with a mean age of 65 were collected and reviewed from 1980 to 2002. Average follow-up was 27 years.

3 During follow-up, 250 individuals were diagnosed with both dementia and at least one severe hypoglycaemic episode. There was a 2.39% increased risk of developing dementia per year of follow-up in people suffering severe hypoglycaemia compared with controls.

4 The authors suggested that severe hypoglycaemia is associated with increased risk of dementia, particularly for older people who have a history of multiple episodes.

Whitmer RA, Karter AJ, Yaffe K et al (2009) Hypoglycemic episodes and risk of dementia in older patients with type 2 diabetes mellitus. *JAMA* **301**: 1565–72

AMERICAN JOURNAL OF MEDICINE

Achievement of targets improves, despite increase in diabetes prevalence

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 This study aimed to determine whether there has been an increase in prevalence of diabetes in the US from 1999 to 2006, and to determine whether blood glucose, blood pressure and lipid control has improved in people diagnosed with the condition.

2 Data from 17 306 individuals aged ≥20 years who participated in the National Health and Nutrition Examination Survey were analysed.

3 The parameter targets were: HbA_{1c} <7.0% (<53 mmol/mol); blood pressure <130/80 mmHg, and LDL-cholesterol <100 mg/dL.

4 The prevalence of diagnosed diabetes in the US was 6.5% from 1999–2002 and 7.8% from 2003–2006 (P<0.05). There were significant increases in prevalence in women (P=0.003), non-Hispanic white individuals (P=0.04), and obese people (P=0.03).

5 Average HbA_{1c} decreased from 7.62% (59.8 mmol/mol) to 7.15% (54.6 mmol/mol) during the study period (P<0.05). Individuals achieving glycaemic and cholesterol targets increased significantly (both P<0.05). The percentage of people with diabetes achieving glycaemic, lipid and blood pressure targets increased from 7.0% to 12.2%, but this was not significant.

6 The authors concluded that, with the increasing prevalence of diabetes in the US, further measures need to be taken to ensure that glycaemia, blood pressure and lipid goals are reached simultaneously.

Cheung BM, Ong KL, Cherny SS et al (2009) Diabetes prevalence and therapeutic target achievement in the United States, 1999 to 2006. *Am J Med* **122**: 443–53

THE LANCET

Intensive glycaemic control reduces coronary event risk

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 This meta-analysis was undertaken to ascertain whether intensive glycaemic control reduces macrovascular event rates and all-cause mortality in people with type 2 diabetes.

2 Five RCTs that met their inclusion criteria were identified: UKPDS (UK Prospective Diabetes Study), PROactive (Prospective Pioglitazone Clinical Trial In Macrovascular Events), ADVANCE (Action in Diabetes and Vascular Disease: Preterax and Diamicron MR-Controlled Evaluation), VADT (Veterans Affairs Diabetes Trial) and ACCORD (Action to Control Cardiovascular Risk in Diabetes). This gave an overall study population of 33 040.

3 The authors used data on all-cause mortality (2892), coronary heart disease (2318 events), non-fatal myocardial infarction (1497 events) and stroke (1127). These data were collected over 163 000 person-years of follow-up

4 Mean HbA_{1c} was 0.9% (9.8 mmol/mol) lower for individuals randomised to receive intensive treatment compared with those who underwent standard therapy. Intensive glycaemic control resulted in a 17% reduction in rates of non-fatal myocardial infarction, and a 15% reduction in coronary heart disease. No significant benefit was conferred in stroke or all-cause mortality events.

5 The authors concluded that intensive glycaemic control reduces coronary event rates more than the standard control, and does not increase risk of death. The authors recommended that guidelines be drawn up regarding the optimum method of HbA_{1c} reduction dependent on population.

Ray KK, Seshasai SR, Wijesuriya S et al (2009) Effect of intensive control of glucose on cardiovascular outcomes and death in patients with diabetes mellitus: a meta-analysis of randomised controlled trials. *Lancet* **373**: 1765–72

JAMA

Screening does not reduce cardiac event rates in diabetes

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 The authors of the DIAD (Detection of Ischaemia in Asymptomatic Diabetics) study aimed to assess whether routine screening for coronary artery disease (CAD) affects, and identifies individuals with type 2 diabetes as being at high risk of, cardiac outcomes.

2 The authors enrolled 1123 people with type 2 diabetes and no symptoms of CAD from 14 diabetes clinics and practices, and randomly assigned them to screening with adenosine-stress radionuclide myocardial perfusion imaging (MPI) or no screening.

3 Study participants were followed-up prospectively from August 2000 to September 2007, with the main outcome measure being non-fatal myocardial infarction (MI) or cardiac death.

4 The cumulative cardiac event rate was 2.9% over a mean follow-up of 4.8 years. Seven non-fatal MIs and eight cardiac deaths occurred in the screened group, and 10 non-fatal MIs and seven cardiac deaths among those who were not screened.

5 The overall rate of coronary revascularisation was low in both groups: 31 (5.5%) in the screened group and 44 (7.8%) in the unscreened group.

6 The authors concluded that screening for coronary heart disease using MPI does not appear to influence event rates for non-fatal MI or cardiac death in people with diabetes who have no symptoms of cardiovascular disease.

Young LH, Wackers FJ, Chyun DA et al (2009) Cardiac outcomes after screening for asymptomatic coronary artery disease in patients with type 2 diabetes: the DIAD study: a randomized controlled trial. *JAMA* **301**: 1547–55

ARCHIVES OF INTERNAL MEDICINE

Metformin reduces risk of macrovascular disease in T2D

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 Use of metformin is common in type 2 diabetes. The authors of this study aimed to elucidate the beneficial effects of the drug on metabolic and vascular parameters in people with type 2 diabetes.

2 This randomised, placebo-controlled trial enrolled 390 individuals with type 2 diabetes treated with insulin therapy from the outpatient clinics of three hospitals.

3 Participants were randomly assigned to receive either metformin 850 mg or placebo (1–3 times daily), in addition to their insulin therapy; median follow-up was 4.3 years.

4 The primary endpoint was an aggregate of microvascular and macrovascular morbidity and mortality, with secondary endpoints of microvascular and macrovascular morbidity and mortality. Any effects on HbA_{1c}, insulin requirement, and body weight were also recorded.

5 Metformin did not improve the primary endpoint, although it did offer an improvement in macrovascular mortality, mainly due to a reduction in weight gain (P=0.02).

6 Metformin also improved glycaemic control (P<0.001) and reduced insulin requirements (P<0.001).

7 The authors concluded that metformin treatment should be continued in people with type 2 diabetes after switching to insulin therapy.

Kooy A, de Jager J, Lehert P et al (2009) Long-term effects of metformin on metabolism and microvascular and macrovascular disease in patients with type 2 diabetes mellitus. *Arch Intern Med* **169**: 616–25

"Metformin treatment should be continued in people with type 2 diabetes after switching to insulin therapy."