Management & prevention of type 2 diabetes

Could non-physician clinical care have a role in the UK?

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It is clear that to reduce both the microvascular and macrovascular complications of type 2 diabetes requires good blood pressure control, good blood glucose control and good control of lipid levels. However, we also know that large gaps exist in the achievement of these care goals in real-life practice across the globe.

In England and Wales in 2014/15, the achievement of a combined intermediate outcome goal of blood pressure at or below 140/80 mmHg, HbA_{1c} at or below 58 mmol/mol (7.5%) and a total cholesterol level below 5 mmol/L was achieved in 41% of people with type 2 diabetes (Health and Social Care Information Centre, 2016).

Quality improvement (QI) schemes have been developed and implemented to try to drive up standards. They may have components directed at patients (such as reminders), directed at care providers (such as guideline prompts) and directed at health systems (such as institutionalising a culture of quality).

Evidence of the effectiveness of QI interventions comes from research that mostly has looked at a single QI intervention, and has assessed benefit only in the short term. In a meta-analysis of 48 cluster and 94 randomised controlled trials of diabetes QI interventions, the largest trial only included 206 participants and the longest follow-up was just 12 months (Tricco et al, 2012).

In the paper by Ali and colleagues (summarised alongside), 1146 patients with type 2 diabetes from specialist diabetes clinic populations in India and Pakistan were recruited into this CARRS (Center for cArdiometabolic Risk Reduction in South Asia) randomised controlled trial. While 571 received usual care, 575 were given a multicomponent QI strategy comprising non-physician care coordinators (CCs) and decision-support electronic health record (DS-EHR) software. The CCs contacted the participants monthly to discuss self-management, adherence to diet, exercise and medication use. Treatment was aligned with evidence-based guidelines through individualised computer-generated clinical prompts. The CCs had distinct access to the DS-EHR and used this to record their interactions with participants.

The baseline characteristics were similar in the intervention and control groups. The mean HbA_{1c} was 85 mmol/mol (9.9%) and blood pressure (BP) was 143.3/81.7 mmHg. Over a median of 28 months, 18.2% of people in the intervention group achieved the primary outcome of HbA_{1c} below 53 mmol/mol (7%), plus BP less than 130/80 mmHg and/or LDL-cholesterol level less than 2.59 mmol/L (100 mg/dL), as compared to 8.1% in the usual care control group.

Those in the intervention group achieved greater reductions in the individual components of the primary outcome and reported higher scores in health-related quality-of-life and treatment satisfaction scores.

This is a well-conducted study with very interesting results. The authors say that their results "offer an encouraging demonstration of the implementation of comprehensive diabetes management and QI in low- and middle-income country settings."

I wonder whether the idea of using non-physician clinical CCs might have a role in improving diabetes care in the UK. ■

Health and Social Care Information Centre (2016) *National Diabetes Audit 2013–2014 and 2014–2015. Report 1: Care Processes and Treatment Targets*. HSCIC, Leeds. Available at: http://bit.ly/1nA7N8a (accessed 07.11.16)

Tricco AC, Ivers NM, Grimshaw JM et al (2012) Effectiveness of quality improvement strategies on the management of diabetes: a systematic review and meta-analysis. *Lancet* **379**: 2252–61

Roger Gadsby
In the spring of 2001, the first issue of *Diabetes Digest* was published. The section on the management and prevention of type 2 diabetes was edited by Dr Roger Gadsby. Sixty issues later, Roger has decided to retire as Section Editor. Dr David Kerr and the Publisher would like to extend our warmest wishes to Roger, and thank him for sharing his wisdom and insight with our readers for the last 15 years.

Ann Intern Med

Effectiveness of a QI strategy

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! Factor	✓✓✓✓✓

1 Guidelines for the management of diabetes recommend ameliorating cardiometabolic parameters through the control of blood glucose levels, blood pressure and lipid levels. Globally, however, care goals are often not met.

2 Quality improvement (QI) interventions aimed at patients, providers and health systems can help to address these gaps in care. This randomised controlled trial evaluated the effect of a multicomponent QI strategy on cardiometabolic profiles in people with poorly controlled T2D.

3 Participants from ten diabetes clinics in India and Pakistan were assigned to the QI care model (n=575) or to usual care (n=571). In the former, participants were supported by non-physician care coordinators who accessed a decision-support electronic health record (DS-EHR) system to record interactions. Prompts from the DS-EHR were immediately reviewed with the treating physician.

4 Baseline characteristics were similar between groups. After a median of 28 months, 18.2% of the intervention group compared with 8.1% of the usual care group achieved the primary outcome of HbA_{1c} <53 mmol/mol (7%) plus blood pressure <130/80 mmHg and/or LDL-cholesterol <2.59 mmol/L.

5 Intervention participants achieved larger reductions in HbA_{1c}, systolic BP, diastolic BP and LDL-cholesterol level compared with usual care. They also reported higher health-related quality of life and treatment satisfaction.

6 The authors conclude that multicomponent QI interventions are effective, even in resource-challenged clinics.

Ali MK, Singh K, Kondal D et al (2016) Effectiveness of a multicomponent quality improvement strategy to improve achievement of diabetes care goals. *Ann Intern Med* **165**: 399–408

JAMA Intern Med

Incretin-based drugs and risk of acute pancreatitis

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! Factor	✓✓✓

1 The use of incretin-based drugs, such as dipeptidyl peptidase-4 (DPP-4) inhibitors and glucagon-like peptide-1 (GLP-1) receptor agonists, in the treatment of T2D has raised concerns of an association with an increased risk of acute pancreatitis.

2 This large, multicentre study examined health records from Canada, the US and the UK to investigate this association.

3 The study population comprised 1 532 513 individuals with T2D initiating the use of non-insulin antidiabetes drugs, and was followed for a mean of 2.3 years.

4 During this time, 5165 participants were hospitalised for acute pancreatitis (incidence rate, 1.49/1000 person-years).

5 Current use of incretin-based drugs was not associated with an increased risk of acute pancreatitis compared with current use of two or more oral antidiabetes drugs (pooled hazard ratio, 1.03; 95% confidence interval, 0.87–1.22).

6 Secondary analyses found that there was no variation in risk between the DPP-4 inhibitor and GLP-1 receptor agonist drug classes. There was no evidence of an association between duration of use and type of incretin-based drug.

7 The findings provide some reassurance that the use of incretin-based therapies is not associated with an overall increased risk of acute pancreatitis. While it remains possible that these drugs may be associated with this condition, the risk is likely to be small.

Azoulay L, Filion KB, Platt RW et al (2016) Association between incretin-based drugs and the risk of acute pancreatitis. *JAMA Intern Med* **176**: 1464–73

Diabetes Care

Metformin and CKD: the case against

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! Factor	✓✓✓

1 While metformin is considered as a first-line therapy for T2D, exceptionally rarely it causes lactic acidosis that can be fatal. The likelihood is substantially higher in those with kidney impairment and those at risk of acute kidney injury.

2 This discussion article argues that, to prevent harm, the renal restrictions on the prescribing of metformin should be maintained.

3 The authors point to Taiwan, where metformin was previously widely prescribed to people with chronic kidney disease (CKD). Here, metformin use was associated with a higher mortality in those with advanced CKD.

4 As well as these safety concerns, it is unclear whether metformin yields the same multi-organ benefits in those with CKD as in those without.

Kalantar-Zadeh K, Kovesdy CP (2016) Should restrictions be relaxed for metformin use in chronic kidney disease? No, we should never again compromise safety! *Diabetes Care* **39**: 1281–6

Diabetes Care

Metformin and CKD: the case for

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! Factor	✓✓✓

1 As a counterpoint to the article summarised above, these authors present evidence that supports the use of metformin under normal circumstances in individuals with stage 3 chronic kidney disease (CKD).

2 While acknowledging the existence of metformin-associated lactic acidosis (MALA), they point to studies that indicate its rarity.

3 They argue that MALA is not associated with stable CKD, but very commonly results from acute kidney injury (AKI) and a subsequent accumulation of metformin.

4 Consequently, physicians should monitor kidney function closely when stage 3 CKD is reached, so that metformin can be stopped when risk factors for lactic acidosis or AKI occur. It should not be used in stage 4 CKD.

5 The authors' position is in line with current American Diabetes Association and European Association for the Study of Diabetes guidelines.

Balros GL, Molitch ME (2016) Should restrictions be relaxed for metformin use in chronic kidney disease? Yes, they should be relaxed! What's the fuss? *Diabetes Care* **39**: 1281–6

Diabet Med

6-minute walk test

Readability	✓✓✓✓
Applicability to practice	✓✓✓
WOW! Factor	✓✓✓

1 This Peruvian study enrolled 111 adults with T2D and 150 healthy adults, of a similar age and sex, as the control. Among those with T2D, 67 (60%) had non-complicated diabetes and 44 (40%) had complicated diabetes, defined as having peripheral neuropathy, retinopathy or nephropathy).

2 After being assessed for vital signs and fatigue, all participants undertook a simple, reproducible 6-min walk test.

3 The mean unadjusted 6-min walk distances for those with and without complications were 376 m and 394 m, respectively, compared with 469 m in the control group ($P<0.001$).

4 Participants walked 13 m less for each 1% (10.9 mmol/mol) increase in HbA_{1c}.

5 Impairment of functional capacity may precede other manifestations of diabetes, so the 6-min walk test could be used to identify early cardiovascular impairment or deconditioning among adults with diabetes.

Stewart T, Caffrey DG, Gilman RH et al (2016) Can a simple test of functional capacity add to the clinical assessment of diabetes? *Diabet Med* **33**: 1133–9

> *"The findings provide some reassurance that the use of incretin-based therapies is not associated with an overall increased risk of acute pancreatitis."*