

Management & prevention of type 2 diabetes

Targets for diabetes need to be realistic



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I found the paper by Winocour on realistic targets for diabetes refreshing. It takes a fresh look at the problems of trying to implement evidence-based diabetes guidelines in the routine situations in which clinicians find themselves every day.

The author discusses the main UKPDS 'goals' for blood glucose concentration and blood pressure: an HbA_{1c} level of 7% or below, and a blood pressure of 140/80mmHg or below. He points out that only 50–70% of 'well-motivated' people enrolled in research studies reach these goals. Indeed, in routine clinical practice these goals might be impractical and de-motivating for a number of our patients. Achieving such therapy goals could mean

taking several different medications, resulting in poor adherence to therapy.

The author suggests that individually tailored targets are needed, and that their effectiveness should be measured by improvements in the range of metabolic and blood pressure measurements taken in diabetes clinics. He points out that the HbA_{1c} goal of 7% is a mean for a population. This level might therefore be valid in clinical practice only in as much as we should focus efforts on shifting the mean level that we try to achieve in our clinics towards this level.

Winocour also emphasises the importance of developing combination products to help people who are experiencing difficulties in adhering to complex multiple drug therapies.

unrealistic as, again, subjects in the original study had difficulty in achieving this target.

6 Because microalbuminuria indicates an increased risk of both micro- and macrovascular disease, intensive efforts to control hypertension, hyperglycaemia, dyslipidaemia and hyperviscosity should be focused on patients with microalbuminuria.

7 The concentrations of lipids and lipoproteins at which treatment of dyslipidaemia should be initiated are unknown at present. It is also not known what target levels should be recommended.

8 When coronary heart disease is diagnosed, aggressive treatment of dyslipidaemia is mandatory, and both fibrates and statins should be considered.

9 If coronary heart disease is not diagnosed, risk tables are often used. However, these fall short in that they do not take account of the varying degrees of risk factors and also assume equivalent risk over several years. An alternative is to start treatment depending on lipid levels, but it is important here to consider more than one type of lipid.

10 The pattern of dyslipidaemia might make the choice of drug crucial, although this is often not emphasised.

11 Current target lipid levels are attained by only 71% of patients.

12 The ideal scenario for the future would be to develop combination products to reduce the number of different medications that individual patients have to take. However, until then, reasonable targets should be set so as to encourage patients.

Winocour PH (2002) Effective diabetes care: a need for realistic targets. *British Medical Journal* 324: 1577–80



Reasonable targets could motivate patients

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

1 Metabolic and blood pressure targets in people with type 2 diabetes need to be tailored to the individual patient as global targets are often unrealistic.

2 The recommended target for HbA_{1c} levels was 7%, although even in the study that produced this figure, the intensive treatment allowed only 50% of subjects to achieve this target.

3 Also, the subjects in this study were newly diagnosed, and so would have differing biochemistry from those in the later stages of the disease.

4 For glycaemic control, estimated duration of diabetes, obesity, concomitant therapy, comorbidity, age and lifestyle should also be taken into account.

5 The target set for the control of hypertension also seems

‘The UKPDS model predicts the absolute risk of a first stroke in people with type 2 diabetes using variables that are readily available in routine clinical practice.’

‘Self-management education for adults with diabetes improves glycated haemoglobin levels at immediate follow-up, and increased contact time increases the effect.’



Collaboration with educators improves glycaemic control

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

1 Mean HbA_{1c} levels for most patients remain high, despite an adequate frequency of visits to primary care physicians. To try to improve glycaemic control in adults with diabetes, primary care physicians referred patients with unsatisfactory glycaemic control, frequent hypoglycaemia or inadequate self-management to a team of educators for a 3-month programme.

2 Patients had at least weekly contact with a diabetes educator and received changes in insulin and/or other medication, coupled with extensive individualised instruction.

3 After 3 months, the first 350 patients who completed the 3-month programme had an overall mean decrease in HbA_{1c} level of 1.7%.

4 Improvement was irrespective of whether patients had type 1 or type 2 diabetes, and were or were not receiving insulin therapy. The level of HbA_{1c} at entry was the most significant predictor of the fall in HbA_{1c} level.

5 A 3-month ‘pulse’ of intensive outpatient counselling and treatment, comprising an average combination of four outpatient visits with a diabetes nurse educator, two outpatient visits with a dietitian, and weekly contact by telephone, fax or email, improved HbA_{1c} levels.

6 It therefore appears that barriers to improving glycaemic control could be reduced by collaboration between primary care physicians and endocrinologist-directed diabetes educators.

Graber AL, Elasy TA, Quinn D et al (2002) Improving glycaemic control in adults with diabetes mellitus: shared responsibility in primary care practices. *Southern Medical Journal* 95 (7): 684–90



UKPDS model predicts stroke risk in type 2 diabetes

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

1 Mathematical models were developed to estimate the risk of a first stroke using data from 4549 newly diagnosed type 2 diabetic patients enrolled in the UK Prospective Diabetes Study (UKPDS).

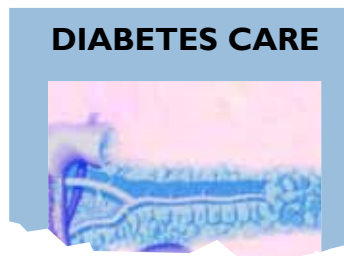
2 During 30700 person-years of follow-up, 188 first strokes occurred.

3 Survival probabilities calculated using the model were compared with those calculated using nonparametric methods.

4 Variables included in the final model were duration of diabetes, age, sex, smoking, systolic blood pressure, total cholesterol to high-density lipoprotein cholesterol ratio, and presence of atrial fibrillation; those not included were body mass index, HbA_{1c} levels, ethnicity and ex-smoking status.

5 The model predicts the absolute risk of a first stroke in people with type 2 diabetes using variables that are readily available in routine clinical practice. This model could therefore help professionals make decisions about clinical management.

Kothari V, Stevens RJ, Adler AI et al (2002) Risk of stroke in type 2 diabetes estimated by the UK Prospective Diabetes Study risk engine. *Stroke* 33: 1776–81



Self-management education for adults with diabetes

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

1 To evaluate the efficacy of self-management education on glycaemic control in adults with type 2 diabetes, results from 31 previous studies were analysed.

2 On average, at immediate follow up, the educational intervention decreased glycated haemoglobin (GHb)

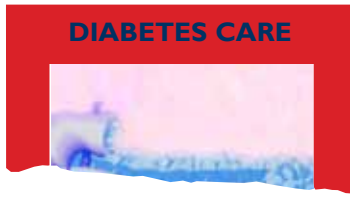
levels by 0.76% more than in the control group, who received no such intervention. At 1–3 months follow-up, this had decreased to 0.26%, and this percentage remained stable at ≥ 4 months follow-up.

3 GHb levels decreased more with additional contact time between participant and educator: a decrease of 1% was noted for every additional 23.6 hours of contact.

4 In summary, self-management education improves GHb levels at immediate follow-up, and increased contact time increases the effect. The benefit declines 1–3 months after the intervention ceases, indicating a need to find educational methods that maintain long-term glycaemic control.

Norris SL, Lau J, Smith SJ et al (2002) Self-management education for adults with type 2 diabetes. *Diabetes Care* 25 (7): 1159–71

‘Adherence to medication regimens for type 2 diabetes is strongly associated with metabolic control in an indigent population.’



Metabolic control and adherence to medication

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

1 Adherence to chronic drug regimens is often suboptimal, and lower socioeconomic and minority populations have greater barriers to adherence.

2 This study examined the relationship between adherence and diabetes metabolic control in a large, low-income population in rural central Virginia.

3 The sample comprised 810 patients with type 2 diabetes, who received oral diabetes medications from the clinic pharmacy and had at least one HbA_{1c} determination during the study period.

4 The study examined the association of HbA_{1c} level, as well as change in HbA_{1c} level, with medication adherence, demographic and clinical characteristics.

5 Better metabolic control was independently associated with greater adherence to medication, increasing age, white (versus African-American) race, and lower intensity of diabetes drug therapy. For each 10% increment in drug adherence, the HbA_{1c} level decreased by 0.16%.

6 The mean HbA_{1c} level of African-Americans was 0.29% higher than that of whites.

7 The intensity of diabetes drug therapy in African-Americans was lower than that in whites, as was their measured adherence to it.

8 There was no association between metabolic control and gender, income, encounter frequency, frequency of HbA_{1c} testing or continuity of care.

9 Adherence to medication regimens for type 2 diabetes is strongly associated with metabolic control in an indigent population: African-Americans have lower adherence and worse metabolic control.

10 Greater efforts are needed to facilitate diabetes self-management behaviours in low-income populations, and to foster culturally sensitive and appropriate care for minority groups.

Schectman JM, Nadkarni MM, Voss JD (2002) The association between diabetes metabolic control and drug adherence in an indigent population. *Diabetes Care* 25 (6): 1015–21

‘To drive home the importance of exercise, patients could be referred to a dietitian and issued written prescriptions for exercise.’



Preventing diabetes-related morbidity in primary care

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

This article proposes 10 strategies for preventing or reducing diabetes-related morbidity and mortality at the primary care level. These are:

1 Primary care physicians need frequent updates of diabetes-specific knowledge.

2 The frequency of testing HbA_{1c} levels needs to be increased to the recommended 1–4 times per year, depending on the state of glycaemic control. Patients’ understanding of the importance of these levels also needs to be increased.

3 Patients need to be educated to know that blood sugar matters, and to appreciate the importance of self-monitoring blood glucose. If possible, patients should be referred to a certified diabetes educator, while keeping contact with their primary care physician.

4 Advice needs to be given to patients on diet and exercise. To drive home the message of how important this is, patients could be referred to a dietitian and issued written prescriptions for exercise.

5 Patients’ self-monitoring of blood glucose tends to reflect how well they stick to other areas of self-management. To encourage them in this task, therefore, primary care physicians should show interest in the blood glucose forms filled in by patients.

6 Medications should be used efficiently. The use of different combinations of therapy should ensure that glycaemic control is adequate in virtually every patient with type 2 diabetes.

7 Goals need to be clearly defined for both the patient and the doctor. These should be achievable, and drug therapy, diet and exercise should be modulated to attain these targets.

8 Attention should be paid to cardiovascular risk factors, e.g. stopping smoking, and decreasing lipid levels and blood pressure. For diabetic patients with acute myocardial infarction, intensification of glycaemic control in the peri-infarct period and beyond should be standard practice.

9 There should be regular surveillance for microvascular complications, e.g. retinopathy, nephropathy and neuropathy, as early detection helps prevent the morbidity and mortality associated with their progression.

10 Diabetes care needs to be seen as a practice within a practice, with easy identification of patients; these can then be grouped with respect to HbA_{1c} levels and treated accordingly.

Dagogo-Jack S (2002) Preventing diabetes-related morbidity and mortality in the primary care setting. *Journal of the National Medical Association* 94 (7): 549–60