



Accessible advice: improving glucose control in patients with diabetes

Alun Edwards, MB

‡ See related article page 959

The past 6 years have seen a surge of energy applied to diabetes care. This enhanced enthusiasm owes little to technological or pharmaceutical developments and is almost certainly attributable to the results of clinical trials — particularly the Diabetes Control and Complications Trial (DCCT)¹ and, more recently, the United Kingdom Prospective Diabetes Study (UKPDS).² The DCCT was designed to definitively answer the long-debated question about the association between quality of blood glucose control and the risk of microvascular complications in patients with type 1 diabetes. Considerable human and material resources were required to maintain improved glycemic status in a select population, and the aims of the study did not include assessment of the feasibility of implementing “intensive” diabetes management in clinical practice.

The results of the DCCT have been widely disseminated since their original publication in 1993, and they have served as the strongest evidence supporting practice guidelines such as the Canadian recommendations published a year ago,³ but it is questionable whether typical office patients will be as successful in achieving optimal glucose control. Even with an understanding of the implications of good glucose control for avoiding the terrible sequelae of microvascular complications, there remain several barriers to achieving better outcomes.^{4,5} These barriers may originate with the patient or the health care system and range from financial constraints to emotional state.

The standard or conventional approaches to care over the past 2 decades have been singularly unsuccessful in achieving better blood glucose control in people with diabetes. Efforts to implement different strategies and measure outcomes are vital. In this issue of *CMAJ*, David Thompson and colleagues⁶ describe one model of care, which mirrors activities in many Canadian diabetes centres, whereby expert diabetes nurses use the telephone to assist diabetic patients in modifying their insulin dosages (page 959). These authors are to be commended for assessing the effectiveness of this practice in a systematic fashion by means of a small randomized controlled trial of patients receiving insulin therapy. At baseline there were no differences between the intervention group and the patients left to usual care with their endocrinologists, and the provision of diabetes supplies to *both* groups removed the potential that lower cost alone might have led to improved glucose control. In the short

term (6 months being a short period in the natural history of diabetes) the availability of a trained nurse to provide telephone advice led to significantly reduced levels of glycosylated hemoglobin (HbA_{1c}) in the intervention group; in 87% of these patients, HbA_{1c} level declined by at least 10%. The DCCT has shown us that any reduction in HbA_{1c} level is of benefit in reducing risk.¹ Further studies will be needed to define what care is needed to maintain the improvement over subsequent years.

Most unselected *willing* subjects with diabetes can, therefore, achieve improved glucose control provided they have frequent, convenient support from a knowledgeable professional — at least in the short term. The process is not cheap — caring for just the 23 patients in the intervention arm of this study required about 17 hours per week of the diabetes nurse’s time, although most of this effort was expended early in the intervention and decreased progressively as the patients acquired better self-management skills. Even the resource-intensive DCCT proved cost-effective according to long-term projections of savings related to care for retinal disease and end-stage renal disease.⁷

Conventional education with intermittent diabetes centre and physician follow-up clearly does little to give most diabetic patients confidence in the day-to-day adjustment of insulin, even when all the technical resources are available to them. Diabetes care must change. New strategies must take into account the need for flexibility and self-management in educating the diabetic patient.⁸ Paying lip service to the philosophy that diabetes should not hinder the ability to live a “normal” life is unacceptable, yet physicians continue to confine their contact with patients to clinic visits that intrude on the patient’s time, work and lifestyle. Diabetes is a chronic disease in which the metabolic parameters change frequently, but rarely in a cycle that matches scheduled clinic visits. We need to recognize the advantages of communication technologies (such as phone, fax, email or electronic diabetes management systems⁹) as means to improve the efficiency of health care providers and the convenience for, and productivity of, patients. Involving physicians in processes whereby clinic visits are replaced by nontraditional interaction will require different reimbursement formulas. Intensified diabetes therapy will continue to rely heavily on the specialist nurses and dietitians in our diabetes centres.^{8,10} However, it will be



necessary to examine staffing levels, standards for training and the medicolegal responsibilities (when there is increased risk of severe hypoglycemia^{1,6}) of nurse practitioners in these expanded roles.⁸

Can this level of support be offered to all patients treated with insulin? Providing the service only to “high-risk” individuals¹⁰ is unappealing given the incidence of adverse health consequences for all people with diabetes, although not all insulin-treated patients will be sufficiently motivated to participate in intensified care.⁵ The number of diabetic people benefiting from insulin therapy will increase if we absorb and apply the results of the UKPDS for patients with type 2 diabetes² or those of the Diabetes and Insulin–Glucose Infusion in Acute Myocardial Infarction (DIGAMI) study for hyperglycemic patients on coronary care units.¹¹ Technology may improve our efficiency in supporting larger numbers of patients and interventions geared to achieve patient competence in self-management, but the need to recruit competent experts is inevitable.

Changing the approach of our diabetes centres and increasing available resources can have benefit, although it will take societal and political will to achieve these goals. Adopting different models of diabetes care is a necessity; their success will depend on patients finding them readily available, rapidly responsive and effective.

Dr. Edwards is Associate Professor, Division of Endocrinology, University of Calgary, and Medical Director, Howard McEwen Regional Diabetes Centre, Calgary Regional Health Authority, Calgary, Alta.

Competing interests: None declared.

References

1. Diabetes Control and Complications Trial Group. The effect of intensive insulin treatment on the development and progression of long-term complications in insulin-dependent diabetes mellitus. *N Engl J Med* 1993;329:977-86.
2. United Kingdom Prospective Diabetes Study Group. UKPDS 33. Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes. *Lancet* 1998;352:837-53.
3. Meltzer S, Leiter L, Daneman D, Gerstein HC, Lau D, Ludwig S, et al. 1998 clinical practice guidelines for the management of diabetes in Canada. *CMAJ* 1998;159(8 Suppl):S1-29.
4. Larme AC, Pugh JA. Attitudes of primary care providers toward diabetes: barriers to guideline implementation. *Diabetes Care* 1998;21:1391-6.
5. Tercyak KP, Johnson SB, Kirkpatrick KA, Silverstein JH. Offering a randomised trial of intensive therapy for IDDM to adolescents. *Diabetes Care* 1998;21:213-20.
6. Thompson DM, Kozak SE, Sheps S. Insulin adjustment by a diabetes nurse educator improves glucose control in insulin-requiring diabetic patients: a randomized trial. *CMAJ* 1999;161(8):959-62.
7. Herman WH, Dasbach EJ, Songer TJ, Eastman RC. The cost-effectiveness of intensive therapy for diabetes. *Endocrinol Metab Clin North Am* 1997;26:679-95.
8. Skyler JS. Tactics for type 1 diabetes. *Endocrinol Metab Clin North Am* 1997;26:647-57.
9. Meneghini LE, Albisser AM, Goldberg RB, Mintz DH. An electronic case manager for diabetes control. *Diabetes Care* 1998;21:591-6.
10. Wagner EH. More than a case manager. *Ann Intern Med* 1998;129:654-5.
11. Malmberg K. Prospective randomised study of intensive insulin treatment on long term survival after acute myocardial function in patients with diabetes mellitus. *BMJ* 1997;314:1512-5.

Correspondence to: Dr. Alun Edwards, Diabetes Education Centre, Colonel Belcher Hospital, 1213 4th St. SW, Calgary AB T2R 0X7; fax 403 541-2169; aedwards@ucalgary.ca

Why go online?

For clinical information, when you want it, from ...

- CMAJ, our most popular journal
- More than 2000 clinical practice guidelines in the CPG Infobase

ASSOCIATION
MÉDICALE
CANADIENNE



CANADIAN
MEDICAL
ASSOCIATION

- MEDLINE, which CMA members access for free through our OSLER service



www.cma.ca