

ADS Position Statements

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**Diabetes Control and
Complications Trial**

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POSITION STATEMENT

DIABETES CONTROL AND COMPLICATIONS TRIAL

POSITION STATEMENT OF THE AUSTRALIAN DIABETES SOCIETY

The Diabetes Control and Complications Trial (DCCT) has unequivocally shown that maintenance of near normoglycaemia, compared with poorer metabolic control, over an average period of 6.5 years, can reduce by 36%-74% the development and progression of retinopathy, nephropathy and neuropathy in people with insulin-dependent diabetes mellitus (IDDM)¹⁻⁴. However, near normoglycaemia achieved by intensive treatment is also associated with an average weight gain of 4.6kg and an approximate threefold increase in the frequency of severe hypoglycaemic episodes. There was a positive curvilinear relationship between worsening complications and elevated glycosylated haemoglobin (HbA_{1c}). There was also an inverse curvilinear relationship between severity of hypoglycaemia and elevated HbA_{1c}. Analysis of the data does not support the existence of a specific target value for HbA_{1c} at which the benefits of intensive therapy are maximised and the risks minimised.

The age range of the subjects studied was 13-39 years and duration of diabetes was 1-15 years. They were randomly assigned to an intensive treatment group or a conventional treatment group. Intensive treatment involved frequent self-monitoring of blood glucose level, three or more insulin injections per day or use of an insulin infusion pump and comprehensive management by a multidisciplinary diabetes care team. The aim of intensive therapy is to achieve near normoglycaemia. Insulin dosage was frequently adjusted according to blood glucose level, dietary intake and anticipated exercise activity. Conventional treatment consisted of one or two injections of insulin each day, with daily self-monitoring of urine or blood glucose, and was aimed primarily at making patients asymptomatic. Conventional therapy did not usually include daily adjustment of insulin dosage. Over the study period, the intensive treatment group achieved a median HbA_{1c} of 7.2% and a mean daily blood glucose level of 8.6mmol/L, compared with a median HbA_{1c} of 8.9% and a mean blood glucose of 12.8 mmol/L in the conventional treatment group.

With regard to a number of patient care issues raised by the DCCT, the position of the Australian Diabetes Society is as follows:

1. All people with diabetes and their families should be appropriately informed of the DCCT findings. In those whose diabetes control is less than optimal, management should be reviewed to determine if diabetic control can be improved. In appropriate cases, there should be discussion about whether to undertake intensive therapy.

2. The suitability of an individual with diabetes for intensive therapy must be judged clinically. Caution is required in people with frequent severe hypoglycaemic attacks, hypoglycaemic unawareness, advanced age or severe microvascular/macrovascular complications. Although not studied by the DCCT, there is no reason to believe that patients over the age of 39 years will not derive benefit from strict metabolic control. The DCCT did not examine the benefit or risk of intensive treatment in children younger than 13 years. Children may be more susceptible to the harmful effects of repeated hypoglycaemia on neuropsychological and intellectual function.
3. Some patients will, for lifestyle reasons, choose not to undergo intensive treatment. Also, despite the best intention and compliance with treatment, many patients are unable to achieve near normoglycaemia. These patients should not be made to feel responsible for the failure, which relates, in part, to limitation in technology and our inadequate understanding of the basis of unstable diabetes. Patients in this situation should be informed that any improvement in diabetic control, even if they do not achieve near normoglycaemia, is beneficial and will reduce diabetic complications.
4. Although the DCCT recommends hospitalisation for initiation of intensive therapy, there is no evidence that hospitalisation is superior to a properly supported ambulatory care approach such as in Diabetes Centres attached to major hospitals.
5. Treating a patient with a multiple insulin injections regimen or an insulin infusion pump is only one facet of intensive treatment. By itself, it rarely achieves near normoglycaemia and should not be considered to be the same as intensive treatment. Meticulous attention to patient education, insulin dosage, exercise activity and dietary intake are essential components of intensive therapy.
6. Although the DCCT findings pertain specifically to patients with IDDM, it seems reasonable to assume that strict metabolic control is also likely to reduce the risk of microvascular and neuropathic complications in patients with non-insulin-dependent diabetes mellitus (NIDDM).
7. Even with intensive treatment, some patients will develop diabetic complications. Thus, systematic screening for and treatment of diabetic complications must continue to be emphasised. Similarly, attempts to achieve near normoglycaemia should not detract from the necessity to reduce other risk factors for diabetic complications such as hypertension, dyslipidaemia and smoking.
8. The purpose of intensive treatment is to achieve the best possible diabetic control. If the metabolic control of a patient who is taking an oral hypoglycaemic agent or receiving less intensive insulin treatment is already excellent, there is generally no need to embark on intensive treatment at that time.

9. Team work involving doctors, diabetes educators, dietitians, psychologists and other health professionals is vital in the implementation of intensive therapy. Special skills, experience and the time of health professionals, beyond that normally available for the routine treatment of diabetic patients, are required to care for patients undergoing intensive therapy. There should be encouragement to train special teams of these health professionals and to establish infrastructure to support them. Scientifically evaluable data should be collected to determine the optimum strategy for identifying and assisting patients suitable for intensive treatment.
10. The cost of implementing widely accessible programs to assist patients to attain near normoglycaemia will be considerable. Every effort should be made to inform government authorities and medical insurance companies of the long term cost-effectiveness of such programs and to secure from them appropriate financial supports and rebates. Such programs are integral parts of the "National Action Plan Diabetes. To the Year 2000 and Beyond".

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