NICE guidance on type 1 diabetes in adults

Desmond Johnston

Desmond Johnston FRCP FMedSci, Professor of Endocrinology, St Mary's Hospital, London

Clin Med 2004;**4**:491–3

The National Institute for Clinical Excellence (NICE) Clinical Guidelines are defined as 'systematically developed statements to assist both practitioner and patient decisions'. They are aimed at healthcare professionals, commissioning and providing organisations, and (perhaps most importantly of all) people with the disorder. The type 1 diabetes Guideline[1] did not cover pregnancy. It was published simultaneously with a document on type 1 diabetes in children.[2]

The emphasis is on ensuring that those with type 1 diabetes are put in a position to help themselves. This is politically correct but the Guideline also sensibly recognises that some people will not wish ever to manage their diabetes themselves, some will wish not to do so in times of change or stress (this is often the case in adolescents) and some people will be incapable. These people will need more direct, instructed care, at least for certain times in their life.

The majority of people with diabetes, however, do wish to manage the condition themselves and the Guideline explains how this may be achieved. Type 1 diabetes is perhaps the condition *par excellence* to which the term the 'expert patient' might apply. Certain key priorities have been defined. The needs and wishes of the person with diabetes should be central. Care should be carried out by teams of health professionals, aiming to place the person in a position of understanding, motivation and skill to look after the diabetes. The same applies to those caring for people with diabetes. Emphasis is placed on blood glucose control by the individual, in an attempt to minimise arterial disease and other complications.

Matching the mode of management to the individual is a key theme. For example, the choice of insulin regimen, or the number of injections per day, should be matched to individual preferences and lifestyle. The team of health professionals will include those interested in education about diabetes, diet, treatment options, complications including foot care, counselling if necessary and wider psychological aspects. Patients should be educated on aspects of blood glucose control, cardiovascular risk factors and other complications. The degree of blood glucose control needs to be balanced with the patient's lifestyle and wishes. Annual review for macro- and microvascular disease is expected.

The Guideline is quite specific in some important ways. Following diagnosis, the multidisciplinary team should ensure that the person's general health is checked, lifestyle issues defined and preferences discussed in order to produce an individual plan for management. The care team should be contactable during working hours and a 24-hour telephone helpline should be available. Each year thereafter, an opportunity should be provided for those with type 1 diabetes to learn more or to refresh existing knowledge.

The method of home blood glucose monitoring should be selected based on individual preferences and requirements. Target blood glucose levels (typically 4–7 mmol/l before food, less than 9 mmol/l after food) should be set and the rationale explained. The equipment utilised in home glucose monitoring should be checked annually. Individualised care means that information on diet and adaptations of dietary intake should be discussed in the light of issues such as obesity or hypertension. Insulin adjustments, depending on carbohydrate intake, should be explained. Advice on healthy eating should be provided to reduce the long-term risks of arterial disease and people are pointed towards nutritional guidance documents, produced by Diabetes UK and the American Diabetes Association. The importance of exercise should be discussed, together with any modifications to insulin dose or diet.

The requirement for monitoring HbA1c every two to six months (depending on the stability of blood glucose control) is discussed, and patients should know and understand the results obtained. The importance of adequate blood glucose control, as reflected in an HbA1c less than 7.5%, is explained. If the risk of complications is particularly high, it may be preferable to aim for an even lower HbA1c (below 6.5%). Again, people with type 1 diabetes should know and understand this. The more intensive the blood glucose control, the more likely hypoglycaemic episodes are to occur. Those with type 1 diabetes should be aware of this and be educated to make their own decisions about the trade-off between good control and more frequent hypoglycaemia.

Different types of insulin, with different durations and onset of action, are described. Again, the emphasis is on choosing an insulin regimen that is most appropriate to the individual lifestyle. The use of new rapid-acting analogues and long-acting analogues, such as insulin glargine, in the prevention of

nocturnal hypoglycaemia is discussed. Rapid-acting analogues, taken at the same time as a meal, may have the benefit in some people of overcoming the need for inter-meal snacks and thereby help in a weight reduction programme. Insulin adjustments, due to shift-work or travel, are discussed.

Causes for loss of blood glucose control, such as poor injection technique, lifestyle changes or other medical conditions, are outlined. Different insulin delivery systems, including injection pens, are discussed. Almost everyone with type 1 diabetes re-uses needles and this is recognised as generally hazard-free if some simple precautions are observed.

Instruction on management of hypoglycaemia is provided for both patients and other people providing they are suitably trained (for example, to administer glucagon intramuscularly). Most importantly, understanding the reasons for hypoglycaemia is emphasised. Hypoglycaemia unawareness is discussed, as are mechanisms to minimise its effects. The principles of management of diabetic ketoacidosis are outlined.

The expectations from an annual review are discussed. Microalbuminuria should be checked, smoking history obtained, blood glucose and blood pressure control monitored, dyslipidaemia discussed, and the presence of arterial disease sought. The implications of central obesity are to be emphasised. Advice on aspirin (or clopidogrel) is given, as is advice on the use of statins and other lipid-modifying drugs, such as fibrates. Blood pressure management is prominent, aiming to achieve a blood pressure of less than 135/85. If albumin excretion rate is raised, or there are two or more signs of the metabolic syndrome, blood pressure control to levels of 130/80 or below is recommended. The drug treatment of hypertension is discussed, with thiazide diuretics recommended as first-line treatment, unless there is evidence of albuminuria or renal disease.

An annual review for retinopathy with fundal examination through dilated pupils should be performed, together with a test of visual acuity. A useful part of the document provides the recommendations for an emergency appointment with an ophthalmologist (sudden loss of vision, rubeosis iridis), pre-retinal or vitreous haemorrhage or retinal detachment. New retinal vessels should lead to an urgent appointment, while macular involvement, pre-proliferative change or unexplained worsening of acuity should also precipitate an ophthalmological referral.

An estimate of microalbuminuria should also be included in the annual review, usually as the albumin:creatinine ratio. Treatment with an angiotensin-converting enzyme inhibitor or an angiotensin-2 receptor antagonist, together with advice on protein intake, is discussed in this context. The importance of early referral to a renal specialist is mentioned.

An annual review of the condition of the skin of the feet, the shape of the feet and shoes is recommended, together with an annual assessment of sensation and peripheral pulses. People at particular risk of foot ulceration should be offered more frequent input. Management of foot ulceration and Charcot's osteoarthropathy is outlined. The detection and management of other complications, including peripheral and autonomic neuropathy, and co-existing related disorders such as coeliac disease, are discussed.

The detection and management of psychological issues, such as depression and anxiety, will require input from specialist psychological services. The same applies to eating disorders such as anorexia nervosa, bulimia or behavioural manipulation of insulin doses. There are also short sections on the management of people with diabetes during hospital admission for other reasons, the organisation of healthcare services and support groups.

Everyone reading the Guideline will disagree with some aspects. For many of us who participate in the care of people with type 1 diabetes, the threshold for recommending therapy with a statin, for example, would be lower than that recommended in the Guideline. Similarly, one suspects that many diabetologists would consider using an angiotensin-converting enzyme (ACE) inhibitor as first line therapy for hypertension in people with type 1 diabetes, even in the absence of microalbuminuria. Nonetheless, the Guideline has the authority conferred by the careful sifting of the evidence and the process leading to its production.

Type 1 diabetes is much less common than type 2 diabetes, but the direct costs to the Health Service are still considerable (estimated at £212 million at 2001 prices). There are additional resource implications for primary care trusts in the Guideline. The multidisciplinary team input, for example, will require additional staff (and probably the creation of a 'diabetes centre') in many parts of the country. Staffing the advisory service constantly during working hours and staffing the 24-hour helpline will be an issue in many, if not most, areas. Commissioning authorities will be studying the document carefully.

The Guideline provides ordered criteria by which primary care trusts can gauge its implementation. If implemented fully, it should provide a minimum level of management for those with type 1 diabetes which is realistic and which is, one suspects, better than that available to many in the UK currently.

The Guideline process

The type 1 diabetes Guideline for adults has been produced by the National Collaborating Centre for Chronic Conditions (NCC-CC), based at the Royal College of Physicians. There was input from a technical team comprising an Information Scientist, a Health Services Research Fellow, a Senior Clinical Advisor, a Health Economist, a Project Manager and the Chair of the Guideline Development Group (GDG). This GDG met monthly over 10 months to review the evidence from the technical team and to produce the recommendations. A larger Consensus Reference Group contained some members of the GDG and others, including two people with type 1 diabetes. This larger group met twice, initially to review the aims and questions and again towards the end of the process, to review the recommendations from the GDG and to attempt to obtain consensus where this had not been possible.

There were four stages to the early process:

- firstly, the important questions were defined

- secondly, the literature search was planned
- thirdly, the search strategy was decided for each question
- fourthly, the data were appraised by the GDG.

Publications were stratified by level of evidence from good randomised controlled trials (the top level) down to expert opinion (at the bottom). Where possible, studies that were specific to type 1 diabetes were examined but where this was not possible, data were used from studies in people with type 2 diabetes or from studies performed in the population without diabetes.

A draft document was circulated to stakeholders for comment. The structure of the Guideline included a rationale for each topic, evidence (including evidence tables), considerations of the evidence and recommendations by the GDG. As with all guidelines, relevant studies were published during the final stages or preparation and a final date for accepted publications had to be set at an early stage.

This document contains the criteria for the diagnosis of diabetes and outlines the management of type 1 diabetes to be expected in adults in primary and secondary care. The diagnostic procedures for type 1 diabetes have been carefully described by the World Health Organization and are described in the Guideline. As with other NICE documents, the Guideline is published in several forms:

- There is a full form, containing the recommendations and the evidence upon which they were based.[1] Detailed evidence tables are available on-line where individual studies are summarised in a standard form (these constitute a useful resource for anyone wishing to know more)
- There is a document written in non-technical language for people with type 1 diabetes, their families and carers, and the public.[3] It outlines the care that adults can expect from the NHS
- There is a quick reference guide summarising the main recommendations.[4] This has been sent to doctors and other healthcare professionals in the NHS.

References

1 National Collaborating Centre for Chronic Conditions. *Type 1 diabetes in adults: national clinical guideline for diagnosis and management in primary and secondary care*. London: RCP, 2004.

2 NICE and the National Collaborating Centres for Chronic Conditions and Women's and Children's Health. *Type 1 diabetes: diagnosis and management of type 1 diabetes in children and young people*. NICE website: www.nice.org.uk

3 NICE. *Type 1 diabetes: diagnosis and management of type 1 diabetes in adults – Information for the public*. NICE website: www.nice.org.uk

4 National Collaborating Centre for Chronic Conditions. *Type 1 diabetes: diagnosis and management of type 1 diabetes in adults. Quick reference guide*. NICE website: www.nice.org.uk