

Information for doctors:

A series of studies have shown that type 2 diabetes is a condition of a small amount of excess fat inside liver and pancreas. It can be reversed to normal by substantial weight loss. Diabetes does not recur unless weight regain occurs. In the UK, the state of being in remission is recognised by GP systems SNOMED code:703136005 (diabetes mellitus in remission (disorder)), permitting the individual to be declared non-diabetic (for insurance and all other matters) but with continuation of annual checks and NHS remuneration for diabetes care.

It is important to recognise that rapid weight loss is an option to be presented as a choice – medication and continued risk of complications with steady worsening, or potentially return to health. The rapid weight loss is extremely successful in people who want to return to health.

1. Diagnosis

The possibility of reversing type 2 diabetes relates specifically to this common form of diabetes. It is important to identify rare forms of diabetes, as they will not respond in the same way.

- a) Monogenic diabetes. Onset of diabetes in teens or early adult life, usually but not exclusively in slim individuals and with a very strong family history of diabetes. Although if individuals are overweight, blood glucose control may be improved by weight loss, beta cell function will not normalise as the specific genetic change cannot be reversed.
- b) Slow Onset type 1 diabetes. Typically individuals present with high blood glucose levels but appear to respond to diet. Despite adequate diet blood glucose levels rise relatively rapidly and insulin therapy is required within a few years. The presence of ketones+++ in the urine associated with hyperglycaemia may be a clue to diagnosis, but any recent hypocaloric dieting would also produce urinary ketones which merely reflect the healthy physiological mechanism.
- c) Pancreatic Diabetes. Most commonly caused by chronic pancreatitis and rarely by haemochromatosis. The associated clinical features are likely to make this diagnosis evident.

2. Significant Restriction of Food Intake

Most individuals will be able to reduce food intake substantially with no short or medium term risks to health. However, iron status should be assessed and vitamin supplementation considered if prolonged hypocaloric dieting is undertaken. The preferred rapid (8-12 weeks) low calorie diet is unlikely to cause problems unless significant iron deficiency is already present.

3. Medication

- a) Sulphonylureas. These agents must be withdrawn with benefit in order to ensure that hypoglycaemia cannot occur.
- b) Gliflozins. These must never be prescribed during either low calorie diet or during very low carbohydrate diet as life threatening lactic acidosis may occur.

- c) Insulin. At the time of commencement of decreasing food intake, insulin dose in type 2 diabetes may be substantially decreased, and advice to cut insulin dose by approximately 50% is appropriate. Monitoring of blood glucose must be done daily with a plan to contact appropriate healthcare professional if blood glucose levels become very high (fasting over 10mmol per litre) or very low.
- d) Other Medication. All other oral hypoglycaemic agents can be decreased or stopped in accordance with degree of control achieved. GLP-1 agonists can be continued.

4. Importance of setting a weight target.

Everyone must know exactly what is to be achieved and that continued action to avoid weight regain will be required. The critical matter is that body weight is decreased and then maintained steady. An individual target can be agreed on the basis of body weight. Some individuals will have type 2 diabetes in the normal range, and for them a 8-10% weight loss is an appropriate target. For all others, a 15kg weight loss is usual. This is less than the average weight gain (100% fat) during adult life.

5. Motivation

Experience has shown that this is not possible to assess accurately in advance. One critical factor is the ongoing support from family/friends. If this is not provide then success is unlikely. Discussion in advance in important.

6. Diabetes complications.

An individual's macrovascular complications should be considered. Sudden normalisation (reduction) in retinal blood flow occurs with the return of normal blood glucose control and can disadvantage areas of the retina with marginal circulation with resulting deterioration in retinopathy. This effect is entirely restricted to individuals with pre-existing moderate or worse retinopathy. (Arun CS, Pandit R, Taylor R. Diabetologia 2004; 47:1380-84. PMID: 15309288). If there is no retinopathy, or only early changes (M1 grade) then no additional precaution is required other than an annual screening. However, if moderate or more severe retinopathy is present then arrangements should be made to re-screen the eyes within six months of achieving a substantial improvement in blood glucose control.

At present it is recommended that retinal screening should be continued after achievement of remission of type 2 diabetes. All macrovascular complications will be improved by the dietary changes (risk decreased by more than 50%). Blood pressure control will be substantially improved, and if taken, one anti-hypertensive agent must be discontinued on day one of the diet to avoid postural hypotension (ie 1 down to 0, 2 down to 1 agent, etc).

All of this general information upon type 2 diabetes and its management has to be interpreted in the light of the circumstances of each individual patient.

Professor Roy Taylor
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