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## Magnetic Resonance Centre

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### INFORMATION FOR DOCTORS

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#### 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) Pancreatic Diabetes. Most commonly caused by chronic pancreatitis and rarely by haemochromatosis. The associated clinical features are likely to make this diagnosis evident.
- b) 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.
- c) 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.

#### 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 when prolonged hypocaloric dieting is undertaken.

#### 3. Medication

- a) Sulphonylureas. These agents can be withdrawn with benefit as soon as hypocaloric dieting is commenced in order to ensure that hypoglycaemia cannot occur.
- b) 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. It may be anticipated that insulin may be withdrawn after approximately two weeks but this depends upon blood glucose response.
- c) Other Medication. All other oral hypoglycaemic agents can be decreased or stopped in accordance with degree of control achieved.

#### 4. Importance of setting a weight target

Everyone must know exactly what is to be achieved and a sustained effect is then essential. It is most important that body weight is decreased to target and then maintained steady. An individual target can be agreed on the basis of body weight and is usually 15kg lower than starting weight. Some individuals will have type 2 diabetes with a BMI only just above the normal range, and for them a low normal BMI is an appropriate target. For others, a BMI substantially less than that present, can be agreed with the patient as a target. Both motivation for the individual patient and support from both family and the diabetes care team will be important.

## 5. Diabetes complications

It is most important to consider the individual's microvascular complications before embarking upon major dietary change. If there is no retinopathy, or only early changes (scattered micro aneurysms with few blot haemorrhages) 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. The reason for this is that the sudden normalisation (reduction) in retinal blood flow associated with the return of normal blood glucose control can disadvantage areas of the retina in areas of 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).

For those individuals who achieve reversal of their type 2 diabetes, retinal screening should be continued for two years if there is no pre-existing retinopathy. If retinopathy is present, it should be continued until all changes remit.

All macrovascular complications will be improved by the dietary changes. It should be noted that blood pressure control will be substantially improved, with the possibility of decreasing number or dose of anti-hypertensive agents.

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

**Professor Roy Taylor**