

# **DIAGNOSIS OF DIABETES**

## DEFINITIONS OF DIABETES

**The terms IDDM and NIDDM should be avoided as they classify patients on the basis of diabetes treatment rather than the pathogenesis of the disease.**

### **Type 1 Diabetes (previously IDDM)**

This results from an absolute deficiency of insulin due to pancreatic beta-cell destruction. It more commonly presents acutely in young people, but can occur at any age. Patients are insulin dependent and prone to ketoacidosis.

### **Type 2 Diabetes (previously NIDDM)**

This results from a relative deficiency of or insensitivity to insulin and is more commonly diagnosed in older people, although can occur in young (especially obese) individuals.

Although the onset of Type 2 diabetes is less dramatic than that of Type 1 diabetes, the long term sequelae are similar and equally devastating, as both Type 1 and Type 2 patients are at risk of developing the microvascular and macrovascular complications of the disease. **For this reason, Type 2 diabetes should never be referred to as 'mild diabetes'.**

### **Impaired Glucose Tolerance (IGT)**

IGT is a state of impaired glucose regulation, diagnosed on glucose tolerance testing (see page 15), which confers an increased risk of future diabetes of 2-5% per year. Patients with IGT tend to have higher blood pressure and plasma triglycerides when compared to non-diabetic individuals.

### **Impaired Fasting Glycaemia (IFG)**

The term IFG has been introduced to classify individuals with fasting glucose values above the normal range but below those diagnostic of diabetes i.e. FPG > 6.0 mmol/L but < 7.0mmol/L. Diabetes UK recommends that all such individuals should have an oral glucose tolerance test to exclude a diagnosis of diabetes.

**IGT and IFG are risk categories for future diabetes and/or cardiovascular disease. Patients with either condition should have fasting plasma glucose checked annually (or sooner if symptoms occur) and receive advice on the avoidance of obesity and the benefits of regular exercise. Co-existing cardiovascular risk factors should be treated aggressively.**

### **Gestational Diabetes Mellitus**

Gestational diabetes mellitus (GDM) is defined as carbohydrate intolerance of variable severity with onset or first recognition during pregnancy. It does not exclude that the glucose intolerance may have antedated pregnancy; therefore a post-natal OGTT should be performed. Women with a history of GDM have a 60% chance of developing diabetes (usually Type 2) within the subsequent 20 years and this risk is increased by obesity. For this reason they should be advised to control their weight and have an annual fasting glucose measurement performed. For further details, [see page 79](#).

**Women with a history of GDM should be screened for the condition in future pregnancies and have a fasting glucose checked annually.**

## Diagnosis of Diabetes

### CONSIDER a diagnosis of diabetes in a patient with:

- thirst and polyuria
- unexplained weight loss or tiredness
- pruritus vulvae, balanitis or recurrent 'UTI's'
- recurrent infections
- blurring of vision (usually an osmotic effect and not permanent)
- discoloured or ulcerated feet
- hypertension, ischaemic heart disease or stroke
- obesity, with diagnosis of arterial disease or family history of diabetes.

In such patients, it is useful to perform preliminary screening investigations i.e. random plasma glucose measurement and urinalysis for presence of glucose and ketones.

The diagnosis of diabetes has important medical and legal implications for the patient; therefore a diagnosis of diabetes should NOT be based solely on the finding of:

- glycosuria
- raised blood glucose (finger prick sample) on a 'stick' reading
- elevated haemoglobin A1c (HbA1c) result.

The World Health Organisation has recently published revised guidelines on the diagnosis of diabetes. Diabetes UK recommends that all UK health care professionals adopt these new criteria from 1<sup>st</sup> June 2000.

### ALGORITHM for DIAGNOSIS of DIABETES

#### 1. Classical symptoms (e.g. polyuria, polydipsia, unexplained weight loss)

##### plus one of the following

- random plasma venous glucose concentration  $\geq 11.1$  mmol/L
- or
- fasting plasma venous glucose concentration  $\geq 7.0$  mmol/L
- or
- plasma venous glucose concentration  $\geq 11.1$  mmol/L (2 hour sample in OGTT)

#### 2. No symptoms i.e. incidental finding of glycosuria or hyperglycaemia

- Diagnosis should not be based on a single venous plasma glucose measurement
- Additional testing on another day with a value in the diabetic range is essential (using either fasting, random or samples taken 2 hours following glucose load)
- If fasting or random values are not diagnostic, the 2-hour value should be used

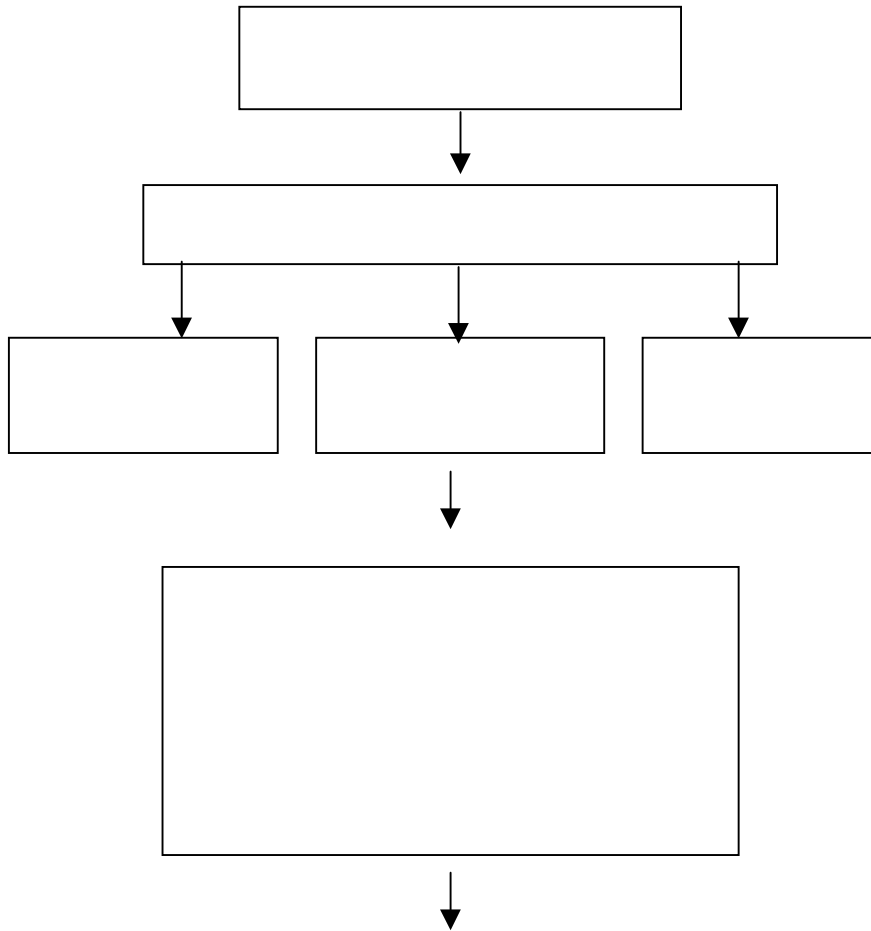
If **ketonuria** is present with:

- Severe symptoms i.e. vomiting and dehydration, **urgent hospital admission is required.**
- Milder symptoms and weight loss **discuss patient urgently with the diabetes team** for consideration of insulin therapy.

## THE ORAL GLUCOSE TOLERANCE TEST (OGTT)

An OGTT need only be considered to establish a diagnosis of diabetes if blood glucose values fall into an equivocal range (e.g. FPG >6.0 but <7.0 mmol/L). **An OGTT is not necessary if the diagnostic criteria for diabetes are present**

- Perform OGTT after at least 3 days of unrestricted diet (> 150g CHO daily)
- Fast patient overnight (8-14 hours, water allowed) and rest during the test.
- Samples at times other than 0 and 2 hours are not necessary for diagnosis.
- Diagnostic interpretation of OGTT is different in pregnancy ([see p83](#))



Fasting plasma glucose	< 6.0 and	6.1–6.9 and	< 7.0 and	≥ 7.0 <b>or</b>
2 hour plasma glucose	< 7.8	< 7.8	7.8–11.0	≥ 11.1
Diagnosis and Management	<b>NORMAL</b> No follow up Required	<b>IFG *</b> Annual fasting plasma glucose	<b>IGT *</b> Annual Oral Glucose Tolerance Test	<b>DIABETES</b>

**\* Have increased risk of future diabetes**

- Advise on healthy eating, regular exercise and avoidance of obesity
- Check FPG annually
- Treat co-existing coronary risk factors aggressively, as are at increased risk of developing cardiovascular disease.