

Diabetes may be diagnosed using any of the following criteria

Test	Type 2 Diabetes	High Risk "Impaired" or "Pre Diabetes"	Normal
HbA1C	≥ 48 mmol/mol (6.5%)	42-47 mmol/mol (6.0-6.4%)	≤ 41 mmol/mol (5.9%)
Fasting Plasma Glucose	≥ 7.0 mmol/L	6.1- 6.9 mmol/L IFG-Impaired fasting Glucose	≤ 6.0 mmol/L
Random Glucose	≥11.1 mmol/L		
2 hr OGTT glucose	≥ 11.1 mmol/L	7.9-11.0 mmol/L IGT- impaired glucose tolerance Follow up annually to reassess - glucose regulation, cardiovascular risk factors -manage with life style advice.	≤ 7.8 mmol/L

Various authorities such as The WHO and Diabetes UK **recommend HbA1c as a valid option for diagnosing diabetes**. The Barnsley Local Diabetes Advisory Group suggest that it should be the preferred option – except in those groups below* where it may be unreliable and glucose should be used.

The HbA1c should be repeated in asymptomatic patients within 2 weeks (to guard against mislabelling or lab error). Both results should be ≥48 mmol/mol or 6.5% to diagnose diabetes. If the results are discordant, the lower value should be used.

An alternative to HbA1c measurement is to have two fasting blood glucose levels.

Finger prick samples should **NOT** be used to diagnose diabetes.

Always check for Ketones- the presence of significant ketones or ketonaemia indicates insulin deficiency and the need for more urgent intervention.

HbA1c for diagnosis

Advantages:

- No need for patient to fast
- More reproducible than oral glucose tolerance test (OGTT)
- Reflects recent prevailing blood sugars (i.e. No-one with raised blood glucose will be 'missed' and people at high risk of diabetes should receive life-style advice whatever their HbA1c)
- Continuity – once diagnosis made, focus switches from glucose to HbA1c

Disadvantages:

- *Inappropriate for some patients
- **Rapid onset of diabetes** (HbA1c may take some weeks to rise)
- **Suspected type 1 diabetes** – rapid onset of symptoms, weight loss, ketosis
- **Children** – because most will have type 1 diabetes
- **Concomitant medication** such as **corticosteroids**, **Antipsychotics** and **immunosuppressants** can also raise blood glucose, but rarely very significantly
- After **pancreatitis or pancreatic surgery**
- **Pregnancy** - Multiple factors lower the HbA1c in pregnancy.

The diagnosis of gestational diabetes should be made by measurement of the blood glucose in line with NICE guidance.

High risk groups in pregnancy will have an OGTT done at 28 weeks.

However, previous history of gestational diabetes will have the OGTT done at 16 and 28 weeks unless they opt for self-monitoring of blood glucose when they access the antenatal clinic at 12 weeks.

- Conditions in which **red cell survival is decreased** such as:
 - **Haemoglobinopathy** will normally be picked up by the lab, but suspect in racial groups where there is a high prevalence of sickle cell trait/disease or thalassaemia.
 - **Haemolytic anaemia**
 - **Severe blood loss**
 - **Splenomegaly/hypersplenism**
 - **Antiretroviral drugs**
- **Renal dialysis** may cause marked reduction in HbA1c, especially if the patient is being treated with erythropoietin
- **Increased red cell survival** (e.g. Post-splenectomy) may increase HbA1c
- **Iron and vitamin B12 deficiency** and their treatment may raise or lower HbA1c, but the effect is small

Oral Glucose Tolerance Test (OGTT)

In the past an OGTT was performed using Lucozade®, however, due to changes in the glucose content in Lucozade®, BHNFT now use **Rapilose®** OGTT as a replacement.

- Before the test the patient should fast for 8 to 12 hours.
- Before the test, the blood glucose level is measured.
- 75g of glucose is then administered to the patient as **Rapilose® OGTT solution (300ml)**- (Green traffic light status on the Barnsley Joint Formulary)
- Further blood samples are then taken at regular intervals of 30/60 minutes or a single test after 2 hours.

The above diagnostic criteria table and advice has been taken from the Barnsley Diabetes Guidelines April 2016 – page 6

It was amended after the APC approved document :-

Diagnosing Diabetes – which test should be used? Feb 2018