

HbA1c for DIAGNOSIS of diabetes mellitus

HbA1c is an important marker of glycaemic status over the preceding 2-3 months and forms part of the WHO diagnostic criteria for diabetes. However, there are some clinical scenarios that make HbA1c unreliable and invalidate use as a diagnostic test. In such cases **fasting glucose** should be measured.

When NOT to use HbA1c to diagnose diabetes

1. Rapid onset of diabetes

- Children and young people <18 years old
- Symptoms for <2 months
- Patients at high diabetes risk who are acutely ill
- Drugs that may cause hyperglycaemia e.g. steroids, antipsychotics, immunosuppressants
- After pancreatitis or pancreatic surgery

2. Haemoglobinopathies (including sickle cell trait and thalassaemia)

- Hb variants have variable effects on HbA1c. Some rare variants may directly interfere with HbA1c measurement while others alter red cell survival time.

3. Conditions with increased red cell survival (may increase HbA1c)

- Splenectomy

4. Conditions with reduced red cell survival (may lower HbA1c)

- Haemolytic anaemia and severe anaemia of any cause
- Recent blood transfusion, severe blood loss or venesection
- End stage renal disease (especially if treated with erythropoietin)
- Some drugs; antiretrovirals, dapsone, ribavirin, sulfasalazine.
- Splenomegaly

5. Pregnancy

Methodology

NMCPs uses an ion-exchange HPLC method to measure HbA1c. This identifies the presence of many haemoglobin variants, which are often clinically silent. For these patients HbA1c is not reported for diagnostic requests; fasting glucose is advised instead. Our method does not identify all cases of abnormal haemoglobin and cannot detect the other situations listed above which can affect HbA1c levels.

Further information

- Annex 1 of the WHO 2011 report – Use of glycated haemoglobin (HbA1c) in diagnosis of diabetes mellitus
- NICE CKS Diabetes type 2 for conditions that preclude use of HbA1c for diagnosis

Contact the duty biochemist should you need further advice.