Use of haemoglobin Al c (HbA1c) in the diagnosis of diabetes mellitus. The implementation of World Health Organisation (WHO) guidance 2011

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An expert group have discussed the WHO report. The group agree that the WHO requirements are met in the UK. HbA1c is not suitable for use in everyone. Do not use HbA1c to diagnose diabetes in pregnancy.

The test

**WHO Recommendation 2011**

HbA1c can be used as a diagnostic test for diabetes providing that stringent quality assurance tests are in place and assays are standardised to criteria aligned to the international reference values, and there are no conditions present which preclude its accurate measurement.

Analysis of venous HbA1c in UK laboratories participating in national quality assurance schemes currently fulfils WHO requirements. HbA1c should usually be measured on a laboratory venous blood sample. Point-of-care HbA1c should not be used for diagnosis unless the health care staff have been appropriately trained and the HbAic method used can demonstrate an internal quality control and external quality assessment performance that matches that of a laboratory method. Confirm a point-of-care diabetes diagnosis with laboratory venous HbA1c.

**Most patients**

An HbA1c of 48mmol/mol (6.5%) is recommended as the cut point for diagnosing diabetes. A value of less than 48mmol/mol (6.5%) does not exclude diabetes diagnosed using glucose tests.

HbA1c >48mmol/mol can be used to diagnose diabetes in most situations. In patients without diabetes symptoms repeat venous HbA1c in the same lab within 2 weeks. If the second sample is <48mmol/mol (6.5%) treat as high risk of diabetes and repeat the test in 6 months or sooner if diabetes symptoms develop. In symptomatic adults with relatively slow onset of symptoms a single result >48mmol/mol will suffice.

**Situations where HbA1c must not be used as the sole test to diagnose diabetes**

HbA1c reflects glycaemia over the preceding 2-3 months so may not be raised if blood glucose levels have risen rapidly. Examples:

- ALL symptomatic children and young people.
- Symptoms suggesting type 1 diabetes (any age).
- Short duration diabetes symptoms.
- Patients at high risk of diabetes who are acutely ill.
- Taking medication that may cause rapid glucose rise, e.g. corticosteroids, antipsychotics.
- Acute pancreatic damage/pancreatic surgery.
Do an immediate quality-assured finger-prick capillary glucose test. Check blood/urine ketones if available. If glucose is >11.0mmol/L seek same-day specialist diabetes advice. For children and teenagers phone the specialist paediatric diabetes team same day. Send same day laboratory venous glucose, adding HbA1c to exclude stress hyperglycaemia and/or for baseline, but do not delay seeking advice whilst awaiting the result.

**Presence of factors that influence HbA1c and its measurement**

See Annex I from WHO report. Discuss the patient with your local laboratory or specialist diabetes team or use glucose testing. Factors include abnormal haemoglobins, anaemia, altered red blood cell lifespan.

**Patients whose HbA1c is <48mmol/mol (6.5%)**

These patients may still fulfil WHO glucose criteria for the diagnosis of diabetes which can be used in patients with symptoms of diabetes or clinically at high risk of diabetes. Glucose tests are not recommended routinely in this situation.

WHO did not provide specific guidance on HbA1c criteria for people at high risk of diabetes. Clinicians should consider the individual patient’s personal risk of diabetes and provide advice and monitoring accordingly. Pending NICE guidance (see consultation) the expert group suggested using HbA1c values below.

- HbA1c <42mmol/mol (6.0%). Some of these patients may still be at risk of diabetes. If clinically at high risk manage as above.

A detailed report will be available shortly.

References