

Pathology Quick Guide for General Practice: HbA1c Testing

Clinical Situation	Recommendation	Source
Suspected Type 2 Diabetes Mellitus HbA1c \geq 6.5% (48mmol/mol) Patient is symptomatic	No repeat test required; diagnosis can be made based on one result.	
Suspected Type 2 Diabetes Mellitus HbA1c \geq 6.5% (48mmol/mol) No symptoms	HbA1c level must be confirmed on a repeat sample – i.e. two tests \geq 6.5% (48mmol/mol) within 4 weeks. If the second sample is $<$ 6.5% (48mmol/mol) treat the patient as being at high risk of developing diabetes. The sample should be repeated after 12 months or before if the patient develops symptoms of diabetes.	
Suspected Type 2 Diabetes Mellitus HbA1c \geq 6% (42mmol/mol) but $<$ 6.5% (48mmol/mol)	This level suggests a high risk of diabetes in future similar to those with a diagnosis of impaired glucose tolerance (IGT) or impaired fasting glucose (IFG). If there is a high suspicion of diabetes (diabetes symptoms of multiple risk factors for developing diabetes and HbA1c $<$ 6.5% an oral glucose tolerance test (OGTT) may be performed, although this should be considered exceptional.	Wandsworth CCG Guidance for the Diagnosis of Diabetes – the use of HbA1c 10 th September 2012 http://www.thewig.eu/mediapool/41/419555/data/HbA1c_to_diagnose_Diabetes_Full_details_Sept_2012.pdf
EXCLUSIONS TO USING HbA1c FOR THE DIAGNOSIS OF TYPE 2 DIABETES MELLITUS (glucose based diagnosis required)	HbA1c must not be used to diagnose/exclude diabetes if: <ol style="list-style-type: none"> 1. The patient has symptoms of less than 2 months generation, as an individual can be significantly hyperglycaemic without HbA1c having had sufficient time to rise. 2. If a patient is acutely unwell (for the same reasons as above). 3. In pregnancy. 4. In patients aged 18 years or younger. 5. In presents with suspected type 1 diabetes (e.g. presence of ketones) at any age. 6. In patients taking medications that cause rapid glucose elevation (e.g. steroids and antipsychotic medications). 7. In patients who have known genetic, haematological or illness-related factors that influence HbA1c and its measurement. 8. In patients with anaemia (Hb $<$ 10.5g/dl). 	NB: ? Could be adopted by Croydon – if the guidance for diagnosis of diabetes is still fit for purpose.
Management of Type 1 Diabetes in adults	Measure HbA1c levels every 6 months in adults with type 1 diabetes. Consider measuring HbA1c levels more often in adults with type 1 diabetes if the person's blood glucose control is	NICE guidelines [NG17] <i>Type 1 diabetes in adults: diagnosis and management</i>

These recommendations represent best practice in the consensus of opinion of the authors and reviewers. The authors have used all reasonable care in compiling the information but make no warranty as to its accuracy. These recommendations were developed by Wandsworth CCG with SWL Pathology and adapted for use in Croydon.

	<p>suspected to be changing rapidly; for example if the HbA1c level has risen unexpectedly above a previously sustained target.</p>	<p>August 2015 https://www.nice.org.uk/guidance/ng17</p>
<p>Management of Type 2 Diabetes in adults</p>	<p>In adults with type 2 diabetes, measure HbA1c levels at 3-6 monthly intervals until the HbA1c is stable on unchanging therapy; and at 6-monthly intervals once the HbA1c level and blood glucose lowering therapy are stable.</p>	<p>NICE guidelines [NG28] <i>Type 2 diabetes in adults: management</i> December 2015 http://www.nice.org.uk/guidance/ng28</p>
<p>Women with diabetes who are planning to become pregnant</p>	<p>Offer women with diabetes who are planning to become pregnant monthly measurement of their HbA1c level.</p>	<p>NICE guidelines [NG3] <i>Diabetes in pregnancy: Management from pre-conception to the postnatal period.</i> February 2015 https://www.nice.org.uk/guidance/cg63</p>
<p>Management of Type 1 diabetes in children and young people</p>	<p>Offer children and young people with type 1 diabetes measurement of their HbA1c level 4 times a year (more frequent testing may be appropriate if there is concern about suboptimal blood glucose control).</p>	<p>NICE guidelines [NG18] <i>Diabetes (type 1 and type 2) in children and young people: diagnosis and management</i> August 2015 http://www.nice.org.uk/guidance/ng18/chapter/1-Recommendations#type-1-diabetes</p>
<p>Management of Type 2 diabetes in children and young people</p>	<p>Measure HbA1c levels every 3 months in children and young people with type 2 diabetes</p>	

See also:

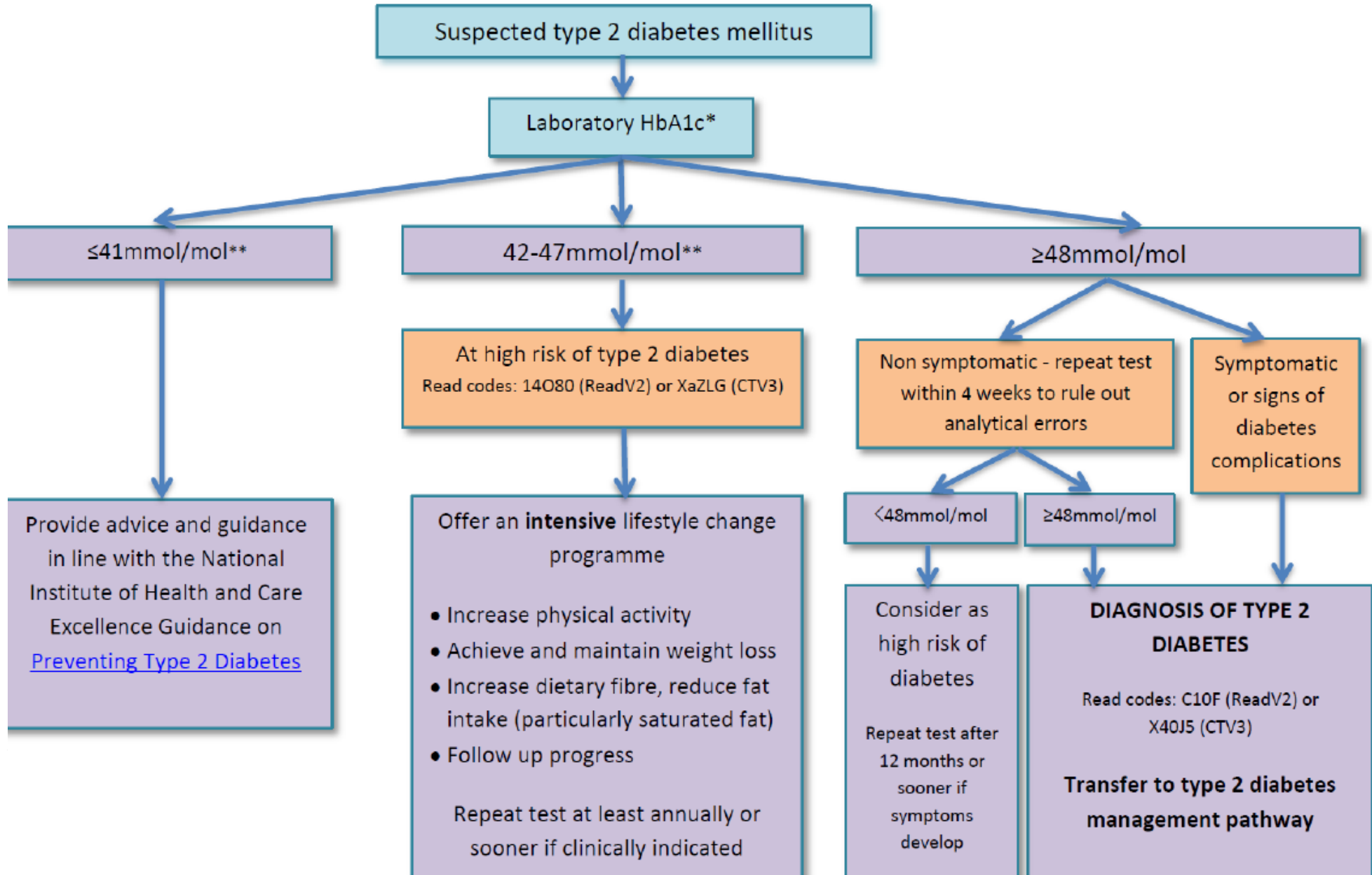
London Strategic Clinical Networks, *Consensus approach for the diagnosis of Type 2 diabetes* (March 2015) <http://www.londonscn.nhs.uk/publication/using-hba1c-for-better-diabetes-detection/>

Algorithm included overleaf

WHO, *Use of Glycated Haemoglobin (HbA1c) in the Diagnosis of Diabetes Mellitus* (2011)
https://www.diabetes.org.uk/Documents/Professionals/hba1c_diagnosis.1111.pdf

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Flow chart 1 – Recommended cut off points for diagnosis of type 2 diabetes mellitus using HbA1c and interventions^{1,2,4,10,13}



*Exclusions to using HbA1c for the diagnosis of type 2 diabetes mellitus (glucose based diagnosis required) ^{1,3,12,14}	
<ul style="list-style-type: none"> • Suspected type 1 diabetes, (all ages) • Short (<2 months)/rapid onset of diabetes symptoms • Patients at high diabetes risk who are acutely ill (e.g. those requiring hospital admission) • Acute pancreatic damage or pancreatic surgery • All children and young people up to the age of 30 years old • Patients taking medication that may cause rapid glucose rise e.g. corticosteroids, antipsychotic drugs (2 months or less) • Pregnancy(current or recent <2months) • Haematological factors <ul style="list-style-type: none"> ○ Anaemia – haemolytic and iron deficiency ○ Haemoglobinopathies • Renal failure (CKD Stage 3b and above) • Human Immunodeficiency Virus (HIV) infection • Presence of genetic, haematologic and illness-related factors that influence HbA1c and its measurement • Factors affecting the life span of red cells - recent commencement of erythropoietin therapy will result in a decrease in HbA1c as will occur with some haemoglobinopathies, splenomegaly, rheumatoid arthritis or with drugs such as antiretrovirals, ribavirin and dapsone. Increased erythrocyte lifespan e.g in splenectomy may increase HbA1c levels 	Urgent glucose based testing required

Points to note: **If there is a high suspicion of diabetes (symptoms or multiple risk factors and HbA1c <48mmol/mol), an oral glucose tolerance test may be performed, although this should be considered exceptional¹⁴. Older people without diabetes appear to have higher HbA1c values than younger individuals, being approximately 4 mmol / mol (0.4%) higher at 70 years than at 40 years³. Afro- Caribbean’s and individuals from South Asian descent may have slightly higher HbA1c levels than white Europeans (4mmol/mol)³.

v1 20 March 2015
 Review March 2016

London Strategic Clinical Networks, *Consensus approach for the diagnosis of Type 2 diabetes (March 2015)*

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