

Diagnostic criteria for diabetes Routine cases and Non-diabetic hyperglycaemia – adapted with permission from Royal Devon and Exeter

Diabetes may be diagnosed on any of the following criteria (WHO 2006, John 2012, NICE 2012).

	Diabetes	NDH	Normal
HbA1c mmol/mol	48 and above	42-47	41 or less
Fasting Plasma Glucose	7.0mmol/L and above	5.5-6.9 mmol/l	5.4 mmol/L or less
2hr Plasma Glucose in OGTT	11.1mmol/L and above	7.8-11.0 mmol/l	7.7 mmol/L or less
Random Plasma Glucose	11.1mmol/L and above		

NDH= Non-diabetic hyperglycaemia

Fasting = 8 hours or more without caloric intake (ADA 2018)

A repeat confirmatory test is required in most cases, see below.

Which test is best?

National and international expert groups do not know. Relevant groups (WHO, ADA, UKDHADC, NICE) simply advise that HbA1c is now an option for diagnosing diabetes.

Benefits to using HbA1c for diagnosis

- No need for patient to fast
- More reproducible than glucose.
- Continuity with diabetes (once diagnosed, we switch from glucose to HbA1c, so it makes sense to use HbA1c for diagnosis)

Disadvantages to using HbA1c:

- Inappropriate for some patients (see below).

We do not wish to be prescriptive. You may prefer fasting glucose, if simpler than assessing each patient's suitability for diagnosis by HbA1c. Generally we recommend HbA1c.

Please choose a single test for diagnosis and if necessary repeat this test to make the diagnosis.

Should a positive test be repeated?

- In the asymptomatic patient a repeat test is required, please repeat the same test as requested initially.
- National Guidance recommends a repeat test within 2 weeks of the first one.
- A diagnosis of Diabetes is only made if both results are at or above the diagnostic threshold.

- In the patient with classical symptoms of diabetes a repeat test is not required.
- **Patients with suspected Type 1 Diabetes should be referred urgently to local level 4 Diabetes services in line with established pathways.**

When not to use HbA1c to diagnose diabetes

These are the most common situations where HbA1c is not suitable. Except in pregnancy, diagnose by fasting glucose ≥ 7.0 mmol/L twice, or once with symptoms. In pregnancy, follow NICE guidelines.

1. **Rapid onset of diabetes** -An increase in HbA1c may not be detected until a few weeks later.

- a. Suspected type 1 diabetes – rapid onset of symptoms, weight loss, ketosis.
- b. Children – because most will have type 1 diabetes.
- c. Steroids. Antipsychotics & immunosuppressant's can raise blood glucose, rarely precipitously
- d. After pancreatitis or pancreatic surgery.

2. **Pregnancy.** Multiple factors make HbA1c lower in pregnancy. The diagnosis of gestational diabetes should be made on blood glucose, in line with NICE guidance.

3. **Conditions with reduced red survival may lower HbA1c:**

- a. Haemoglobinopathy which will normally be detected by the lab, but should be suspected in racial groups where there is a high prevalence of sickle trait, sickle disease or thalassaemia.
- b. Haemolytic anaemia
- c. Severe blood loss
- d. Splenomegaly
- e. Antiretroviral drugs

4. **Increased red cell survival may increase HbA1c** e.g. splenectomy.

5. **Renal dialysis** patients have a markedly reduced HbA1c especially if treated with erythropoietin.

6. **Iron and B12 deficiency** and their treatment. May raise or lower HbA1c, but the effect is small.

What if you have glucose values and an HbA1c on a single patient?

This is confusing, so don't get into that situation – use HbA1c alone, or glucose alone. If you already have both, WHO guidance diagnoses diabetes if either result is high. With same guidance for repeat if asymptomatic. If both are above the threshold for diagnosis of diabetes then diabetes can be diagnosed at that stage.

What is NDH and how should we manage it?

- Non-diabetic hyperglycaemia is the current NHS preferred term for the intermediate category of glucose dysregulation that is neither diabetes nor normal. It replaces the myriad of previous terms including Pre-diabetes, impaired glucose tolerance, impaired glucose regulation, impaired fasting glucose.
- People in this risk category within our CCGs should be strongly advised to attend the NHS National Diabetes Prevention Programme (Healthier You) www.stopdiabetes.co.uk which is an evidenced based programme designed to reduce the risk of progression to Type 2 Diabetes. Sessions take place during the day and evenings and patients should be encouraged to attend at least the first 4 sessions which take place weekly for 4 wks. All practices should be referring to 'Healthier you' by 1/4/18.
- Patients who do not wish to be referred to Healthier You can be offered a referral to Walking Away from Diabetes provided by Diabetes Care for You. This is a shorter programme but does not have an evidence base in preventing diabetes. Patients will be encouraged to go on to attend the 'Healthier You' programme during the Walking Away session.
- Patients should be given lifestyle advice and CCG approved literature
- Patients should be counselled regarding the symptoms of Diabetes and recommended to attend for retesting if these occur.
- Patients who remain asymptomatic should attend annually for repeat HbA1c, Blood pressure and Lipids. Cardiovascular risk should be managed in the same way as people with Type 2 Diabetes
- Patients whose parameters become normal should remain coded as NDH as they will retain an increased cardiovascular risk.

What if a patient lowers their HbA1c through lifestyle change or Bariatric surgery?

A US Consensus (2009) defined Diabetes remission as –

- Partial Remission – Hyperglycaemia below diagnostic thresholds (i.e. HbA1c 42-47mmol/mol, FPG 5.5-6.9mmol/l) for 1 year or more without any active diabetes pharmacological therapy or ongoing procedures
- Complete Remission – Normal glycaemic measures (i.e. HbA1c <42mmol/mol , FPG 5.4mmol/l or less) for at least 1 year without any active diabetes pharmacological therapy or ongoing procedures

Prolonged remission – Complete Remission of at least 5 years duration. If Diabetes has been incorrectly coded our advice is to remove the code altogether, with a documented explanation.

'Diabetes in remission' (C10P) should be used as per 2016/17 General Medical Services (GMS) contract Quality and Outcomes Framework (QOF) Guidance for GMS contract 2016/17 (published April 2016)

From April 2014 the Business Rules included a READ code for "diabetes in remission". Successful management of diabetes with lifestyle, medication, pancreatic or islet cell transplant and/or bariatric surgery may result in glucose levels falling below those diagnostic of diabetes. However these people may still experience the macrovascular and microvascular complications of diabetes and therefore need continued monitoring. Experts from the diabetes classification working group have endorsed the use of this code for people where treatment has normalised hyperglycaemia but still require continued monitoring.

Patients coded 'diabetes in remission': a) are included in NDA audit b) will receive automatic invite for annual diabetes retinal screening c) need continued review for micro- and macro-vascular complications, i.e. annual diabetes review checks, and for development of hyperglycaemia.

Importance of Structured education in the management of Diabetes.

Referral for structured education is an essential part of the early treatment of Type 2 Diabetes and access to structured education for those with established diabetes is equally important.

We would encourage colleagues to view referral to education in the same way as referral for retinal screening or annual review and to strongly encourage people with diabetes to agree to referral for DESMOND

<http://www.desmond-project.org.uk/newlydiagnosedandfoundationmodules-278.html>

For those who are concerned about time away from work or the reaction of their employer we would encourage use of the following letter, developed with Diabetes UK.

Please see recommended letter.

DESMOND is a cost effective, evidence based 6 hour group education course which meets the National Quality Criteria.

At present there is no approved online structured education for Diabetes that meets NHS England criteria for attendance at structured education.

Please contact Diabetes Care for You if your practice needs more DESMOND patient brochures or you would like a visit from the team to discuss this.

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