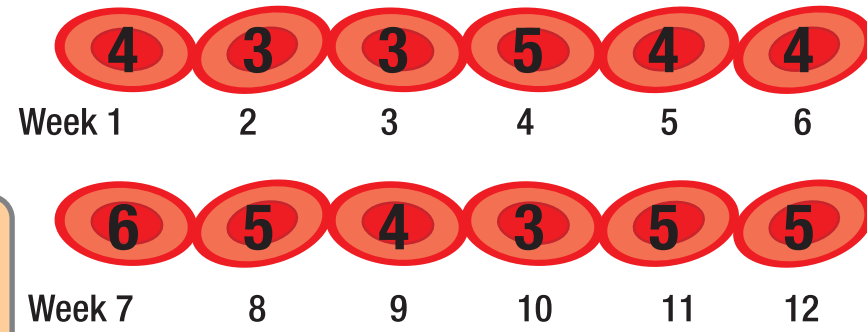


USING HbA_{1c} TO DIAGNOSE TYPE 2 DIABETES

Red blood cells produced and glycosylated over the previous 12 weeks



Fred, aged 69. Attends hypertension clinic for routine appointment. No symptoms of diabetes.



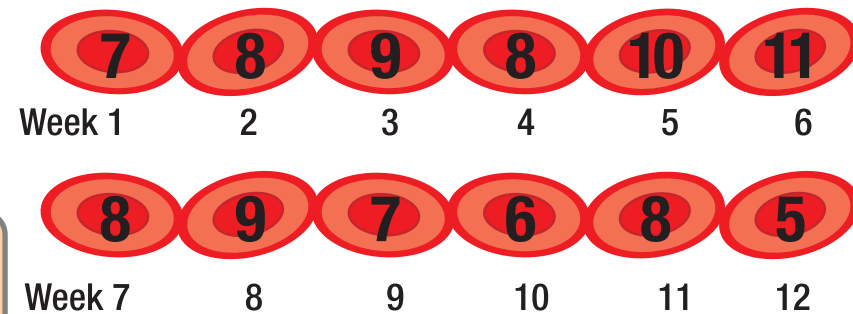
Result

HbA _{1c}	4
Random blood sugar	5

Non-diabetic



Bob, aged 54. Attends routine CVD clinic appointment. Had myocardial infarction one year ago. No symptoms of diabetes.



Result

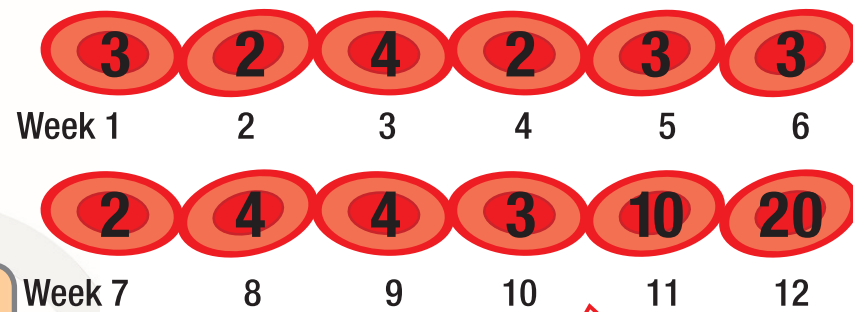
HbA _{1c}	8
Random blood sugar	5

Type 2 diabetes

Confirm with repeat HbA_{1c} in 2 weeks



Karen, aged 25. Attends with polyuria, polydipsia and tiredness.



Result

HbA _{1c}	5.8
Random blood sugar	20

Diabetic

HbA_{1c} should NOT be used when there are symptoms

The pancreas stops producing insulin

Simple protocol for diagnosing type 2 diabetes

The initial screen should usually be with a laboratory plasma glucose measurement.

Where the diagnosis of diabetes is clear – *ie* random plasma glucose > 11.1 mmol/L AND typical symptoms (thirst / polyuria / nocturia / weight loss) – no further testing is required.

Where there is uncertainty, *ie* non-diagnostic or borderline plasma glucose or absence of symptoms, then HbA_{1c} may be used as a confirmatory test. Two diagnostic blood tests taken on two SEPARATE occasions will always be required:

- Random plasma glucose ≥ 11.1 mmol/L on 2 separate days
OR
- Fasting plasma glucose ≥ 7.0 mmol/L on 2 separate days
OR
- HbA_{1c} ≥ 6.5% (48 mmol/mol) on 2 separate occasions at least 2 weeks apart
OR
- Any combination of the above.

For the diagnosis of diabetes to be confirmed TWO abnormal results are needed when asymptomatic. Where uncertainty persists then a 75 g oral glucose tolerance test will be required.

Point of care testing (POCT) – *ie* capillary (fingerprick) glucose or HbA_{1c} – can NOT be used to diagnose diabetes.

Cautions on use of HbA_{1c} for diagnosing diabetes

Circumstances where HbA_{1c} may be raised or lowered:

- Haemoglobinopathies – *ie* high fetal haemoglobin, sickle cell anaemia
- Renal disease
- Liver disease
- Anaemia – iron deficiency, B₁₂ deficiency, haemolysis, reticulocytosis
- Splenectomy
- Alcohol misuse
- Use of certain drugs – eg iron, B₁₂, high-dose aspirin, antiretroviral agents, hydroxyurea, erythropoietin, dapsone
- Hypertriglyceridaemia

HbA_{1c} must NOT be used for diagnosis in

- Children
- Pregnancy
- Suspected or possible type 1 diabetes

More information:

World Health Organization www.who.int/diabetes/publications/report-hba1c_2011.pdf