

# Tool B:

## Testing guide – Diagnosing Diabetes

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### Who should be tested?

1. People with symptoms of diabetes
2. People at high risk of diabetes
3. People having CVD risk assessment

There is currently no recommendation for population wide screening in New Zealand, which is consistent with international recommendations for general screening.

### 1. Test people with symptoms of diabetes

- Thirst/polyuria
- Weight loss
- Lack of energy
- Blurring of vision
- Numbness or paresthesia of the feet
- Recurrent infections e.g. candida

### 2. Test people at high risk of diabetes

Factors associated with increased risk for diabetes include:

- Māori, Pacific, Asian or Indian ethnicity
- Age over 40
- Hypertension
- Adverse lipid profile (especially low HDL, high triglycerides)
- Family history of type 2 diabetes (parent or sibling)
- Impaired glucose tolerance (IGT) /impaired fasting glycaemia (IFG)
- History of gestational diabetes mellitus (GDM) or having a baby over 4 kg

- Increased BMI and/or central obesity
- Polycystic ovary syndrome
- People on certain medications e.g. steroids, antipsychotics

There is no hard and fast rules on when to test based on these risk factors, but as numbers of risk factors increase the threshold for testing should decrease. This would be guided by clinical judgement.

### 3. Test people as part of CVD risk assessment

Recommendations for cardiovascular risk assessment (NZGG, 2003)

Population group	Age to commence testing	
	Men	Women
Asymptomatic people without other known risk factors	45 years	55 years
Māori, Pacific peoples and people from the Indian subcontinent	35 years	45 years
People with other known cardiovascular risk factors or at high risk of developing diabetes	35 years	45 years

## Diagnostic criteria of diabetes

Fasting plasma glucose is recommended as the best initial test for the diagnosis of diabetes. (NZGG, 2003)

### People with symptomatic hyperglycaemia

In a patient with symptoms typical of diabetes, a single fasting plasma glucose level of  $\geq 7.0$  mmol/L  
OR  
casual postprandial plasma glucose or 2 h post-glucose of  $\geq 11.1$  mmol/L is diagnostic.

### People with asymptomatic hyperglycaemia

A fasting venous plasma glucose result  $\geq 7$  mmol/L on two different days AND/OR a random venous plasma result of  $\geq 11.1$  mmol/L on two different days is diagnostic of diabetes. Otherwise interpret as in Table 1.

## Interpretation of fasting glucose

To allow for accurate interpretation, it is important the fasting glucose test is performed when the patient is well. (NZGG, 2003)

Glucose	Interpretation	Action
<5.5 mmol/L	Normal	Retest three years* for those at risk
5.5 – 6.0 mmol/L	Borderline	OGTT for those at increased risk of diabetes. Re-test annually those with IFG or IGT.
6.1 – 6.9 mmol/L	Impaired fasting glycaemia (IFG)	Assess with OGTT. Re-test annually
$\geq 7.0$	Diabetic	Two results $\geq 7.0$ mmol/L on two different days are diagnostic of diabetes. OGTT is not required.

\* There is little evidence of the optimum frequency of screening, but both Diabetes UK and the American Diabetes Association promote three yearly screening for those in high-risk groups, or earlier if symptoms develop.

### Interpretation of the glucose tolerance test

	Fasting mmol/L		2 hours post load mmol/L
Impaired fasting glycaemia (IFG)	6.1 – 6.9	and	< 7.8
Impaired glucose tolerance (IGT)	< 7.0	and	7.8 – 11.0
Diabetes mellitus	≥ 7.0	and/or	≥ 11.1
Gestational diabetes mellitus	≥ 5.5	and/or	≥ 9.0

### Continued debate around diagnostic tests

There continues to be debate around the role of tests other than fasting blood glucose for diagnosing diabetes. The need for a patient to be fasting limits the chance of opportunistic testing. This is a problem for infrequent attendees to general practice.

#### Non fasting blood glucose

Although a fasting glucose is the best test, in some situations a non-fasting glucose may be useful, although interpretation of the result is more difficult.

- A non-fasting result of  $\leq 5.5$  mmol/L may be interpreted as normal
- A result of  $\geq 11.1$  mmol/L is diagnostic for a person with symptoms of diabetes (2 results of  $> 11.1$  are required for a asymptomatic person)
- Results between 5.5 and 11.1 mmol/L are more difficult to interpret, although the threshold for performing a fasting blood glucose (or OGTT) would get lower as the fasting glucose result gets closer to 11.1 mmol/L

#### Urine glucose

Urine glucose has no role as a diagnostic test for diabetes. A fasting glucose would be recommended following a positive glucose dipstick.

#### HbA1c

Although it is currently not recommended as a screening test, there is some evidence to suggest it is being used this way as there are relatively high numbers of HbA1c tests requested on non-diabetics.

**At present, the role of HbA1c remains a tool for monitoring overall glycaemic control.**