



Diabetes

Diagnosis and Monitoring

**1 IN 4
AUSTRALIANS
HAS DIABETES
OR IS AT
HIGH RISK.**

Type 2 Diabetes is the major cause of increased mortality associated with cardiovascular complications including stroke, nephropathy and retinopathy.

Type 2 Diabetes has a preclinical phase of hyperglycaemia and hyperinsulinaemia.

Current recommendations are that Diabetes should be diagnosed in the preclinical phase in order to reduce the morbidity from long-term complications.

WHO IS AT RISK OF DIABETES?

- Those with previously diagnosed impaired glucose tolerance or impaired fasting glycaemia.
- Individuals 45 years or older with either risk factors of obesity or hypertension.
- All Aboriginal and Torres Strait Islanders 35 years or older.
- All individuals with known cardiovascular disease.
- Females with polycystic ovarian syndrome, who are obese.
- Previously diagnosed gestational diabetes.
- Individuals 55 years or older.
- Individuals 45 years or older with a first-degree relative with Type 2 Diabetes.

UNEQUIVOCAL DIABETES

Any two of the following:

Symptoms of Diabetes (polyuria, polydipsia, polyphagia, unexplained weight loss) plus:

- Random plasma glucose greater than or equal to 11.1mmol/L, or
- Fasting plasma glucose greater than or equal to 7.0mmol/L, or
- 2hr plasma glucose greater than or equal to 11.1mmol/L after a 75g oral glucose tolerance test (GTT).

In patients without symptoms a confirmatory test is required on a separate day.

INTERPRETATION

Normal

A fasting glucose of less than 5.5mmol/L indicates that Diabetes is unlikely but it does not completely exclude Diabetes.

Impaired fasting glucose (IFG)

Fasting glucose between 5.5 and 6.9mmol/L.

Impaired glucose tolerance (IGT)

2 hr postprandial or 2 hr oral GTT plasma glucose between 7.8 and 11.0mmol/L.

HOW OFTEN SHOULD I TEST FOR DIABETES?

- Yearly for people with impaired fasting glucose or impaired glucose tolerance.
- Every three years for all other people.

GLUCOSE TOLERANCE TEST

This has largely been replaced by diagnosis on the basis of 2 fasting glucose values in the diabetic range. The oral GTT is recommended for follow up testing of individuals with IFG and IGT.

GLUCOSE BLOOD TEST

Collected in a grey top fluoride tube to preserve the sample.

DIABETES MONITORING

Once the diagnosis of Diabetes has been established all Diabetics should be regularly monitored for assessment of glycaemic control as well as for development or risk of developing vascular complications.

HAEMOGLOBIN A1c (HbA1c)

- HbA1c is the most important index of long-term glycaemic control in Diabetes monitoring.
- HbA1c is increased as a result of irreversible Hb glycation directly reflecting average blood glucose concentrations.
- The HbA1c level reflects the effects of glycation over the lifespan of the red cell (120 days) hence it should be measured no more frequently than three-monthly. Medicare restricts rebates for the test to four times per year. Reimbursement is currently restricted to those with documented Diabetes.
- For a very small number of patients with altered red cell lifespan, or who have a variant haemoglobin, HbA1c is not appropriate and serum fructosamine is a better monitoring tool in these cases only.

Specimen

HbA1c EDTA (Purple Top) Tube or Fructosamine Serum (Gold Top) Tube.

URINE ALBUMIN

- Persisting increased levels of urinary albumin (microalbuminuria) is an early indicator of the chronic vascular complications of Diabetes.
- Microalbuminuria occurs below levels that can be detected by conventional protein dipstick methods.
- It is recommended that all Diabetics be monitored on an annual basis.
- Persistently increased values suggest more stringent control of Diabetes and blood pressure may be required.

Specimen

First voided urine sample (Yellow Top container) for albumin/creatinine (ACR) ratio. The first voided morning specimen has the lowest within individual variation. There is no additional value to be derived from a timed urine collection (these are difficult to collect accurately).

LIPIDS

- Annual screening of lipids is recommended.
- Cholesterol, triglycerides and HDL cholesterol should be measured with calculation of LDL-cholesterol. *Note: Medicare requires that HDL be specifically requested in addition to lipids or similar.*
- Measured after a 10-12hr fast.
- Confirmation of results by repeat analysis of a second fasting sample should be used to decide if treatment is required.

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