Blood Glucose Monitoring

Blood Glucose monitoring allows people to check their own blood glucose levels at home as often as is recommended. The finger is pricked with a lancet device to obtain a very small drop of blood. The blood is placed on a treated test strip, which has been inserted into the meter. The results are displayed within a matter of seconds.

Why test your blood?

Regular blood testing allows you to:

- Better understand the effect of your medication, eating plan and physical activity program.
- Develop confidence in looking after your diabetes
- Actively assist in the prevention or delay of short and long term complications of diabetes.
- Immediately know if your blood glucose is too **high** (*hyperglycaemia)* or too **low** (*hypoglycaemia*). This helps you make decisions on adjusting food, insulin, exercise or seeking medical advice.

Blood glucose levels are measured in millimoles of glucose per litre of blood (mmol/L). For most people with diabetes, blood glucose monitoring helps them to manage their diabetes and to live their day to day life with more confidence.

What blood glucose levels should you aim for?

It is very important to check with your specialist or diabetes educator the level which is appropriate for you. There are occasions when levels, other than stated below, may be suitable for you.

Targets for Glycaemic Control

Ideal blood glucose levels

- Diabetes managed by healthy eating and physical activity: **3.5 - 8.0mmol/L.**
- Diabetes managed by healthy eating, physical activity and medications (tablets and/or insulin): **4 - 10 mmol /L.**
- Fasting (i.e. before breakfast) : **4 - 6mmol/L**

Produced by the Partnership of the Peninsula Diabetes Professionals

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When should you test?

Guidelines for testing: Type 1 diabetes

- Test *four* times a day:
  - -fasting (before breakfast)
  - - before lunch
  - - before dinner
  - - bedtime.

This may be reduced in time, if you have good control of your diabetes. You need to discuss this with your doctor or diabetes educator.

- Test at *extra* times when you:
  - - Have symptoms of hyperglycaemia or hypoglycaemia.
  - - Are unwell.
  - - Experience night sweats or morning headaches.

Guidelines for Testing: Type 2 Diabetes

- Test once or twice daily, changing the time of the day at which your test is done (or as directed by your doctor or diabetes educator).
- Testing may need to be more frequent in times of instability or when changing medication regimen.
- Suggested times are:
  - - fasting (before breakfast) and
  - - two hours after meals.
- This may be reduced to once or twice daily, two to three times a week once good control is achieved.
- If on insulin injections, test **before** each injection unless otherwise directed by your doctor or diabetes educator.
- Log all readings into a diary and take this with you to all appointments with your doctor or diabetes educator.
- Test at *extra* times when you:
  - - Have symptoms of hyperglycaemia or hypoglycaemia.
  - - Are unwell.

Common factors that increase or decrease blood glucose levels are:

- Food - time eaten
- Quantity of food
- Type and amount of carbohydrate (bread, pasta, cereals, fruit).
- Physical activity
- Illness and pain

- Diabetes medication
- Alcohol
- Emotional stress
- Other medications (predinsolone, cough mixture)
- Testing techniques

A quick checklist if you're not sure the result is correct:

- Repeat the test
- Is there enough blood on the strip?
- Are your fingers clean?
- Is the strip the right one for the meter?
- Is the calibration code correct?
- Is the strip inserted the right way?
- Is the meter clean or is the battery low or flat?
- Have the strips expired? Bottles need to be discarded 4 months after opening.
- Have they been affected by climate, heat or light?

Extra blood tests may be requested from time to time by your doctor to confirm your degree of Diabetes control. One of these tests is called the Glycosolated Haemoglobin test (HbA1c).

Glycosolated Haemoglobin Test (HbA1c)

What is the test for?

It estimates the quality of control of diabetes over the previous 2 - 3 months. The HbA1C along with regular blood glucose monitoring is the best way to see the overall picture of your blood glucose levels. We believe that trying to obtain good control is an important way to protect health in later life. Your doctor may order this test 3 to 6 monthly. This test gives a percentage (%) result, a different value than the number on your blood glucose monitor.

What does the test measure?

The test measures that portion (%) of haemoglobin in red cells that has glucose attached to it. The higher the glucose levels in the blood, the more will become attached to the haemoglobin.

What is haemoglobin?

The red pigment inside red blood cells.

How does glucose become attached to it?

- Glucose circulates in the blood and some passes into the cells in the blood where it attaches to various proteins including haemoglobin. Glucose gradually accumulates over a period of several weeks and becomes fixed to the haemoglobin.
- The amount that accumulates depends on the average levels of blood glucose concentration over that period of time.
- Thus the proportion indicates how close the glucose values are to normal values over the period of time.

Why do the test?

This test helps you and your doctor to assess your overall blood glucose control. It will also enable you both to assess whether your Diabetes management program is satisfactory or if some adjustment is needed.
The ranges of the test are graded by the Pathology Department and are as follows:

Normal Control - 4.0 - 6.0%
Ideal Control - 6.1 - 7.0%
Fair Control - 7.1 - 7.9%
Poor Control - 8.0 - 9.9%
Very Poor Control -> 9.9%

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