

Blood Glucose Testing

Dr Jason Long, Director of Clinical Skills



Blood glucose testing

Why does the patient's blood glucose level need to be checked?

The blood sugar is important in diagnosing and monitoring the ongoing treatment of diabetes. People with diabetes are unable to process glucose properly in their bodies due either a lack of the hormone insulin or resistance to the effects of insulin. The levels of glucose in their blood can therefore vary quite dramatically, sometimes too high, sometimes too low – and each can cause very serious effects. Regular monitoring enables the patient and the health care team to ensure the blood glucose levels remain within safe limits.

Many people with diabetes have been taught how to check their own blood glucose levels and are very good at it. Others may be unable to do so because of illness or disability.

When should it be checked?

Most people with diabetes will have their own routine for blood glucose testing. Some may do so only once a week or once a month, while others may have to do so several times a day. The frequency will also vary according to the person's general health state – an illness like an infection in a person with diabetes can temporarily alter how his or her body copes with glucose, so blood testing may have to be stepped up until the person's conditions stabilises. The times to check the blood glucose will be set out in the patient's care plan.

How is it checked?

There are many different blood glucose monitors available but the procedure for testing a person's blood glucose level is depicted in the illustrations below:



Prior to conducting a blood glucose test, assemble the required equipment: Blood glucose meter, cotton wool, disposable gloves, glucose test strips, lancet, lancing device (single patient device displayed) and sharps container.



Insert lancet into lancing device as per manufacturer's instructions.



Check the depth setting on the lancing device is appropriate for your patient.



Apply the cap to complete the assembly of the lancing device as per manufacturer's instructions.



Remove the glucose test strip from the packaging. Take care not to touch the test area.



Insert glucose test strip into blood glucose meter.



Wash hands and apply disposable gloves.



Use lancet to draw blood from side of patient's finger. Avoid using thumb and index (first) finger.



Bring droplet of blood to surface, if necessary by gently 'milking' the finger.



Apply test strip to blood drop and allow blood to be drawn into the strip.



Apply cotton wool or clean tissue to puncture site and note blood glucose reading.



Document results in the patient's record. Report any abnormal results as per local policy.

What do the findings mean?

Testing the blood glucose level is a reliable and accurate way of monitoring diabetes. It tells us how well the medications the person has been prescribed for diabetes, the diet he or she is taking and the physical activity he or she is taking part in are complementing each other, or whether there is too much or too little of any one of these (or a combination).

We measure the glucose level as millimoles of sugar per litre of blood (mmol/L). A typical 'gold standard' blood glucose level for people with diabetes would be:

- before meals: 4 to 7 mmol/L
- 90 minutes after meals: less than 10 mmol/L
- before going to bed: 8 mmol/L.

A person whose blood glucose goes too high or too low is at risk, and we need to act quickly to stabilise the situation. If you find a patient has an abnormally high or low level, report it to a registered member of staff immediately.

It's also very important that you learn to recognise the signs that someone with diabetes either has a low blood glucose, hypoglycaemia, or a high blood glucose, hyperglycaemia.

Where should I record and report my findings?

Many people with diabetes have their own recording books in which they will keep their blood glucose scores; if a person in your care has his or her own recording book and is having blood glucose measurements taken by you, you should make sure the scores are recorded in the book as well as in your organisation's own observation chart. You should make sure you record your findings clearly and accurately so that they can be readily seen and understood. Always follow your organisation's policies and procedures on recording and reporting.