

BLOOD SUGAR

LEVELS

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CMG Archives

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IMPORTANT

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What is "blood sugar level"?

Blood sugar level is the amount of glucose (sugar) in an individual's blood. Blood sugar level is also known as "plasma glucose level".

Blood sugar level is expressed as *millimoles per litre (mmol/litre).

*mole is the molecular weight of a substance (in grams); gram molecule.

Millimole is an SI unit equivalent to one-thousandth of a gram-molecule

Normal levels

Normally blood glucose levels stay within narrow limits throughout the day, typically 4 to 8 mmol/litre. However, levels elevate after meals, and are usually at their lowest in the morning.

Diabetes

In diabetes, the individual's blood sugar level moves outside of the normal limits and if it left unaddressed, resultant pathology can develop.

Even with good control of diabetes, the blood sugar level will still tend to drift outside the normal levels.

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Consequence of High Blood Sugar Levels

When high levels of blood glucose are present, possibly undetected for years, it leads to damage of the small blood vessels.

This has the knock-on effect of possible complications, such as:

- Cardiovascular disease, including high blood pressure, heart attack, heart failure, stroke, artery and vein degeneration, and other problems caused by poor circulation (oedema, skin problems, ulcers, foot and lower leg problems, and gangrene in chronic cases).
- Eye disease, including retinopathy, glaucoma, cataract, and corneal disease.
- Kidney disease (nephropathy).
- Nerve disease (neuropathy, which can cause numbness in the feet).
- Cancer of the liver and other liver diseases, including non-alcoholic fatty liver.
- Infections, metabolic difficulties, impotence, and pregnancy problems.
- Mental health problems, including anger, denial, apathy, learned helplessness, and depression.
- Specific skin problems, including:
 - Bacterial infections.
 - Fungal infections.
 - Itching.
 - Diabetic dermopathy (light brown, scaly patches).
 - Necrobiosis lipoidica diabetorum (similar to diabetic dermopathy (see above), but fewer, larger, and deeper).
 - Atherosclerosis (the skin changes. it becomes hairless, thin, cool, and shiny. the toes become cold. toenails thicken and discolour. and exercise causes pain in the calf muscles because the muscles are not getting enough oxygen).
 - Allergic reactions (especially to other medicines and their coatings/contents).
 - Diabetic blisters (these look like burn blisters).
 - Eruptive xanthomatosis (yellow, pea-like enlargements in the skin).
 - Digital sclerosis (tight, thick, waxy skin on the backs of hands. Sometimes skin on the toes and forehead becomes thick. The finger joints become stiff and can no longer move the way they should. Rarely, knees, ankles, or elbows also get stiff).
 - Acanthosis nigricans (tan or brown raised areas appear on the sides of the neck, armpits, and groin. sometimes they also occur on the hands, elbows, and knees).

Measuring Blood Sugar Levels

Reasonably priced home testing kits are available at good chemists and many supermarkets.

To check the blood sugar level, a small amount of the individual's blood is placed on an associated test strip, which is then placed into the measuring device (picture right). After about 30 seconds (some devices complete the test process in a few seconds), the blood glucose level in mmol/litre is displayed.

Also available, and often as part of the kit, are automatic lancets which are designed to prick the individual's finger as to painlessly draw a drop of blood for testing.



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Interpretation of Results

The ideal Glucose Level values are:

- 4 to 7 mmol/litre before meals.
- Less than 10 mmol/litre 90 minutes after a meal (other authorities - less than 8.5 mmol/litre).
- Approximately 8 mmol/litre at bedtime (the blood sugar level at bedtime should be between 7 and 10 mmol/litre).

If the result values are outside of the ideal levels, then the advice of a health professional should be sought.

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