

What is a normal blood sugar level and should I be monitoring mine?



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As the last article in our series on remote monitoring (checking your own health data at home instead of your healthcare professional checking it for you in person), I will be looking at monitoring blood sugars from home using a blood glucose meter.

Who should be monitoring their blood sugars?

While it might be interesting to see what your blood sugars are doing at any given time, for those who have *not* been diagnosed with diabetes mellitus, there generally isn't a lot of benefit in checking your blood sugar at home using a glucose meter. This is because the reading given is only a snapshot of what level your blood sugar is at *in that moment*. If you are concerned that your blood sugars may be raised, having this sort of instant reading may unfortunately be falsely reassuring. A better test is the [HbA1c test](#), which gives an average result from the previous 3-month period and so is more likely to capture any frequent abnormalities. (And of course, it is always a good idea to speak to your GP about any symptoms that are concerning you.)

However, for those who *do* have diabetes (or have been asked to monitor their blood sugar levels by a clinician for other reasons), glucose meters can be hugely useful in getting instant feedback of how well controlled their condition is. This is especially true for people whose medication has a risk of causing a dangerously low blood sugar (*hypoglycaemia*, or 'hypo' for short), such as insulins and some of the anti-diabetic oral medications.

Generally, there will be target ranges for readings done at different times, such as first thing in the morning, pre-meals and post-meals.

Why monitor blood sugars? (symptoms)

You may be wondering why these blood sugar levels matter so much. There are three main reasons:

1. Having blood sugar levels that are too high or too low can cause medical emergencies, such as:
 1. Dangerously low blood sugars (*hypoglycaemia*)²
 2. DKA, or *diabetic ketoacidosis*³
 3. *Hyperosmolar Hyperglycaemic State*⁴
2. Over time, persistently raised sugar levels can increase the risk of complications, including:
 1. Heart attacks
 2. Strokes
 3. Kidney problems
 4. Eyesight deterioration
 5. Damage to feet (reduced circulation, numbness, ulcers)
3. There is also evidence that having *too tight* control in both Type 1 Diabetes (also known as *insulin-dependent diabetes mellitus*) and Type 2 Diabetes (*non-insulin dependent diabetes mellitus*) can lead to an *increased* risk of cardiovascular disease, through damage done by having too-low blood sugars⁵.

While the HbA1c test is still very useful in people who have diabetes, especially in evaluating risk for some of the long-term complications, tracking blood glucose levels throughout the day and taking appropriate action can help avoid the emergency situations in the short term. Also, through liaising with the doctor and prompting appropriate changes to lifestyle and medication, it can also help reduce the risk of some of the longer-term complications listed above.

What is a normal blood sugar level?

A normal blood sugar level for someone who is not diabetic is usually 4.0 to 5.9 mmol/L before eating, and less than 7.8 mmol/L when taken at least an

hour and a half after eating⁶. Usual targets for those with diabetes are as follows (table credit: diabetesmyway.nhs.uk with some modifications)⁷:

	Waking	Before meals	Two hours after meals
Children: type 1 diabetes*	4-7 mmol/L	4-7 mmol/L	5-9 mmol/L
Adults: type 1 diabetes*	5-7 mmol/L	4-7 mmol/L	5-9 mmol/L
Type 2 diabetes**		4-7 mmol/L	less than 8.5 mmol/L less than 7.8 mmol/L (one hour after eating)
Pregnant women with diabetes*	less than 5.3 mmol/L	less than 5.3 mmol/L	less than 6.4 mmol/L (two hours after eating)

*National Institute of Clinical Excellence (NICE) 2015

** Diabetes UK Council of Health Care Professionals 2015

Please note, the above table is a summary of typical targets based on type of diabetes. However, it shouldn't be taken as a replacement for any doctor's advice. There are of course many instances where an individual person's targets will differ from the table. For instance, a pregnant woman with diabetes may need to have more lax targets if she is prone to getting hypo's.

Also, depending on your type of diabetes and what medication you are using, your doctor may only use HbA1c targets for you, rather than self-testing blood glucose levels.

This article is not meant for use in managing diabetic emergencies. If you think you may have symptoms of a diabetic emergency, please contact 999 for life-threatening symptoms. For non-life-threatening but urgent

symptoms, please contact NHS 111 or read more about these [here](#) or via the links 2, 3 and 4 below.

References

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6. <https://www.kinetikwellbeing.com/diabetic-emergency-advice-from-st-john-ambulance/>