

SIX-MINUTE INTENSIVE TRAINING:

Blood glucose monitoring

Monitoring blood glucose can help people manage their diabetes. It also helps reduce their risk of hypoglycaemia (also known as hypo or low blood glucose) and hyperglycaemia (high blood glucose).

How are blood glucose levels monitored?

There are three ways to measure blood glucose:

- 1. Blood glucose level (BGL) check:** this involves using a glucose meter, blood glucose monitoring strips, and a finger-pricking device with lancets to get a 'snapshot' of a resident's blood glucose level at a specific point in time.
- 2. Sensor glucose level (SGL):** is taken by a small wearable monitor that measures and shows glucose levels throughout the day and night. They measure glucose in the fluid between cells, rather than in the blood and as a result there is usually a difference between SGL and BGL readings. Sensor glucose levels can be taken using a continuous glucose monitor (CGM) or flash glucose monitor (flash-GM).
- 3. HbA1c:** this is a blood test that reflects average blood glucose levels over the last 10-12 weeks. It is recommended that people with diabetes have this test every 3-6 months. This test gives an overall picture of blood glucose management.

Who needs monitoring?

If resident has	Frequency of BGL monitoring	Order HbA1c	Suitable for sensor glucose monitoring
Type 1 diabetes	Daily	3 monthly	» Yes, may be eligible for subsidised CGM products through the NDSS
Type 2 diabetes using insulin	Daily	3 monthly	» Yes, but not eligible for subsidised CGM through the NDSS » Consider flash glucose monitoring to reduce finger pricking and to obtain 24hr profile in those with concerns about overnight hypoglycaemia
Type 2 diabetes using a sulphonylurea	Daily	3-6 monthly	» No, unless clinical review indicated e.g. recurrent signs of hypo or hyperglycaemia, to inform changes to medication or start insulin
Type 2 diabetes not taking glucose-lowering medications, or using metformin or DPP-4 inhibitors only	Not necessary, unless resident chooses to, sick day management or HbA1c not reliable	6-12 monthly	» No

*HbA1c may not be suitable for residents who have low haemoglobin, poor kidney or liver function. Discuss alternative monitoring with the GP. DPP-4 = dipeptidyl peptidase 4.

When to monitor

A routine daily BGL monitoring regimen is guided by the type of diabetes the resident has, the profile of the insulin the resident may take and their hypo risk. Extra BGL monitoring should be done if there are changes to treatment, diet or appetite. This should be done in accordance with sick day or hypo management guidelines.

Checks per day	Treatment	BGL timing			
		Fasting	Before meal	2 hours after meal	Overnight
0 to 1	Not using diabetes medication, or on other diabetes medicine that is not a sulphonylurea	Check only if HbA1c >7%, unreliable or resident preference. Alternating times.			
1 to 2	Sulphonylurea	✓	PRN	PRN	PRN
1 to 2	Basal insulin (once daily)	✓	PRN	PRN	PRN
2 to 4	Premix insulin	✓	✓	PRN to assess bolus component	PRN
4+	Basal/bolus insulin	✓	✓ (each meal)	PRN to assess bolus peak	PRN

PRN = as needed. Extra BGL checks to assess daily glucose profile in order to review diabetes treatment. Extra BGLs asCper hypo and sick day management plans.

What do the numbers mean?

Each resident should have a target BGL range and HbA1c level as part of their care plan. When you check a resident's BGL (or SGL) make sure it is within their target range. If not, refer to the resident's diabetes management plan.

Glycaemic targets guide	HbA1c	Fasting or before meal BGLs	2 hours after meal BGLs
Functionally independent adult	7.0-7.5%	5.0-8.0 mmol/L	6.0-10.0 mmol/L
Frail and/or diagnosed with dementia	8.0-8.5%	6.0-10.0 mmol/L	6.0-15.0 mmol/L
End of life/palliative	Not relevant	Avoid symptomatic hyperglycaemia	Periodic monitoring to avoid symptoms

Next steps

Read:

- » **Diabetes management in aged care: a practical handbook** – Chapter 6: blood glucose monitoring
- » **Six-minute intensive training posters:** Hyperglycaemia, Hypoglycaemia