



# Monitoring blood glucose

For primary care nurses and allied health professionals

## Why monitor blood glucose?

Regular monitoring can help identify the effects of food, exercise, medication, and illness on blood glucose levels. Monitoring blood glucose is a way of tracking how effective a person's diabetes management plan is progressing and can help identify any patterns or changes.

## How is blood glucose measured?

There are three ways to measure blood glucose.

- Blood glucose level (BGL):** this involves using a glucose meter and a finger pricker (lancet device) to get a 'snapshot' of what a person's glucose level is at a specific point in time.
- Sensor glucose level (SGL):** this involves a sensor inserted into the fat layer under the skin which measures glucose levels every few minutes. The readings can be sent to an insulin pump or other device (continuous glucose monitoring or CGM device) or can be scanned with a device (flash glucose monitoring or Flash GM device). Specific training is required.
- Glycated Haemoglobin (HbA1c):** this is a blood test ordered 2 to 4 times a year. The result reflects an average blood glucose level for the last 2 to 3 months.

## Who needs to monitor?

### BGL checks

- All people with type 1 diabetes and type 2 diabetes taking insulin require regular BGL checks through the day.
- People with type 2 diabetes taking sulphonylureas (e.g. gliclazide) also require routine BGL checks every day.
- People with type 2 diabetes not taking any glucose-lowering medicines or taking metformin only do not require routine BGL checks every day.

### SGL checks

All people who are taking insulin may benefit from using a CGM or Flash GM device. Some people may be eligible for subsidised products through the Australian Government's CGM Initiative as part of the NDSS.

### HbA1c

All people with diabetes require routine HbA1c pathology test at least once to four times a year.

## When to monitor

A routine daily regimen for checking BGL is guided by the insulin profile and the person's hypo risk. Extra BGLs should be done if there is any change in treatment or diet/appetite, and according to sick day or hypo management guidelines.

Checks per Day	Treatment	BGL Timing			
		Fasting	Before Meal	2 hours After Meal	Overnight
0 to 1	Not taking a sulphonylurea or insulin	Check only if HbA1c > 7%, unreliable or individual's 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	PRN
4+	Basal/bolus insulin	√	√ (each meal)	PRN	PRN

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

## What do the numbers mean?

Each person should have a target glucose range and HbA1c level as part of their care plan. When a BGL (or SGL) is taken, check it is within target. Refer to their sick day management plan if above range. If BGL (or SGL) it is below target range manage as per person's hypo plan. Always look for patterns and seek review as identified.

Glycaemic targets guide			
	HbA1c	Fasting or Before Meal BGLs	2 hours After Meal BGLs
Functionally independent adult	7.0-7.5%	4.0-7.0 mmol/L	5.0-10.0 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