



## Guidance for Self-Monitoring of Blood Glucose (SMBG)

**SMBG should be used only when individuals with diabetes (and/or their carer-givers) have the knowledge, skills and willingness to incorporate SMBG monitoring and therapy adjustments into their diabetes care plan in order to attain agreed treatment goals.**

All patients performing SMBG should receive adequate instructions from appropriately trained and competent healthcare professionals with a structured follow-up assessment at least annually.

- The assessment should include:

- the person's self-monitoring skills,
- the equipment used and conformity to international standards (ISO 15197: 2013),
- the quality and frequency of testing,
- checking that the person knows how to interpret the blood glucose results and what action to take,
- the impact on the person's quality of life and
- the continued benefit to the person.

- NICE guidelines recommends that SMBG is indicated for all persons with **type 1** diabetes (T1D)
- **NICE do not recommend the routine use of SMBG in type 2 diabetes (T2D)** and recommend only offering SMBG in adults if:

- the person is on insulin or
- there is evidence of hypoglycaemic episodes or
- the person is on oral medication that may increase their risk of hypoglycaemia while driving/operating machinery or
- the person is pregnant, or is planning to become pregnant or
- the person is starting treatment with oral or intravenous corticosteroids.

- NICE recommends considering **short-term SMBG for adults with T2D** (and review if necessary) if:

- the person is starting treatment with oral or intravenous corticosteroids
- to confirm suspected hypoglycaemia

**Patients should be made aware that there are increased risks of blood glucose variation in some circumstances and that they may require an increased testing frequency during periods such as:**

- acute inter-current illness,
- pregnancy/pre-conception,
- any changes in therapy that may alter blood glucose results,
- changes in lifestyle/routine or
- at any times where erratic results may be dangerous e.g. driving.

Diabetes in pregnancy is associated with risks to the woman and to the developing foetus. All pre-conception and pregnant women with pre-existing diabetes or gestational diabetes should be offered SMBG- See NICE guideline on diabetes in pregnancy for further advice.

NICE recommends offering all children and young people with T1D and their family members or carers (as appropriate) a choice of equipment for SMBG so that they can optimise their blood glucose control in response to adjustment of insulin, diet and exercise<sup>5</sup>. It does not recommend the routine use of SMBG in children and young people with T2D unless considered by healthcare professionals as necessary depending on overall diabetes control and management plan.

Healthcare professionals offering SMBG to patients who drive and are at risk of hypoglycaemia must consult the mandatory Driver and Vehicle Licensing Agency (DVLA) - **At a glance guide to the current medical standards of fitness to drive**. This is particularly important and a legal requirement for the DVLA Group 2 drivers of large goods vehicle (LGV) or passenger carrying vehicle (PCV).

Diabetes Type	Treatment Group	Suggested Monitoring Guide	Reasonable test strip requirement (NB: 1 box = 50 strips)
<b>Type 1 Diabetes</b>	All children and adults with Type 1 diabetes	<ul style="list-style-type: none"> <li>SMBG is integral in the treatment of all people with Type 1 diabetes.</li> <li>All people with Type 1 diabetes should be educated in SMBG and offered structured education to ensure they have the skills and knowledge to adjust insulin according to carbohydrate intake and make corrective doses.</li> <li>SMBG four times a day or more will be required to gain optimum control, avoid hypoglycaemia, and avoid metabolic emergencies such as diabetic ketoacidosis (although less frequent testing may be appropriate in patients with good control and good hypoglycaemia awareness).</li> </ul>	Regular testing required. Should be prescribed as a repeat prescription – quantities depend on patient's monitoring frequency (Guide requirement = 2-3 boxes per month)
<b>Type 1 and Type 2 diabetes in pregnant women &amp; gestational diabetes</b>	All pregnant women with diabetes	<ul style="list-style-type: none"> <li>All pregnant women with Type 1, Type 2 or gestational diabetes controlled with insulin, tablets or diet alone should SMBG four times a day or more in order to achieve tight diabetic control.</li> <li>Testing should include both fasting and postprandial blood glucose measurements.</li> </ul>	Regular testing required. Supply according to agreed management plan (Guide requirement = 2-3 boxes per month during pregnancy)
<b>Type 2 Diabetes</b>	Insulin therapy with or without hypoglycaemic agents	<p>On initiation regular monitoring 2 to 4 times a day is required to achieve optimum glycaemic control.</p> <ul style="list-style-type: none"> <li>For stable patients where glycaemic control is achieved, testing may be reduced to 2 or 3 times a week.</li> <li>Increase testing during periods of illness, instability or use of oral steroids, and following changes in insulin dosage.</li> <li>Regular testing is required for patients who adjust their insulin dose according to SMBG.</li> <li>Assess patients understanding and use of results to adjust diet, lifestyle and treatment. Provide extra training/education if required.</li> </ul>	(Guide requirement = 1-2 boxes per month). Additional test strips will be necessary for those who require monitoring for DVLA vocational licensing requirement – assess on an individual basis. (A meter with a memory function will be required by these patients too).
<b>Type 2 Diabetes</b>	Sulfonylurea/glinide alone or in conjunction with other therapies	<p>Patients on sulfonylureas/glinide should not need to routinely self-monitor blood glucose, but SMBG may be considered if there is asymptomatic hypoglycaemia, suspected asymptomatic hypoglycaemia, use of oral steroids, risk of hypoglycaemia due to renal impairment or high alcohol intake, plus in those with certain occupations (see DVLA guidance)</p> <ul style="list-style-type: none"> <li>Self-monitoring regime should be agreed as part of a management plan.</li> </ul>	(Guide requirement = 1-2 boxes per year) (Test strips should not routinely be put on repeat for these patients). More strips may be required for occupational monitoring – assess on individual basis.
<b>Type 2 Diabetes</b>	Diabetic patients controlled with Pioglitazone, gliptins, or SGLT-2 inhibitors or GLP-1mimetic (once stabilised)	<p><b>SMBG not routinely recommended.</b></p> <ul style="list-style-type: none"> <li>Glycaemic control is best monitored through HbA1c testing.</li> <li>On diagnosis and treatment initiation, motivated patients may wish to monitor effects of changes in diet and physical activity.</li> <li>SMBG should only be offered as part of a structured plan with education on how to interpret the results.</li> <li>Regular long term testing is unnecessary</li> </ul>	(Guide requirement = 1-2 boxes per year) (Test strips should not routinely be put on repeat for these patients)
<b>Type 2 Diabetes</b>	Diabetic patients controlled with diet and exercise or metformin alone.	<ul style="list-style-type: none"> <li>SMBG not routinely recommended.</li> <li>Glycaemic control is best monitored through HbA1c testing</li> </ul>	<b>Testing unnecessary</b>

Following a comprehensive [evaluation of blood glucose meters](#) which engaged with patients and reviewed a whole range of meters according to NICE guidance and ISO standards the meter that scored the highest in terms of quality was the Tee2 meter. This meter is the preferred formulary choice along with CareSense N and Contour NEXT.

It is recognised that **paediatric patients and certain Type 1 diabetics** may require meters with additional functions such as carb counting and compatibility with Ketone test strips. A range of additional blood glucose testing meters that fulfil such criteria are therefore available for these specific patients. To see the agreed list of approved meters and associated functions [click here](#).

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