Guideline on Self-Monitoring of Blood Glucose in People with Diabetes (November 2016)

- NICE guidance advises that the need and frequency to Self Monitor Blood Glucose (SMBG) varies depending on the type of Diabetes and the medication being taken.
- Where SMBG is recommended this should form part of a wider programme of management where the results are used to inform diet, lifestyle or treatment changes.
- Patients who self monitor must be given adequate training in self-monitoring techniques, including regular quality control of their meters.
- Patients and health care professionals should be clear about what they hope to achieve by SMBG.
- Increased testing may be required during times of illness and if steroids are prescribed.
- Frequency of SMBG should be reviewed regularly and excess use addressed.
- The continued benefit of SMBG should be assessed to identify and support those who find it useful while discouraging those who gain no clinical benefit from continuing to test.

Type 1 Diabetes

Self Monitoring of Blood Glucose (SMBG) is an integral part of treatment of type 1 diabetes. SMBG should be carried out four or more times a day to help manage diabetes appropriately (control hyperglycaemia and prevent hypoglycaemia).

Type 2 Diabetes

People with type 2 diabetes with good control DO NOT need to use routine SMBG if they are managed with:
- Diet and physical activity alone
- Metformin, glitazones, gliptins or GLP-1 analogues (once stabilised) or any combination of these treatments, without a sulfonylurea or rapid acting insulin secretagogue (glinide).

Patients who do not need routine SMBG testing should have their glycaemic control monitored through HbA1c testing at least every six months.

SMBG should be available to people with Type 2 diabetes:
- On insulin (with or without oral antidiabetic medication). SMBG will need to be considered
up to four times a day. This may be reduced if glycaemic control is stable, and increased during periods of instability or illness.

- On a sulfonylurea or rapid acting insulin secretagogue (glinide) and in whom any one of the following circumstances apply:
  - Suspected hypoglycaemia
  - Hypoglycaemia unawareness
  - Greater risk of hypoglycaemia (pregnancy, underlying renal impairment, alcohol abuse, physical activity)
  - Where hypoglycaemia has particular safety concerns (e.g. HGV, PCV license holders – see DVLA guidance see appendix 1)

The purpose of SMBG should be discussed, agreement reached on how results should be interpreted and what action should be taken. At least annually, the patient should be assessed for:

- Self monitoring skills
- The quality and appropriate frequency of testing
- The use made of the results obtained
- The impact on quality of life and continued benefit
- The equipment used

**DVLA requirements for blood glucose monitoring**

**Commercial lorry or bus drivers (DVLA Group 2)** on insulin or sulfonylureas (e.g. glibenclamide, glicazide) or glinides (e.g. nateglinide, repaglinide) should regularly monitor blood glucose at least twice daily and at times relevant to driving.

DVLA Group 2 drivers on insulin should use a meter with a memory function capable of storing 3 months of readings.

**DVLA requirements for car & motorcycle drivers (DVLA Group 1)** diabetics managed by tablets which carry a risk of inducing hypoglycaemia (e.g. sulphonylureas and glinides):

It may be appropriate to monitor blood glucose regularly and at times relevant to driving to enable the detection of hypoglycaemia.

For Group 1 entitlement the person must not have had more than one episode of hypoglycaemia requiring the assistance of another person within the preceding 12 months.

For DVLA Group 1 drivers who are not on oral medication at risk of hypoglycaemia or on insulin the need for blood glucose monitoring and frequency should be decided on an individual patient basis.

For further information:
https://www.gov.uk/guidance/assessing-fitness-to-drive-a-guide-for-medical-professionals

**References:**

- Diabetes (type 1 and type 2) in children and young people (2015) NICE guideline NG18
- Diabetes in pregnancy: management from preconception to the postnatal period (2015) NICE guideline NG3
- Type 1 diabetes in adults (2015) NICE guideline NG17
- Type 2 diabetes in adults (2015) NICE guideline NG28
<table>
<thead>
<tr>
<th>Diabetes Type</th>
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| **Type 1 Diabetes**           | All children and adults with Type 1 diabetes         | • SMBG is integral in the treatment of all people with Type 1 diabetes.  
• Patients should be educated in SMBG and adjust treatment accordingly  
• SMBG 4 times a day or more (at least 5 times for children) will be required to gain optimum control, avoid hypoglycaemia, and avoid metabolic emergencies such as diabetic ketoacidosis. | 100 strips  
150-300 strips per month  
[may need more for intensive management or loss of hypoglycemic awareness] |
| **Type 1 and Type 2 diabetes in pregnant women & gestational diabetes** | All pregnant women with diabetes (including all women with diabetes planning a pregnancy) | • All pregnant women with Type 1, Type 2 or gestational diabetes controlled with insulin, tablets or diet alone should **SMBG 4 times a day or more** in order to achieve tight diabetic control. [see also under Type 1 diabetes]  
• Testing should include both fasting and postprandial blood glucose measurements. | 100 strips  
150-200 strips per month |
| **Type 2 Diabetes**           | Insulin therapy +/- hypoglycaemic agents             | • **On initiation regular monitoring 2 to 4 times a day** is required to achieve optimum glycaemic control.  
• **For stable patients where glycaemic control is achieved, testing may be reduced to 2 or 3 times a week.**  
• Increase testing during periods of illness, instability or use of oral steroids, and following changes in insulin dosage.  
• Assess patients understanding and use of results to adjust diet, lifestyle and treatment. Provide training/education if required. | 50-100 strips  
50 strips alternative months -100 strips per month |
| Sulfonylurea/glinide alone or in conjunction with other therapies | Considered SMBG 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.  
• Self monitoring regime should be agreed as part of a management plan. | 50 strips  
Test strips should not routinely be put on repeat for these patients, unless DVLA need to monitor (See DVLA guidance) or increased risk of hypoglycaemia. |
| Diabetic patients controlled with Metformin, Pioglitazone, glipitin or GLP-1 mimetic (once stabilised) | SMBG not routinely recommended.  
• Glycaemic control is best monitored through HbA1c testing.  
• On diagnosis and treatment initiation, motivated patients may wish to monitor effects of changes in diet and physical activity.  
• SMBG should only be offered as part of a structured plan with education on how to interpret the results. | Test strips should not routinely be required for these patients. |
| Diabetic patients controlled with diet and exercise | SMBG not routinely recommended.  
• Glycaemic control is best monitored through HbA1c testing | Test strips should not routinely be required for these patients. |