# Guidelines on Self Monitoring of Blood Glucose (SMBG) in people with Diabetes

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These local recommendations update previous guidance on SMBG in the light of the recent NICE Clinical Guidelines on Diabetes (CG 66 and 87)[1]. The intention is to provide guidance additional to that in NICE which includes frequency of testing to aid clinicians and patients in drawing up SMBG management plans advocated by NICE. Local specialist opinion and the recent results of the DiGEM[2] and ESMON[3] studies have informed this guidance.

1. In people with Type 1 Diabetes, SMBG is an integral part of treatment. The majority of individuals with Type 1 Diabetes should be able to monitor four or more times a day to help self manage their diabetes appropriately (control hyperglycaemia and prevent hypoglycaemia)
2. In 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 to once daily or less, if glycaemic control is stable, though increased during periods of instability or illness.
3. In people with Type 2 Diabetes on a sulphonylurea or glinide and in whom any one of the following circumstances apply:
   - Suspected hypoglycaemia
   - Hypoglycaemia unawareness
   - Greater risk of hypoglycaemia (underlying renal impairment, alcohol abuse)
   - Where hypoglycaemia has particular safety concerns e.g. Group 2 driving licence holders (includes large lorries [category C] and buses [category D].)
   - Group 1 driving licence holders (motor cars and motor cycles) – It may be appropriate to monitor blood glucose (depending on clinical factors including frequency of driving) at times relevant to driving to enable the detection of hypoglycaemia.
     SMBG should initially be undertaken within an agreed monitoring plan where appropriate.
     The monitoring plan and results should be reviewed and if long term SMBG is deemed necessary, a further plan should be agreed.
4. In people with Type 2 Diabetes who have good control on diet and physical activity alone, metformin, glitazones, gliptins, SGLT2 inhibitors or GLP-1analogues (once stabilised) or any combination of these treatments without a sulphonylurea or glinide do not generally need SMBG. In such patients, glycaemic control is best monitored through HbA1c testing
5. In people with newly diagnosed Type 2 Diabetes, self monitoring of blood glucose (SMBG) should be offered as an integral part of self-management education only when the purpose is clear and the patient understands how results should be interpreted and acted upon.
6. Motivated patients especially those who have completed a structured education programme may wish to monitor the effects of change in diet or activity using SMBG and act upon the results.
7. DiGEM and ESMON studies, in people with established and newly diagnosed non-insulin Type 2 Diabetes respectively, showed that not only did SMBG not improve glycaemic control but in some people, SMBG decreased their quality of life. People with non-insulin Type 2 Diabetes should be offered information from these studies to support reaching an informed decision on SMBG
8. The continued benefit for SMBG should be assessed at least annually. Where continuing use is deemed appropriate, the following should also be assessed annually: self-monitoring skills; quality and appropriate frequency of testing; use made of the results obtained; impact on quality of life and the equipment used.

Useful Links:

TREND leaflets: http://www.trend-uk.org/resources.php

DVLA guidelines - fitness to drive information, testing requirements whilst driving. (Click diabetes in the contents): https://www.gov.uk/current-medical-guidelines-dvla-guidance-for-professionals-conditions-d-to-f

Leaflets for patients: https://www.gov.uk/diabetes-driving

Acknowledgement to Bradford and Airedale tPCT PACE Diabetes Toolkit February 2009

[1] http://guidance.nice.org.uk/CG87

[2] Simon J, Gray A, Clarke P, et al. Cost effectiveness of self monitoring of blood glucose in patients with non-insulin treated type 2 diabetes: economic evaluation of data from the DiGEM trial. BMJ 2008; 336: 1177—80

[3] O'Kane MJ, Bunting B, Copeland M, et al. Efficacy of self monitoring of blood glucose in patients with newly diagnosed type 2 diabetes (ESMON study): randomised controlled trial. BMJ 2008;336:1174—7

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**Key Practice Points**

- SMBG 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 (HCP) should be clear about what they hope to achieve by SMBG
- Community Pharmacists are strongly advised **not to** sell blood glucose monitoring meters to patients without prior discussion with the patient's diabetes key worker / HCP, if the intention is to obtain test strips from FP10 NHS prescriptions
- Frequency of SMBG should be reviewed regularly and excess use addressed

| Diabetes Type | Treatment Group | Monitoring Regime | Reasonable Blood Glucose Strip Requirement* | |
|---|---|---|---|---|
| | | | Initiation | Repeat prescription |
| Type 1 Diabetes | All people with Type 1 diabetes | • SMBG is an integral part of treating Type 1 Diabetes<br>• Patients should be educated in SMBG and adjust treatment accordingly<br>• The majority of patients with Type 1 Diabetes should be able to monitor 4 or more times a day to prevent hypoglycaemia and control hyperglycaemia | 1 box | 5 boxes every 2 months |
| Intensive management or loss of hypoglycaemic awareness | Frequent testing essential in: newly diagnosed children, under 5yrs; insulin pump therapy users; those unwell or carbohydrate counting | **A management plan should be developed and agreed with the individual**<br>up to 8 or more tests daily | 5 boxes | 10 boxes every 2 months |
| Pre-pregnancy, Pregnancy in Type 1 and Type 2 and Gestational Diabetes | All women with diabetes planning a pregnancy, pregnant women with diabetes and gestational diabetes | All should SMBG at least 4 times a day (in some cases up to 8 times a day), to include both fasting and post prandial blood glucose measurements. | 3 boxes for the first month | 5 - 10 boxes every 2 months |
| Type 2 Diabetes | Insulin therapy +/- hypoglycaemic agents | • Consider SMBG 2 to 4 times a day. This may be reduced to once daily or less if glycaemic control is considered to be stable in agreement with the patient<br>• Increase testing during periods of illness, instability or use of oral steroids<br>• Assess patients understanding and use of results to adjust diet, lifestyle and treatment.<br>• Provide extra training / education if required | 2 boxes | 1 - 2 boxes every 1 to 2 months |
| | Sulphonylurea or glinides alone or in conjunction with other therapies | • Patients on sulphonylureas/glinides should not need to routinely self monitor blood glucose, but SMBG can be considered if there is symptomatic 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 (i.e. HGV, PSV or train drivers)<br>• Group 1 drivers may need to monitor dependent on clinical factors including frequency of driving<br>• Pattern of monitoring should be agreed as part of a management plan | 1 box to facilitate monitoring agreed | 1 box every 3 months on repeat |
| | Diet & Physical Activity alone +/- metformin or glitazones or gliptins or SGLT2s or GLP-1 analogues (once stabilised) | **SMBG not routinely recommended as part of routine care**<br>• Glycaemic control is best monitored through HbA1c testing<br>• motivated patients may wish to monitor effects of changes in diet and physical activity<br>• Consider using SMBG if patient starts oral steroids | Issued as required with agreement and education of the patient | No repeat prescription. Issue on request where appropriate |

* In general 1 box contains 50 strips.