

Glycemic Control and Self-Monitoring of Blood Glucose

Self-monitoring of blood glucose (SMBG) is an important part of the care and management of people with diabetes. Nevertheless, how often patients need to perform SMBG can vary substantially between patients, and whether routine monitoring is necessary for all diabetics, especially those not treated with insulin, remains controversial.

Benefits of self-monitoring of blood glucose (SMBG)
For type 1 diabetes, frequent SMBG is considered standard of care.¹ Most often it is recommended that such patients check their sugar about 3-4 times a day but frequency may vary depending on the individual patient's characteristics and treatment goals. Routine SMBG is also generally considered important for patients with type 2 diabetes who are on insulin. This is particularly true for those who are having their insulin doses adjusted regularly, but it is also considered important in minimizing insulin reactions. Unfortunately there is not good evidence from the literature to guide us in the benefits of different intensities of SMBG for type 2 diabetics on insulin.

For those patients not on insulin, the majority of studies have failed to produce evidence of benefit for routine SMBG. Of six randomized controlled trials of SMBG for individuals with diabetes not on insulin, only one showed any sign of improved glycemic control.²

Costs of SMBG

It is important to use SMBG effectively and efficiently since it is a relatively expensive intervention and patients often find it both onerous and painful. In VISN 11, the average cost of monitoring is roughly \$75 per patient per year with a total cost of over \$1.5 million per year. In addition, the costs for SMBG for patients not on insulin vary widely across facilities without any evidence that more aggressive SMBG results in better glycemic control. Responsible use of SMBG supplies can help the VA use its resources more effectively and

reserve the resources for other important diabetes care pharmaceuticals (such as anti-hypertensive and lipid lowering medications).

Recommendation

Self monitoring of blood glucose (SMBG) is an important part of diabetes care and management. All patients should be educated in SMBG. In addition, all patients should know the signs and symptoms of hyperglycemia and hypoglycemia and should be instructed to check their blood sugar if such symptoms occur.

The VA guidelines recommend that the frequency of SMBG be tailored to meet the needs of each individual patient. Occasional routine SMBG (once to 3 times a week), and more frequent monitoring before visits, should suffice for type 2 diabetic patients who are:

- At low risk for hypoglycemia
- Not making regular adjustments to their medications (especially those not on insulin)

Factors that should increase the frequency of routine SMBG include:

- Being on insulin therapy, especially when striving for tight glycemic control
- History of serious hypoglycemia
- Patient preferences and goals
- Lability and fluctuations of patient's glycemic control
- Recently diagnosed diabetes or actively undergoing medication adjustments
- Illness or treatments that put the patient at risk for worsening control (e.g., infection, prednisone, etc.) or hypoglycemia (e.g., poor oral intake of calories and fluids, renal insufficiency, etc.)

1. American Diabetes Association. American Diabetes Association: Clinical Practice Recommendations 2000. *Diabetes Care*. 2000;23, supplement 1.
2. Faas A, Schellevis FG, Van Eijk JTM. The efficacy of self-monitoring of blood glucose in NIDDM subjects. *Diabetes Care*. 1997;20:1482-6