Reader Feedback

Is Glucose Self-Monitoring Helpful or Harmful in Type 2 Diabetes?

We read the article "Self-Monitoring of Blood Glucose in Diabetic Patients Not Taking Insulin: Does It Affect Hypoglycemia?," which begins on page 27 of the August 2007 issue, with both interest and concern. The authors of this article conclude that, in patients whose type 2 diabetes is treated without insulin, self-monitoring of blood glucose (SMBG) is of unproven benefit, may be associated with an increased incidence of hypoglycemia, and is costly. We contend, however, that the possible association with hypoglycemia represents an argument in favor of, rather than against, the use of SMBG in such patients and that its potential for clinical harm is extremely limited. Furthermore, we believe that evidence supports the benefits of SMBG and that SMBG may prove to be a cost saving measure in the long run.

SMBG has been linked to improved glycemic control in patients with insulin-treated diabetes by more than 20 years of studies.[1] In fact, Davidson and colleagues were able to define that link with a nonlinear equation.[2] And a 2003 study of veterans with insulin-treated diabetes indicated that adherence to SMBG had a greater influence on hemoglobin A_{1c} (HbA_{1c}) levels than such factors as age, body mass index, and exercise level.[3]

SMBG also may benefit patients with non–insulin-treated diabetes, according to Kaiser Permanente's two-year study of 24,312 diabetic patients. This study showed that patients who followed American Diabetes Association recommendations for SMBG frequency had better HbA_{1c} control than those who used SMBG less frequently or not at all, regardless of treatment modality (oral therapy, insulin, or combination therapy) or diabetes type.[4]

Regarding the study published in *Federal Practitioner*, we would submit that the increased incidence of hypoglycemia among survey respondents using versus those not using SMBG, and among those using SMBG more frequently versus those using it less frequently, might be attributed to stricter adherence to prescribed therapies on the part of patients who knew they would be testing their blood glucose more often. Thus, the resulting hypoglycemia actually may represent good news—it might suggest that the current medication regimen is stronger than it needs to be and some medications could be reduced or eliminated.

Although the authors are correct to emphasize the importance of containing the health care costs associated with diabetes, we believe that SMBG is an essential tool for preventing the disease's costly complications. While HbA_{1c} monitoring provides a long-term estimation of glucose control, SMBG provides immediate feedback on the effects of activity, diet, and therapy. Thus, reducing the use of SMBG in an attempt to save money now may increase costs indirectly by hindering prevention of complications.

In 2005, Blonde and Karter published an excellent and concise review of the literature on SMBG.[5] This literature suggests that SMBG encourages adherence to treatment regimens, that it is associated with improved glucose control, and that spending money on SMBG may decrease medication costs and reduce diabetic complications. Moreover, SMBG is the most useful tool available for observing the effects of diet and lifestyle modification—the safest, least expensive, and most physiologic means of treating diabetes. Further studies may help to identify the optimal rate of SMBG testing, but this testing should not be discouraged.

—Suzanne Quinn, MD
Chief, Division of Endocrinology
Malcom Randall VA Medical Center
Gainesville, FL
—Cecilia Lansang, MD
Assistant Professor of Endocrinology
University of Florida
Gainesville, FL

REFERENCES

1. Schiffrin A, Belmonte M. Multiple daily self-glucose monitoring: Its essential role in long-term glucose control in insulin-dependent diabetic patients treated with pump and multiple subcutaneous injections. *Diabetes Care*. 1982;5(5):479–484.
2. Davidson PC, Hebblewhite HR, Bode BW, Steed D, Steffes PG. Statistically-fitted curve for A1c as a function of the SMBG tests per day [ADA Scientific Sessions abstract 430-P]. *Diabetes* 2004;53(suppl 1):A101.
3. Murata GH, Shah JH, Hoffman RM, et al; Diabetes Outcomes in Veterans Stude (DOVES). Intensified blood glucose monitoring improves glycemic control in stable, insulin-treated veterans with type 2 diabetes: The Diabetes Outcomes in Veterans Study (DOVES). *Diabetes Care*. 2003;26(6):1759–1763.
4. Karter AJ, Ackerson LM, Darbinian JA, et al. Self-monitoring of blood glucose levels and glycemic control: The Northern California Kaiser Permanente Diabetes registry. *Am J Med*. 2001;111(1):1–9.
5. Blonde L, Karter AJ. Current evidence regarding the value of self-monitored glucose testing. *Am J Med*. 2005;118(suppl 9A):20S–26S.

The authors respond:

We thank Drs. Quinn and Lansang for their interest in our study. They argue that the benefits of SMBG are

established by citing studies of patients with insulin-treated diabetes. These studies are not relevant to the current discussion, however, which is about whether or not SMBG is useful for patients with type 2 diabetes who are not receiving insulin. The readers cite only one relevant study—the Kaiser Permanente study. This study, referenced in our article, did indeed suggest that SMBG may provide the benefit of lower HbA_{1c} to patients with non–insulin-treated diabetes. The study also suggested, however, that SMBG may harm such patients by leading to more frequent hospitalizations. We do not think that these mixed results, from a retrospective study of administrative data, should be considered strong evidence that SMBG benefits the population in question.

Type 2 diabetes is far more frequently treated with oral agents in the sulfonylurea class than with insulin. Yet, despite a lack of evidence supporting SMBG use in this population, such use has become ubiquitous. In this context, we are disturbed by the data suggesting that SMBG use could harm these patients. Our study is not the only one to indicate that SMBG may increase the risk of hypoglycemia in type 2 diabetic patients not taking insulin; as we cited in our article, two other recent studies reported similar results.

The true risks and benefits of SMBG in patients with type 2 diabetes who are treated with sulfonylureas and not insulin can be determined only through properly conducted, randomized, controlled trials. We believe that our data provide additional impetus for such a definitive trial. Our patients deserve no less.

—Brian J. Neil, MD
Staff Physician
Minneapolis VA Medical Center
Assistant Professor of Medicine
University of Minnesota
Minneapolis, MN

—Hanna E. Bloomfield, MD, MPH
Chief, General Internal Medicine
Director, Center for Chronic Disease Outcomes Research
Minneapolis VA Medical Center
Professor of Medicine
University of Minnesota
Minneapolis, MN

Let Your Voice Be Heard!

To have your letter considered for publication, please include your name, city, state, and contact information. (We will withhold your name at your request.) All letters are subject to editing for length and clarity. We regret that we cannot publish all letters we receive.

E-mail your letter to fedprac@qhc.com or mail it to:

Reader Feedback, *Federal Practitioner,*
Quadrant HealthCom Inc.,
7 Century Drive, Suite 302,
Parsippany, NJ 07054-4609