

Evaluating Prescribing Patterns of Blood Glucose Test Strips

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Recognizing an opportunity for potential cost savings, these authors evaluated whether blood glucose test strips were being prescribed appropriately at their VA medical center.

As 76 million baby boomers approach retirement, federal programs are bracing for the financial impact.¹ Many of these baby boomers will rely solely on federal programs for their health care—requiring the VHA and Centers for Medicare and Medicaid Services (CMS) to extend their resources to ensure equal and fair coverage.

Seen as a hidden pandemic, the increasing prevalence of diabetes mellitus diagnoses in the United States has grown to 17.9 million.² Current estimations show that 23% of Americans aged 60 years or older have diabetes, whether diagnosed or undiagnosed.² Further projections estimate the number of people expected to have diabetes in 2050 to be roughly 29 million, an increase of 165% from 2000.³ Diabetes treatment alone could cost well over \$192 billion dollars in the year 2020.⁴ In light of these projections, and considering the financial limitations under which the VHA works, it is clear that providing the best care for veterans with diabetes will require highly efficient use of the VHA's precious resources.

The expenses related to diabetes are not limited to medications (which include insulin and oral antidiabetes

drugs [OADs]) and monitoring supplies alone, but extend to the prevention and treatment of complications. These complications can inflate exponentially the cost of health care. Patients with diabetes often suffer from multiple macrovascular diseases (including atherosclerosis) and microvascular diseases (including retinopathy⁵ and nephropathy⁶). Studies have shown that controlled blood glucose levels can reduce complications in patients with diabetes,⁷ while others have demonstrated the costs of poor glycemic control.⁸ Preventing these complications seems to be the best method to help contain costs.

To control their glucose levels, patients must be able to know what their levels are. A means of finding out that information is self-monitoring of blood glucose (SMBG) using blood glucose test strips. Recommendations for SMBG have been developed by the American Diabetes Association (ADA),⁹ which provided the basis for the VA's own national blood glucose test strip usage guidelines. These guidelines were developed to ensure proper monitoring for veterans with diabetes, while still maintaining a cost-effective approach to SMBG. Many patients seem to struggle with SMBG, however; they either underutilize test strips secondary to nonadherence to recommendations or they overutilize test strips as they overadhere to recommendations. Clinician prescribing patterns then match the patient's usage in order to maintain

a consistent supply of test strips for the patient. These prescribing patterns can result in excess costs for specific VA health care facilities and the VHA overall.

In September 2006, pharmacy leadership at the Spokane VA Medical Center (VAMC), Spokane, WA initiated a medication use evaluation (MUE) to assess the use of blood glucose test strips at the facility and to determine adherence to the VISN 20 guidelines regarding the distribution of these strips. (VISN 20, known as the VA Northwest Health Network, encompasses the states of Alaska, Washington, Oregon, and Idaho, as well as one county in Montana and one county in California.) The objective of this MUE was to determine clinicians' test strip prescribing patterns, which we felt reflected test strip usage, among insulin dependent or non-insulin dependent patients with diabetes who were treated with or without oral sulfonylurea agents. The MUE was designed in accordance with VA Pharmacy Benefits Management guidelines and approved by the VISN 20 Pharmacy and Therapeutics (P&T) Committee. Here, we describe our MUE design and results. We also discuss the VISN 20 guidelines for test strip use.

TEST STRIP USE GUIDELINES

The ADA recommends three to four test strips daily for patients using multiple insulin injections per day to control their disease. For those patients who use fewer daily insulin injections, OADs, or medical nutrition therapy,

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the ADA maintains that SMBG is not as useful in achieving glycemic control, although it is necessary while adjusting medication therapy.⁹

The VISN 20 guidelines for test strip usage (Table) adhere to the national VA guidelines regarding SMBG. They differ from the coverage guidelines set forth by the CMS for the treatment of patients taking OADs. As stated in the *Medicare Coverage of Diabetes Supplies and Services*, Medicare allows these patients up to 100 test strips every three months.¹⁰

EVALUATION DESIGN

On September 22, 2006, the Spokane VAMC Pharmacy Automated Data Processing Applications Coordinator produced a report of all patients with active prescriptions within the past six months for blood glucose test strips, insulin, and OADs. The prescriptions that did not have refills were excluded from analysis, as these may have reflected patients who were newly diagnosed with diabetes. The data were processed using Microsoft Access 2003 Service Pack 1 (Microsoft, Redmond, WA) on September 29, 2006. A letter from the acting chief of staff waived the need for an institutional review board review.

The data were divided into three groups: patients who used insulin to control their blood glucose levels (group 1), patients who used sulfonylurea medications to control their blood glucose levels (group 2), and patients who used diet or nonsulfonylurea monotherapy to control their blood glucose levels (group 3). Group 1 contained patients who were prescribed test strips and insulin. This group qualified for up to 300 test strips every 90 days. Group 2 consisted of patients who were prescribed test strips and sulfonylurea agents (including glipizide and glyburide). Patients who may have been taking

Table. VISN 20 guidelines for the distribution of blood glucose test strips among patients with diabetes

- Patients who are insulin dependent may receive up to 300 test strips every 90 days
- Patients who are non-insulin dependent and using oral agents to control their blood glucose levels may receive up to 50 test strips every 90 days (metformin and rosiglitazone monotherapy excluded)
- Patients who are non-insulin dependent and using diet or lifestyle changes to control their blood glucose levels may receive up to 50 test strips every year (metformin monotherapy included)
- Extra test strips will be provided to patients when their antidiabetes medications are being titrated
- Patients using insulin pumps are recommended to be limited to 550 test strips every 90 days

other OADs (including metformin and rosiglitazone), but not as monotherapy, were included in this group. Members of group 2 qualified for up to 50 test strips every 90 days. Group 3 consisted of patients who were prescribed test strips and blood glucose monitoring with dietary control or with nonsulfonylurea agent monotherapy (metformin or rosiglitazone). Members of this group qualified for up to 50 test strips every year.

Prescriptions written in 30- or 60-day increments were extrapolated to 90 days for comparison. Data for each of the three groups were reviewed to identify patients who had insulin prescriptions from non-VA providers. Patients with non-VA prescriptions that adhered to VISN 20 guidelines for test strip usage were excluded from the groups based on appropriate test strip usage. One additional patient, who died between the time of data collection and analysis, was excluded.

WHAT WE FOUND

There were a total of 1,876 patients who were identified as having prescriptions for blood glucose test strips. Of this original total, 755 were included in group 1. This group in-

cluded 40 patients (5%) who were prescribed more than 300 test strips every 90 days. There were 699 patients in group 2, 62 (9%) of whom were prescribed more than 50 test strips every 90 days. A total of 422 patients were categorized into group 3. Of these, 48 (11%) were prescribed more than 50 test strips every year.

The national VA target for blood glucose test strip prescribing and usage in non-insulin dependent patients taking OADs is 0.6 test strips per patient per day. On July 10, 2006, the test strip prescribing and usage among this patient population at the Spokane VAMC was reported as 0.74 test strips per patient per day. According to our results 10 weeks later, prescribing and usage among these patients had risen slightly to 0.77 test strips per patient per day, indicating a 92% adherence rate to the guidelines.

AN OPPORTUNITY FOR COST SAVINGS

The results showed that there were at least 29,000 test strips prescribed outside of recommended VA guidelines. Based on this figure alone, it was estimated that the Spokane VAMC could save approximately \$36,000 annually

(or \$15.67 per bottle of 50 test strips) if 100% adherence were achieved. We felt that, if these target prescriptions were adjusted appropriately, it would be possible to reduce test strip usage among patients taking OADs to 0.6 test strips per patient per day.

We presented these findings, along with our recommendations for action, to the local P&T committee for evaluation. The following recommendations were presented for review:

- Diabetic patients using insulin therapy should be evaluated for prescriptions of more than 300 blood glucose test strips every 90 days. Those receiving test strips exceeding this quantity should be referred to their providers for review to determine if this amount is appropriate due to extenuating circumstances.
- Patients taking oral sulfonylurea agents should be evaluated for prescriptions of more than 50 test strips every 90 days. Those using more than this amount should be referred to their providers for review. Patients without extenuating circumstances should have their test strip quantity reduced to meet VISN 20 guidelines.
- Patients prescribed diet-controlled therapy or nonsulfonylurea monotherapy should be evaluated for prescriptions of more than 50 test strips per year. Those determined to be using more than the allowed amount should be referred to their provider for review.

The P&T committee accepted these recommendations and the appropriate patients were referred to their providers for review.

The limitation of this MUE was the inability to identify patient records that may have had incomplete documentation of medications—for example, insulin prescribed by a non-VA provider. Thus, patients who

may have been prescribed agents that would warrant the higher test strip usage should have been excluded from action. Prescribers were alerted to update non-VA medication profiles of patients to ensure accurate prescribing of test strips. We recommend a follow-up analysis be performed after these updates.

POSITIVE CHANGES

From this MUE, two clear directives have been initiated. First, patients requiring medication dose adjustments may be prescribed more test strips than normally recommended (per the VISN 20 guidelines). Once stable medication regimens have been established, the standard number of test strips are prescribed with refills. Second, prescriptions that do not follow VISN 20 guidelines are referred to clinical pharmacists for formulary review. The pharmacist assesses patient eligibility for exemption on a case-specific basis and initiates patient-focused educational interventions when appropriate.

Results of this MUE are anticipated to assist in increasing adherence to VISN 20 guidelines for prescribing blood glucose test strips. Although the cost savings have not been measured, increased guideline adherence represents true potential savings to the Spokane VAMC. ●

Author disclosures

The authors report no actual or potential conflicts of interest with regard to this article.

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Please review complete prescribing information for specific drugs or drug combinations—including indications, contraindications, warnings, and adverse effects—before administering pharmacologic therapy to patients.

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