Diabetics Wary of Harm From Treatment

BY MIRIAM E. TUCKER
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Concern about harm from antihyperglycemic and antihypertensive medications is associated with their underuse among patients with diabetes, even after controlling for economic factors.

The finding, from a survey of 803 adults with diabetes in Flint, Mich., suggests that "Because medication concerns may directly influence cost-related underuse, improved illness outcome may be achievable by simultaneously addressing attitudinal and economic issues," wrote Dr. James E. Aikens and Dr. John D. Piette (Diabetes Care 2009;32:19-24).

The survey included 803 diabetes patients using antihyperglycemic agents, of whom 573 also used antihypertensive medications. Slightly more than half of the total group was black, and slightly more than half was female. More than a third had low functional health literacy (FHL) as measured by validated scales. The patients had a mean hemoglobin A_{1c} (HbA_{1c}) of 7.8% and mean blood pressure of 139/83 mm Hg.

Patients' treatment beliefs were measured with the well-validated Beliefs About Medicines Questionnaire (BMQ), with separate versions for the two types of medications. Five items are designed to elicit perceived medication necessity—such as "My health, at present, depends on my [diabetes or blood pressure] medication." Six items pertain to concern, such as "I sometimes worry about the long-term effects of my … medicine." For each item, patients choose from a 5-point response scale, ranging from "strongly agree" to "strongly disagree."

Overall, perceived necessity was stronger than concern for both types of medication. Patients taking both types rated the antihyperglycemics as being both more necessary and more concerning than the antihypertensive medication, although the effect sizes were relatively small, said Dr. Aikens and Dr. Piette of the University of Michigan, Ann Arbor.

Perceived necessity for one or both types of medication was stronger among participants who were younger, female, had more comorbid conditions, were prescribed more medications, and were prescribed insulin. Perceived harmfulness of one or both types of medications was stronger among those who were younger, were black, were of low income, were diagnosed with more comorbid conditions, were dissatisfied with medication information, and were of low FHL.

"Given that perceived discrimination and distrust in health care have been documented in African Americans with diabetes, the most culturally sensitive interventions will be those that deal directly and skillfully with medication fears," they said.

After adjustment for age, sex, ethnicity, and income, perceived need for antihyperglycemic medications was independently associated with having a greater number of prescriptions and being prescribed insulin. In contrast, concern about antihyperglycemic medications was associated with dissatisfaction with medication information, low FHL, and high out-of-pocket prescription costs.

Perceived need for antihypertensives—after adjustment for age, sex, ethnicity, and income—was associated with more comorbid conditions and satisfaction with medication information. As with antihyperglycemics, concern about antihypertensives also was associated with dissatisfaction with medication information and low FHL.

Medication underuse was measured by two questions: "In the past 12 months, have you ever taken less of your [diabetes/hypertension] medication than prescribed by your doctor because of the cost?" and "Many people do not take their prescription medication exactly as prescribed by their doctor. In the past year, have you ever taken less of your … medication for any reason other than the cost?"

Almost half (47%) of participants reported antihyperglycemic underuse, of whom about a third (16.5% of the total) reported cost-related underuse. However, concern about the medications was associated with both cost-related and non–cost-related underuse. Neither perception of medical necessity nor concern regarding antihyperglycemics was significantly related to HbA_{1c}, although the relationship with concern nearly reached significance.

Of those prescribed antihypertensives, 31% reported underuse, with cost being a reason for about half (15%) of the group.

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CLINICAL GUIDELINES FOR FAMILY PHYSICIANS

Hyperglycemia in Type 2 Diabetes

BY NEIL SKOLNIK, M.D., AND MACKENZIE MADY, D.O.

The American Diabetes Association and the European Association for the Study of Diabetes recently released a consensus statement on the medical management of hyperglycemia in type 2 diabetes (Diabetes Care 2009;32:193-203). Based on both clinical trials and clinical judgment, these guidelines offer an algorithm for achieving glycemic control.

Glycemic Targets

Numerous studies have demonstrated the importance of rigorous glycemic control. The ACCORD (Action to Control Cardiovascular Risk in Diabetes) trial showed excess cardiovascular mortality in the intensively treated group of patients who had an HbA_{1c} level of approximately 6.5%. Based on these studies, the ADA recommends an HbA_{1c} goal of lower than 7% for most patients with diabetes. It may be appropriate to have more rigorous HbA_{1c} goals for some patients, particularly those who are young and who have had only a short duration of diabetes. It may also be appropriate to have less rigorous goals for the elderly and those at high risk of complications from hypoglycemia.

Guidelines are most useful when they are available at the point of care. A free and concise handheld computer version of this guideline is available for download at www.redi-reference.com.

Interventions

An algorithm was developed that is explicit with regard to the order of initiating medications (steps 1, 2, and 3, below) and the level of evidence to support using those medications (tier 1 or 2). Tier 1 therapies are the most well-validated core therapies, and tier 2 therapies are less well-validated therapies that can be considered in selected clinical settings, such as when hypoglycemia is particularly undesirable or when weight loss is a major goal and exenatide may be a good option.

Amylin agonists, α-glucosidase inhibitors, glinides, and dipeptidyl peptidase-4 (DPP-4) inhibitors were not included in the steps of treatment because of expense, limited clinical data, and/or glucose-lowering ability, although the guidelines are clear that they may be appropriate choices in selected patients. The steps are as follows:

▶ **Step 1: Lifestyle modification plus metformin.** Metformin is recommended as the first-line agent because of its efficacy, lack of effect on weight gain, and low risk of hypoglycemia. Metformin should be started at a low dosage of 500 mg once or twice daily; it should be increased in 1 week, and titrated up to a maximum dosage of 1,000 mg twice daily, if tolerated, over 1-2 months. For patients who do not achieve adequate glycemic control on step 1, the next step presents a choice:

▶ **Step 2: Tier 1 therapy.** Add either basal (intermediate or long-acting) insulin or a sulfonylurea (other than glibenclamide [glyburide] or chlorpropamide). Insulin should be considered in patients whose HbA_{1c} level is greater than 8.5% because it is more effective at lowering blood glucose.

▶ **Step 2: Tier 2 therapy.** Add either pioglitazone or exenatide. Both agents have the advantage of causing very little hypoglycemia. Exenatide has the additional advantage of often causing loss of weight. Of note, rosiglitazone is not recommended because of concerns about data that suggest the possibility of increased cardiovascular risk. If tier 1 medications are not effective at achieving the desired HbA_{1c} goal, then a sulfonylurea can be added or the tier 2 medication can be discontinued and basal insulin can be started.

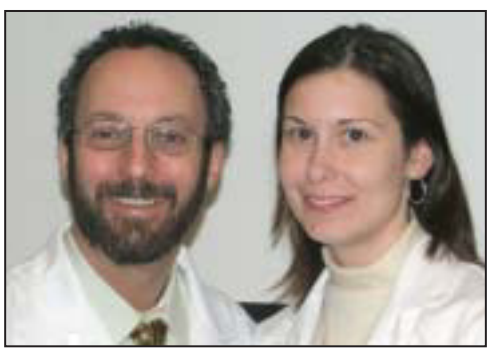
If target HbA_{1c} goals are not achieved with step 2, the next step is to start or intensify insulin therapy.

▶ **Step 3: Insulin therapy.** If basal insulin is already being used, add short- or rapid-acting insulin before selected or all meals to reduce postprandial blood sugars. When insulin is used, sulfonylureas should be stopped, because they provide no further benefit and may increase hypoglycemia. The guidelines do acknowledge that the addition of a third oral agent instead of insulin is an option for step 3 if the HbA_{1c} is close to the target goal, but this is not preferred.

The recommendations also state that patients who present with severe hyperglycemia (HbA_{1c} greater than 10%) should be considered for insulin therapy with lifestyle modification as the first-line option. Once the appropriate blood glucose levels are achieved, oral agents can then sometimes be used successfully and insulin withdrawn. Self-monitoring of blood glucose is recommended on an individual basis; it should be considered for patients on a sulfonylurea or glinide, as well as during regimen adjustment. The optimal fasting and preprandial glucose levels range from 70 to 130 mg/dL; optimal postprandial blood glucose level (measured at 90-120 minutes after the meal) is less than 180 mg/dL.

The Bottom Line

The ADA and EASD have, for the first time, issued specific recommendations for an approach to the medical management of hyperglycemia. Initial therapy for patients with type 2 diabetes consists of both metformin and lifestyle interventions. Step 2 treatment consists of a sulfonylurea or basal insulin, with an option of pioglitazone or exenatide. Step 3 is intensification of insulin therapy.



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