Screening for diabetes in patients receiving second-generation atypical antipsychotics

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Purpose. Results of a study to assess adherence with a consensus statement for diabetes screening in patients receiving atypical antipsychotics and to evaluate the role of pharmacists in a patient-centered medical home in improving guideline adherence are presented.

Summary. For patients prescribed atypical antipsychotics, records were reviewed for glycosylated hemoglobin (HbA_{1c}) testing within the past 12 months. If no HbA_{1c} results were found within that time frame, physicians were sent an alert in the patient's electronic medical record requesting an HbA_{1c} order. Patient medical records were reviewed to analyze the number of HbA_{1c} orders before and after pharmacist intervention. Prior to pharmacist intervention, 17 of 120 (14%) patients were screened with HbA_{1c}. As a result of pharmacist intervention, 86 alerts were sent to physicians to order an HbA_{1c} level, 24 (28%) of which included an order for an HbA_{1c} level. Eleven of 24 (46%) HbA_{1c} test results were collected during study follow-up, and one prediabetic patient was identified.

Conclusion. After pharmacist intervention, a greater number of patients receiving atypical antipsychotic medications had HbA_{1c} levels monitored for evidence of type 2 diabetes.

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An estimated 26.2% of Americans suffer from mental illness in the United States.[1] Patients with schizophrenia and affective disorders have 1.5–2 times higher rates of diabetes and obesity when compared with the general population.[2] Although many factors such as obesity, ethnic background, and family history can contribute to a patient's risk for diabetes, certain medications are associated with an increased risk for developing type 2 diabetes. One common class of medications used for the treatment of psychiatric disorders is atypical antipsychotics, also known as second-generation antipsychotics (SGAs). Although this class of medications can improve quality of life and manage psychiatric diseases, these medications are not without risk and are associated with notable metabolic adverse effects and an increased risk for type 2 diabetes.[3,4]

The American Diabetes Association, American Psychiatric Association, American Association of Clinical Endocrinologists, and North American Association for the Study of Obesity issued a Consensus Statement in 2004 to address the associated risk of developing diabetes in patients receiving atypical antipsychotic treatment and to provide diabetes screening recommendations.[2] Baseline fasting plasma glucose should be tested before initiating an atypical antipsychotic, three months after initiation, and annually thereafter.

Background

Pharmacists have a role in assessing adherence to screening guideline recommendations. As part of their clinical duties, pharmacists at University of Arkansas for Medical Sciences Northwest Family Medical Centers review patient electronic medical records (EMRs) to assess adherence with various standards of care and contact physicians with appropriate recommendations via a secure messaging system within the EMR. Patients receiving SGAs

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are followed by their primary care provider. Prediabetic (glycosylated hemoglobin [HbA_{1c}], 5.7–6.4%) or diabetic (HbA_{1c}, ≥6.5%) patients, including those receiving SGA therapy, are routinely referred to pharmacists to receive patient education, such as lifestyle recommendations to prevent diabetes, and medication management. Pharmacists have an important role in optimizing patient care in a patient-centered medical home (PCMH). The team approach allows them to help manage patients with uncontrolled diseases or those taking medications that require frequent monitoring, such as diabetes, hyperlipidemia, hypertension, or anticoagulation therapy. Such patients are referred to the clinical pharmacist by the primary care provider. Pharmacists manage patients and prescribe therapy for specified diseases through a collaborative practice agreement. The purposes of this study were to assess adherence with the Consensus Statement for diabetes screening in patients receiving atypical antipsychotics and to evaluate the role of pharmacists in improving guideline adherence in a PCMH.

Methods

The study received institutional review board approval from the University of Arkansas for Medical Sciences Northwest. It was performed in the University of Arkansas for Medical Sciences Northwest Family Medical Centers in Fayetteville and Springdale, Arkansas. The study included patients 18 years of age or older currently receiving one of the following atypical antipsychotics: aripiprazole, asenapine, clozapine, iloperidone, lurasidone, olanzapine, paliperidone, quetiapine, risperidone, and ziprasidone. Patients with the diagnosis of diabetes were excluded. A list of patients meeting the inclusion criteria was generated from the EMR to include patients from a 12-month period. Records were reviewed for HbA_{1c} testing within the past 12 months. Adherence with the Consensus Statement for long-term monitoring of diabetes development in patients receiving atypical antipsychotics was determined based on the date of the most recent HbA_{1c} test. In this study, HbA_{1c} values were the preferred method of screening compared with blood glucose due to less variation and greater preanalytic stability, and patient fasting was not required.[5] Because of the inability to determine whether a patient's blood glucose was fasting or not in the EMR, monitoring of HbA_{1c} was used for this study. Patients who had an HbA_{1c} test within the past 12 months were categorized as adherent with Consensus Statement recommendations, whereas those without the test were categorized as nonadherent. For patients in the nonadherent category, the pharmacist sent a secured electronic message via the EMR to the primary care provider with the following standard recommendation: "According to the Consensus Statement, patients treated with atypical antipsychotics should be assessed annually for diabetes. This patient is a candidate for annual screening evaluation for diabetes. Please order an HbA_{1c} for this patient." If the recommendation was made, the patient's chart was reviewed after 3 months to assess adherence to screening guidelines. Patients found to be prediabetic (HbA_{1c}, 5.7–6.4%) or diabetic (HbA_{1c}, ≥6.5%) were provided with follow-up diabetes education by a pharmacist, which included a review of antipsychotic medication history, an evaluation of any changes in blood glucose since initiation of SGA therapy, and recommendations regarding diet and exercise. Patients were provided education on lifestyle changes to prevent the development of diabetes.

Results

One hundred twenty patients met the inclusion criteria. At baseline, 17 (14%) patients received HbA_{1c} testing within the previous 12 months. One hundred four patients qualified for pharmacist intervention and recommendation for HbA_{1c} screening. After pharmacist intervention, 24 (28%) of 86 patients had an HbA_{1c} ordered, with 11 of 24 (46%) having an HbA_{1c} collected and 13 of 24 (54%) having an HbA_{1c} ordered and awaiting collection. An HbA_{1c} had not been ordered in 62 (72%) patients. During data collection, patients were excluded because of discontinuation of atypical antipsychotic medication (n = 5), transfer of care to another clinic (n = 11), or

death ($n = 1$). Of the 11 HbA_{1c} levels collected during the study, 10 were within normal range and 1 was in the prediabetic range. The patient with the abnormal HbA_{1c} received follow-up diabetes education via telephone from the pharmacist.

Discussion

Several published studies have monitored adherence with Consensus Statement screening recommendations in patients receiving atypical antipsychotics.[5,6] After release of the Consensus Statement, a retrospective cohort study of 18,876 adults was conducted to assess adherence with screening guidelines in patients before and after starting an SGA.[6] Glucose monitoring rates were compared in the SGA initiation population to patients who were not on SGAs but had a diagnosis of diabetes. For participants who started SGAs during the study period, mean glucose baseline testing was 23%. Glucose testing rates increased to 38% for persistent SGA users during the study period. Baseline monitoring rates were higher for patients initiated on SGAs and previously diagnosed with diabetes when compared with the nondiabetic SGA population (36% versus 24%, $p < 0.001$). In those receiving SGA treatment for one year, annual glucose screening occurred in 49% of patients. After the Consensus Statement was issued, there was no difference in baseline glucose monitoring in the SGA patients compared with the matched diabetic patients not receiving SGAs. While the monitoring rate increased over time, nearly one-half (51%) of patients on persistent SGAs did not receive recommended annual diabetes screening.

A retrospective study in 2004–05 assessed blood glucose monitoring in adult Medicaid patients initiated on both first-generation antipsychotics (FGAs) and SGAs (FGAs, $n = 477$, and SGAs, $n = 6124$) after the release of the Consensus Statement.[7] This study compared monitoring rates between FGA and SGA users during the six months prior to and six months after starting an antipsychotic. Thirty-nine percent of SGA-treated patients received glucose testing during the six months prior to starting an antipsychotic, compared with 33% of the FGA-treated population ($p = 0.2$). After six months of antipsychotic therapy, 43% of SGA-treated patients received glucose testing, compared with 34% of FGA-treated patients ($p < 0.01$). Although SGA-treated patients were screened more frequently compared with FGA-treated patients, the majority of SGA-treated patients were not screened.

Adherence to diabetes screening recommendations in at-risk patient populations can help prevent further development of diabetes. Pharmacists in a PCMH have the opportunity to help increase guideline adherence. Although the percentage of patients with an HbA_{1c} ordered as a result of pharmacist intervention (28%) was below the average screening rate of approximately 50% reported by other studies evaluating patients receiving SGAs, this was an improvement from 14% prior to pharmacist intervention.[6,7] There was a 50% increase in HbA_{1c} screening rates from baseline in the University of Arkansas for Medical Sciences Northwest Family Medical Centers after pharmacist intervention.

Because this study utilized electronic messaging to communicate recommendations to physicians, it would be beneficial to compare these rates to recommendations made to physicians in person to determine the most effective method for improving pharmacist–physician communication. Use of the electronic messaging system to communicate recommendations to physicians was convenient and efficient; however, there was a low response rate. Because physicians receive multiple messages daily, these notifications could have been overlooked; only a few physicians sent messages acknowledging receipt of the notification and indicating plans to order the HbA_{1c}. Providing educational sessions for physicians on the associated risk for the development of type 2 diabetes in patients receiving SGAs and evaluating HbA_{1c} screening rates before and after the education would also be insightful for improving communication to physicians and increasing guideline adherence. Because pharmacists have the ability to order laboratory results under the collaborative practice agreement, it may be beneficial for a pharmacist to review the SGA patient population on an annual basis, order a yearly HbA_{1c}, and notify the physician if the results are elevated and further action is needed. Using pharmacists to monitor for diabetes annually in the SGA population would help ensure adherence to the Consensus Statement. Because the University of Arkansas for Medical Sciences Northwest Family Medical Centers are academic institutions, pharmacy students may also be able to provide annual monitoring for diabetes in this population as part of a quality-improvement project during their senior year of pharmacy school.

Although this study examined adherence with diabetes screening recommendations in patients receiving SGAs, it is also important to monitor other variables of metabolic adverse effects in this population, such as waist circumference, weight (body mass index), and lipid levels. The Consensus Statement recommends that fasting blood glucose testing is appropriate monitoring; however, the scope of this study was limited to HbA_{1c} testing. It would be beneficial to compare the rate of HbA_{1c} versus fasting blood glucose testing in patients receiving SGAs. Evaluating other markers of metabolic adverse effects in this population and providing lifestyle recommendations, such as diet and exercise, may be a valu-

able area for pharmacist evaluation and intervention as well.

Limitations of this study included a small sample size, the lack of an adequate comparator group, and an inability to access psychiatrists' records to review monitoring. While this study evaluated annual screening rates in patients at risk for developing diabetes, the evaluation phase of this study was only three months. Pharmacist and physician communication via messaging within the EMR may have also been a limitation. Reviewing baseline information and comparing sex, age, and weight may have also influenced whether HbA_{1c} was ordered for these patients.

Conclusion

After pharmacist intervention, a greater number of patients receiving atypical antipsychotic medications had HbA_{1c} levels monitored for evidence of type 2 diabetes.

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