Physician Patterns of Metabolic Screening for Patients Taking Atypical Antipsychotics: A Retrospective Database Study

Charles Motsinger, M.D.; Michael Slack, Ph.D.; Melanie Weaver; and Morgan Reed

Objective: The aim of this retrospective database study was to determine rates of screening for metabolic side effects by physician specialty in community hospital patients prescribed atypical antipsychotics.

Method: A pharmacy database review identified patients who were prescribed atypical antipsychotics over a 6-month period from July 1, 2004, to December 31, 2004. This list of patients was then cross-referenced with the laboratory database to determine if screening laboratory tests for metabolic abnormalities had been ordered.

Results: 13% of patients prescribed atypical antipsychotics had fasting blood glucose levels measured during the study period. 30% of patients prescribed atypical antipsychotics also had lipid panels measured during the study period. Screening rates varied by specialty of physician. Physicians trained in combined family practice and psychiatry had the highest rate of screening, followed by other nonpsychiatric specialties. Psychiatrists had the lowest rate of screening.

Conclusions: The rate of screening for metabolic side effects of atypical antipsychotics in this community hospital setting was low.

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Corresponding author and reprints: Charles Motsinger, M.D., 1075 W. Perimeter Rd., Malcolm Grow Medical Center, Andrews AFB, MD 20762 (charles.motsinger@andrews.af.mil).

The use of atypical antipsychotics is becoming more common. These second-generation antipsychotics are frequently chosen owing to their decreased frequency of extrapyramidal side effects compared to the typical antipsychotics. As experience with atypical antipsychotics grows, so too does the knowledge of their side effects—especially their metabolic side effects, which have become more clearly delineated in recent years. Recent research and consensus statements have focused on this class of side effects owing to their impact on patients' overall health and compliance with treatment.[1–5]

The atypical antipsychotics are approved by the U.S. Food and Drug Administration for schizophrenia, schizoaffective disorder, and bipolar disorder. They also have proven useful in patients with other mood disorders, anxiety disorders, agitation, impulsivity, and disordered sleep.[6–10] Due to their broad therapeutic implications, atypical antipsychotic medications are taken by a wide variety of patients. Although psychiatrists are often the physicians most familiar with these medications, pediatricians, family practice physicians, internists, and neurologists also prescribe atypical antipsychotics with increasing regularity.

There is a sizable body of information about the metabolic side effects of atypical antipsychotics in the psychiatric literature. However, these side effects have not been emphasized to the same extent in the literature of other specialties. Also, very few data exist describing physicians' practices in monitoring for these metabolic side effects. This article describes physician monitoring patterns for metabolic side effects of atypical antipsychotics in a community hospital setting.

METHOD

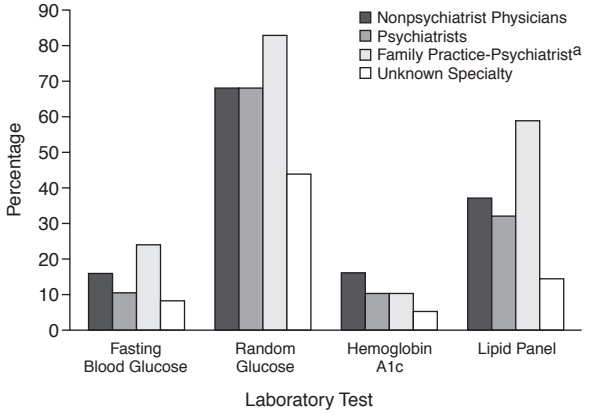
Data were obtained using the computer composite health care system at a community hospital with 50 inpatient beds and associated outpatient clinics serving an empanelment of over 20,000 patients. The study was conducted from June 2005 to August 2005, and Internal Review Board approval was obtained in May 2005. First, a list was generated of patients filling prescriptions for the

Table 1. Number of Patients Filling Prescriptions for Atypical Antipsychotics Who Received Metabolic Screening—by Physician Specialty

Physician Specialty	Fasting Blood Glucose	Random Glucose	Hemoglobin A1c	Lipid Panel	N (total)
Family practice	6	11	2	8	14
Internal medicine	1	15	2	9	18
Neurology	2	6	2	2	10
Primary care	1	7	4	4	10
Pediatrics	0	3	0	0	10
Psychiatry	10	68	10	32	100
Family practice-psychiatrists[a]	10	34	4	24	41
Unknown specialty	6	34	4	11	78
N (total)	36	178	28	90	281

[a]This group represents physicians trained in a combined family practice and psychiatry residency program.

Figure 1. Percentage of Patients Screened for Metabolic Disorders—by Physician Specialty



[a]This group represents physicians trained in a combined family practice and psychiatry residency program.

atypical antipsychotics aripipazole, olanzapine, quetiapine, risperidone, and ziprasidone during the period from July 1, 2004, to December 31, 2004. Inpatient prescriptions and prescriptions for less than a 1-month supply of medications were excluded from this list. Second, laboratory data from January 1, 2004, to May 30, 2005, were analyzed to determine if fasting blood glucose levels, lipid panels, and chemistry panels, including serum glucose and hemoglobin A1c values, had been obtained for these patients.

The investigators did not determine which physician ordered the laboratory tests and did not attempt to match the time of laboratory evaluation to the time that the prescription was written for the atypical antipsychotic. The patients' ages and the specialties of the physicians prescribing the atypical antipsychotics were also extracted from the composite health care system. The rates of screening for metabolic abnormalities were determined by prescribing specialty.

Many patients were prescribed atypical antipsychotics by physicians outside of the hospital network. These patients brought their prescriptions to the community hospital pharmacy to have them filled. Since the databank does not record the specialties of these physicians, they were placed in the category of "undetermined" physicians.

RESULTS

Two hundred eighty-one patients filled prescriptions for atypical antipsychotics (Table 1). Of these patients, 36 (13%) had fasting blood glucose levels, 178 (63%) had serum chemistries that included a glucose level, 28 (10%) had hemoglobin A1c levels, and 90 (32%) had lipid panels drawn during the study period. Psychiatrists prescribed atypical antipsychotics to 100 patients. Of these patients, 10 (10%) had fasting blood glucose levels, 68 (68%) had serum chemistries that included a glucose level, 10 (10%) had hemoglobin A1c levels, and 32 (32%) had lipid panels drawn during the study period (Figure 1 and Table 2). Physicians trained in a combined family practice and psychiatry residency program prescribed atypical antipsychotics to 41 patients. Of these patients, 10 (24%) had fasting blood glucose levels, 34 (83%) had serum chemistries that included a glucose level, 4 (10%) had hemoglobin A1c levels, and 24 (59%) had lipid panels drawn during the study period. Physicians who were not psychiatrists (these included family practice physicians, primary care physicians, pediatricians, internists, and neurologists) prescribed atypical antipsychotics to 62 patients. Of these patients, 10 (16%) had fasting blood glucose levels, 42 (68%) had serum chemistries that included a glucose level, 10 (16%) had hemoglobin A1c levels, and 23 (37%) had lipid panels drawn during the study period. "Undetermined" physicians prescribed atypical antipsychotics to 78 patients. Of these patients, 6 (8%) had fasting blood glucose levels, 34 (44%) had serum chemistries that included a glucose level, 4 (5%) had hemoglobin A1c levels, and 11 (14%) had lipid panels drawn during the study period.

Table 2. Percentage of Patients Filling Prescriptions for Atypical Antipsychotics Who Received Metabolic Screening—by Physician Specialty

Physician Specialty	Fasting Blood Glucose	Random Glucose	Hemoglobin A1c	Lipid Panel
Psychiatrists	10.0	68.0	10.0	32.0
Nonpsychiatrist physicians[a]	16.1	67.7	16.1	37.1
Family practice-psychiatrists[b]	24.4	82.9	9.8	58.5
Unknown specialty	7.7	43.6	5.1	14.1

[a]This group included family practice physicians, internists, neurologists, primary care physicians, and pediatricians.
[b]This group represents physicians trained in a combined family practice and psychiatry residency program.

Table 3. Statistical Significance of Differences Between Physician Specialty Groups in the Rate of Metabolic Screening of Patients Who Filled Prescriptions at a Community Hospital[a]

Physician Specialty	Fasting Blood Glucose	Random Glucose	Hemoglobin A1c	Lipid Panel
Nonpsychiatrist physicians	0.367	0.89	0.457	0.62
Family practice-psychiatrists[b]	0.053	0.112	0.784	0.006
Unknown specialty	0.788	0.0019	0.355	0.011

[a]Statistical analysis with 2-sided p values; psychiatrists within the hospital network were used as the comparison reference.
[b]This group represents physicians trained in a combined family practice and psychiatry residency program.

In this patient sample (N = 281), there were 20 patients with known diabetes mellitus. Psychiatrists wrote prescriptions for atypical antipsychotics to 6 diabetics. Four prescriptions were written for quetiapine, 1 was written for risperidone, and 1 was written for olanzapine. In these patients (N = 6), 3 (50%) had fasting blood glucose levels, 5 (83%) had serum chemistries that included a glucose level, 4 (67%) had hemoglobin A1c levels, and 4 (67%) had lipid panels drawn during the study period. Physicians trained in a combined family practice and psychiatry residency program prescribed atypical antipsychotics to 2 diabetics. One prescription was written for aripiprazole, and 1 prescription was written for ziprasidone. In these patients (N = 2), 0 (0%) had fasting blood glucose levels, 2 (100%) had serum chemistries that included a glucose level, 2 (100%) had hemoglobin A1c levels, and 2 (100%) had lipid panels drawn during the study period. Physicians who were not psychiatrists prescribed atypical antipsychotics to 7 diabetics. Four prescriptions were written for quetiapine, 2 were written for risperidone, and 1 was written for olanzapine. In these patients (N = 7), 1 (14%) had fasting blood glucose levels, 7 (100%) had serum chemistries that included a glucose level, 5 (71%) had hemoglobin A1c levels, and 4 (57%) had lipid panels drawn during the study period. "Undetermined" physicians prescribed atypical antipsychotics to 5 diabetics. Two prescriptions were written for risperidone, 1 was written for olanzapine, 1 was written for quetiapine, and 1 was written for ziprasidone. In these patients (N = 5), 0 (0%) had fasting blood glucose levels, 2 (40%) had serum chemistries that included a glucose level, 1 (20%) had hemoglobin A1c levels, and 1 (20%) had lipid panels drawn during the study period.

Statistical analysis using the critical ratio (Z) test and 2-sided p values showed that there were few statistical differences in screening by specialty in this sample (Table 3). Psychiatrists within the hospital network were used as the comparison reference. Compared with these physicians, undetermined physicians had significantly lower rates of screening for lipid abnormalities. There were no significant differences in screening with fasting blood glucose levels between specialties. Within the hospital network, only family practice and psychiatry physicians had a significantly higher rate of screening for lipid abnormalities than psychiatrists within the hospital network.

DISCUSSION

The overall rate of screening for metabolic disorders in patients prescribed atypical antipsychotics was low. There are several possible reasons for this low rate of screening. First, the majority of literature describing the metabolic side effects of atypical antipsychotics is in the context of schizophrenia. The American Psychiatric Association guideline on schizophrenia describes specific recommendations for screening for metabolic disorders.[1] But, since physicians typically prescribed atypical antipsychotics for many disease processes that are not schizophrenia, it is possible that many physicians do not think about screening patients with these other disease processes. Second, many of the prescriptions in this sample were written for dosages below those recommended for treating schizophrenia. Physicians may feel that monitoring is not needed with these lower doses. Finally, within the community hospital network, the lowest rate of screening occurred among psychiatrists, despite the fact that the psychiatric literature contains the clearest recommendations for screening. The authors propose that this gap in screening may be due to the fact that other medical specialties routinely screen for diabetes on a regular basis. Clearly, some of the patients included in this sample may have had screening for diabetes and hyperlipidemia that was not triggered by their use of atypical antipsychotics. Similarly, while it was noted that the lowest overall rate of screening was undertaken by physicians who were outside of the network, these physicians may have been unfairly characterized, since any intentional or incidental metabolic screening that they performed would have been done at laboratories outside the network and not captured in our data set.

An interesting finding of this study was the rate of screening by specialty. The physicians trained in a combined family practice and psychiatry program had the highest rate of screening for metabolic abnormalities. These physicians' training allows them to treat both diabetes and psychiatric disorders that may respond to atypical antipsychotics. It is possible that the awareness raised by this integrated training leads to the higher rates of screening for metabolic side effects. It was noted that the 2 diabetics who were prescribed atypical antipsychotics by combined family practice and psychiatry physicians were prescribed medications that are infrequently associated with causing metabolic abnormalities. The other physicians tended to prescribe atypical antipsychotics that have a much higher incidence of metabolic

abnormalities. However, no definitive conclusions can be made from these data owing to the very low number of diabetics included in this sample.

There are limits to the study that affect the interpretation of the results. Only 281 patients were prescribed atypical antipsychotics. The number of patients and physicians involved in this data sample limits the assumptions that can be made from the results. These data came from a single community hospital setting. It is not possible from the information included in the composite health care system computer database to determine why these patients had their screening done. Hence, many of these patients may have had screening done regardless of the fact that they were taking an atypical antipsychotic. And, as previously mentioned, some of the patients may have had laboratory work done at outside facilities, which would not appear in the computer system.

Metabolic side effects of atypical antipsychotics have a significant impact on patient health. However, screening rates for these side effects do not appear to be optimal. Educational efforts should be focused on the importance of screening for metabolic side effects. Further study into this clinical question should include larger patient samples, hospitals in various locations, and an attempt to determine if the screening tests were ordered because the patient was taking atypical antipsychotics.

Drug names: aripiprazole (Abilify), olanzapine (Zyprexa), quetiapine (Seroquel), risperidone (Risperdal), ziprasidone (Geodon).

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