Antidepressant Prescribing Practices of Outpatient Psychiatrists

Mark Olfson, MD, MPH; Steve C. Marcus, MA; Harold Alan Pincus, MD; Julie M. Zito, PhD; James W. Thompson, MD, MPH; Deborah A. Zarin, MD

Background: The authors examined recent changes in the number and proportion of patients prescribed antidepressants by psychiatrists in outpatient private practice and characterized antidepressant prescription patterns by patient age, sex, race, payment source, and clinical diagnosis.

Methods: The authors analyzed physician-reported data from the 1985 and 1993-1994 National Ambulatory Medical Care Survey, focusing on visits to physicians specializing in psychiatry. Logistic regressions were used to examine associations between survey year and antidepressant prescription, adjusting for the presence of other variables.

Results: The proportion of outpatient psychiatric visits in which an antidepressant was prescribed increased from 23.1% (95% confidence interval [CI], 19.7%-26.5%) in 1985 to 48.6% (95% CI, 47.5%-49.7%) in 1993-1994. After controlling for several patient variables, psychiatric patients were approximately 2.3 (95% CI, 1.8-2.9) times more likely to receive an antidepressant in 1993-1994 than in 1985. In 1993-1994, selective serotonin reuptake inhibitors accounted for approximately half of the psychiatric visits with an antidepressant prescription. Increases in the rate of antidepressant prescription were particularly evident for children and young adults; whites; new patients; and patients with adjustment disorders, personality disorders, depression not otherwise specified or dysthymia, and some anxiety disorders.

Conclusions: During the late 1980s and early 1990s, there was a significant increase in the prescription of antidepressants by office-based psychiatrists. This increase was greatest for patients with less severe psychiatric disorders.

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Accumulating evidence suggests that the use of antidepressant medications is increasing. A recently published household survey of 2 New England communities revealed that between 1981 and 1993, antidepressant use increased almost 4-fold.1 In this study, the growth in antidepressant use was greatest after fluoxetine hydrochloride first became available in late 1987. Pharmacy prescriptions for antidepressants have followed a similar pattern: increasing only modestly during the early 1980s2 and then increasing more rapidly toward the end of the decade.3

Research on the prescribing practices of office-based physicians provides additional evidence for the increasing use of antidepressants. Between 1980 and 1989, annual prescriptions of antidepressants by office-based physicians in the United States increased from 10.0 to 13.2 million.4 The fastest growth occurred among prescriptions written by psychiatrists.4 In contrast to the steady increase in antidepressant prescriptions by psychiatrists, prescriptions of anxiolytic and antipsychotic medications by psychiatrists did not show consistent growth during this period.5

In the last few years, several developments have focused renewed attention on patterns of antidepressant use. First, the armamentarium of antidepressant medications has continued to expand as newer selective serotonin reuptake inhibitors (SSRIs) and antidepressants with atypical mechanisms of action have become available, beginning with fluoxetine in late 1987. Second, there has been a surge in public interest in antidepressants. Fluoxetine and other newer antidepressants have been the topic of lead articles in national news magazines,6 best-selling books,7 and widely watched television talk shows. Third, drug companies have begun to market antidepressants and other prescription medications on television and in the lay press. Fourth, antidepressants are clinically useful in an expanding range of psychiatric and general medical disorders.8 In light of these developments, we sought to reexamine recent trends in the prescription of antidepressants by psychiatrists in outpatient practice. We examine changes in the demographic, patient payment, and clinical correlates of antidepressant prescription by psychiatrists in office-based practice.
SAMPLE, DEFINITIONS, AND METHODS

SOURCE OF DATA

The source of data for this report is the National Ambulatory Medical Care Survey (NAMCS). The NAMCS, which is conducted annually by the National Center for Health Statistics (NCHS), samples a nationally representative group of visits to physicians in office-based practice. The present report is based on results from the 1985 and 1993-1994 NAMCS.

Approximately 75,000 visits were sampled in the 1985 survey, 36,000 in the 1993 survey, and 34,000 in the 1994 survey. Following NCHS recommendations, data from the 1993 and 1994 surveys were combined to establish a larger base on which to derive annual estimates.

Attending physicians or their office staff completed a 1-page data form for each visit during a specified 1-week period. The form contains items such as the patient’s age, sex, race, payment sources, diagnoses, and medications, including new prescriptions (ordered, supplied, or administered) and continuing medications (with or without new orders).

SURVEY DESIGN

The surveys were conducted via a 3-stage sampling design. First, a probability sample of 112 primary sampling units (a county, a group of adjacent counties, or a standard metropolitan statistical area) was drawn, next a probability sample was drawn of practicing physicians within these primary sampling units, and finally a systematic random sample was drawn of the visits to these physicians. Physicians expecting more than 10 visits per day recorded visits based on a predetermined sampling interval. Some patient duplication may occur with this survey design.

RESULTS

VISIT CHARACTERISTICS

Psychiatric visits in the 1993-1994 survey significantly differed in several respects from visits in the 1985 survey (Table 1). The 1993-1994 sample included a significantly higher proportion of visits by older patients, nonwhite patients, publicly insured patients, prepaid patients, and patients who had not been previously seen by the treating psychiatrist. A relatively larger proportion of psychiatric visits in the 1993-1994 survey than in the 1985 survey included a diagnosis of a major depressive disorder or a disorder that is usually first evident in childhood. By contrast, there was a significantly smaller proportion of visits by self-paying patients and patients with personality disorders in the 1993-1994 than in the 1985 survey (Table 1).

OVERALL ANTIDEPRESSANT PRESCRIPTION

Between 1985 and 1993-1994, the estimated number of psychiatric visits including an antidepressant prescription more than doubled, from 4.2 million (sample N=643) to 11.0 million (sample N=1546) or from 23.1% (95% CI, 19.7%-26.5%) to 48.6% (95% CI, 47.5%-49.7%) of psychiatric visits. After controlling for demographic characteristics, expected payment source, visit status, diagnosis, and number of psychiatric diagnoses, psychiatric patients in the 1993-1994 survey were an estimated 2.3 (95% CI, 1.8-2.9) times more likely to receive an antidepressant prescription than their counterparts in the 1985 survey.

PRESCRIBING DIFFERENCES BY DEMOGRAPHIC GROUP

The increase in antidepressant prescriptions was particularly pronounced among visits by younger patients (Table 2). Patients who were younger than 18 years were approximately 6.1 (95% CI, 1.4-27.6) times more likely to be prescribed an antidepressant in 1993-1994 than in 1985, controlling for sex, race, expected payment source, visit status, diagnosis, and number of diagnoses (Table 2). In the 1993-1994 survey, a depressive disorder was diagnosed in more than half (58.7%) of the children (0-17 years of age) whose visits included an antidepressant prescription.

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provider organizations, and other prepaid arrangements. The payment categories are not mutually exclusive.

Diagnosis

Some of the analyses involve aggregating visits into broad categories by first-, second-, or third-listed diagnosis. These groups, according to International Classification of Diseases, Ninth Revision, Clinical Modification, include major depressive disorder (296.2 and 296.3), other depressive disorders (300.4 and 311), panic disorder (300.01), generalized anxiety disorder (300.02), obsessive-compulsive disorder (300.3), other anxiety disorders (300.0-300.2 [except 300.01-300.02], 300.5-300.9, and 309.8), adjustment disorders (308 and 309 [except 309.8]), bipolar disorder (296.0, 296.1, and 296.4-296.9), schizophrenia and related disorders (295, 297-299, and 780.1), personality disorder (301), disorders of childhood and mental retardation (312-319 and 995.5), substance abuse disorders (291, 292, 303-305, 327, and 328), and other mental disorders (290, 293, 294, 301, 302, 306, 307, and 310). Because of codagnosis, these groups are not mutually exclusive.

Visit Status

The surveys include a visit status variable that classifies patients according to whether the physician (or another physician in the same office) had ever seen the patient before.

ANALYSIS PLAN

We began by examining the demographic and diagnostic composition of psychiatric visits in the 2 survey periods. We then examined the rate per 100 psychiatric visits of antidepressant prescriptions in each survey period. To adjust for secular change in patient characteristics, we combined the 1985 and 1993-1994 surveys and used a logistic regression to evaluate the association between survey year and antidepressant prescription, controlling for patient age, sex, race, payment source, visit status, diagnostic group, and number of psychiatric diagnoses.

The rate of antidepressant prescription in each survey period was determined stratified by demographic group, payment source, visit, diagnostic group, and number of diagnoses. Logistic regressions were used to estimate rates of antidepressant prescription adjusted for the various demographic and clinical covariates.

STATISTICAL METHODS

Because the visit sampling is not entirely random, the NCHS weights each visit to inflate the sample and correct for sampling imperfections. Census population estimates are used to compute the annual visit rate. Reported percentages are based on the weighted estimates. Estimates for the 1993-1994 period represent the annualized mean of the 2 survey years. The construction of weights has 3 components: (1) inflation by reciprocals of sampling probabilities, (2) adjustment for nonresponse, and (3) a ratio adjustment to fixed totals. The adjustment for nonresponse replaces patient visits to nonrespondents with visits to respondents in the same specialty and same primary sampling unit. The ratio adjustment involves multiplying each visit by the ratio of physicians listed in the American Medical Association–American Osteopathic Association master files for a given specialty over the number of sampled physicians in that specialty.

The NCHS provides formulas for the 1985 and 1993-1994 NAMCSs to calculate SEs of the survey estimates. These formulas were used to compute 95% CIs around the survey estimates. In consultation with the NCHS, a statistical adjustment was used to prepare the data for the logistic regressions. This adjustment involves reducing the effective sample size of the survey to simulate sampling from a simple random sample. The weights were multiplied by an adjustment factor calculated by dividing the sum of poststratification weights by the sum of the squared poststratification weights. This procedure yields conservative estimates that tend to overcompensate for stratification artifacts.

After controlling for the confounding effects of other demographic and clinical factors, male patients were 2.9 (95% CI, 1.9-4.4) times more likely and female patients were 2.2 (95% CI, 1.6-3.0) times more likely to be prescribed antidepressants in the 1993-1994 than in the 1985 survey (Table 2). Similarly, white patients were 2.6 (95% CI, 2.0-3.4) times more likely than nonwhite patients to be prescribed an antidepressant in 1993-1994 than in 1985. However, psychiatric visits by nonwhite patients were not significantly more likely to include an antidepressant prescription in the 1993-1994 compared with the 1985 survey (Table 2).

PREScribing differences by expected source of payment

All of the patient payment groups experienced significant increases in the rate of antidepressant prescription between the 2 surveys. These increases remained significant after adjustment for the confounding effects of demographic, payment, visit status, and diagnostic variables (Table 2). The largest increases in the rate of antidepressant prescription occurred among prepaid patients and patients in the residual “other” payment category.

PREScribing differences by visit status

The rate of antidepressant prescription significantly increased between the 1985 and 1993-1994 surveys for patients who were new to the treating psychiatrist and for patients who had been seen previously (Table 2).

PREScribing differences by diagnostic group

Significant increases in the rate of antidepressant prescription were observed for several diagnostic groups (Table 3). There was a significant increase in the unadjusted rate of antidepressant prescriptions for patients with generalized anxiety disorder, obsessive-compulsive disorder, other anxiety disorders, personality disorders, childhood disorders and mental retardation, substance use disorders, adjustment disorders, and depressive disorders other than major depressive disorder.
(Table 3). For adjustment disorders, personality disorders, and the other anxiety and depressive disorders categories, these increases remained significant after controlling within and across survey year for the confounding effects of demographic variables, expected payment source, and other clinical factors (Table 3).

ANTIDEPRESSANT SELECTION

In the 1993-1994 survey, psychiatric patients with antidepressant medication mentions were nearly evenly divided between those who did (49.8%) and did not (50.2%) receive an SSRI. The most commonly prescribed antidepressants in the 1993-1994 survey were fluoxetine (27.0%), sertraline (17.2%), paroxetine (9.8%), trazodone (9.4%), and nortriptyline hydrochloride (7.0%).

Patients whose first-listed diagnosis was a less severe disorder (ie, an adjustment disorder, a depressive disorder other than major depressive disorder, or an “other mental disorder”) were significantly more likely to receive an SSRI (56.7%) than a non-SSRI (43.3%) antidepressant ($\chi^2=8.9, df=1, P=.003$).

Between 1985 and 1993-1994, the proportion of office-based psychiatric visits that included an antidepressant prescription more than doubled. This increase developed at a time when other important changes were also occurring in the composition of office-based psychiatric practice. In line with broader demographic trends, there was an increase in the proportion of psychiatric visits by older patients and racial minorities. Psychiatric practice also became more dependent on public sources of reimbursement and prepaid arrangements. Shorter episodes of outpatient psychiatric care resulted in proportionately more visits by patients who had not been previously seen by the treating psychiatrist.

Between the surveys, there were also significant changes in the recorded clinical diagnoses. In 1993-

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**Table 1. Characteristics of Psychiatric Visits in 1985 and 1993-1994**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>1985, % (n = 2703)</th>
<th>1993-1994, % (n = 3164)</th>
<th>$\chi^2$</th>
<th>df</th>
<th>P</th>
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<td>.3</td>
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<td>2.7</td>
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<td>.1</td>
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<td>23.9</td>
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</table>

* Data are from the National Ambulatory Medical Care Survey. Percentages are based on weighted sampling.
† Groups are not mutually exclusive.
1994, psychiatrists diagnosed a proportionately larger number of their patients as having major depressive disorder or a disorder that is usually first evident in childhood and a smaller number as having personality disorders. Without an independent, objective assessment, it is not possible to determine the sources of these changes. One possibility is that shifts in the clinical diagnostic profile reflect true secular change in the treated prevalence of these disorders. It is also possible that the release of DSM-III-R (1987) contributed to an increase in the diagnosis of some disorders. A third possibility is that the availability of newer antidepressants with fewer adverse effects.
effects tipped diagnostic practices in favor of major depressive disorder and away from personality disorders. There is a close connection between some depressive states and personality disorder that is reflected in the inclusion of “depressive personality disorder” in the appendix of DSM-IV as a proposed category requiring further study. In evaluating antidepressant prescribing differences between the 2 surveys, it is important to bear in mind these differences between the 2 samples.

One of the most dramatic increases in antidepressant prescription occurred among children and adolescents. Approximately 3 of every 10 child or adolescent psychiatric visits in the 1993-1994 survey included an antidepressant prescription. A depressive disorder was diagnosed in 59% of these visits.

The widespread prescription of antidepressants to children and adolescents is a relatively new phenomenon. Earlier research indicates a much lower rate of antidepressant treatment in childhood and adolescent major depressive disorder is uneven. Double-blind, placebo-controlled studies examining the treatment of adolescents with major depressive disorder indicate no or only limited benefit from antidepressant therapy. Moreover, a recent meta-analysis uncovered serious methodological flaws in published studies of antidepressant use among children and adolescents. Given the apparent gap between current treatment practices and existing empirical evidence, continued research on the efficacy and effectiveness of antidepressants in the treatment of psychiatric disorders in children and adolescents remains a high priority.

Antidepressant prescription has also markedly increased to psychiatric patients with less severe disorders. A significant increase in the antidepressant prescription rate was observed for patients diagnosed as having adjustment disorders and less severe anxiety disorders. The frequent prescription of SSRIs to patients with less severe disorders suggests that the introduction of medications with fewer adverse effects has lowered the threshold for antidepressant prescribing. Considerable public and professional controversy surrounds the use of antidepressants in the treatment of such minor conditions. There is a concern that antidepressants are being used to treat conditions that might respond to simple supportive psychological interventions alone. Although antidepressants have been shown to be effective in mild forms of major depression, their proper role in the treatment of less consequential syndromes is less clear. In evaluating the reported use of antidepressants in patients with minor psychiatric conditions, it is important to consider the following possibilities: deliberate undercoding of depressive disorders to reduce stigma or future insurance eligibility; appropriate prescription of antidepressants to treat general medical problems (eg, headache, peripheral neuropathy, and gastritis); the use of sedating antidepressants as hypnotics; and the poor specificity of the diagnostic categories (eg, depression not otherwise specified vs adjustment disorder with depressed mood).

There is substantial evidence supporting the role of antidepressants in the treatment of panic disorder, obsessive-compulsive disorder, some personality disorders, and enuresis. There is also some evidence that antidepressants may be useful in the treatment of attention-deficit hyperactivity disorder and depressed adult patients with alcohol use disorders and in the maintenance of alcohol and cocaine abstinence. For these conditions, the recent increases in antidepressant prescription may represent a response to published experimental clinical data.

Psychiatric patients diagnosed as having major depressive disorder, schizophrenia, or bipolar disorder did not experience a significant increase in the rate of antidepressant treatment. Although antidepressants are effective in treating patients with major depressive disorder and certain phases or subtypes of schizophrenia and bipolar disorder, the availability of newer agents with fewer adverse effects did not significantly increase antidepressant treatment of patients with these more severe disorders. The pharmacological advantages of the newer antidepressants may tend to exert a greater effect in treatment decisions for patients with less severe psychopathologic disorders. The more favorable adverse effect profile and the greater safety of SSRIs when taken in overdose may also help to explain why psychiatrists have become more willing to prescribe antidepressants to outpatients during their initial office visits.

Comparing across payment sources, prepaid insurance was associated with higher use of antidepressants. Compared with psychiatrists in fee-for-service practice, those in prepaid settings may be selectively referred cases for medication management or may tend to first see patients later in the course of illness, when symptoms are more severe and a greater use of antidepressants is clinically indicated. In addition, many prepaid health plans limit psychiatrists’ practices to medication management.

In the present study, nonwhite psychiatric patients did not have a significant increase in antidepressant prescriptions. Several other investigators have reported a relatively low rate of antidepressant prescription in black patients. In 1 study, the pairing of black patients and white clinicians was associated with a lower antidepressant treatment rate than the pairing of black patients and black clinicians. The possibility that racial factors affect antidepressant prescribing requires further investigation. It is possible that patient and provider attitudinal factors mediate the observed racial disparity in antidepressant use.

The NAMCS is limited in many ways. It does not provide critical information about the duration or dosage of the antidepressant medication trials, the specific condition for which the medication is prescribed, or treatment response. Another limitation is the uncertain reli-
ability of diagnoses established by practicing physicians. It is possible, for example, that the observed increase in antidepressant prescription is a response to a secular increase in illness severity within diagnostic groups. There is also no information on the large number of psychiatrists who work outside of office-based practice settings.

Despite these significant limitations, the NAMCS provides the only currently available source of nationally representative data concerning the prescribing practices of physicians in office-based practice.

In less than a decade, the proportion of psychiatric outpatient visits that include an antidepressant prescription approximately doubled so that by 1993-1994 nearly half of all such visits included an antidepressant prescription. Although some of this increase seems to be an appropriate response to the availability of safer agents combined with the results of well-controlled research, some of the increase may be based on less secure evidence.

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Corresponding author: Mark Olsson, MD, MPH, New York State Psychiatric Institute/Department of Psychiatry, College of Physicians & Surgeons of Columbia University, 722 W 168th St, New York, NY 10032.