National Patterns of Depression Treatment in Primary Care

Randall S. Stafford, M.D., Ph.D.; John C. Ausiello, B.A.;
Bismruta Misra, M.P.H.; and Demet Saglam, M.A.

Background: While past studies suggest that primary care physicians underdiagnose and undertreat depression, little is known about recent national patterns of depression treatment.

Method: Using the 1995 and 1996 National Ambulatory Medical Care Surveys, we analyzed 1322 primary care office visits by patients reported to have depression. Rates of psychotherapy/mental health counseling, antidepressant use, and benzodiazepine use were assessed. Independent predictors of depression therapy were examined using multiple logistic regression. Where instructive, we compared the practices of primary care physicians with those of psychiatrists (2418 depression visits).

Results: Primary care physicians reported depression in 7.8% of their office visits. For these depression visits, antidepressants (42%) were the most common form of treatment, followed by psychotherapy/mental health counseling (28%) and benzodiazepines (21%). Among specific antidepressants, selective serotonin reuptake inhibitors were most often prescribed by primary care physicians (26% of depression visits). Rates of antidepressant and benzodiazepine use varied significantly by primary care specialty. In addition, geographic region and health insurance status influenced the likelihood of receiving benzodiazepines. In their depression visits, psychiatrists reported psychotherapy/mental health counseling (88%) most frequently, followed by antidepressants (64%) and benzodiazepines (25%).

Conclusion: The predominant use of selective serotonin reuptake inhibitors suggests that primary care physicians have begun to adopt new therapeutic strategies for depression. The modest rate of antidepressant therapy for a clinical population specifically identified by primary care physicians as having depression may indicate undertreatment of depression in primary care settings. Furthermore, high rates of benzodiazepine use are inconsistent with treatment guidelines, and variations in treatment patterns suggest that nonclinical factors influence depression management.

(Primary Care Companion J Clin Psychiatry 2000;2:211–216)

Depression is a leading cause of morbidity in the U.S. population. An estimated 20% of patients seeing primary care physicians have symptoms of depression, accounting for substantial health care resource use and lost productivity.[1–4] Despite an increased understanding and awareness of depression, there is evidence that this common condition remains underdiagnosed and undertreated, resulting in further societal costs and burdens.[1,5–8]

Changes in the organization of health care have altered the role of primary care physicians in treating depression. Because many health insurers discourage referral to specialty care, the responsibilities of primary care physicians in the treatment of depression have expanded.[6,8,9] As a result, almost half of all patients with affective disorders are seen in primary care settings.[10]

A variety of treatment options for depression are available to primary care physicians.[11] Psychopharmacologic therapy includes selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants (TCAs), monoamine oxidase inhibitors (MAOIs), and other antidepressants. Among these medications, SSRIs have favorable tolerability and safety profiles, characteristics likely to facilitate their application in primary care.[12,13] Anxiolytics such as benzodiazepines can effectively treat anxiety, although evidence of their effectiveness in depression is limited.[14,15] Either alone or in combination with pharmacologic therapy, counseling, particularly psychotherapy, may be effective.[11] Finally, referral to psychiatrists, psychologists, or other mental health providers is an additional strategy for depression treatment.

Despite this variety of treatment options, past studies have questioned how successful primary care physicians are in treating depression. Katon and colleagues[16] reported that only 11% of patients seen by primary care physicians and in need of pharmacotherapy had received an antidepressant in an adequate dose and for an appropriate duration. Wells et al.[17] found that only 14.5% to 17.8%

(depending on insurance type) of depressed outpatients received antidepressants in a primary care setting. Penn et al.[7] compared internal medicine attending physicians' and residents' hypothetical treatment of 4 depression cases with psychiatry residents' treatment. They found that while internists often appropriately recommended pharmacotherapy, their choice of medications was frequently less appropriate than the selections made by psychiatric residents.[7]

Other studies, however, suggest that primary care physicians have begun to meet the new challenges they face in the treatment of depression. Olfson and Klerman[18] found that in 1989, primary care physicians prescribed antidepressants in 57% of their depression visits compared with psychiatrists, who used antidepressants only 45% of the time for depression. Pincus et al.[19] reported that in 1993 and 1994, primary care physicians noted antidepressant use in 60% of their depression visits.

We sought to expand on the existing literature by investigating the use of pharmacotherapy and counseling by primary care physicians to examine whether improvements in depression management have continued. To answer these questions, we employed data from the National Ambulatory Medical Care Survey (NAMCS), a national survey of office-based physicians.

METHOD

Data Source

Data for this study came from the 1995 and 1996 NAMCS conducted by the National Center for Health Statistics.[20,21] These ongoing, annual surveys select U.S. office-based, patient-care physicians from the master files of the American Medical Association and the American Osteopathic Association to ensure random, stratified sampling by geographic area and specialty. The unit of analysis is the patient visit, and the data exclude visits made to government-operated facilities or hospital-based outpatient departments. Of selected physicians, 73% (1995)[20] and 70% (1996)[21] agreed to participate in the study. For each participating physician, 1 week of the year was randomly selected for systematic sampling of between 20% and 100% of their patient visits.

For each selected patient visit, physicians completed encounter forms detailing specific clinical services provided during the visit, as well as patient demographics, ICD-9-CM diagnoses, reason-for-visit codes, physician characteristics, visit characteristics, and new or continued medications. These encounter forms also contained check boxes enabling the physician to identify the presence of various chronic conditions, including depression. We identified depression if any of the following were reported: the presence of depression using the check boxes, a NAMCS reason-for-visit code 1110.0, or an ICD-9 diagnostic code 296.2, 296.3, 300.4, 309.1, or 311.[22] We focused our analysis on 1322 visits by patients 18 years and older visiting general internists, general practitioners, or family physicians. Where informative, we compared the practices of primary care physicians with those of psychiatrists and their 2418 visits by adults with depression.

To assess the current status of depression therapy, we examined patterns both of medication prescribing and physician counseling. Antidepressant and benzodiazepine use were identified if NAMCS drug codes for any of these medications were listed among the 6 possible new or continuing medications on the survey form. Antidepressants were categorized into one of the following classes: MAOIs, TCAs, SSRIs, or other antidepressants (including bupropion, trazodone, or the nonspecific designation "antidepressant agent"). Our assessment of counseling practices focused on the report of either psychotherapy or mental health counseling during physician visits. We also evaluated counseling for diet, exercise, weight reduction, injury prevention, and smoking cessation because the presence of depression may complicate the management of these issues. Counseling in these areas also may indicate primary care physicians' indirect efforts to manage depression and its consequences.

We analyzed the effect of patient and physician characteristics on these treatment patterns, including physician specialty, patient race, patient age, insurance status, geographic region, and metropolitan versus nonmetropolitan location. American Medical Association designations were employed to define physician specialty. Payment source was divided into 5 categories: Medicare, Medicaid, health maintenance organization (HMO)/private, self, and other. Patient demographic information was included in the NAMCS record. Because of limited racial and ethnic designations, race was dichotomized into non-Hispanic whites and other. Validation studies performed in earlier years have confirmed the general accuracy of the NAMCS data.[23]

Statistical Methods

For each visit record, the National Center for Health Statistics provided a visit weight calculated from the physician and visit sampling rates, adjusted for nonresponse. Statistical aggregation using these visit weights allowed us to estimate the national volume of clinical activities among office-based physicians.

We further modified these weights by proportional scaling to provide "effective sample sizes" for use in statistical testing.[24] Using SAS, bivariate differences were tested using the chi-square test with a p value < .05 signifying statistical significance.[25] Our multivariate analysis consisted of 3 logistic regression models to determine independent predictors of depression treatment. Our dependent variables, assessed at the level of individual visits, were the report of the following: (1) psychotherapy/mental counseling, (2) antidepressant use, and (3) benzo-

diazepine use. Each regression model included physician specialty, patient race, patient age, expected payment source, geographic region, and metropolitan versus nonmetropolitan area. In addition, we included the presence of coexisting anxiety using the ICD-9 diagnostic codes 300.00, 300.01, 300.02, 300.09, and 308.0.[22] Adjusted odds ratios and 95% confidence intervals, developed using weighted visits calibrated to reflect effective sample size, were calculated from these models.[26]

RESULTS

In 1995 and 1996, depression was reported in 39.1 million visits to primary care physicians in the United States by patients 18 years or older, or 7.8% of all adult visits to primary care physicians. Among these visits, the likelihood of reported depression varied in specific subpopulations. Most notably, depression was twice as likely to be identified in visits by Medicaid patients compared with visits by patients with private insurance or HMO coverage. Women were almost twice as likely to have depression noted compared with men (Table 1).

Medications Reported for Depression Visits

Primary care physicians reported the use of antidepressants or benzodiazepines in 51.3% of visits with depression. Antidepressants were noted in 41.8% of visits and benzodiazepines in 20.6% (Table 2). The combination of both classes was reported in 11.0% of depression visits. In primary care visits in which depression was not noted, antidepressant use was infrequent (2.5%). Among specialties, general practitioners (46.9%) and family physicians (45.2%) were more likely to report antidepressants than internists (36.0%, p = .014; see Table 2). Patients 45 years and older (36.4%) were less likely to receive antidepressants compared with younger patients (50.2%, p < .001). Only the difference between family physicians and internists persisted within the regression model, however (Table 3).

Among patients receiving antidepressants, SSRIs were the most commonly reported by primary care physicians (25.8% of visits with depression), followed by TCAs (10.7%) and other antidepressants (7.9%). Primary care physicians noted 2 or more antidepressants in 2.7% of depression visits.

Selective serotonin reuptake inhibitor use for depression was reported more frequently among patients 18 to 44 years old (33.3% of all depression visits) compared with those 45 to 64 years old (20.6%) and patients 65 years or older (23.0%, p < .001). Among the different primary care specialties, SSRIs were noted more often by

Table 1. Proportion of Visits With Depression Reported, Primary Care Physicians and Psychiatrists, 1995–1996[a]

Visit Characteristic	Percentage of Visits With Depression Reported: Primary Care Physicians	p Value (chi-square)	Percentage of Visits With Depression Reported: Psychiatrists	p Value (chi-square)
Total	7.8		63.8	
Physician specialty		.003		NA
Family medicine	7.1		NA	
General practice	9.0		NA	
Internal medicine	8.0		NA	
Patient age, y		.005		< .001
18–44	7.6		59.2	
45–64	9.1		68.5	
≥ 65+	7.0		73.2	
Patient gender		< .001		< .001
Male	5.9		52.6	
Female	9.1		72.3	
Patient race		< .001		< .001
Nonwhite	6.2		51.4	
White	8.3		66.5	
Region		< .001		< .001
Midwest	7.1		83.9	
South	6.5		44.4	
West	8.6		66.7	
Northeast	10.1		78.4	
Insurance status		< .001		< .001
Medicaid	16.0		49.4	
Medicare	7.6		68.9	
Other	6.2		71.8	
Self-pay	6.6		48.3	
Private/HMO	7.4		76.5	
Metropolitan area		.153		.028
Yes	8.1		63.5	
No	7.2		76.4	

[a]Abbreviation: HMO = health maintenance organization.

family physicians (32.8%) than by internists (22.6%) or general practitioners (19.2%, p < .001). TCA use was not significantly related to patient age. General practitioners prescribed TCAs more often (23.4%) than internists (8.3%) or family physicians (6.4%, p < .001).

Benzodiazepines, reported in 20.6% of primary care visits for depression, were used infrequently by primary care physicians for patients without depression (3.0%, p < .001) and even less frequently in the absence of both anxiety and depression (2.3%). General practitioners (47.0%) reported using benzodiazepines for depression more often than internists (14.0%) and family physicians (13.4%, p < .001). By insurance status, the highest rates of use were for patients covered by Medicaid (43.0%) and the lowest for patients with private or HMO insurance (15.2%, p < .001). Patients living in the Northeast (32.5%) received benzodiazepines more frequently than patients in the West (22.1%), South (15.8%), and Midwest (11.6%, p < .001; see Table 2).

Patients with both depression and anxiety received benzodiazepines in 54.2% of visits, whereas depressed patients without anxiety received benzodiazepines in 14.4% (p < .001). Because only 15.4% of depression visits had anxiety noted, 59.4% of all benzodiazepine use

Table 2. Depression Treatment Among Primary Care Visits Reporting Depression, 1995–1996[a]

Visit Characteristic	NAMCS Sample Size	Estimated US Visits (in millions)	Psychotherapy/ Mental Health Counseling		Antidepressant Medications		Benzodiazepines	
			%	p Value[b]	%	p Value[b]	%	p Value[b]
Total	1322	39.1	27.8		41.8		20.6	
Physician specialty				< .001		.014		< .001
Family medicine	464	15.2	21.6		45.2		13.4	
General practice	270	7.9	48.2		46.9		47.0	
Internal medicine	588	16.1	23.3		36.0		14.0	
Patient age, y				< .001		< .001		.038
18–44	426	14.0	36.4		50.2		22.9	
45–64	486	13.7	24.0		36.4		22.7	
≥ 65	410	11.4	21.8		37.9		15.2	
Patient gender				.059		.982		.182
Male	355	11.7	32.2		41.7		23.3	
Female	967	27.5	26.0		41.8		19.4	
Patient race				.023		.809		.037
Nonwhite	203	7.2	35.1		40.9		26.6	
White	1119	32.0	26.2		41.9		19.2	
Region				< .001		.317		< .001
Midwest	325	8.6	24.0		43.0		11.6	
South	360	10.1	16.7		37.1		15.8	
West	351	11.3	31.0		41.7		22.1	
Northeast	286	9.1	4.0		45.8		32.5	
Insurance status				< .001		.046		< .001
Medicaid	145	5.8	46.8		50.9		43.0	
Medicare	397	11.1	18.8		36.0		15.5	
Other	166	4.5	29.2		37.0		15.8	
Self-pay	112	3.2	33.2		46.2		28.2	
Private/HMO	502	14.6	25.4		43.0		15.2	
Metropolitan area				< .001		.542		.181
Yes	1026	29.8	31.5		42.3		21.6	
No	296	9.4	16.1		40.0		17.3	

[a]Abbreviations: HMO = health maintenance organization, NAMCS = National Ambulatory Medical Care Survey.
[b]p Value calculated for each visit characteristic via chi-square testing.

in depression was reported for patients without coexisting anxiety. Multiple logistic regression analysis adjusting for all of our selected variables confirmed that the likelihood of benzodiazepine use was increased for patients with anxiety and for those receiving Medicaid, but decreased for patients in the Midwest and those visiting family practitioners and internists (see Table 3).

These patterns of medication use reported by primary care physicians were distinct from those of psychiatrists, for whom antidepressants were reported in 64.4% of depression visits. Among depression visits to psychiatrists, SSRIs were noted in 41.8%, TCAs in 13.6%, MAOIs in 0.6%, and other antidepressants in 16.7%. Two or more antidepressants were reported in 8.2% of the visits. Among depression visits to primary care physicians, gender had little influence on antidepressant use (see Table 2), but for psychiatric depression visits, women (67.8%) were more likely to receive antidepressants than men (58.2%, p < .001). With regard to age, patients 65 years or older seen by a psychiatrist were no less likely to receive antidepressants, whereas for primary care visits with depression, antidepressant use was less likely in older patients. Benzodiazepine use for depression was slightly higher among visits to psychiatrists (25.2%) compared with primary care physicians (20.6%, p = .011).

Counseling in Depression Visits

Primary care physicians reported providing psychotherapy/mental health counseling in 27.8% of depression visits. In primary care depression visits in which antidepressant use was reported, the rate of psychotherapy/mental health counseling rose to 35.8%, compared with 22.1% of primary care visits without a report of antidepressants. Multivariate analysis indicated that psychotherapy/mental health counseling was more likely in depression visits to general practitioners and by patients with coexisting anxiety, whereas these services were less likely to be reported in the South (see Table 3).

Primary care physicians provided counseling other than psychotherapy/mental health counseling in 8.7% of their visits with depression noted, compared with 5.4% of visits without a report of depression (p < .001). Several types of counseling were more frequent in visits with depression than without, including diet (21.2% vs. 18.3%, p = .030), exercise (18.0% vs. 13.6%, p < .001), weight reduction (11.1% vs. 7.4%, p < .001), injury prevention (4.1% vs. 1.8%, p < .001), and smoking (7.3% vs. 3.8%, p < .001).

Psychiatrists provided psychotherapy/mental health counseling in 88.4% of their depression visits. In addition, while primary care physicians indicated using psy-

chotherapy/mental health counseling or antidepressants in 54.0% of their depression visits, psychiatrists reported either treatment modality in 95.3% of their visits in which depression was noted.

DISCUSSION

Previous studies have suggested that depression is underreported in primary care.[27,28] The true prevalence, however, is difficult to determine; current literature reports rates of major depression ranging from 2.2% to 14.1% In our analysis, primary care physicians reported depression in 7.8% of their visits when depression was defined on the basis of several reporting mechanisms available within the NAMCS. This broad definition, which probably yielded a population of visits that included patients with mild depression, contrasts with other analyses using the NAMCS that have defined depression only via ICD-9 codes.[18,19] As a result, our reported rate of depression is significantly higher, although it may still fall short of the "true" prevalence. A previous study[1] screened patients for both mild and major depression and found that 20% of primary care outpatients have symptoms of depression.

Our findings also raise concerns regarding depression treatment. While the predominant use of SSRIs by primary care physicians is encouraging, primary care physicians report the use of antidepressant medications or psychotherapy/mental health counseling for only 54% of their depression visits. Furthermore, the frequent use of benzodiazepines by primary care physicians is disturbing. Benzodiazepines are most effective in treating anxiety,[14,15] yet in 59% of visits with a report of both depression and benzodiazepines, primary care physicians did not indicate the presence of coexisting anxiety. In addition, our data reveal that Medicaid patients seen by primary care physicians were nearly as likely to receive benzodiazepines as they were antidepressants. Although benzodiazepines may be effective in treating mild depression, they are not considered a drug of first choice for depression treatment.[11]

We found the overall use of antidepressants by primary care physicians (42% of depression visits) to be significantly lower in comparison to the prior studies using NAMCS data by Olfson and Klerman[18] (57%) and Pincus et al.[19] (60%). The lower treatment rate noted in our analysis most likely reflects our broader definition of depression; we have captured visits by patients with mild depression whose benefit from antidepressants has been

Table 3. Independent Predictors of Primary Care Visit Treatment Strategies for Depression, 1995–1996[a]

Predictors	Adjusted OR of Psychotherapy/ Mental Health Counseling (95% CI)	Adjusted OR of Antidepressant Therapy (95% CI)	Adjusted OR of Benzodiazepine Therapy (95% CI)
Physician specialty			
Family medicine	0.98 (0.67 to 1.45)	1.42 (1.03 to 1.97)	0.88 (0.55 to 1.42)
General practice	2.00 (1.28 to 3.13)	1.31 (0.87 to 1.97)	3.00 (1.85 to 4.89)
Internal medicine	Reference	Reference	Reference
Patient age, y			
18–44	1.11 (0.64 to 1.91)	1.17 (0.74 to 1.87)	0.93 (0.48 to 1.81)
45–64	0.71 (0.41 to 1.22)	0.74 (0.47 to 1.17)	1.38 (0.73 to 2.62)
≥ 65	Reference	Reference	Reference
Patient gender			
Male	1.28 (0.91 to 1.81)	0.98 (0.72 to 1.32)	1.12 (0.75 to 1.68)
Female	Reference	Reference	Reference
Patient race			
Nonwhite	1.24 (0.82 to 1.87)	0.95 (0.66 to 1.38)	1.22 (0.76 to 1.97)
White	Reference	Reference	Reference
Region			
Midwest	0.74 (0.46 to 1.19)	0.98 (0.64 to 1.48)	0.46 (0.26 to 0.84)
South	0.46 (0.28 to 0.75)	0.76 (0.50 to 1.14)	0.65 (0.38 to 1.12)
West	0.81 (0.53 to 1.25)	0.89 (0.60 to 1.31)	0.86 (0.53 to 1.42)
Northeast	Reference	Reference	Reference
Insurance status			
Medicaid	1.33 (0.81 to 2.20)	1.12 (0.71 to 1.76)	1.90 (1.08 to 3.34)
Medicare	0.58 (0.33 to 1.02)	0.72 (0.45 to 1.15)	0.98 (0.51 to 1.89)
Other	1.03 (0.61 to 1.73)	0.75 (0.47 to 1.20)	0.80 (0.41 to 1.57)
Self	1.31 (0.72 to 2.38)	1.10 (0.65 to 1.88)	1.39 (0.72 to 2.69)
Private/HMO	Reference	Reference	Reference
Metropolitan area			
Yes	2.04 (1.32 to 3.16)	1.17 (0.83 to 1.64)	0.94 (0.60 to 1.49)
No	Reference	Reference	Reference
Coexisting anxiety			
Yes	2.30 (1.51 to 3.51)	1.21 (0.80 to 1.80)	5.21 (3.35 to 8.10)
No	Reference	Reference	Reference

[a]Abbreviations: CI = confidence interval, HMO = health maintenance organization, OR = odds ratio.

suggested but not proved.[29] Nevertheless, patients in our analysis who were reported to have depression quite likely represent patients with more severe depression compared with those patients whose depression is not reported in NAMCS. Therefore, the rates of treatment noted in our analysis may suggest that a sizeable number of potentially eligible patients with depression are not being treated with antidepressants.

Several limitations of this study must be acknowledged. Depression was determined solely by physician report, making it impossible to directly confirm diagnostic validity or to evaluate disease severity. Without a direct measure of severity, it is particularly difficult to gauge the appropriateness of the pharmacotherapy and counseling rates that we report. The rates of medication use that we report do not reflect the potential for patients who fail to take medications prescribed to them. Our inability to track the care of individual patients, because NAMCS data are based on visits, further compounds the problem. Patients probably made multiple visits, yet we cannot determine what proportion of those individuals not treated at their initial visit received treatment at a later date.

In addition, we were unable to evaluate the rate of referrals by primary care physicians to psychiatrists. It is conceivable that primary care physicians continue to refer to psychiatrists at high rates, despite existing pressures by managed care organizations. This possible explanation may be particularly pertinent for internists, who report the lowest rates of antidepressant use and who have been found both to refer more frequently than family practitioners and to refer more often for depression than any other condition.[30,31] Lastly, we were unable to assess the adequacy of antidepressant dosing, despite concerns that these medications are frequently prescribed in inadequate doses.[8,17] Despite these shortcomings, the NAMCS data set remains a unique source of information on office-based practice and is particularly well suited for investigating practice pattern variation.

The growth of managed care, with its pressures to limit access to specialists, has increased the importance of primary care physicians. These pressures place particular responsibilities on primary care physicians for the management of depression, a condition for which they have often relied on referral to psychiatrists. Our findings suggest that primary care physicians have begun to respond to the new tasks required of them in the management of major depression. The choice of SSRIs as the primary medication indicates that they have readily adopted new therapies. Nonetheless, several concerns remain regarding their recognition of depression and their treatment of this condition. It appears that primary care physicians do not fully recognize depression among their patients and may fail to treat effectively a significant fraction of their patients. In addition, we noted variations in depression treatment by primary care specialty, geographic region, and payment source, indicating that adoption of practices has not been uniform. The variations noted by payment source are of particular concern because they suggest that inappropriate benzodiazepine use may be more frequent for patients of lower socioeconomic status. In total, these shortcomings suggest a need to improve primary care physicians' ability to manage depression either by enhancing their skills in depression management or by reducing the barriers they face in referring patients to psychiatrists. The burden that this prevalent condition places on individuals and society points to the substantial benefits possible through improved primary care practices.

Drug names: bupropion (Wellbutrin), trazodone (Desyrel and others).

REFERENCES

1. Zung WWK, Broadhead WE, Roth ME. Prevalence of depressive symptoms in primary care. J Fam Pract 1993;37:337–344
2. Wells KB, Stewart A, Hays RD, et al. The functioning and well-being of depressed patients: results from the Medical Outcomes Study. JAMA 1989;262:914–919
3. Greenberg PE, Stiglin LE, Finkelstein SN, et al. The economic burden of depression in 1990. J Clin Psychiatry 1993;54:405–419
4. Simon G, Ormel J, VonKorff M, et al. Health care costs associated with depressive and anxiety disorders in primary care. Am J Psychiatry 1995; 152:352–357
5. Wells KB, Hays RD, Burnam MA, et al. Detection of depressive disorder for patients receiving prepaid or fee-for-service care: results from the Medical Outcomes Study. JAMA 1989;262:3298–3302
6. Wells KB, Sturm R. Care for depression in a changing environment. Health Aff 1995;14:78–89
7. Penn JV, Boland R, McCartney JR, et al. Recognition and treatment of depressive disorders by internal medicine attendings and housestaff. Gen Hosp Psychiatry 1997;19:179–184
8. Hirschfeld RMA, Keller MB, Panico S, et al. The National Depressive and Manic-Depressive Association consensus statement on the undertreatment of depression. JAMA 1997;277:333–340
9. Wulsin LR. An agenda for primary care psychiatry. Psychosomatics 1996;37:93–99
10. Marrow WE, Regier DA, Rae DS, et al. Use of services by persons with mental and addictive disorders: findings from the National Institute of Mental Health Epidemiologic Catchment Area Study. Arch Gen Psychiatry 1993;50:95–107
11. American Psychiatric Association. Practice Guideline for Major Depressive Disorder in Adults. Am J Psychiatry 1993;150(suppl 4):1–26
12. Vanderhoff BT, Miller KE. Major depression: assessing the role of new antidepressants. Am Fam Physician 1997;55:249–254
13. Guze BH, Gitlin M. New antidepressants and the treatment of depression. J Fam Pract 1994;38:49–57
14. Schatzberg AF, Cole JO. Benzodiazepines in depressive disorders. Arch Gen Psychiatry 1978;35:1359–1365
15. Lipman RS, Covi L, Rickels K, et al. Imipramine and chlordiazepoxide in depressive and anxiety disorders. Arch Gen Psychiatry 1986;43:68–77
16. Katon W, Von Korff M, Lin E, et al. Adequacy and duration of antidepressant treatment in primary care. Med Care 1992;30:67–76
17. Wells KB, Katon W, Rogers B, et al. Use of minor tranquilizers and antidepressant medications by depressed outpatients: results from the Medical Outcomes Study. Am J Psychiatry 1994;151:694–700
18. Olfson M, Klerman GL. The treatment of depression: prescribing practices of primary care physicians and psychiatrists. J Fam Pract 1992;35: 627–635
19. Pincus HA, Tanielian TL, Marcus SC, et al. Prescribing trends in psychotropic medications: primary care, psychiatry, and other medical specialties. JAMA 1998;279:526–531
20. National Center for Health Statistics. Public Use Data Tape Documentation: 1995 National Ambulatory Medical Care Survey. Hyattsville, Md: National Center for Health Statistics, US Public Health Service; 1997
21. National Center for Health Statistics. Public Use Data Tape Documentation: 1996 National Ambulatory Medical Care Survey. Hyattsville, Md: National Center for Health Statistics, US Public Health Service; 1997
22. International Classification of Diseases, 9th Revision, Clinical Modification. Washington, DC: Public Health Service, US Dept Health and Human Services; 1988
23. Delozier JE. The design and methods of the National Ambulatory Medical Care Survey. Med Group Manage 1974;12:5–7
24. Potthoff RF, Woodbury MA, Manton KG. "Equivalent sample size" and "equivalent degrees of freedom" refinements for inference using survey weights under superpopulation models. J Am Stat Assoc 1992;87:383–396
25. SAS Institute Inc. SAS/STAT User's Guide, Version 6. 4th ed. Cary, NC: SAS Institute; 1990
26. Hosmer DW, Lemeshow S. Applied Logistic Regression. New York, NY: John Wiley & Sons; 1989
27. Myrna MW, Bland R, Joyce PR, et al. Sex differences in rates of depression: cross-national perspectives. J Affect Disord 1993;29:77–84
28. Bell JR. Underdiagnosis of depression in primary care: by accident or design? [letter] JAMA 1997;277:1433
29. Stewart JW, McGrath PJ, Quitkin FM. Can mildly depressed outpatients with atypical depression benefit from antidepressants? Am J Psychiatry 1992;149:615–619
30. Bachman KH, Freeborn DK. HMO physicians' use of referrals. Soc Sci Med 1999;48:547–557
31. Borowsky SJ, Rubenstein LV, Skootsky SA, et al. Referrals by general internists and internal medicine trainees in an academic medicine practice. Am J Managed Care 1997;3:1679–1687