

# Prescription of Psychotropic Medications to Youths in Office-Based Practice

Renee Goodwin, Ph.D.  
Madelyn S. Gould, Ph.D., M.P.H.  
Carlos Blanco, M.D., Ph.D.  
Mark Olfson, M.D., M.P.H.

**Objective:** This study sought to determine sociodemographic characteristics of treatment of children and adolescents for whom psychotropic medications are prescribed and to describe the clinical management approaches associated with the prescription of each major class of psychotropic medication in office-based medical practices in the United States. **Methods:** Data for a four-year period (1992–1996) were drawn from the National Ambulatory Medical Care Survey, a nationally representative survey of office-based medical practices, to determine prescribing patterns, patients' sociodemographic characteristics, and clinical management approaches associated with visits during which psychotropic medications were prescribed to patients aged 19 years or under. **Results:** Psychotropic medications were prescribed during 2.2 percent of all visits. A majority of the prescriptions for psychotropic medications (84.8 percent) were provided by general practitioners or pediatricians. For the visits during which a psychotropic medication was prescribed, stimulants were the most commonly prescribed (53.9 percent of such visits), but prescription of other classes of medications was not uncommon: antidepressants (30 percent), anxiolytics (7.2 percent), antipsychotics (7.2 percent), and mood stabilizers (12.7 percent). Significant differences were observed in the prescription of each class of medication by sex, race, and payment source. **Conclusions:** General practitioners and pediatricians have a role in the office-based treatment of youths with psychotropic medications. (*Psychiatric Services* 52:1081–1087, 2001)

In recent years, the prescription of psychotropic medications to youths under the age of 18 years has become more common (1–3). However, with the exception of data on stimulants for the treatment of attention-deficit hyperactivity disorder (ADHD), relatively few studies have been published on the sociodemo-

graphic characteristics of youths for whom psychotropic medications are prescribed or on the clinical management approaches used in the prescription of psychotropic medications for youths in the community (1,4–8). Such studies of pediatric pharmacoepidemiology can help identify determinants of access to treatment

with psychotropic medications. These data can then be used to assess the extent to which community treatment is consistent with recommended guidelines for the prescription of psychotropic medications to youths, an issue that has received little direct attention (1,6,9).

Jensen and colleagues (1) described the overall prescription rates of psychotropic medications to patients under 18 years of age in the United States by using data from the 1995 National Ambulatory Medical Care Survey (NAMCS) and the National Disease and Therapeutic Index. Stimulants were the most commonly prescribed, although prescription of other psychotropic medications was not infrequent. The use of anxiolytics, antidepressants, antipsychotics, mood stabilizers, and stimulants has increased in recent years (1,5,8). Jensen and colleagues commented on the paucity of data supporting the efficacy or safety of most of these agents among youths. However, neither their study nor any other has provided data on the sociodemographic characteristics of youths to whom these medications are prescribed.

Another area that has remained largely unexamined is the clinical management approaches to prescribing psychotropic medications to youths. Using data from the 1985 NAMCS, Kelleher and colleagues (10) described the clinical management provided with prescriptions of psychotropic medications, and with stimulants specifically, during visits by youths to office-based practices. Only a small minority of visits during

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*Dr. Goodwin is affiliated with the division of epidemiology, Columbia University School of Public Health, and the department of psychiatry at Columbia University, PH 18-303, 600 West 168th Street, New York, New York 10032 (e-mail, rdg66@columbia.edu). Dr. Gould is with the department of child psychiatry and Dr. Blanco and Dr. Olfson are with the department of psychiatry at Columbia University. All authors are affiliated with the Columbia University College of Physicians and Surgeons and the New York State Psychiatric Institute in New York City.*

which a psychotropic drug was prescribed also involved psychotherapy and the scheduling of a follow-up appointment. Close monitoring of clinical changes and side effects associated with psychotropic medications prescribed to youths is particularly important, because many of the clinical indications are "off-label," and fewer data are available to guide the course of treatment (1). However, with the exception of Kelleher's work (10), no recent studies have systematically addressed this issue.

In this study we used NAMCS data to examine patterns of prescription of psychotropic medications to children and adolescents in office-based medical practices. We collected demographic and diagnostic data and information on the source of payment associated with the use of each major class of psychotropic medication—antidepressants, anxiolytics, antipsychotics, mood stabilizers, and stimulants—during these visits. We also examined the medical specialties of the physicians who prescribed each class of medication. Finally, we updated and expanded existing information on clinical management approaches associated with the prescription of specific classes of psychotropic drugs.

### Methods

The NAMCS is conducted annually by the National Center for Health Statistics (NCHS), which samples a nationally representative group of patient visits to physicians in office-based practice as defined by the American Medical Association and the American Osteopathic Association (11).

We obtained information about a total of 166,256 visits to a national sample of office-based physicians who participated in the NAMCS from 1992 to 1996. On the basis of recommendations of the NCHS, we combined data from the surveys during that four-year period to establish a larger base from which to derive estimates (11). A total of 17,347 physicians were sampled. Of these, 5,912 were deemed ineligible for the study, or out of the study's scope, mainly because they had retired; had died; were employed in teaching, research, or administration; or had not seen

any patients during the study period because they were on vacation or were ill. Among the 11,435 eligible physicians, the overall response rate for the four-year study period was about 72 percent.

### Survey design

The NCHS uses a multistage probability sampling design for the NAMCS. Counties or standard metropolitan statistical areas are stratified by size, region, and demographic characteristics (11). The surveys were conducted in three stages. First, a probability sample of 112 primary geographic sampling units was drawn, followed by a probability sample of

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practicing physicians, stratified by specialty within these primary sampling units. Finally, a systematic random sample of the visits to these physicians was drawn. Attending physicians or their office staff completed a one-page data form for each visit, which defined the sampling unit. The form contains items such as basic demographic characteristics; payment sources; diagnoses; medications prescribed, supplied, or administered; and medications that patients continued to take with or without a new prescription.

Only minor modifications were made to the survey between 1992 and 1996; a more detailed description of the survey's design and procedures has been published elsewhere (12). The sampling period was one week. Physicians who expected more than ten visits a day recorded visits on the basis of a predetermined sampling interval, which may have resulted in some patients being recorded more than once. Data were obtained from general practitioners, pediatricians, psychiatrists, child psychiatrists, and all other physicians who reported visits from patients aged 19 years or under.

Because selection was not completely random, a weighting and downweighting procedure was used to convert the data from the sample into data that could be treated as coming from a simple random sample. Such weighting corrects for the design effect of a stratified complex sample. Because the NCHS's exact sampling probabilities have not been published, multivariate analyses of these data cannot take advantage of adjustment for nonrandom sampling. We used the downweighting method of Lee and colleagues (13), which is a conservative strategy for approximating a simple random sample.

### Measures

During each visit, patient record forms were used to collect information on prescriptions and several sociodemographic and clinical characteristics—for example, age, sex, and ICD-9 diagnosis. The three items used to describe the clinical management that was provided with prescriptions of psychotropic medications were psychiatric diagnosis, psychotherapy, and disposition of the visit. Three spaces are provided for recording ICD-9 diagnoses on the patient record form. Disposition of the visit was grouped into two categories, "scheduled follow-up" and "no follow-up planned." An item on the form specifically coded whether or not psychotherapy or counseling was provided.

Prescription of a psychotropic medication refers to whether a drug was prescribed, refilled, or recommended or whether a drug sample

was given to a patient. Psychotropic medications were grouped to determine prescription patterns. Antidepressants included selective serotonin reuptake inhibitors, tricyclics, venlafaxine, trazodone, and nefazodone. Anxiolytics included alprazolam, clonazepam, and other benzodiazepines. Antipsychotics included haloperidol and fluphenazine. Valproic acid, lithium, and carbamazepine were grouped under mood stabilizers. The stimulant category included methylphenidate, pemoline, and amphetamine compounds.

Information on payment source for each visit was recorded on the physician record form. Categories of payment source included health maintenance organization, Medicaid, Blue Cross-Blue Shield, other private insurance, and payment by the patient.

#### *Analytic strategy*

In the first series of analyses, we used Pearson's chi square test to compare the sociodemographic characteristics of patients aged 19 years and under who did and did not receive a prescription for a psychotropic medication during an office-based ambulatory care visit. Next, the demographic characteristics of patients who received a prescription for each class of medication were compared with the characteristics of those who received a prescription for any other psychotropic medication. All tests were two-tailed, and the level of significance was set at .05 or less.

In the next series of analyses, we used Pearson's chi square test to compare differences in physician specialty (general practitioner, pediatrician, or psychiatrist), the number of visits that involved documentation of a psychiatric diagnosis (*ICD-9* codes 290 to 319), whether psychotherapy was provided, whether a follow-up appointment was scheduled, and the source of payment for visits that did and did not involve a prescription for any psychotropic medication. The same method was then used to compare visits that involved a prescription for each class of medication with visits that involved a prescription for any other psychotropic medication.

Finally, we computed the numbers

and percentages of specific *ICD-9* diagnoses associated with prescriptions for each class of medication. Diagnoses of anxiety disorder were collapsed into one category, because of the small number of patients with panic disorder, agoraphobia, obsessive-compulsive disorder, and anxiety disorder not otherwise specified. Because of the small subsamples, formal tests of association were not conducted.

#### **Results**

The weighted national estimates produced by the analyses of these data indicated that a psychotropic medication was prescribed during 2.2 percent of all office-based visits by patients aged 19 years or under.

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*The  
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#### *Sociodemographic characteristics*

As Table 1 shows, a significantly larger proportion of males than females received a prescription for a psychotropic medication during their physician visit. No significant sex differences were observed among the groups receiving antidepressants, mood stabilizers, or antipsychotics. As can be seen in Table 2, visits during which anxiolytics were prescribed were more likely to have involved female patients, and visits during which stimulants were prescribed were more likely to have involved male patients. Age was significantly associat-

ed with prescriptions within each medication class except mood stabilizers. Visits during which antidepressants or stimulants were prescribed were more likely to have involved Caucasian patients; no significant racial differences were observed among groups receiving antipsychotics or mood stabilizers.

#### *Clinical characteristics of visits*

Tables 3 and 4 summarize some of the clinical characteristics of office visits, by whether a psychotropic drug was prescribed and the type of drug. Although psychiatrists were significantly more likely to have prescribed a psychotropic medication than physicians who were not psychiatrists, nonpsychiatrists prescribed more of each class of medication overall as a result of the sheer volume of visits to general practitioners and pediatricians. Thus prescriptions for psychotropic medications were more likely to have been received during visits to physicians who were not psychiatrists.

An *ICD-9* mental disorder was more likely to have been documented during visits that involved a prescription for a psychotropic medication than during visits that did not (Table 3). Nevertheless, for more than 30 percent of visits during which a psychotropic medication was prescribed, an *ICD-9* diagnosis was not documented.

Psychotherapy was provided during only a minority (11.4 percent) of visits during which a psychotropic medication was prescribed. Visits during which an antidepressant was prescribed were more likely to have involved psychotherapy than visits during which any other psychotropic medication was prescribed. Among visits during which a psychotropic medication was prescribed, those involving a prescription for a stimulant were the least likely to have included psychotherapy.

We examined specific *ICD-9* diagnoses as one means of assessing the appropriateness of each prescription. As Table 5 shows, for visits during which an antidepressant or an anxiolytic was prescribed, major depressive disorder was the most common diagnosis. Visits during which a stimulant was prescribed most commonly involved a diagnosis of ADHD, and

**Table 1**

Sociodemographic characteristics of youths aged 19 years and under who did and did not receive a prescription for a psychotropic medication during a visit to an office-based ambulatory care practice<sup>1</sup>

Characteristic	Not prescribed (N=22,843 visits)		Prescribed (N=473 visits)		$\chi^2$ †	p
	N	%	N	%		
Sex					43.3	<.001
Female	10,416	50.0	164	34.7		
Male	10,427	50.0	309	65.3		
Age (years)					251.7	<.001
0-3	8,286	39.8	34	7.2		
4-8	4,674	22.4	118	24.7		
9-12	2,717	13.0	135	28.7		
13-16	2,998	14.4	117	24.7		
17-19	2,168	10.4	69	14.6		
Race					14.7	<.001
Caucasian	15,293	84.8	433	91.5		
Other	5,550	15.2	40	8.5		

<sup>1</sup> Data were drawn from the National Ambulatory Medical Care Surveys from 1992 through 1996.

† df=1 for sex and race; df=4 for age

visits during which an antipsychotic was prescribed most frequently involved a diagnosis of schizophrenia or adjustment disorder.

## Discussion

In this study we documented the sociodemographic characteristics, psychiatric diagnoses, and clinical management approaches associated with

prescription of each major class of psychotropic medication to youths who visited office-based medical practices in the United States. Use of these medications is common among children and adolescents.

The visits during which each class of medication was prescribed had several notable attributes in common as well as some distinct characteristics. The age and sex differences we observed for prescribing patterns appear to be in accord with epidemiologic and clinical data on the differences in prevalence of mental disorders between sexes and between different age groups; for example, prescription of stimulants is more common during visits by male youths (14,15). However, no data exist to suggest that the prevalence of mental disorders is higher among Caucasian children and adolescents than among children of other races. The reasons for the observed racial disparity in prescribing patterns remain unknown. The data are consistent with and expand on previous findings of racial inequalities in the prescription of stimulants to children and adolescents (15-18).

For example, Zito and colleagues (15) found that African-American children were two and a half times less likely to receive prescriptions for stimulants than their Caucasian counterparts. In addition, Melfi and colleagues (18) found in a Medicaid population that African-American children were less likely than Caucasian children to have received antidepressants when they were first diagnosed as having depression; when they did receive medication, the African-American children were more likely to have received prescriptions for tricyclics, whereas the Caucasian children were more likely to have received selective serotonin reuptake inhibitors.

Two possible explanations for the racial disparity in prescribing patterns are cultural differences in the expression of symptoms that result in lower rates of detection and treatment (19) and cultural bias in diagnosis (20). Alternatively, lower rates of use of mental health services among minorities, as found in several community-based studies, may help

**Table 2**

Sociodemographic characteristics of youths aged 19 years or under who received a prescription for a psychotropic medication during a visit to an office-based ambulatory care practice<sup>1</sup>

Characteristic	Antidepressants (N=142 visits)		Anxiolytics (N=34 visits)		Antipsychotics (N=34 visits)		Mood stabilizers (N=60 visits)		Stimulants (N=255 visits)	
	N	%	N	%	N	%	N	%	N	%
Sex <sup>2</sup>										
Female	76	53.5	25	73.5	18	52.9	30	50.0	53	20.8
Male	66	46.5	9	26.5	16	47.1	30	50.0	202	79.2
Age (years) <sup>3</sup>										
0-3	14	9.9	11	31.4	6	17.6	8	13.3	4	1.6
4-8	10	7.0	7	20.0	6	17.6	12	20.0	88	34.5
9-12	30	21.1	5	14.3	7	20.6	14	23.3	90	35.3
13-16	50	35.2	4	11.4	6	17.6	15	25.0	60	23.5
17-19	38	26.8	8	22.9	9	26.5	11	18.3	13	5.1
Race <sup>4</sup>										
Caucasian	128	95.5	25	89.3	20	64.5	49	86.0	222	95.7
Other	14	4.5	9	10.7	14	35.5	11	14.0	33	4.3

<sup>1</sup> Data were drawn from the National Ambulatory Medical Care Surveys from 1992 through 1996.

<sup>2</sup> Significant difference between the sexes for anxiolytics ( $\chi^2=4.67$ , df=1, p=.03) and stimulants ( $\chi^2=93.44$ , df=1, p<.001)

<sup>3</sup> Significant difference between the nine- to 12-year age group and the other age groups in prescriptions for antidepressants ( $\chi^2=72.7$ , df=1, p<.001); significant difference between the 17- to 19-year age group and the other age groups in prescriptions for anxiolytics ( $\chi^2=58.6$ , df=1, p<.001), antipsychotics ( $\chi^2=49.2$ , df=1, p<.001), and stimulants ( $\chi^2=49.2$ , df=1, p<.001)

<sup>4</sup> Significant differences between groups in prescriptions for antidepressants ( $\chi^2=9.6$ , df=1, p=.02) and stimulants ( $\chi^2=136.4$ , df=1, p<.001)

to explain the difference we observed, but it was not possible for us to control for service use. Nevertheless, previous studies have shown similar racial disparities in the treatment of ADHD, even after service use was controlled for (21).

Our findings indicate that Medicaid is a major source of payment for visits during which psychotropic medications are prescribed for children. Interestingly, our observation that antipsychotics and mood stabilizers—but not antidepressants—were more likely to be paid for by Medicaid are consistent with the findings of other studies (15,18). None of these findings definitively address the question of why psychotropic drugs were more likely to be prescribed for children during visits paid for by Medicaid.

However, it is certain that these findings highlight the increasingly apparent need for research that addresses the quality of care and equity in the quality of care for Medicaid recipients. Given that Medicaid is the largest source of health insurance for

**Table 3**

Clinical characteristics of visits to office-based ambulatory care practices by youths aged 19 years or under during which a psychotropic medication was prescribed compared with visits during which a psychotropic medication was not prescribed<sup>1</sup>

Characteristic	Not prescribed (N=20,843 visits)		Prescribed (N=473 visits)		$\chi^2$ <sup>†</sup>	p
	N	%	N	%		
Provider type					29.9	<.001
General practitioner or pediatrician	19,136	91.8	401	84.8		
Psychiatrist	1,707	8.2	72	15.2		
Clinical management factors						
ICD-9 diagnosis	34	.02	24	5.1	411.0	<.001
Psychotherapy	62	.03	54	11.4	1,056.5	<.001
Scheduling of follow-up visit	9,727	46.7	368	77.8	189.6	<.001
Recommended treatment <sup>2</sup>	53	.03	50	10.6		
Payment source					47.1	<.001
Health maintenance organization	10,269	49.3	172	36.4		
Medicaid	4,235	20.3	120	25.2		
Blue Cross-Blue Shield	2,128	10.2	79	16.7		
Other private insurance	1,232	5.9	41	8.7		
Patient	2,979	4.3	60	12.7		

<sup>1</sup> Data were drawn from the National Ambulatory Medical Care Surveys from 1992 through 1996.

<sup>2</sup> From the American Academy of Child and Adolescent Psychiatry, 1998

<sup>†</sup> df=1 for ICD-9 diagnosis, psychotherapy, and scheduling of follow-up visit; df=4 for payment source

**Table 4**

Clinical characteristics of visits to office-based ambulatory care practices by youths of age 19 years or under during which a psychotropic medication was prescribed<sup>1</sup>

Characteristic	Antidepressants (N=142 visits)		Anxiolytics (N=34 visits)		Antipsychotics (N=34 visits)		Mood stabilizers (N=60 visits)		Stimulants (N=255 visits)	
	N	%	N	%	N	%	N	%	N	%
Provider type										
General practitioner or pediatrician	121	85.3	28	82.9	28	84.8	46	76.7	222	87.0
Psychiatrist	21	14.7	6	17.1	6	15.2	14	23.3	33	13.0
Clinical management factors <sup>2</sup>										
ICD-9 diagnosis	73	51.4	11	13.0	26	43.4	26	43.3	228	89.4
Psychotherapy	40	28.2	7	20.0	7	20.6	15	25.0	24	9.4
Scheduling of follow-up visit	116	87.7	28	82.4	25	73.5	54	90.0	218	85.5
Recommended treatment	24	16.9	4	11.8	4	11.8	10	16.7	21	8.2
Payment source <sup>3</sup>										
Health maintenance organization	49	34.3	17	48.6	9	28.1	17	28.8	94	36.9
Medicaid	38	26.6	10	28.8	17	53.1	23	39.0	49	19.2
Blue Cross-Blue Shield	25	17.5	2	5.7	5	15.6	4	6.8	50	19.6
Other private insurance	8	5.6	3	8.6	0	—	3	5.1	28	11.0
Patient	23	16.1	3	8.6	1	3.1	12	20.3	34	13.3

<sup>1</sup> Data were drawn from the National Ambulatory Medical Care Surveys from 1992 through 1996.

<sup>2</sup> Significant difference between ICD-9 diagnosis and other clinical management factors ( $\chi^2=324.9$ , df=1, p<.01) for visits during which antidepressants were prescribed; significant difference between psychotherapy and other clinical management factors for visits during which antidepressants ( $\chi^2=28.7$ , df=1, p<.001) or stimulants ( $\chi^2=19.2$ , df=1, p<.001) were prescribed

<sup>3</sup> For payment source, N=145 visits for antidepressants, N=31 visits for anxiolytics, N=36 visits for antipsychotics, N=64 for mood stabilizers, and N=260 for stimulants. Significant difference between Medicaid and other payment sources for visits during which antipsychotics were prescribed ( $\chi^2=7.9$ , df=1, p=.005); significant difference between Blue Cross-Blue Shield and other payment sources for visits during which mood stabilizers ( $\chi^2=6.7$ , df=1, p=.013) and stimulants ( $\chi^2=11.8$ , df=1, p=.001) were prescribed

**Table 5**

Psychiatric diagnoses of youths aged 19 years or under who received a prescription for a psychotropic medication during a visit to an office-based ambulatory care practice<sup>1</sup>

Diagnosis	Antidepressants (N=142 visits)		Anxiolytics (N=34 visits)		Antipsychotics (N=34 visits)		Mood stabilizers (N=60 visits)		Stimulants (N=255 visits)	
	N	%	N	%	N	%	N	%	N	%
Schizophrenia (N=22) <sup>2</sup>	2	1.4	1	2.9	5	14.7	1	1.7	1	.04
Bipolar disorder (N=58) <sup>3</sup>	4	2.8	1	11.8	2	5.9	8	13.3	0	—
Major depression (N=38) <sup>4</sup>	28	19.7	4	11.8	2	5.9	3	5.0	2	.08
Attention-deficit hyperactivity disorder (N=155) <sup>5</sup>	10	7.0	0	—	0	—	7	11.7	106	41.6
Anxiety disorder (N=36) <sup>6</sup>	9	6.3	4	11.8	0	—	0	—	2	.08
Adjustment disorder (N=30) <sup>7</sup>	4	2.8	0	—	23	67.6	22	36.7	2	.08

<sup>1</sup> Data were drawn from the National Ambulatory Medical Care Surveys from 1992 through 1996.

<sup>2</sup> ICD-9 codes 295.1 to 295.9, 299.9

<sup>3</sup> ICD-9 codes 296.0, 296.1, 295.6, 295.6, 296.6, 296.7, 296.81, 296.82, 296.89

<sup>4</sup> ICD-9 codes 296.2, 296.3, 311.0

<sup>5</sup> ICD-9 codes 300.0 to 309.21

<sup>6</sup> ICD-9 codes 314.0 to 314.1

<sup>7</sup> ICD-9 codes 309.0 to 309.9

children and adolescents in the United States (22), research on the quality of care and issues that affect quality is extremely important for this population. The fact that youths who are covered by Medicaid are more likely to be of lower socioeconomic status—a strong risk factor for mental illness—highlights the potential impact on the health of this population of improving the quality of care (23). The rate of prescriptions was also low among patients who belonged to health maintenance organizations, which might have been a result of an emphasis on primary care rather than on treatment by specialists, who are more likely to prescribe medications.

It is unclear why more than 30 percent of visits involving a prescription for a psychotropic medication did not also involve a psychiatric diagnosis. However, this finding is consistent with those of previous studies (24). It has been suggested that physicians who are not psychiatrists—who provide a majority of psychotropic prescriptions—may improperly use psychiatric terms or may feel less comfortable with these terms, and thus they may be less likely to record psychiatric diagnoses. This phenomenon has been documented for the treatment of adult patients (25). Other authors have hypothesized that some physicians intentionally misdiag-

nose—or neglect to document—psychiatric illnesses because of the stigma associated with these disorders (26). Also, it is conceivable that vague behavioral problems for which there is no clear diagnosis are being treated pharmacologically.

In addition, the reluctance of physicians to diagnose mental disorders among pediatric patients may stem from a belief that neither a psychiatric diagnosis nor any available treatment will significantly alter the clinical course of the disease (27). The infrequency with which psychiatric diagnoses were documented in our study is striking, yet it is not evident from these data alone that diagnostic practices affect quality of care, because the diagnoses recorded were generally consistent with the type of medication prescribed; for example, major depression was the most common diagnosis among visits during which antidepressants were prescribed.

This study had several limitations. First, because the NAMCS records visits rather than individual patients, the extent to which data for individual patients were duplicated is unknown. Second, although our findings can be considered to be representative of office-based practice in the United States, the response rate was only 72 percent, so response bias may have

affected the results. Thus the generalizability of the results may be limited. Also, the NAMCS data do not provide information about prescribing patterns for psychotropic medications in hospitals, clinics, or university-based health care settings, nor on the frequency with which individual patients receive mental health services from two or more health care professionals.

### Conclusions

Our findings emphasize the magnitude of the role of general practitioners and pediatricians in prescribing psychotropic medications to pediatric patients in office-based practices in the United States. A recent study highlighted the need for more specialized training of physicians who work in these settings, reporting that although a majority of the nonpsychiatric physicians sampled had prescribed an antidepressant to a patient under 18 years of age, fewer than one in ten of these physicians believed that they had adequate training in the management of childhood depression (28).

In light of the findings of our study and other recent studies, policy makers and medical educators might want to consider increasing efforts to train primary care physicians and pediatricians in the identification, prescrip-

tion, and clinical management of mental disorders among children. Investigations that aim to identify the determinants of access to care for youths and to promote a more in-depth understanding of psychotropic prescribing practices may provide information on the current treatment of children in office-based practice and offer insight into what interventions are most effective for improving pediatric mental health care in the community. ♦

## References

- Jensen PS, Bhatara VS, Vitiello B, et al: Psychoactive medication prescribing practices for US children: gaps between research and clinical practice. *Journal of the American Academy of Child and Adolescent Psychiatry* 38:557-565, 1999
- Wolraich ML, Lindgren S, Stromquist A, et al: Stimulant medication use by primary care physicians in the treatment of attention deficit hyperactivity disorder. *Pediatrics* 86:95-101, 1995
- Zito JM, Safer DJ, dosReis S, et al: Trends in the prescribing of psychotropic medication to preschoolers. *JAMA* 283:1025-1030, 2000
- Coyle J: Psychotropic drug use in very young children. *JAMA* 283:1059-1060, 2000
- Hoar W (ed): Prozac Rx for children jumps 500%. *Mental Health News Alert* 29:13, 1998
- Safer DJ, Krager JM: Increased rate of stimulant treatment for hyperactive/inattentive students in secondary schools. *Pediatrics* 94:462-464, 1994
- Vitello B: Pediatric psychopharmacology and the interaction between drugs and the developing brain. *Canadian Journal of Psychiatry* 43:582-584, 1998
- Zito JM, Safer DJ, dosReis S, et al: Psychotherapeutic medication patterns for youths with attention-deficit/hyperactivity disorder. *Archives of Pediatrics and Adolescent Medicine* 153:1257-1263, 1999
- Practice parameters for the assessment and treatment of children and adolescents with depressive disorders: American Academy of Child and Adolescent Psychiatry. *Journal of the American Academy of Child and Adolescent Psychiatry* 37:63S-83S, 1998
- Kelleher KJ, Hohmann AA, Larson DB: Prescription of psychotropics to children in office-based practice. *American Journal of Diseases of Childhood* 143:855-859, 1989
- Nelson C: The National Ambulatory Medical Care Survey, United States: 1975-81 and 1985 Trends. DHHS publication (PHS) 88-1754. Washington, DC, US Government Printing Office, 1988
- Shappert SM: National Ambulatory Medical Care Survey: 1991 summary. *Vital and Health Statistics. Series 13*, May 1994, pp 1-113
- Lee ES, Forthofer RN, Lorimar RJ: Analysis of complex sample survey data: problems and strategies. *Sociological Methods and Research* 15:69-100, 1986
- Cohen P, Cohen J, Kasen S, et al: An epidemiological study of disorders in late childhood and adolescence: I. age- and gender-specific prevalence. *Journal of Child Psychology and Psychiatry* 34:851-867, 1993
- Zito JM, Safer DJ, dosReis S, et al: Methylphenidate patterns among Medicaid youths. *Psychopharmacology Bulletin* 33: 143-147, 1997
- Gadow KD: An overview of three decades of research in pediatric pharmacoepidemiology. *Journal of Child and Adolescent Psychopharmacology* 7:219-236, 1997
- LaFever GB, Hannon PH, Dawson KV, et al: Prevalence of medicine use for attention deficit hyperactivity disorder (ADHD): a population-based study of Virginia school children. *Pediatric Research* 41: 14A, 1997
- Melfi CA, Croghan TW, Hanna MP, et al: Racial variation in antidepressant treatment in a Medicaid population. *Journal of Clinical Psychiatry* 61:16-21, 2000
- Kleinman A, Eisenberg L, Good B, et al: Clinical lessons from anthropologic and cross-cultural research. *Annals of Internal Medicine* 88:251-258, 1978
- Bell C, Mehta H: The misdiagnosis of black patients with manic-depressive illness. *Journal of the National Medical Association* 72:141-145, 1979
- Hahn BA: Children's health: racial and ethnic differences in the use of prescription medications. *Pediatrics* 95:727-732, 1995
- Buck JA: Utilization of Medicaid mental health services by nondisabled children and adolescents. *Psychiatric Services* 48:65-70, 1997
- Gotlib IH, Avison WR: Children at risk for psychopathology, in *Basic Issues in Psychopathology*. Edited by Costello CG. New York, Guilford, 1993
- Jencks SF: Recognition of mental distress and diagnosis of mental disorders in primary care. *JAMA* 253:1903-1907, 1985
- Rost K, Smith R, Matthews DB, et al: The deliberate misdiagnosis of major depression in primary care. *Archives of Family Medicine* 3:333-337, 1994
- Goldberg ID, Regier DA, McInerney TK, et al: The role of the pediatrician in the delivery of mental health services to children. *Pediatrics* 63:898-909, 1979
- Olsson M: Diagnosing mental disorders in office-based pediatric practice. *Developmental and Behavioral Pediatrics* 13:363-365, 1992
- Rushton JL, Clark SJ, Freed GL: Primary care role in the management of childhood depression: a comparison of pediatricians and family physicians. *Pediatrics* 105:957-962, 2000

## Institute on Psychiatric Services Scheduled for October

The Institute on Psychiatric Services—the American Psychiatric Association's annual conference on clinical care and service delivery issues—will be held October 10-14 at the Renaissance Orlando Resort in Orlando, Florida. Harvey Bluestone, M.D., of New York City, is chairperson of the 2001 institute scientific program committee.

A day-by-day overview of the institute program appeared in the June issue of *Psychiatric Services*. The overview is also available on APA's Web site at [www.psych.org](http://www.psych.org). Order a copy by calling APA's Answer Center at 888-357-7924. For additional information, contact Jill Gruber, associate director, Institute on Psychiatric Services, APA, 1400 K Street, N.W., Washington, D.C. 20005; telephone, 202-682-6314; e-mail, [jgruber@psych.org](mailto:jgruber@psych.org).

