

Management of Common Medical Conditions by Office-Based Psychiatrists

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Objective: This study examined the extent of psychiatrists' involvement in general medical management activities for their patients.

Methods: With data from the 2006–2013 U.S. National Ambulatory Medical Survey—an annual cross-sectional survey of visits in a random week to office-based physicians—general medical management activities in 11,046 visits to psychiatrists, 66,267 to general medical physicians (general and family physicians and internists), and 158,933 to other physicians were compared. General medical management activities included recordings of hypertension, hyperlipidemia, diabetes, or obesity; prescriptions of medications for hypertension, hyperlipidemia, or diabetes; blood pressure or weight measurements; ordering glucose, glycohemoglobin (HbA1c), lipids, or cholesterol laboratory tests; and education or counseling for weight, exercise, diet and nutrition, or tobacco use.

Results: Any of the target general medical management activities were provided in 37.0% of visits to psychiatrists,

compared with 98.0% of visits to general medical physicians and 78.4% to other physicians. Differences between psychiatrists and all other physician groups were smaller for health education and counseling. For each general medical management activity, many of the psychiatrists did not engage in the activity in any of their sampled visits. The most consistent predictors of general medical management activities in each psychiatrist visit were the extent of these activities in other visits to the same psychiatrist and having recorded other types of general medical management activities in the same visit.

Conclusions: Efforts to expand psychiatric practice to general medical management activities require better understanding of barriers to such expansion, better characterization of conditions under which such expansion is feasible, and continuing medication education.

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Poor physical health and excessive premature mortality among individuals with serious mental disorders raise concerns over these individuals' access to primary medical care services (1–4). Psychiatric patients face several impediments to primary and preventive health services, including financial and structural barriers, disabilities related to their mental illness, and stigma (5–7). Even when people with psychiatric conditions successfully access medical services, they tend to receive medical care of relatively low quality (8–10).

In response, several efforts have been advanced to improve the medical and preventive care of patients in psychiatric settings, including colocation of medical care providers and integration of mental health and general medical services (11–15). Psychiatrists have also been called upon to become more directly involved in addressing the general medical needs of their patients (1,16–20).

Over the last several years, health care reform has brought a new urgency to these calls (21). With greater emphasis on integration of mental and general medical services and transitions toward behavioral health homes, psychiatrists are increasingly practicing in integrated services (21), which requires them to

become more deeply involved in the management and prevention of general medical conditions.

Because of their medical training, psychiatrists are well positioned to assume these new roles. The American Psychiatric Association recently urged psychiatrists to identify and intervene with patients receiving suboptimal primary care (21). This may involve becoming principal care physicians (22), similar to oncologists in their overall care of cancer patients (21). Nevertheless, psychiatrists have been slow to assume this role (23,24). According to a recent survey, only 16% of psychiatrists reported providing general medical care to their patients (25). However, the extent and nature of this care was not assessed in that survey. Detailed information about the extent to which U.S. psychiatrists are involved in general medical management activities could inform the educational needs of psychiatrists and policy initiatives to improve the medical care of patients in psychiatric settings.

In this study, we evaluated the frequency with which basic aspects of general medical management are provided by psychiatrists and other physician groups. We further

examined variations in general medical management practices among individual psychiatrists and other physicians and whether various patient, clinical, or contextual variables were associated with greater involvement by psychiatrists in general medical management of hypertension, hyperlipidemia, diabetes, and obesity.

METHODS

Sample

Data were drawn from eight years (2006–2013) of the National Ambulatory Medical Care Survey (NAMCS) (26,27). NAMCS is a multistage probability survey of visits to office-based physicians. A sample of visits to each physician was drawn during a randomly selected one-week period. We limited the sample to visits made by adults in which the patient had seen the physician. A total of 236,246 visits to 11,724 physicians across the survey years met these criteria and were included in the sample for this study, including 11,046 visits to 735 psychiatrists, 66,267 visits to 3,024 general medical physicians (general and family physicians and internists), and 158,933 visits to 7,965 physicians from other specialties. The median numbers of such visits by adults were 14 (interquartile range [IQR]=six to 22) for psychiatrists, 22 (IQR=15–29) for general medical physicians, and 20 (IQR=12–27) for other physicians. The NAMCS protocol has been approved by the National Center for Health Statistics (NCHS) Research Ethics Review Board. The requirements to obtain informed consent of patients and patient authorization for release of medical record data by health care providers were waived. The study used deidentified publicly available data that were deemed exempt from review by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

The physician participation rates varied over time from 64.2% in 2006 to 48.1% in 2013 (26,27). Participation rate in this context refers to the percentage of physicians who responded to the survey and provided information for at least part of the visits in the randomly selected week, thus corresponding to Response Rate 2 according to the definition of the American Association for Public Opinion Research (28). A study by the NCHS suggested that the bias introduced by nonresponse in NAMCS is likely to be small for most estimates (29).

Assessments

For each visit, information was extracted from medical charts about the patient and visit characteristics. Physician specialty was recorded on the basis of the American Medical Association Master File and further confirmed by the physicians. Medical diagnoses were recorded based on *ICD-9-CM* codes (30).

Up to three diagnoses were also recorded. We focused on four medical diagnoses that are commonly encountered in both general medical and psychiatric settings: hypertension (*ICD-9-CM* codes 401.xx–405.xx), hyperlipidemia (272.0–272.4), diabetes mellitus (250.xx), and obesity (278.xx). In addition, the survey assessed whether patients had hypertension, hyperlipidemia,

diabetes, obesity, and other health conditions regardless of the diagnoses recorded in the chart. We considered a general medical diagnosis as indicated by either a formal diagnosis or a medical chart indication of the health condition.

Up to eight medications were recorded in each visit in NAMCS 2006–2011. Starting in 2012, the maximum number of medications recorded was increased to ten. For consistency, we limited the maximum number of medications to eight. Three medication classes were included in the primary analyses: antihypertensive medications, medications for treatment of hyperlipidemia, and antidiabetic medications. [A table in an online supplement to this article lists the medications.]

We also considered second-generation antipsychotic medications because they are associated with the relevant health conditions, medications that require regular measurement of level (lithium and valproate/divalproex), and other psychiatric medications (which included other antipsychotics and mood stabilizers, antidepressants, anxiolytics, sedative-hypnotics, and stimulants).

NAMCS assessed several laboratory tests ordered during the visits. For this study, we included three such tests: glucose level, HbA1c (glycohemoglobin) level, and lipids-cholesterol. For this study, we combined reports of glucose level and HbA1c testing, given that they are both measures of hyperglycemia. From 2006 to 2011, the lipids-cholesterol level tests were recorded as such. However, beginning in 2012, these tests were recorded as “lipid profile.”

Physical examination, blood pressure measurement, and weight measurement during the visit were also recorded. Recording of physical examination was introduced in the 2012 and 2013 surveys.

NAMCS assessed health education and counseling in a number of areas. For this study, we included health education and counseling regarding weight reduction, exercise, diet and nutrition, and tobacco use.

Individual general medical management activities were categorized into the following categories: diagnosis of hypertension, hyperlipidemia, diabetes, or obesity; medication prescriptions for hypertension, hyperlipidemia, or diabetes; blood pressure or weight measurements; glucose, HbA1c, or lipids-cholesterol laboratory testing; and counseling or health education regarding weight, exercise, diet and nutrition, or tobacco use.

Psychiatric diagnoses were also recorded on the basis of *ICD-9-CM* codes (30). The large majority of visits to psychiatrists during the study period listed a psychiatric diagnosis. The analyses focused on major mental disorder groups, including schizophrenia (*ICD-9-CM* 295), bipolar disorder (296.0–296.1 and 296.4–296.8), major depressive disorder (296.2 and 296.3), and other affective disorders (296.9 and 311.0); anxiety disorders, including generalized anxiety disorder (300.02), panic disorder with or without agoraphobia (300.01 and 300.21), obsessive-compulsive disorder (300.3), posttraumatic stress disorder (309.81), and social phobia (300.23); and adjustment disorder (309.0, 309.2–309.4, and 309.9).

TABLE 1. Visits by adults to office-based psychiatrists and other physicians in which the physician engaged in five types of general medical management activities, in percentages^a

Activity	Psychiatry (N=11,046)	General and family medicine (N=44,117)	Internal medicine (N=22,150)	Cardi- ology (N=13,744)	Surgery (N=10,909)	Obstetrics/ gynecology (N=17,870)	Ortho- pedics (N=13,690)	Derma- tology (N=10,862)	Urology (N=11,907)	Neurology (N=12,151)	Ophthal- mology (N=15,558)	Otolaryn- gology (N=9,129)	Other (N=43,113)
Medical condition was recorded													
Hypertension	12.0	33.3**	37.7**	46.0**	24.0**	15.2**	21.8**	13.5	19.2**	21.7**	22.5**	20.6**	25.2**
Hyperlipidemia	6.8	23.6**	27.7**	32.2**	9.3	5.7	5.7	5.0*	8.6	10.7*	7.3	7.6	13.1**
Diabetes	5.0	14.4**	16.1**	13.5**	10.7**	6.0*	8.5**	4.6	7.6**	9.6**	14.7**	7.2**	11.7**
Diabetes mellitus													
Obesity	7.5	10.7**	13.2**	13.5**	12.5**	5.3*	3.8**	1.9**	3.8**	5.6	1.1**	3.1**	8.2
Any of the conditions	22.0	47.1**	53.7**	61.8**	34.7**	26.4*	27.7**	17.7*	26.7*	30.5**	31.9**	26.8*	26.8**
Medications were prescribed													
Antihypertensive	7.1	28.3**	31.4**	52.7**	13.8**	12.4**	9.9	6.7	19.9**	18.6**	10.7*	10.8*	21.1**
Hyperlipidemia medication	2.0	16.0**	18.6**	29.2**	7.9**	5.7**	6.0*	4.1	7.7**	9.0**	5.7**	5.8**	11.8**
Diabetes medication	1.1	9.0**	10.2**	10.0**	4.2**	3.5**	2.9*	1.4	3.3**	3.8**	4.2**	2.4*	6.9**
Any of the medications	8.5	34.5**	39.0**	59.6**	16.5**	16.5**	12.1	8.4	22.2**	22.0**	12.8*	13.2*	25.0**
Laboratory test was ordered													
Glucose-HbA1c	1.0	11.9**	18.4**	5.7**	1.9	6.8**	.3	.4*	1.1	2.8**	.6	.5	7.0**
Lipids-cholesterol	1.2	14.1**	21.7**	12.7**	1.0	2.8**	.2*	.9	.7	2.2	.5	.3*	4.8**
Either of the tests	1.4	18.3**	26.9**	14.0**	2.0	7.8**	.3*	1.0	1.2	3.2**	.7	.5*	8.4**
Physical examination was conducted, blood pressure or weight was measured													
Physical examination ^b	3.6	72.8**	76.0**	69.2**	50.2**	48.4**	48.4**	14.8*	52.7**	41.1**	2.5	41.1**	58.6**
Blood pressure measured	8.3	93.0**	92.0**	93.9**	46.1**	89.1**	16.1**	7.4	43.9**	67.0**	4.3	26.5**	71.6**
Weight measured	13.7	88.8**	88.0**	90.4**	53.9**	89.6**	52.0**	11.8	44.4**	50.6**	6.2*	39.3**	72.3**
Blood pressure or weight measured	15.8	95.5**	95.8**	96.0**	60.4**	92.4**	53.1**	14.7	55.0**	74.3**	8.0*	45.7**	80.8**

continued

TABLE 1, continued

Activity	Psychiatry (N=11,046)	General and family medicine (N=44,117)	Internal medicine (N=22,150)	Cardi- ology (N=13,744)	Surgery (N=10,909)	Obstetrics/ gynecology (N=17,870)	Ortho- pedics (N=13,690)	Derma- tology (N=10,862)	Urology (N=11,907)	Neurology (N=12,151)	Ophthal- mology (N=15,558)	Otolaryn- gology (N=9,129)	Other (N=43,113)
Health education or counseling was provided													
Weight reduction	2.5	5.3**	7.0**	8.0**	4.6	2.9	2.0	.2**	.6**	2.1	.2**	1.0**	3.8*
Exercise	7.5	10.3*	12.4*	15.0**	5.0	8.0	13.6**	.3**	1.5**	5.6	.4**	.8**	6.8
Diet and nutrition	6.3	13.5**	18.0**	17.5**	7.6	11.0**	1.1**	.6**	3.3*	4.5	2.2**	2.5**	9.3*
Tobacco use	3.2	3.8	4.0	5.2*	1.4	1.9	.9**	.3**	1.2*	1.6*	.6**	2.0*	2.2
Any counseling or education	12.7	19.8**	25.2**	25.1**	10.3	14.6	15.3	1.0**	5.1**	9.6	2.7**	5.1**	15.4

^a Data were from 236,246 visits to office-based physicians participating in the 2006–2013 National Ambulatory Medical Care Survey (NAMCS). Prevalence estimates were adjusted for age, sex, and race-ethnicity.

^b Assessed only in NAMCS 2012 and 2013

* $p < .01$, ** $p < .001$

Other variables included patient sociodemographic characteristics (age, sex, and race-ethnicity), expected source of payment (private insurance, Medicaid, Medicare, self-pay, and “other types”), the office setting (solo versus other type of practice setting), duration of visit, whether the patient was a new or returning patient, whether the office used electronic health records, and whether the office was located in a metropolitan statistical area. Because community health centers were not sampled in all survey years, visits to community health centers were excluded from the analysis.

Analytic Approach

Analyses were conducted in three stages. General medical management activities were first compared across visits to psychiatrists and other physician groups by using multivariable logistic regression models adjusting for age, sex, and race-ethnicity of patients. In further analyses, general medical management activities were compared across groups of patients who were most likely to need these services according to their specific health conditions: for example, prescribing antihypertensive medications and measurement of blood pressure for patients with hypertension or weight measurement and health education or counseling regarding weight reduction for patients with obesity.

The distribution of psychiatrists, general medical physicians, and other physicians was next explored based on the percentage of visits with general medical management activities. Within each general management activity and physician specialty group, visits were aggregated to estimate percentages of sampled visits in which each activity was conducted. General and family physicians were classified together with internists into a “general medical physicians” group.

Finally, individual visit-level correlates of general medical management activities in visits to psychiatrists were examined by using unadjusted and multivariable binary logistic regression models. These analyses were limited to visits to psychiatrists.

All visit-level analyses adjusted for visit weights, clustering, and stratification of data by using design elements provided by the NAMCS (26,27,29). When adjusted for these design elements, NAMCS data are representative of annual visits to office-based physicians in the United States. Alpha was set at $p < .01$.

RESULTS

Medical Management Activities by Psychiatrists and Other Physicians

Visits to psychiatrists were less likely than visits to general medical physicians and most other specialist groups to record an indication of hypertension, hyperlipidemia, or diabetes (Table 1). The differences were especially large between psychiatrists and general and family physicians, internists, and cardiologists. Similarly, visits to psychiatrists were less likely than visits to most other physicians to

TABLE 2. Visits by adults with specific recorded medical conditions to office-based psychiatrists and other physicians in which the physician engaged in general medical management activities, in percentages^a

Visit with medical condition	Psychiatry (N=11,046)	General and family medicine (N=44,117)	Internal medicine (N=22,150)	Cardiology (N=13,744)	Surgery (N=10,909)	Obstetrics/gynecology (N=17,870)	Orthopedics (N=13,690)	Dermatology (N=10,862)	Urology (N=11,907)	Neurology (N=12,151)	Ophthalmology (N=15,558)	Otolaryngology (N=9,129)	Other (N=43,113)
Hypertension	17.2	62.0**	61.5**	76.1**	33.1*	41.2**	26.7	18.8	42.0**	40.3**	25.8	25.4	49.1**
Prescription of antihypertensive medications													
Blood pressure measurement	16.9	95.5**	94.2**	95.2**	55.7**	91.5**	20.6	13.0	52.9**	74.9**	7.9	36.6**	84.1**
Education or counseling about diet and nutrition	12.6	21.0*	27.0**	24.0**	10.6	16.2	1.7**	.5**	5.3*	7.8	4.2**	4.5**	17.7
Education or counseling about tobacco use	8.2	6.5	6.7	9.3	2.6**	3.7*	1.9**	1.1**	2.6*	2.6**	1.6*	3.8	4.3*
Hyperlipidemia													
Prescription of medication for hyperlipidemia	12.4	42.2**	43.5**	54.1**	25.6	31.2*	25.1	15.4	25.6*	27.7*	17.2	19.9	35.7**
Lipids-cholesterol testing	3.7	32.8**	42.2**	24.1**	5.1	9.9*	.8	2.0	3.8	6.9	3.0	.9	18.7**
Education or counseling about diet and nutrition	14.8	27.0*	33.3**	28.8*	17.9	21.9	2.1*	1.2**	6.9	11.8	5.6*	4.7**	23.8
Diabetes mellitus													
Prescription of medication for diabetes	16.2	55.9**	58.0**	55.8**	31.9*	35.8*	28.1	20.7	31.6*	30.7	26.6	25.6	49.4**
Glucose-HbA1c testing	1.8	34.4**	41.1**	11.2**	2.5	12.7**	1.2	2.1	3.2	4.9	2.1	.8	21.8**
Education or counseling about diet and nutrition	15.6	27.3*	33.4**	24.7	12.6	20.3	2.4**	1.5**	6.8*	8.1	8.1*	5.7*	24.5
Education or counseling about weight reduction	9.7	12.7	17.0*	17.1	11.1	7.9	4.5	1.5*	.9**	4.8	.8**	1.4*	13.2

continued

TABLE 2, continued

Visit with medical condition	Psychiatry (N=11,046)	General and family medicine (N=44,117)	Internal medicine (N=22,150)	Cardiology (N=13,744)	Surgery (N=10,909)	Obstetrics/gynecology (N=17,870)	Orthopedics (N=13,690)	Dermatology (N=10,862)	Urology (N=11,907)	Neurology (N=12,151)	Ophthalmology (N=15,558)	Otolaryngology (N=9,129)	Other (N=43,113)
Obesity													
Weight measurement	24.9	94.3**	92.8**	96.0**	82.8**	95.4**	72.0**	46.6	69.8**	76.9**	40.4	63.4**	86.8**
Education or counseling about diet and nutrition	20.0	34.5**	39.0**	37.9**	32.5	27.5	8.3*	5.0*	16.5	18.6	4.8*	6.3*	30.0*
Education or counseling about weight reduction	20.3	27.4	30.2*	33.8*	28.7	21.1	18.5	2.0**	9.5*	18.8	1.0*	8.1*	26.1

^a Data were from 236,246 visits to office-based physicians participating in the 2006–2013 National Ambulatory Medical Care Survey (NAMCS). Prevalence estimates were adjusted for age, sex, and race-ethnicity.

* $p < .01$, ** $p < .001$

involve prescription of antihypertensive, antihyperlipidemia, and antidiabetic medications, with the notable exceptions of visits to dermatologists or orthopedic surgeons (Table 1). Psychiatrists were as likely or more likely than other physicians, except general and family physicians, internists, cardiologists, and surgeons, to record obesity (Table 1).

Psychiatrists were significantly less likely than most other physicians, except for ophthalmologists, to conduct physical examinations and significantly less likely than most other physicians, except for dermatologists and ophthalmologists, to measure blood pressure or weight (Table 1). In addition, glucose-HbA1c and lipids-cholesterol testing were significantly less common in visits to psychiatrists than in visits to most other physicians (Table 1). However, psychiatrists were more likely than orthopedic surgeons and otolaryngologists to order lipids-cholesterol testing. Differences between visits to psychiatrists and other physicians were less marked for counseling and health education services (Table 1).

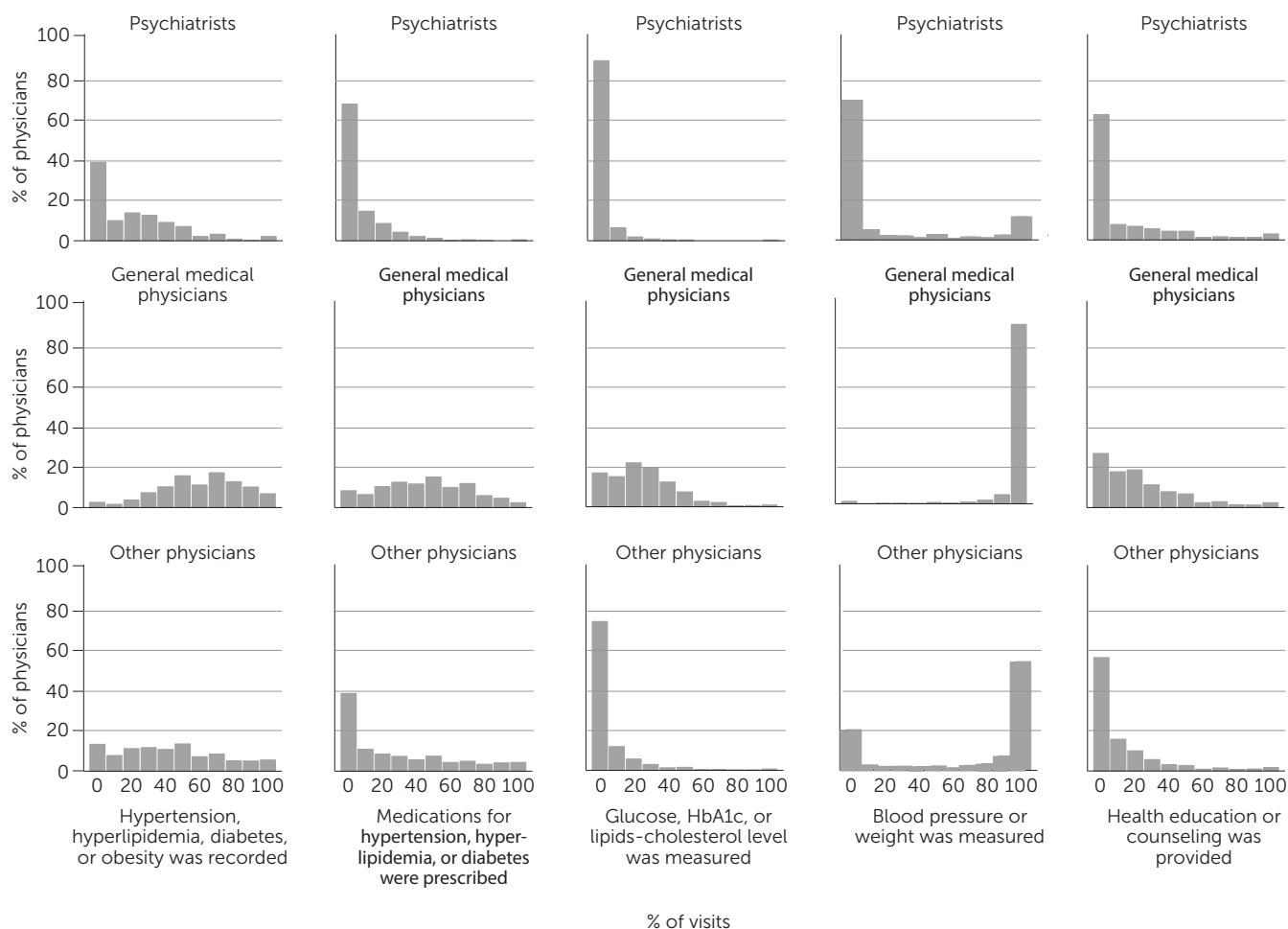
Overall, 37.0% of psychiatrists' sampled visits involved one of the study's general medical management activities, compared with 98.0% of visits to general medical physicians (that is, general and family physicians and internists), and 78.4% of visits to other physicians ($<.001$ for all p values). A similar pattern was observed when analyses focused on patients with specific health conditions (Table 2). With the exception of health education and counseling, psychiatrists were less likely than most other physician groups to engage in general medical management activities for these patients.

Distribution of General Medical Management Activities in Sampled Visits

Individual psychiatrists varied in their involvement in general medical management activities (Figure 1). However, a substantial proportion of psychiatrists did not engage in these activities for any of their sampled visits. For example, 67.6% did not prescribe any medications for treatment of hypertension, hyperlipidemia, or diabetes, and 89.4% did not order any laboratory tests for glucose-HgA1c or lipids-cholesterol. These proportions were larger than corresponding proportions for visits to general medical physicians and other physicians (Figure 1).

Correlates of General Medical Management in Visits to Psychiatrists

Assessment of correlates of general medical management was limited to psychiatrist visits. In unadjusted analyses, recording of medical conditions was more common in psychiatric visits by patients age 25 and older compared with those younger than 25 (Table 3). Ordering of laboratory tests was less common in visits by patients age 65 or older compared with patients who were younger than 25. Recording of medical conditions and measurement of blood pressure were more common in visits by non-Hispanic black patients than in visits by non-Hispanic white patients (Table 3). Furthermore,

FIGURE 1. Visits by adults to psychiatrists, general medical physicians, and other physicians in which the physicians engaged in five types of general medical management activities, in percentages^a

^aGeneral medical physicians include general and family physicians and internists. The bar marked 0% represents the percentage of physicians who did not engage in the identified general medical management activity in any sampled visit. The subsequent bars represent 10% increments; for example, the bar marked 40% represents the percentage of physicians engaging in the activity in >30% to <40% of visits. Data were based on 236,246 visits to office-based physicians participating in the 2006–2013 National Ambulatory Medical Care Survey.

recording of medical conditions, prescription of medications for these conditions, and measurement of blood pressure and weight were more common in visits by patients with public insurance compared with private insurance (Table 3).

Among psychiatric diagnoses, schizophrenia was most consistently associated with higher odds of general medical management activities by psychiatrists, followed by bipolar disorder; whereas, diagnoses of other affective disorders were associated with lower odds of such activities (Table 3). Consistent with this finding, prescription of second-generation antipsychotic medications and lithium or valproate/divalproex was positively associated with general medical management activities (Table 3). In contrast, solo (versus other) practice setting was associated with lower odds of measuring blood pressure and weight, and new (versus established) patient status was associated with lower odds of prescription of medications for the target medical conditions (Table 3).

For almost all general medical management activities, psychiatrists' engagement in other general medical management

activities was a significant predictor (Table 3). Similarly, engagement in the same general medical management activity in other sampled visits of the psychiatrist was a significant predictor of engagement in all general medical management activities (Table 3).

Few of the associations of the sociodemographic variables with general medical management activities in unadjusted analyses persisted in multivariable analyses (Table 4). However, psychiatrists' engagement in other general medical management activities and engagement in the same general medical management activities in other sampled visits remained significant predictors of engagement in all general medical management activities (Table 4).

DISCUSSION

Consistent with past research, this study found that psychiatrists were less likely than most other physician groups to engage in management of common general

TABLE 3. Unadjusted logistic regression analysis of correlates of general medical management activities in 11,046 visits to office-based psychiatrists participating in the National Ambulatory Medical Care Survey, 2006–2013

Variable	Total (%)	Recorded hypertension, hyperlipidemia, diabetes, or obesity		Prescribed medications for hypertension, hyperlipidemia, or diabetes		Ordered laboratory test for glucose-HbA1c or lipids-cholesterol		Measured blood pressure or weight		Provided health education or counseling	
		OR	99% CI	OR	99% CI	OR	99% CI	OR	99% CI	OR	99% CI
Sociodemographic											
Age											
18–24 (reference)	9.6	1.00		1.00		1.00		1.00		1.00	
25–44	35.8	1.62*	1.03–2.56	1.05	.63–1.76	.71	.30–1.70	.83	.60–1.17	.99	.66–1.47
45–64	43.1	3.34**	2.11–5.30	1.66	.92–2.98	.70	.32–1.56	.95	.63–1.44	.91	.62–1.34
≥65	11.6	4.20**	2.46–7.18	1.94	.87–4.33	.16**	.04–.55	.97	.56–1.69	.72	.44–1.20
Male (reference: female)	41.1	1.04	.88–1.24	1.35	.98–1.87	1.58	.98–2.57	1.21	.98–1.49	1.15	.93–1.44
Race-ethnicity											
Non-Hispanic white (reference)	81.4	1.00		1.00		1.00		1.00		1.00	
Non-Hispanic black	6.6	1.40*	1.01–1.95	1.00	.53–1.91	1.15	.43–3.10	2.30**	1.33–3.97	1.21	.75–1.97
Hispanic	8.4	1.33	.92–1.94	.84	.40–1.78	.99	.32–3.07	1.57	.67–3.66	.70	.38–1.27
Other	3.6	1.01	.66–1.56	1.33	.68–2.62	.22	.03–1.41	1.31	.82–2.09	1.19	.67–2.11
Health insurance											
Private (reference)	43.3	1.00		1.00		1.00		1.00		1.00	
Medicare	16.7	2.35**	1.71–3.22	2.77**	1.61–4.74	1.13	.47–2.70	2.19**	1.27–3.77	1.36	.86–2.14
Medicaid	11.9	1.73*	1.15–2.61	2.58**	1.51–4.40	1.73	.72–4.12	2.59**	1.39–4.83	1.44	.78–2.68
Self-pay	20.2	.79	.57–1.09	.85	.43–1.70	.80	.33–1.91	.88	.53–1.48	1.54	.98–2.44
Other	5.2	1.78*	1.14–2.76	1.29	.69–2.44	1.72	.50–5.93	2.77*	1.26–6.10	1.87	.86–4.07
Unknown	2.7	.61	.28–1.33	1.08	.42–2.78	1.21	.20–7.36	.81	.30–2.21	.69	.28–1.66
Psychiatric diagnosis and treatment											
Diagnosis ^a											
Schizophrenia	7.5	1.89**	1.37–2.61	1.80*	1.00–3.22	3.25**	1.39–7.62	2.95**	1.68–5.16	1.33	.81–2.17
Bipolar disorder	17.9	1.34*	1.05–1.71	1.30	.92–1.82	3.05**	1.76–5.31	1.24	.89–1.72	1.28	.92–1.79
Major depressive disorder	27.1	1.58**	1.27–1.98	1.10	.74–1.63	.56	.25–1.22	.84	.58–1.24	1.28	.99–1.65
Other affective disorder	21.1	.76*	.60–.97	.76	.50–1.14	.44	.19–1.05	.73	.49–1.09	.68*	.47–.98
Anxiety disorder	20.0	1.14	.91–1.42	1.19	.84–1.71	.70	.38–1.30	1.03	.75–1.42	1.33	.99–1.79
Adjustment disorder	8.0	1.07	.82–1.39	1.77*	1.13–2.76	.68	.26–1.82	.95	.60–1.50	1.18	.77–1.81
Psychiatric medication prescribed ^b											
Second-generation antipsychotic	23.1	1.52**	1.25–1.86	1.39	.99–1.94	3.91**	2.22–6.90	1.52*	1.07–2.15	1.28	.96–1.72
Lithium or valproate/divalproex	7.0	1.42*	1.01–2.00	1.88*	1.04–3.39	4.68**	1.96–11.17	1.24	.75–2.06	1.00	.65–1.54
Any psychiatric medication	80.3	1.29	.93–1.79	1.10	.74–1.62	2.07	.89–4.83	.74	.40–1.35	1.13	.69–1.85

continued

TABLE 3, continued

Variable	Total (%)	Recorded hypertension, hyperlipidemia, diabetes, or obesity		Prescribed medications for hypertension, hyperlipidemia, or diabetes		Ordered laboratory test for glucose-HbA1c or lipids-cholesterol		Measured blood pressure or weight		Provided health education or counseling	
		OR	99% CI	OR	99% CI	OR	99% CI	OR	99% CI	OR	99% CI
Practice and visit											
Solo practice setting (reference: other settings)	65.9	.81	.55–1.21	.62	.33–1.18	.57	.28–1.18	.48*	.24–.93	.88	.52–1.46
New patient (reference: no)	5.9	1.01	.71–1.44	.54*	.29–.99	2.36	.90–6.20	1.15	.65–2.01	.78	.51–1.21
Visit duration (minutes)											
<15	2.9	1.00		1.00		1.00 ^a		1.00		1.00	
15–20	29.1	1.26	.66–2.42	1.50	.62–3.62	1.00 ^a	Ref.	.67	.31–1.45	.90	.20–3.98
21–30	26.5	1.61	.84–3.07	1.41	.64–3.12	1.71	.68–4.29	.66	.29–1.51	1.51	.30–7.60
>30	41.5	1.35	.73–2.49	.87	.37–2.04	1.41	.58–3.45	.59	.24–1.47	1.41	.29–6.81
Office uses electronic health records	15.9	1.01	.62–1.63	1.58	.65–3.84	1.33	.54–3.26	1.83	.77–4.37	.87	.44–1.72
Office not in a metropolitan statistical area (MSA): (reference: in an MSA)	7.3	1.69	.67–4.28	2.30	.34–15.59	1.09	.47–2.56	1.00	.40–2.51	1.51	.65–3.48
Survey year ^c											
Other general medical management activities		.67	.40–1.11	1.28	.60–2.74	.68	.27–1.69	1.38	.51–3.71	.72	.38–1.36
Recorded hypertension, hyperlipidemia, diabetes, or obesity		—	—	5.15**	3.17–8.35	3.01**	1.67–5.41	2.33**	1.71–3.19	3.28**	2.49–4.33
Prescribed medications for hypertension, hyperlipidemia, or diabetes	5.15**	3.17–8.35	—	—	—	2.03	.82–5.04	2.28*	1.12–4.63	1.60*	1.11–2.31
Ordered laboratory tests for glucose-HbA1c or lipids-cholesterol	3.01**	1.67–5.41	2.03	.82–5.04	—	—	—	3.95**	1.86–8.36	3.16**	1.73–5.75
Measured blood pressure or weight	2.33**	1.71–3.19	2.28*	1.12–4.63	3.95**	1.86–8.36	—	—	—	2.81**	1.68–4.70
Health education or counseling	3.28**	2.49–4.33	1.60*	1.11–2.31	3.16**	1.73–5.75	2.81**	1.68–4.70	—	—	—
Propensity of the same activity for other patients seen by the provider (in 10% increments)											
Recorded hypertension, hyperlipidemia, diabetes, or obesity	1.69**	1.62–1.76	— ^d	— ^d	— ^d	— ^d	— ^d	— ^d	— ^d	— ^d	— ^d

continued

TABLE 3, continued

Variable	Recorded hypertension, hyperlipidemia, diabetes, or obesity		Prescribed medications for hypertension, hyperlipidemia, or diabetes		Ordered laboratory test for glucose-HbA1c or lipids-cholesterol		Measured blood pressure or weight		Provided health education or counseling	
	OR	99% CI	OR	99% CI	OR	99% CI	OR	99% CI	OR	99% CI
Prescribed medications for hypertension, hyperlipidemia, or diabetes	— ^d	— ^d	2.05**	1.88–2.23	— ^d	— ^d	— ^d	— ^d	— ^d	— ^d
Ordered laboratory tests for glucose-HbA1c or lipids-cholesterol	— ^d	— ^d	— ^d	— ^d	3.24**	2.53–4.16	— ^d	— ^d	— ^d	— ^d
Measured blood pressure or weight	— ^d	— ^d	— ^d	— ^d	— ^d	— ^d	2.17**	2.05–2.30	— ^d	— ^d
Provided health education or counseling	— ^d	— ^d	— ^d	— ^d	— ^d	— ^d	— ^d	— ^d	1.96**	1.86–2.05

^a Visits with each diagnosis were compared with all other visits.

^b Visits in which each type of medication was prescribed were compared with all other visits.

^c Survey year was transformed to a variable ranging from 0 to 1 by subtracting 2006 from the year and dividing the results by 7. The ORs associated with this transformed variable of survey year represent a change in odds of general medical management activities in an eight-year period.

^d Not included in the model

p* < .01. *p* < .001

medical conditions, including prescribing medications, ordering tests, measuring blood pressure and weight, and providing health education and counseling (11,25,31–35). However, the extent to which psychiatrists and other physicians differed in their involvement in general medical management activities varied across activities. The differences were smaller with regard to health education and counseling. For example, psychiatrists were as likely as general medical physicians to provide tobacco counseling, possibly reflecting the high prevalence of tobacco use among psychiatric patients (36). Psychiatrists were more likely than many other specialists to provide counseling and health education for patients with specific health conditions, such as hypertension or diabetes.

A major driver of the low prevalence of general medical management activities in psychiatric visits was the large proportion of psychiatrists who did not provide these services in any of their sampled visits. Visits to nonpsychiatrist physicians were more evenly distributed with regard to engagement in medical activities. The differences in distribution of psychiatrists and other physicians were more dramatic with regard to measurement of blood pressure and weight; whereas a majority of psychiatrists did not provide these services in any of their sampled visits, most other physicians did so in the majority of their sampled visits.

General medical management activities in psychiatrist visits were not consistently associated with patient or visit characteristics. Visits by patients with public insurance and with schizophrenia and bipolar disorder diagnoses and visits involving prescription of second-generation antipsychotics or mood stabilizers requiring regular drug level assessments were more likely to include general medical management activities. These characteristics may be indicators of the need for regular metabolic monitoring of patients treated with second-generation antipsychotics and mood stabilizers or greater need for medical care in these patient populations. Alternatively, the associations with Medicaid and diagnoses of schizophrenia and bipolar disorders may reflect difficulties that many patients with severe and disabling mental disorders face in accessing general medical services (7).

Providing general medical management activities in other visits was a significant predictor of provision of these activities in each visit, suggesting the impact of physician practice styles. Psychiatrists with more extensive medical expertise, such as those with specialized training in both internal medicine and psychiatry or those with greater access to nursing and support staff, may be more engaged in general medical management activities. Contextual factors not measured in the survey, such as local availability of primary care providers, may also contribute to these practice style variations.

TABLE 4. Multivariable logistic regression analysis of correlates of general medical management activities in 11,046 visits to office-based psychiatrists participating in the National Ambulatory Medical Care Survey, 2006–2013

Variable	Recorded hypertension, hyperlipidemia, diabetes, or obesity		Prescribed medications for hypertension, hyperlipidemia, or diabetes		Ordered laboratory test for glucose-HbA1c or lipids-cholesterol		Measured blood pressure or weight		Provided health education or counseling	
	AOR ^a	99% CI	AOR ^a	99% CI	AOR ^a	99% CI	AOR ^a	99% CI	AOR ^a	99% CI
Sociodemographic										
Age										
18–24 (reference)	1.00		1.00		1.00		1.00		1.00	
25–44	1.50*	1.02–2.21	.87	.49–1.55	.58	.23–1.47	.68	.38–1.20	1.08	.67–1.75
45–64	2.81**	1.86–4.24	1.08	.62–1.89	.59	.25–1.44	.65	.37–1.17	.79	.51–1.25
≥65	3.66**	2.24–5.97	1.08	.53–2.18	.16*	.03–.78	.76	.36–1.60	.63	.32–1.24
Male (reference: female)	1.06	.88–1.27	1.35	.93–1.96	1.28	.77–2.15	1.09	.70–1.71	1.03	.80–1.32
Race-ethnicity										
Non-Hispanic white (reference)	1.00		1.00		1.00		1.00		1.00	
Non-Hispanic black	1.23	.85–1.78	.70	.40–1.25	.64	.21–1.96	.75	.36–1.56	1.11	.76–1.61
Hispanic	1.10	.85–1.42	.60	.31–1.16	.96	.37–2.46	.80	.45–1.45	.73	.46–1.16
Other	1.02	.64–1.63	1.05	.52–2.10	.16	.03–1.06	1.22	.52–2.87	.79	.43–1.43
Health insurance										
Private (reference)	1.00		1.00		1.00		1.00		1.00	
Medicare	1.33	.99–1.81	1.60	.95–2.68	1.02	.36–2.83	1.36	.88–2.12	1.08	.69–1.69
Medicaid	1.27	.94–1.71	1.72**	1.14–2.59	.97	.48–1.99	1.44	.79–2.61	1.06	.63–1.78
Self-pay	1.04	.78–1.38	1.07	.61–1.87	1.02	.45–2.28	1.00	.60–1.66	1.17	.85–1.60
Other	1.33	.95–1.86	1.11	.65–1.88	.75	.16–3.52	1.19	.30–4.74	1.24	.54–2.89
Unknown	.94	.47–1.89	1.36	.60–3.07	1.51	.27–8.53	1.71	.77–3.82	.89	.37–2.19
Psychiatric diagnosis and treatment										
Diagnosis ^b										
Schizophrenia	1.67**	1.17–2.38	.65	.28–1.51	1.58	.56–4.48	1.58	.68–3.71	1.08	.64–1.80
Bipolar disorder	1.57**	1.14–2.15	.87	.51–1.47	1.65	.78–3.51	.82	.44–1.52	1.36	.89–2.08
Major depressive disorder	1.70**	1.32–2.18	.89	.57–1.38	.80	.31–2.02	.89	.51–1.55	1.20	.84–1.71
Other affective disorder	1.47**	1.14–1.90	.93	.60–1.44	.70	.28–1.74	.97	.61–1.52	.91	.61–1.36
Anxiety disorder	1.08	.88–1.32	.97	.66–1.43	.76	.37–1.57	1.46	.95–2.24	1.12	.83–1.52
Adjustment disorder	.94	.72–1.22	1.71*	1.09–2.70	.69	.18–2.66	.67	.35–1.30	.86	.58–1.28
Psychiatric medication prescribed ^c										
Second-generation antipsychotic	1.04	.85–1.29	.93	.63–1.35	2.18	.96–4.99	1.16	.73–1.84	1.12	.84–1.48
Lithium or valproate/divalproex	1.17	.85–1.62	1.71	.90–3.23	2.23	.77–6.47	1.45	.40–5.23	.81	.50–1.30
Other psychiatric medication	1.10	.89–1.38	.94	.61–1.43	1.13	.46–2.77	1.27	.80–2.03	.89	.59–1.33
Practice and visit										
Solo practice setting (reference: other settings)	1.02	.85–1.24	.86	.59–1.26	.84	.42–1.67	.84	.57–1.23	.87	.65–1.16
New patient (reference: no)	1.10	.75–1.62	.59	.31–1.13	2.55	.99–6.59	1.09	.18–6.54	.95	.56–1.61
Visit duration (minutes)										
<15	1.00		1.00		1.00 ^a		1.00		1.00	
15–20	1.18	.61–2.28	1.30	.65–2.60	1.00 ^a		.99	.40–2.49	1.72	.61–4.89

continued

TABLE 4, continued

Variable	Recorded hypertension, hyperlipidemia, diabetes, or obesity		Prescribed medications for hypertension, hyperlipidemia, or diabetes		Ordered laboratory test for glucose-HbA1c or lipids-cholesterol		Measured blood pressure or weight		Provided health education or counseling	
	AOR ^a	99% CI	AOR ^a	99% CI	AOR ^a	99% CI	AOR ^a	99% CI	AOR ^a	99% CI
21–30	1.41	.71–2.79	1.27	.65–2.45	1.68	.76–3.72	1.08	.38–3.06	2.06	.67–6.35
>30	1.53	.80–2.94	1.11	.50–2.45	1.58	.72–3.47	1.24	.38–4.01	2.15	.72–6.47
Office uses electronic health records	1.00	.73–1.35	1.00	.70–1.43	1.18	.58–2.41	1.38	.81–2.35	.95	.68–1.32
Office not in a metropolitan statistical area (MSA) ^c (reference: in an MSA)	.93	.69–1.26	.71	.46–1.10	.98	.47–2.00	1.24	.79–1.95	.85	.61–1.18
Survey year ^d	.69**	.52–.90	1.13	.74–1.74	.54	.23–1.29	1.13	.60–2.14	.74	.48–1.16
Other general medical management activities	—	—	4.08**	2.88–5.80	2.08*	1.07–4.02	1.74**	1.19–2.55	3.03**	2.16–4.25
Recorded hypertension, hyperlipidemia, diabetes, or obesity	3.96**	2.85–5.48	—	—	.85	.24–3.09	1.44	.78–2.69	1.03	.72–1.49
Prescribed medications for hypertension, hyperlipidemia, or diabetes	1.59	.69–3.68	.85	.23–3.15	—	—	3.90*	1.12–13.64	2.03*	1.09–3.78
Ordered laboratory tests for glucose-HbA1c or lipids-cholesterol	1.26*	1.03–1.55	1.27	.89–1.80	2.26*	1.09–4.70	—	—	1.44*	1.06–1.95
Measured blood pressure or weight	2.45**	1.90–3.16	.86	.57–1.29	1.77	.88–3.55	2.01**	1.29–3.13	—	—
Health education or counseling	1.58**	1.49–1.67	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e
Propensity of the same activity for other patients seen by the provider (in 10% increments)	— ^e	— ^e	1.93**	1.74–2.13	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e
Recorded hypertension, hyperlipidemia, diabetes, or obesity	— ^e	— ^e	— ^e	— ^e	2.69**	1.98–3.64	— ^e	— ^e	— ^e	— ^e
Prescribed medications for hypertension, hyperlipidemia, or diabetes	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e
Ordered laboratory tests for glucose-HbA1c or lipids-cholesterol	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	2.19**	2.06–2.32	— ^e	— ^e
Measured blood pressure or weight	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	1.92**	1.83–2.02
Provided health education or counseling	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e	— ^e

^a AOR, adjusted odds ratio. The analysis adjusted for all variables in the table except the ones noted not to be included in the specific model.^b Visits with each diagnosis were compared with all other visits.^c Visits in which each type of medication was prescribed were compared with all other visits.^d Survey year was transformed to a variable ranging from 0 to 1 by subtracting 2006 from the year and dividing the results by 7. The ORs associated with this transformed variable of survey year represent a change in odds of general medical management activities in an eight-year period.^e Not included in the model* $p < .01$, ** $p < .001$

Psychiatrists may be reluctant to engage in general medical management activities because of ethical and legal concerns about scope of practice and lack of medical expertise. Competing demands on the time and attention of psychiatrists and lack of support staff and medical resources may be other barriers to providing general medical care in psychiatric practice. Psychiatric assessment and treatment, which are priorities in psychiatrist visits, are time consuming and often involve extensive mental status examination, assessment of safety, and psychotherapy. As a result, psychiatrists may have less time to manage general medical conditions. Furthermore, many psychiatrists practice in solo or small group offices with few or no nursing or other support staff, which limits their ability to conduct basic health assessments, such as blood pressure measurement.

The study findings should be considered in the context of several limitations. First, NAMCS data are based on visits in a randomly sampled week in the past year. Some physicians who did not engage in any general medical management activities in a single week may have done so in visits during other weeks. Similarly, patients may have received general medical services in visits to other providers. The structure of the NAMCS data does not allow for assessment of services received from these other providers. Second, NAMCS does not assess prevalence of medical conditions or need for medical care. Thus patients seen by psychiatrists may have had fewer medical conditions or fewer unmet needs for general medical care than patients seen by other physicians. However, analyses limited to visits by patients with specific health conditions also showed lower prevalence of general health management activities by psychiatrists. Third, we focused on management of a limited number of common medical conditions. Psychiatrists may have had different levels of engagement in the management of other general medical conditions. Furthermore, we did not assess more specialized medical management activities, such as neurological examination or fundoscopy. We also did not examine activities that are more consistent with the scope of practice of psychiatrists, such as the full mental status examination or mental health counseling.

CONCLUSIONS

In the context of these limitations, the results indicate that psychiatrists are substantially less involved in managing common general medical problems than most other medical specialties. With ongoing trends toward integration of general medical and mental health care, demands on psychiatrists to expand their scope of practice will likely increase. Identifying appropriate opportunities for such expansion and providing necessary medical support services and continuing medical education may encourage psychiatrists to increase their involvement in the general medical care of their patients in the coming years (21,22,37,38). However, efforts to expand psychiatrists' scope of practice to include general medical activities should be moderated by judicious

considerations of competing demands on their attention and time. These efforts should also be informed by the persistent unmet need for psychiatric care in the country and the continuing shortages in the mental health workforce.

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