Patterns and Quality of Treatment for Patients With Schizophrenia in Routine Psychiatric Practice

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Objectives: **This study provided generalizable national data on the treatment of adult patients with schizophrenia in the United States and assessed conformance with the practice guideline treatment recommendations of the Schizophrenia Patient Outcomes Research Team and the American Psychiatric Association.** ***Methods:*** **National data from the American Psychiatric Institute for Research and Education's 1999 Practice Research Network study of psychiatric patients and treatments were used to examine treatment patterns for 151 adult patients with schizophrenia. Analyses were performed and adjusted for the weights and sample design to generate nationally representative estimates.** ***Results:*** **Findings indicated that patients with schizophrenia who were treated by psychiatrists had complex clinical problems and were markedly disabled. Forty-one percent of patients had a comorbid axis I disorder, and 75 percent were currently unemployed. Thirty-five percent were currently experiencing medication side effects, and 37 percent were currently experiencing problems with treatment adherence. Although most patients received guideline-consistent psychopharmacologic treatment, treatment was characterized by significant polypharmacy. Rates of conformance with the guideline recommendations were significantly lower for psychosocial recommendations than for psychopharmacologic recommendations. Although 69 percent of patients received at least some psychosocial treatment, none of the unemployed patients received vocational rehabilitation services in the past 30 days.** ***Conclusions:*** **These data suggest unmet need for psychosocial treatment services among individuals with schizophrenia. These findings raise questions about whether currently available antipsychotic medications are being used optimally or whether they offer limited effectiveness for patients with complex clinical problems who are treated in routine psychiatric practice. (*Psychiatric Services* 56:283–291, 2005)**

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The treatment of schizophrenia has changed dramatically in recent years with the development of new pharmacologic treatments and the accumulation of evidence for effective psychosocial treatments. Six second-generation antipsychotics are now available, increasing treatment options for patients with schizophrenia (1,2). In addition, antidepressants, antianxiety medications, and mood stabilizers are commonly used adjunctive medications (3–5), which has resulted in polypharmacy treatment practices, including the use of two or more antipsychotics (6). Also, evidence that supports the use of psychosocial interventions, such as family therapy and social skills training, has increased the number of treatment options for physicians to consider (7).

To improve and standardize quality of care for patients with schizophrenia and to guide clinical decisions, practice guidelines and treatment recommendations have been developed, including the Schizophrenia Patient Outcomes Research Team's (PORT's) recommendations and the American Psychiatric Association's (APA's) practice guideline (8–11). The PORT recommendations provide concise, rigorously derived statements that aim to represent unbiased summaries of available scientific research that covers a range of treat-

ments. Similarly, the APA has published and recently revised a summary of available data as a practice guideline (2,8).

Studies have analyzed patterns of treating patients with schizophrenia in specific regions or service settings and conformance with selected practice guideline recommendations (12–19). Analyses of conformance with evidence-based practice guideline recommendations are of particular interest because these recommendations provide accepted measures of quality (20). Because of concerns that recommended evidence-based treatments may not be effective for a significant portion of patients in routine practice, there is particular interest in studying patterns and outcomes of treatments in routine practice (21).

The primary aims of this study were to obtain national data on the treatment of adult patients with schizophrenia in the United States, including the diagnostic and clinical characteristics of patients treated by psychiatrists in routine practice settings, the types and combinations of psychopharmacologic and psychosocial treatment provided, and the patterns of conformance with key PORT and APA practice guideline recommendations (8). Because psychiatrists treat an estimated 77.9 percent of patients with schizophrenia, our data reflect most patients with schizophrenia who are treated in the United States (22).

Methods

Population and data collection

This study used cross-sectional data from the American Psychiatric Institute for Research and Education's 1999 Practice Research Network (PRN) study of psychiatric patients and treatments (SPPT). A detailed description of the methods used in the 1997 SPPT, which were replicated in this study, are described elsewhere and summarized here (23). Our study sample included 784 psychiatrists who were APA members and spent at least 15 hours per week in direct patient care. A total of 378 psychiatrists (48 percent) were randomly selected and recruited from the APA membership (58 percent of those targeted agreed to participate), and 406 psychiatrists (52 percent) were APA members who volunteered through a nationwide recruitment.

Psychiatrists who are members of the APA represent a majority of psychiatrists in the United States; at the time of this study an estimated 71 percent of the psychiatrists listed in the American Medical Association's (AMA's) Masterfile of physicians were members of the APA. Although APA members' sociodemographic characteristics are comparable to those of psychiatrists in AMA's Masterfile, APA members are more likely to be U.S. graduates and board certified.

A total of 615 psychiatrists (78 percent) completed the 1999 SPPT. Participants implemented the study on a randomly assigned start day and time and provided general information on the next 12 consecutive patients seen in treatment. More clinically detailed data were provided for three of these 12 patients. The study was reviewed by the APA's institutional review board, and written informed consent was obtained from the participating psychiatrists. All patients were passively informed about the PRN and data collection activities. No personal identifying patient information was collected with the SPPT. Psychiatrists provided detailed clinical data on 1,843 patients. A total of 127 psychiatrists reported data on 151 adults (9.7 percent of the total adult patient sample) who were given a diagnosis of schizophrenia by the participating psychiatrists. The adult patients with schizophrenia were the focus of the study presented here.

Vocational rehabilitation services for unemployed patients in our sample appeared to be nonexistent.

Study measures

The 1999 SPPT database was used to select key psychopharmacologic and psychosocial guideline recommendations that could be used or approximated to examine related treatment patterns. Table 1 provides a summary of these guidelines. Tables 2, 3, and 4 list the variables examined in this study, including psychosocial treatments provided by the psychiatrist and other providers in the past 30 days. To assess conformance with practice guidelines, we used evidence-based treatment recommendations that were available when the 1999 SPPT was implemented: the 1998 PORT guideline and the 1997 APA guideline.

Statistical analysis

To generate national estimates, three-stage propensity score weights were used. The first stage adjusted for discrepancies between a random sample of APA members who responded to the 1998 National Survey of Psychiatric Practice (NSPP) and the APA membership population profile on variables known to the APA about all members—for example, age, sex, race or ethnicity, and certification (24). The NSPP provides the best available national practice data source to weigh the data. The second stage adjusted for discrepancies between the PRN psychiatrists and the NSPP sample profile of APA member psychiatrists on relevant demographic information and the extensive set of characteristics assessed in the NSPP. The third stage adjusted for the inverse probability of patient selection by patient volume of the treating psychiatrist. To reduce the effect of outliers, quintile medians were used at each stage of the weighting.

Analyses were performed with use of SUDAAN to adjust for the weights and the nested sample design to generate nationally representative estimates (25).

Results

Sociodemographic and health plan characteristics

As shown in Table 2, most patients with schizophrenia in our study sample were white, middle aged and male and had a high school education or

Table 1

Psychopharmacologic and psychosocial recommendations for treating schizophrenia from the Schizophrenia Patient Outcomes Research Team (PORT) and the American Psychiatric Association practice guideline

Guideline recommendation	Measure
Psychopharmacologic recommendations	
Antipsychotic medications should be the primary, first-line treatment to reduce psychotic symptoms for acute episodes of schizophrenia, the prevention of future episodes, and improvement of symptoms between episodes	Percentage of patients who are currently identified as having schizophrenia and are currently receiving an antipsychotic medication
Patients receive doses of antipsychotic medications within the recommended dosage range. (PORT recommendations note that the effective-dose upper limit has not yet been determined for the second-generation antipsychotics)	Among patients receiving second-generation antipsychotics, the proportion receiving a stable target dosage within the recommended range (2 to 8 mg for risperidone, 10 to 20 mg for olanzapine, 300 to 750 for quetiapine)
Depot antipsychotic medications should be considered for nonadherent patients in the maintenance phase of treatment	Percentage of patients who are currently identified as experiencing treatment compliance problems and are currently receiving a prescription for a depot antipsychotic
Antidepressant treatment should be provided for patients with persistent depressive symptoms	Percentage of patients who are identified as having a current major depressive disorder and are currently receiving a prescription for an antidepressant
	Percentage of patients who are identified as currently having moderate to severe depressive symptoms and are currently receiving a prescription for an antidepressant
Benzodiazepines should be used for patients with moderate to severe anxiety symptoms or agitation	Percentage of patients who are currently identified as having moderate to severe anxiety symptoms and are currently receiving a prescription for an antianxiety medication
The use of prophylactic antiparkinsonian medications should be considered when first-generation antipsychotic medications are used	Percentage of patients who are currently receiving a prescription for a first-generation antipsychotic medication (excluding chlorpromazine, mellaril, and serentil) and are currently receiving a prescription for an antiparkinsonian medication
Psychosocial recommendations	
Ongoing illness education should be provided to patients on the nature and management of their illness	Percentage of patients or their family members who received education about the nature and management of the patient's disorder from a mental health provider in the past 30 days
Individual and group therapies that emphasize support, education, and behavioral and cognitive skills training (with an emphasis on cognitive-behavioral therapies) are beneficial and should be offered over time to patients who are not currently experiencing severe psychotic symptoms	Percentage of patients who are not currently experiencing severe psychotic symptoms and who received any psychotherapy from a mental health provider in the past 30 days
	Percentage of patients who are not currently experiencing severe psychotic symptoms and who received any psychotherapy from a mental health provider in the past 30 days that inludes either a discussion of specific activities or tasks for the patient to attempt outside of a session or discussion of cognitive themes related to the patient's ideas or belief systems
Case management should be provided to individuals who are high users of services. Assertive community treatment and assertive case management models should be emphasized	Percentage of outpatients receiving any case management services in the past 30 days
Individuals who identify competitive employment as a goal or have a history of or potential for competitive employment should be offered vocational services	Percentage of patients who are currently unemployed or not working and are currently receiving vocational rehabilitation services
Social skills training should be provided when indicated to remedy specific deficits	Percentage of outpatients with moderate to severe disability in work or school, in parenting, in relationships with family members, or in social functioning who received social skills training from a mental health provider in the past 30 days
Patients with comorbid substance use disorders should receive treatment for these disorders	Percentage of patients who are identified as currently experiencing a substance use disorder and who received any substance use treatment from a mental health provider in the past 30 days
Individuals with schizophrenia should receive psychosocial treatment to improve the course of schizophrenia and aid in preventing relapse and in improving coping skills, social and vocational functioning, treatment adherence, and ability to function more independently	Percentage of patients receiving any psychosocial treatment from a mental health provider in the past 30 days (that is, psychotherapy, illness education, social skills training, case management, vocational rehabilitation, or substance use treatment)

Table 2

Sociodemographic characteristics of 151 patients with schizophrenia in routine psychiatric practice[a]

Variable	N	%	SE (%)
Gender			
Male	100	66	5
Female	51	34	5
Age (years)			
18 to 35	38	25	4
36 to 64	98	65	6
65 or older	14	10	3
Race or ethnicity			
White	92	61	5
African American	37	24	5
Hispanic	16	11	3
Other	6	4	2
Marital status			
Married or living as married	17	11	3
Divorced or separated	81	54	6
Never married	46	30	5
Widowed	7	5	2
Education			
Less than 12 years	45	30	5
High school graduate	66	44	6
More than high school	40	27	5
Employment status			
Full-time or part-time	31	20	5
Unemployed because of mental or physical disability	113	75	5
Student, homemaker, or retired	1	1	1
Other	6	4	2

[a] Percentages were weighted for the sampling design and to provide nationally representative estimates.

less. Most patients were not married or living as married. The most commonly used source of payment was Medicaid, followed by other government or public insurance. Only 4 percent of the patients in our sample used private insurance.

Diagnostic and clinical characteristics

As Table 3 shows, 41 percent of the patients had comorbid axis I conditions, most commonly alcohol or other substance use disorders, followed by mood and anxiety disorders. Although 33 percent of the patients were reported to currently have problems with nicotine dependence (twice the rate of patients who did not have schizophrenia), only four patients (9 percent) were currently receiving treatment for nicotine dependence. Fifty-three patients (35 percent) had a comorbid general medical condition.

Sixty-four percent of the patients with schizophrenia were reported to currently be experiencing moderate to severe psychotic symptoms; 26 percent, moderate to severe anxiety symptoms; and 11 percent, moderate to severe depressive symptoms. The mean score on the Global Assessment of Functioning scale for patients in the study sample was 45, which indicates serious symptoms or impairment. Ninety-three percent of patients had at least one previous hospitalization for a mental disorder. Mental or physical disability precluded employment for 75 percent of the patients. A majority were reported to have moderate to severe disability in social functioning (82 percent) and in parenting or in relationships with family members (53 percent). The most common axis IV psychosocial problems were problems with the primary support group (54 percent), problems related to social environment (49 percent), and economic problems (44 percent). Current medication side effects were reported for 35 percent of the patients with schizophrenia, and treatment compliance problems were reported for 37 percent. Twenty-seven percent experienced sleep problems.

Patterns of psychosocial and psychopharmacologic treatment

As shown in Table 4, most patients were treated in outpatient settings. The mean length of time the patients were in treatment with the psychiatrist was 45 months, and the mean length of the current visit was 24 minutes. Treatment most commonly consisted of medications alone (58 percent) and combined medications and psychotherapy (40 percent). One patient received electroconvulsive therapy. Virtually all patients (99 percent) received at least one antipsychotic, 32 percent received antianxiety medications, 39 percent received antiparkinsonian medications, 28 percent received antidepressants, and 18 percent received mood stabilizers. The mean number of psychopharmacologic medications prescribed per patient was 2.9. Sixteen percent of the patients were taking two or more antipsychotics, 82 (54 percent) were taking only second-generation antipsychotics, 47 (31 percent) were taking only first-generation antipsychotics, and 21 (14 percent) were taking both first- and second-generation antipsychotics. Table 4 lists the most commonly prescribed combinations of medications; as can be seen, 79 percent of the patients received two or more medications.

Conformance with key psychopharmacologic guidelines

As shown in Table 5, conformance rates were relatively high for most of the psychopharmacologic recommendations studied. An exception was the infrequent use of depot antipsychotic medications. Twenty-seven patients with schizophrenia (18 percent) received depot antipsychotics, and 30 percent of patients with current treatment compliance problems received depot antipsychotics. In addition, a significant proportion of patients who were currently experiencing moderate to severe psychotic symptoms and received an antipsychotic also received mood stabilizers or benzodiazepines; however, these patients did

not receive clozapine, which is recommended for patients with treatment-resistant psychotic symptoms.

Most of the patients with schizophrenia received second-generation antipsychotic dosages within the recommended maintenance ranges (83 percent). However, ten (10 percent) received stable target dosages that were greater than the recommended range, and seven (7 percent) received dosages that were less than the recommended range.

Thirty-two patients (51 percent) who received first-generation medications (excluding chlorpromazine, thioridazine, and mesoridazine because of their favorable side effect profiles) also received antiparkinsonian medications. However, 24 patients who received only second-generation antipsychotics (29 percent) (excluding patients receiving risperidone, because of the side effects associated with higher dosages of this medication) also received antiparkinsonian medications, even though antiparkinsonian medications were not recommended for patients who are taking second-generation antipsychotics (26). Although only a small sample of patients had major depressive disorder, all these patients received an antidepressant. However, only six patients with moderate to severe depressive symptoms (38 percent) received antidepressants.

Table 3

Diagnostic and clinical characteristics of 151 patients with schizophrenia in routine psychiatric practice[a]

Variable	N	%	SE (%)
Comorbid disorder			
Anxiety	6	4	2
Mood	13	9	3
Substance use	44	29	5
Axis I condition	63	41	5
Axis II personality disorder	23	15	4
Axis III general medical condition	53	35	5
Axis IV psychosocial problems			
Primary support	81	54	5
Occupation	50	33	5
Economic	66	44	5
Related to social environment	73	49	5
Education	18	12	3
Housing	36	24	5
Criminal or legal system	16	11	4
Access to health care	19	13	5
Moderate to severe symptoms			
Depression	17	11	3
Anxiety	40	26	4
Psychotic	97	64	5
Moderate to severe disabilities			
In work	112	74	5
In parenting or in relating to family members	80	53	5
In sexual functioning	47	31	5
In social situations	124	82	4
Medication side effects	53	35	5
Current illicit drug use problem	12	8	3
Current alcohol use problem	14	10	3
Current treatment compliance problem	55	37	5
Previous psychiatric hospitalization	141	93	2
Sleep problems	41	27	5
Fair to poor health status	42	28	5
Current problem with nicotine dependence	49	33	5
GAF score of 40 or less[b]	72	48	5
Mean±SE GAF score[b]	44.8±1.4		

[a] Percentages weighted for the sampling design and to give nationally representative estimates
[b] As measured by the Global Assessment of Functioning scale; possible scores range from 0 to 100, with higher scores indicating higher levels of functioning.

Conformance with key psychosocial guideline recommendations

As indicated in Table 5, rates of conformance with the guideline recommendations were significantly lower for psychosocial recommendations than for psychopharmacologic recommendations: for psychosocial recommendations rates ranged from 0 percent to 43 percent, whereas for psychopharmacologic recommendations rates ranged from 30 to 100 percent. Overall, 69 percent of the patients received at least some psychosocial treatment. However, among patients who were currently unemployed as a result of a mental or physical disability, none received vocational rehabilitation. Among patients with deficits in social skills functioning, only 14 percent received social skills training in the past 30 days. Although 43 percent of patients or their family members received illness education from a mental health provider and 43 percent of the patients received psychotherapy from a mental health provider, only 28 percent of the patients received cognitive-behavioral oriented psychotherapy from their treating psychiatrist.

Thirty-eight percent of the patients were reported to have received some form of case management in the past 30 days. Although substance use disorders were the most commonly reported axis I disorder, only 38 percent of patients with such disorders received treatment for their substance use disorder.

Discussion

Study strengths and limitations

Although this study provided clinically detailed nationally representative data that reflect patients with schizophrenia who are treated by APA member psychiatrists in the full range of treatment settings, the study had several limitations. First, the study relied on psychiatrist-reported data and had limited data on the clinical context of treatment in terms of phase of illness, treatment history, and response to treatment. These limitations make it difficult to determine and model the extent to which psychiatrists are providing treatment that is consistent with many of the guide-

Table 4

Treatment and health plan characteristics of 151 patients with schizophrenia in routine psychiatric practice[a]

Variable	N	%	SE (%)
Length of current visit (mean±SE minutes)	24.1±1.2		
Length of treatment (mean±SE months)	45.1±6.5		
Setting			
Inpatient	47	31	5
Outpatient	93	62	5
Partial	11	7	3
Type of practice setting			
Solo	21	14	4
Group	12	8	3
Clinic	70	47	7
Hospital-based	48	32	5
Psychopharmacologic treatment			
Antianxiety	48	32	5
Mood stabilizer	27	18	4
Antipsychotic	149	99	4
Antiparkinsonian	59	39	5
Antidepressant	43	28	5
Number of medications (mean±SE)	2.9±.21		
Number of medications			
One	32	21	4
Two	39	26	5
Three	39	26	4
Four	19	13	4
Five or more	22	15	4
Medication combination			
Antipsychotic only	34	23	4
Antipsychotic and antiparkinsonian	55	36	5
Antipsychotic and antianxiety	40	26	4
Antipsychotic and antidepressant	35	23	5
Antipsychotic, antianxiety, and antiparkinsonian	15	10	4
Antipsychotic, antidepressant, and antianxiety	11	8	3
Antipsychotic, mood stabilizer, and antianxiety	10	7	3
Antipsychotic, antidepressant, and antiparkinsonian	16	10	4
Antipsychotic, antidepressant, antianxiety, and antiparkinsonian	4	3	2
Number of antipsychotics			
Zero	24	16	4
One	102	68	5
Two	20	13	3
Three	4	3	2
Treatment combinations			
Medication only	87	58	6
Medication and psychotherapy	61	40	6
Psychotherapy only	3	2	1
Type of psychotherapy			
Psychodynamic	1	1	0
Cognitive or behavioral	31	20	4
Psychotherapy provided by a psychiatrist	50	33	5
Psychotherapy provided by another mental health provider	58	39	9
Type of health plan			
Managed	15	10	3
Nonmanaged	63	42	6
None	25	17	4
Other or don't know	48	32	6
Source of payment			
Private	6	4	1
Medicare	9	6	3
Medicaid	89	59	5
Self-pay	8	5	2
Other government or public agency	24	16	4
Other or don't know	14	9	3

[a] Percentages were weighted for the sampling design and to provide nationally representative estimates.

line recommendations. For example, for a majority of patients currently experiencing moderate to severe psychotic symptoms, we know the percentage of patients currently receiving clozapine; however, we do not know the proportion who ever received an adequate trial of another antipsychotic and whether these patients were ever offered or prescribed clozapine. Because of these limitations many of our guideline-conformance measures are somewhat crude. Because we do not have data on the indications for which medications were prescribed, we do not know whether benzodiazepines were prescribed for anxiety, agitation, sleep problems, or treatment-resistant psychotic symptoms. APA and PORT recommendations caution against using benzodiazepines for treatment-resistant psychotic symptoms.

We also did not have data on consumer preferences and the extent to which treatments were ever offered or provided to patients—for example, depot medications, psychotherapy, and vocational rehabilitation. With respect to the psychosocial recommendations studied, we did not have data on the type of case management or on the indications for vocational rehabilitation. Reliance on psychiatrist-reported data of treatments provided in the past 30 days may also significantly underestimate some measures, including side effects, treatment adherence, and substance use.

Because of the clinical caveats surrounding the guidelines, it was difficult to determine whether many of the recommendations were followed appropriately. In addition, our data did not clearly specify the intensity, frequency, and duration of treatments. Consequently, we were able to examine only general treatment patterns related to the PORT and APA recommendations.

Summary of key findings and implications

Overall, these data indicate that patients with schizophrenia who are treated by psychiatrists have highly complex clinical problems and are markedly disabled; 75 percent of our sample were unemployed because of a mental or physical disability. Psychi-

atrists reported that a significant proportion of the patients were experiencing medication side effects (35 percent) and had problems adhering to treatment (37 percent).

Most patients generally appeared to be receiving guideline-consistent psychopharmacologic treatment, and rates for this type of treatment were consistent with the previous PORT research findings reported by Lehman and Steinwachs (12). Our findings showed that the psychopharmacologic treatment was characterized by significant polypharmacy, with a mean of three medications prescribed per patient. A significant proportion of patients were also receiving two or more antipsychotics, a practice that is not endorsed by the guidelines that were used for this study. In addition, a notable proportion of patients who received second-generation antipsychotics were receiving dosages above the recommended range. This study also found that a majority of patients experienced moderate to severe psychotic symptoms, even though almost all patients in our sample received at least one antipsychotic and received treatment from their psychiatrists for three years on average.

Table 5

Rates of conformance with practice guideline treatment recommendations for 151 patients with schizophrenia in routine psychiatric practice[a]

Variable	Total N	N	%
Psychopharmacologic guideline recommendations			
Currently receiving antipsychotic treatment	151	149	99
Receiving dosages of second-generation antipsychotics within a stable target range	103	85	83
Nonadherent patients receiving depot antipsychotics	55	16	30
Patients with major depression receiving antidepressant treatment	5	5	100
Patients with moderate to severe depressive symptoms receiving antidepressant treatment	17	6	38
Patients with moderate to severe anxiety symptoms receiving benzodiazepines	39	17	45
Patients receiving first-generation antipsychotics also receiving prophylactic antiparkinsonian medications	63	32	51
Patients receiving second-generation antipsychotics are not receiving antiparkinsonian medications	81	57	71
Receiving any psychopharmacologic treatment	151	150	99
Psychosocial guideline recommendations			
Receiving illness education	151	65	43
Receiving psychotherapy	54	23	43
Receiving cognitive-behavioral–oriented psychotherapy	54	15	28
Receiving case management	151	57	38
Receiving vocational rehabilitation	109	0	0
Receiving social skills training	133	18	14
Receiving substance abuse treatment for patients with a comorbid substance use disorder	44	17	38
Receiving any psychosocial treatment	151	104	69

[a] Percentages were weighted for the sampling design and to provide nationally representative estimates"

These findings raise questions about whether available antipsychotic medications are used optimally or whether available antipsychotic treatments offer limited effectiveness (as demonstrated in randomized clinical trials) for clinically complex patients treated in routine practice. Some questions about the effectiveness of antipsychotic treatments may be answered through the National Institute of Mental Health's clinical antipsychotic trials of intervention effectiveness study, which is being conducted in a wide range of routine practice settings to assess the long-term effectiveness and tolerability of first- and second-generation antipsychotics.

As for whether currently available medications for the treatment of schizophrenia are being optimized in routine clinical practice, we do not have longitudinal data to characterize the extent to which patients received an adequate trial and dosage of one antipsychotic before another was added. We also do not know the extent to which clozapine was offered to or tried among patients who were receiving an adequate antipsychotic dose and actively experiencing moderate to severe psychotic symptoms.

Depot medications may be underused: 70 percent of the patients with current treatment adherence problems were not receiving depot antipsychotics. Rates of depot antipsychotic use in our study were consistent with those found by Citrome and colleagues (27). In that study rates ranged from 12 to 39 percent in 21 psychiatric hospitals in New York State. Our data also indicate that a significant proportion of patients (29 percent) who received second-generation antipsychotics may be receiving antiparkinsonian medications unnecessarily. This issue warrants follow up in light of findings that show that several second-generation antipsychotics prescribed at higher dosages may have greater than expected side effect profiles (28). In these areas clinical practice may be ahead of evidence-based guidelines.

The data that showed limited access to the psychosocial treatments that are recommended by the evidence-based guideline raises concerns. Our findings are consistent with those of Young and colleagues (29), who studied 224 patients at two public mental health clinics and found that 52 percent received inadequate psychosocial care. The rates of psychotherapy that we found in our sample were consistent with those in the PORT study (12). Although rates of vocational rehabilitation in our study were significantly lower than in the PORT study (no patients in our study compared with 23 percent), the PORT study included patients who reported looking for work or participating in a vocational rehabilitation program and patients for whom vocational rehabilitation was part of the treatment plan, regardless of whether

vocational rehabilitation services were provided.

Vocational rehabilitation services for unemployed patients in our sample appeared to be nonexistent; no unemployed patients were currently receiving these services, although 14 percent of the employed patients were. This finding is particularly disturbing because of the high rates of unemployment among individuals with schizophrenia. Studies suggest that vocational rehabilitation can be effective in significantly increasing employment rates and levels of earned income in this population (14,30). Cohort and cross-sectional studies indicate that the relationship between employment outcomes and symptoms is complex, and symptom severity alone does not determine a patient's suitability for vocational rehabilitation services (31,32). A growing number of clinicians, patient advocates, and researchers have called for expanded vocational and psychosocial rehabilitation services to improve functional outcomes for individuals with schizophrenia (33,34).

The patterns that we identified are troubling for two major reasons. First, patients who are already receiving treatment from a psychiatrist would be expected to represent patients with greatest access to needed treatments. Second, for patients with public insurance, access to psychosocial treatment appears to be particularly limited: only 8 percent of patients with Medicare and 41 percent of patients with Medicaid received psychotherapy from a mental health care provider in the past 30 days. Provision of substance use treatment for this population was also strikingly low. Collectively, these data suggest considerable unmet need for psychosocial treatment services among individuals with schizophrenia.

Future research

Several future studies are being conducted or planned that can help illuminate the patterns of treatment for schizophrenia and the reasons for these patterns. In addition to the study described above on clinical antipsychotic trials of intervention effectiveness, we are currently completing a study of medication management decisions in schizophrenia. Using a large, nationally representative sample of psychiatrists in routine psychiatric practice, this study will evaluate the extent to which routine medication management of schizophrenia conforms to other evidence-based treatment recommendations. Furthermore, this study will identify factors affecting clinical decision making and modifiable factors associated with not conforming with these treatment recommendations.

To assess patterns of treatment and the extent to which treatments provided are consistent with evidence-based practice guideline treatment protocols, PRN studies are now being pilot tested to capture longitudinal data on the treatment history of psychiatric patients, patient preferences, treatment adherence, and patient response and outcomes of treatment. These studies will assess the extent to which specific subgroups of patients—such as patients with different severity levels, specific comorbid axis I disorders, or significant psychosocial problems who receive different types, combinations, intensity, and duration of treatment—have superior outcomes. These data will help in assessing the extent to which some of the current clinical practices identified in this study, which are not consistent with evidence-based guideline recommendations, are associated with favorable outcomes of treatment.

Conclusions

These study findings indicate that patients with schizophrenia who are treated by psychiatrists have complex clinical problems and are markedly disabled. Although most patients received guideline-consistent psychopharmacologic treatment, it was characterized by significant polypharmacy and a majority of patients experienced moderate to severe psychotic symptoms despite receiving antipsychotic medication. These findings also suggest significant unmet need for psychosocial treatment services among individuals with schizophrenia in the United States; rates of conformance with the psychosocial practice guideline recommendations studied ranged from 0 to 43 percent. ♦

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