

Guideline Recommendations for Treatment of Schizophrenia

The Impact of Managed Care

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Background: Medicaid-managed care has been shown to reduce the number and length of psychiatric hospitalizations, but little is known about the clinical and social consequences of such managed care programs. The purpose of this study was to compare the treatment of schizophrenia for disabled Medicaid beneficiaries who were and were not enrolled in managed care.

Methods: This was a prospective observational study of patients who sought care for a psychiatric crisis from June 7, 1997, to May 13, 1999. Patients were followed up for 6 months. Inpatient and outpatient mental health facilities in Massachusetts were studied. The participants included 420 adult Medicaid beneficiaries, aged 24 to 64 years, who were treated for schizophrenia; 784 eligible beneficiaries were originally contacted and invited to participate (53.6% response). A private managed behavioral health care organization administered the Medicaid mental health benefit for about half the patients in the study. The other half were enrolled in the dually insured fee-for-service Medicare/Medicaid plan. The main outcome measures were adherence to the Schizophrenia Patient Outcomes Research Team treatment recommendations from inpatient and outpatient medical records, self-reported quality of interpersonal

interactions between patient and clinician, self-reported care experiences and outcomes, and clinician-reported outcomes.

Results: There were no differences between the managed care plan and the unmanaged fee-for-service plan in adherence to the schizophrenia treatment guidelines. However, much outpatient care in both programs was inconsistent with treatment guidelines. Inpatient treatment was far more likely to conform to guidelines than outpatient treatment. Patient ratings of their care were positive and not different between plans. Clinical outcome and health-related quality of life were not different between plans.

Conclusions: A major change in Massachusetts in the way mental health care is organized and financed had neither a negative nor a positive effect on care quality. However, adherence to nationally accepted guidelines for care was only modest, suggesting a need to improve the delivery of treatment to the most disabled highest-risk adults with schizophrenia.

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ADVOCATES FOR those with mental illness have worried about the potential adverse impact of managed care programs,¹ especially on vulnerable Medicaid recipients. Earlier research² on a new managed care plan in Massachusetts suggested that adults with schizophrenia were less likely to receive hospital care and more likely to receive outpatient care after introduction of the program. Hospitalization rates and expenditures for this patient group decreased by about 20%. Data on reductions in hospitalization and related cost savings³ have raised concerns that patients with mental illness might not be receiving adequate treatment under new insurance arrangements.⁴

A recent national evaluation of Medicaid-managed care⁵ found that beneficiaries in Tennessee (the only state for which the investigators had mental health data) reported low levels of treatment, high levels of unmet need, and dissatisfaction with mental health care. The researchers were not able to determine whether this was a consequence of managed care. In Utah,^{6,7} initial evaluations of Medicaid-managed care revealed no impact on patient social functioning or satisfaction, but a 4-year follow-up showed deteriorating status of the managed care group. The Utah evaluation assessed 400 adults with schizophrenia and found that the sickest patients did more poorly over time. A Colorado evaluation of 591 patients with serious illness found no differences be-

tween adults in managed care plans and those not in managed care plans for clinical outcomes or satisfaction after a 2-year follow-up.⁸

As part of a program to identify best treatments and develop guidelines consistent with those treatments, the Agency for Healthcare Research and Quality and the National Institute of Mental Health sponsored research by a Schizophrenia Patient Outcomes Research Team (PORT). The PORT developed treatment recommendations for schizophrenia based on evidence of the effectiveness of appropriate medication and community-based care. After assessing the extent to which treatment provided in 2 states was consistent with those recommendations,^{9,10} the PORT concluded that "for nearly all of the recommendations the level of practice conformance . . . [was] modest at best"^{11(p19)} and that inpatient treatment was more consistent with the guidelines than outpatient treatment. In both settings, rates of conformity were lower for the psychosocial treatment recommendations than for the pharmacological recommendations.

Young et al¹² conducted a similar study of outpatient treatment in 2 publicly funded clinics in Los Angeles, Calif. The study sample came from those who were undergoing regular treatment and, in doing so, found better results: 38% of the patients had poor medication management. Rosenheck et al,¹³ using PORT guidelines to assess treatment of Veterans Affairs patients, found that Veterans Affairs outpatients were less likely than non-Veterans Affairs patients to receive antipsychotic medication; the daily dose was outside the recommended dose range for almost two thirds of those who received medication. When examining guideline-related treatment provided in 1990 and 1992, Wang et al¹⁴ found that only 15% of a nationally representative sample of persons with serious mental illness received adequate treatment.

None of the studies previously summarized examined the effect of managed care on adherence to treatment guidelines. Thus, we compared guideline adherence by clinicians in a managed behavioral health care plan for Medicaid beneficiaries and in a traditional fee-for-service (FFS) plan for dually insured Medicare/Medicaid beneficiaries. We also examined patients' assessment of the interpersonal aspects of their treatment and their outcomes. The patient's perspective on the care experience is an important measure of quality.¹⁵

METHODS

SITE

In 1992, Massachusetts received a 1915b waiver from the Health Care Financing Administration (now the Centers of Medicare & Medicaid Services), and in 1993 started a managed care plan for all Medicaid beneficiaries except the dually insured (Medicare/Medicaid beneficiaries). Under the managed care plan, beneficiaries could choose to enroll in a local health maintenance organization or the primary care clinician plan, in which all behavioral health care was carved out and managed by a single private managed care organization (MCO). About 98% of the psychiatrically disabled beneficiaries joined the primary care clinician plan. The contract with the MCO (ValueOptions) lim-

ited the financial loss and gain from medical payments. The contract also called for a separate premium for management of the benefit. Financial incentives and penalties were included to encourage the MCO to meet performance standards, such as making a follow-up psychiatric appointment for a discharged inpatient.

The MCO had 4 cost-containment strategies: (1) negotiation of FFS reimbursement rates with a select network of outpatient clinics; (2) a negotiated comprehensive per diem for inpatient network providers that bundled the cost of physicians, laboratory tests, and other ancillaries with the hospital charge; (3) a use management program; and (4) the development of community-based alternatives to hospitalization.

Under the terms of the contract, the MCO was required to make available to recipients all the mental health and substance abuse benefits previously offered and was directed to add diversionary services, including acute-care residential treatment programs, family stabilization teams, and partial hospitalization programs. Outpatient pharmacy expenditures were paid for by the state Medicaid agency, not the MCO. Disabled beneficiaries were covered at a higher rate than other beneficiaries. Providers were reimbursed by the vendor on an FFS basis, and there were no out-of-pocket costs to beneficiaries.

Dually insured beneficiaries had Medicare as their primary payer and Medicaid as a secondary payer. The Medicare indemnity health plan paid providers a fee for services and allowed beneficiaries a choice of providers. There was no management of the mental health benefit. Charges not reimbursed by Medicare were covered by Medicaid as the secondary payer, and enrollees had no out-of-pocket expenditures.

SAMPLE

Subjects were disabled Medicare/Medicaid (dually insured) beneficiaries in a traditional FFS plan and were compared with disabled Medicaid beneficiaries who had their behavioral health benefit managed. Eligible individuals were Supplemental Security Income or Social Security disability income recipients, either a primary or a secondary Medicaid health plan beneficiary, diagnosed as having schizophrenia or a schizoaffective disorder by a clinician at the psychiatric emergency screening team (EST) site, aged 24 to 64 years, and English or Spanish speaking. We did not include beneficiaries who were enrolled in local health maintenance organizations because there were so few of them. Enrollment into the study was triggered by a visit to 1 of 8 psychiatric ESTs in Massachusetts. These screening teams (8 of 40 statewide teams) volunteered to participate in the study and were chosen for their geographic distribution and concentration of minority beneficiaries. These teams operated on a walk-in basis for anyone in crisis, regardless of insurance status. All managed care beneficiaries in Massachusetts were required to be examined by a screening team before approval was given for a psychiatric or substance abuse inpatient admission. Off-site examination was available when travel to the screening team office was impossible. Other individuals in crisis who showed up at the team sites were also examined and, if hospitalization was needed, an inpatient bed was located.

The dually insured were chosen as the comparison group because no aspect of their mental health treatment was managed, and in an earlier study, we found that their sociodemographic and clinical characteristics were similar to the Medicaid MCO group (data available from the authors). Medicare-enrolled disabled adults with schizophrenia who were dually insured were, by categorical definition, poorer than other Medicare-enrolled disabled adults and were eligible for Medicaid benefits to supplement their Medicare plan.

ENROLLMENT

Enrollment took place between June 7, 1997, and May 13, 1999. Approximately 1 month after the index screening team visit, eligible patients were sent a letter that explained the study and invited them to participate. The letter was followed by a telephone call to answer questions. Research staff met with study participants to obtain informed consent once they gave permission.

MEASURES

Treatment Appropriateness

Selected recommendations from the Schizophrenia PORT guidelines⁹ were used to assess the appropriateness of treatment. We identified guidelines that were appropriate for our study population and that could be assessed for conformity from medical records. In addition, use of any atypical medication, not one of the PORT recommendations, was assessed to measure access to medications widely presumed to have fewer adverse effects and, for some, increased benefit.^{16,17}

Patterns of Care

We used paid reimbursement claims to determine specific types of services used in the 6 months after the screening team crisis visit.

Interpersonal Aspects of Treatment

We used the Consumer Survey for Behavioral Health Services¹⁸ to measure interpersonal aspects of the treatment process. Responses to 6 questions about outpatient treatment (eg, "In the last few weeks, how often did clinicians listen carefully to you?") and 3 questions about inpatient treatment (eg, "Were you told what to do in case you needed help after leaving the hospital?") were used to assess the client-clinician relationship.

Patient Outcomes

The interviews included a measure of health-related quality of life¹⁹ and a measure of psychiatric and substance use problems.²⁰ We also asked the participant to name the clinician who knew them best, and that clinician was asked to complete a level of functioning instrument.²¹ Items from the Consumer Survey for Behavioral Health Services were used to measure patient experiences with the plan, their provider, and their treatment.

PROCEDURES

Research staff conducted face-to-face structured interviews with participants about 8 weeks after their index visit to the screening team. Study participants were paid \$20 for each interview. We used paid claims to identify inpatient and outpatient treatment sites at which medical records would be abstracted. We abstracted records from the outpatient site where the study subject had been seen the most often during the 6-month follow-up period. When outpatient medication records were in different sites than therapy records, both were abstracted, if possible. Of the 375 study participants (89.3%) who received outpatient mental health treatment after the screening visit, 16 refused to provide permission to review their medical records and 21 outpatient records could not be found (90.1% abstracted). When records were not available, paid claims data were used when possible to determine conformity to guideline recommendations.

Inpatient and outpatient medical records were abstracted by 4 and 2 abstractors, respectively. Professional nurse abstractors, who abstracted the inpatient records, were trained by the subcontractor who had trained Schizophrenia PORT record abstractors in 2 other states. Outpatient abstractors were trained by the research staff. Weighted κ statistics measuring agreement among the 4 inpatient abstractors based on reabstracted information from 20 medical records ranged from 0.74 to 0.88. Similarly, κ values for the consistency between the 2 outpatient abstractors for 26 medical records ranged from 0.68 to 0.95. We developed coding rules that presumed adherence if the recommended treatment procedure was mentioned in the record, even when data about that procedure were limited. For example, PORT recommendation 23 states that "individual and group therapies employing well-specified combinations of support, education, behavioral and cognitive skills training approaches designed to address the specific deficits of persons with schizophrenia should be offered over time to improve functioning."^{9(p23)} We assumed the recommendation was met if the record made any reference to the provision of individual or group therapy, unless it specifically stated the approach was psychodynamic, which the PORT concluded was contraindicated.

For individuals who had an inpatient hospitalization, the discharge medication dose recorded in the medical record was used to determine if the daily medication dosage for inpatients met the guideline for acute episodes (300-1000 chlorpromazine [CPZ] equivalents). This was calculated by converting the antipsychotic medication dose on discharge into CPZ units, multiplying the units times the daily frequency, and, if more than one was prescribed, summing the units.

From outpatient medical records, we calculated a mean standardized daily dose of antipsychotic medication for each month to summarize information about prescriptions made during a 6-month period. To determine adherence to the dosage recommendations, we used the 300 to 1000 CPZ units range recommended for acute treatment for all study participants for 8 weeks after the index EST visit and, for those hospitalized, for the entire 6-month study period. We used the maintenance range recommendation of 300 to 600 CPZ units for those who had not been hospitalized from week 9 to week 26. Not all outpatients had medication prescribed regularly during that period, requiring an adjustment that took into account the number of months for which medication information was available. For several study participants, medication dosage was calculated from paid pharmacy claims that provided the name of the medication, the dosage of each pill, and the number of pills prescribed. The daily dose was calculated using the number of days between filled prescriptions (eg, 60 pills of a 5-mg dose, refilled within 30 days, was assumed to be a daily dose of 10 mg).

ANALYSIS

We used χ^2 or t tests to compare sociodemographic characteristics, symptoms at screening, comorbidity burden, and service use 6 months after screening between the managed care and FFS groups. Differences in conformity to the guideline recommendations between the groups were assessed in 2 ways. We calculated relative risks and corresponding 95% confidence intervals of receiving care that conformed to the PORT guidelines for the managed care group relative to the FFS group, not adjusting for any observed differences between the 2 groups. Relative risks were calculated for each inpatient quality indicator separately and then again for each outpatient quality indicator. Patients were not randomly assigned to the 2 groups, so we also estimated adjusted relative risks by first stratifying the sample into homogeneous groups based on a propensity

score^{22,23} and then estimating the risk using a Mantel-Haenszel estimate.

To calculate a propensity score that adjusts for baseline differences in the 2 groups, we estimated a logistic regression model using the log odds of belonging to the carve-out group as the response variable and sociodemographic (age, race, marital status, sex, and educational level), screening site, referral source, symptoms at screening (depression, aggression, or functional impairment), history of substance abuse, prior psychiatric hospital admission, and interactions of these as predictors. After the model was fitted, we stratified the sample into quartiles based on the estimated probabilities of belonging to the managed care group. In the resulting four 2 × 2 tables, we tested for an association between the adherence to each quality indicator and carve-out status using the Cochran-Mantel-Haenszel test. For the single continuous measure, the rating of patient-clinician relationship, we estimated a linear regression model, adjusting for plan, quartile, and the interaction between quartile and plan status. No adjustment was made for inpatient or outpatient subject clustering.

To examine whether financial incentives in the Medicaid contract with the MCO resulted in greater adherence to certain inpatient guideline recommendations linked to contractual incentive payments, we examined unadjusted observed differences between the managed care plan and the FFS plan for 3 measures: aftercare planning with inpatient discharge, follow-up appointment after discharge, and contact with the outpatient clinician before discharge.

RESULTS

THE SAMPLE

Of the 784 eligible individuals who received a letter and were reached by telephone, 425 agreed to participate. We were unable to confirm the diagnosis for 5 participants, so the final study sample was 420 individuals (53.6% response rate). An additional 739 individuals were identified as eligible, but were unreachable by mail or telephone. Those unreachable had virtually the same distribution of age, race, and insurance characteristics as the study sample, but were slightly less likely to be women. Refusers had the same frequency distribution with respect to insurance status and age, but were more likely to be white and women.

Of the study participants, 46.9% were in the managed care plan and the rest were dually insured. The managed care group had less education and was more likely to be women, to be in a minority race or ethnic group, to have experienced homelessness within the past 3 months, and to be diagnosed as having a comorbid substance use disorder (**Table 1**). Almost everyone in the study had been treated recently for a medical disorder, and 73.8% reported that they smoked (data available from the authors).

Documented levels of acute symptoms were about the same for both groups at enrollment, but the managed care group had more problems with daily functioning. Most participants had more than one symptom; psychotic symptoms were the most common. A few study participants came to the screening team site solely for medication or some treatment-related problem.

Because the managed care group was more likely to be referred by clinicians and police, to arrive by ambu-

Table 1. Sociodemographic Characteristics of the Sample*

Characteristic	Plan		P Value
	MCO (n = 197)	FFS (n = 223)	
Age, mean (SD), y	40 (8.5)	41 (7.9)	.08
Male sex	47.2	65.9	<.001
Race or ethnicity			
African American	32.0	22.0	.02
American Indian	0	0.45	
Asian	2.0	1.3	
Latino	15.2	10.3	
White	50.8	65.9	
Never married	65.0	69.1	.41
High school education or less	74.1	59.2	<.001
Homeless†	15.2	9.0	.06
Contact ever with the criminal justice system	50.8	50.2	.84
Victim of a violent crime†	9.1	6.3	.44
English speaking	89.8	92.8	.27

Abbreviations: FFS, fee for service; MCO, managed care organization.
*Data are given as percentage of each group unless otherwise indicated.
†In the past 3 months.

Table 2. Baseline Characteristics of the Sample on Enrollment Into the Study*

Characteristic	Plan		P Value
	MCO (n = 197)	FFS (n = 223)	
Referral to EST			
Clinician	51.8	43.9	.02
Self-referred	23.9	39.0	
Police or ambulance	19.3	12.1	
Family or friend	5.1	4.9	
Types of symptoms			
Depression	53.8	58.3	.43
Psychosis	74.1	71.3	.57
Daily functioning	54.8	40.8	<.001
Suicidal	36.0	30.0	.20
Therapy problems	28.9	34.1	.34
Substance use disorder	58.4	48.0	.02
No. of symptoms, mean (SD)	2.5 (1.04)	2.3 (1.08)	.19

Abbreviations: EST, emergency screening team; FFS, fee for service; MCO, managed care organization.
*Data are given as percentage of each group unless otherwise indicated.

lance, and to have more problems with daily functioning (**Table 2**), these individuals probably were more disabled at study enrollment, even though symptom acuity was equivalent between groups.

PATTERNS OF CARE

The patterns of service use during the 6-month period after the index EST visit were different for each group. The greatest difference was that the FFS group had fewer inpatient hospitalizations. About half of the managed care patients, but only a third of the FFS group, were hospitalized after they were screened. Once hospitalized, the managed care group had somewhat longer stays (**Table 3**). A few study participants had no docu-

Table 3. Patterns of Care, 6 Months After Screening*

Service Use Variable	Plan	
	MCO (n = 197)	FFS (n = 223)
Inpatient and ER visits only	5.1	0.9
Outpatient and support services only	42.1	61.0
Inpatient, outpatient, and emergency services	45.7	30.0
Medication only	2.0	4.9
No specialty treatment or medication	5.1	3.1
Length of stay for the hospital episode, mean, d	12.25	10.29

Abbreviations: ER, emergency department; FFS, fee for service; MCO, managed care organization.

*Data are given as percentage of each group unless otherwise indicated. Data for the first 5 variables are mutually exclusive.

mentation of specialty mental health treatment or antipsychotic medication after visiting the screening team.

ADHERENCE TO OUTPATIENT GUIDELINES AND PATIENT ASSESSMENT OF INTERPERSONAL ASPECTS OF TREATMENT

Table 4 summarizes the number and proportion of individuals whose treatments were consistent with outpatient PORT guideline indicators and provides unadjusted and propensity score–adjusted relative risks of the carve-out group meeting each guideline. We found no differences between plans, nor did patients report differences in their interpersonal relationships with their outpatient clinicians.

The highest level of adherence to the PORT guideline recommendations (90%-95%) was for prescription of an antipsychotic medication, but was much lower for antipsychotics prescribed within the recommended dose range. Fewer than half the individuals in the study had the recommended dose on average, and even fewer had prescriptions within range at least 75% of the time. More than two thirds of the study participants were prescribed an atypical antipsychotic medication, often in combination with a conventional antipsychotic medication. Conformity was about 80% for receipt of any type of psychosocial treatment (individual and group therapy or day activity programs).

Just more than half of the sample received substance use treatment (including self-help) when there was documentation of a substance use problem. Case management for high-risk patients (ie, hospitalization in the previous 6 months) was infrequent, but was provided more often to the FFS group. However, it did not meet the PORT recommended standard of assertive community treatment. Vocational rehabilitation services (pre-vocational counseling, transitional employment, and supported employment) and clinician contact with the study participants' primary care clinician or medical specialist were the lowest.

Patient assessments of the interpersonal relationships with their clinicians were relatively positive (a mean

of 4 represents the highest possible score on this 6-item scale).

ADHERENCE TO INPATIENT GUIDELINES AND PATIENT ASSESSMENT OF INTERPERSONAL ASPECTS OF TREATMENT

Of the 170 persons admitted directly from the EST, 11 denied consent to have their records abstracted, and 5 records were not found after 3 attempts. Most of those admitted after their index screening (86.2%-86.7%) were prescribed an antipsychotic medication on discharge. For this and other indicators, we found no significant difference between the 2 groups when results were adjusted using the propensity score (**Table 5**).

Overall, conformity to the inpatient guidelines was high, with 3 exceptions: medication dose within range on discharge, family contact, and case management. There were no differences in how patients rated their interpersonal relationship with their inpatient clinician.

CONTRACTING EFFECT

Inpatient discharge and aftercare planning, the follow-up appointment after discharge, and contact with the outpatient clinician before discharge were more often documented in the medical records of the managed care patients than the FFS patients (Table 5). In addition to the managed care plan having financial incentives, Medicaid also set nonfinancial standards for inpatient short-term treatment for network providers that included the availability of therapeutic programming (eg, vocational assessment, individual and group psychotherapy, family examination and therapy, psychiatric and medical examination, pharmacological services, substance abuse examination, and other psychosocial services). Managed care inpatients were as likely or more likely to have most of the specified services provided (not all data shown).

OUTCOME

There were no differences on self-reported health status, health-related quality of life, or ratings of experience between the 2 plans 8 weeks after the index EST visit (**Table 6**). Clinician-rated functioning was slightly higher in the FFS group, but the difference is small and not clinically meaningful.

COMMENT

There were no differences in either the quality of treatment provided or the outcomes between the MCO plan and the FFS plan. Patient ratings of their care and their relationship with clinicians were positive and not different between plans. In both plans, inpatient treatment conformed to guideline recommendations more often than not, but conformity to outpatient recommendations was only fair. This is troubling because everyone in this study received most or all of their care in outpatient settings.

Some mental health policy makers have suggested that managed care might improve treatment. They have argued that financial incentives to increase attention to

Table 4. Quality Indicators for 420 Outpatients

Quality Indicator	MCO Plan (n = 197)		FFS Plan (n = 223)		Unadjusted*		Adjusted†	
	Observed‡	Known Eligible§	Observed‡	Known Eligible§	P Value	RR (95% CI)	P Value	RR (95% CI)
Antipsychotic medication								
Atypical	134 (73.2)	183 (92.9)	158 (74.5)	212 (95.1)	.53	0.96 (0.85-1.09)	.92	0.99 (0.86-1.15)
Any	183 (92.9)	197 (100.0)	212 (95.1)	223 (100.0)	.35	0.98 (0.93-1.03)	.10	0.96 (0.91-1.00)
Chlorpromazine equivalent unit								
Prescribed dose within PORT range ≥75% of the time	76 (42.2)	180 (91.4)	70 (33.7)	208 (93.3)	.08	1.26 (0.97-1.62)	.34	1.15 (0.86-1.53)
Mean standardized monthly dose within PORT range	81 (45.0)	180 (91.4)	71 (34.1)	208 (93.3)	.03	1.32 (1.03-1.69)	.16	1.23 (0.92-1.65)
Any psychosocial treatment	156 (79.2)	197 (100.0)	181 (81.2)	223 (100.0)	.61	0.98 (0.89-1.07)	.68	0.98 (0.88-1.09)
Any vocational rehabilitation	32 (20.4)	157 (79.7)	42 (23.2)	181 (81.2)	.53	0.88 (0.59-1.32)	.54	0.87 (0.55-1.37)
Case management if high risk	23 (43.4)	53 (26.9)	16 (64.0)	25 (11.2)	.09	0.68 (0.43-1.07)	.20	0.72 (0.44-1.19)
Contact with PCP or MD	38 (24.2)	157 (79.7)	40 (22.1)	181 (81.2)	.65	1.10 (0.74-1.62)	.44	1.19 (0.77-1.84)
SUD treatment if SUD problem	63 (54.8)	115 (58.4)	59 (55.7)	106 (47.5)	.90	0.98 (0.78-1.25)	.75	1.05 (0.80-1.36)
Patient/clinician relationship¶	3.20 (0.67)	184 (93.4)	3.21 (0.65)	210 (94.2)	.80	-0.016 (0.066)	.38	-0.112 (0.128)

Abbreviations: CI, confidence interval; FFS, fee for service; MCO, managed care organization; MD, doctor of medicine; PCP, primary care physician; PORT, Patient Outcomes Research Team; RR, relative risk; SUD, substance use disorder.

*These results refer to observed RRs (MCO plan vs FFS plan).

†Adjustment made via stratification using an estimated propensity score. The P value and RR are associated with the Cochran-Mantel-Haenszel statistic.

‡Data are given as observed number (percentage) of patients meeting the criteria (or the mean value if the indicator is continuous). The denominator used for each row is the number of known eligible patients (given in the column to the right).

§Data are given as number (percentage) of patients meeting inclusion criteria for whom there are observed data. The denominator used is the total for each plan.

||The denominator used is the number of outpatient record abstracts (n = 338); no other data sources were available.

¶Data in the "Observed" columns are given as mean (SD) score on this 6-item measure. The P values were obtained using an F test for a linear model that includes managed care, propensity score quartile, and the interaction of the quartile with managed care variable. Instead of RRs (95% CIs), data given in these 2 columns are mean (SE) values for MCO plan patients minus FFS plan patients.

Table 5. Quality Indicators for the 154 Inpatients for Whom We Have Medical Records

Quality Indicator	MCO Plan (n = 94)		FFS Plan (n = 60)		Unadjusted*		Adjusted†	
	Observed‡	Known Eligible§	Observed‡	Known Eligible§	P Value	RR (95% CI)	P Value	RR (95% CI)
Antipsychotic medication								
Atypical	48 (59.3)	81 (86.2)	32 (61.5)	52 (86.7)	.65	0.94 (0.70-1.25)	.85	1.03 (0.74-1.44)
Any	81 (86.2)	94 (100.0)	52 (86.7)	60 (100.0)	.39	0.97 (0.91-1.04)	.25	0.95 (0.87-1.04)
Antipsychotic dose within the PORT range	48 (59.3)	81 (86.2)	36 (69.2)	52 (86.7)	.25	0.86 (0.66-1.11)	.10	0.77 (0.57-1.05)
Any psychosocial treatment	93 (98.9)	94 (100.0)	54 (90.0)	60 (100.0)	.01	1.09 (1.02-1.18)	.07	1.08 (0.99-1.18)
Any family contact	50 (53.2)	94 (100.0)	18 (30.0)	60 (100.0)	.005	1.77 (1.19-2.64)	.17	1.36 (0.88-2.10)
Any contact with an outpatient therapist	84 (89.4)	94 (100.0)	48 (80.0)	60 (100.0)	.11	1.12 (0.98-1.28)	.21	1.11 (0.94-1.31)
Follow-up appointment	87 (92.6)	94 (100.0)	49 (81.7)	60 (100.0)	.04	1.13 (1.01-1.28)	.26	1.08 (0.95-1.23)
Occupational or vocational assessment	74 (78.7)	94 (100.0)	49 (81.7)	60 (100.0)	.66	0.96 (0.82-1.13)	.25	0.90 (0.74-1.08)
Case management	30 (31.9)	94 (100.0)	23 (38.3)	60 (100.0)	.42	0.83 (0.54-1.29)	.21	0.73 (0.45-1.19)
Contact with PCP or MD	47 (50.0)	94 (100.0)	26 (43.3)	60 (100.0)	.61	0.95 (0.78-1.15)	.54	0.93 (0.74-1.17)
SUD treatment appointment if SUD	11 (45.8)	24 (25.5)	8 (47.1)	17 (28.3)	.94	0.97 (0.50-1.91)	.89	0.95 (0.45-2.01)
Assessment of care	1.93 (0.40)	69 (73.4)	1.90 (0.32)	43 (71.7)	.59	0.039 (0.073)	.25	0.145 (0.127)

Abbreviations: CI, confidence interval; FFS, fee for service; MCO, managed care organization; MD, doctor of medicine; PCP, primary care physician; PORT, Patient Outcomes Research Team; RR, relative risk; SUD, substance use disorder.

*These results refer to observed RRs (MCO plan vs FFS plan).

†Adjustment made via stratification using an estimated propensity score. The P value and RR are associated with the Cochran-Mantel-Haenszel statistic.

‡Data are given as observed number (percentage) of patients meeting the criteria (or the mean value if the indicator is continuous). The denominator used for each row is the number of known eligible patients (given in the column to the right).

§Data are given as number (percentage) of patients meeting inclusion criteria for whom there are observed data. The denominator used is the total for each plan.

||Data in the "Observed" columns are given as mean (SD) score on this 3-item measure. The P values were obtained using an F test for a linear model that includes managed care, propensity score quartile, and the interaction of the quartile with managed care variable. Instead of RRs (95% CIs), data given in these 2 columns are mean (SE) values for MCO plan patients minus FFS plan patients.

preventive services, continuity of care, and provider accountability could result in better care. In Massachusetts, the contract with the MCO included inpatient-specific performance incentives (financial bonuses and

penalties) in addition to the contractual premium for medical reimbursement and administration. This may have increased the likelihood that certain aspects of inpatient care met the guidelines. Managed care outpa-

Table 6. Outcomes Approximately 8 Weeks After the EST Visit

Measure	No. of Patients	Score, Mean (SD)		P Value	
		MCO Plan Group	FFS Plan Group	Unadjusted	Adjusted
BASIS-32*	418	1.17 (0.72)	1.17 (0.67)	.94	.41
SF-12†					
Physical health	371	43.27 (9.71)	43.27 (9.80)	.99	.98
Mental health	371	41.91 (11.71)	41.80 (11.54)	.93	.69
CABHS‡					
Satisfaction, plan	402	8.04 (2.50)	8.28 (2.30)	.65	.78
Satisfaction, treatment	392	7.37 (2.60)	7.63 (2.30)	.91	.70
Total LSP score§	219	118.10 (15.56)	122.09 (16.06)	.07	.91

Abbreviations: BASIS, Basic Achievement Skills Individual Screener; CABHS, Consumer Survey for Behavioral Health Services; EST, emergency screening team; FFS, fee for service; LSP, Life Skills Profile; MCO, managed care organization; SF-12, 12-Item Short-Form Health Survey.

*Lower scores are fewer problems, *t* test.

†Higher scores are better health, *t* test.

‡Higher scores are more satisfaction, χ^2 test.

§Higher scores are higher functioning, *t* test.

tient treatment also met 2 of the guideline recommendations, however, even though there were no specific outpatient performance incentives provided in the contract at the time of the study.

The Massachusetts Medicaid program has one of the most generous benefit plans in the nation, and per-enrollee expenditures are among the highest.²⁴ In light of this, additional funding for community-based services might not increase recommended care. In any case, it is important to consider other factors that influence the provision of treatment. The lack of a financial incentive for outpatient clinicians to improve treatment may be one reason why most care did not meet the recommended standards. Another reason might be that physician training and clinical experience that occurred before the publication of the PORT guidelines may be one factor that contributed to low adherence. Knowledge of practice guidelines for mental disorders is low, even when efforts have been made to encourage evidence-based practice. Furthermore, implementation of evidence-based practices is a complex organizational task that requires considerable management effort and resources.

Evidence-based medicine is based on the premise that empirical research, when well done, constitutes the standard to which everyday practice should conform.^{25,26} However, randomized clinical trials, considered the gold standard of research, exclude many patients who the average clinician is likely to treat.²⁷ Even when effectiveness studies with more heterogeneous populations are included in the evidence base, as they are in the PORT literature review by Lehman et al,²⁸ the gap between the evidence-based (outpatient) treatment and everyday practice is, in the words of the Institute of Medicine, “not just a gap, but a chasm.”^{25(p1)}

Because patients in the managed care plan seemed to be more disabled at the start of the study, we used patient-level risk adjustment to compare managed and not FFS care. Unadjusted data indicate that outpatients in the managed care group were prescribed antipsychotic medication more often within guideline range. The MCO group, when hospitalized, was provided psychosocial

treatment, family contact, and follow-up appointments more often than the FFS group.

There are several possible explanations for these findings: sicker patients might receive more attention and obtain better treatment, oversight by managed care leads to greater adherence to the recommended guidelines, or financial incentives encourage care consistent with recommendations. Unfortunately, our data do not allow us to test these different explanations; the fact that the MCO plan beneficiaries received recommended care more often raises difficult questions about whether we consider quality of care to be relative or absolute. Should we expect that all treated beneficiaries, regardless of their social or clinical status, receive the recommended care?

This study has several limitations. The most difficult problem was operationalizing the PORT guidelines in such a way as to use abstracted medical record data to determine if the guidelines were met. These recommendations are conditional on specific circumstances, much like a medical decision tree algorithm. Unfortunately, medical records do not always provide adequate information to determine if conditions justify the treatment prescribed. Moreover, we found that records are sometimes incomplete, poorly organized, or missing.

The observed differences between our 2 groups of patients are less pronounced in the baseline clinical data we collected than in the subsequent use of services, suggesting larger unobserved clinical differences. We chose to enroll study subjects from ESTs based on observed data that indicated similarities in those who made such visits. However, it may have been that the most disabled patients with acute illnesses who were dually insured (FFS group) were examined for admission by their own physician and sent directly, if necessary, to a hospital without visiting the screening team. Because the financial incentive to hospitalize is greater for the FFS group, we cannot conclude that their lower hospitalization rates are an indicator of undertreatment. Instead, the higher hospitalization rates of the managed care group reflect observed lower functioning, and are consistent with the social data on the managed care group—more homelessness,

more often the victim of crime, and less education. In a recent report by McFarland et al,²⁹ Medicaid-managed care beneficiaries had longer inpatient episode lengths of stay than similar Medicaid FFS beneficiaries, leading the researchers to conclude that practice patterns may influence length of stay more than managed care.

The unexpectedly small number of subjects who were hospitalized after their crisis visit means that our data on the adherence to inpatient recommendations must be considered tentative. However, increasing the response rate of eligible individuals who refused probably would not have changed our findings unless they were systematically different in other ways or if they sought treatment from providers in sections of the state distant from the enrollment sites chosen and those providers were systematically different in their adherence to the recommendations. We believe this to be quite unlikely.

In this study, we deliberately limited our examination of managed care to a single acute episode because we believed that a long follow-up time (when patients were stable) would reflect the effect of community support services not covered by managed care. There is little evidence, however, that longer follow-up would produce different results. Other researchers^{30,31} have found no differences in level of functioning over the long-term after organizational interventions. It may be because of the following: (1) the pervasive nature of disabilities among those with long-term and severe mental illness and their socioeconomic circumstances are likely to have much stronger effects on outcome than managed care, (2) variations in conformity to the guideline recommendations dilute outcome effects, and (3) managed care aims to change provider behavior without lowering the standard of care that clients receive.

Investigators studying quality of care might consider 4 topics that will lead the field forward. First, we need to continue to examine how care is delivered in clinical settings so that we can better understand how guideline adherence is associated with clinical, functional, and satisfaction outcomes in everyday practice. Such studies are bound to be filled with noise from various sources, making the findings difficult to interpret. Nevertheless, published studies are fairly consistent in finding poor adherence to the guidelines. The one exception is the study by Young et al,¹² perhaps because of the sampling frame that included only adults in treatment for at least 3 months.

Second, we need to understand why evidence-based practice known to improve treatment to the most disabled and highest-risk adults with schizophrenia is not more common. A better understanding is needed of how physicians prescribe, what motivates their decision making, and how organizational culture influences practice. Studies of translating research on guideline implementation into practice must be a priority not just for national organizations but for state and local levels of physician organizations, state agencies, and MCO administrators.

Third, the methods used to measure the quality of care are rough and approximate at best. The guidelines represent the floor rather than the ceiling of good care, and we need to identify what constitutes high-quality treat-

ment and what measures are most appropriate to measure it. In this study (and others like it), only the presence or absence of compliance with all the guidelines but one, the medication dose, was measured. Furthermore, these guidelines focus more heavily on what Donabedian³² called the technical aspects of care, rather than on the interpersonal aspects. This study made a small effort to redress that imbalance, but a broader and more comprehensive approach needs to be developed.

Fourth, there is considerable discussion about what is the cost of quality care, or given the state of the art, what is the cost of minimally adequate care? We should be moving toward empirical research that examines whether adequate (or better) care is more expensive than poor care. Can we do good and do well at the same time?

We cannot develop new methods of delivering care to the sickest patients until we arrive at some consensus about what effort should be made to improve their treatment. It requires more effort to care for those who avoid treatment, who are unable to follow treatment directions, who are often inadequately housed, who are victims of crime, and who have histories of abuse. What is less certain is how much we are willing to pay and how hard we are willing to work for the improvement of their care.

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