The Effect of a Managed Behavioral Health Carve-Out on Quality of Care for Medicaid Patients Diagnosed as Having Schizophrenia

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Context: Managed behavioral health carve-outs (MBHCOs) are a regular feature of public and private mental health care systems and have been successful in reducing costs. The evidence on quality impacts is limited and suggests comparable quality overall, except that people with severe psychiatric disorders may be those most disadvantaged by MBHCOs.

Objective: To explore the effect of implementing an MBHCO on the quality of outpatient care received by enrollees diagnosed as having schizophrenia.

Design and Participants: Observational retrospective cohort study using a quasi-experimental design of state Medicaid enrollees diagnosed as having schizophrenia, aged 18 to 64 years between 1994 and 2000 in the carve-out and comparison regions (8082 person-years).

Setting: Ambulatory care.

Main Outcome Measures: Quality indicators derived from the Schizophrenia Patient Outcomes Research Team recommendations.

Results: There was no statistical difference between the carve-out and integrated arrangements in the likelihood of receiving any antipsychotic medication (odds ratio [OR], 1.02; 95% confidence interval [CI], 0.81-1.29), second-generation antipsychotics (including clozapine: OR, 1.05; 95% CI, 0.86-1.28; not including clozapine: OR, 1.05; 95% CI, 0.85-1.29), or antipsychotic medication (OR, 1.36; 95% CI, 0.84-2.19). The carve-out was negatively associated with receiving any individual therapy (OR, 0.27; 95% CI, 0.22-0.33), group therapy (OR, 0.19; 95% CI, 0.14-0.25), and psychosocial rehabilitation (OR, 0.31; 95% CI, 0.26-0.38). Family therapy occurred for less than 1% of this population in both carve-out and integrated regions.

Conclusions: The MBHCO was not associated with changes in medication quality (for which it was not at financial risk). It was significantly associated with sharp decreases in the likelihood of receiving psychosocial treatments (for which it was financially at risk)—independent of whether a clinical evidence base supported them.

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MANAGED BEHAVIORAL health carve-outs (MBHCOs) are a regular feature of the mental health care delivery landscape and have been successful in reducing costs. As states struggle to control Medicaid spending, they have turned to managed behavioral health care organizations to ration public mental health–substance abuse (MH/SA) care. More than 20 states have adopted carve-outs to manage MH/SA care in the Medicaid program. Carve-outs serve to separate part of the risk in a health insurance arrangement and manage it under a separate contract. Two sets of health insurance risks where this occurs frequently are mental health and substance abuse care (together referred to as behavioral health care) and prescription medications. There are several different approaches to organizing carve-out arrangements. There are multiple ways in which states can contract with carve-outs. In the analysis presented in this article, we focus on a carve-out contract where the state directly contracts with a specialty managed behavioral health care vendor. This arrangement is quite common within state Medicaid programs. Arizona, Colorado, Florida, Iowa, Massachusetts, Maryland, New Jersey, and Utah, among others, have adopted this approach. Under such contracts, specialty mental health services—which include psychotherapy, medication management, day treatment, inpatient care, psychosocial rehabilitation, and case management services—are managed by the carve-out vendor. The contract frequently includes financial risk for the carve-out vendor and some performance requirements.
Risk-based contracts range from pure capitation arrangements to contracts specifying high levels of risk sharing between the state Medicaid program and the vendor. Performance requirements span from the speed at which telephones for intake are answered to indicators of continuity of care. Carve-out contracts generally do not include management of prescription drug utilization.

The MBHCOs offer potential advantages and disadvantages. Among the disadvantages are incentives for cost shifting and concerns regarding barriers to access and coordination of care. The advantages include the application of specialized expertise to the rationing of MH/SA care, scale economies for smaller health plans, and, in some circumstances, protection against adverse selection. The idea of using clinical expertise, instead of cost-sharing provisions and limits on service use, to ration care offers the potential to contain costs and to maintain or improve quality of care by precisely targeting waste and inappropriate treatment. Additionally, such expertise can be used to develop performance standards and monitor the quality of care that patients receive. Existing research suggests that there are abundant opportunities to eliminate inefficient and ineffective MH/SA care. Extant evidence indicates that Medicaid MBHCOs decrease costs in the specialty mental health sector, but the literature is mixed with respect to the effect of MBHCO arrangements on quality of care, particularly for severely and persistently mentally ill patients in Medicaid.

This study uses a natural experiment in implementing an MBHCO within a state Medicaid program. Because existing evidence points to adverse impacts for people with severe mental disorders under managed care arrangements, we focus on the quality of care provided to people diagnosed as having schizophrenia. We make use of the treatment recommendations from the Schizophrenia Patient Outcomes Research Team (PORT) to measure quality of care. In addition to quality measures recommended by the PORT, we also include one measure (ie, psychosocial rehabilitation) that the PORT did not endorse because of an inadequate evidence base. This was to answer the following question: Does an MBHCO that is meant to apply specialized expertise in its care management discriminate between treatments supported by evidence-based recommendations and those that are not?
diagnosis of schizophrenia (n=1849), we were concerned that the diagnosis may have been formulated with less observation of a patient than that based on a full inpatient stay, possibly resulting in more false-positive results. We also did not want to exclude the most difficult-to-engage patients with schizophrenia who may have occasionally sought treatment. Therefore, for enrollees with a single outpatient diagnosis of schizophrenia, we conducted sensitivity analyses in which we varied the “threshold” (ie, the percentage of total mental health outpatient claims that the single schizophrenia claim represented) between 10% and 50%. Use of the strictest criteria resulted in 541 not meeting the 50% threshold, and they were excluded from the study population. Therefore, 94.2% (n=31,871) of the state's Medicaid enrollees who were diagnosed as having schizophrenia met our diagnostic study criteria. Enrollees aged 18 through 64 years who met the diagnostic criteria and resided in the comparison and carve-out regions were included.

As noted above, the people identified as having schizophrenia had to be continuously enrolled to be included in this cohort. Continuous enrollment was defined as the following: per fiscal year, months not enrolled in Medicaid plus months in a Medicaid HMO must be less than 6 months.

**DEPENDENT VARIABLES: QUALITY OF CARE MEASURES**

Lehman et al16 conducted exhaustive reviews of the treatment outcomes literature for schizophrenia and published evidence-based recommendations for pharmacologic and psychotherapeutic treatments. These PORT treatment recommendations were rated according to the level of evidence supporting them. The PORT recommendations are therefore a useful tool to describe the quality of care received by enrollees diagnosed as having schizophrenia. Process measures observable in claims data were selected from the PORT recommendations, characterized as dichotomous variables except those knowable in claims data, this measure was not examined.

Explanatory variables included age, sex, race, Medicaid eligibility category, Social Security Insurance status, and presence of substance use disorder comorbidity. We also controlled for the months elapsed in the program (independent of carve-out status) in a given fiscal year. All variables were measured as dummy variables except age and months enrolled. The difference in difference analysis used dummy variables for region (ie, carve-out vs comparison regions) and time (ie, before vs after carve-out), and an interaction term between the two served as the difference in difference estimator. Thus, the estimator is the difference in the before and after periods in the region that adopted the MBHCO relative to the difference in the before and after periods in the control regions. The strength of this design is that it allows us to factor out differences in utilization that are independent of the carve-out but might otherwise be attributed to it, such as baseline utilization differences between the regions.

**STATISTICAL ANALYSIS**

Bivariate summary statistics were computed by region and before–vs after carve-out period; unpaired, 2-tailed t tests were used for continuous variables and Wald χ² for categorical variables. The difference in differences model was estimated by means of logit regressions for each of the dependent quality measures. To account for clustering and autocorrelation in the context of non-gaussian error terms, we used the generalized estimating equation. Thus, the estimated standard errors are robust to autocorrelation and clustering.

**RESULTS**

Initial analyses showed that the schizophrenia populations in the carve-out and comparison regions changed differently during the after–carve-out period in 2 ways: (1) the comparison regions more than doubled in their schizophrenia person-year population, whereas the carve-out region grew only 7% relative to the before–carve-out period, and (2) after carve-out, the comparison regions differed in their populations based on Medicaid eligibility categories (ie, Social Security Insurance, Aid to Families With Dependent Children, or otherwise eligible). The regions also differed in their ethnic composition in both before and after periods. Therefore, instead of comparing the before and after periods for all schizophrenia-diagnosed enrollees in these regions, we matched enrollees in the before period on Medicaid eligibility category and race, and similarly matched enrollees in the after period. Table 1 shows the results of that matching. After matching, the populations were similar in both matched and unmatched characteristics for the before and after periods.

**QUALITY MEASURES BY REGION**

Table 2 describes, after matching, the person-year frequency with which the schizophrenia-diagnosed enrollees received any care consistent with each quality indicator. Regardless of region or study period, more than...
85% of these enrollees received some antipsychotic medication. In contrast, very few enrollees (<1%) in any region received family therapy. Before carve-out, more schizophrenia-diagnosed patients in the carve-out region received individual therapy (63.9% vs 48.3%), group therapy (32.9% vs 21.4%), or either (71.7% vs 56.5%) compared with those in comparison regions. The opposite was true for psychosocial rehabilitation: 39.7% in the carve-out region vs 48.8% in the comparison regions. In contrast, after carve-out, schizophrenia-diagnosed patients in comparison regions had higher frequencies of all of the PORT-recommended psychosocial treat-
ments; they were still at less than 50% of the population (individual therapy, 16.4% in carve-out region vs 26.5% in comparison regions; group therapy, 8.4% in carve-out region vs 17.9% in comparison regions; individual or group therapy, 20.3% in carve-out region vs 36.9% in comparison regions). Also, after carve-out, psychosocial rehabilitation was more likely to be received by schizophrenia-diagnosed enrollees in comparison regions than those in the carve-out (42.9% vs 16.4%, respectively).

**IMPACT OF CARVE-OUT ON QUALITY**

Table 3 reports the difference in differences results of each of the logit regressions. Separate models were run for the outcome measure of all second-generation antipsychotics (ie, including clozapine) and all second-generation antipsychotic medications excluding clozapine. The results for both models were quite similar for the 2 specifications. The estimated coefficients for the difference in differences estimator implies that people enrolled in the carve-out program had the same likelihood of being treated with antipsychotic medications—including the more expensive second-generation antipsychotic medications—as those who were treated in the comparison regions (any antipsychotic: odds ratio [OR], 1.02; 95% confidence interval [CI], 0.81-1.29; second-generation antipsychotic [not including clozapine]: OR, 1.05; 95% CI, 0.85-1.29; second-generation antipsychotic [including clozapine]: OR, 1.05; 95% CI, 0.86-1.28). Also, the carve-out was not associated with changes in the likelihood of receiving anti-extrapyramidal symptom medications, conditional on receiving a first-generation antipsychotic (OR, 1.36; 95% CI, 0.84-2.19). In contrast, schizophrenia-diagnosed persons in the carve-out region were one-fourth to one-fifth as likely to receive any PORT-recommended individual therapy (OR, 0.27; 95% CI, 0.22-0.33), group therapy (OR, 0.19; 95% CI, 0.14-0.25), or either (OR, 0.20; 95% CI, 0.16-0.24) than otherwise similar enrollees not enrolled in the carve-out. Medicaid recipients diagnosed as having schizophrenia were about as three as likely to receive any psychosocial rehabilitation (not a PORT recommendation) in the MBHCO region (OR, 0.31; 95% CI, 0.26-0.38). Family therapy claims occurred too infrequently to be used as a dependent measure.

### LIMITATIONS AND STRENGTHS

This analysis relies on diagnoses based on administrative data to determine its cohort. While the gold standard for diagnosis is a structured clinical evaluation, comparisons between Medicaid claims-based diagnoses of schizophrenia with clinical interviews and chart reviews have demonstrated substantial agreement between them. Thus, claims-based schizophrenia diagnoses appear to have adequate validity for case finding. Furthermore, this schizophrenia cohort was constructed in an effort to maximize inclusion of all enrollees who were true positives (and minimize false positives) for the diagnosis. We used a “confirmatory diagnosis” in the claims data and also established criteria so as not to exclude those who received only 1 diagnosis of schizophrenia because they were not successfully engaged in treatment. However, there is evidence that people who meet criteria for schizophrenia by clinical examination may not be diagnosed as such in the claims data. Thus, while we have likely maximized the true positives, we are less confident of the false negatives who did not meet these cohort criteria and therefore are not included in the study.

These results are consistent with previous studies documenting that family and group therapies are not extensively used in the treatment of schizophrenia, independent of managed care. They are also consistent with the PORT conformance study results that showed considerably higher rates for antipsychotic medications than for psychosocial treatments. While conformance to PORT-recommended antipsychotic use is similar in both studies (87.1% vs 89.2%-92.3% in the PORT), the outpatient psychotherapies differ: in fiscal years 1994 to 1996, the overall proportion receiving individual and/or group psychotherapy was 61.4% in this study compared with 45.0% in the PORT conformance study, but after 1996 the proportion decreased to 28.6% overall. Family therapy was also more prevalent in the PORT conformance study than in this population (<1% vs 9.6% in the PORT). However, these data are not directly comparable. The PORT used chart review data and clinical interviews, whereas this study relies on claims data. Similarly, while approxi-

<table>
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<th>Outcome*</th>
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<th>OR</th>
<th>CI</th>
<th>P</th>
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<td>Receiving any antipsychotic medication</td>
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<td>0.460</td>
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<td>.65</td>
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<td>Receiving psychosocial rehabilitation</td>
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<td>0.842-2.187</td>
<td>.21</td>
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<tr>
<td>Receiving any individual therapy or group therapy</td>
<td>-12.138</td>
<td>0.188</td>
<td>0.144-0.246</td>
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Abbreviations: CI, confidence interval; EPS, extrapyramidal symptom; OR, odds ratio.

*Family therapy claims occurred too infrequently to be modeled as a dependent measure.
approximately 85% of all beneficiaries with schizophrenia in our analysis were treated with an antipsychotic medication, unlike the PORT, we did not assess whether they received appropriate doses for adequate durations. This analysis used a far looser indicator of quality: whether a patient received any prescription for antipsychotics in a given fiscal year. Similarly, our therapy quality measures were defined as whether these patients had at least one session in a given fiscal year; we did not assess the “dose” or duration of therapy utilization. While in general it is difficult to define exactly what is an appropriate level of utilization, it is reasonable to expect that a high proportion of patients with schizophrenia receive at least one of these services (ie, family therapy, group or individual therapy).

The low rate of family therapy codes in Medicaid (independent of region or time) does not necessarily mean that family members were uninvolved in treatment or received no services. Dixon et al interviewed a randomly selected sample of Medicaid patients from one state and found that 30% of those with ongoing family contact reported their family received information about their illness, treatment, or support and advice. However, only 8% responded that their family attended an educational or support program. Analysis of Medicaid claims showed that 7.1% of the patients diagnosed as having schizophrenia (including those with and without ongoing family contact) had a claim for family therapy services. Thus, while claims data likely do not fully reflect the receipt of any education, support, or advice, they do appear to reflect family therapy of an intensity that is most likely to be consistent with PORT recommendations.

It is important to note particular limitations of psychosocial process measures identified through claims data. First, the PORT recommends individual, group, and family therapies that are well defined and contain specific content tailored to an individual’s or family’s needs. The specific content of psychosocial treatments is not knowable in administrative claims, nor is such information easily or accurately assessed through patient interview or chart review. As in all quality assessment of usual care, variations in quality of a specific service are expected because of a combination of varying levels of clinician skill, knowledge of evidence-based care, and adequacy of resources. While possible, it is unlikely that the reduction in individual and group psychotherapies associated with the carve-out represents only cuts in therapies that were not conforming to PORT content recommendations.

Recently, Dickey et al also examined the impact of an MBHCO on the receipt of PORT-recommended quality measures for schizophrenia-diagnosed Medicaid enrollees in Massachusetts and found no differences between the MBHCO and fee-for-service groups. That study is not directly comparable to ours. In our analysis all non-dually eligible (ie, Medicaid and Medicare) recipients diagnosed as having schizophrenia were eligible; the analysis by Dickey et al included those dually eligible and also only those who presented for care in a crisis during the study period. Utilization in our study was determined solely by claims data and was considered for each person-year; in the study by Dickey et al, utilization was determined by clinical interview and/or claims data and only for the first 6 months after presenting for treatment in crisis. Also, significantly, our study used a different design: we used a quasi-experimental design that allowed us to control for trends independent of the carve-out, whereas theirs was cross-sectional. Finally, Dickey et al examined a different set of contractual relationships between the MBHCO and the state. In Massachusetts, the MBHCO had limited risk of financial gain or loss. In our study, the MBHCO assumed full financial risk for all nonpharmacologic mental health treatments. Despite these differences in determination of population and utilization, study design, and local context, in the one quality measure directly comparable between studies (ie, any antipsychotic use), both analyses indicated similar levels of PORT conformance.

Finally, this study found that the likelihood of receiving the nonclozapine second-generation antipsychotic medications increased by approximately 250% during the study period, independent of the carve-out. However, it is unclear whether this penetration rate is appropriate. Current recommendations are that persons who are stable with first-generation antipsychotic medication and not experiencing significant adverse effects should not be switched to second-generation antipsychotics. Therefore, in the absence of knowing other clinical details of these patients, it is impossible to comment on the appropriateness of this observed prescribing pattern.

**POLICY IMPLICATIONS**

The results of the analysis of the quasi-experiment suggest that for continuously enrolled non-HMO Medicaid recipients diagnosed as having schizophrenia, the MBHCO was associated with a sharp reduction in the likelihood of receiving any individual and/or group therapy and psychosocial rehabilitation. In fact, the reductions in the probability of receiving individual and/or group therapy were greater than for the probability of receiving psychosocial rehabilitation treatments—despite the fact that these latter treatments have greater clinical therapeutic uncertainty. The results also indicate that the carve-out did not affect the likelihood of being treated with medications indicated for the treatment of schizophrenia—even the newest, most expensive antipsychotic medications that offer therapeutic advantages over first-generation antipsychotics. Of importance, prescribing these medications had no direct economic consequence for the carve-out vendor.

The analyses described herein lead us to a number of observations with implications for policy. First, the data suggest that there are some clear indications of shortcomings in the quality of care for schizophrenia that are independent of whether the mental health care was carved out. The low rates of adoption of measures consistent with evidence-based practices such as individual/group and family therapy are striking.

Carve-out programs respond to the incentives contained in their contracts. Our analysis shows that, in an area where strong financial incentives were implemented, substantial reductions in quality were observed. In contrast, when the carve-out was not financially at risk, we saw no decrement in quality. Two policy issues stem from these observations. One is that the use of high-powered incentives to contain costs of caring for disadvantaged and vulnerable populations will likely yield substantial savings but appears to also result in important reductions in the qual-
ity of care for people with schizophrenia, particularly if the contract does not include quality performance standards. Contracts with weaker financial incentives for the carve-out vendor may offer a more attractive trade-off between cost containment and quality.

A second policy issue concerns efforts to improve quality through public reporting. The results reported herein indicate that quality problems occur where there are high-powered incentives in place. In the mental health field, where carve-out arrangements virtually never include incentives to reduce prescribing of psychotropic medication, quality assessment efforts that focus on pharmacotherapies may not be measuring the therapeutic services that are most at risk. This means that quality-of-care measurement efforts should include measuring treatments that are likely to be affected by incentive arrangements.

These results also raise questions regarding the argument that MBHCOS use specialized expertise in the ratification of MH/SA care. In the wake of these financial incentives, the specialty mental health carve-out arrangement was associated with sharp cuts in psycho-social treatments that have a known evidence base supporting them, as well as those without such an evidence base. These results point to limitations in the use of evidence-based practice recommendations in the face of high-powered financial incentives.

Finally, while there were clear treatment quality problems in this population that appear to be independent of the carve-out, quality problems in usual-care practice are not limited to one state, service system, disorder, or medical discipline. The American health care system does not do well with complex, chronic conditions. Add financial stress to the system (as is often the case, particularly in the public sector) and conditions can worsen. Full-risk contracts clearly reduce cost but, without adequate accountability, run the risk of deteriorating quality of care for vulnerable patients. Improving quality requires quality assessment as well as accountability that penalizes for poor-quality care. By “paying for quality,” policymakers can realign the financial incentives to promote quality standards, not just cost containment.

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