

Variation in Outpatient Mental Health Service Utilization under Capitation

Ann F. Chou,^{1*} Neal Wallace,² Joan R. Bloom,³ Teh-Wei Hu³

¹ Ph.D., MPH, Assistant Professor, Health Services & Research Development, Richard L. Roudebush VA Medical Center, and Indiana University-Purdue University Indianapolis, IN, USA

² Ph.D., Assistant Professor, Portland State University, Portland, OR, USA

³ Ph.D., Professor, University of California, Berkeley, CA, USA

Abstract

Background: To improve the financing of Colorado's public mental health system, the state designed, implemented, and evaluated a pilot program that consisted of three reimbursement models for the provision of outpatient services. Community mental health centers (CMHCs), the primary providers of comprehensive mental health services to Medicaid recipients in Colorado, had to search for innovative ways to provide cost-effective services.

Study Aims: This study assessed outpatient service delivery to Medicaid-eligible consumers under this program. This paper is among the first to study variations in the delivery of specific types of outpatient mental health services under capitated financing systems.

Methods: This study uses claims data (1994-1997) from Colorado's Medicaid and Mental Health Services Agency. The fee-for-service (FFS) model served as the comparison model. Two capitated models under evaluation are: (i) direct capitation (DC), where the state contracts with a non-profit entity to provide both the services and administers the capitated financing, and (ii) managed behavioral health organization (MBHO), which is a joint venture between a for-profit company who manages the capitated financing and a number of non-profit entities who deliver the services. A sample of severely mentally ill patients who reported at least one inpatient visit was included in the analysis. Types of outpatient services of interest are: day-treatment visits, group therapy, individual therapy, medication monitoring, case management, testing, and all other services. Comparisons were set up to examine differences in service utilization and cost between FFS and each of the two capitated models, using a two-part model across three time periods.

Results: Results showed differences in service delivery among reimbursement models over time. Capitated providers had higher initial utilization in most outpatient service categories than their FFS counterparts and as a result of capitation, outpatient services delivered under these providers decreased to converge to the FFS pattern. Findings also suggest substitution between group therapy and individual psychotherapy. Overall, more service integration was

observed and less complex service packages were provided post capitation.

Implication for Health Care Provision and Policies: Financing models and organizational arrangements have an impact on mental health service delivery. Changes in utilization and costs of specific types of outpatient services reflect the effects of capitation. Understanding the mechanism for these changes may lead to more streamlined service delivery allowing extra funding for expanding the range of cost-effective treatment alternatives. These changes pose implications for improving the financing of public mental health systems, coordination of mental health services with other healthcare and human services, and provision of services through a more efficient financing system.

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Introduction

As costs of public mental health services grow rapidly,* a number of states became interested in managed care as a mechanism to contain cost, many of which involve capitated contracts with providers.¹⁻⁷

Capitation involves a fixed amount of prepayment per individual over a defined time period to a provider covering a specific set of services.^{8,9} For providers, the capitated method creates incentives for cost control because capitation serves to constrain the prescription of costly treatment in order to maximize income.¹⁰ Proponents of capitation have suggested that benefits of such mechanism include creating incentives to reduce costs; increasing flexibility, control, coordination, and efficiency in the delivery of services; empowering clients and staff; promoting provider accountability; and improving ability to care for people in the community.^{8,10-14} However, there are some risks inherent in capitation. For example, the goal of cost containment may motivate a clinic to confine the provision of service to

* **Correspondence to:** Ann F. Chou, PhD, MPH, Assistant Professor, Health Services & Research Development, Richard L. Roudebush VA Medical Center, and Indiana University-Purdue University, 801 W. Michigan St., Indianapolis, IN 46202, USA

Tel.: +1-317-274 5417

Fax: +1-317-374 7860

E-mail: achou@iupui.edu

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* The change in per capita mental health expenditures between 1993 and 1997 was a 14.2% increase for the US average. However, in the Mountain Region of the US where the state of Colorado is situated, the per capita mental health expenditures increased by 42.6%.¹⁵ The change in per capita national health expenditures for the same time period was 24.7%.¹⁶

existing patients rather than to create access for new patients. In addition, patient access to specialists as well as more expensive services may be restricted, and individuals who are perceived as high, therefore costly, users may become excluded from care.⁸

The main assumption underlying the application of capitation in general medical care is risk-sharing across a population, with the individuals who require care balancing out those who do not. However, in the case of the chronically mentally ill, a group requiring comparatively more intensive services, the risk-sharing concept is less useful. Capitation can be applied to this patient population as a tool to “consolidate financing, focus responsibility, and reduce service fragmentation.”⁹ Among the intended outcomes of capitating chronically mentally ill patients, greater flexibility in care management, appropriate service linkage, secondary and tertiary prevention, and resource allocation for the development of innovative services may be achieved.^{9,10,17} On the other hand, Babigian *et al.*² identified two problems associated with capitation delivery systems for the severely mentally ill. First, severely mentally ill patients often receive care from more than one provider or even agencies, which can lead to discontinuous or disruptive care.^{2,18} Second, capitation in mental health may encourage the substitution of less expensive services for more expensive hospitalization, which can lead to adverse outcomes.^{2,19}

Empirical studies examining capitated mental health models have yielded mixed results. In terms of cost containment, Babigian *et al.*,² Cole *et al.*,²⁰ Reed *et al.*^{6,7,13} reported that capitation reduced costs, but the effect decreased over time. Patients in capitated sites received less costly services than those enrolled in fee-for-service (FFS) plans while the cost savings did not seem to have affected outcomes.²⁰⁻²³ Much of the cost savings have been generated from substituting outpatient for inpatient services.² With regards to service provision, capitation has been shown to provide service flexibility with a shift towards rehabilitation and greater ability for new service development, compared to FFS.^{24,25} The only available study focusing on outpatient service delivery was Liu *et al.*'s analysis¹ of the Utah Prepaid Mental Health Plan. They reported no difference in service delivery at baseline between those in capitation and FFS. Controlling for mental health status, they found significant reduction in day treatment visits and an increase in the number of medication and individual therapy visits. No difference was observed for group therapy and crisis visits between the two financing systems.¹

In general, understanding the effects of managed care techniques on the public mental health system has been limited by a lack of conclusive information from empirical research. In particular, the effectiveness of capitation in controlling costs while maintaining access to and quality of care warrants a closer examination.^{8,11,22,26} Although some of the aforementioned research has indicated that the adoption of capitation reduces mental health expenditures without negatively impacting those with less severe mental health symptoms,^{4,22,23} how managed care models affect severely mentally ill patients in terms of outpatient treatment patterns or the outpatient setting in general remains mostly

unknown.⁸ Furthermore, evidence on the differences in overall costs and the provision of benefits to the severely mentally ill remains limited.¹⁷

More systematic, longitudinal information about those who are severely mentally ill as well as service utilization can bridge current knowledge gaps in this area.^{8,27} It is critical to understand the “patterns of use” in this population in order to institute appropriate managed care models that ensure high quality of care, predict costs, and heighten the agency's overall ability to design, monitor, and evaluate public mental health systems.^{8,28} This study represents one of the first opportunities to capture changes resulting from system transitions and assess in detail, the changes in the provision of specific types of outpatient services. The objectives of this study are to determine how the implementation of the capitated public mental health system in Colorado has affected: (i) the probability of providing specific outpatient services to Medicaid-eligible consumers; and (ii) the utilization pattern associated with each type of service and as a proportion of total outpatient utilization.

Colorado's Medicaid Mental Health System: The Change in Governance

Major providers of Colorado's public outpatient mental health services for the seriously mentally ill are 17 Community Mental Health Centers (CMHCs) and five specialty clinics with performance contracts from Colorado's mental health authority, the Mental Health Services (MHS). The CMHCs in Colorado are geographically based and provide a broad range of outpatient mental health services to Medicaid and non-Medicaid clients

With goals aimed at controlling costs, and improving access and outcomes of mental health services, the Colorado State Legislature mandated the MHS to design, implement, and evaluate a pilot program of a single point of entry, pre-paid capitation system to provide comprehensive mental health services to Medicaid recipients. Employing a capitated financing system, Colorado's approach to capitation has imposed one of the purest forms of capitation. First, the capitation rate covers all Medicaid eligible individuals for both inpatient and outpatient services. Second, the entities established for the purpose of administering capitated service delivery, the Mental Health Assessment and Service Agencies (MHASAs), were at full risk from the program's inception. Third, decisions regarding reinsurance or other measures to protect the MHASAs from high-risk clients are determined by each MHASA.

In Colorado, the competitive bidding process occurred at the CMHC level rather than the state level. The process in Colorado differed from those of other states, in that Colorado allowed both not-for-profit and for-profit entities to submit separate bids for various geographic regions. CMHCs and for-profit organizations that were interested in obtaining the capitated contracts organized within the MHASA framework for the bidding.²⁹

The bidding process led to two capitated arrangements under the pilot program. The two capitated arrangements

differed by their ownership status: (i) Direct capitation (DC) with publicly funded CMHCs, which are non-profit [n=6 CMHCs], where the CMHCs provide both the services and administer capitated financing; and (ii) Capitation with a joint venture between a for-profit managed behavioral health organization (MBHO) and a single or consortium of CMHCs [n=8 CMHCs], where the MBHO manages the capitation financing and the CMHCs deliver the services. Three freestanding CMHCs continued to be reimbursed under the FFS scheme, and served as the comparison.

The MHASAs played a major role in facilitating the implementation of capitation in Colorado. In the geographic regions where the capitation pilot project was implemented, MHASAs either provided mental health services directly or through subcontracts with other providers. The capitation rates were based on historical usage within the MHASAs and varied by Medicaid eligibility categories and geographic location. Total capitated payments were determined by the expected number of Medicaid-eligible consumers for each group, paid prospectively on a monthly basis. These amounts were adjusted by the actual monthly enrollment.

The competitive bidding process in place did not allow randomization of capitated sites as capitated sites were selected based on their "readiness for capitation." The "readiness" criteria included administrative capabilities regarding centralized information and financial management. Nevertheless, the two regions selected for capitation and the FFS region are comparable in their make-up of rural, urban, suburban, and frontier areas. The DC models were implemented in the northern part of the state. The western and southern part of the state adopted the MBHO model while one of the three CMHCs that remained FFS served the Denver area.

Early results from Colorado's program evaluation indicated that reductions in the costs of providing mental health care to consumers, with little change in outcomes of care, could be attributed to capitation.³⁰ The MBHO model appeared to be associated with lower costs than either the DC model or FFS reimbursement although the contract restricts for-profit managed care organizations to a profit cap of five percent. Savings from the individual MHASAs were redirected to the provision of services to non-Medicaid eligible, but needy adults and children. Further, innovations in service configurations and increased service capacity had occurred within capitated agencies over the evaluation period, relative to the FFS sites.²⁴

Methods

Study Design

This study employs a quasi-experimental, pre-post design. Cost and utilization of six service categories are determined and compared between each capitated financing system and FFS. The pre-post design refers to a period (1994-1995) before capitation and two periods after the implementation of capitation (1995-1996 and 1996-1997).

Data and Sample

The state Medicaid agency provided Medicaid claims data for all FFS claims from hospital, health and mental health specialty clinics, primary and mental health specialty independent practitioners. Colorado's Mental Health Services supplied similar claims data from a Shadow Billing System on costs and utilization of specialty mental health services under capitation. The Shadow Billing System was created specifically for collecting data for the pilot program, capturing costs and utilization from the capitated sites. The Shadow data system has high accuracy as the State of Colorado has validated the measures contained in this data system. These two datasets were merged to create a file for capturing utilization patterns.

Within the selected counties, severely and persistently mentally ill adults aged 18 and over with diagnoses of schizophrenia, bipolar disorder, or at least one 24-hour inpatient stay with a primary mental health (DSM-IV) diagnosis were randomly selected. Counties from which the sample was drawn were matched on percent poverty, degree of rurality based on the 1990 U.S. census, and comparable industrial bases (e.g., a geographical area whose major industry is mining was not compared to one that is primarily ranching). Prior to random selection, the sample was stratified by gender and cost incurred from mental health services during the previous year. Seventy-five percent of the sample has already been known to the system, where they have had contact with the system during the year prior to the implementation of capitation, the remainder were new to the system following capitation.²⁹

Based on power analyses, we planned to recruit a final sample of 653, with 256 subjects in each model. Fifty percent of the sample was drawn from the 1993 Medicaid files, which is about two years prior to the implementation of capitation, while the other 50% were drawn from CMHC rolls one year before the implementation of capitation. Although recruitment targets were not met in some of the smaller CMHCs, a final sample of 683 (71% acceptance rate and 81% retention rate) exceeded initial projections. However, about 25% of the total sample was excluded from these analyses because they were recruited after capitation was in place. The goal of our study to make pre-post comparisons limited participation to consumers who entered the study prior to the implementation of capitation. Of the 75% of the sample that remained, about two-thirds were identified via the Medicaid files and one-third came from the CMHC rolls. Utilization associated with a particular type of service were derived from a sample of 522 patients, which included 176 subjects from DC areas, 195 from MBHO areas, and 151 from the FFS areas.²⁹ Patients in the sample remained in the study all three years, regardless of service use during this time.

Measures

Service Use

Utilization in each service category in a given period is derived from claims data. The utilization of each service

category is measured by the number of visits per individual consumer. An outpatient visit is defined by the receipt of one or more units of a specific outpatient treatment modality in a day. Specific outpatient services of interest include: (i) day treatment; (ii) group therapy; (iii) individual psychotherapy; (iv) medication monitoring; (v) case management; (vi) psychiatric intervention and testing; and (vii) other services, such as emergency department visits and crisis care. Due to the coding structure, we cannot differentiate emergency department visits and crisis care from other types of services in this category.

Expenditures

Costs are determined by summing all costs associated with a particular service category incurred by the patient during a given period.

Financing Models and Capitation Period

Two dummy variables were constructed for each of the two capitated arrangements: DC and MBHO, with the existing FFS system serving as reference to detect baseline differences among the models. To capture the effects of the secular trend, two dummy variables were created for each period, 1995-1996 and 1996-1997, after capitation was implemented. The period prior to the implementation of capitation, 1994-1995, where the state mental health system employed a FFS reimbursement structure, was used as the comparison. To examine the synergistic effect of a specific model in a given period and, thereby, understand the effect the policy change, interaction terms of the type of model and period post capitation were created.

Control Variables

Individual diagnosis, age, gender, cost risks, and ethnicity were controlled in this analysis. For individual diagnosis, two dummy variables were created for those who were diagnosed with schizophrenia and bipolar disorder. Individual consumers selected from the 1994 Medicaid files were stratified by Medicaid cost in the previous year (based on the median of the distribution where low cost was defined as expenditures up to \$1,500 and high cost ranged from \$1,500 to \$85,000). Dummy variables were created for high-cost and low-cost users from the Medicaid files. Individuals in the CMHC Rolls made up the comparison group.

Analysis

To assess the effects of capitated financing, a “difference in difference” model is employed. The model identifies differences in utilization for patients in the DC and MBHO areas post capitation as compared to their pre-capitation conditions as well as to their counterparts who continued to receive care under the FFS model. To that end, the model includes dichotomous variables identifying subjects from one of the two capitated areas, with the FFS area serving as comparison; dichotomous variables for the two post capitation periods; interaction variables of capitation model and time period, cost risks (high v. low), controlling for diagnosis, age, gender, and ethnicity. The “difference in

difference” approach is applied partly because of expectations that initial differences in service utilization prior to the implementation of capitation may exist.²⁹

The general model is adjusted for the presence of individual consumers who had not used services in a particular category in a given period, by using a two-part model. The two-part model separates the assessment of probability of service use from the assessment of the quantity of service use. This allows for the identification of potentially different capitation effects for these two important aspects in the treatment process. In part one of the model, the dependent variable for each service category was transformed into a binary variable with a unit value if any utilization was indicated in the given period. This binary variable was created for each of the seven service categories. The probability of using a certain service was estimated using the logistic regression model. The estimated coefficients of the type of capitated model by post capitation time period interaction terms provided relative probabilities of service use for subjects in the capitated areas post capitation, relative to FFS subjects. In part two of the model, only observations where the individual had accessed the service of interest were kept. Ordinary least squares (OLS) regression analyses were applied to this observation set with the dependent variable equal to the logarithm of service use for each service category. A second regression was performed with the dependent variable equal to the logarithm of costs of services used. The logarithmic transformation of the dependent variable was done to adjust for the typical positive skewness of service utilization distributions.³¹

We chose to use the log transformation and did not retransform the results because our main objective is to explore how service use is shifting at the individual level, rather than if the total amount of services provided is changing. Since we have a right-skewed distribution, we feel that individual level change is better identified through change in the median. Although the untransformed coefficient does not tell us how the mean is changing by fully taking into account all the outliers, the change in the median of service use (which is approximated by the mean of the log of utilization) provides very useful information about how a typical user who is severely mental ill uses a particular service.^{31,32}

For both the logistic and OLS analyses, the standard errors of the coefficients were adjusted to account for the potential lack of independence of observations for each subject over time.²⁹ Using the “cluster” option in STATA (STATA command ‘robust, cluster (patient ID),’ STATA Corp., 1997), we applied a generalized correction to the standard errors for heteroscedasticity, as well as an adjustment for potential correlation across observations for the same individual.

Results

Descriptive statistics in **Table 1** showed that approximately 75% of our sample were between 18 and 50 years of age.

More than half were white, female, with a diagnosis of schizophrenia, and about a third of the sample were high-cost consumers. At least 90% of the sample has recorded service use during the period prior to the implementation of capitation. Chi-square tests on distributions across the three financing arrangements indicated that ethnicity, diagnosis, and service use at baseline were significantly different.

In terms of outpatient service utilization, the overall pattern of outpatient service use differed by financing model over three years (**Figure 1**). The total number of outpatient services remained stable under the FFS system. Under the DC model, the total number of outpatient services decreased during the second period, which was one-year post capitation, and then increased slightly in the third period, which was two years post capitation. The total number of outpatient services under the MBHO model drastically declined over the two years post capitation. The Chi-square test on the distributions across the three time periods indicates that total outpatient service utilization for the three financing arrangements were significantly different.

Table 2 illustrates the patterns of outpatient service delivery by specific service categories (e.g., day treatment, group therapy, individual psychotherapy, medication monitoring, case management, and psychiatric intervention/testing). It provides information about the number of service units rendered, mean costs and standard deviation associated with a particular type of service during each of the three time periods. Utilization patterns under the FFS model remained

mostly stable, with slight increases observed in the second and third years in most service categories. The only exception is in the “other” service category, where the number of service units showed a steady decline.

Under the DC model, day treatment and group therapy had an initial drop in number of services provided one year post capitation but showed an increase two years post capitation, compared to baseline figures. Service units for individual psychotherapy, medication monitoring, case management, intervention/testing, and other services all decrease following the implementation of capitation. Under the MBHO model, the number of service units in all seven service categories declined over the two periods post capitation. Although both DC and MBHO were capitated arrangements, their service utilization patterns may have differed due to their different philosophies in service provision and therefore their approach to program management. Chi-square tests on the distributions across the three time periods indicate that the utilization of day treatment, medication monitoring, and case management among the three financing arrangements were significantly different.

Table 3 presents the results from the logistic regression analysis. The results are interpreted to measure (i) baseline differences between the capitated financing and the FFS model; (ii) the secular trend; and (iii) the effects of the change in financing. Overall, there were significant differences between models at baseline and the secular trends in the probability of service use. Comparing to the FFS

Table 1. Sample Sociodemographic and Service Use Characteristics

	FFS (%) (n=151)	DC (%) (n=176)	MBHO (%) (n=195)	χ^2
Gender				
Male	44.4	47.7	49.7	0.99 (p<0.61)
Female	55.6	52.3	50.3	
Ethnicity				
White	54.3	73.9	64.1	15.84 (p≤0.01)
African-American	15.9	4.0	5.6	
Latino	12.6	8.5	16.4	
Other	17.2	13.7	13.8	
Age				
18-35	28.5	35.8	27.2	9.66 (p<0.14)
36-50	49.0	40.3	42.6	
51-65	13.9	18.2	17.9	
65+	8.6	5.7	12.3	
Diagnosis				
Schizophrenia	75.7	62.3	66.8	8.62 (p<0.071)
Bipolar	22.2	30.9	26.3	
Other	2.1	6.9	6.8	
High Cost User	37.1	30.9	31.8	7.80 (p<0.100)
Initial Service Use				
Total	89.4	93.8	90.3	27.71 (p<0.0001)
Local Inpatient	14.6	8.0	9.7	
State Hospital	4.0	1.7	14.4	
Outpatient	89.4	93.8	87.7	

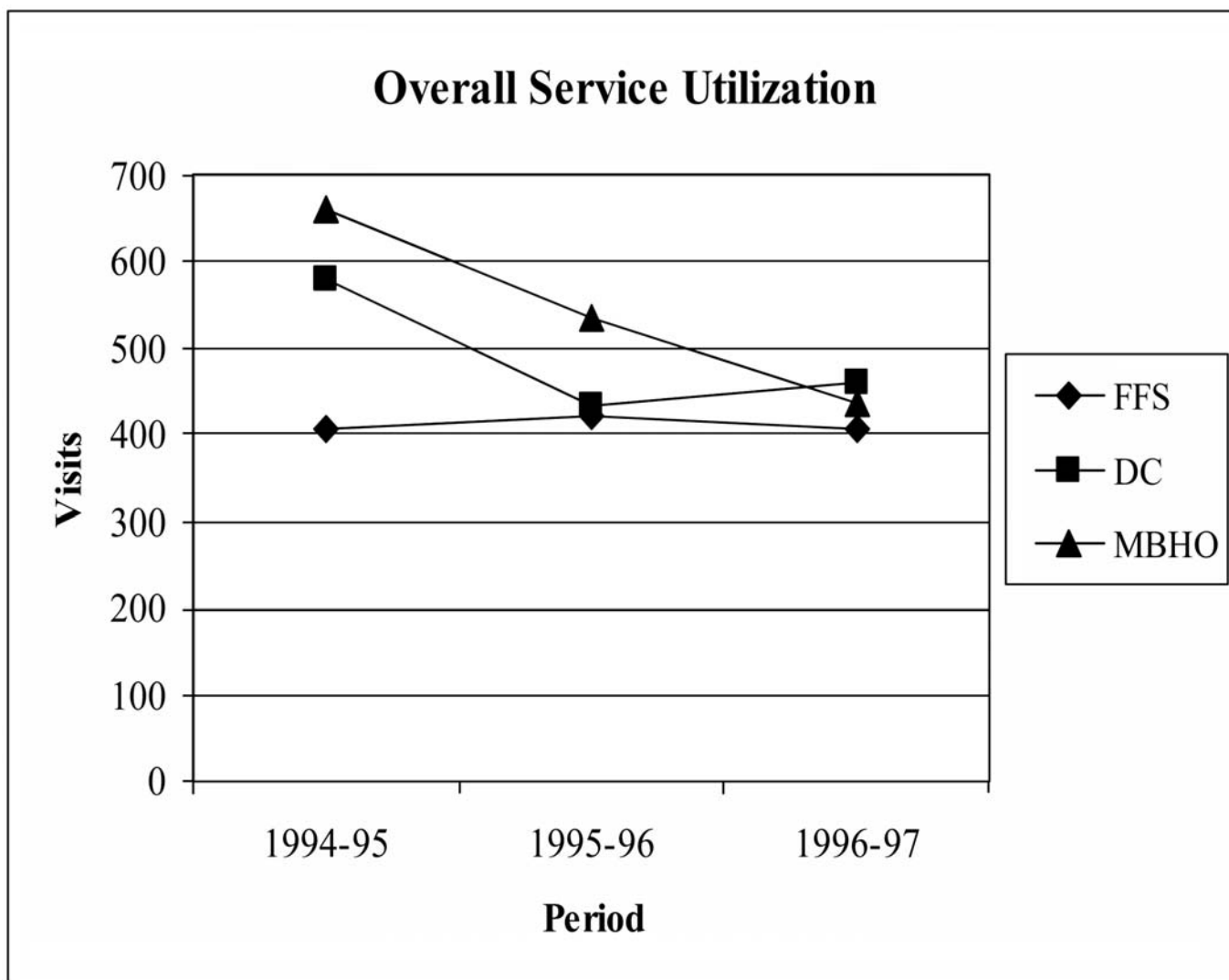


Figure 1. All Outpatient Service Utilization by Financing System.

Note: $\chi^2 = 26.62$, $p \leq 0,001$

model at baseline, the odds ratios indicated that patients in the DC model had almost 2.1, 2.1, 1.7, 1.7 times the likelihood to have received day treatment, group therapy, individual psychotherapy, and medication monitoring, respectively. Those in the MBHO model were significantly more likely to have had day treatment (OR=4.6), group therapy (OR=4.2), individual psychotherapy (OR=3.4), and medication monitoring (OR=2.2). Comparing the two periods following the implementation of capitation, individual psychotherapy was more likely to have been used the first year post capitation while group therapy was more likely to have been used the second year post capitation. The probability of using medication monitoring increased both years post capitation, which may be largely attributed to the exclusion of the cost of medication from the capitation rate.³³ The exclusion may have created incentives for capitated areas to use medications effectively via monitoring as

medication use may potentially reduce psychosocial treatment expenditures.

The interaction between the time period post capitation and financing models showed how capitation changed outpatient service delivery over time. Under the DC model, the likelihood of using day treatment (OR=0.4), individual psychotherapy (OR=0.4), medication monitoring (OR=0.2), and case management (OR=0.3) significantly decreased one year post capitation. With the exception of medication monitoring, this effect dissipated after one year and the likelihood of providing these services was no different than that observed under the FFS model. The decrease in the probability of providing day treatment, individual psychotherapy, and case management under the MBHO model was significant and consistent during both periods following capitation. The probability of use for group therapy (OR=0.5) was reduced during the second year of capitation.

Table 2. Service Utilization and Mean Cost

	Pre-Capitation			One Year Post Capitation			Two Years Post Capitation		
	Individuals N(%)	Mean Cost	Std. Dev of Cost	Individuals N(%)	Mean Cost	Std. Dev of Cost	Individuals N(%)	Mean Cost	Std. Dev of Cost
FFS									
Day Treatment	22	1780	3121	21	656	770	27	890	1480
Group Therapy	36	805	1564	36	750	1788	45	851	1742
Individual Therapy	76	639	663	89	644	892	81	508	611
Medication Monitoring	97	719	1833	112	908	2405	102	1496	2807
Case Management	113	1491	1972	120	1230	1601	113	1458	1934
Psychiatric Intervention/Testing	6	345	363	2	63	18	2	185	225
Other	57	329	427	42	430	752	36	280	400
DC Model									
Day Treatment	42	3803	6352	18	1621	3049	39	1231	1832
Group Therapy	68	1096	2150	59	1700	3711	71	1620	1985
Individual Therapy	113	959	2016	83	465	546	86	782	960
Medication Monitoring	128	624	2676	92	436	722	97	1428	3411
Case Management	135	1477	2711	104	1460	2659	105	1390	1710
Psychiatric Intervention/Testing	11	1089	1632	4	3173	1935	6	2637	2713
Other	82	325	466	74	291	511	57	805	2032
MBHO									
Day Treatment	67	2579	4481	38	1292	2219	27	2027	4518
Group Therapy	94	1077	1271	81	1806	3808	65	1271	2432
Individual Therapy	140	547	590	108	555	745	96	541	591
Medication Monitoring	142	776	1524	144	669	1054	109	480	592
Case Management	134	690	902	107	289	387	77	374	613
Psychiatric Intervention/Testing	13	325	237	5	232	234	5	133	33
Other	70	457	1085	51	253	415	57	327	554
χ^2 Test	χ^2	p-value							
Day Treatment	15.46	p=0.004							
Group Therapy	6.40	p=0.17							
Individual Therapy	7.43	p=0.12							
Medication Monitoring	8.68	p=0.07							
Case Management	9.63	p=0.05							
Psychiatric Intervention/Testing	0.41	p=0.98							
Other	2.61	p=0.62							

Table 3. Probability of Service Use: Logistic Regression Results

	Day treatment	Group Therapy	Individual Therapy	Med Monitoring	Case Management	Intervention and Testing	Other
Direct Capitation	0.74** (0.32)	0.74*** (0.26)	0.52** (0.25)	0.50* (0.28)	-0.02 (0.32)	0.36 (0.54)	0.51** (0.24)
MBHO	1.52*** (0.30)	1.43*** (0.26)	1.22*** (0.27)	0.78*** (0.28)	-0.26 (0.30)	0.56 (0.51)	0.08 (0.24)
Post Capitation(1)	-0.07 (0.29)	-0.01 (0.24)	0.48** (0.20)	0.68** (0.28)	0.48 (0.36)	-1.13 (0.84)	-0.40** (0.20)
Post Capitation(2)	0.34 (0.28)	0.44** (0.22)	0.38 (0.25)	0.47* (0.28)	0.39 (0.34)	-1.07 (0.84)	-0.51* (0.20)
DC-post (1)	-0.92** (0.40)	-0.03 (0.32)	-1.02*** (0.30)	-1.45*** (0.37)	-1.10** (0.47)	0.19 (0.97)	0.20 (0.29)
DC-post(2)	-0.08 (0.39)	0.15 (0.32)	-0.48 (0.34)	-0.64* (0.39)	-0.42 (0.43)	0.71 (0.96)	0.05 (0.32)
MBHO-post(1)	-0.79** (0.35)	-0.20 (0.37)	-1.13*** (0.30)	0.08 (0.44)	-1.10*** (0.42)	0.20 (0.99)	-0.01 (0.29)
MBHO-post(2)	-1.42*** (0.38)	-0.67** (0.29)	-0.72** (0.35)	-0.26 (0.42)	-1.35*** (0.43)	0.40 (1.00)	0.72** (0.32)
Age	0.02 (0.04)	0.04 (0.03)	0.03 (0.03)	0.04 (0.03)	-0.09** (0.04)	0.08 (0.08)	0.03 (0.03)
Age squared	-0.0003 (0.0004)	-0.0005* (0.0002)	-0.0004 (0.0003)	-0.0003 (0.0003)	0.0009*** (0.0003)	-0.001 (0.0009)	-0.0004 (0.0003)
Minority	0.004 (0.20)	-0.37** (0.17)	-0.13 (0.15)	0.34** (0.19)	0.09 (0.20)	-0.17 (0.36)	0.17 (0.16)
Male	0.11 (0.20)	0.25 (0.17)	-0.45*** (0.15)	-0.006 (0.18)	-0.006 (0.19)	0.009 (0.35)	-0.77*** (0.16)
High cost	0.98*** (0.23)	0.87*** (0.20)	-0.18 (0.20)	0.44** (0.22)	0.80*** (0.24)	0.32 (0.32)	0.03 (0.18)
Low cost	-0.93*** (0.28)	-0.50** (0.22)	-0.90*** (0.20)	-0.28 (0.22)	-0.33 (0.21)	-0.48 (0.42)	-0.75*** (0.20)
Schizophrenia	1.60*** (0.61)	1.00** (0.42)	-0.09 (0.39)	1.21*** (0.32)	1.34*** (0.38)	0.17 (0.83)	0.10 (0.37)
Bipolar	1.03* (0.62)	0.64 (0.44)	0.58 (0.41)	0.83** (0.33)	0.68* (0.39)	0.69 (0.81)	0.56 (0.38)
Chi-square	138.05***	105.01***	98.48***	96.94***	101.54***	32.35***	82.86***
Observations	1287	1287	1287	1287	1287	1287	1287

Note:
***p=0.01, **p=0.05, *p=0.10, two-tailed

OLS results* on utilization are reported in **Table 4**. In comparison to that of the FFS model at baseline, utilization per user under the DC model was higher for day treatment and psychiatric intervention/testing. There was higher utilization for group therapy, medication monitoring and lower utilization in case management under the MBHO model. In comparison to the utilization rate prior to the implementation of capitation, there was no difference in the utilization in all service categories one-year post capitation except individual psychotherapy. Utilization of individual psychotherapy was also significantly reduced while that of medication monitoring increased two years following capitation. The interaction between time post capitation and financing models again showed the impact of capitation on utilization over time. Although there was no difference in utilization under the DC model one-year post capitation, utilization increased for group therapy and psychiatric intervention/testing two years post capitation. Under the MBHO model, the utilization of case management decreased significantly over the two years post capitation. Utilization for medication monitoring also decreased under the MBHO model two years following capitation while that for individual psychotherapy increased during the same period.

Discussion

Findings from this study demonstrated the impact of capitation on outpatient service delivery. In particular, capitation has motivated CMHCs under this financing scheme towards meeting the expectations of efficiency in their service delivery. First, the decreased likelihood of providing day treatment, individual psychotherapy, and medication monitoring under the capitated model suggest that capitation impelled these CMHCs to converge with their counterparts under the FFS model. Since both the DC and MBHO models had higher likelihood of service use at baseline, the propensity to provide these services may have declined in order to “catch up” with their FFS counterparts. Second, the decreased service utilization in a number of outpatient services observed under the DC and MBHO models suggests that the capitated CMHCs were providing less dense service packages. For example, the increased

utilization observed in testing under the DC model may illustrate the CMHCs’ attempt to better match clients with appropriate services. Third, there is evidence demonstrating CMHCs’ implementing selective changes in service provision in response to capitated financing. The decreasing likelihood of providing individual psychotherapy under the capitated models post capitation suggest a certain degree of service substitution and less reliance on a service that has been perceived to be less efficient than other service modalities.³⁴⁻³⁵ Findings presented here are consistent with previous literature reporting greater flexibility, control, coordination, and efficiency in the delivery of services in capitated systems.^{8,11-14,36}

These results also suggest that the for-profit and not-for-profit systems in Colorado responded differently to capitation. This difference may have emerged during the time in which CMHCs prepared for capitated financing. To prepare for capitation, the chief executive officers (CEOs) and clinical directors within the not-for-profit DC system decided to audit their case loads for the severely mentally ill. Clinical outcomes and service use history were evaluated for each patient. Consequently, service use for the individual patient was either consolidated or reduced. In particular, a lack of improvement in patient outcomes was interpreted as that little or no efficacy/benefit has been derived from a given service, which may justify subsequently the decreased probability in providing such service during the first year of capitation. After making adjustments to utilization in the first year post capitation where the decreased probability of providing day treatment, individual psychotherapy, case management and medication monitoring was observed, the rate of change in service use under the DC model was no different than that of the FFS system by the second year.

In fact, not only did service delivery stabilize under the DC model the second year following capitation, the utilization of group therapy and psychiatric intervention/testing increased two years post capitation. This could be attributed to a benchmark of service use that was established based on the evaluation from the first year post capitation, and only outliers of this range were audited again during the second year. On the other hand, the for-profit MBHO model may have changed their treatment target by reducing service provision overall to mirror more closely to that of their FFS counterparts. This is evident in the decreased probability in providing day treatment, individual therapy, and case management both years post capitation, and group therapy the second year post capitation. The utilization and costs showed a corresponding decrease under the MBHO model over time. However, the decline in services is not necessarily a reflection of denied access under the MBHO as findings from a previous study reported decreased waiting time and greater focus on immediate, walk-in access over scheduled maintenance outpatient visits in MBHO clinics.²⁹ Moreover, the MBHO model’s management philosophy emphasized access by expanding its independent practitioner network and providing less complex types of care to make service delivery quicker and simpler. In a way, service provision under the MBHO may be characterized as trading intensity for wider accessibility.

* Analysis examining expenditures associated with service use were also conducted. Expenditures in a given service category consistently reflected its utilization pattern. Corresponding to the increases in utilization, cost per user for day treatment and psychiatric intervention/testing increased under the DC model while those for group therapy and medication monitoring also increased under the MBHO model. The decline in utilization for case management translated into a comparable reduction in costs under the MBHO model. Overall, the effect on costs one-year post capitation was not readily visible but the cost per user for medication monitoring increased significantly two years post capitation. Exploring how the capitated financing models fared during each time period post capitation, results showed that cost per user for group therapy increased both years post capitation under the DC model. Under the MBHO model, cost per user for case management also decreased both years post capitation and the same result was observed for medication monitoring two years post capitation.

Table 4. Utilization per User (log): OLS Regression Results

	Day treatment	Group Therapy	Individual Therapy	Medication Monitoring	Case Management	Intervention and Testing	Other
Direct Capitation	0.75** (0.38)	0.22 (0.29)	0.19 (0.15)	-0.08 (0.14)	-0.12 (0.16)	1.78*** (0.85)	-0.005 (0.19)
MBHO	0.43 (0.36)	0.82*** (0.26)	-0.07 (0.13)	0.32** (0.14)	-0.54*** (0.15)	-0.03 (0.70)	0.02 (0.21)
Post Capitation(1)	-0.38 (0.38)	-0.20 (0.27)	-0.22* (0.11)	0.08 (0.10)	-0.11 (0.10)	-0.16 (0.73)	-0.12 (0.18)
Post Capitation(2)	-0.33 (0.34)	-0.18 (0.28)	-0.35*** (0.12)	0.29** (0.14)	-0.07 (0.12)	1.23* (0.66)	-0.01 (0.21)
DC-post (1)	-0.46 (0.51)	0.50 (0.34)	-0.26 (0.18)	-0.06 (0.15)	0.05 (0.16)	1.32 (1.06)	-0.07 (0.23)
DC-post(2)	-0.22 (0.45)	0.75** (0.34)	0.12 (0.18)	0.19 (0.21)	0.10 (0.17)	1.80* (0.96)	-0.06 (0.30)
MBHO-post(1)	0.02 (0.44)	0.07 (0.32)	0.07 (0.15)	-0.21 (0.14)	-0.53*** (0.15)	-0.65 (0.83)	-0.30 (0.26)
MBHO-post(2)	-0.44 (0.44)	-0.11 (0.33)	0.45*** (0.16)	-0.61*** (0.19)	-0.53*** (0.19)	-0.02 (0.80)	0.03 (0.28)
Age	0.02 (0.04)	0.001 (0.04)	0.02 (0.02)	0.02 (0.02)	-0.03 (0.02)	0.04 (0.08)	0.03 (0.02)
Agesq	-0.0002 (0.0004)	-0.0002 (0.0004)	-0.0002 (0.0001)	-0.0002 (0.0001)	0.0003** (0.0002)	-0.0006 (0.001)	-0.0003 (0.0002)
Minority(nonwhite)	0.02 (0.21)	-0.16 (0.17)	-0.13* (0.08)	0.02 (0.09)	-0.07 (0.11)	0.75 (0.49)	-0.07 (0.11)
Male	0.04 (0.21)	-0.34** (0.16)	-0.22*** (0.08)	0.05 (0.10)	0.04 (0.11)	-0.47 (0.37)	-0.10 (0.11)
High-cost	0.01 (0.26)	0.56*** (0.19)	0.31*** (0.09)	0.70*** (0.12)	0.54*** (0.14)	0.60 (0.48)	0.06 (0.12)
Low-cost	-0.62* (0.34)	-0.28 (0.23)	0.01 (0.10)	-0.10 (0.11)	-0.22 (0.15)	-0.80 (0.53)	-0.04 (0.14)
Schizophrenia	0.83 (0.67)	0.66 (0.60)	0.06 (0.18)	0.31 (0.26)	0.99*** (0.25)	0.25 (0.59)	0.10 (0.25)
Bipolar	0.90 (0.73)	0.32 (0.61)	0.20 (0.19)	-0.003 (0.27)	0.57** (0.25)	0.22 (0.57)	-0.02 (0.25)
R ²	0.10	0.15	0.08	0.14	0.21	0.72	0.03
F Statistic	2.27***	5.65***	3.73***	7.06***	11.80***	10.60***	1.23
Observations	301	555	846	1022	1007	54	486

Note:

***p=0.01, **p=0.05, *p=0.10, two-tailed

Findings from interacting time post capitation and financing models are interpreted by examining more closely the differences between the two-capitated systems. The ownership status of the two-capitated systems, not-for-profit and for profit, encounter different demands. Whereas a not-for-profit organization is often held accountable by the public, a for-profit organization faces pressures from its shareholders. The ownership or profit status also signifies distinctions in organizational goals, expectations and evaluations placed on the organization, and the identity and behavior displayed by collective actors.³⁷ Schlesinger³⁸ described the mechanism in which the ownership status could affect organizational behavior by: (i) influencing incentives for administrators and employees; (ii) shaping expectations and perception of those who deal with the organization, including the general public; and (iii) affecting the way in which the organization is treated by regulatory agencies. Obviously, the issue of cost containment is of central importance to both capitated models because of its implication on service delivery and efficiency.

As mentioned before, one of the primary goals of capitation is to create incentives for service coordination and integration to effectively manage and improve patient care.^{2,18} Results on case management contradict the conventional wisdom that would predict higher utilization for case management under capitated systems. A theoretical explanation invokes the resource dependence perspective. As resources contract under capitation, CMHCs' attempt to maintain autonomy and survival relies on minimizing their dependence on needed resources to the extent that is possible.³⁹ The nature of case management creates dependencies for health care organizations in terms of labor intensity and increased coordination of information and funds. More specifically, goals for case management may vary from therapeutic care to administrative tasks of securing entitlements and coordination. For providers, their corresponding roles then vary widely in training, position, salary and career structures, authority, and control over resources. Conflicts between treatment goals and cost containment pressures often arise when these goals are not clearly articulated.⁴⁰ Therefore, the decreased use of case management may be a result of resolving these conflicts, and represent the efforts of CMHCs to preserve resources.

Moreover, a number of studies have suggested the lack of a clinical definition for case management models, which impedes the proper evaluation of case management as a service. As in the case of Colorado, there is very little information that can help determine the quality or intensity of case management. The ambiguity allows case management to be examined as a function on its own terms or studied as an approach embedded within a larger service strategy.⁹ Mechanic and Rochefort noted that, "How case management fits within the goals and operational approaches of an agency may affect its performance on critical indicators." A definition within the context of the care system of interest is necessary for the successful evaluation of case management.^{8,9}

Overall, these findings support the goals of capitation where incentives were created to discourage inappropriate

use of treatment for mental illness, allowing extra funding for expanding the range of outpatient treatment alternatives, establishing a point of clinical and financial accountability in mental health service delivery. Although the profit status of the capitated system affected the pattern of outpatient service use, it was evident that both systems invested in efforts to adjust service utilization and eliminate unnecessary services.

One of the strategies to control cost for capitated systems in general is to identify consumers who incur more cost in the system and change their patterns of care by matching their individual needs to services. Hence, high users who typically incur more inpatient service utilization, the single most expensive mental health service,^{8,41} need to be identified and studied as a part of the cost containment strategy. Furthermore, this study can be expanded to examine the pattern of care for the entire population in Colorado's public mental health system, in addition to the sample of those who were severely mentally ill.

Nevertheless, the main limitation of this study is the lack of longitudinal data beyond the second year post capitation, which could have provided much insight into the performance of capitated system beyond the implementation stage. The promising short-term results from the pilot project impelled the state of Colorado to capitate the remaining FFS areas after 1997, thereby, eliminating the comparison group for the continuation of the natural experiment. Furthermore, the development of a viable capitation model requires thorough planning and implementation.^{9,42} Collecting qualitative information from individual CMHCs would be useful for a closer examination of unanticipated difficulties associated with planning and implementation, providing a comprehensive review to identify best practices for these processes.

Implication for Health Care Provision and Policies

This study lends important insights for looking at the impact of capitation programs on service delivery as data used are derived from a unique natural experiment that provided a comparison group. Results generated also serve to illuminate decision-making for state governments as more and more states are entering into the capitated arrangement to provide cost-effective mental health services.²⁹

Findings from this study suggest that substitution and coordination among an array of outpatient services may be occurring in response to new reimbursement systems. Specifically, these findings indicate that substitution was occurring, on a whole, between group therapy and individual psychotherapy. As the results showed, for group therapy, there was increased intensity under the DC model during the second year post capitation, whereas CMHCs under the MBHO model already exhibited high utilization at baseline. At the same time, overall decline in the utilization of individual psychotherapy was observed during the second year post capitation. Capitated financing thus may have facilitated program evaluation by the CMHCs to assess the efficiency of their service delivery.

Financing models and organizational arrangements have an impact on the mix of outpatient mental health services delivered. Changes in utilization and costs of specific types of outpatient services reflect these effects. Understanding the mechanism for these changes may lead to more streamlined service delivery allowing extra funding for expanding the range of cost-effective treatment alternatives. These findings pose implications for improving the financing of public mental health systems, coordination of mental health services with other healthcare and human services, and provision of services through a more efficient financing system.

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