

# Mental Health Community Case Management and Its Effect on Healthcare Expenditures



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People with severe mental illness served by public mental health systems have rates of co-occurring chronic medical illnesses that of two to three times higher than the general population, with a corresponding life expectancy of 25 years less.<sup>1,2</sup> Treatment of these chronic medical conditions in those with serious mental illness is often substandard, with many receiving no treatment at all. Much of the treatment they do receive comes from costly ER visits and inpatient stays, rather than routine screenings and preventive medicine.<sup>2,3</sup>

In 2003, in Missouri, for example, more than 19,000 participants in Missouri

Medicaid had a diagnosis of schizophrenia. The top 2,000 of these had a combined cost of \$100 million in Missouri Medicaid claims, with about 80% of these costs being related not to pharmacy, but to numerous urgent care, emergency room, and inpatient episodes. The \$100 million spent on these 2,000 patients represented 2.4% of all Missouri Medicaid expenditures for the state's 1 million eligible recipients in 2003.

In general medical benefit programs, these chronic medical conditions, including congestive heart failure, hypertension, diabetes, and asthma are frequently targeted for disease management interventions.

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In addition, people with severe mental illness frequently receive case management services to address their mental illness and resulting disability. Although both are care-coordination programs aimed at managing specific disease states, the actual interventions and services differ greatly.

In typical medical benefit programs, targeted people with multiple chronic conditions are assigned a care coordinator, which is primarily an administrative activity coordinating care between healthcare providers. Occasionally, these care coordination services (CCS) include written or telephone contact with the patient, but they almost never include an ongoing personal relationship between the case manager and the patient.

In contrast, Community Mental Health Case Management (CMHCM) is an ongoing individual relationship between a (usually) bachelor's level case manager providing primarily direct face-to-face assistance in the patient's home and in various community settings. The case manager assists with maintaining housing, eligibility for various benefits, activities of daily living, and adherence to medication, as well as coordinating care between healthcare providers and attending clinic visits.

Research on the effectiveness of CMHCM has yielded inconsistent results, and the ability to draw solid conclusions from these studies is hampered by differing methodologies; varying models; and inadequate descriptions of the CMHCM being studied; differences in the context in which services are delivered; differences in the previous history of hospital utilization; varying experimental designs across studies; and contamination of control groups (if present) by the delivery of other case management services.<sup>3-6</sup>

There is some indication that intensive case management is associated with decreased hospital admissions and days, and increased social function and quality of life, but this is not a universal finding. Furthermore, it is difficult to establish the effectiveness of lower-intensity CMHCM

alone because it has rarely been studied as the primary experimental focus. Instead, lower-intensity CMHCM has usually been studied as a comparison condition where it appears to be less effective than more assertive types of intensive CMHCM.<sup>7-9</sup>

It is also important to note that the existing literature on CMHCM has failed to examine the potential effect of such services on chronic medical illness and associated medical health. This is not surprising because historically, CMHCM programs have not explicitly stated if their coordination activities included or excluded general healthcare needs in addition to their primary focus on mental illness.

Nevertheless, community mental health case managers have regular, periodic, ongoing, face-to-face interaction with people with severe mental illness, and routinely provide care coordination, address medication adherence, and assist in accessing healthcare services. These interventions could be reasonably anticipated to improve the outcomes of chronic medical illness as well as severe mental illness.<sup>10</sup>

In this article, we pursue two hypotheses. First, that the efficacy of CMHCM cannot be adequately evaluated without considering its effect on total healthcare use/expenditure as opposed to limiting the scope of analysis to mental health services. Second, that CMHCM will reduce total healthcare use/expenditures, including medical services for chronic illnesses, because of the generalized care coordination efforts of the case managers.

## METHOD

We used two approaches when examining our hypotheses. The first was a simple compare/contrast of two different groups of patients, one receiving CMHCM and the other not. The population studied consisted of patients who were continuously eligible for Medicaid and had a monthly claim with a diagnosis of schizophrenia in fiscal year 2004 (July 1, 2003, through June 30, 2004). People with an episode of care in a nursing

home or with a co-occurring diagnosis of mental retardation were excluded. A proprietary algorithm<sup>11</sup> was used to further narrow the population to 6,061 patients with comorbid medical conditions (see Figure 1, page 417, for a breakdown of these diagnoses for a random sample of 1,000 of these patients) who were likely to require high cost services in the coming year.

This cohort was subdivided into patients who had received CMHCM and those who had not, with the CMHCM group being further subdivided into three categories of CMHCM: low-intensity (annual CMHCM services costing less than \$1,000), medium-intensity (annual costs between \$1,000 and \$5,000), and high-intensity (annual costs greater than \$5,000). Total Medicaid costs for fiscal year 2004 for inpatient, outpatient, and pharmacy services were examined for each group.

For the second approach, the total Medicaid costs were examined pre- and post-enrollment in CMHCM services. Six hundred thirty-six patients were selected who were newly enrolled in Missouri Medicaid's CMHCM program in 2005. Patients were included if they had 9 months of Medicaid claims in each of the two preceding years, a diagnosis of severe mental illness, a history of psychiatric hospitalization or multiple emergency room visits, and functional limitations as a result of their mental illness.

The exact enrollment date for CMHCM services varied from client to client, minimizing the effect of bias caused by changes in the healthcare delivery system at specific points in time or over the study period. Average total monthly Medicaid costs were calculated for the month or CMHCM enrollment, the 24 months before enrollment, and the 24 months after enrollment for each client. Linear regression trend lines were then calculated on those pre-CMHCM and post-CMHCM cost data.

## RESULTS

The Table (see page 418) shows the average fiscal year 2004 healthcare costs for inpatient, outpatient, and pharmacy ser-

vices for the compare/contrast analysis. Nearly two-thirds of the sample (3,751 patients; 62%) received CMHCM services. Of these, 1,302 (34.7%) received high-intensity CMHCM; 1,508 (40.2%) received medium-intensity CMHCM; and 941 (25.1%) received low-intensity CMHCM. Patients receiving low- and medium-intensity CMHCM had lower hospitalization and outpatient costs than non-CMHCM patients. Patients receiving high-intensity CMHCM had higher hospitalization, outpatient, and pharmacy costs compared with the other groups.

Figure 2 shows the results of the pre-post analysis. The graph shows rising total costs for the sample during the 2 years before enrolling in CMHCM, with the average per user per month (PUPM) total Medicaid costs increasing by more than \$750 during that time. This trend was reversed by the implementation of CMHCM. After a brief spike in costs during the CMHCM enrollment month, the graph shows a steady decline over the next year of \$500 PUPM, even with the overall costs now including CMHCM services.

## DISCUSSION

These two studies suggest that CMHCM services result in a positive effect beyond typically examined mental health indicators and can more broadly affect chronic medical illness and overall physical and mental health. Overall, our findings suggest that CMHCM is effective in reducing total healthcare expenditures in SMI people with moderate to severe illness, but not in the most severely ill.

Our first analysis includes only people with schizophrenia and is a 1-year comparison study without a control group. We found that people with schizophrenia receiving low and moderate amounts of CMHCM had lower hospital outpatient and pharmacy use than those not receiving such services.

The major limitation of this analysis is a potential selection bias: Because

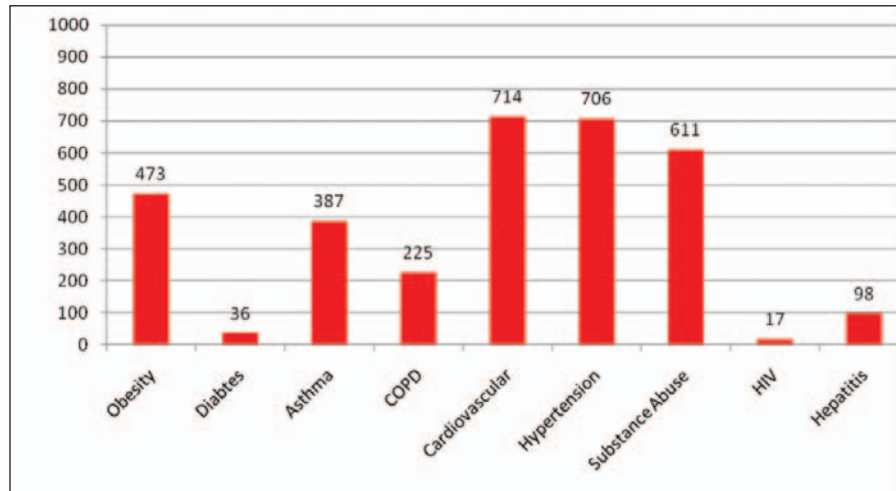


Figure 1. Comorbidities. A proprietary algorithm was used to further narrow the population to 6,061 patients with comorbid medical conditions. Above is a breakdown of these diagnoses for a random sample of 1,000 of these patients who were likely to require high cost services in the coming year.

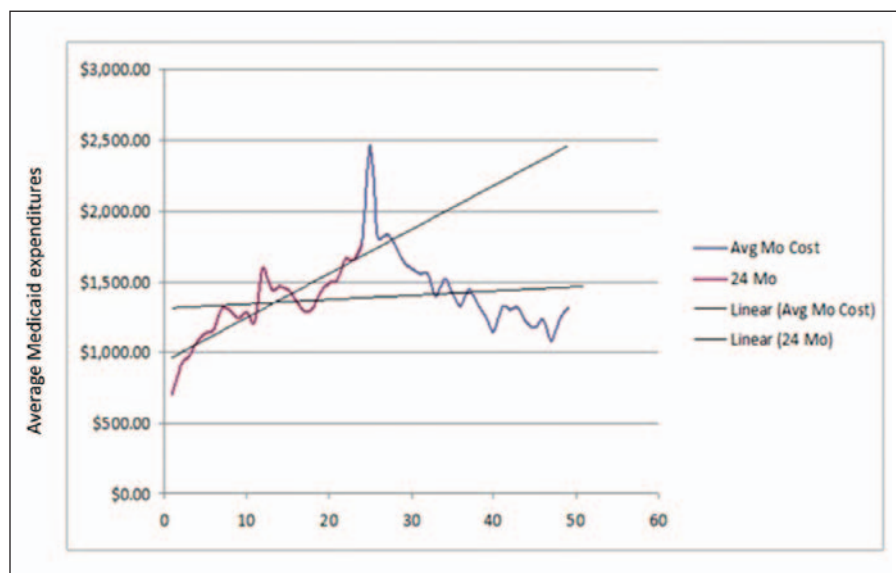


Figure 2. Total healthcare utilization per user per month, pre- and post-community mental health case management. The graph shows rising total costs for the sample during the 2 years before enrolling in CMHCM, with the average per user per month (PUPM), with total Medicaid costs increasing by over \$750 during that time. This trend was reversed by the implementation of CMHCM. Following a brief spike in costs during the CMHCM enrollment month, the graph shows a steady decline over the next year of \$500 PUPM, even with the overall costs now including CMHCM services.

people are not eligible for CMHCM unless they have had an episode of hospitalization or repeated emergency room visits and impairment in their daily functioning, the subjects in our sample were likely psychiatrically sicker than those not receiving CMHCM. This may have affected our findings.

Still, schizophrenia is the mental illness most highly associated with

disability and multiple chronic medical illnesses, and as such, it is likely to be the primary condition resulting in Medicaid eligibility for these subjects. This makes it more likely that patients with schizophrenia who are not getting CMHCM are approximately as disabled as those who receive it.

Case management capacity is limited in Missouri's mental health system, so many

TABLE.

**Case Management Analysis: Missouri Medicaid**

Cost of Care (average \$ per recipient)					
Service	CM	CM (low)	CM (mid)	CM (high)	Non-CM
Hospital	\$1,985.84	\$1,900.12	\$2,178.24	\$5,590.77	\$2,919.66
Outpatient	\$9,918.78	\$5,435.43	\$8,409.13	\$14,907.56	\$8,765.70
Case management	\$4,171.98	\$342.57	\$2,962.42	\$8,340.58	\$0.00
Pharmacy	\$10,248.20	\$9,857.83	\$10,065.48	\$10,764.70	\$9,981.14
Total cost (IP + OP + RX)	\$22,152.82	\$17,193.38	\$20,652.85	\$31,263.03	\$21,666.50
Percentage of patients	100%	25.10%	40.20%	34.70%	

*Time period of analysis: July 1, 2003 through June 30, 2004.  
Population: 6,061 Medicaid recipients in Missouri.*

people eligible to receive CMHCM are unable to obtain it. Although unfortunate from a services-delivery standpoint, this situation does partially control for the potential severity selection bias in our study.

The second analysis presented is a pre- and post-intervention control design with the time of initiation of CMHCM services staggered for each individual client. The cohort is more homogeneous in level of disability and previous inpatient/ER use than the cohort in the first analysis because of eligibility criteria for receiving CMHCM. This, in combination with the pre-/post-design, amounts to better risk adjustment between the intervention condition and the control condition in this approach.

Examination of month-to-month trends in cost changes was a particularly important aspect of this analysis. Since the costs increase for the duration of the pre-CMHCM period, and then decrease over the post-CMHCM period, the average costs for the total pre- and post- periods are comparable, and no differences between the two conditions would have been found. It is only by using a smaller period of time in the analysis does the reversal of a rising cost trend become apparent.

A final important factor is that our results reflect the effect of CMHCM on total healthcare outcomes and use before case managers are given any specific instruction or training regard-

ing chronic medical conditions. That is, even typical CMHCM, presumably directed primarily at mental health concerns, shows a positive effect on chronic medical diseases and general medical health. With specific instruction and training, the effects we report in this paper may be expanded.

Work is under way to test this hypothesis. Since 2006, The Missouri Department of Mental Health has been working in partnership with MO HealthNet (Missouri's Medicaid agency) and The Missouri Coalition of Community Mental Health Centers to develop its CMHCM system into a care coordination and disease management entity that addresses the whole person, including serious mental illness and chronic medical conditions. Case managers have been trained and instructed to assist patients with adherence to medications for treatment of medical conditions, scheduling and keeping general healthcare appointments, and obtaining a primary care home.

Preliminary results are promising. Because case managers see their patients more often than other healthcare providers, they have greater opportunity to coordinate care and implement disease management interventions. Thus, CMHCs are providing coordinating services for patients in CMHCM who do not have access to a primary care healthcare home, with the

CMHC being the designated healthcare home for 2,895 Missouri Medicaid recipients as of February 2009.

In addition, CMHCs have all added primary care nurse liaisons on site to provide training in the recognition and management of chronic medical conditions to the case managers and to coordinate and integrate disease management activities with other Missouri Medicaid disease management programs. CMHCs and their staff are provided with the same historic data on healthcare use as other disease management/care coordination entities through a Web portal that allows them to review the past 3 years of healthcare history.

Healthcare use patterns are analyzed for gaps in care inconsistent with recommended treatment for mental illness and chronic care conditions. The primary care nurse liaisons and CMHCM teams assist the CMHC clients in addressing these gaps in care.

Other healthcare home activities performed by the CMHCs include annual screening for hypertension, diabetes, obesity, high cholesterol, and hyperlipidemia, and the development of CMHC-specific prediabetes screening and disease management interventions. In addition, traditional psychosocial rehabilitation programming is being revised to include smoking cessation,

weight loss, and increased physical activities. Selected general medical health-care problems and healthy lifestyle goals are being incorporated into the annual mental health treatment plan.

It has been 17 years since it was first noted that CMHCM can play a role in addressing the unmet medical needs of the patients it serves.<sup>10</sup> The recent finding of 25-year premature mortality in patients served by the public mental health system is a clear indication that the time is past due for mental health providers to embrace the principle that physical healthcare is a core component of basic services to patients with serious mental illness. Ensuring access to preventive healthcare and ongoing integration and management of medical care is a primary responsibility and mission of mental health treatment systems.<sup>12</sup>

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