

Transforming the Delivery System for a Seriously Mentally Ill Population: Innovations in Care Coordination, Network Building, and Health Information Technology

With support from the Center for Medicare & Medicaid Innovation (CMMI), Maimonides Medical Center (MMC) designed and implemented a program to improve the care and lives of adults with serious mental illness (SMI)—including schizophrenia, bipolar disease, schizo-affective disorder, and severe depression—in Brooklyn, New York.

Building on a history of population health initiatives in behavioral health, MMC continued to focus on SMI patients, a group of people that:

- Are more likely to suffer from **medical co-morbidities, and more likely to smoke, have poor nutrition, and inadequate exercise**
- Have a life expectancy **up to 25 years less** than the general population
- Comprise, in NYS as of 2010, average per capita Medicaid expenditures of over \$22,000 per year, **double that of the average NYS Medicaid enrollee**

In addition to higher baseline morbidity, poor health outcomes and high costs are related to a lack of provider coordination and inappropriate utilization patterns, such as excessive use of inpatient and emergency services, service duplication, poly-pharmacy and other inefficient and potentially harmful practices.

In an effort to transform the system of care for a high-need safety net population, improve outcomes, lower costs, and prepare for value-based payment, MMC implemented a care coordination model across a network of community-based providers to mitigate adverse social determinants of health, engage individuals in their care, and reduce costly, preventable, and inappropriate health care utilization.

The Model

Guiding Principles of the Program Model:

- Fully-informed and integrated medical care, mental health care, and connection to social services is especially critical for the SMI population.
- Sustainable improvement in the health of the SMI population is dependent on a care delivery system centered on the individual and his/her personal goals.
- Funding and workforce resources must be optimally deployed to care for the SMI population, enhance cost-efficiency, and drive measurable quality improvement.
- Integration of Health Information Technology (HIT) and Health Information Exchange (HIE) into clinical care delivery will be among the most significant breakthroughs in improving the treatment and management of care for the SMI population.

Building on the Brooklyn Health Home Model: MMC's care coordination model built upon the model for the Brooklyn Health Home (BHH), a NYS Medicaid care coordination program for individuals with complex chronic conditions, also administered by MMC. The cornerstone of the BHH model is HIT-enabled collaboration among a multidisciplinary team, with a care manager as its node, ensuring access and coordination across medical, behavioral, and social domains, and working with the individual to develop a care plan, set goals, and make progress toward an optimal state of health, well-being, and self-management.

CMMI funding allowed for the expansion of the mental health model, the development and delivery of a comprehensive workforce training program, the deployment of uniform care standards across a cohesive network, and enhanced investments in HIT.

Program Implementation

Patient Population: 8,237 SMI individuals over age 18 living and/or receiving care in Brooklyn, NY (4,392 BHH members, 3,210 Coordinated Behavioral Care (CBC) Health Home members, and 635 non-Health Home members covered by either Medicare or commercial insurance)

Program Components:

- Develop an integrated network of providers
- Partner with payors
- Assign multidisciplinary care teams
- Develop and maintain coordinated care plans (CCP) to address medical, behavioral, and social needs
- Implement uniform care standards (participate in discharge planning, follow-up appointments with PCPs and psychiatrists after medical and behavioral inpatient stays, case conferences after critical events)
- Utilize web-based care coordination platform (GSI Health) to virtually coordinate care and exchange health information (provided by Healthix and the SHIN-NY)

The Multidisciplinary Care Team: Care managers' chief tasks include helping patients schedule and keep appointments, access timely follow-up care, adhere to medication regimens, maintain medical and social benefits, coordinate among providers, and provide patient education and support. For this program, they must also define a core care team for each patient, to consist of, at minimum, the care manager, a care navigator, PCP, and psychiatrist and/or therapist if needed. Other potential team members may include specialty care physicians, peers, home care nurses, residence managers, social workers, or substance abuse providers. The team collaborates virtually via the "case conference," which facilitates effective care coordination and ensures that core team members are engaged in information sharing and shared decision-making processes.

Evaluation and Outcomes

Internal Evaluation:

During the program, MMC periodically reviewed data entered into the care management platform and conducted surveys of the program's participants. Participant surveys indicated that participant's perceptions of their own health as being either "good," "very good," or "excellent" rose from 51% to 55% between Year 1 and Year 2 of the program. For those members surveyed in Year 2 who had been enrolled for at least one year, this self-reported perception of good health rose to 57%.

To determine whether the CMMI innovation program had positive impacts on hospital utilization (inpatient and ED) and total cost of care, MMC acquired NYS Medicaid claim and encounter data for patients enrolled in the CMMI intervention for 2009-2015. The final dataset includes utilization claims history for 4,789 BHH individuals with a total of 306,729 patient-months and 2,318 CBC individuals with a total of 143,641 patient-months.

Results of an internal analysis suggest a reduction in total cost of care and inpatient and ED utilization per month of enrollment. Over three years, the model projects a net 42.5% reduction in ED visits, 29.7% reduction in inpatient admissions, and a 9% net reduction in cost of care over three years for the population. Based on an approximate base total cost of care of \$2,000 per member per month, the model projects a potential savings of \$50 million for the projected CMMI program cohort of 7000 Medicaid beneficiaries with continuous participation over a three year program period.

External Evaluation:

Engaged by CMMI to analyze the impact of all HCIA programs, Mathematica Policy Research conducted an [independent evaluation](#)¹ of MMC’s CMMI program. This evaluation which used a different methodology, found results convergent with the MMC Internal analysis. The Mathematica evaluation concluded that the intervention saved Medicaid an average of \$944 per member per month, for a total savings of \$48 million over three years.

Discussion

MMC’s program demonstrated the benefit of care coordination on the well-being and cost for a highly vulnerable population. Building an infrastructure for the delivery of high quality primary care, integrating behavioral health and primary care, and providing care coordination are the cornerstones of MMC’s overall approach to transformation, now as a Performing Provider System (PPS) lead in the New York State Delivery System Reform Incentive Payment (DSRIP) program. The network and standards developed for the CMMI program undergird the DSRIP projects, and continue to grow. Long-term sustainability plans, beginning with VBP arrangements for the HARP population—an integrated insurance product for individuals with serious mental illness or substance use disorders—have also been informed by the results achieved through the CMMI program.

The implications are significant for the evolution of healthcare delivery and payment system reform. Implementing this model for adults with SMI addresses one of the most fundamental and urgent care and cost problems that must be overcome for health reform to succeed. The dissemination of the MMC intervention’s features and impacts is a key part of supporting both providers and government agencies as they pursue or expand their transformation efforts.

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¹ <https://www.mathematica-mpr.com/our-publications-and-findings/publications/evaluating-the-hcia-behavioral-health-substance-abuse-awards-addendum-to-the-third-annual-report>

Investing in Social Services to Impact Health Outcomes and Costs

With support from the New York State Health Foundation (NYSHealth), the Maimonides Department of Population Health studied the impact of social services on healthcare utilization and cost with the goal of identifying opportunities to invest in the social service infrastructure in Brooklyn to address social determinants of health.

Literature Review

A search of relevant literature was conducted to explore the relationship between social determinants of health and healthcare utilization and cost outcomes. Most literature selected for review, including journal articles and white papers, was published between 2008 and 2016. Six domains of social service interventions were identified: **Housing, Food Assistance, Income Assistance, Legal Services, Peer Support, and Vocational Training.**

Methodology

Patient Sample: 600 patients that met the following inclusion criteria were randomly sampled:

- Medicaid member assigned to the Brooklyn Health Home (BHH) at any point in 2014
- At least nine months of care coordination during 2014
- Care management progress notes in BHH’s online care management platform indicating a demonstrated potential need in at least one of the identified six target social service domains

Descriptive statistics of the patient sample were as follows:

Patient Sample Demographics (n = 599)	n	%		n	%
Gender			Race/Ethnicity		
Women	275	46%	Black, not Hispanic	305	51%
Men	324	54%	White, not Hispanic	173	29%
			Hispanic	41	7%
Age			Other	37	6%
Age 18-44	226	38%	Asian or Pacific Islander	17	3%
Age 45-64	323	54%	Unknown	14	2%
Age 65 and older	50	8%	Native American or Alaskan Native	12	2%

Care management progress notes for patients in the sample were manually reviewed to determine patients’ need for and receipt of each of the six identified social service domains. Project manager led team of 4 reviewers, determined the coding structure, and conducted regular inter-rater reliability checks.

Study Design: Pre-post analysis was used to assess the impact of social services (and care management interventions) on healthcare utilization and cost outcomes for eight cohorts. Utilization and cost data were compared between the pre-intervention period (Medicaid claims data from 2013) and the post-intervention period (Medicaid claims data from 2015). Four healthcare utilization indicators were included (# of Emergency Room (ER) visits, # of inpatient admissions, # of patients with any ER utilization, # of patients with any inpatient utilization). Two healthcare cost indicators were included (total cost to Medicaid of ER utilization, total cost to Medicaid of inpatient utilization).

Results

Similar to previously published findings, results indicate that **housing, food assistance, income assistance, legal services, and vocational training interventions may be associated with reduced healthcare utilization and costs** among this study population.

Overall, the patients in the study experienced statistically significant reductions in number of ER visits, number of inpatient admissions, and ER-related Medicaid costs (see table below).

Overview of ER and Inpatient Utilization and Cost Outcomes, Post-Intervention Period:

Intervention Receipt Cohorts	Emergency Room			Inpatient		
	Visits	Members w/ Utilization	Cost	Admissions	Members w/ Utilization	Cost
Housing (n = 66)	△	△	△	△	△	△
Food Assistance (n = 35)	▽	△	▽	△	△	▲
Income Assistance (n = 27)	△	△	▽	△	△	△
Legal Service (n = 33)	△	△	▲	△	△	▲
Peer Support (n = 10)	▽	▽	▽	▽	▽	▽
Vocational Training (n = 15)	△	△	▽	▽	△	▽
Any Intervention (n = 153)	△	△	▼	▲	△	▲
All Patients (n = 599)	▲	△	▲	▲	△	▼

▲ Positive Impact – statistically significant △ Positive Impact – not statistically significant ▼ Negative Impact – statistically significant ▽ Negative Impact – not statistically significant

Conclusions

Results suggest some association between social service interventions and reduced healthcare utilization and costs among a population of patients engaged in consistent care management in Brooklyn. Lack of statistical significance in many of the reductions in utilization and cost observed could be due, in part, to the small cohort sizes. Findings provide useful preliminary insights into social service receipt and its impact on healthcare utilization and cost outcomes.

Pilot Program: Based on preliminary research findings and assessment of availability of needed social services across Brooklyn, the Maimonides Dept. of Population Health developed a pilot program that expands an existing legal assistance clinic model (the New York Legal Assistance Group (NYLAG) LegalHealth). The legal clinic provides patients with legal assistance services to address a variety of social determinants of health.

The pilot leverages a training series, *Social Determinants and the Law*, provided by NYLAG and 1199SEIU Training and Employment Funds, which trains care managers and other providers to better recognize social needs among their patient populations. The Maimonides Dept. of Population Health is currently monitoring and evaluating the pilot to further understand the impact of intervening on the social needs of patients on healthcare utilization and cost.

Study Limitations: Social services receipt data was abstracted through a qualitative review of free-text care management progress notes, which are difficult to code. Patient sample size was limited due to challenges in abstracting free-text social service receipt data; the small cohort sizes limited the statistical significance of the analyses and the generalizability of the findings to a larger population. Limited follow-up data available about social service receipt; information such as length of time a patient remained housed or connected to a service was often not available.

Notes and Acknowledgements

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