Medicaid Behavioral Health Homes: Lessons Learned and Early Findings From Maine

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Objective: Individuals with serious mental illnesses represent a high-need, high-cost population. To address this population's needs under the State Innovation Models Initiative, Maine assisted Medicaid-participating behavioral health providers in changing to behavioral health homes (BHHs). The authors explored BHHs' experiences in transforming care from 2014 to 2017 and investigated changes in utilization, care coordination, and Medicaid expenditures before and after Medicaid-covered individuals enrolled in a BHH.

Methods: The authors interviewed stakeholders, conducted focus groups with BHH consumers and providers, and used pre-post analyses of Medicaid fee-for-service claims. Program features such as capitated payments, connection to the state's health information exchange, and one-on-one technical assistance altered delivery of behavioral health care.

Results: Interviewees reported some challenges, such as understanding team roles, sharing clinical data, and integrating care with primary care providers. Analyses of data for 7,560 BHH enrollees with serious and persistent mental illness (adults) or serious emotional disturbance (children) indicated no changes in inpatient admissions, 30-day inpatient readmissions, emergency department visits, behavioral health–related expenditures, and professional expenditures after the switch to the BHH model. Total Medicaid expenditures increased by $170 per beneficiary per month. The BHH model did not change several measures of utilization and expenditures, but it was well received by behavioral health providers.

Conclusions: Medicaid programs experimenting with new care delivery models for individuals with complex conditions may look to the Maine experience for guidance in program design.

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Serious mental illness is a common and highly consequential issue affecting 9.8 million adults in the United States (1). Individuals with serious mental illness constitute an especially high-cost, high-need population, and they often experience chronic general medical conditions, such heart disease, cancer, and diabetes, in addition to their behavioral health conditions (2, 3).

Properly treating and caring for this medically complex population is a challenge for primary care and behavioral health providers, and many providers may fail to detect, diagnose, or treat conditions that fall outside their area of expertise. Moreover, legal, technological, organizational, and payment-related barriers hinder efforts to integrate and link services across primary care, behavioral health, and social service providers, leaving a system that is fragmented, disconnected, and difficult for patients to successfully navigate (4).

Numerous efforts within both primary and behavioral health care services have attempted to address fragmented care for persons with serious mental illness (5–7), but one approach—the medical home model—has gained popularity in recent years, particularly among Medicaid programs. In 2010, the Patient Protection and Affordable Care Act established a "health home" option under Medicaid to serve enrollees with chronic conditions (8). Health homes strive to improve coordination and health care quality by enhancing

HIGHLIGHTS

- Using its State Innovation Models Initiative award, Maine invested in the development of behavioral health homes (BHHs) for Medicaid enrollees with serious mental illness.
- BHH program features, such as care delivery redesign, capitated payments, integration of primary and behavioral health services, and investment in health information technology infrastructure, have shaped how care is provided to this population.
- Although the impact of BHH enrollment on utilization and expenditure outcomes through March 2016 have been mixed, early implementation lessons may be helpful for other states seeking to improve the value of care provided to their populations with serious mental illness.

self-management support for patients, engaging multidisciplinary provider teams, promoting decision support, optimizing the capacity of clinical information systems, and strengthening linkages with community-based resources. Behavioral health homes (BHHs) specifically serve people with serious mental illness and perform these functions as well as promote integration of behavioral health and primary care services (9, 10).

In 2013, the Center for Medicare and Medicaid Innovation funded six states—Arkansas, Maine, Massachusetts, Minnesota, Oregon, and Vermont—to transform statewide health care systems through policy and regulatory levers and by convening public and private stakeholders whose organizational priorities influence health care delivery (11). This funding opportunity was known as the Round 1 State Innovation Model (SIM) Initiative. Maine is one of 20 states that currently provide a Medicaid health home to individuals with serious mental illness or serious emotional disturbance (12), and here we focus on the efforts of Maine to support implementation of the BHH model with SIM funding.

Authorized by a Medicaid state plan amendment and launched in April 2014, Maine's BHHs are state-licensed behavioral health organizations (i.e., community mental health centers) that provide behavioral health services. These organizations can become Medicaid BHHs if they meet specific program participation criteria, and Medicaid enrollees can participate in the BHH program only if they meet very specific diagnostic and functional criteria on the basis of clinical assessments reflective of serious and persistent mental illness for adults and of serious emotional disturbance for children (more details are provided in an online supplement). Therefore, not all behavioral health organizations elect to become BHHs, and not all patients at a BHH are eligible for the program. Furthermore, individuals eligible for the program must opt in, and they can leave the program at any time.

BHHs provide team-based care, enhanced access to care, population risk stratification and management, and patient- and family-directed care plans. BHHs also strive to integrate general medical and behavioral health care by partnering with patients' primary care providers. BHHs include patients and families in decision making, make connections to community resources, commit to quality improvement, and build capacity with respect to health information technology (health IT) and clinical data exchange with other providers. BHHs function in the same way as primary care medical homes function for individuals with chronic general medical conditions.

Maine used SIM funding to provide technical assistance and practical transformation support to BHHs to transform care delivery and to develop a more robust health IT infrastructure, including connection to the state's health information exchange (HIE). To further support BHHs, Maine reimbursed BHHs with a capitated payment (per BHH enrollee per month) of $394.20. With the capitated payment, BHHs would have more flexibility to craft the package of services and supports that an enrollee might need. This payment was a departure from Maine's typical fee-for-service Medicaid payments, and for most BHHs, this arrangement provided the first exposure to an alternative payment model within Medicaid. More details on Maine's BHHs can be found in Box 1.

This study explored Maine's BHHs' successes, challenges, and lessons learned regarding practice transformation, health IT and data analytics, and integration with primary care. It also investigated the association between Medicaid beneficiaries' BHH enrollment and changes in their utilization and Medicaid expenditures. We hypothesized that BHH enrollment would lead to better coordination of care, which in turn could reduce reliance on high-cost services, such as inpatient admissions, readmissions, and emergency department (ED) visits. We also hypothesized that Medicaid expenditures might increase in the short term as enrollees' unmet needs are addressed but decrease over time through avoidance of costly services.

METHODS

Study Design

To assess BHH implementation progress and the impact of the BHH program on several utilization, care coordination, and expenditure outcomes, we employed a mixed-methods design, integrating qualitative data (from interviews and focus groups with key stakeholders) with a pre-post analysis of Medicaid claims data. RTI International's institutional review board determined that this study did not require its approval because it was an evaluation approved by the Centers for Medicare and Medicaid Services designed to examine possible changes in public programs.

Qualitative Data Sources, Analyses, and Outcomes

We collected qualitative data during three annual site visits from 2014 to 2017. At each visit, we conducted 20–30 interviews with key stakeholders who had deep knowledge of the BHH program, including Maine's SIM Initiative leadership, other state officials, commercial payers, primary care and BHH providers, and consumer representatives. We also conducted four focus groups each with BHH providers and with Medicaid beneficiaries enrolled in BHHs over the course of the three site visits. We used thematic analysis of these data to identify themes regarding practice transformation, health IT and data analytics, and integration with primary care (see online supplement for additional information about the interviews).

Quantitative Data Sources, Analyses, and Outcomes

The state of Maine provided Medicaid fee-for-service claims and enrollment data for 3 years before BHH implementation (April 2011–March 2014) and 2 years after BHH implementation (April 2014–March 2016). The state also provided a list of 7,560 Medicaid beneficiaries assigned to BHHs at any point during the BHH initiative during the 2-year implementation period.

BOX 1. Key characteristics of Maine's behavioral health home (BHH) model

Provider type

Behavioral health organizations (i.e., community mental health centers)

Population served

Medicaid-enrolled adults with serious mental illness and children with serious emotional disturbances who meet certain clinical and functional need criteria and who require case management services

BHH providers decide which of their patients would be a good fit for the program, and potentially eligible individuals may opt in. However, at the time of this analysis, it was unknown how many were deemed eligible but chose not to enroll.

Authorization

Medicaid state plan amendment

Certification

Ten core expectations: demonstrated leadership, team-based approach to care, population risk stratification and management, enhanced access, comprehensive consumer- and family-directed care planning, behavioral-general medical health integration, inclusion of members and families, connection to community resources and social support services, commitment to reducing waste and unnecessary health care spending and improving cost-effective use of health care services, and integration of health information technology

Alternative payment

$394.20 per BHH enrollee per month to provide comprehensive case management

Payment is not contingent on meeting quality measures or performance goals.

Team composition

The BHH team consists of a nurse care manager, a clinical team leader, a peer or family support specialist, and a coordinator who oversee development and implementation of care plans. Members of this care team are most frequently located on site at the BHH. BHHs must also have a psychiatric consultant and a medical consultant (physician, physician assistant, or nurse practitioner) who provides expertise on the development of evidence-based practices and helps lead quality improvement initiatives.

Integration with primary care

BHHs are expected to partner with a primary care practice designated as a health home, which is Maine Medicaid's primary care, patient-centered medical home program for Medicaid enrollees with multiple chronic conditions.

Health homes receive $15 per member per month to coordinate care with a BHH if the health home's patient is also enrolled in a BHH.

Through the health information exchange (HIE), BHHs can view general medical health data for their patients.

BHHs and primary care providers can exchange general medical health and behavioral health information through the HIE or by other means.

Learning collaboratives and one-on-one technical assistance are provided to train BHHs and health homes on collaboration and integration.

Technical assistance

Practice transformation support, including learning collaboratives, one-on-one in-person site visits, and telephone assistance

Health information technology (IT) infrastructure support, including helping BHHs connect to the state's HIE, troubleshooting electronic health record issues, and providing assistance to optimize workflows around data and health IT

Data analytics support, including distribution of feedback reports that include patient- and practice-level Medicaid claims–based data on cost, utilization, and quality of care and guidance on how to optimize data to improve patient care

We examined several care utilization, coordination, and expenditure outcomes. Utilization measures included acute inpatient admissions, ED visits and observation stays that did not lead to a hospitalization, and 30-day readmissions among beneficiaries with an index inpatient admission. We calculated these outcomes as binary measures (i.e., whether the service happened or not). We then multiplied the probability of use by 1,000 to obtain approximate rates of utilization per 1,000 beneficiaries for acute inpatient admissions and ED visits and per 1,000 discharges for 30-day readmissions. For a care coordination measure, we followed 2016 Healthcare Effectiveness Data and Information Set (HEDIS) specifications to examine the percentage of acute inpatient admissions with a primary diagnosis of a mental disorder that were followed by a mental health visit within 30 days of discharge.

Expenditure measures included total expenditures, total behavioral health–related expenditures, and professional expenditures. All expenditure measures were calculated on a per-beneficiary-per-month (PBPM) basis. Total expenditures included payments for inpatient, outpatient, professional, and pharmacy claims. Total behavioral health–related expenditures included the payments for inpatient, outpatient, and professional claims in which the primary diagnosis code was related to a mental disorder as defined in Mental Health Diagnosis or Chemical Dependency 2016 HEDIS value sets (13). Professional payments included payments for all inpatient and outpatient professional claims.

We conducted within-state, pre-post regression analyses to estimate the impact of Maine's BHH initiative. We could not compare the outcomes of the BHH study sample with those of a comparison group for several reasons. At the time of data collection for this study, BHH enrollees were adults with serious mental illness or were children with serious emotional disturbances who met certain clinical and functional need criteria and required case management services (14). BHH providers could decide which of their patients would be a good fit for the program, and we could not

replicate the providers' selection decisions to form a comparison group. Moreover, we did not have access in the claims data to the functional assessment data providers used to identify potentially eligible program participants, so we could not identify comparators similar to those in the BHH study sample.

This analysis included beneficiaries dually enrolled in Medicare and Medicaid because a high proportion of the beneficiaries in the study sample were dually eligible. However, we did not have access to Medicare data and were therefore unable to include Medicare services for these dually enrolled individuals in the analysis. We also did not impose any continuous-enrollment criteria on the study sample. We used ordinary least-squares regression for the expenditure measures and logistic regression for the binary care coordination and utilization measures. All models controlled for age, gender, race, enrollment in Medicaid due to disability, Medicare-Medicaid enrollment, length of enrollment in Medicaid, health status, urban or rural area of residence, county-level characteristics of the beneficiary, and beneficiary enrollment in the BHH program in only one or both of the two program implementation years. Regression models also clustered standard errors for each BHH to account for clustering of individuals within different BHHs. Statistical significance was assessed at 90% ($p<0.10$) in accordance with the Round 1 SIM evaluation design.

RESULTS

The BHH program in Maine began in April 2014. After the first year of program implementation, 22 behavioral health organizations were participating, and BHH activities were occurring at 51 sites throughout the state (behavioral health organizations participating in Maine's BHH program had multiple locations). By September 2016, additional BHHs had enrolled, along with additional locations for participating BHHs, and 24 BHHs were participating at 102 sites. At the time of this analysis, Maine had 159 behavioral health organizations, and only 15% (N=24) were participating. By September 2017, the end of the SIM Initiative, 11,271 Medicaid beneficiaries had ever enrolled in the program—4% of all Maine Medicaid enrollees (N=281,775) and 16.7% of all Medicaid enrollees (N=67,384) served through Maine's state mental health program (individuals served were considered here as proxies for individuals potentially eligible for BHH services).

BHH Implementation

Key implementation findings are described below, and Box 2 summarizes lessons learned from these findings.

BHHs need a clearly defined vision for the BHH model before implementation and require technical assistance to meet model expectations. According to BHH providers, dissemination of standardized workflows, trainings, and curriculums at program start would have helped participating BHHs better understand how to change practice patterns to align with BHH model expectations. One provider described setting up a BHH as "trying to build the airplane while we were taking off and flying." Although the respective roles of the required BHH clinical care team—clinical team leader, peer support specialist, nurse care manager, and primary care and psychiatric consultant—were delineated in state policy, some BHH providers expressed confusion about team member roles. During both site visit interviews and focus groups, providers mentioned the lack of a clear locus of responsibility for each patient and concern about how this lack of clearly delineated responsibilities might affect workflows among members of the care team.

To address these issues, Maine hired a contractor to administer learning collaboratives (e.g., learning sessions, webinars, and newsletters) for BHHs and to provide quality improvement support through one-on-one in-person or telephone technical assistance. The learning collaboratives focused on enhancing care coordination capabilities and coordinating behavioral health and primary care. These collaboratives offered BHHs the opportunity to share best practices, engage in peer-to-peer learning, and develop strategies to improve health care outcomes for patients. The technical assistance was very well received by BHH providers participating in stakeholder interviews and focus groups, and many providers noted that they had learned how to change care delivery because of this help. For example, BHH providers noted improvements in how they followed up with patients after an inpatient admission and how they identified patients' clinical and social needs and worked with patients to fill gaps in care.

The shift from fee-for-service to capitated payment for case management services was critical to model success. State officials noted that the move to a capitated payment of $394.20 per BHH enrollee per month to reimburse for case management services signaled a notable departure from Medicaid's fee-for-service reimbursement model and that this change was well received by BHH providers. When the BHH program was first implemented, BHHs were paid $330 PBPM for adults and $290 PBPM for children to provide care management services. However, to adequately cover BHHs' cost of care coordination and case management services and to give them the flexibility to provide whole-person, comprehensive care, the state had to increase the payment to $394.20 PBPM for adults and children. Examples of how BHHs used the capitated payment included financing group education classes for participants and hiring peer support specialists and care managers to provide enhanced case management. As one BHH provider noted, "It's the first time we've been able to have some measurable income based on quality and population health. There is a big value there." Another said, "The BHH can be more of a wellness model.... You are not chasing a productivity model, so you can do a lot more programming and communication and coordination of services."

Connecting BHH providers with clinical data facilitated coordination and integration of care. Before the SIM Initiative,

BOX 2. Lessons learned from implementation of behavioral health homes (BHHs) within Maine's Medicaid program

- When introducing a new model of care delivery, expect that some providers may lack clarity around model design; allow time for providers to adapt to the new mode.
- Providing technical assistance is critical to realizing practice transformation.
- Alternative payment models give providers flexibility in delivering care.
- Consider changing the alternative payment amount or structure if the current structure does not meet providers' needs.
- Access to clinical data on general medical health helps BHH providers develop care plans and improve care coordination between clinical providers.
- Technical assistance helps BHH providers optimize workflows around data.
- High costs of maintaining electronic health records (EHRs) and connections to a health information exchange (HIE) hinder adoption of health information technology.
- Real-time data from an EHR or HIE is viewed by providers as more useful than summary-level feedback reports on use, cost, and quality.
- Integration of primary and behavioral health care takes time.
- Exchange of clinical data alone does not ensure seamless integration between providers.
- Outreach and frequent communication can foster relationships between behavioral health and primary care providers.

Maine Medicaid staff had identified a critical gap in the state's Medicaid delivery system: behavioral health providers lagged behind primary care providers in access to and use of data to better manage patient care. To address this concern, Maine devoted considerable SIM funding to connecting behavioral health providers to its HIE, known as HealthInfoNet (15). Many BHH interviewees and focus group attendees discussed how they used the HIE; this use included developing workflows to respond to HIE notifications of their patients' ED and hospital use, mining the HIE for a patient's general medical health data, and modifying behavioral health care plans according to the patient's general medical health. One BHH provider singled out a useful feature: "I just love HealthInfoNet. I can tell if my client has been to the emergency room or admitted." Another commented, "[The HIE was] helpful in getting a more comprehensive picture of what is happening to individuals and getting us to formulate what support and services will be required for them to be successful."

However, use of real-time HIE data was not without challenges, including provider readiness to use data and optimization of workflows around the data, costs of connecting to the HIE and maintaining an electronic health records system that feeds data to the HIE, the need to obtain patient consent to share mental health records with the HIE, inability to share substance use–related data among providers, and resistance to clinical data sharing between primary and behavioral health providers. Providers needed extensive technical assistance to work through these challenges, and Maine allocated a significant amount of SIM funding to hiring contractors to provide this assistance. Providers uniformly lauded this technical assistance.

In addition to facilitating BHHs' connections to the HIE, Maine also analyzed the Medicaid claims for BHH enrollees and provided regular feedback reports to BHH providers on the use, cost, and quality of care for their BHH patients. However, providers viewed real-time data from an electronic health record or HIE as more useful than summary-level feedback reports on use, cost, and quality.

Integration with primary care takes time. State officials expected that the bidirectional HIE-mediated exchange of physical and behavioral health data between BHHs and primary care providers and technical assistance through learning collaboratives and one-on-one assistance would foster integration of primary and behavioral health care. According to many BHH providers, the relationship between BHHs and a BHH patient's primary care provider depended largely on the efforts of the BHH providers. Several of the BHH providers we interviewed conducted outreach to primary care providers to educate them about the BHHs' role in patients' medical care and to discuss sharing clinical data for mutual patients. Several BHH providers acknowledged productive relationships with their patients' primary care providers. The general perception among those interviewed during site visits and participants of BHH provider focus groups was that the relationships between behavioral health providers and primary care providers was improving because communication about shared patients became more frequent and improved in quality. However, many BHH providers acknowledged that the goal of seamless integration with primary care to create a comprehensive care team with a shared care plan has largely not yet been achieved—a sentiment echoed by BHH enrollees. Focus group participants often said that their primary care providers and other providers (e.g., case managers, psychologists, and specialists) did not necessarily work together as a team. As one BHH enrollee put it, "I don't think they have much contact. He takes care of my blood pressure medications, and my therapist deals with the behavioral side of it."

Utilization, Care Coordination, and Expenditure Outcomes

Table 1 summarizes the sociodemographic and county-level characteristics of 7,560 Medicaid enrollees in the BHH program over the first 2 years of the program (2015 and 2016; the total count of unique enrollees over these 2 years is higher than the counts for the individual years given in the table). A little over one-half of the population were female,

TABLE 1. Sociodemographic characteristics of behavioral health home (BHH) enrollees, by program year[a]

	Year 1 (2015) (N=7,306)		Year 2 (2016) (N=7,386)	
Characteristic	N	%	N	%
Individual level				
Female	4,208	57.6	4,232	57.3
Age				
1–18	1,542	21.1	1,492	20.2
19–64	5,311	72.7	5,399	73.1
≥65	453	6.2	495	6.7
With disability	4,135	56.6	4,210	57.0
Dual eligibility for Medicare and Medicaid	2,711	37.1	2,851	38.6
Nonwhite	1,220	16.7	1,204	16.3
Race missing	760	10.4	739	10.0
Continuously enrolled in Medicaid[b]	7,204	98.6	7,268	98.4
Total months enrolled in Medicaid annually (M)	11.5		11.5	
Had full Medicaid benefits during the year	6,429	88.0	6,396	86.6
In BHH in both demonstration years	4,121	56.4	3,944	53.4
CDPS comorbidity score (M)[c]	1.8		1.8	
Resides in a metropolitan area	4,902	67.1	4,986	67.5
County level[d]				
Uninsured rate in 2013		13.5		13.4
Median age of residents in 2010 (years)	42.0		41.9	
Poverty rate in 2013		14.5		14.5
Hospital beds (any type) per 1,000 persons (M per county)	3.2		3.2	
Physicians per 1,000 persons (M per county)	1.1		1.1	
Community mental health centers per county (M)	.01		.01	

[a] Source: RTI analysis of Maine's Medicaid claims data. The number of unique Medicaid enrollees in the BHH program in the first 2 years was 7,560. Some enrollees were enrolled only in the first year of the program, some only in the second year, and others in both years. Therefore, the total unique count of enrollees over the 2 years is higher than the count in each of the individual program years.

[b] Continuous enrollment was operationalized as having a break in enrollment no longer than 1 month from the time the beneficiary first entered the Medicaid data in the year until the end of the measurement year. However, a person could have multiple occurrences of a 1-month break in enrollment and still be considered continuously enrolled. This covariate was used to control for churning in and out of Medicaid.

[c] The CDPS (Chronic Illness and Disability Payment System) is a diagnostic classification system originally developed for states to use in adjusting capitated payments for beneficiaries with disabilities in the Temporary Assistance for Needy Families and Medicaid programs and is used to predict Medicaid costs. The CDPS was used in this study to measure beneficiary morbidity. The CDPS maps selected diagnoses and prescriptions to numeric weights. Beneficiaries with a CDPS score of 0 have no diagnoses or prescriptions that factor into creating the CDPS score. The more diagnoses a beneficiary has or the greater the severity of a particular diagnosis, the larger the CDPS score.

[d] BHH enrollees' county of residence.

and close to three-fourths were adults. Approximately 55% of the sample population were enrolled in Medicaid because of disability, and about 36% were dually enrolled in Medicare and Medicaid. On average, BHH enrollees were enrolled in Medicaid 11.5 months in any given year.

Table 2 summarizes estimates of utilization, care coordination, and expenditure outcomes before BHH enrollment and 1 year, 2 years, and both years combined after program implementation. BHH enrollees on average experienced a small increase in inpatient admissions, a large increase in 30-day inpatient readmissions, a decrease in ED visits, and little change in follow-up within 30 days of discharge for a mental illness–related inpatient admission. None of the changes in utilization were statistically significant. Expenditures increased after BHH enrollment, with a statistically significant increase in total expenditures of $170 PBPM ($p<0.001$) and a nonsignificant increase in behavioral health–related expenditures and professional expenditures.

DISCUSSION

To improve care for individuals with behavioral health needs, health systems and payers have placed significant emphasis on primary care practice as the site for integrating behavioral health care delivery. In contrast, Maine's BHH program offers unique insights into real-world implementation of delivery system transformation that places behavioral health providers at the forefront of practice transformation. After 2 years of model implementation, BHH providers offered anecdotes of how capitated payments—in conjunction with SIM-funded health IT support; practice transformation assistance; connection to the state's HIE; and feedback on quality, utilization, and cost measures—altered how they delivered behavioral health care. Giving behavioral health providers access to more clinical data played a role in improving integration and coordination of care, and providers viewed technical assistance in transforming practices as necessary for changing workflows and care delivery.

However, expectations for model performance and design must be clearly communicated to providers, and alternative payments must be correctly calibrated to reflect appropriate levels of staff effort for providers to buy into the model. Even then, practice transformation takes time, and the BHH model itself does not guarantee seamless integration between behavioral health and primary care for shared patients. Payment, exchange of health information, and training in shaping care delivery redesign all play roles in facilitating or impeding practice transformation for primary care providers and behavioral health providers who learn to operate within a patient-centered medical home model (16–19).

Contrary to expectations that improvements in care coordination and case management might reduce reliance on high-cost services, the BHH model was not associated with statistically significant reductions in high-cost utilization (i.e., inpatient admissions and readmissions as well as ED visits) and expenditures after 2 years. However, ED use was

TABLE 2. Difference in the annual change in utilization and expenditures for Maine Medicaid beneficiaries enrolled in behavioral health homes (BHHs), for the first 2 years of implementation (April 2014–March 2016)[a]

Outcome	Preperiod (adjusted M)	Test period (adjusted M)	Regression-adjusted pre-post estimate	90% CI	p	Total weighted N of period-years in regression model
Utilization (per 1,000 beneficiaries)						
Inpatient						30,580
Year 1	183.7	187.2	3.5	−5.0, 11.9	.50	
Year 2	183.7	183.5	−.2	−17.8, 17.5	.99	
Overall	183.7	185.5	1.8	−7.3, 11.0	.74	
Emergency department visits not leading to hospitalization						30,580
Year 1	586.8	570.7	−16.2	−31.3, −1.1	.08	
Year 2	586.8	585.1	−1.7	−18.8, 15.4	.87	
Overall	586.8	577.1	−9.8	−21.1, 1.6	.16	
30-day inpatient readmissions						8,297
Year 1	186.5	203.3	16.8	−8.8, 42.4	.28	
Year 2	186.5	200.1	13.5	−9.6, 36.7	.34	
Overall	186.5	201.9	15.4	−2.3, 33.0	.15	
Care coordination						
Follow-up ≤30 days postdischarge from psychiatric hospitalization (%)						1,984
Year 1	92.4	91.8	−.6	−3.1, 1.8	.66	
Year 2	92.4	91.9	−.5	−3.4, 2.5	.79	
Overall	92.4	91.8	−.6	−2.5, 1.3	.62	
Expenditures ($ PBPM)[b]						
Total expenditures[c]						30,580
Year 1	1,461.60	1,573.81	112.2	58.5, 165.9	.001	
Year 2	1,461.60	1,703.52	241.9	166.7, 317.2	<.001	
Overall	1,461.60	1,631.37	169.8	125.0, 214.6	<.001	
Behavioral health expenditures						30,580
Year 1	933.86	946.44	12.6	−37.7, 62.9	.68	
Year 2	933.86	1,000.84	67.0	−13.7, 147.6	.17	
Overall	933.86	970.58	36.7	−8.7, 82.1	.18	
Professional expenditures						30,580
Year 1	408.30	417.86	9.6	−15.4, 34.5	.53	
Year 2	408.30	426.19	17.9	−22.8, 58.6	.47	
Overall	408.30	421.56	13.3	−9.5, 36.0	.34	

[a] Source: RTI analysis of Maine's Medicaid claims data.
[b] PBPM, per beneficiary per month.
[c] Total PBPM expenditures do not include the BHH monthly capitation payment.

trending downward after BHH enrollment. Interviews with BHH providers confirmed that providers were tracking hospital and ED use through the HIE and were subsequently reaching out to patients to ask why the visit happened and discuss appropriate use of the ED. Reductions in ED visits may signal that inpatient admissions could eventually come down as BHH enrollees make less frequent trips to the hospital.

Moreover, the single claims-based measure of care coordination presented here—follow-up after an inpatient admission for mental illness—did not improve over time. Rates of follow-up were high during the baseline period (i.e., 92%), suggesting that this sample already had good follow-up, perhaps because they were already known to the BHHs, and improving on relatively high rates can be challenging. It is also important to note that a single claims-based measure does not capture the full breadth of coordination activities happening under this model.

Total Medicaid expenditures significantly increased for BHH enrollees after participation in the model, which was not unexpected. BHH providers in focus groups and interviews reported providing more services because the model gave them the flexibility to do so. For example, care managers or peer support staff made more home visits, attended more medical appointments with BHH enrollees, and worked with patients on improving activities of daily living. This increased engagement with patients could, and often did, lead

to recommendations for additional medical care as needs assessments revealed gaps in clinical care. Moreover, BHH enrollees were very high-need, high-cost patients, and realizing significant reductions in total expenditures in the short run for such patients can be challenging, because their health needs are persistent, chronic, and often costly to treat.

Maine's Medicaid program developed the BHH model to meet the needs of a specific clinical population, and very few studies exist with which to compare our results. However, one small pilot study also found some reduction in ED use, as well as fewer psychiatric hospitalizations, among adults with psychotic and bipolar disorder receiving care in a BHH (20). Although not directly comparable, our finding of relatively little change in outcomes, except a trend toward less ED use and, in some cases, higher costs, is not dissimilar from the experience of publicly insured and of privately insured patients with primary care practices transforming into patient-centered medical homes (21–24).

Several factors should be taken into consideration when considering these results. The qualitative analyses were derived from focus group and interview respondents, and findings from these analyses may be positively biased because individuals satisfied with the program may have been more willing to speak about the program than those who were dissatisfied. Specific to the quantitative analyses, enrollment in the program was relatively low and included a very select sample chosen by BHH providers. Detecting significant changes in utilization and expenditures over time can be difficult with such small samples, and generalizability to a broader population with serious mental illness is limited. We also employed a pre-post study design because of difficulties selecting a reasonable comparison group, and we could not rule out regression to the mean, account for secular trends in health care use, or adequately control for unobserved characteristics of BHH enrollees that may have changed over the study period, all of which are factors that could bias results. Finally, at the time of this analysis, Maine's BHH model was relatively new, and program start-up takes time. Two years may not have been enough time for sustained patterns of care to emerge. Furthermore, over these first 2 years, the number of behavioral health organization sites enrolled in the BHH model doubled, and the newer sites were likely not as effective as the early participants, which had more time to align with model expectations.

CONCLUSIONS

Both providers and state officials viewed BHHs as transformative to Maine's behavioral health care system. The BHH implementation experience in Maine demonstrates that behavioral health providers can transform care delivery. However, similarly to what their primary care counterparts experienced, behavioral health providers found that practice transformation is not without its challenges and that successful redesign of care delivery takes time, technical support, and sufficient provider reimbursement. Maine's Medicaid program has decided to continue the BHH model after determining that it has shown promise in improving coordination and quality of care. Other Medicaid programs, health systems, and payers experimenting with alternative delivery and payment models to address care fragmentation and high costs for individuals with complex behavioral health and general medical conditions can look to Maine's lessons learned when shaping their own initiatives.

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