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DEPARTMENT OF HUMAN SERVICES

Behavioral Health Home Services

Implementation Evaluation Report

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Executive summary

In 2016, Minnesota Department of Human Services (DHS) established the behavioral health home (BHH) services model. BHH services providers serve children and adults with serious mental illness and their families with a multi-disciplinary team using a collaborative, person-centered, strength-based approach. BHH services aim to address the comprehensive physical, behavioral health, and social service needs of individuals in a holistic, coordinated manner.

As part of this project, there is a federal requirement for an implementation evaluation and an outcome evaluation. DHS contracted with Wilder Research to conduct the implementation evaluation that will help inform the outcome evaluation. Wilder Research measured implementation through compiling an implementation checklist as a fidelity assessment completed by providers, conducting interviews with a sample of 93 individuals served and/or their caregivers, completing group interviews with 74 staff from all 19 BHH services sites, and gathering referral data from all sites. In addition, Wilder Research used results from health care claims data analyzed by DHS. The goals of the implementation evaluation were to assess how services sites were implementing the BHH service model, and to document the successes, challenges, and preliminary outcomes associated with this model. Data collection occurred between April 1 and December 31, 2018.

BHH services participation

At the time of this publication, there are 34 provider locations certified to provide behavioral health home (BHH) services in Minnesota. This evaluation gathered data from 19 organizations providing services in 23 locations across the state. Sixty-five percent of the sites are located in predominately urban settings, while 35 percent are in rural settings. Seventy-four percent of sites are primarily mental health sites while 26 percent are primarily primary care sites. In addition, four sites (17%) are also Certified Community Behavioral Health Clinics (CCBHC), which is a service delivery model that integrates substance use disorder and mental health services using many of the same person-centered, coordinated care principles as the behavioral health home model.

As of December 2018, 1,779 individuals had been enrolled in BHH services for between 1 and 18 months (average = 8.37 months). Demographic information is only available for 1,756 individuals. Of those, the majority were over age 18 (87%), female (57%), and white (54%). In addition, 63 percent live in the Twin Cities metro area.

Key findings: Implementation

Wilder Research identified the following key findings from the implementation evaluation. This report presents supporting data for these key findings alongside the findings.

Individuals receiving behavioral health home (BHH) services feel there is a collaborative, supportive approach to creating and fulfilling health goals and plans.	✓ Most individuals served said that the BHH services team worked with them to come up with their goals (89%) and to create a plan to address them (94%). Nearly all individuals served (94%) mentioned either the plan or the BHH services team helped them reach their goals. ✓ Over 70 percent of individuals served said that the BHH services team helped them make the appointments they need (76%), reminded them about the appointments (71%), and followed up about the appointments (87%).
BHH services staff make thousands of referrals to community organizations to meet the needs of people they serve, and individuals mostly follow up on referrals they receive.	✓ Based on referral tracking, BHH services sites made nearly 4,000 referrals during the 9-month data collection period. ✓ The most common categories for referrals given by services sites were for mental health care (24%) and physical health care (21%), followed by housing (15%). These categories alone accounted for 60 percent of all referrals. ✓ Individuals who received referrals followed up on most of them (62%), especially referrals for Medical Assistance or other insurance (77%), disability services (71%), the Minnesota Family Investment Program (MFIP) or other financial assistance (70%), and the Supplemental Nutrition Assistance Program (SNAP) or other food support (70%).

Organizations with a history of integrated care are well-positioned to implement BHH services, but they still require additional resources to build BHH services-specific infrastructure.	✓ According to the staff interview, nearly all sites (18 out of 19) previously provided services to support integrated care, either formally or informally, and 13 sites also implemented other integrated service models. ✓ Although 15 out of 19 sites reported using a patient registry, a technology-based component of BHH services that tracks individuals served and the services they receive, staff from a number of sites mentioned in the staff interview that the patient registry is cumbersome or that they still have difficulty building or navigating the patient registry. ✓ Similarly, 12 out of 19 sites reported in the implementation checklist that they monitor and analyze data to perform population management, but several agencies clarified they are in the early stages of population management. Others said that they do not find the available systems as useful as they would like.
Skilled staff are an essential element of the BHH services model, but sites struggle with staff turnover.	✓ When asked what was most helpful about BHH services, individuals served most frequently mentioned specific positive qualities about their BHH services staff (n=23). ✓ While most individuals served were satisfied with BHH services staff and services and did not have suggestions for improvements, the most frequently mentioned suggestion was related to BHH services capacity (n=9), such as wanting staff to be more available to individuals receiving services, or hiring more staff. ✓ Several sites (n=6) shared in the staff interview that they encountered difficulties in staffing, such as hiring (e.g., due to a lack of upfront funding), high turnover, and not having enough staff to cover a large territory. Some sites described specific challenges associated with staff turnover, including the time it takes to hire, onboard, and train new staff, as well as the need to rebuild relationships with the people they serve.

While those served appreciate the benefits of multifaceted care coordination, it can be challenging for staff to get timely information from external partners.	✓ All sites reported in the implementation checklist that they provide a central point of contact to ensure people and their families can successfully navigate the array of services that impact their health and well-being. Individuals served shared that this is one of the most helpful aspects of the BHH services. ✓ Internal communication appears to be a strength of the services sites. Nearly all services sites (n=17) said in the staff interview that they have regular team meetings, check-ins, and supervision to do case reviews and case consultation on individuals served. Several sites (n=7) have staff co-located to help facilitate communication. ✓ Eighteen sites mentioned in the staff interview that they actively work with outside providers to promote BHH services, build relationships, and communicate about the needs of individuals served. However, some sites mentioned difficulties in communication or relationships with partners and outside providers.
There are some opportunities to increase administrative efficiencies and program success, now that the BHH services model has been thoroughly piloted in Minnesota.	✓ In the staff interview, BHH services sites requested more flexibility in the timing or process for conducting the diagnostic assessment and in the required frequency and methods for contacting the individuals they serve. ✓ In addition, four sites mentioned having problems with billing or receiving payments for their BHH services in the staff interview. Three of these sites would like support to have smoother claims processing so that they could receive their payments for BHH services more quickly.
BHH services sites have difficulty building awareness of the services they provide, both to potential individuals served and community partners.	✓ Nine sites shared in the staff interview that they encounter challenges explaining what BHH services are, how they are different from other services, and who would be a good fit for BHH services to other service teams, individuals who might receive services, and external partners. ✓ Five sites cited difficulties related to referrals in the staff interview, such as having slow and few referrals due to a lack of awareness about BHH services or resistance from the county to make referrals in certain cases.

Key findings: Preliminary outcomes

While the main focus of the current evaluation is on implementation, the evaluation also captured some information about preliminary outcomes for individuals receiving services associated with the model.

BHH services help the individuals they serve access more mental, physical, and chemical health care	✓ Based on claims data from the Minnesota Department of Human Services, nearly all BHH services-eligible adults both receiving BHH services (99%) and not receiving BHH services (95%) had at least one preventative care visit. ✓ Individuals receiving BHH services tended to have more mental health services (1,611 per 100 individuals) than those not receiving BHH services (928 per 100 individuals). ✓ Individuals receiving BHH services had about twice as many inpatient admissions per 1,000 months enrolled for mental health reasons than their counterparts not receiving BHH services (31 versus 16 claims per 1,000 months). ✓ When asked about what changes they have seen in individuals receiving BHH services, staff shared that they attend appointments more regularly and are better at showing up for appointments (n=8).
Individuals receiving BHH services perceive improvements to their health.	✓ When asked about what goals they had accomplished, 48 percent of individuals served (n=45) mentioned improvements to mental health (e.g., reduced anxiety and depression, greater coping skills, and better stress management). ✓ 37 percent of interview participants (n=34) mentioned general improvements to their physical health when asked about what goals they accomplished. ✓ Most BHH services sites said in the staff interview that it's too early to see any changes in physical health or mental health of individuals receiving BHH services.

BHH services staff and individuals receiving services both reported that those served have improved quality of life and wellness.	✓ When asked about what goals they had accomplished, some individuals receiving BHH services shared that after receiving BHH services they feel more hopeful, optimistic, and better about themselves, and that their quality of life has improved (n=8). ✓ When asked about the changes they've observed in individuals receiving BHH services, thirteen sites shared that the individuals served have become more independent and learned to advocate for themselves and to proactively ask for help.
BHH services sites help individuals served take better control of their health.	✓ About two-thirds of respondents (67%) said that BHH services staff helped them learn about their health condition. ✓ When asked about changes they've observed in individuals' abilities to manage their health condition, seven sites explicitly mentioned that the individuals served have increased awareness, knowledge, and skills to manage their or their child's physical and mental health condition. ✓ Nine sites mentioned in the staff interview that the individuals served like and are engaged with the services. ✓ Ten sites reported in the staff interview that the individuals served have built greater trust with providers and communicate more and better with providers.

Background

Behavioral health home services model

The Minnesota Department of Human Services (DHS) began offering behavioral health home (BHH) services in July 2016. Behavioral health home services are Minnesota's version of the federal health home benefit, which is a provision of the Affordable Care Act that provides a person-centered system of care.

Health home services are federally required to provide six core services:

- Comprehensive care management
- Care coordination
- Health and wellness promotion
- Comprehensive transitional care
- Individual and family support
- Referral to community and social services

The goals of the health home framework are to:

- Improve health outcomes (preventative, routine, treatment of health conditions) of individuals
- Improve the experience of care for the individual
- Improve the quality of life and wellness of the individual
- Reduce health care costs

Behavioral health home services create an opportunity to meet the needs of individuals experiencing serious mental illness and their families by addressing the individual's goals for physical health, mental health, substance use, and wellness. Behavioral health home services build on the health home framework by including a multi-disciplinary team that shares information and collaborates to deliver a holistic, coordinated plan of services and care. Providers deliver behavioral health home services with a person-centered, strength-based perspective, considering the varying social factors that ultimately impact a person's health. Behavioral health home services aim to address the comprehensive physical, behavioral health, and social service needs of individuals in a coordinated manner. This includes completing a health wellness assessment and developing a subsequent health action plan to address chronic conditions, providing health literacy education, ensuring ongoing coordination of care between behavioral and physical health, and coordinating

with non-clinical services and community supports. This full integration of mental and physical health care separates the behavioral health home model from other models, such as Targeted Case Management and Assertive Community Treatment services.

Evaluation

The Minnesota Department of Human Services (DHS) contracted with Wilder Research to evaluate the implementation and initial outcomes of the behavioral health home model. Wilder Research used a mixed methods approach to complete this evaluation, including compiling an implementation checklist as a fidelity assessment completed by providers, conducting interviews with a sample of 93 individuals served and/or their caregivers, completing group interviews with 74 staff from all 19 services sites, and gathering referral data from all sites. Interviews with individuals served by BHH services included closed- and open-ended questions, while interviews with BHH services staff were semi-structured and included only open-ended questions. Thus, this report indicates when interviewers directly asked individuals served about a topic and when individuals freely brought up a topic in response to an open-ended question. All staff responses discussed in this report were in response to open-ended questions. When possible, researchers conducted analysis to determine differences between sites based on characteristics, such as rural versus urban and mental health versus primary care. This report indicates any notable differences, and researchers will develop additional summaries based on these characteristics.

In addition, Wilder Research used results from health care claims data analyzed by DHS to examine preliminary outcomes and costs associated with the model. For the outcome data, DHS created a comparison group of individuals who are eligible for BHH services but not enrolled in BHH services. For the cost data, DHS created a one-to-one matched comparison group using propensity score matching.

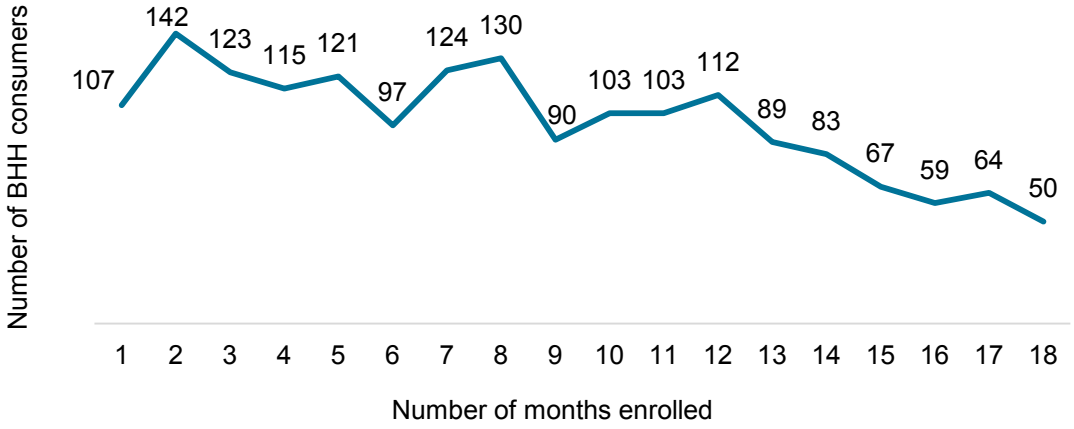
This is the first phase of the evaluation and more extensive outcome evaluation will be conducted in the future. See Appendix D for detailed evaluation methods.

BHH services participation

The data for this evaluation was collected from 19 organizations certified to provide behavioral health home services in 23 sites across the state. Sixty-five percent of the sites are located in predominately urban settings, while 35 percent are in rural settings. Seventy-four percent of sites are primarily mental health sites while 26 percent are primarily primary care sites. In addition, four sites (17%) are also Certified Community Behavioral Health Clinics (CCBHC), which is a service delivery model that integrates substance use disorder and mental health services using many of the same person-centered, coordinated care principles as the behavioral health home model.

As of December 2018, 1,779 individuals had been enrolled in BHH services for between 1 and 18 months (average = 8.37 months; Figure 1). Demographic information is only available for 1,756 individuals served. Of those, the majority were over age 18 (87%), female (57%), and white (54%). In addition, 63 percent live in the Twin Cities metro area (Figure 2).

1. Duration of BHH services enrollment (N=1,779)



Source. Department of Human Services Quality Analysis

2. Demographic characteristics of people receiving BHH services

Sex	Individuals served by BHH services (N=1,756)
Female	57%
Male	44%
Age	
Under age 18	13%
18 to 64	83%
65 and over	4%
Race and ethnicity	
Asian or Pacific Islander	7%
Black	16%
Hispanic	3%
Native American	6%
Unknown	14%
White	54%
Region of residence	
Twin Cities metropolitan area	63%
Greater Minnesota	37%
Out of state	1%

Source. Department of Human Services Quality Analysis
Note. Percentages may not add up to 100 due to rounding.

Behavioral health home services implementation

This report summarizes the results of the implementation evaluation. The main focus of the report is on the implementation of core elements of the behavioral health home (BHH) services model, including how the sites are implementing these elements, their strengths, and their challenges. In addition, this report covers preliminary outcome data based on the BHH services logic model (see Appendix A).

> *The most helpful is how they serve me in a variety of aspects, whether it be mental health, physical health, transportation, my benefits, accessing additional services, help with insurance, help with information about gym membership opportunities. As I'm reflecting back on this year, they have helped me in so many different ways. They allowed me to focus on what I needed to do to become healthier. Basically, they share the burden so I don't feel overwhelmed doing it all alone.*
> *– Individual receiving BHH services*

Progress in BHH services implementation overall

When asked what successes they have had so far in implementing the BHH services model, a common theme from the staff interviews is a clear plan for implementation (e.g., roles, plans, documentation/tracking), improved processes (e.g., more systematic, integrated, standardized, smoother, quicker), and more established infrastructure in place for implementation (e.g., electronic health records, billing).

> *We have a better handle on roles, policies, and procedures. – BHH services staff*
>
> *We have established a pretty good workflow to meet the needs of the clients as well as fulfill the requirements of BHH [services]. – BHH services staff*

Seven sites mentioned that they are expanding by getting more referrals, increasing the number of individuals enrolled in BHH services, or broadening the services provided.

> *Our BHH [services are] growing so well…We're broadening our area of service.*
> *– BHH services staff*
>
> *We're getting real close to our maximum number of clients. – BHH services staff*

In the staff interview, only urban sites (5 out of 12) mentioned that they are achieving stability in their implementation (e.g., fully implemented; fully staffed/adding staff; financial stability/break-even point; expanding services). Rural sites were more likely to be developing their services, including receiving more referrals, increasing the number of individuals enrolled in their BHH services, or improving processes in their BHH services implementation (4 out of 7 each). Two rural sites mentioned that they are experiencing financial instability or losing money.

Organizational supports

In order for the BHH services model to be successful, there must be buy-in and support from the organization providing the services. This includes the technical infrastructure used to manage individuals' records and population health monitoring.

Many sites are receiving organizational resources and supports to operate BHH services. Thirteen sites mentioned in the staff interview that they are also implementing other models, such as Certified Community Behavioral Health Clinics (CCBHC) and Adult Rehabilitative Mental Health Services (ARMHS). In addition, 11 sites said in the staff interview that individuals receive services in addition to BHH services at their organization, including social services, housing, CCBHC, mental health resources, and in-house diagnostic assessments.

> *For us, we're lucky in that we have our mental health professionals to do assessment just for individuals who are coming into [site] any way. That's not the reality for other agencies; it can be a month to three months of working with clients before they're eligible to actually bill for them. During that time, the client may decide they don't really want to go through that or need the help. – BHH services staff*

However, staff interviews suggest that sites were just beginning to use technical tools or put technical structure in place. Several sites ran into challenges launching the technical tools or leveraging the tools for BHH services implementation. For example, a number of sites (n=5) mentioned in the staff interview that the patient registry, which is an electronic tool to track individuals served and the services they are receiving, is cumbersome or that they are still having difficulty building or navigating the patient registry.

> *Doing that patient registry manually is a very cumbersome task. We are managing and keeping it up but it's really not what is informing how we move forward. How we move forward is really coming from verbal communication and our [electronic health record]. – BHH services staff*

Though having early challenges with their technical infrastructure, several sites (n=6) said in the staff interview they have the support from their IT departments to build documents and management reports for the BHH services.

According to the self-reported implementation checklist, all agencies use an electronic health record and most agencies (79%) use a patient registry. Most sites (84%) use the state-developed Mental Health Information System (MHIS) for reporting data to the state, though some said they have had technical issues and others are still working on fulfilling all of the required variables. Slightly less than two-thirds (63%) monitor and analyze data in their patient registry or the Provider Partner Portal to perform population management. Several agencies identified that they are in the early stages of population management, and others said that they do not find the available systems as useful as they would like.

In addition, when asked about challenges they've encountered in BHH services implementation, four sites reported problems with their organizations obtaining payment for BHH services. These challenges generally relate to issues with billing or insurance reimbursement for the BHH services. Three of these sites would like support for smoother claims processing to receive payments for BHH services in a timelier manner.

Culture to support integration

An organizational culture that supports providing integrated services includes having leadership support for integration, having a culture of shared leadership, and having leaders who engage all staff in integration.

The themes from both the implementation checklist and staff interview suggest that the organizations implementing the BHH services model have leadership support and/or an organizational culture conducive to its implementation.

- Nearly all sites (18 out of 19) said in the staff interview that they previously provided services to support integrated care, either formally or informally.
- Without prompting, many sites (n=13) mentioned in the staff interview that their leaders support them in the BHH services implementation.
- Six sites mentioned in the staff interview that their organization values interdisciplinary and integrated services.

> *For infrastructure, we have a team here of leadership that really believes in getting this program started and supporting that mission. – BHH services staff*
>
> *Even our mission statement from 1970 talked about providing integrated services. It's an inspiration for most people within our agency. – BHH services staff*

In response to the self-reported implementation checklist, all sites endorsed that their leaders actively support the concepts of integration and 90 percent said they work to engage all staff in integration. Ninety-five percent also said that financial leaders are involved in creating the business plan for increased integration. Ninety percent reported that there is a culture of shared leadership with everyone taking responsibility for change and improvement.

Staff training and capacity

This section summarizes implementation in hiring and supporting staff, including providing technical support and training, supporting coordination and communication, and retention.

In the self-completed implementation checklist, all agencies reported that they have filled the required staff positions of Services System Navigator and Integration Specialist. Some sites did not report the credentials of their staff, but most staff with credentials listed met the BHH services standards. The implementation checklist indicated that all BHH services sites reported identifying and meeting staff training needs, and staff were qualified with the requisite skill set to work in an integrated environment. Ninety-five percent of sites reported that staff had a basic understanding of the principles of integration.

In the staff interview, however, six sites shared that they encountered difficulties in staffing, such as hiring (e.g., due to a lack of upfront funding), high turnover, and not having enough staff to cover a large territory. Relatedly, the most frequently mentioned theme for improvements among individuals receiving services was related to BHH services capacity, such as wanting staff to be more available or hiring more staff (n=9). A few of the individuals served also suggested providing more training for staff (n=3).

When asked what type of support would be most helpful as sites move forward with BHH services implementation, nine sites shared that they would like to receive additional training for their staff from the Minnesota Department of Human Services (DHS). The suggested topics for these trainings include: motivational interviewing, trauma-informed care, alternative mental health approaches, population health approaches, health coaching, and using the partner portal. BHH services sites would also find it helpful to have more regular check-ins with DHS and clearer guidelines to make sure their implementation is on track. Urban sites were more likely to ask for additional staff training (7 out of 12) and clearer guidelines for BHH services implementation (3 out of 12) compared to rural sites (1 and 0 out of 7, respectively).

Ten sites shared in the staff interview that they would like to have more opportunities for BHH services staff from different sites to come together to share lessons learned, either in-person or through a communication platform, such as an online forum, portal, or directory to exchange knowledge.

> *It'd be great to organize another learning. Challenges one team might be facing could learn from another team. So we should be able to take advantage to share successes and best practices.* – *BHH services staff*

> *It would be really cool if DHS could facilitate cohorts of different roles within BHH [services sites] so you can have an opportunity to connect with other system navigators, informational specialists, and community health workers just to see how they are doing their work and could we learn anything from them. That would open doors for continuity of care if a client does need to move to a different BHH [services] program.*
>
> *– BHH services staff*

Comprehensive care management

Comprehensive care management is a collaborative process designed to manage medical, social, and mental health conditions more effectively based on population health data and tailored to the individual served. It includes the following activities:

- Administering or referring people for physical health screenings and substance use disorder screenings
- Systematically following up with screenings
- Tracking lab results and medications to inform recommendations for adjustments, as needed
- Systematically coaching individuals and their identified supports to increase self-efficacy, improve health management, maintain a healthy lifestyle, and improve health outcomes
- Facilitating the provision of wellness and prevention education to prevent and manage common chronic conditions

According to the self-reported implementation checklist, most sites indicated that they are engaging in these activities. For example, many BHH services sites reported using tools and curricula to tailor communication and support to the individuals they serve, such as the Patient Activation Measure (PAM), health action plans, U.S. Preventative Services Task Force Services Selector Tool, and the "I can prevent diabetes" curriculum.

Interviews with individuals receiving BHH services support a similar theme. Sixty-seven percent of interview respondents said that BHH services staff helped them learn about their health condition. When asked how staff helped them learn about their health condition, respondents said BHH services staff helped explain treatment and strategies for coping with their mental health condition; helped them understand symptoms, diagnoses, and triggers; and provided resources or information.

Care coordination

Care coordination is the compilation, implementation, and monitoring of the individualized, holistic health action plan with the individual and their identified supports through appropriate linkages, referrals, coordination, and follow-up to needed services and supports. Providers conduct care coordination activities with individuals and their identified supports, as well as with medical, behavioral health, and community providers, across and between care settings to ensure that all services are coordinated. This includes providing individuals served with a primary point of contact, delivering services in a location and setting that meets their needs, having the capacity to assess and connect to community supports, and helping with appointments.

> *It's a great place to be able to go and everybody is on the same page. Everyone on my health care team knows what's going on, they know my files. I can meet with all of them at the same time if I need to. I like that my psychiatrist is right there, and they all communicate with each other. I highly recommend this type of program.*
> *– Individual receiving BHH services*
>
> *There's not necessarily a handoff because we stay on board…There's always follow-up on our end with the client and then most likely with the providers to make sure that what's happening is what is in the client's best interest and how we support them in ensuring they're following through and following up. – BHH services staff*

Several sites (n=6) shared in the staff interview that they draw on previous care coordination experience and efforts to implement BHH services care coordination.

Support for appointments

All BHH services sites reported in the implementation checklist that they help individuals receiving BHH services to set up and prepare for appointments. The interviews with individuals receiving BHH services also support the same theme when asked whether BHH services staff supported them with appointments in specific ways. Most interview participants said that the BHH services team helped them make the appointments they need (76%), reminded them about the appointments (71%), and followed up with them about the appointments (87%; Figure 3). Almost half of the respondents said that the BHH services team provided transportation or helped them find transportation to get to their appointments, while nearly half of the respondents said they did not need this assistance.

Most sites (n=15) mentioned in the staff interview that they accompany individuals receiving BHH services to appointments or meetings with referral agencies. All sites also reported in the implementation checklist that they accompany individuals they serve to appointments as appropriate and follow up with individuals about appointments.

3. BHH services team role in supporting appointments of individuals served

Does the BHH services team…	Percentage of individuals served by BHH services (N=91)			
	Most of the times or always	Sometimes	Never	Not needed
Help you make the appointments you need?	47%	29%	6%	19%
Remind you about the appointments?	51%	20%	4%	25%
Provide assistance to help you get to the appointments?	26%	21%	10%	43%
Follow up with you about the appointments?	62%	25%	3%	10%

Source. Interview with individuals receiving BHH services

Access to health information

BHH services staff must have access to health data for the individuals they are serving. When asked to describe their care coordination process, a common theme in the staff interview was getting release of information and requesting records (n=12). BHH services sites also said that staff have access to information about individuals served as needed and appropriate, including case notes and electronic health records (n=11). Similarly, the implementation checklist showed that in all agencies, BHH services staff members have access to essential information about the individuals served, such as referrals based on physical health screenings, contact information for health providers, contact information for family members, and medication and lab results.

Communication within the BHH services team

Because care coordination involves seamless behind-the-scenes planning and integration on behalf of the individuals served, staff communication is essential. When asked what steps BHH services sites take to ensure consistent staff communication, nearly all BHH services sites (n=17) reported in the staff interview that they have regular team meetings, check-ins, and supervision. These meetings are for case reviews and consultation; discussion of which individuals need to be contacted for follow-up; and sharing successes, challenges, and lessons learned. Several sites (n=7) mentioned that sharing the same office facilitates frequent communication between BHH services team members, where they can immediately discuss the needs of the individuals they serve with one another and problem-solve cases together.

Communication with outside providers

As team communication plays an important role in care coordination, communication with outside providers is also a prominent theme. Eighteen sites mentioned in staff interviews that they actively communicate with outside providers. This communication most commonly focused on: outreach to promote BHH services, relationship building, follow up about referrals, serving as a liaison between the individual served and providers or between providers, and case consultation. BHH services sites communicate with outside providers via phone calls, faxes, emails, and, in certain cases, in-person meetings or a shared health information portal.

> *One really nice thing about our program that makes it a little bit different than other agencies is that we often will have the ARMHS [Adult Rehabilitative Mental Health Services] practitioners go out with the system navigators to help get that client onboard for BHH [services] … It really helps ease the client's anxiety about starting something new and just make sure that information is being collected in a comprehensive way. – BHH services staff*
>
> *We have established MOUs [memorandums of understanding] with key primary care organizations, and meet with primary care partners ongoing for collaborative purposes, to then educate providers on optimal coordination and interaction with primary care. We have a provider hotline for immediate consultation between the Medical Director and psychiatric staff at certain hospitals.– BHH services staff via implementation checklist*

BHH services sites also identified opportunities for improvement in communication with outside providers in the staff interview. Seven sites mentioned difficulties in communication or relationships with partners and outside providers, such as with Managed Care Organizations, the county, and school districts, particularly around accessing and receiving information about individuals receiving BHH services from outside providers. As requesting records is an important piece of care coordination, having a shared, integrated primary and behavioral health database with outside providers would greatly facilitate BHH services care coordination. In addition, sites requested a same-day notification system to alert them when an individual is admitted to or discharged from an inpatient or residential setting. They also requested more up-to-date information in the partner portal.

> *One gal, I requested her record probably five or six times and we never got them. We try to keep their health profiles up to date but we're really having a hard time with that because we're just not getting any help from the clinics. I want to go talk to the doctors up here about the program but they wouldn't do it unless I have something where they can have a CEU [continuing education unit].*
>
> *– BHH services staff*
>
> *It would be good to figure out what would make it easier for primary care providers to reach us. What's stopping them? What would make it faster? What system can we put in place to help process that? – BHH services staff*

In addition, care coordination to avoid duplication of services is sometimes challenging for BHH services sites. Six sites shared in the staff interview that they have encountered challenges because of the requirement to avoid duplicative services. Staff described cases in which they put a lot of work into enrolling individuals, only to find out that they already have a duplicative service and can no longer receive services. Most of the time Managed Care Organizations (MCOs) and the individuals served are not aware that they are receiving duplicative services, and MCOs are unresponsive to inquiries about potential duplications of service. In certain cases, individuals would benefit from both BHH services and other services considered duplicative, such as health care homes or targeted case management.

Communication with individuals served

In addition to team communication and collaboration with outside providers, communication with individuals served is also central to the care coordination process. All of the BHH services sites reported in the implementation checklist that they provide a central point of contact to ensure people and their families can successfully navigate the array of services that impact their health and well-being.

Most sites said in the staff interview that they communicate with those they serve through phone calls (n=17) and face-to-face contact (n=13). Several sites (n=6) said they see the individuals they serve in their homes or places they prefer. Relatedly, in the implementation checklist, all sites reported that they deliver services in locations and settings that meet the needs of the person served. A smaller number of sites reported in the staff interview that they communicate with individuals through text (n=7), email (n=5), and telehealth or video communication (n = 3).

When asked what kinds of processes sites use to help communicate with individuals receiving BHH services or their caregivers, six sites shared in the staff interview that they have a protocol or tracking system for when to contact the individuals they serve to ensure regular contact. The tracking system is either based on team check-in meetings or built in to the electronic medical record system. Sites also use other tools to enhance care coordination; for example, 15 sites mentioned that their sites use electronic health records to coordinate care, while seven sites mentioned using spreadsheets for care coordination.

> *The team is getting used to using the dashboard in which you can see all the reports and which patient needs to be contacted. In the case management meetings where the whole team is present, we discuss patient cases and make sure that all the patients that need to be contacted are contacted.* *– BHH services staff*

Transitional care

Another part of the BHH services model is assisting individuals receiving BHH services with transitioning between different types of care settings, such as into and out of inpatient or residential care.

Data from the interviews with individuals served showed that 29 percent of individuals receiving BHH services have been admitted to a hospital or other residential settings since starting BHH services. Among these respondents, 48 percent said the BHH services team helped them transition in and out of that care. When asked how the BHH services staff helped with the care transition, respondents mentioned that staff helped accompany them to the hospital or helped with admission, assisted with transportation, or followed up with them after discharge.

Follow-up visits after a hospital discharge can be associated with lower risk of readmission. Based on claims data from the Minnesota Department of Human Services (DHS), over half of mental illness hospitalizations experienced by individuals receiving BHH services had a follow-up with a mental health provider within a week of discharge (53%). This is notably higher than the 36 percent rate of one-week follow-ups for individuals who are eligible for BHH services but not enrolled in BHH services. Also, 71 percent of individuals receiving BHH services who experienced a hospitalization had a follow-up within a month, versus 63 percent of individuals who are eligible for BHH services but not enrolled.

Self-reported data from the implementation checklist showed that about three-quarters of agencies report having a system for comprehensive transitional care, including:

- Engaging individuals and families in transition planning (79%)
- Accessing admission and discharge information, health profiles, and service information from appropriate entities (74%)
- Creating a plan to follow up after the person's discharge from hospitals, residential treatment, and other settings (79%)

Individual and family support services

Individual and family support services are activities, materials, or services aimed to help individuals receiving BHH services reduce barriers to achieving goals, increase health literacy and knowledge about chronic condition(s), increase self-efficacy skills, and improve health outcomes. To accomplish this, BHH services sites should use a person-centered planning approach that reflects preferences, goals, resources, and optimal outcomes for the individual served. BHH services sites should also have processes for identifying people's formal and informal supports, and for learning about and understanding each person's culture, preferences, and communication needs.

Person-centered care

As part of the BHH services model of care, individuals served work with their BHH services teams to create health action plans. The plan identifies goals that individuals would like to work on. The individual served should drive their goals, and BHH services staff should work with the individual to create a plan to reach the goals. Most individuals served said that the BHH services team worked with them to come up with their goals (89%) and to create a plan to address them (94%). When asked how the plan or service team helped them to reach their goals, individuals served by BHH services mentioned that BHH services staff help them identify and connect with resources and referrals. Nearly all interviewed individuals (94%) mentioned either the plan or the BHH services team helping them reach their goals.

> *[BHH services staff] put objectives for my goals. For example, to practice coping skills, the objective was to use positive coping skills. [BHH services staff] connected me to an ARMHS [Adult Rehabilitative Mental Health Services] worker that helps with learning and coping skills, DBT [dialectical behavior therapy], and set my intervention start and end date. – Individual receiving BHH services*

Relatedly, in the staff interview, staff reported that they learn about the needs and preferences of the individuals they serve during intake or assessment (n=9) and make referrals based on these needs and preferences (n=13). A few sites (n=3) mentioned that they involve or communicate with family members about individuals' care. Three other sites reported in the implementation checklist that they identify and involve the person's support system and family members in the person's care.

According to the self-reported implementation checklist, all or almost all agencies incorporate a person-centered ecological approach in their BHH services, including:

- Using a person-centered planning approach to ensure the person's health action plan reflects the preferences, goals, resources, and optimal outcomes for the person and their identified supports (100%).

- Having a process in place to learn about and understand the person's cultural and individual preferences and communication needs (100%).
- Uniformly asking people to identify formal and informal supports (95%).

Referrals and supports

A cornerstone of the BHH services model is to provide referrals to additional services and supports that individuals may need to support their physical and mental health, as well as their general well-being. In order to increase the likelihood that individuals served connect with needed services, staff should provide a warm hand-off to the referral site, and staff should follow up with individuals served to ask if they connected to the needed support.

BHH services sites made nearly 4,000 referrals during the 9-month referral tracking data collection period (Figure 4). Individual sites made between 34 and 870 referrals (Average = 174 referrals) during this time. More referrals were made in the first quarter of data collection (46%), compared to the second (29%) or third (26%) quarters of data collection. The reason for this difference is not clear in the data.

The most common categories for referrals were mental health care (24%) and physical health care (21%), followed by housing (15%). These categories alone accounted for 60 percent of all referrals.

Individuals served followed up on the majority of referrals they received (62%), meaning that they contacted the referral agency to initiate the referral service. Those not followed up on may be because site staff were unable to ask the individual served about referral follow-up, the referral was unavailable, or the individual chose not to follow up on the referral. The categories with the greatest follow-up rate included Medical Assistance (MA) or other insurance (77%), disability services (71%), the Minnesota Family Investment Program (MFIP) or other financial assistance (70%), and the Supplemental Nutrition Assistance Program (SNAP) or other food support (70%).

When asked whether they had received referrals for a list of specific services, individuals receiving BHH services most commonly reported receiving: transportation (85%); mental health care services (78%); physical health care services (77%); housing (76%); SNAP or other food support (75%); dental care services (72%); and recreation, social, or cultural services (61%).

4. Referrals made to and followed-up on by individuals receiving BHH services

	Referral tracking results			Individuals served by BHH services self-reported referrals (N=91)
	Number of referrals	% or all referrals	% of referrals followed up on	
Mental health care	959	24%	60%	78%
Physical health care	820	21%	63%	77%
Housing	588	15%	63%	76%
Transportation	227	6%	67%	85%
Disability services	173	4%	71%	N/A
Recreational, social, or cultural	154	4%	47%	61%
SNAP/Food Support	153	4%	70%	75%
Dental care	143	4%	52%	72%
MFIP/Financial Assistance	142	4%	70%	26%
Chemical health care	128	3%	51%	39%
MA/Insurance/MNsure	97	2%	77%	N/A
Other basic needs	97	2%	61%	45%
Legal assistance	94	2%	56%	46%
Other	87	2%	67%	N/A
Employment	71	2%	52%	44%
Education	44	1%	63%	N/A
Child care	17	0%	53%	29%
Total	**3,994**	**100%**	**62%**	

Source. Referral tracking, interviews with individuals served

Note. Referral tracking included categories of referrals not asked about in interviews with individuals served. These categories are indicted by N/A.

Patterns of referrals made were similar between rural and urban sites, although a greater proportion of referrals were for transportation in rural areas (10%) compared to urban areas (3%). In addition, individuals receiving BHH services in rural areas were more likely than their peers in urban areas to follow up on referrals for dental care (67% versus 40%), employment (70% versus 44%), and transportation (72% versus 58%). Conversely, those in urban areas were more likely to follow up on referrals for education (68% versus 20%).

When asked what community resources individuals served are currently using to meet their identified needs, BHH services sites in the staff interview most commonly mentioned housing

(n=16), food supports (n=13), physical health (n=9), mental health (n=8), transportation (n=7), chemical health (n=7), and recreational/social/cultural (n=7).

When asked to describe the process sites use to make referrals, staff generally shared that they learn about an individual's needs during intake or assessment and through ongoing communication. Depending on the individual's needs, comfort, and preferences, staff make referrals to address immediate needs, make a phone call to the referred source with the individual, meet the provider with the individual receiving BHH services, or give the individual contact information to call on their own.

Additional supports families need

To better identify what gaps still exist for the individuals receiving BHH services, both individuals served and staff were asked about additional supports individuals receiving BHH services and their families need.

When asked what additional supports would be helpful that they were not receiving or did not receive, the most frequently mentioned response was transportation (n=11), including transportation services specifically for people with disabilities. In an analysis of differences between urban and rural sites, transportation was the highest ranked additional service for rural individuals, and the second highest for urban individuals. Overall, the second most frequently cited response among all individuals served was additional social support (n=10). This included opportunities for social interaction, such as group settings like group therapy, and organized opportunities for socializing. Individuals served also said that additional assistance with housing would be helpful (n=6). This includes help with finding housing, supportive housing services, help with housing advocacy (such as working with a landlord), and homemaking for people with physical health conditions.

Although individuals receiving BHH services are accessing community resources for their needs, there is still a shortage of these resources. When asked what resources could help meet the needs of individuals receiving BHH services that are not currently available, staff requested additional housing resources (such as more affordable housing, sober housing, housing for those with a felony; n=15); and more transportation resources (n=11). A smaller number of sites mentioned that it would be helpful to have more dental (n=3), food (n=3), and mental health resources, such as day treatment programs, intensive residential treatment services, partial hospitalization treatment programs, and programs for school-aged children (n=4).

Six sites mentioned in the staff interview that insurance can pose a challenge in making or following up on referrals. For example, the type of insurance individuals have may limit their access to services. This theme was more common in rural sites (4 out of 7) than in urban sites (2 out of 12). One site suggested having other funding streams for individuals with insurance other than Medical Assistance (MA).

> *I would say one of the challenges is that we can only serve clients that have MA while it would be great to have other funding streams for those that have private insurance or high deductible just because we're very limited in who can serve. That's frustrating from a provider's standpoint as well as from an organizational standpoint that we have to turn people away.* *– BHH services staff*

Intended outcomes

The behavioral health home model has many intended outcomes focused on the individuals served by behavioral health home (BHH) services as well as the overall health care system. The logic model found in Appendix A documents these outcomes, and this report details the extent to which these outcomes have been achieved so far. A more comprehensive outcome evaluation will be conducted in the future.

Individuals access more appropriate care

One of the main goals of the BHH services model is that individuals served get care in the most appropriate setting for their needs. In many cases, this includes accessing preventative care before a health condition emerges or worsens. It also includes accessing care in less intensive settings, such as in primary care clinics or outpatient mental health services, when possible, rather than more intensive settings such as emergency rooms and inpatient hospitalizations. However, it is important to note that the individuals receiving BHH services often have serious and complex mental and physical health conditions that may necessitate care in more intensive settings at times.

Accessing needed care

Based on claims data from the Minnesota Department of Human Services (DHS), it appears that BHH services sites have made some progress in encouraging preventative care among the individuals served. Nearly all adults receiving BHH services (99%) had at least one preventative care visit in 2017.

In addition, the two largest types of referrals made to those receiving BHH services were for physical (24% of all referrals) and mental (21% of all referrals) health care (Figure 4). These are central to the BHH services model, and a great deal of the health action plan revolves around improving physical and mental health, so it is not surprising that so many referrals were in these areas. However, it is notable that individuals served by sites that primarily provide physical health care were more likely to get referrals for other physical health care services (26%) than those served by primarily mental health sites (15%). There were no differences in referrals to mental health services among BHH services providers based on the type of site.

When asked about what changes they have seen in individuals receiving BHH services, BHH services staff shared that they attend appointments (e.g., therapy, doctor's appointments) more regularly and are better at showing up for appointments (n=8).

> *We have one gal that would have a case manager for years and didn't get anywhere and was very depressed. When she started BHH [services], she got to talk about how she wanted a gender reassignment surgery and we were able to coordinate that. Now she's going to therapy and going to the doctor regularly.*
>
> *– BHH services staff*
>
> *He was very hostile and reluctant to engage with providers and believed that they were not helping him. I helped him connect with providers and attended at least three appointments with the providers with him to try to build trust.*
>
> *– BHH services staff*

A number of BHH services sites shared in the staff interview that they have been able to catch issues that have not been noticed before or help the individuals they work with start accessing services to improve their physical and mental health (n=8). For example, sites described individuals going to see an eye doctor or dentist, getting started on HIV treatment, having a gender reassignment surgery, recognizing diabetic issues, or getting more timely treatment for chronic conditions.

> *A client overdosed on insulin and was suicidal. A provider thought that she was just not complying with doctor's instructions. Nobody knew that she doesn't know how to read but we were able to identify that and created a cheat sheet with visuals for her so she wouldn't have to do the math to take medications.*
>
> *– BHH services staff*

Care in least restrictive setting

According to claims data from the Minnesota Department of Human Services (DHS), individuals receiving BHH services were more likely to have outpatient services (86% of all services) than other types of mental health services. Individuals receiving BHH services also had very few emergency department visits and inpatient hospitalizations (<1% of all services each) relative to other types of services, so it appears individuals are frequently seeking care in less intensive settings. In addition, sites shared in the staff interview that the people they serve reduced or eliminated using emergency department visits for their primary care. This was especially true of rural sites (3 out of 7) compared to urban sites (1 out of 12).

Although inpatient hospitalizations were far less common than less restrictive care, individuals receiving BHH services had about twice as many inpatient admissions per 1,000 months enrolled for mental health reasons than their counterparts who were eligible for BHH services, but not enrolled (31 versus 16 claims per 1,000 months). Notably, 90 percent of acute inpatient hospitalizations for individuals receiving BHH services were for mental health needs, while only 75 percent of the acute inpatient hospitalizations for eligible individuals not receiving services were. This may be an indication that individuals

receiving BHH services are accessing needed inpatient hospitalizations in addition to less intensive services.

Addressing social determinants of health

Social determinants of health, or the conditions in the places where people live, work, play, and go to school, affect a wide range of health risks and outcomes (Centers for Disease Control and Prevention, 2019). While BHH services sites are not specialists in addressing the social determinants of health, they often provide supports and referrals for basic needs and general well-being and stability (see referral section above).

Basic needs

Based on referral tracking, housing was the most common type of referral provided that is not directly related to physical or mental health (Figure 4). Housing is a social determinant of health, so building relationships with housing agencies, landlords, and housing support providers, such as utility providers or agencies that provide household furnishings, is important for ensuring individuals receiving BHH services are able to focus on their health. When asked about the changes staff have observed in individuals receiving BHH services, obtaining housing was a key outcome (n=6). In these cases, staff reported that individuals receiving BHH services moved from homelessness to more stable housing, such as assisted living facilities, transitional housing, or apartments.

In addition, supports related to financial needs, such as financial support, food support, and insurance, were the types of referrals individuals were most likely to follow up on (Figure 4). This may mean that those served are particularly motivated to access help in those areas or that those services are especially accessible. Again, if individuals have adequate access to basic needs like food, insurance, and financial support, they are more likely to be able to take steps to improve or maintain their physical and mental health.

In addition, sites reported in staff interviews that the individuals they serve also access more services and resources in general as part of their support, such as furniture, waivers and financial assistance, food shelves, and Adult Rehabilitative Mental Health Services (ARMHS; n=6):

> *One of our nurses working with a refugee family came back and said they had nothing and managed to reach out to some charities in the community. She was able to get an entire semi-truck full of furniture donated to us that we were then able to deliver to this family. That was just unbelievable. – BHH services staff*

> *There are a couple of people that really would not have gotten access to greater level of services if the system navigator hadn't have been in there seeing the need and helping the person walk through how to obtain better services.*
>
> *– BHH services staff*
>
> *Another client also has trust issues with providers and I was able to get her in to BHH [services] and earn her trust so that she got the Minnesota Choice assessment and now has a [traumatic brain injury] waiver and is attending the rehab she never attended after she had the TBI [traumatic brain injury]. That's been successful that she's getting more services than she was getting before and trusting providers.* *– BHH services staff*

Chemical health

Although BHH services do not include chemical health treatment directly, chemical health is closely tied with both physical and mental health. Claims data demonstrate that individuals with drug or alcohol abuse or dependence receiving BHH services were more likely to initiate (40%) and engage with (14%) alcohol treatment services relative to those eligible for and not receiving BHH services (29% and 11%, respectively). This is in line with the goals of the model. Individuals receiving BHH services were especially likely to initiate treatment for opioid abuse or dependence (69%). This may be a particular area of focus for BHH services sites given the coordinated care they are providing between mental and physical health care.

While chemical health referrals were not among the most common, it is notable that individuals served by BHH services sites that also implement the Certified Community Behavioral Health Clinics (CCBHC) model are more likely to follow up on chemical health referrals than those served by BHH services sites that do not implement the CCBHC model (67% versus 47%). This likely reflects the CCBHC focus on integrating chemical and mental health care. However, individuals served by BHH services sites that do not implement the CCBHC model are more likely to follow up on nearly all other types of referrals, especially medical assistance or insurance (79% versus 40%), disability services (73% versus 36%), the Minnesota Family Investment Program (MFIP) or financial support (72% versus 25%), and other basic needs (64% versus 0%).

Improved health outcomes

The central focus of BHH services is to improve the health of the individuals served. This includes both improving their mental health and improving or maintaining their physical health. Most individuals served identified positive changes in their lives as a result of their participation in BHH services. When asked about what goals they had accomplished, the most common response was improved mental health (n=45), such as reduced anxiety and depression (n=20), improved emotional regulation and coping skills (n=8), and improved independence and confidence (n=6).

Interview participants also mentioned general improvements to their physical health (n=34). Most individuals served did not describe how their physical health improved specifically, but rather said that their physical health generally improved. However, a few said they increased their level of physical activity (n=4) or visited their doctors more regularly (n=4).

> *I walk more and do this almost every day. I am eating less and getting better at cleaning. For my mental health I am still working on my anxiety. My depression is actually doing pretty good because I do not feel as lousy as I used to feel. I used to isolate myself more and not want to eat but now I know my episodes are not as bad as they used to be.* *– Individual receiving BHH services*
>
> *I have more control than I did over my anxiety. I can call [BHH services staff] anytime when I need someone to talk to about my anxiety. With my physical health, I have gotten stronger because I go to occupational and physical therapy. This has helped me with my balance and decrease my fear of falling.*
> *– Individual receiving BHH services*

Individuals served at urban sites most frequently mentioned improvements in mental health (28 of 52), while rural residents most frequently mentioned changes in physical health (18 of 41), such as general improvements or increased exercise, followed closely by changes in mental health. Readers should interpret this difference with caution, as the differences between these groups were not large. Furthermore, when specifically asked about improvements in these areas, both groups most frequently mentioned positive mental health outcomes (32 of 52 and 30 of 41, respectively). Individuals served in primary care settings and mental health settings both ranked improvements to their mental health first and physical health second. No other notable differences between groups emerged.

Most sites said in the staff interview that it's too early to see any changes in physical health or mental health of individuals receiving BHH services. A number of sites (n=6) mentioned seeing improvements in the physical health of individuals served, such as lower A1c scores, negative HIV tests, or generally improved physical well-being.

Improved quality of life and wellness

In addition to self-reported changes in physical and mental health, when asked about what goals they had accomplished, individuals receiving BHH services also shared that they feel more hopeful, optimistic, and better about themselves, and that their quality of life improved (n=8). Some said they improved their socialization skills, became more social, or got out of the house and enjoyed life more (n=6).

When asked about the changes sites have observed in individuals receiving BHH services, thirteen sites shared that the people they serve have become more independent, learned to advocate for themselves, and proactively ask for help.

> *When you give them resources, a lot of them are now are able to call on their own to utilize the resources.* *– BHH services staff*
>
> *Now they are able to drive themselves and we meet them there. They don't require all of the reminder calls, or us providing the transportation to ensure that they get there.* *– BHH services staff*

Increased control over health

In order to help increase health outcomes and independence, BHH services aim to empower the individuals served to increase their control over their health. This includes fully understanding their health conditions and taking steps to address their health concerns with greater independence over time. Therefore, one important aspect of the BHH services model is providing individuals served with education about their health conditions.

When asked whether BHH services staff helped them learn about their health condition, about two-thirds of individuals served (67%) said they had. When asked about what kinds of health education they had received from staff, individuals receiving services most frequently mentioned education related to their mental health. Respondents also mentioned that staff helped explain treatments and strategies for coping with their mental health condition; helped them understand symptoms, diagnoses, and triggers; and provided them with resources or information.

> *I could not fully comprehend PTSD [post-traumatic stress disorder] and I always thought this is what military personnel had coming back from the war. I did not know that from the car accident I could have that. [BHH services staff] has helped me understand about what is PTSD. She puts it into layman terms and helps me to understand and explain why I feel the way I do.*
> *– Individual receiving BHH services*
>
> *We've seen individuals improve their ability to manage not only their mental health but also their physical health and increase their capacity to live independently.*
> *– BHH services staff*

When asked about changes they've observed in individuals' abilities to manage their health condition, seven sites explicitly mentioned in the staff interview that the people they serve have increased awareness, knowledge, and skills to manage their (or their child's) physical and mental health condition. In addition, nine sites said that individuals served like and engage with the services.

> *We have seen parents who have been able to handle their child's mental health better, navigate the system a little better for them and understand their needs for self-care…We have also seen families who are learning when to use emergency room and when to use their primary care providers.* *– BHH services staff*

> *Our clients love it. A lot of positive feedback from the clients themselves. They are very happy with their case managers, navigators, and also the team approach, knowing that there's a nurse there to help with their mental health and social needs.*
> *– BHH services staff*

Additionally, ten sites reported in the staff interview that the individuals they serve have built greater trust with providers and communicate more and better with providers. Sites also reported that they accompany the people they serve to appointments and help them learn skills to better communicate with doctors and feel more connected to their care providers.

> *We've seen them to be more connected with providers, open them to more resources they are eligible for that they didn't know they were before. – BHH services staff*

Claims data from the Minnesota Department of Human Services (DHS) also demonstrate that individuals receiving BHH services tend to be more engaged in health care than their comparison group peers. Individuals receiving BHH services tended to have more mental health services (1,611 per 100 individuals served) than comparison group members (928 per 100 individuals served). In particular, individuals receiving BHH services were two and a half times as likely to have intensive outpatient or partial hospitalizations and one and a half times as likely to have emergency department, inpatient, outpatient, and telehealth services compared to their peers eligible for but not receiving BHH services. It is unclear whether this is an indication that individuals receiving BHH services have a greater need for services or whether they are better able to connect to needed services.

Improved experience of care

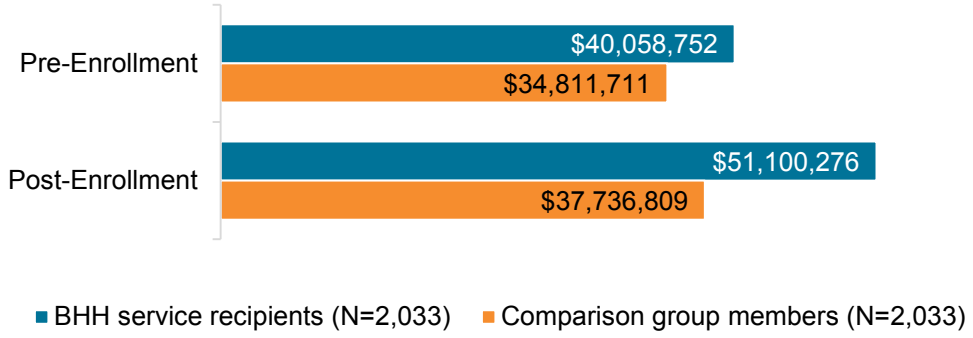
In order to retain individuals served by BHH services, it is important that those served have a positive experience with the services. When asked what was most helpful about BHH services, individuals receiving BHH services most frequently mentioned specific positive qualities about their BHH services staff (n=77). For example, they said that they felt the team is reliable, dependable, and responsive (n=20); staff genuinely cared for them and make them feel comfortable (n=12); and staff listen and encourage them (n=10). Relatedly, individuals served also mentioned the emotional support and encouragement that staff provide (n=24). For example, staff answered questions and helped them understand different information, problem-solved with them, helped them manage various aspects of day-to-day living, and find resources. Help with appointments was also a frequent theme (n=13), including making and managing appointments and reminding individuals about the appointments. Individuals served also shared that regular check-ins and follow-ups were helpful in keeping them accountable and making progress (n=12).

Reduced health care costs

One of the goals of the BHH services model is to build access to health care supports so that individuals can receive care in the least restrictive and most appropriate settings. Having access to routine and preventive care may lead to reduced use of care in more costly settings, such as emergency departments or inpatient hospitalizations. In this way, the BHH services model aims to reduce long-term health care costs for individuals enrolled in services.

Despite the long-term goal that the BHH services model will lead to reduced health care costs, claims data from the Minnesota Department of Human Services (DHS) show that individuals receiving BHH services had higher total costs both before and after enrollment than a matched comparison group (Figure 6). Both individuals receiving BHH services and comparison group members had greater total health care costs after enrollment compared to before enrollment. In addition, those receiving BHH services had higher total health care costs than the comparison group both before and after enrollment. It is not clear whether this means that people receiving BHH services have greater health care needs, are more likely to access health care to address their needs, or both.

5. Total costs of care for BHH services and comparison group members



Some of the primary goals of the BHH services model include identifying previously unaddressed health care needs and building access to health care supports to address those needs. Therefore, it is not surprising that costs increased for individuals receiving BHH services after enrollment. These individuals are likely accessing the care they needed prior to enrollment. Comparison group members might not have the same level of support to access needed care, or they might not need the same level of care as individuals served by BHH services.

While individuals receiving BHH services generally reported positive outcomes, when asked about how their physical or mental health had changed since starting BHH services, a few individuals said it had stayed the same (n=9), and a few individuals said it got worse (n=3). Note that these individuals did not say that their health or mental health had stayed

the same or gotten worse because of BHH services, and did not express being dissatisfied with BHH services. Furthermore, many individuals receiving BHH services have chronic, complex health conditions, so maintaining their health may be a positive outcome, and even declines in health may be predictable and unavoidable.

Sustainable business model

One of the long-term goals of the BHH services model is that it can become a sustainable business model, both for the state and the organizations providing services. In order for it to become a sustainable model, the human and financial costs of providing care must be equal to or less than the net benefits for the organizations and society as a result of this care. While a return on investment study is outside of the scope of this implementation evaluation, BHH services sites provided feedback about the sustainability of the model from their perspectives.

When asked about the challenges they've faced in BHH services implementation, a few sites (n=4) shared that they are serving individuals with higher acuity than the reimbursement rates reflect because BHH services sites tend to serve individuals who have been unable to access services elsewhere. While these individuals may benefit from more intensive services, it is often not possible to quickly transition individuals with higher acuity to a more appropriate program. Consequently, sites continue to serve individuals who require more resource-intensive care. Some sites shared that the reimbursement rates are not commensurate with the high caseload ratio and administrative responsibilities. Only staff from urban sites (4 out of 12) mentioned this theme, as opposed to staff from rural sites (0 out of 7).

> *The acute crisis state that a lot of people that are coming into BHH [services] and their needs for services are not less than if they're able to get on an Assertive Community Treatment team or Targeted Case Management. However, we have fewer resources to serve them and we don't have the ability to have dedicated administrative support. So it's a pretty high expectation of work for a lower reimbursement rate and lacking in the administrative support with a lot of extra work on a small amount of people.*
>
> *– BHH services staff*
>
> *Because our program is so easy to access, it sometimes doesn't feel as though it's a continuum but is more of a safety net. So we sometimes serve people who may need a higher level of care but because the system is so difficult to navigate for an individual suffering from mental illness, they don't get other services and it's easy to get into our program... Right now, we're the only [ones] that accept [these clients]. If we believe that somebody needs a higher level of acuity, Targeted Case Management or Assertive Community Treatment, we don't have the ability to just get them right in there. They have to go through a county process; they have to determine eligibility. So that creates a challenge.*
>
> *– BHH services staff*

Seven sites said in the staff interview that more flexibility in the BHH services requirements will provide more efficiencies and billable opportunities. Currently, sites are required to have at least one personal contact per month with individuals served, which may include a face-to-face, telephone, or interactive video contact. Letters, voicemails, and texts do not meet the requirement for monthly personal contact. If an individual does not meet the monthly personal contact requirement, the individual will be dis-enrolled. Specific flexibility the sites requested include allowing: sites to bill for addressing people's immediate needs that are not stated in the health action plan; alternative methods of contacting individuals served (e.g., texting, telehealth); more contact attempts before dis-enrolling an individual; community health workers to serve as qualified health home specialists; and non-Western practices to be culturally responsive. In addition, four sites specifically mentioned that the current diagnostic assessment requirements lead to delays in access to services. Only urban sites (5 out of 12) mentioned concerns about or the need for greater flexibility with the diagnostic assessment.

> *I would like to request texting to be one of the methods of contact because some clients will do nothing but text and prefer to just be able to communicate over text.*
> *– BHH services staff*
>
> *Many evidence-based practices are not well matched to the cultural values and circumstances of the clients enrolled in our BHH [services] programming. Many clients we serve are focused on basic needs for survival, are distrustful of formal systems providing care due to previously experienced inequities, and/or have non-western beliefs/practices about health/wellness.*
> *– BHH services staff via implementation checklist*
>
> *In the beginning clients are not really ready to talk about their mental health yet, but it's very known to the providers that there's a mental health diagnosis out there. So if they have a mental health diagnosis that is done by a physician in a primary care or hospital setting, or whether that was done by a previous provider, we could start BHH services and have a diagnostic assessment at a later date when we have built up a relationship and trust with the client. To be able to put off a DA [diagnostic assessment] for the first 3-6 months and get started with services first would eliminate a barrier into the program.* *– BHH services staff*
>
> *If you don't have a certain number of touches within a time period, patients need to be dis-enrolled. So if there could be a way to keep people enrolled and still be funded in some way even if we're not making contact with them as long as we're trying to contact them.* *– BHH services staff*

Finally, in the staff interview sites said that they have difficulty enrolling individuals and building relationships with partner organizations because the BHH services are not well understood. Specifically, staff from nine sites said they encounter challenges in helping other service teams, individuals who might receive BHH services, and external partners understand what the BHH services model is, how it's different from other services, and who would be a good fit for the services. Five sites cited difficulties related to receiving referrals to the services, such as having slow and few referrals due to a lack of awareness

about BHH services, or resistance from the county to make referrals in certain cases. Relatedly, 10 sites would like the Minnesota Department of Human Services (DHS) to educate and advertise to providers and the community about BHH services.

> *MCOs [managed care organizations] haven't really promoted it either. The medical group of people who are doing the care, they don't know anything about it; they don't talk among themselves or between themselves.* – *BHH services staff*
>
> *Lots of people that we see to are very confused by what it is, how it differs from traditional forms of care coordination. And the name itself [BHH services] lends to it - everyone just assumes that we're residential, we do housing.*
> – *BHH services staff*
>
> *It'd be helpful for DHS to talk to the county and clarify the distinction between TCM [Targeted Case Management] and BHH services.* – *BHH services staff*

Recommendations

Wilder Research identified the following recommendations for the Department of Human Services (DHS) and Behavioral Health Homes (BHH) services sites based on the data included in this report.

- **Celebrate and market the successes associated with the collaborative, supportive approach to creating and fulfilling health goals and plans.** BHH services sites and the individuals they serve both identified that the services are collaborative and person-centered. Most individuals served said that the BHH services team worked with them to come up with their goals (89%) and to create a plan to address them (94%). Nearly all individuals served (94%) mentioned either the plan or the BHH services team helped them reach their goals. In addition, all sites reported in the implementation checklist that they use a person-centered planning approach to ensure the individual's health action plan reflects the preferences, goals, resources, and optimal outcomes for the individual and their identified supports.
- **Improve connections to community resources to meet the needs of individuals receiving BHH services.** Based on referral tracking, BHH services sites made nearly 4,000 referrals during the 9-month data collection period. The most common categories for referrals given by BHH services sites were for mental health care (24%) and physical health care (21%), followed by housing (15%). These categories alone accounted for 60 percent of all referrals. The interviews asked individuals served what additional supports would be helpful that they were not receiving or did not receive. They most frequently mentioned transportation (n=11), social support (n=10), and housing (n=6). Given the significant need, it is important to support community-based resources that sites can better connect to, build staff awareness of the resources available and how to connect with them, and ensure that the connections to these resources are happening as efficiently and effectively as possible.
- **Support BHH services sites in expanding their integrated care experience and infrastructure.** According to the staff interview, nearly all sites (18 out of 19) previously provided services to support integrated care, either formally or informally, and 13 sites also implemented other integrated service models. The history of integrated care helped sites implement the BHH services model more quickly and efficiently than if they did not have this prior experience. However, sites identified that it takes time and financial resources to develop their infrastructure to use all of the systems associated with BHH services, including a patient registry or population management programs. Therefore, it is important to ensure that sites have adequate resources to develop this infrastructure prior to or early in their service delivery.

- **Assist BHH services sites in recruiting and retaining skilled staff.** When individuals receiving BHH services were asked what was most helpful about BHH services, they most frequently mentioned specific positive qualities about their BHH services staff (n=23). However, they also expressed that they wanted more staff or more availability from the current staff (n=9). Several sites (n=6) shared in the staff interview that they encountered difficulties in staffing, such as hiring (e.g., due to a lack of upfront funding), high turnover, and not having enough staff to cover a large territory. Some sites described specific challenges associated with staff turnover, including the time it takes to hire, onboard, and train new staff, as well as the need to rebuild relationships with the people they serve. DHS can provide resources to BHH services sites to ensure all staff fully understand the demands of the job and have a manageable caseload, and adequate recognition and compensation for their work.
- **Develop communications systems to facilitate more timely communication with other sites and community partners.** Eighteen sites mentioned in the staff interview that they actively work with outside providers to promote BHH services, build relationships, and communicate about the needs of individuals served. However, some sites mentioned difficulties in communication or relationships with partners and outside providers. Six sites specifically shared that they encountered challenges because of the requirement to avoid duplicative services, including finding out an individual is receiving duplicate services after enrolling them in BHH services. According to staff interviews, ten sites would like to have more opportunities for staff to come together to share lessons learned and have a communication platform, such as an online forum, portal, or directory to exchange knowledge.
- **Identify aspects of the model that can be more flexible.** BHH services sites identified aspects of the model that they believe impede their ability to best meet the needs of the individuals they serve. Specifically, BHH services sites requested more flexibility in the timing or process for conducting the diagnostic assessment in the staff interview. Four sites mentioned that the diagnostic assessment requirement delays access to needed services for the people they serve. Several sites would also like more flexibility in the required frequency and methods for contacting the individuals they serve. Some people have communication preferences, such as texting, not supported by the model, and the requirement of actual versus attempted monthly contacts can lead to some individuals losing services that they may need.

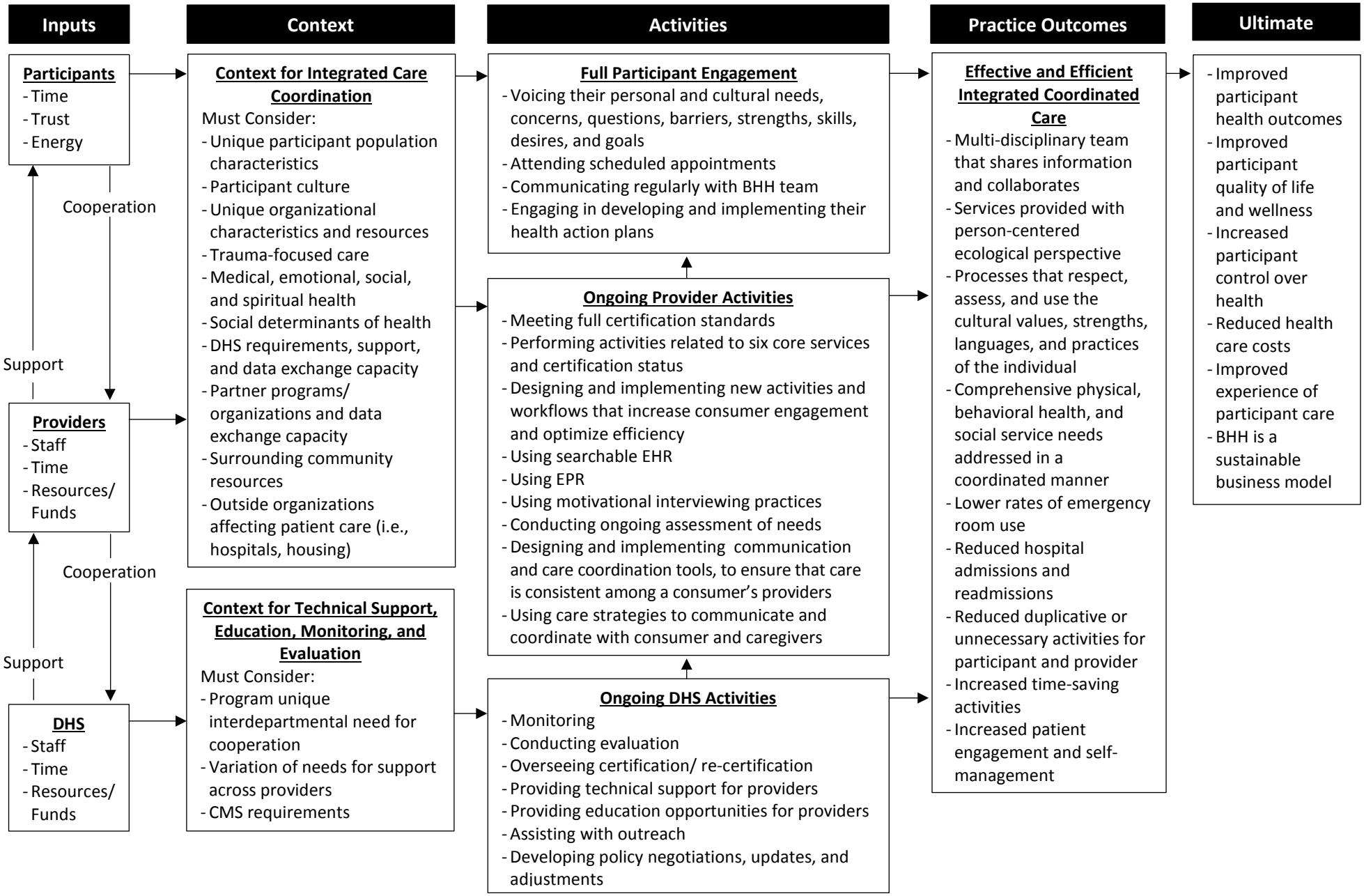
- **Advocate for BHH services sites to get adequate, timely reimbursement for services.** A few BHH services sites (n=4) shared in the staff interview that they are serving individuals with higher acuity than the reimbursement rates reflect because they tend to serve individuals who cannot get services elsewhere. Some BHH services sites shared that the reimbursement rates are not commensurate with the high caseload ratio and administrative responsibilities. Four sites also mentioned having problems with billing or receiving payments for their BHH services in the staff interview, and three sites would like support to have smoother claims processing so that they could receive their payments for BHH services more quickly.
- **Develop marketing materials and talking points to assist sites with promoting and clarifying BHH services.** As indicated in staff interviews, ten sites would like DHS to educate and advertise to providers and communities about BHH services. Nine sites shared in the staff interview that they encounter challenges explaining what BHH services are, how they are different from other services, and who would be a good fit for BHH services to other service teams, individuals who might receive services, and external partners. Five sites cited difficulties related to referrals in the staff interview, such as having slow and few referrals due to a lack of awareness about BHH services or resistance from the county to make referrals in certain cases.

References

Centers for Disease Control and Prevention. (2019). *Social Determinants of Health*. Retrieved from https://www.cdc.gov/socialdeterminants/index.htm

Appendix A: Logic model

BHH Draft Evaluation Logic Model - Revised 11/30/17 (Original draft by La Loba Health and Empowerment; Revisions by Wilder Research)



Behavioral health home services overview

Behavioral health home (BHH) services is Minnesota's version of the federal "health home" benefit. In July 2016, Minnesota adopted a state plan amendment and established BHH services through the health home model provision authorized in the Affordable Care Act under Sec. 1945 of the Social Security Act available to states to serve the needs of complex populations covered by Medicaid. The Department of Human Services (DHS) implemented the BHH services model in response to the known barriers to health care access, high co-occurrence of chronic health conditions and early mortality that individuals with serious mental illness disproportionately experience.

The health home model expands upon the concept of person-centered medical homes (health care homes in Minnesota) and makes a more concerted effort through design, policy levers and outcome measures to serve the whole person across primary care, mental health, substance use disorder treatment, long-term services and supports, and social service components of our health care delivery system.

BHH services is available to individuals receiving Medical Assistance who are adults with serious mental illness or children with emotional disturbance, as defined in Minnesota statute, section 245.462, subdivision 20, paragraph (a), or Minnesota statute, section 245.4871, subdivision 15, clause (2). Individuals must have a current diagnostic assessment from a licensed mental health professional. Serious mental illness and emotional disturbance are umbrella terms that include individuals diagnosed with serious and persistent mental illness and severe emotional disturbance.

BHH services is not a place to live. BHH services aims to reduce costs to the health care system and improve outcomes for individuals by utilizing a person-centered, team-based, coordinated approach to deliver a set of core services focused on the integration of primary care, behavioral health services and social services and supports.

The six federally required health home services include:

- Comprehensive care management
- Care coordination
- Health and wellness promotion
- Comprehensive transitional care
- Individual and family support
- Referral to community and social services

BHH services follows four guiding principles to deliver the health home services:

- Utilize a multidisciplinary team that will share information and collaborate to deliver a holistic, coordinated plan of care.
- Meet the needs of individuals experiencing serious mental illness and their families by addressing the individual's physical, mental, substance use and wellness goals.
- Take a person-centered approach, and engage and respect individuals and families in their health care, recovery and resiliency.

- Respect, assess and use the cultural values, strengths, languages and practices of individuals and families in supporting an individual's health goals.

The goals of BHH services are that each individual:

- Has access to and utilizes routine and preventative health care services
- Has consistent care for mental illness and other health conditions
- Gains knowledge of health conditions and associated effective treatments
- Increases self-efficacy and improves health management practices
- Has access to and utilizes wellness and recovery resources
- Has access to and uses social and community supports to assist with meeting wellness goals

BHH services providers may be located in a variety of settings, including primary care clinics, community mental health centers and more formally integrated primary care health settings. The BHH services model offers a multidisciplinary approach and utilization of allied professionals including but not limited to mental health professionals, registered nurses, mental health practitioners, community health workers, peer support specialists and community paramedics. This model allows BHH services providers to share information, communicate regularly and deliver services in a unique way. The team-based model also offers flexibility in how the services are delivered between the professionals on the BHH services team. DHS works with providers to support a population health management approach that ensures the integration of behavioral health and primary care. This approach requires that the provided services be:

- Quality-driven
- Cost-effective
- Culturally appropriate
- Person- and family-centered
- Coordinated across primary care, mental health, substance use disorder treatment, long-term services and supports, and social service components
- Proactive in the use of health information technology to target and match individuals and populations with needed services and care

Provider responsibilities

BHH services providers must have the capacity to perform the six core health home services specified by the Centers for Medicare and Medicaid Services (CMS), and must be certified as a behavioral health home by DHS. The BHH services team is required to include the following members: Team Leader, Integration Specialist, Systems Navigator and Qualified Health Home Specialist. BHH Services Certification Standards (DHS-6766-ENG) outlines the required qualifications for the respective team members.

Provider certification

DHS certifies BHH services providers according to federal and state standards. Information about the certification process can be found on the BHH services website and in the BHH Services Certification Standards (DHS-6766-ENG).

Reporting and evaluation

BHH services providers are expected to participate in reporting and evaluation requirements. The federal health home provision details specific state monitoring, quality improvement reporting and evaluation requirements.

Payment

The per-member, per-month (PMPM) payment methodology for BHH services includes an enhanced rate of $350 and an ongoing rate of $245. The enhanced rate is provided for the first six months that a person receives BHH services, to account for additional costs associated with engaging the person, conducting the initial screenings and assessments, implementing initial referrals and linkages to address emergent needs and establishing relationships with the person and his or her supports.

In order to receive a monthly PMPM payment, a BHH services provider must have personal contact with the person or the person's identified support at least once per month. This contact may be face-to-face, over the telephone or via interactive video. A letter, voicemail or text alone does not meet the requirement for monthly personal contact.

Duplicative services

Medicaid payment for duplicative services is prohibited. Therefore, a person is not able to receive BHH services and any of the following services in the same calendar month:

- Mental health targeted case management (MH-TCM)
- Assertive Community Treatment (ACT) or Youth Assertive Community Treatment (YouthACT)
- Relocation service coordination targeted case management (RSC-TCM)
- Vulnerable adult/developmental disability targeted case management (VA/DD-TCM)
- Health care homes care coordination

A person who meets the eligibility criteria for one or more of these covered services must choose which service best meets his or her needs. The concept of consumer choice is at the heart of the Olmstead settlement and is a key component of the federal health home model.

Questions

For more information, contact Behavioral.Health.Home.Services@state.mn.us.

Appendix C: List of behavioral health home sites

The following BHH services sites participated in the implementation evaluation. We are grateful for all of their contributions to this work.

Site name	County
Amherst H. Wilder Foundation	Ramsey
Fairview Clinics – Andover	Anoka
Fairview Clinics – Hiawatha	Hennepin
Fairview Clinics - Integrated Primary Care	Hennepin
Fairview Mesaba Clinic (Fairview Range)	St. Louis
Fraser Child and Family Center	Hennepin
Guild Incorporated	Ramsey
HealthStar Home Health	Ramsey
Hennepin County Medical Center, Aquí Para Tí Clinic	Hennepin
Natalis Outcomes	Ramsey
Northern Pines Mental Health Center	Crow Wing
Northland Counseling Center, Inc.	Itasca
Nystrom & Associates, Ltd.	Ramsey
People Incorporated	Ramsey
Range Mental Health Center, Inc.	St. Louis
Smiley's Family Medical Clinic	Hennepin
South Central Human Relations Center	Steele
Southwestern Mental Health Center, Inc.	Nobles
Touchstone Mental Health	Hennepin
Vail Place, Inc.	Hennepin
Western Mental Health Center, Inc.	Lyon
Woodland Centers	Kandiyohi
Zumbro Valley Health Center	Olmsted

Appendix D: Detailed methods

Interviews with individuals receiving BHH services

From July through August 2018, the Minnesota affiliate of the National Alliance on Mental Illness (NAMI-MN) and Wilder Research conducted telephone interviews with individuals receiving BHH services or their parents/caregivers to learn about their experiences with BHH services. Individuals were eligible to complete the interview if they had evidence of enrollment in a single BHH services site for at least six months as of June 2018. Researchers randomly sampled individuals still enrolled in BHH services as well as those no longer enrolled. The Minnesota Department of Human Services (DHS) provided a sample of eligible individuals to Wilder Research. Wilder Research trained BHH services staff to recruit and gather informed consent from eligible individuals from their site.

Trained interviewers from NAMI-MN and Wilder Research conducted semi-structured telephone interviews with 81 adults receiving BHH services and 12 caregivers of youth receiving BHH services. Individuals served were asked about their experiences with the BHH services model, including questions about how they have worked with BHH services staff to create and work toward physical and mental health goals; how the BHH services staff have helped them learn about their health conditions; experiences with referrals, care coordination, and care transitions; the impact of BHH services, including any changes in physical and mental health, as well as other important life goals; and suggestions for improving care.

Researchers created a codebook using an open-coding method and coded the data in Atlas.ti, qualitative analysis software. This report only reports the most frequently mentioned themes (mentioned by more than 10 interview participants). Participants spoke about a wide variety of topics, and at times, researchers grouped thematically similar codes together for reporting purposes.

Differences between groups of interview participants were analyzed for the following variables: gender (male or female), location (rural or urban), site type (mental health or physical health), and Certified Community Behavioral Health Clinic (CCBHC) status. When the groups had a difference in the rank order of the most commonly applied codes, and when the difference between these codes was greater than five, this report notes these differences. Separate summaries may highlight other differences, but researchers did not deem these strong enough to highlight in this report.

Interviews with BHH services staff

From April through May 2018, Wilder Research conducted telephone interviews with 74 staff from 19 Behavioral Health Home sites in Minnesota to learn about the implementation of the BHH services model. Wilder Research conducted a group interview for each BHH services site for a total of 19 interviews. Note that one system has five participating BHH services sites, so all sites in that system participated in one group interview. Researchers asked staff about their progress in implementing the model, new tools and processes they have put in place, additional supports they need, and any changes they have seen in people receiving BHH services.

Researchers created a codebook using an open-coding method and coded the data in Atlas.ti, qualitative analysis software. Only the most frequently mentioned themes by BHH services sites in the staff interview (i.e., mentioned by at least four sites) are reported in the report. Note that researchers based themes on what staff mentioned during the interview. Due to the one-hour time limit, staff might not have reported all the practices they actually implement. Thus, themes only represent common patterns in BHH services implementation across BHH services sites.

The only analysis completed by type of site was examining differences between urban and rural sites. We were unable to explore other site characteristics because of small sample sizes for specific groups of sites.

Implementation checklist

Nineteen BHH services agencies completed the self-reported implementation checklist in April 2018 to document the extent to which they were implementing key elements of the behavioral health home model at that time. The Minnesota Department of Human Services (DHS) and Wilder Research developed the checklist collaboratively to capture all of the core components of the BHH services model. The self-report nature of this assessment may have introduced a bias or allowed for different interpretations of questions, so readers should interpret results with caution. Note that one agency represents five separate physical sites.

Researchers entered and descriptively analyzed the quantitative data from the checklist. We also ran chi-square tests in SPSS to determine if there were any differences in implementation between urban and rural sites. However, we did not find any significant differences. The qualitative results generally provide context to the quantitative results, so researchers reviewed and summarized them as relevant throughout this report.

Referral tracking

Wilder Research coordinated with sites to collect information about the referrals they make to the people they serve, including whether or not individuals followed up on referrals made. This component of the evaluation aimed to identify patterns in the number of referrals provided to individuals receiving BHH services over time, and to determine the most common types of referrals offered and received. Sites were able to collect these data in an online tracking form, on paper tracking forms, or through their electronic health records system, as long as the data could be aggregated with data from other sites. Data were submitted to Wilder Research quarterly for three quarters in 2018 (April to June; July to August; September to December) in order to provide periodic quality control checks and adjust the tools and processes accordingly. Researchers compiled, cleaned, and analyzed referral tracking data in aggregate, by site, and by groups of sites based on site characteristics. Note that there were multiple staff from most sites who were responsible for entering these data on an ongoing basis, which may have introduced some potential for errors. Despite rigorous data cleaning efforts, these data may be an under-representation of the total referrals provided and may be subject to differences in staff interpretations of referral categories and follow-up steps.

Analysis of existing data

The Minnesota Department of Human Services Health Care Research and Quality department (DHS HRQ) conducted analysis from claims data on the individuals receiving BHH services. DHS HRQ conducted quality and cost analyses differently based on the different purposes, timing, and data available. Therefore, the two sets of analyses also included two different comparison groups, as described below.

Quality analysis

The Minnesota Department of Human Services Health Care Research and Quality department (DHS HRQ) analyzed quality data in alignment with the federal reporting requirements for behavioral health homes. As specified for each measure, the analysis includes all enrollment months for individuals served by BHH services in the calendar year 2017. DHS HRQ excluded months in which an individual served had Assertive Community Treatment (ACT) or Targeted Case Management (TCM) services or were not eligible for Medicaid. In addition, DHS HRQ formed a comparison group of individuals who met the criteria for a serious mental illness, serious and persistent mental illness, or serious emotional disturbance; were eligible for Medicaid; and did not receive BHH, ACT, or TCM services in 2016 or 2017. The comparison group is demographically similar to the BHH services group, though the BHH services group is more likely to be over age 18 and live in the metro area.

Cost analysis

The Minnesota Department of Human Services Health Care Research and Quality department (DHS HRQ) analyzed cost data from claims data from the Minnesota Department of Human Services (DHS). This analysis includes all individuals enrolled in at least one month of BHH services between July 1, 2016 and June 30, 2018. Data from the individual's first BHH services claim and all subsequent months are considered post-enrollment and data prior to the first BHH services claim are considered pre-enrollment. Analysis excluded individuals with an Assertive Community Treatment (ACT) or Targeted Case Management (TCM) claim within three months before or after their first BHH services claim. If an individual received an ACT or TCM service after BHH services enrollment or had a gap in Medical Assistance (MA) coverage, their enrollment timeframe ended for this study. The pre-enrollment timeframe for each individual matches their post-enrollment timeframe.

DHS HRQ used propensity score matching to identify one-to-one matches for all individuals receiving BHH services from a comparison group of people with a serious mental disorder diagnosis and sufficient claims data. Researchers removed individuals in this group identified as having ACT or TCM services at any point in time. Researchers matched individuals receiving BHH services to individuals not receiving BHH services based on proximity of propensity score using nearest neighbor matching. The logistic regression model used to estimate the propensity scores included the following variables:

D1. Propensity score matching variables for cost analysis

Variable name	Data type
Individual receiving BHH services*	Binary
Midpoint age	Numeric
Time from origin	Numeric
Gender	Binary
Metro	Binary
Serious and Persistent Mental Illness (SPMI)	Binary
Serious Emotional Disturbance (SED)	Binary
Serious Mental Illness (SMI)	Binary
Opioid	Binary
Alcohol	Binary
Other	Binary
Months in BHH	Numeric
Race category	Factor
Diagnosis of Rheumatoid Arthritis	Binary

* Dependent Variable

D1. Propensity score matching variables for cost analysis (continued)

Variable name	Data type
Diagnosis of Osteoporosis	Binary
Diagnosis of Diabetes	Binary
Diagnosis of Seizure Disorders	Binary
Diagnosis of Congestive Heart Failure	Binary
Diagnosis of Parkinson's Disease	Binary
Diagnosis of Persistent Asthma	Binary
Diagnosis of Hypertension	Binary
Diagnosis of Disorders of Lipid Metabolism	Binary
Diagnosis of Chronic Obstructive Pulmonary Disease	Binary
Diagnosis of Chronic Renal Failure	Binary
Diagnosis of Low Back Pain	Binary
Diagnosis of Glaucoma	Binary
Diagnosis of Ischemic Heart Disease	Binary
Diagnosis of Hypothyroidism	Binary
Diagnosis of Human Immunodeficiency Virus	Binary
Diagnosis of Transplant Related Immunosuppression	Binary
Diagnosis of Age Related Macular Degeneration	Binary

DHS HRQ matched individuals as closely aligned on these descriptive variables as possible. Comparison group "enrollment" timeframes were determined based on the largest consecutive span of Medical Assistance (MA) coverage within the two year period from January 1, 2014 through June 1, 2018 and the midpoint serves as their pseudo-enrollment date. Based on these sampling and matching parameters, there were 2,033 matched individuals receiving BHH services and comparison group members.

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