Patient and provider perception of appropriateness, acceptability, and feasibility of behavioral health home (BHH) core components based on program implementation in an urban, safety-net health system

Ana M Progovac1,2, Miriam C Tepper1,2, H. Stephen Leff1, Dharma E Cortés2, Alexander (Cohen) Colts3, Andrea Ault-Brutus4, Sherry S-Y Hou5, Frederick Lu6, Sara Banbury7, Dennis Sunder8 and Benjamin L Cook1,2

Abstract

Background: This manuscript evaluates patient and provider perspectives on the core components of a Behavioral Health Home (BHH) implemented in an urban, safety-net health system. The BHH integrated primary care and wellness services (e.g., on-site Nurse Practitioner and Care Manager, wellness groups and tools, population health management) into an existing outpatient clinic for people with serious mental illness (SMI).

Methods: As the qualitative component of a Hybrid Type I effectiveness-implementation study, semi-structured interviews were conducted with providers and patients 6 months after program implementation, and responses were analyzed using thematic analysis. Valence coding (i.e., positive vs. negative acceptability) was also used to rate interviewees’ transcriptions with respect to their feedback of the appropriateness, acceptability, and feasibility/sustainability of 9 well-described and desirable Integrated Behavioral Health Core components (seven from prior literature and two additional components developed for this intervention). Themes from the thematic analysis were then mapped and organized by each of the 9 components and the degree to which these themes explain valence ratings by component.

Results: Responses about the team-based approach and universal screening for health conditions had the most positive valence across appropriateness, acceptability, and feasibility/sustainability by both providers and patients. Areas of especially high mismatch between perceived provider appropriateness and measures of acceptability and feasibility/sustainability included population health management and use of evidence-based clinical models to improve physical wellness where patient engagement in specific activities and tools varied. Social and peer support was highly valued by patients while incorporating patient voice was also found to be challenging.

1Department of Psychiatry, Harvard Medical School, Boston, MA, USA
2Department of Psychiatry, Cambridge Health Alliance, Cambridge, MA, USA
3Community Solutions, Inc., Portland, OR, USA
4Office of Health Equity, Nassau County Department of Health, Mineola, NY, USA
5Department of Epidemiology, McGill University, Montreal, Quebec, Canada
6Boston University School of Medicine, Boston, MA, USA
7University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, USA
8Tufts Medical Center, Boston, MA, USA

Corresponding author:
Ana M. Progovac, Health Equity Research Lab, Cambridge Health Alliance, 1035 Cambridge Street, Suite 26, Cambridge MA 02141, USA.
Email: aprogovac@cha.harvard.edu

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The 20–30 year mortality gap for adults with severe mental illness (SMI; Colton & Manderscheid, 2006; Olsson et al., 2015; Ösby et al., 2001) is driven largely by poor access to primary care (Aggarwal et al., 2013; Bradford et al., 2008; Brugh et al., 1989; Druss et al., 2000; Li et al., 2011; Lord et al., 2010; Nasrallah et al., 2006), poorer access to specialty medical care (Druss & Silke, 2006; Goldberg et al., 2007) medication side effects (Cohn & Sernyak, 2006; Newcomer, 2007; Newcomer & Haupt, 2006), as well as structural social determinants of health (e.g., social isolation and substandard housing), and related individual health behaviors (e.g., poor diet, smoking, and physical inactivity) (Druss, 2007; Parks et al., 2006; Viron et al., 2014), which increase cardiovascular and diabetes risk (Saha et al., 2007; Suetani et al., 2015). Behavioral Health Homes (BHHs) integrate primary care and wellness services into specialty mental health clinics, enhance care management, and adopt a holistic health paradigm (Alakeson et al., 2010; Colton & Manderscheid, 2006; Druss, 2007; Gerrity et al., 2014, 2016; Glim et al., 2016; Krupski et al., 2016; Maragakis et al., 2016; Olsson et al., 2015; Ösby et al., 2001). However, Behavioral Health Home (BHH) effectiveness has been mixed (Druss et al., 2000; Gerrity et al., 2014; Lamontagne-Godwin et al., 2018; Missouri Department of Mental Health, 2016; Wells et al., 2018) a recent systematic review found that BHH programs improved cardiometabolic screening, modestly reduced cardiometabolic risk factors and that clinical outcomes varied widely (Fortuna et al., 2020). Maryland’s Medicaid Medical Home program reduced physical health emergency visits but had no effect on inpatient admissions (Bandara et al., 2019). A subsequent analysis found that the program improved receipt of eye exams among SMI patients with diabetes, but not other measured outcomes (McGinty et al., 2020). Most BHH studies do not assess implementation outcomes or patient and provider perspectives (Davis et al., 2018) or provide enough detail about essential BHH components (Cameron et al., 2014; Conn et al., 2008; Solmeyer & Constance, 2015) to sufficiently contextualize BHH effectiveness (Conn et al., 2008; Kirk et al., 2016; Solmeyer & Constance, 2015).

This manuscript closes these gaps by detailing the second component of a Hybrid Type I implementation-effectiveness study of BHH implementation in a community health system. The primary aim (establishing effectiveness) 1-year results found BHH patients had higher HbA1c screening rates, marginally higher lipid monitoring rates, and fewer psychiatric inpatient and emergency department visits (Tepper et al., 2017). The secondary aim, described here, was to better understand the BHH implementation context via patient and provider feedback on the Appropriateness, Acceptability, and Feasibility/Sustainability of well-defined BHH components at 6 months post-implementation. These results improve understanding of sources of heterogeneity in model performance and help identify areas for improved implementation in real-world settings.
### Table 1. Core Components of Implemented Behavioral Health Home (BHH) Intervention.

| Component                                                                 | Prior to BHH implementation                                                                 | As implemented in BHH Sept 2015                                                                 |
|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 1 Integrated organizational culture (Integration is a shared vision of the organization, and supported and promoted by leaders and empowered champions) | • Health system had integration of mental health into primary care sites only, for mild-moderate mental health conditions | • Studied BHH was first site in system to integrate primary care into specialty mental health care for patients with SMI |
| 2 Population health management (Program assesses and differentiates patients by prevalent comorbidities; Health IT is used to manage outcomes.) | • Use of depression registry in primary care to guide outreach by primary care-based ‘care partners’ | • Local champions identified and empowered (Clinical Director, Program Manager) |
| 3 Structured use of a team approach (Co-located primary care into specialty mental health; shared, team-based workflow) | • Team-based approach to mental health treatment. • Weekly team meeting for review of clinical questions | • Electronic health record (EHR/IT) tools: Population registry, Admission / Discharge/Transfer alerts, Hospital discharge follow-up reports, Care Team assignment |
| 4 Integrated behavioral health staff competencies (Providers skilled in patient engagement and trained to coordinate with other providers, including other primary care providers, social services, and other specialists.) | • Coordination with community-based services: informal ad-hoc approach by individual providers • No structured approach to coordinating with medical providers | • Proactive use of population registry with direct patient outreach • Institution provided tools for measuring care plan assignment and metabolic monitoring (see below) as part of meeting Medicaid waiver requirements |
| 5 Universal screening: health conditions (Screenings for common and costly physical health conditions) | • No coordinated approach to screening | • Health plan based care management |
| 6 Integrated, person-centered treatment planning (Documented individual-level, person-centered treatment plans unifying behavioral and physical health.) | • Standard mental health clinical approach to treatment planning in specialty mental health; no routine approach to integrating behavioral and primary care plans | • Integrated, co-located Nurse Practitioner providing primary care |
| 7 Systematic use of evidence-based clinical models (Systematic clinical approach using evidence-based and guideline-concordant interventions for behavioral and physical health conditions prioritized in this setting; evidence-based health and wellness programming) | • Counseling or therapy • Medication management | • Integrated, co-located Care Manager • All-team meetings including all roles |
| 8 Social connection (Additional formal and informal opportunities for patients to connect socially to other patients and community members, and to providers and staff) | • Limited social events for patient community | • Coordination with community-based services: structured approach facilitated by full-time Integrated Care Manager • Partnership with on-site (same building) primary care |
| 9 Patient voice (Specific solicitation of patients’ experiences, views, values, and priorities into ongoing program implementation) | • No formal approach | • Connections to off-site practices • Transition support to facilitate discharge planning from hospitalizations |

**Note.** Adapted from “Best Practices in Integrated Behavioral Health: Identifying and Implementing Core Components” (Zahniser et al., 2016).

Components 8 and 9 are components of this BHH but are not typically blinded described as standard “Core Components” in existing BHH models.
Methods

Setting and clinical population

On September 1, 2015, within an urban, safety-net health system (140,000 patients annually) clinic leadership enrolled eligible patients at a large community-based outpatient mental health clinic and those from a nearby primary care practice into the new BHH program. Eligibility included: primary psychotic or bipolar disorder plus an antipsychotic prescription; after September 1, within-system referrals were accepted based on diagnosis, medical risk/comorbidity, and care coordination needs.

Description of behavioral health home intervention

Medicaid 1115 waiver funding (expected to last for five years) and local resources were used to expand a multidisciplinary team for adults with SMI to include the following: seven domains of integrated behavioral health models from prior literature (Zahniser et al., 2016) plus two additional components established by the clinical team (Table 1). These components were implemented using five key implementation strategies identified in discussions with clinic leadership and implementation leaders (Figure 1, Supplementary Table 1 for details; taxonomy from Powell et al. (2015)). Key BHH components included the addition of an on-site Nurse Practitioner (NP) medical provider, expansion of health promotion activities, care coordination and transition support, enhanced peer-to-peer engagement opportunities, expanded electronic health record functionality, and proactive population management within the BHH (Tepper et al., 2017).

Qualitative methods

Developing interview guides. The Conceptual Model of Implementation Research (CMIR; Proctor et al., 2009, 2011) and the Consolidated Framework for Implementation Research (CFIR; Damschroder et al., 2009; Tabak et al., 2012) informed interview guides. CMIR was used to eludicate the implementation outcomes of Appropriateness (perceived fit, relevance, or compatibility), Acceptability (perception that the model is satisfactory as-implemented), Feasibility (Extent to which model can be successfully carried out in this setting), and Sustainability (whether the model can be maintained and institutionalized) (Proctor et al., 2009, 2011). We asked both patients and providers about Appropriateness and Acceptability, but only providers about Feasibility/Sustainability (which are combined in this analysis). We selected specific constructs from CFIR to guide in the domains of (a) Intervention Characteristics, (b) Outer Setting, (c) Inner Setting, and (d) Characteristics of Individuals to develop the interview guides; see Table 2 for sample questions and construct mapping.

Data collection. Semi-structured interviews were conducted with patients (n = 18; 15–20 deemed sufficient for thematic saturation (Ando et al., 2014; Palinkas et al., 2015)) and providers (n = 13, all but 1 provider) at the BHH 6–7 months after program start. Interview guides were developed jointly with researchers and program leaders and...
Table 2. Map of Relevant CFIR Constructs, Interview Domains, and Sample Questions.

| CFIR domains and relevant constructs | Patient interview topics | Provider interview topics | Sample interview questions | Relevant implementation outcomes for sample question |
|--------------------------------------|--------------------------|---------------------------|---------------------------|-----------------------------------------------|
| **Intervention Characteristics**     |                          |                           |                           |                                               |
| b. Evidence Strength and Quality     | Perception of Program Elements | Perception of Program Elements | (Patients) Have you received any of the wellness tools? (e.g., cookbook, pedometer)? Did you use them? Why/why not? | Acceptability |
|                                     |                          |                           | (Providers) Do you think this program (or, specific element) will improve patients’ health? | Acceptability |
|                                     |                          |                           | (Providers) Do you think it will work better than the previous process at this clinic? If so, why? By how much? | Acceptability |
|                                     |                          |                           | (Providers) What do you think are the most useful components of the BHH? (each component was listed individually) | Appropriateness |
|                                     |                          |                           | (Providers) How important would you say it is to improve the physical health of patients at this clinic? And how urgent would you say it is? What makes it important or not as important/urgent or not as urgent? | Appropriateness |
| c. Relative Advantage                | N/A                      | Perception of Program Elements – Fit with patient needs | (Patients) In the past year, have you had any trouble getting medical care? If so, why? (e.g., have you ever not gotten medical care because of: not feeling comfortable in a medical setting, trouble with insurance or paying for care, difficulty with transportation or getting to an appointment, housing troubles, legal troubles, or any other reason?) | Appropriateness |
| **Outer Setting**                   |                          |                           |                           |                                               |
| a. Patient Needs & Resources        | Barriers to Medical Care | Perception of Program Elements – Fit with patient needs | (Patients) How important do you feel it is to work together with your providers on your treatment plan (care plan)? | Appropriateness |
|                                     |                          |                           | (Patients) How well do you feel that your providers are sensitive to your personal beliefs, values, and culture? Have you noticed any changes since this program was implemented? | Acceptability |
|                                     |                          |                           | (Providers) Do you believe this intervention plays any role in | Appropriateness |
| **Inner Setting**                   |                          |                           |                           |                                               |
| b. Networks and Communication        | Shared decision-making,  | Perception of Program elements—team-based care; Patient centeredness | (Patients) How important do you feel it is to work together with your providers on your treatment plan (care plan)? | Appropriateness |
| and c. Culture                      | Comprehensiveness of Care, and Patient centeredness |                           | (Patients) How well do you feel that your providers are sensitive to your personal beliefs, values, and culture? Have you noticed any changes since this program was implemented? | Acceptability |
|                                     |                          |                           | (Providers) Do you believe this intervention plays any role in | Appropriateness |
|                                     |                          |                           |                           |                                               |

(Continued)
piloted within the research team. An experienced female qualitative researcher (PhD) trained two junior female interviewers (PhD and MPH level), and all 3 conducted interviews. Participants gave written informed consent. During appointments, providers informed patients of the study and offered a “Consent to Contact” form. Interested patients were contacted by a team member who explained the study and incentives ($25 grocery gift card). Providers were not compensated financially but were given time to participate.

Thirteen of fourteen eligible providers participated in 30–45 min interviews (one was unavailable) March 15–March 22, 2016. Twenty-two patients consented to be contacted, and 18 participated in 45–60 min English language interviews March 17–April 21, 2016 in private rooms at the clinic. Interviews were recorded and transcribed verbatim, except for two patients and one provider who preferred the interviewer take hand-written notes. Transcripts were not returned to participants.

Qualitative data analysis. Thematic qualitative data analysis was conducted in two stages. Stage 1, a hybrid of inductive/deductive coding and thematic analysis (Fereday & Muir-Cochrane, 2006), involved a priori coding based on
interview guides by a pair of coders, who coded individually and then met iteratively with senior researchers to resolve discrepancies and consolidate codes. In the second stage, the lead author applied valence ratings to coded excerpts regarding appropriateness, acceptability, or feasibility/sustainability for each component (e.g., +1 for high/positive acceptability, 0 for neutral-or-mixed acceptability, and −1 for negative/low acceptability), adapted from the CFIR Website and “determined by the influence the coded data has on the implementation process,” that is, contextual factors that facilitate or hinder implementation” (CFIR Research Team, 2019). This specific use of valence rating differs from similarly named coding approaches which code an individual’s statements as positive, negative, or neutral. We differentiated excerpts according to Proctor et al., definitions and, practically speaking, whether participants’ replies answered the following questions: “Should we/they do it?” (Appropriateness), versus “I like/don’t like how this is working.” (Acceptability), versus “We/they can/can’t do this (or keep doing this).” (Feasibility/Sustainability). We combined feasibility and sustainability in valences scores because provider perceptions of these two concepts were largely overlapping and did not apply valence ratings to patient interviews as most patients were not familiar with individual program components. Theme and implementation outcomes were organized by program component and reviewed by all authors. Excel was used to manage coded data. Results were not fed back to participants.

### Table 3. Demographic Characteristics of Patients Interviewed About Behavioral Health Home (BHH) Implementation.

| Variable                  | Interviewed BHH patients (n = 18) |
|---------------------------|-----------------------------------|
| Age (mean in years)       | 55.5 (SD 9.5)                     |
| Time at BHH (mean in years) | 7.35 (SD 5.2)                     |
| Highest education (n, %)  |                                    |
| No high school diploma    | 5 (29%)                           |
| Diploma or general educational development (GED) test | 1 (6%)                           |
| Vocational/tech           | 3 (18%)                           |
| College but no degree     | 3 (18%)                           |
| Associate’s degree        | 1 (6%)                            |
| Bachelor’s degree         | 4 (24%)                           |
| Missing                   | 1 (6%)                            |
| Sex: (n, %)               |                                    |
| Male                      | 9 (50%)                           |
| Female                    | 9 (50%)                           |
| Race/ethnicity: (n, %)    |                                    |
| White, non-Hispanic       | 12 (67%)                          |
| Black, non-Hispanic       | 2 (11%)                           |
| Hispanic or Latino        | 2 (11%)                           |
| Other                     | 2 (11%)                           |

### Results

#### Patient and provider characteristics

Patients (n = 18) were 55.5 years old on average, half were male, 12 were non-Hispanic white, two were non-Hispanic Black, two were Hispanic and Black or white, and two were non-Hispanic and another race (Table 3), which was similar to the overall BHH clinic population. Patients’ average self-reported health was Fair to Good. Providers (n = 13) included a Nurse Practitioner and Care Manager, social workers/interns, and psychiatrists. Providers were all white, nine were female, and had served at the clinic an average of 5.8 years.

Patients were not asked about Feasibility/Sustainability and only 40% of patients were aware of specific BHH core components; we therefore report patient feedback only when there was sufficient feedback to generate themes. We do not distinguish individual providers and patients for confidentiality reasons; however, multiple quotations within a single sub-theme are from different participants. Additional quotations are provided in Supplementary Tables 2 and 3.

### Core component 1. Integrated Organizational Culture

#### Providers. Valences. Providers had positive responses to the Appropriateness (average valence ratings: 1.0) and Acceptability (0.96) of the BHH model, but lower ratings for Feasibility/Sustainability (0.27) (Figure 2).

**Appropriateness.** Providing access to on-site primary care and increased coordination was seen as appropriate for patients with SMI: “I think it’s pretty urgent if you’re dying 30 years younger. I think that if it were not for the stigma of mental illness, then this would be a much more widely discussed and known problem…”

**Acceptability.** Implementation strategies like the initial all-team educational and ongoing implementation team meetings increased the acceptability of the program. A clinic provider stated: “It’s pretty inspiring because, you know, agencies don’t always support people with major mental illness…And I think I feel more support from the agency in general, the organization in general.”

**Feasibility and Sustainability.** Rapidly shifting state and federal policy reimbursement priorities for BHH services threatened future feasibility and sustainability. Within the health system, concerns included difficulty demonstrating cost-savings (system-level goal) in addition to disparities reduction (original program goal), and scaling up the program to meet the needs of SMI patients system-wide: “One of the bigger barriers is that the work that we do is necessary to help people and, especially in this population, much of it is not billable fee-for-service care.”
Patients. Appropriateness. Patients who were generally aware of the program offerings felt the BHH program was appropriate, although each tended to use services depending on their needs. "I think it’s a great idea, the integration about the two of them."

Acceptability. Patients were generally positive about the BHH’s convenience and whole-person approach. A small minority of patients reported discomfort with providers sharing information with each other or outside organizations. Not all patients may understand information sharing in the context of team-based, integrated care, and may benefit from additional introduction to this model: “Sometimes there’s a little bit of confidentiality breaches that go on in these places. It does kinda mess, messes with you because…they say things like that…I know they’re talking about me as they walk by me and everything. And I say to myself, it’s really none of these people’s business what I do.”; “I would just encourage you guys to keep

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**Figure 2.** Average valence of provider responses by behavioral health home (BHH) component.  
Note: Shaded area represents average values less than zero.
Core component 2. Population Health Management

Providers. Valences. Providers agreed that population health management was appropriate (1.0), but acceptability was neutral (-0.06), and feasibility/sustainability valences slightly negative (-0.31).

Appropriateness. Providers agreed that registries and using electronic health records (EHRs) to support a population health approach were appropriate conceptually. However, individual providers were still unsure about their role in this framework. “Things like metabolic monitoring, things like ensuring that people who have access to primary care are utilizing it, things like closer follow-up for patients and outreach. I think those are really where all the strengths are.”

Acceptability. A practice that helped increase the acceptability of population health management, even given role confusion and the fact that EHRs were not inherently well-equipped for group care management or tracking patients’ wellness goals, was that clinical leadership used group meetings to share reports and help re-orient providers toward specific goals, especially the care plan documentation and metabolic monitoring targets which were pay-for-performance measures in the Medicaid waiver agreement. Still, some providers worried that a data-driven population health approach would shift program focus toward goals quantifiable in EHRs, at the risk of de-valuing less trackable or holistic goals and patient-provider relationships. “Most individual providers are not looking through the registries. What we do at these team meetings is that [clinic leadership] would sometimes pull up a report they run through these registries and say ‘here are some of the individuals we flagged and may need to follow-up’.”

Feasibility & Sustainability. Providers were concerned about balancing acute patient issues with long-term or preventive population health activities (a mismatch with their training), and heterogeneity of patients’ needs. “That’s such a massive shift in our way of thinking, and we’re so used to like providing like one-on-one care.”

Patients. We did not ask patients about this aspect of the program, which was not typically visible to them.

Core component 3. Structured Team-Based Approach

Providers. Valences. The team-based approach was seen as highly appropriate (average valence score, 1.0), acceptable (0.94), and feasibility/sustainability were positive but with room for improvement (0.20).

Appropriateness. The team-based BHH approach was considered an appropriate model to improve overall patient wellness and staff morale and engagement through mutual support and empowering providers to better address patients’ needs. “A lot of our patients are really hesitant to see primary care providers. So I think the fact that we can actually do some of that in a less threatening environment in a place where they’re, where they’re comfortable, is huge.”

Acceptability. Direct referral to the co-located NP, who maintained an open, welcoming environment for patients, greatly increased provider acceptability. The three implementation strategies of revising professional roles, conducting all-team educational meetings, and especially the ongoing implementation team meetings were essential to increasing acceptability, particularly to continue refining communication and sharing knowledge between the NP and the provider team (see Supplementary Table 1 for strategy details). However, the Care Manager’s role and potential impact were least understood, because of the complexity and scope of the role and difficulty prioritizing tasks within this role. “What we’ve been able to offer and the end goals from which we approach somebody, has just increased, so that has led to... a little bit more hope and shared worth around it, so I think that has changed the dynamic of the team and again, probably changed the feeling of burnout within the team.”

Feasibility & Sustainability. Providers had concerns about (1) financing issues given the complexity of the services delivered, (2) staff shortages, and (3) complexity of shared workflows. Questions arose around sustained grant support and roles like care management that were not paid fee-for-service, and the need for administrative support to navigate complex insurance benefit and care management structures. Filling positions for much-needed full-time social workers was an ongoing challenge. The interdisciplinary approach sometimes led to a lack of role clarity. Recruiting staff committed team-based care was seen as key for sustainability. Multiple layers of care management and outreach through insurance and social services often complicated this issue. “At times, patients have felt like they’re being harassed by repeated phone calls and being pushed into medical care that they are not interested in.”

Patients. Appropriateness. Patients generally viewed the team-based approach positively because of integrated medication management, provider awareness of other appointments, appointment reminders, and increased focus on whole health. “I think the psychiatrist is more involved in your total health, including your physical health, and sometimes um intervened, say with a primary care doctor or a podiatrist or whoever it is...I find [this change] is good because um, it’s a reminder of, um, things you might ordinarily brush over but once they’re brought up, you think about it twice. So sometimes you go to an appointment you might have not gone to unless it was brought up and discussed.”
Acceptability. Several patients mentioned very positive experiences with the NP. However, not all patients appreciated being asked to meet with additional providers or tackling other aspects of their health. “I like it better because I like to go see [the NP] and I like to go to the health stuff.” vs. “It’s just frustrating...It’s just more pressure on me. I don’t wanna sit here and talk...I don’t wanna sit here and talk about something that’s not gonna work.”

Core component 4. Integrated Behavioral Health Staff Competency

Providers. Valences. These aspects of the program were seen as very appropriate (1.0), highly acceptable (0.81), but not fully feasible/sustainable (−0.15).

Appropriateness. Coordination across multiple social sectors and health system entities was seen as critical. “Statistically, our patients have much higher risks and much shorter lifespans, so my hope is that this would be a great way to address the larger societal issues by connecting bubbles of care, and to make sure they have coordination of care.”

Acceptability. Areas for improvement included incorporating routine home visits and making connections with families: “...My role is more case management here, but [in my other placement] I also had the opportunity to go into patients’ homes...For some patients, we have had some difficulties reaching out to them, and there’s only so much you can do.”

Feasibility and Sustainability. Attending to social issues beyond the health system, such as housing, was seen as infeasible. Visiting hospitalized patients and offering in-person transition support to patients were seen as particularly challenging, and requiring additional resources. “Home visits, more people visiting patients while they’re in the hospital...it’s really just me, and only if I have the time.”

Patients. Appropriateness. Patients did not report many barriers to receiving medical care. However, housing instability was cited as an ongoing strain impeding patients’ abilities to exercise, sleep, feel safe at home, or prepare healthful meals. “I was living in the streets and in shelters...the last 30–40 years...Now, I’m living how I’m supposed to be living. Like a human, not an animal.”

Acceptability. Patients echoed providers’ concerns about the BHH’s ability to improve patient situations outside of the clinic, especially housing concerns, and few patients had families engaged with them in their treatment. “They’re an integration program, but they need to integrate outside of [the health system].”

Core component 5. Universal Screening for Health Conditions

Providers. Valences. Universal screening (metabolic monitoring) received high ratings for appropriateness (1.0), but lower scores for acceptability (0.36), and feasibility/sustainability (0.50).

Appropriateness. There was a consensus that metabolic monitoring was essential to the program. “That’s the power of using registries through [the EHR] and to be able to flag objective markers that we should be implementing, but gets slipped through the cracks. Things like metabolic monitoring, things like ensuring that people who have access to primary care are utilizing it, things like closer follow-up of patients, and outreach.”

Acceptability. Providers had a clear, action-oriented mandate, which was also tied to state funding, to conduct lab screenings for metabolic disorders, document this effort, and take appropriate actions. Acceptability was tempered by concerns about an overly medical focus. “I’ve been making sure to document in my note, if I’ve checked a metabolic lab, what I’ve been doing about the finding, and when I’m going to check it again. So I’ve just been trying to make it a part of my documentation, because I know, that the external kind of motivator is that this is one of our deliverables back to the state, like, we’re going to show we did this. But it’s also helping organize me better, about what I have to attend to.”

Feasibility and Sustainability. Lab testing logistics were still in, but seen as surmountable. “Based on what our outcome goals are right now, are we going to get the metabolic labs checked? Yes...I’m having a hard time connecting [the NP] to that person because, [the NP] is not here on Monday. Um, we absolutely need phlebotomy, it’s absurd—you know.”

Patients. Coordination of routine lab monitoring was not yet visible to patients.

Core component 6. Integrated Person-Centered Treatment Planning

Providers. Valences. Person-centered treatment planning was seen as appropriate (1.0), and mostly acceptable (0.50), but its feasibility/sustainability had negative valence (−0.11).

Appropriateness. Person-centered care planning and shared decision-making were nearly universally seen as appropriate by providers. “Just by the virtue of the fact that it’s a team approach, means the patient is part of the team, right? Nobody is talking at the patient.”

Acceptability. Some providers felt that in practice it was difficult to strike a balance between provider goals for patients and patients’ own goals. “It’s coming up in every patient presentation: who is the primary care provider (PCP), what are the health goals, what is the care plan? So in that way, it has put that focus on wellness...I worry, like a concern about another impact that maybe isn’t wholly positive is it getting so medicalized perhaps.”

Feasibility & Sustainability. Providers found it difficult to balance person-centered care planning with time to
address urgent needs and noted patient expectations may be incompatible with what the system was able to provide. “...When people come to therapy, they usually have something on their mind and want to talk about it, right?... It’s been a little bit more challenging for me to be like, ‘Okay, don’t talk about that crisis. Let’s talk about your care plan.’”

**Patients. Appropriateness.** A few patients did not want to share the burden of co-developing their care with their providers, but most valued shared decision-making and a person-centered approach. “Yes, they take me into consideration and we talk as equals. My plan is kind of an agenda of things I want to bring to them and things they want to bring to me.” versus “I am gung-ho about being the only one in charge.”

Acceptability. Acceptability in practice stemmed from patients’ trust in health care providers in general or the clinic itself, and the belief that providers could help them. “I feel like I can say anything to her.”; “She’s on my side.”(vs.) “They’re all pill pushers.”; “They can’t help me no more. Be honest with you, I really don’t care about them anymore. I really don’t. I just want to get my medicine and see [the psychiatrist] and get the hell out of here.”

**Core component 7. Systematic Use of Evidence-Based Clinical Models**

**Providers. Valences.** Providing care using evidence-based clinical models, (i.e., via counseling, therapy, and health promotion including via wellness tools such as cookbooks and pedometers) was seen as appropriate by almost all providers (0.97), highly acceptable (0.74), but with negative-to-neutral valence for this feasibility/sustainability (−0.08).

**Appropriateness.** Most providers felt the wellness offerings were key components of the program. “These patients are often suffering from cardiovascular issues, obesity, smoking, all of these things are huge concerns that are really reducing their lifespan.”

Acceptability. Providers’ acceptability was tempered by varied patient engagement, and difficulty deciding how much to continue encouraging individual patients. Some said there should effort to capture “small wins” like engagement. “It has been surprising the degree to which people are interested in changing their health. I would have assumed that a larger percentage of people would have said, ‘No thanks, I’m fine, I don’t need any other services’ or ‘I don’t want to work on any of that...’”

**Feasibility & Sustainability** Providers were unsure that the program could improve specific health metrics as quickly as hoped given patients’ many wellness barriers, and stated the program may require additional community space for wellness activities or funds for gym memberships. When asked about other barriers, one provider responded, “there are so many of them, just because... poverty. And maybe patients’ lack of belief in the possibility of health. I think those are huge barriers.”

**Patients. Appropriateness.** Patients largely liked the large “menu” of wellness options. “I mean, it’s right here for you if you want to take advantage of it. And if you don’t, then I guess it’s not good for you. It’s good for people who actually need it cause they’re actually people who need it.”

Acceptability. Those who accessed the NP and/or wellness groups had nearly universal positive experiences (e.g., succeeding in losing weight, and finding the NP’s demeanor extremely welcoming and helpful). They reported the least engagement with wellness tools (i.e., cookbooks, pedometers, healthy portions plates) for various reasons having to do with efficacy or acceptability of those individual tools. Several patients noted that engagement was the first step to benefiting from such tools. “Yeah, I’ve got one [a pedometer]. But I can’t use it. I can’t figure it out...[The NP] gave it to me and she showed me how to use it, but I still can’t do it.”

**Core component 8. Social Connection**

**Providers. Valences.** Providers found the need to incorporate social connection appropriate (1.0) and acceptable (1.0), but with room for improvement for feasibility/sustainability (−0.25).

**Appropriateness.** Providers felt bolstering patient-provider and peer-to-peer patient relationships as critical to forming a sense of community. “We connect them to [the NP] or to other groups here then they, you know, that can inspire them to make some changes with our support and lead to them feeling better and seeing us as a community or finding community here whereas most people don’t have, um, are socially isolated at times. And the more services they get in this building, the more they might connect here and feel it’s a second home.”

Acceptability. The weekly facilitated informal drop-in space for patients, providers, and providers, and staff; increased group-based therapy and wellness programs; and prioritizing building community with patients was highly acceptable by providers. “I think having that option [the groups] is huge and allows us to capture a lot more patients than we could with just single visits. Um, and that fosters a kind of sense of community that I think you know, we really need to build upon if we want to be effective.”

**Feasibility & Sustainability.** The vision of creating a “second-home” feeling to increase social connection for patients was challenged by the limitations of a fee-for-service clinical environment. “If we really want to build a community and a comfort level and a place where people feel welcomed, cared for, and special—and
I think that’s really important—then we need a place to do that.”

**Patients. Appropriateness.** Many patients interviewed did not have an active social support network. “I’m alone. If I fall into a gutter, no one will know.” But BHH program offered opportunities to socialize. “I come here [every week] and talk to other clients/patients. It makes me feel better cause I did something today. If I didn’t come here, I would probably be at home watching TV or something. It gives me something to do.”

Acceptability. Some patients with involved family members also experienced tensions between cultural and/or family beliefs and their receipt of mental health care, particularly medications. With only a few exceptions, patients reported enjoying engaging with providers and especially with peers in group settings. “It’s fun, everybody in the group...we all have mental illness so we all can be frank. We can say what we want to say, get it off our chest, you know.”; “The patients learn more from the other patients than the doctors.”

### Core component 9. Patient Voice

**Providers. Valences.** Patient voice, primarily incorporated through the Patient Advisory Council (PAC) was seen as highly appropriate (1.0) but acceptability was not as high (0.57), and providers had concerns about its feasibility/sustainability (0.13).

**Appropriateness.** Providers felt incorporating patient voices was important and appropriate. “I haven’t had anyone go there and give me feedback about it. But I think it’s huge that we’re actually, we’re doing that. I feel like that speaks volumes for what kind of team we are.”

**Acceptability.** The PAC was perceived to be one of the least defined elements of the BHH program. Providers questioned whether the goals and processes were sufficiently defined. “I have some mixed feelings about it [the PAC]... it seems to be very sort of underattended. Um, so I’m not sure if that’s sort of patients aren’t interested or providers aren’t really selling it or what?”

**Feasibility & Sustainability.** Lower engagement and acceptability from patients and providers at the early stages made providers feel this may not be as feasible or sustainable as originally hoped. “There’s stuff about [the PAC], but I think it mostly appeals to...the small group of people who are going to take that kind of active role in program development.”

**Patients. Appropriateness.** There was a general sense by some patients that patient voice had not been historically incorporated into mental health system planning. “I did [go to the PAC] the first week, but I didn’t want to stay with it...I feel like it’s more important to be out in the community doing things.”; “The people who did speak up [in the past], they weren’t in enough power for it, and there wasn’t enough people advocating for us. For ourselves. And we were just letting these people walk all over us, and that’s probably why our, our system of care was like, you know, not enough sometimes.”

Acceptability. Many patients had not attended the PAC, but those who did found it a useful place to share program feedback, although some remained unsure of its goals or how to engage during meetings. Some echoed that some of those who most needed to be heard in a PAC-type setting were least likely to attend. “Those that don’t make it in because they’re out on the streets don’t have a voice.”

### Discussion

Structured use of a team-based approach and universal screening for health conditions had the most “positive” valence across appropriateness, acceptability, and feasibility/sustainability, consistent with prior work showing that team-based care in patient-centered medical homes are associated with lower provider burnout (Helfrich et al., 2014; Le Blanc et al., 2007; Reid et al., 2010; Rodríguez et al., 2018) and suggesting that BHH models may help meet the fourth of healthcare’s “Quadruple Aims” by improving the work-life of providers. Consistent with prior studies of team-based care in BHHs, the barrier of role confusion was improved by dedicated training, and the NP’s ability to assist patients and providers was facilitated by the embedded, co-located nature of the role (Murphy et al., 2018).

Several BHH components showed a high mismatch between perceived provider appropriateness on the one hand and acceptability and feasibility/sustainability on the other. Population health management was considered an important system-level goal but a “major shift” from traditional medical training; prior BHH studies showed that clear and consistent alignment with an organizational mission can help facilitate this shift (Murphy et al., 2018). Evidence-based clinical model implementation was challenging given that physical health concerns among patients were complex and heterogeneous. Unlike specialty outpatient mental health clinics which may focus on just one service (like prescribing or some other more narrow clinical focus), our BHH tried to deliver a range of services that addressed this complexity; it is precisely because BHH models take on “whole-person interventions” that they are seen to hold promise for patients with SMI (Fortuna et al., 2020; Viron et al., 2014).

Value-based payment approaches may facilitate flexibility in behavior change efforts (Ramanuj et al., 2019) but real-world BHH programs would likely need increased guidance on risk-stratifying patients, incorporating patient feedback to increase the impact of wellness offerings, and data systems and information sharing that align with all BHH targets (Murphy et al., 2018). Social support and peer support (which improve quality of life for people
with SMI (Beels, 1978, 1981; Bengtsson-Tops & Hansson, 2001; Breier & Strauss, 1984; Hammer, 1981; Hammer et al., 1978; Lipton et al., 1981) may be under-leveraged in BHH models.

Incorporating patient voice into program planning can improve health and reduce long-run costs (Cameron et al., 2014; Fortuna et al., 2020) but mixed feedback about the Patient Advisory Council suggests that more guidance and resources are needed to meaningfully engage patients in BHH co-implementation. Few patients in our study were aware of many BHH components, which parallels the barriers that other BHH and integrated mental health programs have with engaging and retaining patients (Murphy et al., 2018; Wright et al., 2020). Future research should dive deeper into how BHH models, as routinely implemented, are comprehensively meeting “patient needs,” using, for example, comprehensive definitions of patient needs as outlined in the recovery-oriented mental health systems framework (Anthony, 2000; O’Keeffe et al., 2018). Aligning realistic health system efforts with patients’ expectations will likely require maintaining or establishing robust community partnerships (Murphy et al., 2018).

The study contains several limitations. Experiences in this BHH program may not be generalizable to other contexts or BHH programs with different components. Interviews conducted 6–7 months after program implementation may not reflect the perspectives of patients and providers in more established programs. Patients who chose to participate may have been more engaged with the program overall. Key strengths include: applying valence rating component to present a holistic, comprehensive account of implementation outcomes; including provider and patient feedback; and identifying areas where patients were not fully aware of model components. Identifying these specific areas for improved implementation may help elucidate mixed BHH effectiveness findings in the existing literature and suggest areas for BHH model refinement in real-world practice.

Conclusions

BHH models have become more prevalent in recent decades (Collins et al., 2010). Our findings highlight component-specific challenges to acceptability and feasibility/sustainability that may partly explain the mixed outcomes of BHH models, and help provide concrete data for providers to improve BHH program implementation in clinical settings.

Author Contributions

Alexander (Cohen) Colts was a Program Manager at Cambridge Health Alliance at the time this work was initiated. Andrea Ault-Brutus was Senior Scientist and Assistant Director of the Health Equity Research Lab at the time this work was initiated. Sherry Shu-Yeu Hou was a Research Coordinator and Project Manager at Cambridge Health Alliance at the time this work was initiated. Frederick Lu was a Research Assistant at Cambridge Health Alliance during the bulk of his contributions to this project. Sara Banbury and Dennis Sunder were interns at Cambridge Health Alliance during the time they primarily contributed to this project.

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Supplemental material

Supplemental material for this article is available online.

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