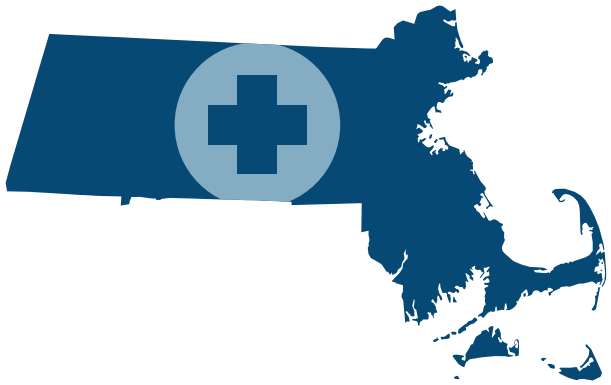
SHIFT-CARE CHALLENGE

ADDRESSING HEALTH-RELATED SOCIAL NEEDS AND BEHAVIORAL HEALTH ACCESS



FINAL EVALUATION REPORT

MASSACHUSETTS
HEALTH POLICY COMMISSION

JANUARY 2024

SHIFT-CARE CHALLENGE: ADDRESSING HEALTH-RELATED SOCIAL NEEDS AND BEHAVIORAL HEALTH ACCESS

EXECUTIVE SUMMARY

INTRODUCTION AND METHODOLOGY

The Massachusetts Health Policy Commission (HPC) is an independent state agency charged with monitoring health care cost growth in Massachusetts and providing data-driven policy recommendations regarding health care delivery and payment system reform. The HPC's mission is to advance a more transparent, accountable, and equitable health care system through its independent policy leadership and innovative investment programs. The HPC's goal is better health and better care – at a lower cost – for all residents across the Commonwealth.

In 2018, the HPC launched the Sustainable Healthcare Innovations Fostering Transformation (SHIFT-Care) Challenge investment program opportunity. This $10,000,000 initiative supported promising innovations that addressed health-related social needs (HRSNs) and increased access to timely behavioral health services for residents of Massachusetts, with the goal of decreasing the use of costly and avoidable hospital care. The program built on evidence that addressing HRSNs can reduce the cost of care, and was designed to align with related work by MassHealth, accountable care organizations, and community-based organizations. The HPC awarded funding to six awardee organizations and their partners for programs addressing HRSNs or increasing access to behavioral health care.[i]

SHIFT-Care Challenge awardees were required to propose and conduct evaluations of their initiatives. Some awardees conducted their evaluations themselves while others subcontracted all or a portion of the evaluation work to external firms. The resulting evaluation materials, in combination with quarterly written program updates and quantitative data submitted by the awardees, were used as source material for production of this report.

SHIFT-CARE CHALLENGE AWARDEES

- **Baystate Health Care Alliance**, in partnership with local community-based organizations, developed the Springfield Healthy Homes Asthma Program to address social and home remediation needs of participants with asthma and their families.
- **Boston Medical Center** developed THRIVE+, a program that enhanced pharmacy staff training and services to systematically screen for and address HRSNs among patients at risk of high acute care utilization.
- **Community Care Cooperative**, a community health center-led MassHealth accountable care organization (ACO), developed Healthy Connections, a community-based, integrated care management program for ACO members with complex social and medical needs.
- **Hebrew SeniorLife** expanded its integrated housing and care model – Right Care, Right Place, Right Time (R3) – to focus on additional social and health risk categories in a new iteration of the program they called R3^2. They also focused on gathering data to establish the financial rationale for the program.
- **Holyoke Health Center**, in collaboration with Behavioral Health Network, developed a program to integrate treatment for mild to moderate mental health issues into primary care settings.
- **Steward Health Care Network** developed a program to more effectively coordinate the medical, behavioral health, and HRSNs of ACO-attributed patients with substance use disorders.

i The SHIFT-Care Challenge included a second track which provided funding to nine hospitals to implement programs that would expand access to opioid use disorder (OUD) treatment by initiating medication for addiction treatment (MAT) in the emergency department (ED) and connecting patients to community-based behavioral health services. The final evaluation report for those initiatives can be found here: https://www.mass.gov/doc/shift-care-challenge-evaluation-final-report/download

COHORT-WIDE THEMES

Several themes emerged from the implementation of the six initiatives:

- **Unique Value of Community Health Workers and other Non-Clinical Staff**
  - Most SHIFT-Care Challenge awardees employed community health workers or other non-clinical staff and found immense value in their ability to build relationships with participants and devote considerable time and resources to addressing participants' HRSNs.
- **Tailoring Efforts to Address Health-Related Social Needs**
  - All awardees made efforts to tailor their processes for addressing HRSNs both to their target populations and to the social resources available to meet those needs.
- **Understanding the Impact of Inequities on the Target Population**
  - Awardees confronted the impact of longstanding issues such as housing segregation, inter-generational poverty, and racism on their participants' health and HRSNs, and calibrated both their efforts and their expectations to the reality of those challenges.
- **Expanded Expertise through Intentionally Structured Community Partnerships**
  - Partnerships with community-based organizations brought valuable knowledge and expertise to awardees and played an important part in addressing participants' needs. Awardees collaborated in both integrated and referral-based partnerships and developed strategies to bridge between health care and community organizations to deliver services efficiently and effectively.
- **Facing Obstacles and Opportunities posed by the Covid-19 pandemic**
  - The onset of the Covid-19 pandemic occurred during the implementation of SHIFT-Care Challenge programs, posing significant obstacles to the delivery of programs and the well-being of participants. Programs were largely able to adapt, transitioning to remote service delivery and often providing key supports that responded specifically to the effects of the pandemic on their participants.

CONCLUSION

The six awardees of the SHIFT-Care Challenge track that focused on implementing programs to address HRSNs and behavioral health needs served a combined total of approximately 1,238 individuals across the Commonwealth. These programs reached participants who had consistent challenges with social and behavioral health needs, and who often had high hospital utilization as a result.

The initiatives had demonstrable positive effects on participants, and participant satisfaction was high among those surveyed by awardees. Programs adapted to disruptions resulting from the Covid-19 pandemic and continued to provide critical support to participants in that uniquely challenging time.

While most awardees saw downward trends in hospital utilization and measures of HRSNs, data analysis challenges—including insufficient data for robust statistical testing, data sourcing barriers, and utilization reductions due to the pandemic that confounded the findings—posed limitations to drawing strong conclusions from the data. SHIFT-Care Challenge programs also generated fruitful community partnerships, which many awardees intended to continue in some form, as well as many insights into the benefits and challenges of initiatives focused on increasing behavioral health access and addressing HRSNs.

PART 1:

INTRODUCTION AND COHORT-WIDE THEMES

The Massachusetts Health Policy Commission (HPC) is an independent state agency charged with monitoring health care cost growth in Massachusetts and providing data-driven policy recommendations regarding health care delivery and payment system reform. The HPC's mission is to advance a more transparent, accountable, and equitable health care system through its independent policy leadership and innovative investment programs. The HPC's goal is better health and better care – at a lower cost – for all residents across the Commonwealth. The HPC invests in and tests innovative care delivery and payment models that hold promise for supporting achievement of the Commonwealth's cost containment goals while improving access to high-quality care.

The HPC launched the Sustainable Healthcare Innovations Fostering Transformation (SHIFT-Care) Challenge investment program opportunity in January 2018. This $10,000,000 initiative supported promising innovations that addressed health-related social needs (HRSNs) and increased access to timely behavioral health services for residents of Massachusetts, with the goal of decreasing the use of costly and avoidable hospital care. Substantial evidence supports the relationship between patients' HRSNs and need for behavioral health services, and patients' health care utilization and outcomes.[1,2,3,4,5,6] In response to this evidence, there has been significant effort to fund and build programs to address HRSNs and behavioral health needs. This work has been undertaken by public payers, commercial insurers, and hospitals or health systems, often through accountable care organizations (ACOs). Many programs have also been led by or partnered with community-based organizations with expertise in addressing HRSNs such as housing or food insecurity.

In Massachusetts, MassHealth made a significant investment in this area through its Delivery System Reform Incentive Payment Program (DSRIP), established via an 1115 waiver from the federal government, which included programs aimed at integrating medical, behavior, and social care and encouraging community-medical partnerships for MassHealth members.[ii]

The design of SHIFT-Care HRSN/BH track intentionally mimicked the themes of the MassHealth program, with MassHealth and HPC staff coordinating to align goals. In practice, awardees serving MassHealth participants worked to maintain boundaries between their SHIFT-Care and MassHealth programs to avoid confusion and duplication of services, however, the collaborative program design helped to ensure common supports across programs and services for eligible patient populations.

SHIFT-Care Challenge applicants were required to propose sustainable care models designed to reduce acute care utilization and to partner with an organization that would provide clinical or non-clinical services to the target population or collaborate with the awardee on payment, service delivery, or analysis. The aim of these program requirements and the program as a whole was to build capacity for collaborations with community-based organizations and to allow health care entities to test new models that would be in alignment with the goals of Medicaid and commercial risk contracts.

Awardees were required to report on acute care utilization as a primary outcome. An award of up to $750,000 per awardee was available through funds from the Distressed Hospital Trust Fund (M.G.L. c. 29, § 2GGGG) and the Healthcare Payment Reform Trust Fund (M.G.L. c. 6D, §7).

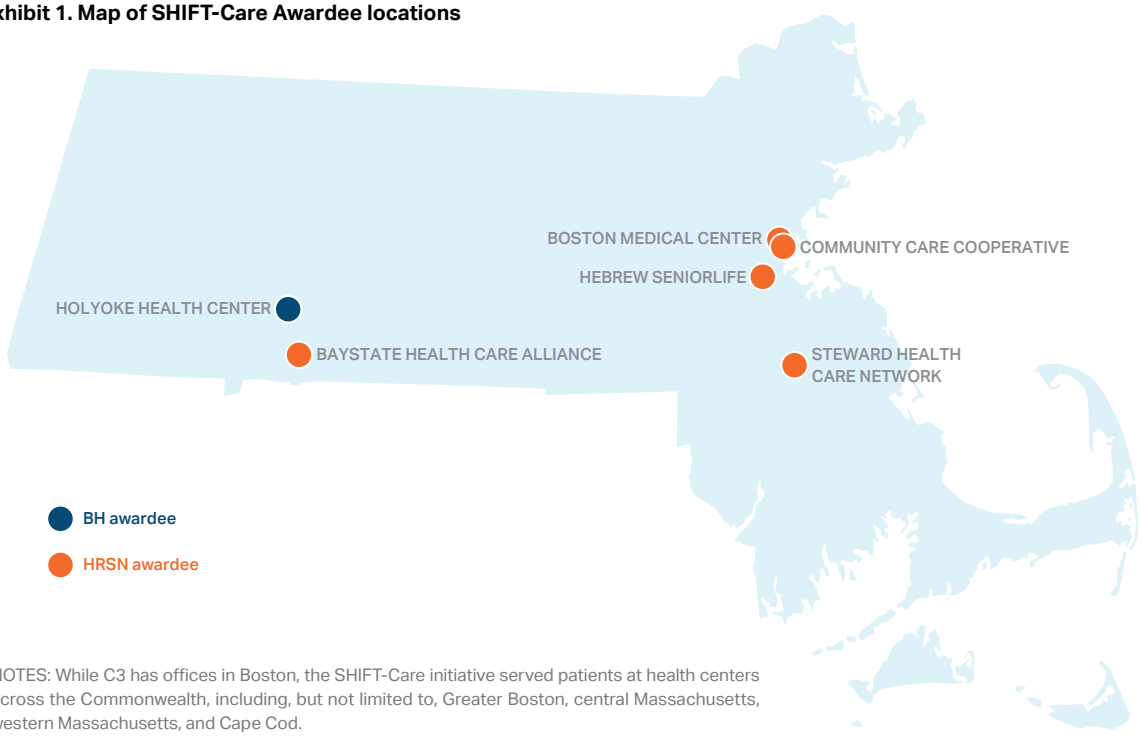
ii For more information on the DSRIP, see: https://www.mass.gov/info-details/massachusetts-delivery-system-reform-incentive-payment-program#:~:text=MassHealth-,Massachusetts%20Delivery%20System%20Reform%20Incentive%20Payment%20Program,through%20MassHealth's%20federal%201115%20waiver.

The HPC awarded funds to six organizations and their partners for programs addressing health-related social needs or increasing access to behavioral health care.[iii] The six awardees are listed below along with a brief description of their programs:

- **Baystate Health Care Alliance** (**"Baystate"**), in partnership with local community-based organizations, developed the Springfield Healthy Homes Asthma Program to address social and home remediation needs of participants with asthma and their families.
- **Boston Medical Center** (**BMC**) developed THRIVE+, a program that enhanced pharmacy staff training and services to systematically screen for and address HRSNs among patients at risk of high acute care utilization.
- **Community Care Cooperative** (C3), a community health center-led MassHealth accountable care organization (ACO), developed Healthy Connections, a community-based, integrated care management program for ACO members with complex social and medical needs.
- **Hebrew SeniorLife** (**HSL**) expanded its integrated housing and care model—Right Care, Right Place, Right Time (R3)—to focus on additional social and health risk categories in a new iteration of the program they called R3^2. They also focused on gathering data to establish the financial rationale for the program.
- **Holyoke Health Center** (**HHC**), in collaboration with Behavioral Health Network, developed a program to integrate treatment for mild to moderate mental health issues into primary care settings.
- **Steward Health Care Network** (**"Steward"**) developed a program to coordinate more effectively the medical, behavioral health, and HRSNs of ACO-attributed patients with substance use disorders.

The awardees were located throughout the state of Massachusetts. See **Exhibit 1** below:

Exhibit 1. Map of SHIFT-Care Awardee locations



NOTES: While C3 has offices in Boston, the SHIFT-Care initiative served patients at health centers across the Commonwealth, including, but not limited to, Greater Boston, central Massachusetts, western Massachusetts, and Cape Cod.

The Steward SHIFT-Care initiative also had locations in Taunton and Fall River.

For more information on each awardee, see part 2 of this report: **Findings from the SHIFT-Care Challenge awardees**.

iii The SHIFT-Care Challenge included a second track which provided funding to nine hospitals to implement programs that would expand access to opioid use disorder treatment by initiating medication for addiction treatment in the emergency department and connecting patients to community-based behavioral health services. The final evaluation report for those programs can be found here: https://www.mass.gov/doc/shift-care-challenge-evaluation-final-report/download

EVALUATION METHODOLOGY

SHIFT-Care Challenge awardees were required to propose and conduct evaluations of their initiatives. Some awardees conducted their own evaluations while others subcontracted all or a portion of the evaluation work to external firms. The HPC incorporated a six-month evaluation period into awardee contracts and required multiple evaluation deliverables throughout the course of the program to ensure awardee progress in developing their evaluations. At the conclusion of the evaluation period, the HPC reviewed final evaluation reports from the awardees and their evaluation teams. These reports, in combination with quarterly written program updates and quantitative data submitted by the awardees, were used as source material for the HPC's evaluation and production of this evaluation report. For more detail on the evaluation and report generation process, see **Appendix A**.

COHORT THEMES

Despite the heterogeneity of the programs, several common themes emerged across the cohort of awardees during implementation:

UNIQUE VALUE OF COMMUNITY HEALTH WORKERS AND OTHER NON-CLINICAL STAFF

Many awardees employed community health workers (CHWs) or other types of non-clinical staff (e.g., pharmacy technician) in roles related to patient navigation or care coordination in their care models. These staff members typically worked personally with participants on identifying their HRSNs and connecting them to resources to address those needs. The role of CHWs often involved conducting outreach to enroll participants, meeting with them in the community, and administering program assessments. In some programs, CHWs provided patient education on relevant topics.

Staff in these roles often underwent extensive training to orient them to the organization and the population they were working with, as well as the resources to which they would be connecting the participants. They were often familiar with the communities they served, and many had previously worked in similar roles.

In SHIFT-Care Challenge programs, CHWs typically had small patient panels, sometimes of as few as 10-15 patients, which allowed them to prioritize relationship-building, form clear and holistic pictures of their assigned participants' individual needs, and devote considerable time and effort to each participant. Their skill in navigation of community-based resources combined with these relationships contributed to their success in responding to participant needs and goals.

Most programs hired multiple staff members in these types of roles, meaning they had the opportunity to work as a part of a team. While participants were typically assigned to a specific staff member, staff often described working in close collaboration among the team to address participants' needs, such as meeting their language needs if a member of the CHW team spoke the participant's language and another did not. Many CHWs reported having a sense of camaraderie and more generalized support from the team. Most teams also had regular case review meetings where CHWs could share any challenges with particular cases and solicit support and feedback from their colleagues. Most programs with CHWs also employed a supervisor to manage the CHWs to ensure they felt supported in their work and had an individual to whom they could bring questions or challenges.

Other staff who collaborated with and observed the work of the CHWs in these programs noted their preference for continuing to work with staff in these roles, citing the centrality of CHWs to the success of the model and the important non-clinical support they provided to complex patients. Two awardees, C3 and HHC, planned to continue some type of non-clinical CHW-type role in their organizations after their SHIFT-Care Challenge programs ended. One of the program's partners, Revitalize Community Development Corporation (Revitalize CDC), planned to add CHWs to their staff. Nevertheless, the fact that fee-for-service payment models do not typically reimburse for these services is a barrier to further investment in these roles, as are the challenges of quantifying a short-term financial return on efforts to address HRSNs and build stronger relationships with participants.

TAILORING EFFORTS TO ADDRESS HEALTH-RELATED SOCIAL NEEDS

Five of the six awardees in this cohort were awarded under the SHIFT-Care Challenge goal of addressing HRSNs. In seeking to meet this goal, each program in the HRSN track targeted their screenings on specific needs (e.g., food insecurity, unstable housing) based on their knowledge of their target populations and the structure of their programs.

There was broad consistency in the awardee's approach to screening. Typically, awardees screened participants for the needs of focus for the program at enrollment, periodically during the program (generally every three months), and again at the end of their participation in the program. This cadence was intended to measure change over time and to track which needs had been addressed.

The HRSNs that appeared most consistently across programs were food insecurity, housing insecurity, and transportation access; however, each awardee defined the scope of the health-related needs of focus in their program based on their unique structure and target population. For example, Baystate's Springfield Healthy Homes Asthma Program (SHHAP), while broadly focusing on housing, sought specifically to address the environmental triggers of asthma that could arise in participants' homes as opposed to other aspects of housing security or safety. Similarly, HSL's screening process covered gaps in specific nutritional needs for their elderly population in addition to more generalized food insecurity.

Awardees had to calibrate both their efforts and their expectations to the complexity of the problem they were trying to solve. For example, food insecurity could be addressed through relatively straightforward means such as by making referrals to local food pantries or working with participants to complete the necessary paperwork to receive or increase SNAP benefits. In contrast, other issues—such as housing and immigration—were much more complicated to address and often required navigating complex systems with many years-long waiting lists. In these cases, awardees could take steps towards addressing the problems, such as referring the participant to a partner or organization with specific expertise in that area or arranging the necessary paperwork for them to be placed or moved up on a waiting list, but realistically could not fully solve them within the timeline of the program. Some of the supports awardees could provide, such as transportation vouchers, were time-limited and dependent on program funding, meaning the need might not be permanently addressed through the program. In their work on addressing participant HRSNs, SHIFT-Care Challenge programs sometimes were able to create a permanent solution to the need, while other times it moved participants closer to the possibility of meeting that need, or temporarily met the need during the program.

SIDEBAR: THE CONNECTION BETWEEN HEALTH-RELATED SOCIAL NEEDS AND HEALTH INEQUITIES

Health-Related Social Needs in a Context of Systemic Inequity

"There are systematic barriers we are up against over which we have no control. This includes the types of available services, funding for those services, and very specific eligibility requirements. It often feels as if we are brainstorming workarounds or temporary fixes rather than connecting our patients to upstream services that will truly mitigate health-related social needs."

–BMC THRIVE+ Staff

Programs focused on addressing HRSNs, like the SHIFT-Care Challenge, often face systemic barriers, such as housing shortages and lack of jobs offering living wages, that limit their ability to address participant needs fully and sustainably. These systemic factors are further exacerbated by racism and other systems of oppression and disproportionately impact people of color and other historically marginalized populations.[7,8] These conditions have been shown to result in health inequities,[9] which are systemic, avoidable, and unjust disparities in health status and mortality rates across population groups based on race, ethnicity, religion, socioeconomic status, sexual orientation, gender identity, age, disability status, geographic location, or other characteristics, that are rooted in underlying injustices and social and economic conditions.[10]

Programs like the SHIFT-Care Challenge and prior HPC investment programs[11] focused on addressing participants' HRSNs to help ameliorate some of the impacts of these systems by addressing individuals' needs, but they are not designed to resolve the larger factors at play. Therefore, efforts at the level of policy or social change are warranted to improve the conditions of populations impacted by these inequities and to more fully address the root causes of their HRSNs.[10]

In recognition of the role of systemic inequities in the health of populations, some health care systems, governments and other organizations have implemented efforts to address these systemic factors in specific sectors of need, such as housing policy, food security, or improved employment opportunities, as a complement to work with individual participants.[12] One such example is the Moving Massachusetts Upstream (MassUP) program, a collaboration between the HPC and the Massachusetts Department of Public Health. For more information on the MassUP program, visit the HPC's website.

AWARDEE REFLECTIONS ON INEQUITIES AFFECTING THEIR TARGET POPULATIONS

Recognizing the intersection between HRSNs and health equity, HPC staff worked to gain some perspective on whether and/or how awardees were integrating health equity into their SHIFT-Care programs and patient populations. To that end, although a focus on health equity was not an explicit goal of the SHIFT-Care Challenge, the HPC collected qualitative data to surface insights into the ways health equity factored into awardee programs.

Awardee responses to and extent of experience with these topics varied. Most awardees considered language barriers as an equity issue in their programs and were able to meet at least some of the language needs in their populations through multilingual staff. Some even tailored hiring approaches to meet these language needs. Several awardees pursued trainings in topics related to health equity or other equity topics through their organizations, while others expressed interest but were not able to complete training before the programs ended.

Other awardee responses demonstrated meaningful reflection on related topics including the challenging environment for immigrant communities, the persistent challenges of economic security for participants, and the persistent structural barriers to affordable housing. However, because the SHIFT-Care Challenge was not designed with explicit goals related to addressing health equity, most awardees did not undertake specific work related to identifying and responding to health inequities experienced among their participants. One awardee, Steward, reflected that if they were to implement a similar program in the future, they would incorporate more tailored approaches to recruiting a more diverse participant population that better reflected their surrounding communities.

EXPANDED EXPERTISE THROUGH INTENTIONALLY STRUCTURED COMMUNITY PARTNERSHIPS

A required component of all SHIFT-Care Challenge programs was a partnership with a community organization. Each awardee had to build a working relationship with at least one partner in the service of the program's goals of addressing HRSNs and reducing hospital utilization. These partnerships took many forms and were typically tailored to the needs and goals of the particular program.

Community-based partners brought unique knowledge and expertise to the task of addressing the non-medical needs of participants. For example, Revitalize CDC had expertise in home repair that was foundational to the SHHAP implemented in partnership with Baystate. Behavioral Health Network's specialization in behavioral health services added important knowledge and support to HHC's program serving participants with unmet behavioral health needs. The local emergency medical services providers who partnered with Steward on the Care to Community (C2C) program brought knowledge of home safety and prior relationships with some participants to their home visiting program.

The structure of the partnerships varied depending on the care model of the program. In some cases, the program required tight integration among partners for the program to function. This often entailed partnership components such as program staff based at multiple partner organizations, co-location, and shared management of participant cases. Examples of this include the Baystate program, which brought a pulmonary rehabilitation department together with a home remediation and repair organization (Revitalize CDC) to improve participants' asthma symptoms, as well as HHC's partnership with BHN. In other cases, the partnerships were a referral or consultation model, such as in C3 and Steward's collaborations with medical-legal partnership organizations. Another example was BMC's collaboration with Action for Boston Community Development in which patients would be referred to services based on their identified needs.

The specific expertise and capabilities of the partner organizations were often integral to the support awardees provided during the Covid-19 pandemic (for more information, see subsection "The Impact of Covid-19" in each awardee section). For example, the medical-legal partnership from C3's Healthy Connections program was able to inform staff, youth participants, and families about their rights to special education services and accommodations as schools transitioned to remote learning early in the pandemic. Another example involves the efforts of peer recovery coaches from High Point Treatment center who allowed C2C participants to continue to receive recovery coaching while the rest of the program was paused in the first few months of the pandemic.

Awardees reported a number of conclusions from their partnership experiences. First, strong buy-in from the partner organization as well as a clear point of contact were essential to getting partnerships off the ground. Communication was also a common theme, as clear information sharing was essential to ensuring the partnership could accomplish its goals and coordinate participants' care and services. One information-sharing strategy used by awardees was holding regular meetings

with all relevant stakeholders to review cases, discuss processes, and share participant information. Awardees also deployed software that allowed remote and real-time communication (e.g., care coordination software) to share information between partner organizations.

Oftentimes, partner organizations had unique frameworks, approaches, and capacities in conducting their work, which could cause tensions if clear communications, expectations, and processes were not set. In most instances, large health care organizations were partnering with smaller community organizations, which highlighted differences in the scale of infrastructure and size of the staff. This differential made creating or scaling new programs relatively more challenging for smaller organizations. A process improvement mindset and collaborative and solutions-focused approach to problem solving mitigated some of these difficulties.

The majority of awardees found immense value in their partnerships and expressed a desire to maintain them after the program had ended. Many also took steps to expand their network of partners to build on the impact of their work, including with organizations that could provide transportation support for participants or help navigating the immigration system.

FACING OBSTACLES AND OPPORTUNITIES DUE TO COVID-19

A state of emergency was declared in Massachusetts on March 10, 2020 in response to Covid-19. At that time, SHIFT-Care Challenge awardees had between three and eight months of their planned 18-month implementation period remaining (with differences resulting from staggered start dates). To comply with emergency orders and protect the health of both participants and staff, programs had to make a number of changes. The pandemic posed immediate obstacles to patient enrollment and engagement. Later, widespread declines in inpatient utilization as a result of the pandemic confounded analysis of the programs' impact on acute care utilization. However, the existence of the SHIFT-Care programs also provided critical support to vulnerable populations in the difficult early months of the pandemic, and the programs' pre-existing infrastructure and relationships with the participants allowed them to pivot to providing remote support for both ongoing and pandemic-induced needs.

Most common among the pandemic-related changes were limits on in-person contact with enrollees in favor of telehealth (including audio-only telehealth). Some awardees eventually shifted to a hybrid model combining telehealth with in-person care when required.

Most programs were not able to enroll as many new participants during the pandemic as they had prior to it or lost touch with enrolled participants due to the disruption of the pandemic. A few programs had to temporarily pause enrolling new participants. Steward's C2C program paused the program altogether for several months. In contrast, a few programs reported participants reaching out for additional support during the pandemic and renewed engagement from individuals who had declined participation in the past.

In several instances, the existing infrastructure of the SHIFT-Care Challenge program allowed the awardee to pivot nimbly to providing new or additional supports to participants specific to the needs that arose out of the pandemic, such as disinfectant cleaning supplies which were safe for those with asthma enrolled in Baystate's SHHAP, or guidance on legal rights during remote schooling for youth participants in the C3 Healthy Connections program. HSL's high touch engagement with the residents of their senior living facilities through the R3^2 program made them uniquely positioned to support elderly residents and their families through the early months of the pandemic as older individuals were uniquely vulnerable to the virus and families were not able to visit because of safety policies. (More information on each program's individual response to the challenges of the pandemic can be found in their awardee section under the subsection heading "The Impact of Covid-19").

The pandemic had significant impact on many programs' evaluations. Lower enrollment and more participants lost to follow-up decreased the amount of data available for analysis. Moreover, extreme reductions in utilization related to the pandemic confounded planned pre-post assessments of health care utilization to assess the impact of SHIFT-Care programs. Some also found that time differences in the enrollment of their intervention versus control groups complicated their comparison and analysis. These factors limited the ability of the programs to draw strong conclusions about changes in utilization.

CONCLUSION

The six awardees of the SHIFT-Care Challenge who implemented programs to address HRSNs and behavioral health needs served a combined total of approximately 1,238[iv] individuals across the Commonwealth. These programs reached participants who had consistent challenges with social and behavioral health needs, and who often had high hospital utilization as a result.

When the Covid-19 pandemic began, programs pivoted to continue to provide essential supports to communities that were particularly vulnerable to the social, economic, and health impacts of Covid-19. These circumstances could not have been foreseen in the planning and execution of the SHIFT-Care Challenge program, yet the awardees were able to adjust in real-time and fill gaps for their participants in a time of great uncertainty, often leveraging the connections and relationships they had formed with participants and community-based partners.

Broad changes in utilization during the pandemic make it difficult to fully quantify the impact of the SHIFT-Care Challenge initiatives. That said, most initiatives saw flat or downward trends in utilization, as well as improvements in measures of HRSNs. Staff reported many instances of meeting longstanding needs for participants, such as improved housing, receipt of appropriate behavioral health care, access to needed medications, and transportation to outpatient appointments. Similarly, staff and leadership reported appreciation for the support of added staff, such as CHWs, and spoke positively about the impact of the initiatives on patient care. All programs were required to administer patient experience surveys, and responses generally indicated high patient satisfaction with the programs.

Perhaps the most telling indicator of the success of the SHIFT-Care Challenge programs is the number of awardees who planned to retain some part of the care model after the end of the funding period. Despite limits on reimbursement and even in the absence of definitive data on utilization and cost savings, awardees saw enough value in the programs to sustain at least some components. Two awardees added CHW roles to their internal care management departments, and one awardee's partner, a housing and community development organization, created a CHW role. Three programs planned to continue their model or an adapted version through ACO or other funding. Several awardees incorporated generalizable lessons from the programs into the work of other departments or standing care coordination programs; these often included the benefits of telehealth or the importance of prioritizing HRSNs. In at least two cases, awardees planned to continue the partnerships they established as part of the SHIFT-Care Challenge. These efforts to sustain programs are a testament to the commitment of the staff and the important learning and care delivery improvements in settings across the Commonwealth that resulted from the SHIFT-Care Challenge.

iv In some cases, due to the pandemic, enrollees did not experience the full scope of SHIFT-Care Challenge program services. In other cases, a much larger number of people benefited although they were not formally enrolled in a SHIFT-Care Challenge program, as additional services were extended.

PART 2:

FINDINGS FROM THE SHIFT-CARE CHALLENGE PROGRAMS

Of the six awardees participating in this cohort of the SHIFT-Care Challenge, five awardees implemented programs focused on addressing health-related social needs (HRSNs) and one implemented a program focused on increasing access to behavioral health care. The programs designed by these awardees were tailored to their specific circumstances, target populations, goals, and theory of change for influencing acute health care utilization through their chosen care models.

In addition, the terms of the award required awardees to conduct evaluations of their programs which were expected to feature utilization measures, intermediate measures of the progress towards addressing participants' health-related needs, and a measure of patient experience. Thus, while the overarching themes are consistent, the evaluation approaches and data measures represented here vary. The HPC reviewed multiple evaluation deliverables and qualitative and quantitative data from each awardee in drafting this report. Further details on the evaluation methods can be found in **Appendix A**. Each of the following subsections provides a comprehensive overview of one awardee's implementation, impact, and findings, and the nature of any sustained practices or program elements.

BAYSTATE HEALTH CARE ALLIANCE

AWARDEE OVERVIEW

The aim of Springfield Healthy Homes Asthma Program (SHHAP) was to improve the quality of life for people living with asthma and to mitigate asthma health care costs by reducing inpatient admissions and emergency department (ED) visits through implementation of an evidence-based home visiting and home remediation service. The SHHAP involved a community-clinical collaboration with the Epidemiology and Biostatistics Research Core (EBRC) of Baystate Medical Center identifying potential participants, Baystate Pulmonary Rehabilitation (BPR) providing asthma education and support, Revitalize Community Development Corporation (Revitalize CDC) providing housing assessment and repair, and the Public Health Institute of Western Massachusetts (PHIWM) providing overall coordination and data management.

Target population: Children and adults diagnosed with asthma who had two or more ED visits or one inpatient admission for asthma or other respiratory conditions in the previous year, were members of the BeHealthy Partnership Accountable Care Organization (ACO), and resided in the greater Springfield area.

Health-related needs of focus: Reducing asthma triggers within participant housing; increasing self-efficacy to manage asthma symptoms, quality of life, and asthma control.

IMPLEMENTATION

PARTICIPANT IDENTIFICATION AND ENGAGEMENT

PHIWM staff worked closely with the BPR to identify and refer those patients who were eligible. Participant identification began with EBRC reviewing hospital reports to determine which BeHealthy Partnership ACO members met eligibility criteria. BPR staff assigned participants to a community health worker (CHW) based on the participants' preferred languages and capacity of the CHWs. CHWs then contacted participants to schedule a first home visit for enrollment and baseline health data collection, which included assessing exposure to asthma triggers and self-efficacy for managing chronic illness, education around effective use of respiratory inhaler medications, and an Asthma Control Test (ACT). CHWs provided a spacer (an inhaler attachment to improve medication delivery), asthma-safe cleaning supplies, and educational materials at the first

visit, as well as other asthma management supplies such as high-efficiency particulate air filter (HEPA) vacuums, mattress/pillow protectors, closed lid garbage cans, and air purifiers at subsequent visits based on need.

The next visit was scheduled with Revitalize CDC's Healthy Homes Assessors, who completed a home assessment and walk-through to identify housing problems and participant concerns related to housing. Revitalize CDC assessors prepared a plan in consultation with the CHW and participants or their parent/guardian, and classified participants by level of need based on a two-tier system. If home repairs or remediation services were not needed, the case was classified as Tier 1. If repairs or remediation services (e.g., vent cleaning, carpet removal, ventilation fan installation, or smoke and CO_2 alarm installation) were needed, it was classified as Tier 2. In Tier 2 cases, the CHW and Revitalize CDC worked with the participant to obtain authorization signed by themselves or the property owner/landlord.

In parallel, the CHW continued visits as necessary to provide education, support, and supplies. After the housing intervention and asthma education were completed, a final visit was conducted, including a final inspection walk-through to ensure all necessary repairs were completed and to ensure the quality of the work, and completion of final visit forms and participant satisfaction surveys. The CHWs also performed assessments of exposure to asthma triggers and self-efficacy for managing chronic illness and an ACT at the final visit. Three follow-up calls were planned to occur at three, six, and nine months following the final visit.

Enrollment and engagement challenges and responses

Program staff adapted the program in response to challenges with recruitment. The core team composed of the CHWs, BPR supervisor, and nurse clinician expanded the eligibility criteria to include ACO members with one ED visit or hospitalization for asthma or other respiratory conditions. The team also found that if there were other competing health priorities, participants considered asthma education less of a priority. In response, they tried to provide better messaging that shared the importance of asthma education and the success of the program with other potentially eligible families to boost recruitment.

Within the first quarter of the program, the SHHAP team found that most participants rented their homes, which meant obtaining authorization from a landlord or property manager to make modifications. When offered the home remediation services, some participants were hesitant to have a home visit in some cases due to concerns about experiencing judgement by staff or revealing possible violations of their lease, such as additional residents. Other participants expressed a preference for moving over receiving home repairs due to concerns with neighborhood safety and/or poor housing conditions that went beyond the scope of the asthma-focused services program the was offering; however, relocation assistance was not authorized to be part of the program. Among participants who were interested in home repairs, some were hesitant to request permission and risk disrupting relationships with their landlords, especially given the limited options for affordable housing in the region and the negative impacts of eviction.

The program also experienced barriers in obtaining approval from landlords, who often feared that the remediation program had an ulterior motive focused on enforcing housing codes. Program staff attempted to communicate to landlords and residents the value of the free repair and remediation services being provided, but in order to move forward, often chose to pivot to remediation services that did not require permanent changes to the home. Revitalize CDC staff and CHWs coordinated professional carpet cleaning and provided supplies such as HEPA vacuums that could be used to clean surfaces and remove dust without landlord approval.Staff noted that upstream policy changes to improve the access to and quality or affordability of housing for their participants, such as sealing of eviction records, increased incentive for rental property renovation, or a policy of proactive rental inspections, would be necessary to resolve the barriers to home repairs they encountered.

Program staff stated that the emphasis on data collection rather than relationship-building during the initial home visit created tension between the CHW and the participants and families. This observation led to changing the data collection timeline to include more visits with less data collected at each visit to encourage more time to engage with participants. The core team was also able to structure the forms and data management system so that it was more user-friendly and intuitive.

STAFFING

Staffing supported by SHIFT-Care Challenge program funding included the BPR supervisor, nurse clinician, and one CHW; PHIWM's Director of Programs and Development and research associate; and Revitalize CDC's Healthy Homes Assessors and program coordinators. A second CHW, as well as funding for the time commitments of executive leadership, financial, and data staff were covered by other Baystate Health Care Alliance grants and matching funds.

The BPR supervisor and nurse clinician supervised the care team, participated in all planning and intervention meetings, and coordinated participant referrals. The CHWs provided education and support to participants during home visits and were the primary point of contact for participants during the housing intervention. The CHWs also worked closely with Revitalize CDC staff throughout the home repair and remediation services intervention to ensure the program was meeting participant needs. Revitalize CDC's Healthy Home Assessors completed home assessments to identify housing problems and participant concerns related to housing. The program coordinators worked with the home assessors to coordinate and manage necessary repairs and modifications with licensed building contractors. There was also an economist from Department of Resource Economics and Center for Public Policy and Administration at the University of Massachusetts Amherst (UMass Amherst) who participated in program evaluation. The evaluation team had not previously used raw claims data to assess utilization, and they noted that having a subject matter expert in claims data on the evaluation team would have been helpful.

The CHWs hired for the intervention had varying levels of experience, though all completed the Massachusetts Department of Public Health (DPH) asthma home visiting training and National Center for Healthy Housing Healthy Homes training. PHIWM, Revitalize CDC staff, and CHWs received health equity training, which prompted them to adapt the planned one-size-fits-all regimen for distribution of supplies to better match participant need and housing conditions. CHWs later reflected that conducting additional screening to assess needs would have been helpful in further tailoring the provision of supplies to participant needs based on features of the home, family, and their environment.

Rather than have CHWs located in the clinical sites, the program housed CHWs in the BPR department in order to have better access to supervision by a certified asthma educator. The SHHAP team later reflected that a warm hand off could have been enabled by having a CHW in both the health center and the pulmonary rehabilitation department. In carrying out the program, the SHHAP team encountered challenges with staff transitions and delays in hiring. The staff reported it would have been preferable to have a fully-staffed CHW supervisor position, specifically for the documentation part of the CHW role. SHHAP staff expressed pride in the work they were doing to improve their participants' health—specifically asthma—and the impact they were having on the entire household. The CHWs stated that building trust with participants and "strengthening" trust with programs, community agencies, and health providers was a significant part of their work.

A staff member of Revitalize CDC shared that spending more time with participants on the phone to listen to what they were experiencing and being flexible with scheduling changes aided in cultivating trust. They had learned that how they communicate with participants would be a "tool that can help or hinder creating a relationship and reaching goals." They also reported that seeing participants use the supplies and witnessing the impact these items had on their quality of life gave the staff great feelings of satisfaction.

PARTNERS

The SHHAP was implemented as a collaboration of the BPR department with lead partners PHIWM and Revitalize CDC. PHIWM staff organized and supported all project activities as part of developing a sustainable "pay for success" model to reduce asthma-related health care costs. Revitalize CDC staff provided home assessment and remediation services that included performing critical repairs and rehabilitation to the homes of low-income families who live with asthma.

The SHHAP team received ancillary support and technical assistance from their steering committee, the Pioneer Valley Asthma Coalition, which is comprised of community groups, health care institutions, and public health organizations committed to improving asthma and environmental conditions, as well as the Green & Healthy Homes Initiative (GHHI), a national organization with a high-quality, high-impact approach to housing rehabilitation which provided additional advising to the program staff. The EBRC identified eligibility and led the evaluation with additional analysis from an economist at the School of Public Policy at UMass Amherst.

BPR, PHIWM, and Revitalize CDC staff stayed in close contact for streamlined implementation through daily communication, weekly meetings, and data/calendar sharing, but still encountered challenges coordinating aspects of the program (e.g., different kinds of repairs, funding requirements, documentation, etc.) across organizations. Upon reflection, the staff of the program posited that co-locating the CHWs and Revitalize CDC staff would have addressed some of the organizational challenges. Some staff also noted that a medical-legal partnership would have been helpful to some participants to assist with housing and landlord-related issues.

Baystate Health Care Alliance had originally intended to coordinate with the Mercy Health Care Alliance for data sharing to aid with the identification of eligible ACO members. However, due to leadership changes at Mercy Health Care Alliance and

other challenges, the partnership did not come to fruition. This change resulted in a smaller pool of potential participants and contributed significantly to the difficulty the program had in reaching its enrollment goal. As a result, the core team expanded the enrollment criteria to one ED visit or hospitalization related to asthma or other respiratory conditions.

IMPACT OF COVID-19

In March of 2020, the CHWs stopped making home visits and established protocols for phone calls with participants. Through the calls, they provided asthma and Covid-19 prevention information. While unable to perform home repairs until later in the pandemic, SHHAP developed new safety protocols for delivering Covid-19 supplies (such as masks and sanitizer) and cleaning supplies that would not exacerbate asthma symptoms (e.g. bleach was widely recommended for surface cleaning and disinfection, but can exacerbate asthma). They also distributed air purifiers and air conditioners for the heat since cooling centers were closed, and participants had to remain indoors. The program staff also participated with local, state, and national partners in reviewing and promoting guidelines for safe cleaning for people with asthma. A collaboration with PHIWM Go Fresh Emergency Food Distribution allowed the program to provide fresh produce boxes twice a month to enrolled families starting in April of 2020.

As a result of these changes, participants received an average of 9.5 visits, rather than the anticipated 4 visits. The number of intervention visits per participant varied based on participant need but the minimum was three visits (baseline visit, home assessment, and final visit). Revitalize CDC resumed in-home services in June of 2020 with an interruption from December of 2020 to March of 2021 resulting from the winter surge in cases.

SHHAP developed a reopening plan for home repairs that included protocols for virtual home assessments as well as a resumption of in-home interventions for participants comfortable with staff entering their home. Through the new protocol for virtual home assessments, program staff could assess a participant's digital access (e.g., Do they have a device? Do they have sufficient data access via Wi-Fi, mobile minutes, etc.? Do they know how to use the video applications?). Many participants were not able to take advantage of the virtual services and, as a result, most education was telephonic.

IMPACT

METHODS

Overall Approach

The program's evaluation design assessed whether a comprehensive intervention addressing asthma education and environmental trigger abatement would have a measurable effect on asthma control, self-efficacy in managing asthma, quality of life, and health care utilization among program participants. The evaluation design included a control and intervention group to measure the impact of the intervention on health care utilization. A pre-post comparison for enrolled participants was also used to compare responses on validated assessment tools.

Demographics

Demographic data, including age, sex, race, and ethnicity, was collected through ACO records for both intervention and comparison group members.

Intermediate Measures (Health-related needs)

SHHAP's intermediate measures—asthma control, self-efficacy in managing asthma, and quality of life—were measured only in the intervention group. The intermediate measures were collected at baseline, the post-intervention visit (which was the visit performed after receiving home repairs or asthma medication based on participant need), and during regular follow-up calls at three, six, and nine months post-intervention. The analysis used data collected at the baseline and post-intervention visits, because of small sample sizes and delays in finishing cases due to the pandemic.

Asthma control over the prior four weeks was assessed using the ACT (ACT-Child for those under 12 or ACT-Adult for those 12 and over). The ACT has been shown to be highly correlated with a wide range of significant health outcomes including lung function, use of rescue medication, work productivity and missed work, asthma risk and healthcare costs.[13,14] A score of 19 or below indicates poorly controlled asthma. A change in the ACT score of three points has been shown to be clinically relevant.[13]

Self-efficacy is the ability to recognize asthma symptoms, reduce or manage asthma triggers, and mitigate asthma exacerbations. To measure the change in self-efficacy, SHHAP used the four-item PROMIS Self-efficacy for managing symptoms

assessment. The items in this measure included the participant's level of confidence to manage/control symptoms during daily activities, work with health providers, and ability to keep symptoms from interfering with relationships. A higher score indicated a higher level of self-efficacy. To improve self-efficacy, the CHW assessed the participant's basic asthma knowledge at the first visit and used the results to address any misperceptions.

Quality-of-life effects due to asthma were assessed using the RAND-IAQL-4 metric, which asks about the degree to which asthma negatively impacted the participant's sense of worry, enjoyment of life, frustration and feeling of missing out. A higher score indicated a larger negative impact due to asthma, thus a decrease in the mean (or median) indicated an improvement.

The intended analysis for the intermediate measures was to compare the intervention and comparison groups using t-tests for continuous data and Fisher's exact test or chi-square for categorical variables.

Utilization

The evaluation team designed the utilization analysis as a comparison between two groups: those selected to receive the intervention based on a lottery system, and a comparison group comprising individuals not selected for the intervention. This approach was selected based on forecasts that suggested that there would not have been enough capacity to provide services to all eligible ACO members.

After modifications to the protocol in the fall of 2019, participants were ultimately classified into three groups: 1) Comparison group: eligible individuals who were not offered the intervention; 2) Negative intervention group: eligible individuals who were offered the intervention, but either declined participation or did not follow through on scheduling an initial visit; 3) Positive intervention group: eligible individuals who were offered the intervention and who completed at least some of the activities associated with the intervention.

The endpoints for the utilization analysis were ED or inpatient visits that were captured by the Health New England (HNE) insurance database. Included in the database were ED and inpatient visits to Baystate Health facilities or to non-Baystate facilities that were captured by HNE. Outpatient visits were excluded from these analyses. SHHAP recorded the following metrics for both the intervention and the comparison groups:

- All visits: All ED or inpatient visits by study participants, regardless of reason
- ED visits: All ED visits by study participants, regardless of reason
- Inpatient visits: All inpatient visits by study participants, regardless of reason
- Asthma visits: All visits by study participants where asthma or respiratory distress was the primary diagnosis, either ED or inpatient

The intended analysis for the utilization measures was a univariate approach comparing the intervention and comparison groups using t-tests for continuous data and Fisher's exact test or chi-square for categorical variables.

Patient Experience

Participant satisfaction was measured using a survey containing questions from the Consumer Assessment of Healthcare Providers and Systems (CAHPS) patient experience survey. At the last visit, participants were provided with a paper copy of the survey and an envelope to return the survey to the program upon completion. The survey asked if the participant agreed that the program staff explained things in a way the participant understood, listened to them, and treated them with respect/courtesy. Participants were asked to rate their experiences with CHWs and Revitalize CDC staff separately.

FINDINGS

Demographics

Exhibit 2 shows the distributions of individual characteristics for the study sample. Demographic characteristics were similar across the comparison groups. The study sample was predominantly Latino (75.6%), with substantially fewer Black (14.6%) and White (7.6%) participants. This distribution was expected given the demographics of the overall Springfield population and the relative rates of ED visits and hospitalizations for asthma in the area.[15,16]

Exhibit 2. Participant Demographics

CHARACTERISTICS	TOTAL	COMPARISON	INTERVENTION		P-VALUE
	(N = 397)	(N = 86)	NEGATIVE (N = 239)	POSITIVE (N = 72)	
AGE AT ENROLLMENT, MEAN (SD)	22.3 (19.7)	21.3 (20.1)	21.7 (19.4)	25.5 (20.2)	0.31
AGE CATEGORY, N (%)					0.56
≤18	215 (54.2)	49 (57.0)	131 (54.8)	35 (48.6)	
18+	182 (45.8)	37 (43.0)	108 (45.2)	37 (51.4)	
SEX, N (%)					0.27
Female	217 (54.7)	43 (50.0)	129 (54.0)	45 (62.5)	
Male	180 (45.3)	43 (50.0)	110 (46.0)	27 (37.5)	
RACE, N (%)					0.89
Hispanic	300 (75.6)	68 (79.1)	174 (72.8)	58 (80.6)	
Black	58 (14.6)	11 (12.8)	39 (16.3)	8 (11.1)	
White	30 (7.6)	5 (5.8)	20 (8.4)	5 (6.9)	
Asian/Other/Unknown	9 (2.3)	2 (2.3)	6 (2.5)	1 (1.4)	

Intermediate Measures (Health-related needs)

The intermediate outcome measures included asthma control as measured by ACT test scores, self-efficacy in managing asthma symptoms, and quality of life measures.

Asthma Control

There was a statistically significant increase in the ACT score (an improvement) among all participants, from a mean of 14.71 to 18.89 (p-value=<0.001). This increase was greater than the three-point increase that is considered clinically significant.[13] There was a 5.23-point increase in the mean among children (p-value=<0.001) and 3.12-point increase in the mean among adults (p-value= 0.02) (see **Exhibit 3**).

These changes observed in ACT scores suggest that more people had better control of their asthma by the end of the program. Among the participants who had uncontrolled asthma at the first visit, 66% had controlled asthma at the final visit. Of children with uncontrolled asthma at the first visit, 82% moved into the "controlled asthma" group by the final visit, and among adults, 54% had brought their asthma symptoms under control by their last visit.

Exhibit 3. Asthma Control Test Scores

	ALL PARTICIPANTS (N=40)		ADULTS (N=22)		CHILDREN (N=18)	
	First Visit	Final Visit	First Visit	Final Visit	First Visit	Final Visit
% Not controlled	79	30	93	47	67	15
Mean score	14.71	18.89	13.00	16.12	16.27	21.50
(95% CI)	(13.37, 16.06)	(17.29, 20.48)	(11.48, 14.52)	(13.76, 18.47)	(14.18, 18.36)	(20.07, 22.93)
Median score	14	19	13	17	16	21.5
Response Rate (%)	100	100	100	100	100	100

Self-efficacy and Quality-of-Life Measures

For all participants, there was a positive difference in self-efficacy between the first visit and the final visit (mean self-efficacy scores were 39.46 and 41.78, respectively; p-value: 0.077). This difference was observed in both children and adults (adult mean self-efficacy scores were 37.54 and 39.35, respectively; children mean self-efficacy scores were 42.73 and 44.22, respectively). The quality-of-life measure trended towards improvement, but the difference was not statistically significant (mean quality-of-life scores among all participants were 51.01 and 50.14, respectively). The staff started collecting the quality-of-life data at the beginning of the program and started collecting the self-efficacy data later in the program, resulting in fewer observations on self-efficacy.

Utilization

Due to shelter-in-place orders and restrictions on health care services during the Covid-19 pandemic, there was substantially reduced health care utilization across the state. While a reduction in overall all-cause ED and inpatient utilization was seen among participants in this initiative, the utilization effects of the pandemic likely confound the results, and thus the change cannot be attributed to the intervention.

Patient Experience

The patient experience survey asked several questions about their experience with program staff, including if they were treated with respect and courtesy and gave clear explanations on an agree/disagree scale. The questions were asked separately about CHWs and Revitalize CDC staff. Participants (n=32) gave an average score of 11.75 on a 12-point scale for both CHWs and Revitalize CDC staff. All but one participant indicated they would recommend the service.

Examples of feedback included:

- "CHW was very respectful, very clear about her job and helped [my child] use her spacer properly all the time."
- "I have felt good about all the help I have received. I have been treated with respect. Thank you for your help. I hope that the program helps other families."
- "I liked it a lot because there were things I did not know with regards to the inhaler and now I manage it better without the need to go to the ER. I also know what to do in case of an emergency before having to go to the hospital."

Six participants suggested a program improvement, requesting services for other family members in the same household, which the team tried to accommodate within budget constraints. Two participants suggested better communication was needed.

LIMITATIONS

The SHHAP team identified three major limitations for this program: the timing of follow-up, the inability to accurately track attrition, and limitations to stratification for analysis.

First, the timing of follow-up was influenced by the state's response to the Covid-19 pandemic. The state's shelter-in-place policy and restriction on hospital services decreased all health care utilization during the study period. Completion of enrollment into the comparison group in the Fall of 2019 meant that the entire comparison group had full and unrestricted access to health care facilities for at least 5 months prior to the onset of the pandemic, and implementation of shelter-in-place and hospital service restriction policies in Massachusetts. Conversely, enrollment into the two intervention groups continued through September of 2020. Consequently, a larger proportion of intervention participants were enrolled and followed during the pandemic period. This difference in the study groups in the proportion of participants followed and timing of follow-up likely has a significant effect on the estimates of utilization. Due to the shelter-in-place policy and hospital services restriction, as well as general impacts of the pandemic on utilization, it cannot be determined if the decrease in utilization was due to improved asthma status attributable to the program or from the pandemic.

Second, the program was limited in its ability to track attrition. For the current project, there was only active follow-up for the positive intervention group. For the control and negative intervention, there was no planned follow up. The inability to undertake active follow-up had at least two consequences that affected results. First, extended periods where no services were used may indicate that either the person did not require services or was no longer enrolled in the BeHealthy ACO as the program did not track ACO enrollment for control and negative intervention groups. Second, the differential follow-up and contact with participants (i.e., participants in the positive intervention group maintained contact, while participants in the other study groups did not), may lead to substantial information bias. The differential follow-up and information bias likely contribute to the group effects seen in the study results.

Finally, due to implementation changes to the program and the nature of the enrolled population, there were limitations to stratification for analysis. Ideally, the sample size would be large enough to support analysis by characteristics such as tier of intervention, timing of entry into intervention (e.g., before and after start of pandemic or changes in target population) and demographics. There was no clear delineation between the participants that received Tier 1 versus Tier 2 intervention—all participants, by definition, received Tier 1 whereas 77% received Tier 2. There was tremendous variation in what Tier 2 intervention entailed, thus there was not obvious sub-categorization within Tier 2 which could create meaningful comparison. Furthermore, the tier of intervention a participant received was related to the timing of their participation relative pandemic, and as a result there was no way to distinguish between the effect of the pandemic versus the tier of the intervention received.

Stratification by race/ethnicity would have produced very unbalanced groups resulting in such small samples of Black non-Hispanic and White participants that the evaluators could not have made statistical inferences about differences between groups. The unbalanced nature of the sample reflects the demographics of the population targeted by the projects—those with ED visits and hospitalizations for asthma in Springfield.

SUSTAINABILITY

The work of the SHHAP will continue in the region in a variety of ways through the funding of the BeHealthy Partnership's Flexible Services program as a MassHealth ACO and through Revitalize CDC's ongoing Healthy Homes Asthma programming, which now includes the cities of Holyoke and Springfield.

As a MassHealth ACO, the BeHealthy Partnership was able to incorporate the Healthy Homes Asthma Program approach into its Flex Services contracts by contracting with Revitalize CDC to provide services to BeHealthy ACO members with asthma identified as high risk, without the requirement of an asthma-related ED or inpatient visit. The Flexible Services program[v] is a component of MassHealth ACOs that allows for funding for nutritional or housing supports to ACO members through the federal Delivery System Reform Incentive Payment program. Since the SHHAP team found that the vast majority of ACO members are renters and that their project had difficulty getting interest from renting participants and/or landlord approval, the Flex Services primarily addressed the immediate needs of members by providing supplies (e.g., air purifiers, mattress/pillow protectors, etc.) that do not require permission of the property owner and that could be used if the ACO members move to another residence. However, the design of the program also allows for some minor repairs to be completed when possible. Several of the BeHealthy Partnership ACO health centers have set up asthma clinics to address asthma education, including trainings for their CHWs on asthma home visiting and a training on virtual home assessments by Revitalize CDC. In addition, Revitalize CDC has contracted with two additional ACOs as part of the Flex Services program and is in discussion with another ACO.

Revitalize CDC is expanding their work to encompass home health education by hiring and training staff to handle the resident education that was previously conducted by the BPR CHWs. These staff are seeking CHW certification and training on the asthma CHW intervention using the Massachusetts DPH training modules. Revitalize CDC is also collaborating with other healthcare entities including Holyoke Medical Center to provide home assessment and repair in collaboration with their existing CHW staff.

BOSTON MEDICAL CENTER

AWARDEE OVERVIEW

Boston Medical Center (BMC), designed an enhanced care model, THRIVE+, to address health-related social needs (HRSNs) for Boston Accountable Care Organization (BACO) members with high acute care utilization. In THRIVE+, experienced pharmacy liaisons (i.e., pharmacy technicians with at least a high school degree and four years of experience) were trained to navigate patients to resources in the community to address their HRSNs and also provided support with medication adherence as in BMC's existing pharmacy liaison program. This model built on BMC's usual care model for HRSNs, wherein patients were screened during health care encounters and provided paper guides to community resources they could access. The hypothesis in building on the existing care models to create the THRIVE+ intervention was that combining HRSN screening, pharmacy support services, and patient navigation in one staff person would position patients to better manage their social needs and chronic conditions and avoid acute care utilization.

Target population: General Internal Medicine clinic patients who were age 18–64 and within the 3rd to 10th percentile for health care utilization and spending among Medicaid Accountable Care Organization (ACO) members at the time of enrollment into the pharmacy program.

Health-related needs of focus: Increasing housing stability, food security, access to transportation for medical appointments, access to appropriate care for family members, access to employment and education, ability to pay for utilities, and affording medications.

v MassHealth Accountable Care Organization Flexible Services. Accessed at: https://www.mass.gov/doc/flexible-services-program-summary/download

IMPLEMENTATION

PARTICIPANT IDENTIFICATION AND ENGAGEMENT

BMC used a risk stratification score that included demographics, health care utilization, medications, adjusted clinical group scores, fragility index, and other domains to identify eligible patients. Patients in the top 1-2% of health care utilization were excluded, as they were eligible for or were receiving services from a more intensive ACO care management program. BMC staff approached potential patients for enrollment before or after their clinic visits. If the patient had not received an HRSN screening in the prior three months, they were screened at intake.

Once enrolled in the program, the pharmacy liaison-patient navigators (PLPNs), systematically screened enrolled THRIVE+ patients for HRSNs every three months, conducted monthly telephone check-ins with patients, and interfaced with BMC's partner community organization, Action for Boston Community Development (ABCD), to coordinate the receipt of resources and services for their patients. The PLPN also provided patient education, assisted with appointment making and reminders, and offered social support, as well as transportation, interpreter, and childcare services to support patients in accessing health care and connecting with resources to mitigate HRSNs. The PLPNs' trainings, particularly in motivational interviewingand patient navigation, equipped them to respond to patients' needs in a non-judgmental manner and build rapport over the course of the implementation period.

Developing relationships with patients required patience and an understanding that trust would be gained slowly. Patients reported that they appreciated opportunities to interact with their PLPN via telephone and text during flexible hours, as this was most convenient; this flexibility was only available for THRIVE+ patients.

Enrollment and engagement challenges and responses

The PLPNs encountered two main barriers to engaging with patients for enrollment. The pool of eligible patients the PLPNs could target on any given day was limited by high no-show rates for appointments, patients and providers running behind schedule, and other clinical workflow constraints. Although THRIVE+ communication occurred primarily over the phone, the PLPNs initially had difficulty connecting with patients who did not return calls, texts, or voicemails, particularly during normal business hours. BMC allowed the PLPNs to work more flexible hours in response, which meant they could call or text patients when most convenient for patients and call patients multiple times a month. PLPNs in the THRIVE+ program spoke English, Haitian Creole, and Vietnamese. When patients spoke a language the PLPNs did not speak, the team would utilize hospital interpreter services.

BMC staff also faced challenges with engagement when they found that patients were already receiving resources or services from other programs, but in some cases, those supports were not fully meeting their needs. Waitlists and delays in processing referrals to services, which were outside of the program's control, often meant patients were waiting to receive services and there was little the PLPN could do to offer additional assistance. In some cases, it was difficult to keep patients engaged and continue to monitor them once they had received all the assistance that the program staff could offer. This was most often true for services to address housing concerns. The team also found that homelessness, inconsistent telephone access, and lengthiness of phone calls were barriers to consistent communication. PLPNs also found they often had to rely on patients self-reporting on HRSNs support received, as there was no systematic way of tracking patient engagement with resources at organizations outside the hospital or ABCD.

STAFFING

The SHIFT-Care Challenge award funded two PLPNs and a program manager as well as supervisory staff focused on implementation and evaluation staff at BMC, as well as ahalf-time program liaison at ABCD. The PLPNs regularly communicated with an experienced social worker to discuss challenging cases, identify resources, and provide opportunities to practice motivational interviewing skills. BMC research staff partnered with pharmacy staff and clinical data warehouse staff to identify eligible patients. BMC also used SHIFT-Care Challenge funds to subcontract with a data coordinating center to conduct the study data analysis.

THRIVE+ PLPNs received traditional BMC pharmacy-focused onboarding and additional trainings in social determinants of health, motivational interviewing, patient navigation, and screening for and addressing HRSN. However, the THRIVE+ program was implemented at a time when hospital patient navigation services were being reduced across BMC. Limited access to experienced navigators meant that PLPNs had to develop their own protocols for screening and referrals. In many

cases, the PLPNs were able to find flexible solutions to accommodate the difficulties patients encountered with managing their health care and HRSNs, including setting up appointment reminders, connecting patients to medication delivery services, and ensuring access to translation services. The PLPNs regularly communicated with an experienced social worker to discuss challenging cases, identify resources, and provide opportunities to practice motivational interviewing skills. Program staff noted that additional training and shadowing opportunities for the PLPNs would have facilitated faster identification of resources with capacity to meet patient needs and more effective navigation of resources with varying eligibility and documentation requirements.

While the PLPNs handled smaller patient caseloads than typical pharmacy liaisons, program staff originally envisioned a more efficient referral pipeline than was realized during implementation. One reason for the inefficiency was the limited capacity of the SHIFT-Care Challenge-funded case manager at BMC's community partner ABCD. The role had been intended to streamline the connection between the health care and social care systems, but there was a great deal of complexity to managing the needs of the THRIVE+ program within the allotted hours. In addition, the ABCD liaison had limited ability to impact program wait times and resource constraints. Program staff recommended more comprehensive assessments of community partners' ability to meet patients' HRSNs prior to implementation and strategic thinking around the limitations of existing resources and systems for meeting patient social needs.

PARTNERS

BMC partnered with ABCD to connect patients to community-based resources such as housing and food services. ABCD is a non-profit human services agency that provides low-income residents in the Greater Boston region with the tools and resources needed to transition from poverty to stability.

Though BMC and ABCD have a long-standing relationship, the THRIVE+ program was the first time that ABCD had dedicated staff to advocate for the particular patient population of THRIVE+ who were referred to its network of services. The goal was to have the PLPNs work directly with an ABCD staff member who would help coordinate referrals, connect patients to resources, and track receipt of services. However, BMC found that operationalizing and streamlining the new system of communication and referrals with ABCD presented several challenges. In THRIVE+, the PLPNs initially contacted ABCD and requested that ABCD reach out to patients directly, as the patients themselves were not reaching out to ABCD and often needed to be contacted multiple times (or did not respond at all). Prior to the Covid-19 pandemic, ABCD required referred patients to attend an in-person intake at an ABCD service center before services were provided; ABCD experienced challenges getting patients to attend this intake appointment as well as challenges to produce any documentation as programs required. The teams worked to improve the referral process by having three-way calls among the pharmacy liaison, patient, and ABCD contact. They found these adaptations helpful for a relatively small population but stated that such adaptations would not be feasible for a larger patient caseload. While the PLPNs were often able to connect patients to ABCD to meet their HRSNs, the PLPNs found they sometimes needed processes in place to liaise directly with organizations. These operational hurdles demonstrated the importance of adequately assessing community partner capacity to not only receive referrals, but also to ensure connection to resources. It also revealed the importance of expectation setting around constraints in resources to mitigate HRSNs.

BMC's program leadership and PLPNs met with ABCD's leadership and project liaison in bi-weekly project management calls and case conferences. As needed, the teams also held quarterly in-person meetings (pre-pandemic) with all members of both teams. There was consistent contact and communication between the PLPNs and the ABCD project liaison. One strategy PLPNs used to expedite patient referral to services was to encourage the ABCD liaison to focus on resolving the patient's highest/most immediate need first before attempting to conduct a comprehensive assessment to identify all services for which the patient may be eligible.

Consistent communication facilitated warm hand-offs from the PLPNs to ABCD, but together they still had to establish work-arounds and temporary fixes for dealing with the lack of availability of services and complex eligibility requirements. These complex requirements and waitlists, particularly for state and federally funded programs, slowed connections to resources. These program requirements also took time to navigate for patients and staff and often required patients to present new or duplicative documentation or complete additional forms for each new program or resource they required. Coordination between BMC and ABCD seemed to work best when referring patients to food banks and food delivery services, given the large number of organizations in the region providing these services.

IMPACT OF COVID-19

THRIVE+ completed enrollment procedures prior to the onset of the pandemic, after which the PLPNs continued to offer their services via telephone when the hospital restricted in-person services. The PLPNs leveraged the rapport they had built with patients to check in with patients informally to alleviate concerns about pandemic safety and food insecurity. ABCD had to close 50% of their neighborhood centers and reduce service hours during the pandemic; other community resource providers temporarily closed, and eligibility requirements for other resources had changed, limiting access to resources to address HRSNs.

From March to September 2020, hospital-wide HRSN screening rates dropped from 80% to 40% of patients, mostly due to workflow changes as primary care visits transitioned to telehealth. The lack of routine service operations among community organizations providing support for HRSNs made the PLPNs uncomfortable with screening THRIVE+ patients for HRSNs for which they might not be able to provide support. Changes in provision of resources and discomfort with formal screening was a frequent discussion topic in bi-weekly case consult meetings between the PLPNs and evaluation staff.

Collection and analysis of the proportion of days covered (PDC) metric, normally conducted by the clinical pharmacy program, could not be performed when their efforts were shifted to the Covid-19 response. In addition, in March 2020, BMC placed an institutional pause on research activities, which delayed administration of patient satisfaction questionnaires from six months post-enrollment to after the implementation period ended. As this was more than 12 months post-enrollment for most patients, it was challenging to engage them in the survey.

In late 2020, ABCD received federal Coronavirus Aid, Relief, and Economic Security Act funding which enabled ABCD to make more services available to THRIVE+ patients and added flexibility to provide resources and support to patients affected financially by the Covid-19 pandemic. As a result of these additional funds ABCD could, for example, provide support for all utilities whereas previously it was only able to assist patients in paying for heat. This new funding also enabled ABCD to provide patients with unrestricted funds for various needs, so long as the need was in some way exacerbated by the pandemic. For example, ABCD provided patients with funds for rent support to ensure housing and car repairs to ensure reliable transportation to employment. Both BMC and ABCD launched food delivery services that delivered groceries directly to patients. In November 2020, in response to the Covid-19 pandemic, BMC implemented a Covid-19 related patient resource guide that identified ABCD as a primary BMC partner.

IMPACT

METHODS

Overall Approach

The key evaluation question was whether the THRIVE+ model was superior to the usual care model in the BMC clinics targeted for the intervention. The THRIVE+ model consisted of more intensive screening for and addressing of HRSNs whereas the usual care model involved periodic screening and referral to address HRSNs.

BMC's program evaluation design assessed differences in hospital and emergency department utilization by comparing an intervention group (those assigned to enroll in THRIVE+) and a control group (those assigned to receive the usual standard of care) to which patients were assigned in a quasi-randomized method. The usual standard of care at BMC included periodic screenings with the THRIVE tool and patient navigation as needed. All those assigned to THRIVE+ were included in the group for evaluation, regardless of the level of engagement with the intervention, an intent-to-treat approach. Data was collected on both groups and compared to assess the impact of the THRIVE+ model.

Demographics

Demographic and population characteristic data were collected from the BMC electronic medical record (EMR) system for both the intervention and control groups. The demographic information included age, gender, race/ethnicity, and language. Characteristics recorded included education level, employment status, and total household income.

Intermediate Measures (Health-related social needs)

THRIVE screening results were also collected from the BMC EMR system. The THRIVE screening tool is designed to identify eight potentially unmet HRSNs directly associated with health outcomes and health care utilization: homelessness, housing

insecurity, food insecurity, inability to afford medications, access to transportation for medical appointments, utilities, childcare, care for an elderly or disabled person, employment, and educational needs. If at enrollment in THRIVE+, the patient had not received THRIVE screening in the prior 90 days, the screener was administered. After the initial 30–45-day engagement period in the THRIVE+ program, the PLPNs would re-administer the screener every three months until the patient reached one year of engagement in the program. Data on patient receipt of social services were collected via patient self-report or PLPN report. Data on THRIVE+ patient receipt of services through ABCD were shared between ABCD and BMC via the Box.com HIPAA-compliant cloud storage system.

Utilization

BMC used data from its electronic data warehouse to measure utilization. Utilization measures used in their primary analysis included all-cause hospital admissions and all-cause emergency department (ED) visits during the 12-month implementation period. Secondary outcomes included all-cause 30-day hospital readmissions and 30-day ED revisit rates.

BMC's program used a concurrent control group rather than a comparison of the intervention data to historical data. By using a control group, BMC aimed to mitigate the threat of a potential regression to the mean in two ways: first, by distributing the patients who are exposed to potential confounders across both study arms (usual care vs. enhanced care groups); and second, by comparing the effectiveness of two plausible intervention models (usual care and THRIVE+) and the control incorporated any complementary efforts into the study design and answered the pragmatic question of whether THRIVE+ produces better outcomes.

The team also noted in retrospect that using a concurrent control group helped with interpretation of utilization data in light of Covid-19. They posited that both the control and intervention groups would be equally affected by the utilization impacts of the pandemic.

Patient Experience

BMC used the Client Satisfaction Questionnaire (CSQ-8), a well-studied measure of patients' perceptions of the value of services received, to determine patient satisfaction for both the intervention and usual care groups. In addition, seven yes/no questions assessed whether the pharmacy liaison with whom the patient worked effectively assisted the patient in accessing resources to address HRSN, and eight open-response questions assessed the patient's interactions with their PLPN and effectiveness of the PLPNs in addressing the patient's needs. The intention was to administer surveys at six months post-enrollment. As noted above, a pandemic pause in research activities at BMC resulted in the patient experience surveys being delayed and administered instead between March and July 2021, by phone.

FINDINGS

Demographics

The mean age of THRIVE+ patients was 49.4. THRIVE+ patients were 57.1% women (n=182), 19.8% Non-Hispanic White, 57.7% non-Hispanic Black, and 9.9% Hispanic patients of any race. THRIVE+ patients were 86.8% English-speaking. Demographic compositions of THRIVE+ and usual care arms were not statistically significantly different except for a higher proportion of English-speaking patients versus non-English speaking patients in THRIVE+.

Additional social and demographic characteristics are displayed in **Exhibit 4**.

Exhibit 4. Participant Demographics and Characteristics by Treatment Group[a]

CHARACTERISTIC	NO. (%) ALL (N=364)	USUAL CARE (N=182)	THRIVE+ (N=182)	P VALUE
SOCIODEMOGRAPHIC				
Age at enrollment, mean (SD), years	50.1 (10.1)	50.7 (9.8)	49.4 (10.4)	0.25
Gender, women	216 (59.3)	112 (61.5)	104 (57.1)	0.39
Race[b]				
Non-Hispanic White	68 (18.7)	32 (17.6)	36 (19.8)	0.95
Non-Hispanic Black	214 (58.8)	109 (59.9)	105 (57.7)	
Hispanic (any race)	35 (9.6)	17 (9.3)	18 (9.9)	
Another race	47 (12.9)	24 (13.2)	23 (12.6)	
Language				
English	300 (82.4)	142 (78.0)	158 (86.8)	0.028[c]
Spanish	36 (9.9)	22 (12.1)	14 (7.7)	
Haitian Creole	9 (2.5)	4 (2.2)	5 (2.7)	
Other	19 (5.2)	14 (7.7)	5 (2.7)	
HEALTH-RELATED SOCIAL NEEDS				
Screened in 12 months prior to study enrollment	351 (96.4)	175 (96.2)	176 (96.7)	0.78
Health-related social needs screening results[d]				
Housing insecurity	40 (11.0)	17 (9.3)	23 (12.6)	0.06
Food insecurity	36 (9.9)	16 (8.8)	20 (11.0)	0.34
Trouble paying for medication	20 (5.5)	12 (6.6)	8 (4.4)	0.34
Trouble getting transportation to medical appointments	26 (7.1)	17 (9.3)	9 (4.9)	0.18
Trouble paying for utilities	19 (5.2)	10 (5.5)	9 (4.9)	0.56
Trouble taking care of child/family member	4 (1.1)	3 (1.6)	1 (0.5)	0.26
Unemployed, looking for job	19 (5.2)	12 (6.6)	7 (3.8)	0.31
Interested in more education	21 (5.8)	11 (6.0)	10 (5.5)	0.67
Received utility shut-off protection letter in past 12 months	22 (6.0)	13 (7.1)	9 (4.9)	0.38
Referred to hospital food pantry in past 12 months	70 (19.2)	25 (13.7)	45 (24.7)	0.008
Had at least one visit to hospital food pantry in past 12 months	58 (15.9)	22 (12.1)	36 (19.8)	0.045

[a] Study enrollment period was May 28, 2019 – March 5, 2020; all participants enrolled prior to hospital-instated COVID-19 pandemic research restrictions
[b] Race data were collected in the routine course of clinical care, through the patient portal, registration, and telephone encounters.
[c] p-value for English vs. Non-English language
[d] Health-related social needs screening result on most recent screen prior to or on the date of enrollment

Intermediate Measures (Health-related needs)

Much of the data collected for the intermediate measures were process measures (e.g., total number of patients connected to services, total number of patients that indicated they had a need, etc.). At six months post-enrollment, BMC found that in comparing the receipt of services from referrals to ABCD, between the usual care group and the THRIVE+group (for referrals to ABCD only), 7.1% of the usual care group received services compared to 5.5% of the intervention group. This may be accounted for by several reasons related to staff and resources in the primary care clinic for those in the usual care arm (see **Limitations**, below).

When 43 patients who responded to surveys at more than 12 months post-enrollment were asked whether their PLPN helped them connect with services corresponding to the seven categories of HRSNs, patients most frequently reported being

connected with transportation (30%) and food (28%) services. Housing proved to be a challenging need to address. The number of patients who reported receiving housing services is so low that BMC cannot publicly report it for privacy reasons, while 37% were not connected to housing services and 60% reported that housing services were not applicable. Over 70% of respondents indicated that services in the remaining four categories (paying utility bills, education, employment, and childcare) were not applicable to them.[17]

Utilization

The primary utilization analysis used an intent-to-treat approach and included covariates determined a priori as important predictors of health care utilization. The BMC team found that hospital inpatient and ED utilization decreased in both the THRIVE+ and usual care group. In the usual care group 71%, or 129 out of 182 patients, had at least one inpatient hospital admission or ED visit in the baseline period, compared to 65%, or 118 out of 182 patients, in the 12 months following enrollment. In the THRIVE+ group, 75%, or 136 out of 182 patients, had at least one inpatient hospital admission or ED visit in the baseline period, compared to 60%, or 110 out of 182 patients, in the 12 months following enrollment.[18] When controlling for baseline hospital admissions and ED visits in the year prior to enrollment, there was not a difference in the odds that a patient in the THRIVE+ would have any hospital admission or ED visit (adjusted odds ratio, 0.62 [95%CI, 0.23-1.62]; P = .32) compared to a patient in the usual care group in the year following enrollment. There was also no difference between the THRIVE+ and usual care group in the visit rates among those with any visit in the year following enrollment (adjusted rate ratio, 0.93 [95%CI, 0.71-1.22]; P = .62).

Patient Experience

A total of 43 participants in THRIVE+ (23.6% of those enrolled) and 26 individuals assigned to usual care (14.2% of those assigned) participated in the program's patient experience survey. The CSQ-8 has a range of 8-32 points with higher scores indicating higher satisfaction. Usual care patients had an average CSQ-8 score of 28.5 and THRIVE+ patients had an average score of 27.7, indicating a high level of satisfaction across comparison groups; the slight difference in scores between the two groups was not statistically significant, and may have resulted from the fact that the usual care group was smaller and thus the average may have been more susceptible to outliers. BMC did not find a significant association between patient satisfaction and any demographic or social factors in each of the two study arms, which suggests that study group assignment was not related to any difference in patient satisfaction.

LIMITATIONS

BMC identified several limitations to this evaluation related to potential for bias and low generalizability. Despite efforts to randomize patients into the usual care and THRIVE+ arms based on odd or even numbered medical record numbers, it is possible that there were unmeasured differences not accounted for in their utilization analysis that may have introduced bias. Considering that only 37% of eligible ACO patients participated in the program, their findings might not have been generalizable to all patients with high utilization and high cost from ACOs in safety-net institutions. Since recruitment took place around clinic visits, the patients included may only represent patients with few barriers to attending medical appointments, or who had high-frequency appointments. It is also possible that patients were more likely to participate if English was their primary language. It was also unclear to BMC how decreased utilization affected overall health outcomes.

The most notable limitation in this evaluation was that BMC could not track receipt of services when patients were referred outside of ABCD. It is therefore likely that BMC underreported the number of patients referred to services to address HRSNs, as well as those who actually received services. THRIVE+ PLPNs could have been deploying services directly to the patients or referring them to services outside of ABCD. The screening to referral to service connection pathway was not always linear, which meant that THRIVE+ participants could report connecting with a service without screening positive and/or without being formally referred. In addition, patients could be screened multiple times in any given quarter, sometimes with inconsistent screening results.

Another key limitation was that the usual care at these BMC primary care clinics included a resource guide that informed patients of ABCD services, and also included a pharmacy liaison and offered patients the option to see a clinic-based navigator, which meant some patients in the usual care arm received services with significant similarities to those in the THRIVE+ arm, including referral to ABCD. Such staff may not be available in most primary care settings, thereby limiting generalizability of their findings. However, the intervention may be particularly effective when implemented in clinics with fewer ancillary

staff. In addition, it was difficult to discern the relative contribution of the intervention components; the PLPNs were dually trained as patient navigators, received intensive training in motivational interviewing, and had smaller caseloads, but the impact of each individual component could not be measured.

Finally, there were several modifications to the evaluation from the original plan which may have affected findings. BMC was not able to assess medication adherence data due to pharmacy staff's shift to Covid-19 response and was only able to administer the CSQ-8 on average 18 months following patient enrollment. Patients may be subject to recall bias after such a long period of time, and this may have impacted reported receipt of services as well as perceptions.

SUSTAINABILITY

BMC did not perform a budget impact analysis given the lack of statistically significant reduction in ED and inpatient care utilization in the THRIVE+ group compared to the usual care group at either six or 12 months post-enrollment. PLPNs returned to their prior roles. Nevertheless, BMC pharmacy and project leadership staff found the program to be valuable. Lessons learned from THRIVE+ were informally disseminated by PLPNs to their fellow pharmacy liaisons and pharmacy leadership, and this informed the direction and scope of the pharmacy staff in providing additional patient support embedded within the existing medication adherence pharmacy program. BMC program staff expressed a desire to continue to have staff operating in the PLPN role and maintain BMC food pantry service and food delivery to patients with food insecurity. As food is one of the top needs endorsed by BMC primary care patients, food delivery from the BMC food pantry, ABCD, or other community partners was the service staff indicated they would most like to see continue beyond the SHIFT-Care Challenge program.

BMC's experience with THRIVE+ led to updates to their online HRSN resource platform to ensure ABCD offerings were accurately listed and led to the design and implementation of standardized processes for collaboration with community-based organizations. This includes introduction of communication through the online HRSN resource platform. Additionally, multiple projects and research studies testing improvements in addressing HRSN and connecting hospital patients to community-based organizations (CBOs) are underway, inspired by the THRIVE+ program. Finally, BMC continues to advocate for improved collaboration between the health and social service sectors, and to support CBOs and social services organization in advocating for policy change to simplify requirements and enable organizations to meet more patients' needs.

COMMUNITY CARE COOPERATIVE

AWARDEE OVERVIEW

Community Care Cooperative (C3), a MassHealth accountable care organization (ACO) led by community health centers, developed Healthy Connections, a community-based, integrated care management program for members with complex needs. The program supported frequent, intensive home and community-based visits utilizing community health workers (CHWs) under the supervision of a licensed social work care manager. C3 used Healthy Connections to enhance their care management offerings to ensure health-related social needs (HRSNs) and behavioral health needs were addressed, and to accommodate longer-term engagements with members than other C3 care management programs allowed. To do so, the Healthy Connections program deployed community health workers and care managers to work intensively with eligible members to identify and work towards their health-related goals, including addressing their medical, behavioral health, and social needs.

Target population: C3 members, including adults (ages 22+) and youth (ages 3-21), who were 1) eligible for other C3 care management programs but had never engaged with them or 2) had engaged with other C3 programs, but still had at least two inpatient admissions or four emergency department (ED) visits in one year.

Health-related needs of focus: Increasing financial security, food and nutritional security, educational access, stable housing, access to health care services, community and social connectedness, and access to human social services.[vi]

vi C3 drew inspiration for their health-related needs of focus from "Beyond Health Care: Teh Role of Social Determinants in Promoting Health and Health Equity" by Samantha Artiga and Elizabeth Hinton, published by the Kaiser Family Foundation.

IMPLEMENTATION

PARTICIPANT IDENTIFICATION AND ENGAGEMENT

Healthy Connections staff worked closely with existing C3 care management programs to identify and enroll members in Healthy Connections. Staff from the care management programs referred and provided contact information for eligible members who needed longer-term supports than existing care management programs could provide and, in some cases, arranged warm handoffs to the Healthy Connections team. Healthy Connections staff then called eligible members at least three times to enroll them in the program, emphasizing their connection to the members' health center and offering a no-cost, opt-in service to address members' social needs. Those who agreed to enroll in the program were screened for HRSNs, and the HRSNs of youth participants' families were also assessed.

To increase awareness of their services and increase referrals, the Healthy Connections team advertised extensively within the ACO, including with other care management teams and the health centers in which they were based. This communication was particularly important to ensure that members were not receiving duplicative services from Healthy Connections and other C3 care management programs (including care management programs funded through MassHealth's Delivery System Reform Incentive Payment program) at the same time. To that end, C3 created a committee, which developed workflows to ensure the members were placed in the appropriate care management program for their needs and to avoid duplicative enrollment.

Healthy Connections also received referrals for youth members with behavioral health needs who were involved or at risk of becoming involved with the juvenile justice system. CHWs worked with parents or guardians of these youth to enroll them in the program and involved their legal services partner, Health Law Advocates (HLA), in the case as needed.

Staff members—a community health worker (CHW) and a social worker or care manager—met enrolled participants in their homes or other community settings to conduct in-depth HRSN screenings and to discuss the goals they identified as the most important to them. The assigned CHW would then continue to regularly engage members via in-person meetings, phone calls, and text messages.

Enrollment and engagement challenges and responses

Through this process, the team identified several barriers to enrollment and engagement, including language and cultural differences between staff and members. Staff also observed the impact of the political environment on members' engagement with Healthy Connections, noting that immigrant populations were more reluctant to enroll with the program due to the Public Charge policy.[vii] Staff also faced more practical enrollment challenges like the inability of members to access phones or difficulty determining accurate contact information.

While they were persistent in their efforts to contact and enroll members (and offered any member who declined services the option to engage later), staff never pressured members to join the program. Instead, they approached members with a conversational tone, presented the services available, and emphasized the support they could provide. They stated their belief that this relationship-focused approach and voluntary participation was instrumental in their success in connecting with members who were otherwise challenging to engage. Staff also recognized that members' readiness for change was a major factor in their decision to engage.

STAFFING

The staffing model for Healthy Connections included six CHWs who worked with Healthy Connections members on a day-to-day basis. Most of the CHWs had experience working as CHWs for patients with medical or behavioral health needs, as well as experience identifying and connecting participants with social services and community-based providers. The team also included both a nurse care manager and a social work care manager for additional support for participants with more significant medical or behavioral health needs.

vii In August of 2019 the US Department of Homeland Security published an updated policy expanding the government services which might qualify an individual as "likely to become a public charge", a criterion which can be a reason for denial of Legal Permanent Resident status. See the following fact sheet for more information: https://www.kff.org/racial-equity-and-health-policy/fact-sheet/public-charge-policies-for-immigrants-implications-for-health-coverage/

CHWs were based in three geographic regions.[viii] CHWs spent time in their specific regions as a part of their training and orientation, identifying resources so they could understand the community and build their general knowledge. Each Healthy Connections CHW had a caseload target of approximately 25 participants at any given time. This ratio enabled CHWs to establish and cultivate trusting relationships with the participants they supported.

The program was not fully staffed until midway through the implementation period as a result of delays in hiring, but once fully staffed, Health Connections was able to serve a wider geographic range and offer more cultural and linguistic diversity among the staff. The Healthy Connections team worked collaboratively, often bringing in other staff to meet a member's language needs.

Staff focused on equity in their approach to working with participants and had frequent discussions about the effects of health inequities and marginalization on their participant populations. They also discussed the power dynamics in their work with participants, and how witnessing the challenges participants faced and inadequate resources to respond to them could lead to secondary trauma for staff. The strong team culture within Healthy Connections provided support to staff through their work and created an extremely collaborative approach to serving participants. This collaboration helped keep morale high. The experience of serving as a CHW in the program and making a tangible difference in members' lives was gratifying for staff, with some who had come from other fields expressing an interest in changing careers permanently.

PARTNERS

Healthy Connections was designed by and is operated in close collaboration with the Brookline Center for Community Mental Health (the Brookline Center) and HLA. C3 based the design of Healthy Connections on the Brookline Center's Healthy Lives program and HLA's Mental Health Advocacy Program for Kids and contracted with the Brookline Center to provide program development input, staff training, and case consultation services. In partnership with the Healthy Lives team, a two-day training plan was developed for the Healthy Connections team.[ix] The training was designed to equip the staff with skills specific to working with the Healthy Connections population and in a program focused on goal-oriented progress towards addressing HRSN needs.

HLA provided legal and navigational services for select youth participants in the program. HLA attorneys joined the care team for youth who needed intensive navigation and representation with social service and educational agencies. Initially, the Healthy Connections team struggled to fully integrate HLA's services and connect appropriate families with them, however, they worked to overcome this challenge in several ways. For example, a new CHW was brought in to provide weekend availability, which enabled families to meet with program staff and HLA attorneys at convenient times. Targeted searches of claims data also helped identify more youth for referral. Collaboration with HLA was an essential part of the program, but immigration concerns—which were common among program participants—were outside of HLA's purview, limiting the program's capacity to address one of their members' most pressing issues.Staff reflected that immigration was an area, along with housing, where they desired additional resources or partnerships to serve members.

Healthy Connections held bi-weekly meetings with partners and engaged with them in other ways between meetings. In addition to formal partnerships, C3 worked with a patient and family advisory council and shared community information and resources within the Healthy Connections team to stay connected to needs in the community.

IMPACT OF COVID-19

As a result of Covid-19, the community-based model of care transitioned to a remote model of care in March of 2020. CHWs followed the same workflows, however, the in-person sessions became telephonic. Healthy Connections did not see major demographic shifts in enrolled members during the pandemic, but after the program transitioned to a telephone-only program, the number of participants who enrolled increased. Healthy Connections staff hypothesized this increase reflected

viii Region 1: Central & Western Massachusetts. Served members from Hilltown CHC, CHC of Franklin County, Holyoke Health Center, Family Health Center of Worcester, and Edward M. Kennedy CHC; Region 2: Boston & North of Boston. Served members from Lynn CHC, North Shore Community Health, North End Waterfront Health, Fenway Health, and East Boston Neighborhood Health Center; Region 3: Boston and South of Boston. Served members from Charles River Community Health, Upham's Corner Health Center, The Dimock Center, Brockton Neighborhood Health Center, CHC of Cape Cod.

ix This training covereda number oftopics including: Understanding Issues of Health Equity; Cultural Sensitivity; Understanding Behavioral Health Complexities; Effective Communication with an emphasis on Clinical Language/Writing Skills; SDOH Resource Connection; Care Coordination, such as Strategies for/Barriers to Engagement, Working with Releases of Information and Collateral Supports, and Transitions of Care; Home Visiting/Safety; Working with Families; Discharge Planning.

several factors including increased demand as more acute social needs emerged during the pandemic (especially for food, housing, and employment), greater capacity for CHWs to do member outreach in a telephonic program, increased comfort for participants over the phone versus face-to-face, and easier access to members who were at home due to the public health emergency. Many participants who had initially declined services reconnected to the program in response to additional challenges such as lost income because of the pandemic. The partnership with HLA also provided key services during the pandemic, including informing staff and members about educational rights for children once schools transitioned to remote learning. The pandemic also had an impact on program staff as they had to rapidly transition to remote work, although regular meetings helped staff adjust to the shift to remote work. Some staff members experienced the impact of the pandemic more directly within their homes or families, which also had impacts on their work.

IMPACT

METHODS

Overall Approach

C3's evaluation design assessed both whether the Healthy Connections program produced a decline in acute care utilization and whether it delivered a quantifiable social return on investment (SROI). The SROI aspect of their evaluation was designed through a partnership with a team at Dartmouth College and evaluated by a team at the Institute for Community Health. C3 intended to use both a demographically matched comparison group of eligible individuals and a pre-post analysis of utilization measures, but in response to the effects of the pandemic only used the comparison group approach. Patient experience and intermediate measures were assessed solely for participants in Healthy Connections.

Demographics

Demographic and population characteristic data were collected from care management software in use by C3 for both intervention and comparison groups. They included age, gender, race, ethnicity, region/health center alignment, disability status, and clinical conditions/comorbidities.

Intermediate Measures (Health-related needs)

C3 adapted an initial and follow-up screening tool from the software platform Healthify to collect data from members to inform their intermediate measures, which were measures of the following HRSNs: housing stability, employment, food security, and access to transportation. This screening was administered to members at enrollment, and a follow-up version was administered quarterly during engagement and upon graduation from the program.

C3 used an SROI approach to assess the social impact of Healthy Connections. The Healthy Connections SROI tool examined outcomes for members enrolled in the program such as changes in employment, hunger, food stamp enrollment, days of school/work missed, and avoidance of emergency shelter use. By linking changes in these outcomes with financial values, the tool could begin to provide a rough estimate of the quantifiable social impact of the money invested in the program. C3 worked with Master of Health Care Delivery Science students at Dartmouth College to develop the SROI tool and with the Institute for Community Health to evaluate and assess the SROI tool.

Utilization

To measure the impact of the program on ED and inpatient utilization, staff collected data on visits and admissions rates, 30-day all-cause inpatient readmission rates, and 30-day all-cause ED revisit rates using administrative data from MassHealth for participants during the period they were enrolled in Healthy Connections. Baseline ED and inpatient utilization were determined using administrative claims data for the 12 months prior to each participant's enrollment in the program.

C3 compared performance on all utilization measures to a comparison group of members matched based on available demographics. This comparison cohort was eligible for Healthy Connections but did not participate in the intervention either because of caseload limitations for the program staff, being unable to be reached, or declining to participate. The intent was to conduct a comparison to baseline performance as well, but given the complications of accounting for reduced utilization due to the Covid-19 pandemic, the focus of the assessment was on the enrolled versus comparison cohorts. To test the efficacy of the intervention, a two-sided t-test was conducted on the 30-day all-cause ED revisit rate and 30-day all-cause inpatient readmission rate.

Patient Experience

C3 staff administered a participant experience survey to enrolled members at the end of their engagement with the program to assess their experience. The six-item survey was adapted from the Consumer Assessment of Healthcare Providers and Systems (CAHPS) "Willingness to Recommend" item and the CAHPS "Home and Community-Based Services Survey 1.0". This survey was administered to enrolled and graduated participants on a rolling basis starting in July 2020.

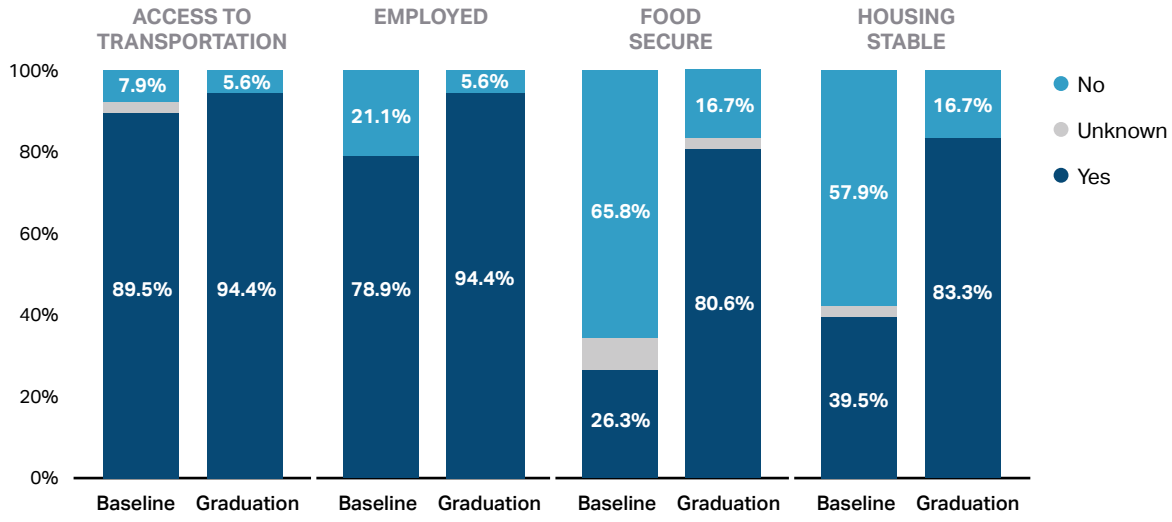
FINDINGS

Demographics

A total of 302 individuals enrolled in Healthy Connections. The participant population of Healthy Connections was 52.3% male. Youth members from ages 5-17 made up the largest portion of participants (n=118, 39.1%), with the second highest age bracket being those from ages 45-64 (n=62, 20.5%). The population was predominantly White (40%); 24.5% of participants were Black or African American, and 22.8% were of unknown race.

Intermediate Measures (Health-related needs)

Exhibit 5. C3 Intermediate Measures Tracking Baseline and Graduation HRSNs Results (n=36)



Overall, there was a positive change for all intermediate outcomes from baseline to graduation among those who completed a graduation survey. **Exhibit 5** shows the change in intermediary measures for the members who completed a graduation survey (n=36). Most significantly, there was a 54.3% increase in members with food security, with 80.6% of members reporting being food secure at graduation compared to 26.3% at baseline. Housing stability also improved by 43.8% percentage points from baseline to graduation for this population subset. The high level of lost to follow-up in the program limits the conclusions that can be drawn from HRSNs survey measures, given the resulting small n (only participants with an initial and graduation survey can be included in the analysis of change over time in HRSNs status), and the possibility that those with more improvements may also have been more likely to stay in the program.

The SROI tool looked at improvements in economic stability (employment status or decrease in missed days of work) and food security and found 21 individuals with improved employment status and 28 with improved food security at a follow-up survey compared to enrollment. Based on their financial calculations of the value of these changes, the tool measured an SROI for these impacts of over $250,000.

Utilization

The enrolled members had lower inpatient admission and ED visit rates per 1,000 than the control group. The inpatient admission and ED visits per 1,000 members were 804.4 and 2,460.6 respectively for enrolled members. In comparison, the rates were 1,220.5 and 4,321.1 respectively for the control group.

C3 performed a two-tailed t-test to determine whether there was a statistically significant difference in 30-day all-cause ED revisit and inpatient readmission rates between enrolled participants who had any index ED visit or inpatient admission

(n=108; 41, respectively) and members of the comparison group who had any index ED visit or inpatient admission (n=595; 325, respectively). The findings indicated that there was a slight difference in mean rate between the enrolled participants (mean rate ED revisits 25.0%; mean rate inpatient readmissions 17.6%) and the comparison group (mean rate ED revisits 30.0%; mean rate inpatient readmissions 26.3%) for both 30-day all-cause ED revisits and inpatient readmissions (5% and ~9%, respectively), but these data were not found to be statistically significant. There was higher variability within the data of the enrolled group for the 30-day all-cause ED revisit and inpatient readmission rates. The variability within this group in combination with the small number of participants may have contributed to the findings not being statistically significant. Forty-seven enrolled participants completed the program before the onset of the Covid-19 state of emergency (prior to March 13, 2020), and this group had an ED revisit rate which was considerably higher than the enrolled members whose enrolled span was either entirely during the pandemic restrictions or covered a time period both before and after March 13, 2020.

Patient Experience

Healthy Connections collected participant experience survey responses from 54% of enrolled participants (n=164). Overall, satisfaction was high, with over 90% of participants indicating that Healthy Connections staff "always" treated them with courtesy and respect, listened carefully, treated participants as they wanted to be treated, and explained things in a way that was easy to understand. These results indicate a very positive experience with the program.

LIMITATIONS

C3 experienced some challenges with aspects of their data collection and limitations in its analysis. When recording data, internet connectivity was sometimes challenging in the field. Some elements of the screening tools were not relevant for participants who were experiencing homelessness. The high number of participants who were lost to follow-up in the program limits the conclusions that can be drawn from HRSN survey measures, as noted above.Response bias may have affected these and the patient experience results.

Reductions in utilization were observed in all inpatient and ED settings due to the Covid-19 pandemic. This impacted the utilization data collected on the Healthy Connections enrolled member population, which was largely enrolled in the program in 2020. The overall small sample size of the enrollees further limits the conclusions that can be drawn from any observed changes in utilization.

The initial study design called for comparisons to both baseline and control to assess program performance against a targeted reduction in utilization and readmissions and revisits. However, given the pandemic-related reductions in utilization in 2020 across all services and populations, comparisons to baseline were confounded. As such, C3 focused its comparison to the control population which also experienced an impact from the pandemic.

The implementation of the survey was delayed due to operational challenges. This meant some participants were contacted for the survey after they had graduated from the program. The smaller proportion of respondents raises the possibility of response bias. In addition, some participants used language line services to complete the survey, which may have obscured results.

SUSTAINABILITY

There was strong alignment between the goals and values of C3 and the Healthy Connections program. This alignment and the benefits of the Healthy Connections program were well recognized by other staff within C3. Although the Healthy Connections program as a discrete initiative was discontinued at the end of the SHIFT-Care Challenge program, C3 applied much of the knowledge gained in the program to designing future care management programs. Based on what was learned about the value and capabilities of the CHW role within a care management program and the importance of addressing HRSNs and behavioral health conditions, C3 created a new, internal, and integrated care management program. All participants in this program are assigned a CHW, with caseload targets based on what was learned from Healthy Connections. CHWs now sit on an internal committee at C3 to improve primary care. Several of the CHWs on the Healthy Connections staff planned to continue to work at C3 and/or in the CHW field.

The design of the care model accentuated the importance and capabilities of CHWs, and the importance of addressing social needs along with medical and behavioral health needs. C3 expressed confidence that programs such as Healthy Connections would continue to inform future programming and would be especially successful in capitated models. C3's experience with the SHIFT-Care Challenge program had a significant impact on how they conceptualized their care management work and the importance of addressing HRSNs to ensure member engagement and success in managing medical and behavioral health needs.

HEBREW SENIORLIFE

AWARDEE OVERVIEW

Hebrew SeniorLife (HSL) describes its Right Care, Right Place, Right Time (R3) program as a "housing with services" model designed to serve residents of affordable senior housing communities, who tend to have significant needs for health and social support. R3, which was originally developed through an HPC Targeted Cost Challenge Investment award, placed teams of wellness coordinators (social workers) and nurses at seven housing sites. These wellness teams helped seniors manage their health careand address their health-related social needs. The specific services provided by R3 wellness teams varied by resident, but often included coordination of health care services, connection to social programs and other community resources, and routine check-in calls. A second phase, $R3^2$, began as part of the SHIFT-Care Challenge program in January 2019 and continued through September 2020.

$R3^2$ offered additional targeted interventions to enrolled residents who were identified by the team as being at high risk due to prior hospitalizations, emergency department (ED) trips, chronic medical conditions, falls, difficulties with medication adherence, cognitive decline, mental health concerns, and food insecurity.

Target population: The initiative served seniors, 62 years of age and older, living in seven affordable housing sites: HSL's Center Communities of Brookline (Cohen, Danesh, and Goldman Buildings) and Simon C. Fireman Community; Milton Residences for the Elderly (Unquity House and Winter Valley); and Winn Companies' The Village at Brookline.

Health-related needs of focus: Increasing food security, knowledge about nutrition and managing chronic health conditions, access to transportation, and access to support for mental health and cognition; decreasing ER and hospital risk.

IMPLEMENTATION

PARTICIPANT IDENTIFICATION AND ENGAGEMENT

Most residents who were a part of the R3 program continued with $R3^2$. Patient identification was straightforward for $R3^2$, as the wellness teams' presence on site and collaboration with housing staff allowed for easy identification of residents in need of the program's support. The three main pathways for patient identification/referral were by housing staff, resident self-referral, and community providers. Staff in all roles at the housing sites (maintenance, dining, reception) were charged with flagging unusual behaviors or changes in health status of residents. This 'eyes on' approach was key to the identification of potential participants and an important part of the care model. Review of daily ambulance reports, housing site incident reports and requests for help from residents were other ways the teams identified potential participants.

Housing site staff introduced new residents to the program shortly after they moved in, often with an $R3^2$ team member. In general, the $R3^2$ staff found that residents who self-referred were the most engaged. Encouragement from multiple people on the housing staff team or even family members helped prompt residents to enroll. The team also found that offering one small act of assistance to residents often started a productive conversation about ongoing supports. Most residents stayed in the program for the duration of $R3^2$.

Once residents were enrolled, the team performed comprehensive assessments, identified areas of risk in the areas of focus, and provided assistance to address these risks in several areas. This primarily involved coordination of health care services, including routine check-in calls with specific follow-up questions regarding medication adherence, changes in condition, and major events; transitions management and support when returning from a hospitalization; support and advocacy with issues such as insurance coverage and service approvals. In addition, the team supported the residents' individual health goals and priorities and connected them to wellness and social programs offered on site such as "What happens when you call 911" and "Brain Health". The team found small groups or informal activities better for encouraging participation than large group programming. Recognizing that many residents did not leave their homes often in winter due to fear of falls, staff developed many on-site activities that were open to all residents to prevent isolation.

Services were provided in the residents' apartments, in common areas of the housing sites, and over the phone. Each wellness team served three to four buildings. Once a resident joined $R3^2$, they typically remained enrolled and continued receiving services unless they moved out of the building or died. All staff at housing sites—not just the $R3^2$ coordinators and nurses—were trained in observing changes in residents and communicating them to the $R3^2$ team.

Enrollment and engagement challenges and responses

HSL faced challenges in enrolling residents who feared that accepting additional supports or participating in program assessments might reveal that they needed to transition out of independent living. Some were simply not ready to address behavioral health needs. Cultural customs and language barriers sometimes played a role in the reluctance or inability of residents to participate in certain services, particularly among those residents who had strong cultures of maintaining privacy and not discussing struggles (especially with mental health) outside of the family unit. Language barriers also created challenges for R3 staff in providing services. HSL tried to work through these barriers by hiring some additional staff familiar with residents' cultural backgrounds and languages and using the language abilities of existing staff to help increase language access to residents.

Because of the multitude of services available to all residents in HSL housing, it was sometimes challenging to explain to residents the additional value of R3^2 services beyond the services to which they already had access. Some residents expressed to the team that they were already receiving plenty of services through the housing site, and so were not interested in the more targeted supports offered by R3^2. Family members could sometimes be helpful in encouraging residents to enroll, though R3^2 staff frequently encountered family members who were not fully aware of the extent of their loved ones' needs for support services. The team also noted there were challenges in navigating the many overlapping systems of elder care and wished for better integration of the R3^2 program into these systems.

STAFFING

HSL's program staff consisted of two wellness teams, each composed of one wellness coordinator trained as a social worker and one registered nurse. One team served the Brookline buildings and the other served the buildings on the South Shore.

Like enrolled residents, staff transitioned seamlessly from R3 to R3^2, so they were already familiar with the goals of the program and well-trained. R3^2 required more individualized care and planning than the R3 protocol, and while this represented a shift for the staff from R3, they perceived deeper and more sustained impact from the new model. Team members collaborated to develop the new protocols for R3^2, including additional documentation and tracking of resident needs and connection to services. The team also called on existing staff within the HSL organization to provide specific interventions related to the needs and target areas of the program. This included physical and occupational therapists who provided expertise in balance and falls prevention, which was particularly valuable.

Housing staff who were not explicitly part of the R3 program were still given training so they could better understand the needs of residents and proactively notice and alert the program to residents' needs. R3 staff and leadership noticed a culture change among both residents and housing site staff as a result of the program, with residents more comfortable discussing their medical needs and staff more comfortable identifying issues and finding supports earlier, allowing preventive measures to be taken to keep residents in independent living.

PARTNERS

R3^2 forged several partnerships to address key areas of risk for residents (mental health, cognition, nutrition, food insecurity, transportation, ED/hospital) and to try to create a sustainable model for their program. Some of these were continuations from R3, while others were new.

Staff from HSL's Center for Memory Health attended monthly meetings with resident services staff in both regions and worked to integrate their services into the housing sites. HSL developed relationships with Community Servings and Eat Well Meal Kits to increase supports for residents who struggle with food insecurity and nutrition. Teams at the Brookline housing sites worked with the Brookline Center to add a second therapist to increase mental health support services. HSL implemented a partnership with Aspire Health to play a similar role at housing sites on the South Shore.

R3 partnered with EMS providers to collect daily transport data for participating buildings so they could follow up with residents who called 911. This significant partnership was the cornerstone of their ability to understand residents' needs and prevent future ED trips and hospitalizations—something that was critical to their goal of demonstrating return on investment. They communicated regularly with staff from Fallon Ambulance Services and the Randolph Fire Department to discuss resident needs and brainstorm creative ways to work together. Housing staff and R3^2 staff also met together to examine each ED trip closely and determine individualized ED prevention care plans for residents who had multiple trips.

As for partnerships with insurers to participate in the trial payments to fund program services, HSL settled contract terms with Tufts Health Plan and Commonwealth Care Alliance. They considered these some of their most important partnerships

given the goal to create a sustainable funding mechanism with resources leveraged from the health care system. HSL and the health plans created contract terms and scopes of work to meet their aligned goals, including items such as flu shot uptake, physician visits, and health care proxies for plan members.

HSL found that direct contact with a point person on staff at a partner organization—ideally one with some decision-making ability, flexibility and creativity, and experience working with seniors—were the keys to their most successful partnerships. R3^2 staff discussed data in weekly team meetings and regularly with housing staff to note trends and inform the implementation. The team stated that additional partnerships, specifically partnering with hospitals to facilitate data sharing—more health plans to provide funding, and pharmacy and transportation providers to support residents' needs—would have helped the program expand its capacity and impact.

IMPACT OF COVID-19

Covid-19 did not change the core components of HSL's care model. However, the pandemic had major effects on how the care model was delivered. HSL pivoted the program with the onset of the pandemic to focus on the safety of the entire HSL population and provide for their needs as they sheltered in place. Most work was done by phone, especially at the height of the crisis when most senior living communities were in lockdown. The onset of the pandemic led to many of the R3^2 program practices being extended to the entire HSL community.

The wellness teams also shifted the provision of their wellness/educational programs from in-person to paper, phone, and video conference. In several sites, staff generated weekly lists of video conference and phone activities—health-related, fun, cultural, and educational. Staff noted that in the beginning of the pandemic, conversations with residents shifted to a narrower focus of meeting basic needs—e.g., food, toilet paper, cleaning supplies—and then shifted again to addressing isolation and depression.

Some staff at HSL sites, including those from R3^2, were moved to remote work in the initial part of the pandemic. During that period, other staff on- and off-site stepped in to provide care, often going outside their normal duties, and ensured good communication between on- and off-site staff. HSL provided support to their staff during the pandemic, including meals, appreciation pay, and flexible and work from home opportunities where possible. Sessions and classes aimed at stress relief and emotional resilience were also offered to staff. In May and June, staff returned to the housing sites and typical program work.

R3^2 used partnerships during the pandemic to ensure safe care for residents. Using EMS transport data, they could perform contact tracing and help residents isolate after trips to the hospital. Through mental health partnerships, therapists saw residents over video, and local volunteers helped with social connection and deliveries. They made attempts to work with Aging Services Access Points (ASAPs) to reduce the volume of contacts and caregivers coming to residents, some of which resulted in modified practices.

R3^2 enabled an effective and positive response to the challenges presented by the pandemic—specifically, the teams already knew most residents, had established relationships with them, and knew family members who could be supportive and had ways to communicate with them. Thus, HSL could more easily identify high risk residents who needed assistance during this crisis. The wellness teams also helped other housing staff members with a process for managing calls to all residents and helped create a Covid-related call log. This coordination ensured good communication, helping on-site and remote teams to work together effectively. Similarly, the process that R3^2 established to manage emergency department trips proved useful to HSL during the pandemic, as systems were already in place for obtaining information from first responder partners, thus ensuring speedy follow-up for residents who might otherwise be alone in their apartments and in need of care. Once some routine health care services resumed, staff helped residents access telehealth.

HSL had planned their program to finish enrollment in March 2020; however, after expanding services to the entire HSL population due to the pandemic, they found some residents who had initially declined services were more eager to participate. The pandemic created new needs for those in R3^2 and in the HSL residences as a whole.

Some aspects of the R3^2 program had to be deferred, including data measurement. HSL was focused on the safety of the residents and providing for their immediate needs, and thus did not do as many assessments or as much data tracking as originally planned. The pandemic caused some delays in evaluation work. Transitioning to virtual focus groups delayed receipt of data related to partner and community stakeholder perceptions of the program and community stakeholders regarding scaling the model. Utilization data were also delayed. The transition to telephone check-ins due to the pandemic

limited the detail and quality of data R3² staff could collect from residents but did increase the communication from some family members sharing updates with the team. HSL staff anticipated that changes in ED/ambulance utilization due to the pandemic would appear in the program data.

IMPACT

METHODS

Overall Approach

HSL's evaluation objective was to determine the extent to which the R3² intervention had a positive impact on acute care utilization, participants' sense of well-being, and quality of life. HSL used a residential building-wide comparison group approach to assess impact on utilization, with a group of similar senior residences not implementing the R3² initiative used to compare against the residences implementing the program.

The main data collection tool was the Vitalize 360 instrument. This instrument collected information on residents' socio-demographic and health characteristics as well as on quality-of-life measures and was customized by HSL to collect other evaluation data as well. This instrument was completed at the outset of the program as well as within three months of program completion. In total there were 325 baseline assessments and 79% of those who completed an initial assessment completed a final assessment.

Demographics

As a part of the initial assessment conducted at enrollment in the program, HSL asked for the following demographic data from those in the participating buildings: date of birth, gender, race, ethnicity, primary language, marital status, and highest level of education. Answering any of the questions was optional; residents most commonly skipped the race and ethnicity questions. Demographic data was not collected for those in comparison buildings.

Intermediate Measures (Health-related needs)

HSL data measures focused on tracking the number of participants in the five risk domains, which were: mental health (requiring access to specialized services and supports), memory (requiring some level of ongoing supervision or care), nutrition (nutritional deficiencies and/or chronic medical conditions requiring food counseling), food insecurity (lack of sufficient food), and emergency department or inpatient hospitalizations (requiring a broad range of mitigation activities). Also tracked was the percentage of participants in the five risk domains whose needs were considered "addressed" by R3², typically once they had been connected to and fully engaged in appropriate services or resources. HSL used internal tracking spreadsheets as well as HPC data reporting spreadsheets to track this data.

Utilization

A pre- post experimental design with a comparison group was used to analyze the program's effect on the utilization measures of ED visit rate, inpatient admission rates and readmission rates, and ambulance transfers. Through the available Medicare data, HSL obtained data on the ED visit and inpatient hospitalization payments, as well as hospital observation visit rates and hospital length of stay. The comparison sample was developed in lieu of a pure control group, given the practical and financial difficulties of a randomized controlled trial. Comparison groups were drawn from housing sites not involved in the intervention.

Healthcentric Advisors, a local quality improvement organization (QIO), provided the team with aggregate building-level Medicare claims data (not R3² specific, as defined below). These data enabled comparison of building-level utilization statistics before and after R3² was launched for the intervention and comparison sites, serving as a primary source of hospitalization data and a secondary source for emergency department data. Medicare utilization data included information for two 18-month periods: (a) Pre-Intervention: July 1, 2017 to December 31, 2018 (original R3 program period) and (b) Intervention: January 1, 2019 to June 31, 2020 (R3² program period). The R3² intervention site buildings were evaluated against 1) the original five comparison buildings; 2) a comparison group comprising buildings that are known to have service coordinators, and 3) a group of buildings known not to have service coordinators. Like the intervention buildings, the original five comparison buildings had service coordinators onsite and offered programming. Detailed information on buildings in the other two comparison group are not available other than whether they did or did not have service coordinators. The analytic sample included: R3² Intervention (n= 618), Comparison 1 (n= 323), Comparison 2 (n= 1010), Comparison 3 (n= 214).

The emergency responder partners provided data on every ED trip for any resident living in an intervention site, which served as the primary source for the ED visit transfer rate measure. The data were analyzed at the building level—that is, average transfer rates per 100 residents in a given building. HSL's analysis of claims data focused on the difference-in-differences between pre- and post-R3² utilization trends in the intervention and comparison groups. They evaluated the magnitude of any differences in utilization across sites and whether they changed over time. Statistically significant utilization changes over time were attributed to the "R3² effect". Because data were only provided on an aggregate building-wide basis, they could only measure "R3² effects" among residents in an entire building, not among R3² participants only. They then used standard statistical tests (t-tests for the bivariate analyses and, for the regression analyses, ordinary least squares and logistic regressions) to determine whether any observed differences were statistically significant. They did not separate out the effect of Covid-19 since it was a system-wide effect that influenced utilization across all sites. The difference-in-differences method employed in the analysis controlled for the effect of Covid-19.

Patient Experience

To measure satisfaction with the program, HSL distributed a short survey to participants during the second and third quarters of 2019, added a set of common questions to the final Vitalize 360 assessments, and distributed a survey to non-participants in calendar year 2020 at the R3² sites to compare the experiences of R3² participants with other residents in R3² buildings and with residents in comparison buildings. The final dataset comprised survey responses from 120 R3² participants, survey responses from 73 non-participants, and completed assessments from 243 R3² participants and 97 residents of comparison buildings. Non-participants were residents at the interventions sites who did not participate in the R3² program.

FINDINGS

Demographics

Resident demographics varied by housing site. Overall, 1,100 seniors lived in the participating buildings, with an average age of 87, approximately 78% of whom were women, 24% of whom were people of color, and 16% of whom spoke a language other than English as their first language. All residents over 62 at the intervention sites were eligible to participate, regardless of insurance coverage, medical conditions, income, or service utilization. HSL recruited and enrolled 400 of these residents to be participants in the initiative, from 325 of whom they collected complete demographic information.

Exhibit 6: Participant Demographics and Characteristics by Treatment Group

CHARACTERISTIC	TREATMENT (N=325)	COMPARISON (N=158)
	Mean or %	Mean or %
Age	84.27	82.59
Female, %	80.00%	84.18%
Race, %		
Hispanic	1.26%	0.65%
American Indian or Alaskan Native	0.00%**	1.30%
Asian	3.47%**	0.00%
Black or African American	18.93%***	1.95%
White	76.34%***	96.10%
Marital Status [Single], %	38.99%	42.41%
Education, %		
Less than HS	8.70%	10.13%
HS Grad	21.74%***	37.97%
Tech or Trade School	5.90%	3.80%
Some College	25.16%	29.11%
Bachelors	15.84%	12.03%
Graduate Degree	22.67%***	6.96%

Note: ** Differences are statistically different at the .05 level.

*** Differences are statistically different at the .001 level.

Intermediate Measures (Health-related needs)

To assess the success of the R3² strategy, HSL tracked the percentage of residents in the five risk domains whose needs were addressed by the R3² program. They identified that at least 238 individuals needed mental health supports, 142 needed memory supports, 82 received regular check-ins due to concerns about emergency department and hospitalization risk, 102 needed nutrition counseling, and 50 needed food security supports. In total, among the population of R3² residents, the program identified 614 care gaps covering more than half of the total 400 participants. Many residents were at risk in multiple categories.

Their analysis indicated that across four of the five risk categories—mental health, memory, nutrition counseling, and food supports – the program connected residents to relevant services or addressed their needs at a rate greater than 90%.

Utilization

While some of the data collected was during a time period when the pandemic curtailed health care utilization, HSL's analysis design used contemporaneous comparison sites, which were also impacted by the pandemic.

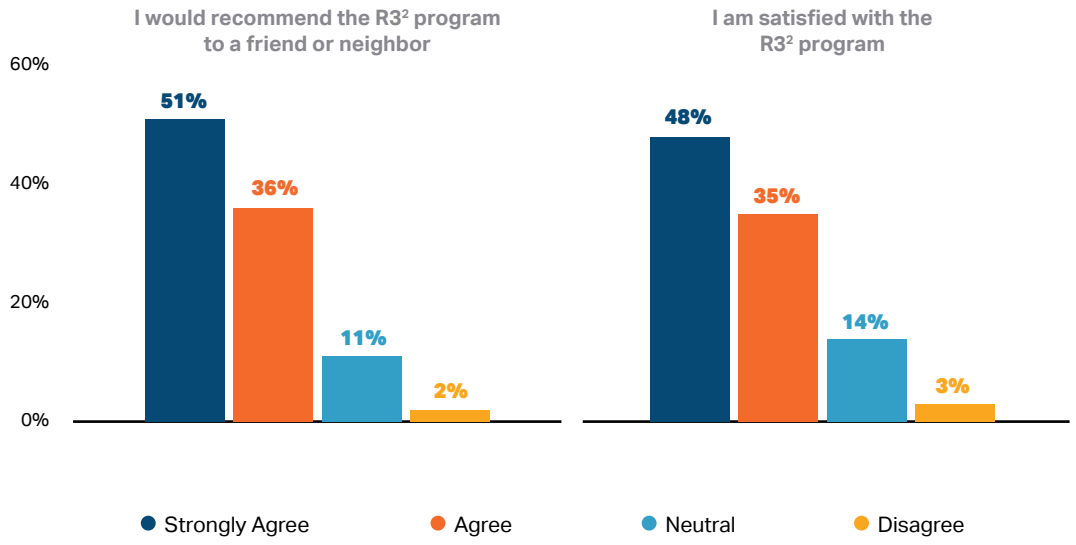
The R3² program had a strong and positive impact on inpatient hospitalization rates compared to comparison sites. The HSL team found a 16% decline in inpatient hospitalization rate among residents compared to a 6% increase at comparison sites, and a 12% decline in the average number of hospital days compared to a 14% increase. In addition, there was a 22% decline in 30-day hospital readmission rates compared to a 54% increase at comparison sites.

The HSL team found a significant change in ED visit rates when adjusting for the age difference between the intervention and non-intervention buildings, which was 4-5 years. When ED admission payments per beneficiary data was not adjusted for age, the team found that there was a decline in admissions payments (per beneficiary); but the decline was not statistically significant.

Patient Experience

HSL collected 120 surveys from residents regarding their experience with the program, asking them to agree or disagree with several statements about the program, staff, and services. Results demonstrate that a high percentage of individuals believe that they benefited from R3². Nine out of ten respondents trust that R3² staff would protect their privacy and virtually all respondents (97%) knew how to reach R3² staff had they needed them; most (85%) expressed the opinion that R3² was a good source of information and support. Moreover, approximately two-thirds expressed the opinion that the program had helped them to be healthier and feel less lonely; very few individuals (<5%) disagreed with these two statements. A number of residents (n=114) also responded to questions asking whether they were satisfied with the program and whether they would recommend it to a friend. Eighty-seven percent agreed or strongly agreed they would recommend the program and 83% agreed or strongly agreed they were satisfied with the program. Results are presented in **Exhibit 7**.

Exhibit 7: Measures of Satisfaction with Program (n=114)



LIMITATIONS

HSL did not encounter significant difficulties with data collection aside from the challenge of their tracking spreadsheets, which could not always capture the nuance of residents' participation with program services. Staff developed other ways to track case management data, which allowed for greater detail and nuance. HSL also captured metrics relevant to their health plan partners, including flu shots, falls prevention, and health care proxy forms.

Covid-19 influenced the evaluation in several ways. First, some assessments as well as interventions could not be performed in-person, but rather, could only be done telephonically. Additionally, certain R3^2 program components were implemented more generally with the HSL buildings such as the telephone calls and check-ins with all residents during this period.

The program evaluation involved several primary limitations. First, the inability to develop a more accurate comparison group and the wide variability in services and supports offered meant that not all of the difference in utilization could be attributed to R3^2. Second, the relatively high drop-off rate in both participant and comparison group members between the baseline and final assessments also posed a challenge and limited the ability to detect statistically significant differences in certain outcome metrics. Third, the fact that the team was only able to obtain aggregated Medicare claims data rather than individually linked data, limited the assessment as claims were only assessed by building, and thus in the R3^2 buildings included both enrolled and non-enrolled residents. This was yet another limiting factor in being able to see the effect of R3^2 as individuals receiving services could not be compared directly against those who did not. Finally, due to the relatively short term of both the program and the evaluation, there was extremely limited ability to capture potential impacts such as a reduction in falls risk or the use of nursing home care which are lower-incidence events than ED visits and hospitalizations.

SUSTAINABILITY

As previously noted, R3^2 built on both the success of the R3 model (for more, see the Targeted Cost Challenge Investments program evaluation report) and gaps in care identified by the R3 team. Implementing R3^2 through continued HPC funding allowed HSL the opportunity to test the enhanced model and continue their efforts towards solidifying a financially sustainable program. HSL focused on sustaining the R3^2 program because it was completely aligned with the organizational priorities of population health, advancing the field of aging, and developing supportive, affordable, integrated senior housing.

A key strategy for achieving sustainability was via contracts with payers. HSL negotiated a financial arrangement with Tufts Health Plan and Commonwealth Care Alliance that paid per member per year (PMPY) fees to support a portion of the staff costs of the program during R3^2 as a pilot. This payment represented a pro-rata share of costs based on the number of each plan's members who were benefiting from services. HSL also invested significant effort during both iterations of the program in engaging additional individual payers to pool funding as a means of sustaining the program.

A challenge to this approach was that private Medicare Advantage and dual eligible Senior Care Options plan members represented a minority of residents in the participating buildings as compared to traditional fee-for-service Medicare. As such, the PMPY fees for these members were insufficient to fund program operations in full.

Another sustainability strategy was to seek out other senior housing providers interested in covering costs of the model in order to bring services to their campuses, and HSL engaged in negotiations with several local housing providers. For the housing providers, a desire to provide enhanced services to the seniors in their buildings was a significant motivator, as was the reduced turnover as seniors were able to remain in more independent living arrangements, which was beneficial to them in operations and cost.

Opportunities and challenges in sustainability, scalability, and financing were assessed through a series of focus groups. In total, 22 individuals attended the focus groups: seven housing partners, seven payers, and eight Brookline community stakeholders representing first responders, health care providers, and housing providers.

Their sustainability work also included meeting with stakeholders in caring for seniors including ASAPs and Senior Care Options to share interim results from the program and discuss opportunities for collaboration in improved models of care coordination based on the work of R3^2. HSL also worked to explore additional grant funding opportunities and ensure stakeholders at the Executive Office of Elder Affairs were aware of the program and to discuss changes or improvements to the model.

HSL believed that leadership from government was crucial to assure ongoing sustainability, particularly as it related to addressing the lack of critical mass of residents for any single payer which posed a barrier to financial sustainability through insurer payments. They also stated that buy-in from the Center for Medicare & Medicaid Services and better coordination among local senior care entities would be key roles for government involvement in the sustainability of models like R3^2.

While the pandemic paused some of the sustainability conversations, HSL was eventually able to resume those efforts and noted that the pandemic provided evidence of the important role the "housing with services" model could play. HSL planned to continue both their work with partners and their efforts to advocate for adoption of these models by government and secure funding streams for the program after the SHIFT-Care Challenge ended.

HOLYOKE HEALTH CENTER

AWARDEE OVERVIEW

Holyoke Health Center (HHC) was the sole awardee in this cohort of the SHIFT-Care Challenge program focused on increasing access to behavioral health care. In collaboration with Behavioral Health Network, Inc. (BHN), HHC developed a SHIFT-Care Challenge program to integrate behavioral health treatment more effectively into primary care for patients with mild to moderate mental health conditions. Eligible patients presenting to their primary care visits with behavioral health needs received a referral to either the BHN clinic or the HHC psychiatry clinic to address those needs, as well as to the program's community health workers (CHWs) for additional support in addressing barriers to care.

Target population: Patients with mild to moderate psychiatric diagnoses requiring psychiatric services, including psychiatric medication management, who are not attributed to an accountable care organization (ACO) or enrolled in other care management services.

Health-related needs of focus: Increasing rate of patient engagement with CHW services, kept psychiatric medication appointments, and follow-up after emergency department (ED) visits for mental illness.

IMPLEMENTATION

PARTICIPANT IDENTIFICATION AND ENGAGEMENT

Patients were identified and enrolled into the program either through primary care visits to HHC or through the HHC psychopharmacology clinic. In the primary care visits, patients presenting with a behavioral health need were evaluated by both primary care providers and an on-site BHN clinician, and if appropriate and eligible, were referred to the SHIFT-Care Challenge program. Patients in the psychopharmacology clinic who were eligible for the program also were identified and referred to the SHIFT-Care Challenge program. Patients could also be referred to the program for medication management at either the HHC clinic or the BHN clinic, which supported patients with more significant behavioral health needs.

Once a referral was made, the program manager or CHW would contact the patient to describe the program and obtain their consent to enroll. If the patient completed the enrollment process, the program manager would work with them for the first two weeks after enrollment, then make a warm handoff to an assigned CHW. Some patients bypassed the program manager and enrolled directly into the care of the CHW if they were able to meet with a CHW immediately following a scheduled appointment.

The assigned CHW worked with the patient to provide support in addressing their health and social needs, schedule and maintain medication appointments, and address barriers to medication compliance. The CHWs worked very closely with patients for the initial three months of enrollment, making contact at least once a week. After this initial period, the CHWs worked with each patient individually to determine how frequently they should be in contact in the future.

Enrollment and engagement challenges and responses

Patients already engaged in therapy were not eligible when the program was first designed, and staff were surprised by the number of patients excluded as a result of this criterion. Patients who were ineligible because of their affiliation with an ACO also represented a larger number of patients than staff anticipated. The combination of these exclusion factors substantially limited the number of eligible patients at the beginning of the program. Eventually, the therapy restriction was removed, and patients already receiving therapy from BHN or another provider were eligible to be referred to the SHIFT-Care program to receive additional care coordination and support.

When reflecting on their low enrollment and challenges with identifying eligible patients, staff opined that a deeper analysis of the target population to ascertain its true size would have been helpful. In response to these enrollment challenges and with support from the HPC, program leaders initiated other efforts to boost enrollment, including making workflow modifications to ensure that CHWs were alerted when patients were in the clinic so they could make contact immediately before or after appointments – a strategy that was particularly effective in the psychopharmacology clinic.

Beyond issues related to the size of the target population, staff reflected on enrollment challenges associated with telephonic outreach, noting that it was easier to explain the program in face-to-face meetings. They also reported that a substantial portion of the population had out-of-date or no contact information on file. Though staff attempted to make contact via phone, text, and mail, many potential participants did not respond. Finally, HHC noted a small but still significant proportion of patients informed about the program who declined to participate (12%-15%), generally due to a lack of interest or competing priorities.

Staff noted some challenges with maintaining patients' engagement after enrollment. These included difficulty with ensuring (1) that patients attended their 90-day medication follow-up appointments and (2) that they provided the necessary input for completion of their treatment plan plans. Staff found that offering transportation helped improve attendance at appointments.

STAFFING

HHC's SHIFT-Care Challenge program clinical care staffing model included four CHWs[x], two psychiatry professionals (1.83 FTEs), several day-to-day operations managers, and medical providers at BHN and HHC who provided clinical supervision. A psychiatry nurse practitioner with authority to prescribe medications ran the HHC psychopharmacology clinic with support from a psychiatrist who covered one clinic per week and provided psychiatry consultation for the psychopharmacology clinic. Administration of the program was via part-time support from several other staff members, including medical providers in the primary care clinic, a data analyst, and an investment director.

When hiring CHWs, HHC looked for customer service and navigation experience as well as health care knowledge. The CHWs were bilingual English and Spanish speakers, which matched the language needs of the enrolled populations. In addition to providing intensive care coordination, the CHWs maintained patient contact between medication management visits and monitored symptoms and medication compliance. They also encouraged participation in therapy when appropriate and provided information about resources within HHC and in the community to help patients manage their mental health and address health-related social needs.

Staff received program-specific training, including policies and procedures for working at HHC, and received training on integration of behavioral health with medical care. Staff also completed research training for an evaluation being conducted by the Department of Public Health and Health Sciences at the University of Massachusetts Amherst.

The team was satisfied with both the number of staff and the structure of their staffing model. Staff observed that the team was collaborative, supportive, and flexible and showed enormous dedication to their patients—particularly during the pandemic when they had to create new workflows and ensure continuity of care. The collaboration among staff to address the participants' needs was a critical aspect of the program, which they hoped to maintain when the program ended.

Clinicians working with the HHC program were grateful for the handoff to CHWs to ensure patients with behavioral health and social needs would be monitored in between appointments and stated that they felt the program represented an improvement on existing services. Staff also stated that they felt the program was well-constructed to deliver good service and that the work the team put in to ensure clear communication among SHIFT-Care Challenge program staff helped service delivery as well. CHWs did occasionally turn to supervisors if they needed additional support with managing a patient's needs or behaviors, but this support was not needed frequently, especially as the CHWs got deeper into the program and gained experience.

PARTNERS

The program was designed as a close partnership between HHC and BHN to provide an integrated behavioral health program. Medication services for patients in the program were provided by both the HHC psychopharmacology clinic and BHN's City Clinic. Designated appointment times were allocated to the SHIFT-Care Challenge program to allow for shorter wait times for appointments, particularly for new patients.

Consistent collaboration was necessary to ensure alignment in goals, program efficiency, and success in navigating different organizations' procedures.HHC met with BHN weekly for case review and to troubleshoot program implementation. BHN staff were also regularly present at HHC and attending internal HHC staff meetings to educate staff on the program and to seek their support with referrals.

As HHC and BHN had separate technology systems and had to adhere to patient privacy regulations in the use of and access to those systems, a significant amount of work went into ensuring staff had the technological capabilities necessary to manage

x During the first quarter, one CHW had to go on medical leave, which meant the program manager who typically oversaw day-to-day operations had to step in to cover their patient panel.

the program. BHN staff used both BHN and HHC technology tools to ensure communication and compliant data sharing. Program staff from BHN also used HHC's electronic health record to identify upcoming appointments.

IMPACT OF COVID-19

With the onset of the Covid-19 pandemic, program operations shifted so that services could be provided remotely, using phone, video conference, and mail. Enrollment was paused for six weeks (March 16, 2020, through April 27, 2020) while a workflow for remote enrollment was developed, allowing for enrollment documents to be dropped off or mailed to patients to complete. Since one of the program's key recruitment strategies had been in-person contact immediately prior to or after a medication visit, this change substantially affected the ability to enroll new patients. Nevertheless, staff found no-show rates for medication visits were lower with telehealth. Engagement with the CHWs was more challenging, particularly for patients who were not already enrolled in the program, suggesting that the in-person components of the CHW work may be required for full engagement with the program.

Staff had very little experience with telehealth prior to the pandemic. Technological challenges were significant as the IT infrastructure of the organizations was not designed to handle the transition from in-person operations to a fully remote workforce, including provision of almost all clinical services by telehealth. HHC's transition went relatively smoothly while BHN encountered more significant challenges with their infrastructure's capacity to handle remote work, but these issues were resolved over time with increased communication regarding data collection and some new workflows for CHWs.

Staffing remained the same, but weekly hours were reduced from 40 hours to 32 hours from March through the end of July 2020 for the CHWs and several of the supervisors in the program. HHC provided access to and reminders about the availability of Concern, a third-party workplace support organization for staff to use as a resource to support their mental health.Staff received information on Covid-19 leave options, and the team maintained an understanding and supportive attitude towards all staff who were concerned and/or stressed due to the pandemic. The supervisor provided emotional support, if needed, to CHW staff.

The pandemic meant CHWs could not provide transportation, which remained a need for some patients during this time (although a period of free public transportation met the needs of some of these patients). The team was delayed in sharing the care model and results of their initiative within and outside of their organization due to the extra burden on the program staff and all levels of the health care system.

IMPACT

METHODS

Overall Approach

The primary objectives for the evaluation of HHC's program were to determine the impact of the SHIFT-Care Challenge program on acute care utilization including ED visits and hospitalizations. Intermediate measures were evaluated to ensure intervention fidelity and to identify opportunities to improve the initiative.

The HHC evaluation team used a pre-post design to evaluate the impact of the SHIFT-Care Challenge program on acute care utilization. The evaluation team initially intended to use a difference-in-difference design, but due to resource limitations and overlapping quality improvement efforts, it was not possible to use comparison group data.

Demographics

HHC collected age, gender, race, and education level from enrolled patients at the time of their enrollment.

Intermediate Measures (Health-related needs)

HHC's intermediate measures were process measures to assess the effective delivery of behavioral health care, including rate of patient engagement with CHW services within 90 days of enrollment, rate of kept medication appointments within 90 days of enrollment, and rate of 30-day outpatient follow-up after ED visits for mental illness. These measures were collected prospectively, with no control group. Patients with at least three months of follow-up post-enrollment are included in the analysis of process measures.

Utilization

The utilization measures tracked by HHC were any all-cause ED visits, 30-day ED revisits, all-cause inpatient admissions, and all-cause 30-day readmissions. Utilization measures were compared for the six months prior to enrollment to the six-month

period post-enrollment (three to five months for those enrolling at the end of the program). Baseline data was collected through past alerts in PreManage, a third-party acute care utilization tracking system for outpatient organizations, and implementation period data was collected through the same system.

Fisher's exact test was used to compare binary utilization measures between six months prior to enrollment in the SHIFT-Care Challenge program and six months after enrollment. Paired t-tests were used to compare continuous utilization measures between six months prior to enrollment in the SHIFT-Care Challenge program and six months after enrollment.

Patient Experience

Patient experience questionnaires were administered at enrollment to assess self-reported mental health and quality of mental health treatment, and at three months post-enrollment to re-assess both of those measures and a likelihood to recommend the SHIFT-Care Challenge program. These measures account for patient experience of the program and allow for analysis of changes in self-reported mental health. A small number of surveys (n=4) were conducted via phone rather than in person due to the pandemic.

FINDINGS

Demographics

In total, 55 patients were enrolled in the program. Two-thirds were female, and one-third were male. Sixty-four percent of patients were between ages 35 and 64. The majority of patients identified their race as "Other" (72%), followed by White (24%) and Black (4%). Sixty-seven percent of patients identified their ethnicity as Hispanic or Latino. A majority of patients (82%) had a high school diploma/GED or less. A total of six participants were discharged or lost to follow-up during the program, however where possible, their data is included in analyses. See **Exhibit 8** for full demographic data.

Exhibit 8: Participant Demographics and Characteristics

DEMOGRAPHIC CHARACTERISTICS	PERCENTAGE (%)
Number of Patients	**55**
Gender (n=55)	
Male	33%
Female	67%
Age (n=54)	
18-24 years	4%
25-34 years	11%
35-44 years	24%
45-54 years	20%
55-64 years	24%
65-74 years	17%
Hispanic or Latino (n=55)	67%
Race (n=51)	
White	24%
Black or African American	4%
Other	72%
Education Level (n=55)	
8th grade or less	24%
Some high school, but did not graduate	31%
High school graduate or GED	27%
Some college or 2-year degree	16%
4-year college degree	2%
More than 4-year college degree	0%

Note: Minimal missing data in each category. The "Other" race category mostly includes people who identify as Hispanic or Latino and do not identify with one of the listed racial categories.

Intermediate Measures (Health-related needs)

The first intermediate measure was "rate of patient engagement with CHW services within 90 days of enrollment." Overall, the team found that 84.5% engaged with CHW services within 90 days. This engagement included in-person and substantive phone check-ins.

The second intermediate measure was "rate of kept medication appointments within 90 days of enrollment." Overall, the team found that 53.4% (31 out of 58 enrollees; 49% for enrollees during evaluation period) had a kept medication visit within 90 days of enrollment. This was lower than the team had anticipated; however, they suggested that this percentage may have been because many patients were identified and enrolled into this program at or during a medication visit (pre-enrollment).

The third intermediate measure tracked by HHC in their program was "rate of 30-day outpatient follow-up after emergency department (ED) visits for mental illness." This measure was linked to utilization (ED visits) but there were no reported ED visits for mental illness. Part of the explanation for this is that one year into implementation, the Covid-19 pandemic began. As a result of the pandemic, across the Commonwealth there was a sharp decrease in overall ED utilization, which had an impact on the data measures tracked in this program.

Utilization

HHC looked at ED and inpatient utilization six months prior to enrollment to assess baseline data. They found that 38.5% of enrolled patients had at least one all-cause ED visit in the six months prior to enrollment. For each patient who had at least one ED visit, 11.5% had a 30-day ED revisit within the six months prior to enrollment. Once patients joined the program, 25% of enrolled patients had at least one all-cause ED visit in their first six months of enrollment. For those patients who had at least one ED visit in the six months after enrollment, 5.8% of these had a 30-day ED revisit. These data indicate that there was reduction in both ED utilization and revisits, and the reduction in revisits was found to be statistically significant. It is possible that other factors besides the program may have contributed to the reductions, including overall low levels of utilization by participants as a result of the Covid-19 pandemic.

During the baseline period, 3.8% of enrolled patients had an all-cause inpatient admission. This increased to 7.7% in the period after SHIFT-Care Challenge program enrollment. This difference is not statistically significant and is likely due to chance as the overall number of patients experiencing hospitalizations was very small. There were reductions in inpatient readmissions that were statistically significant, but again the number of patients is small enough that it is hard to draw conclusions from this difference.

Patient Experience

The HHC team analyzed patient experience measures at enrollment in the initiative and then again three months later. The low response rate for completed follow-up surveys (n=15, 27%), despite most participants being offered the survey, somewhat limits the ability to draw conclusions from these data. However, patients were generally satisfied with the initiative, as demonstrated by their willingness to recommend the program to their friends and family, with 92%; (n=14) saying that they would "probably recommend" or "definitely recommend" the program.

LIMITATIONS

HHC's program experienced several challenges that must be noted as limitations of the analysis. First, a major data loss took place near the end of the program that required reconstruction of the data, which was limited due to available technologies. As a result, some enrolled patients' data could not be reconstructed and could not be included in the analysis. This resulted in small differences in sample size for the analyses, which cannot be resolved.

Second, both HHC and BHN had limited ability to collect inpatient and ED utilization data, in part because they are outpatient organizations not directly affiliated with any hospital systems. The third-party system they had available to monitor acute care utilization (PreManage) had many limitations, and at times communication challenges between the two organizations also created barriers to collecting utilization data. As a result, CHWs sometimes consulted patients to determine or verify utilization records. Though the HPC helped the teams work through these challenges, the limitations on data access for these outpatient organizations remained.

Third, the program had low enrollment overall, meaning all the analyses were conducted with a small sample size, which limited the interpretation of the statistical analyses conducted. In addition, pre-post design of both the utilization and intermediate measure analysis included periods of severely depressed ED and hospital utilization due to the Covid-19 pandemic, meaning that the conclusions that can be drawn from any reductions in utilization that were observed are limited.

Finally, the follow-up survey had an extremely small number of responses (n=15) compared to the overall population and to the initial survey (n=55) which makes comparison between the two extremely difficult, particularly on the measures of self-rated mental health and quality of mental health treatment.

SUSTAINABILITY

HHC planned to use the lessons learned from the SHIFT-Care Challenge program to refine their model with the goal of achieving and sustaining reductions in hospital utilization. The resulting shared savings from ACO risk contracts would then fund non-billable staff such as the CHWs.

Patients from the SHIFT-Care Challenge program were transferred based on their primary clinic to continuing care management and medication management at HHC and BHN. By providing care management services, HHC anticipated being able to maintain some gains from the SHIFT-Care initiative. Those in the psychopharmacology clinic were transferred to the HHC care management team; those enrolled at BHN City Clinic maintained medication management services.

Additionally, over the course of the SHIFT-Care Challenge program, HHC's care management department expanded and added CHWs. HHC and BHN shared an understanding of the vital role that CHWs could play in obtaining successful patient health outcomes. HHC planned to continue to support advocacy efforts underway in Massachusetts—including those by the Massachusetts Association of Community Health Workers—to allow CHWs to bill for their services.

While HHC initially did not use the program data to communicate internally or externally about the work of the program, they eventually reviewed this data with the entire program staff and shared it with BHN and the HHC leadership and board.In particular, HHC shared lessons from the SHIFT-Care initiative around intensive patient contact and follow-up with the care management team over the duration of the SHIFT-Care initiative. After observing high appointment attendance rates with telehealth, the team was exploring options to continue remote visit options for the psychopharmacology clinic. Additionally, other providers and teams within the organization who were not directly involved with the program saw the positive effects of the program and initiated some conversations about how they might incorporate aspects of the model into their work.

STEWARD HEALTH CARE

AWARDEE OVERVIEW

Steward Health Care Network, Inc. (SHCN or "Steward") developed a community-based pilot program to more effectively coordinate the medical, behavioral health, and health-related social needs (HRSNs) of Accountable Care Organization (ACO) patients with substance use disorders (SUD). This program, Care to Community (C2C), consisted of a three- to six-month intensive population health program that integrated behavioral health supports for treatment of SUD with care management for medical needs and care coordination for HRSNs.

The C2C program sought to address two inter-related problems which limited the ability of individuals with SUD and HRSNs to receive well-coordinated, person-centered care: 1) Limited access to integrated multidisciplinary care including medication management and social services; 2) Lack of transportation impacting patients' abilities to adhere to their care plans and receive the right care, in the right place, and at the right time. The aim of the program was to address those two factors and to reduce emergency department (ED) utilization, future hospitalizations, and total cost of care for this population. SHCN saw this program as an opportunity to expand the collaboration within the community to improve on the ability to provide quality care to patients.

C2C took place from February 2019 to July 2020 and included collaboration among behavioral health and primary care providers, community health workers, recovery coaches, and emergency medical services (EMS) providers.

Target population: Steward risk patients in the Medicare, Medicaid, and Commercial ACO programs over age 18 with a SUD and HRSNs. The SUD diagnosis could be a prior confirmed diagnosis or one based on assessment by referring ED staff. Those with additional factors such as elevated levels of utilization in the past 12 months, multiple comorbid conditions, those who were Department of Mental Health clients, a history of medication for opioid use disorder (MOUD), interaction with Emergency Service Program, or detoxification, were prioritized for enrollment.

Health-related needs of focus: Increasing access to and security of housing, food, transportation, and employment; participation in MOUD.

IMPLEMENTATION

PARTICIPANT IDENTIFICATION AND ENGAGEMENT

Much of the identification and enrollment process for C2C occurred in the ED. Eligible patients were identified either by referrals or through an EHR flag and software system already in place at Steward that would alert social workers when eligible patients presented to the ED. A social worker in the C2C program would reach out to identified patients in one of three ways: 1) meeting in the ED during the member's visit; 2) meeting during their inpatient stay; 3) following up by phone after discharge or referral. During the initial meeting, social workers completed an eligibility screening and enrolled the member into the program, if eligible. They would also complete a psychosocial and care needs assessment that informed a patient-centered care plan. The social worker then conducted a warm hand off to a recovery coach and community health worker (CHW).

Once patients were enrolled in the program and connected with their CHW, the team worked closely with them to support their behavioral health needs, provide care coordination, and address HRSNs. Meeting members in the community, in their homes or in public places such as coffee shops, was key to maintaining regular contact with them. Staff worked to increase patient's connection with others on their care team, especially primary care physicians (PCPs). The team also worked with participants' family members as needed and appropriate to support participants. Staff found that middle-aged patients who were highly motivated for recovery and who had fewer other concerns to address, were the easiest to enroll and maintained most consistent program participation. Those with polysubstance use, co-occurring conditions, and who were not ready for change were the most challenging to maintain consistent program participation. Translation services were available, as there was not full concordance between languages spoken by staff and the participants, though some staff were bilingual.

Enrollment and engagement challenges and responses

C2C encountered challenges in identifying eligible ACO members who had both commercial insurance and a history of SUD due to privacy regulations around data sharing of SUD diagnoses and treatment history. The need to exclude patients in the MassHealth Long-Term Services and Supports and Community Partner programs, which could not be combined with enrollment in a SHIFT-Care Program, was also a significant barrier to enrollment. Staffing challenges also slowed enrollment, as the program was not fully staffed for much of its duration (see Staffing). Initiating in-person contact in the ED also proved to be difficult given the busy and high-intensity environment but telephone follow-ups were less effective than in-person contact in getting patients to enroll.

Steward found effective strategies to meet enrollment targets despite these challenges through strong connections with hospital ED and inpatient teams so that even ACO members presenting with non-SUD related issues who met program-related criteria could be flagged to meet a social worker. C2C also received referrals from providers and the hospital care management teams. The team noted that implementing more targeted strategies for enrollment earlier in the program could have helped them recruit a larger and more diverse patient population.

STAFFING

The C2C core staffing model consisted of social workers (3 FTEs), a community registered nurse (RN) (1 FTE) and community health workers (CHWs) (2 FTEs). Peer recovery coaches were provided by partner organizations (see **Partnerships**). Social workers were embedded in the ED to identify and connect with ACO members and to review their cases regardless of the chief complaints that brought them to the ED. This broader scope surfaced additional eligible members and ultimately contributed to increased enrollment. CHWs worked directly with patients to connect them to community services and address identified needs. The community RN oversaw the medical and behavioral health needs of enrolled patients.

Steward made two changes to their original staffing plan, the first to ensure all three hospitals had a social worker to identify and enroll eligible patients, and the second to use a community RN rather than a nurse practitioner as the role was scoped to primarily involve medication management, safety assessments, and coordination with primary care and other providers on the patients' care team. The program was not fully staffed until Quarter 2. Before a third social worker was hired, phone follow-up was used to contact eligible members. The team did not have a CHW for one area in Quarter 3 and found covering this gap challenging. When the program returned after a pause, during which all staff were furloughed due to the Covid-19 pandemic, they did so at reduced staffing. Social workers' hours in the ED were modified based on trends in ED utilization. The team anticipated a high volume of potential participants on Saturdays, though they found that the initial staffing schedule did not align with highest volume and continued with flexible scheduling to address trends in ED admissions.

All staff had prior experience with SUD populations, which was an asset. One CHW was hired after initially serving as a recovery coach for C2C. Staff participated in recovery coach training to better understand the population. Staff received standard training for Steward employees, which included care management software training and shadowing staff in similar roles. In addition to the recovery coach training, program-specific training included training on culturally competent care and collecting data on race, ethnicity, and language. Team huddles were implemented to ensure communication about patient needs and care plans.

PARTNERS

The C2C program worked with partners to provide peer recovery coach and SUD treatment services, medical-legal support, transportation, and home visits to enrolled patients.

Community Counseling of Bristol County (CCBC) provided behavioral health services and treatment to participants while High Point Treatment Center and Steppingstone, Inc. provided peer recovery coaches. MLPB provided legal consultation and support for addressing participants' HRSNs. Circulation was a transportation provider for participants.

Brewster Ambulance and Fall River Fire Department used their EMS providers to conduct home safety and care management assessments. The EMS partnership was part of a new program regulated by the Massachusetts Department of Public Health, and there were delays and challenges with the application and approval process for the program as well as geographic restrictions to the EMS service areas. The team reflected that starting earlier and ensuring they understood the full scope of the regulations would have been beneficial.

A biweekly interdisciplinary case review meeting brought all partners and staff together to discuss participant cases, which was a key part of the strong relationships Steward worked to cultivate with all partners. Communication was important for C2C in implementing the program and working with partners effectively.

The C2C team met with hospital and outpatient stakeholders in the early part of program preparation and implementation to raise awareness of the services offered and met with local providers to develop a strong network for referrals. Staff also attended local community and task force meetings to stay connected to local needs throughout program implementation. The team worked with a PCP in Fall River who wanted to add an embedded therapist to augment SUD treatment offerings in the practice and to connect eligible patients to C2C. This physician reached out after starting to prescribe MOUD in his practice and learning about patients' need for integrated care for SUD.

The team reflected that additional partnerships designed to help patients with immigration and legal system navigation would have been helpful. They also stated that additional partnerships or other resources to provide more support to patients with food, transportation, and communication, especially cell phone access, would have increased the program impact.

IMPACT OF COVID-19

At the onset of the pandemic, the team experienced a significant decrease in the number of participants willing to meet in person, and the EDs had to restrict social workers' presence for safety reasons. Ultimately, Steward decided it was necessary to pause operations of the C2C program from April 1, 2020 through June 15, 2020 to preserve the integrity of the intended program operations. Patients enrolled in C2C were absorbed into Steward's existing behavioral health care management program and recovery coaches stayed in contact during the pause. While the program was on pause, C2C staff were supported through behavioral health programs for employees, and provided with information on health plan coverage, telemedicine, state Covid updates, travel guidance, and safety policies for returning to the office.

After the pause, there was reduced staffing (three staff instead of the budgeted six), but the program decided to continue and complete the implementation and no-cost extension periods with this lower level of staffing rather than attempting to hire the positions. Once the program resumed, there were still pandemic-related challenges to meeting eligible patients in the ED. Patient needs also increased significantly during the pandemic including in the areas of housing, transportation, and counseling.

Many patients had lost contact during the pause, and the team could not re-establish communication. The number of participants who were lost to follow-up for pandemic-related and other reasons had a significant impact on the amount of follow-up data the program collected, especially in tracking HRSNs. Overall, the team expressed that the pandemic posed major operational challenges and significantly impacted the outcomes of the program.

IMPACT

METHODS

Overall Approach

The evaluation of C2C aimed to determine the extent to which the program changed the target population's utilization of acute care, and the extent to which the program was implemented effectively. While SHCN initially intended to use a traditional comparison group evaluation approach, data limitations and the departure of some team members limited the scope of the evaluation. Ultimately, for the utilization measures, they employed an observational approach for the entire eligible ACO member population, encompassing both those who were enrolled and those who were not enrolled in the intervention. Other measures were assessed for those enrolled in the program.

Demographics

SHCN collected information at enrollment on patients' age, gender identity, race (this measure included Hispanic ethnicity), language, disability status, geography/current residency, and functional status. Demographic data was not reported for the all-eligible members group used for data comparison.

Intermediate Measures (Health-related needs)

Participants were asked to report on several HRSNs at time of enrollment regarding housing, food, transportation, and employment. These surveys were conducted at initial enrollment, 90 days post enrollment, and at discharge from the program. Participants who were lost to follow-up were included in the data, and the last available data obtained was used to populate the post-treatment time point, even in cases where this was the enrollment data. Last available data could include answers from discharge surveys, 90-day surveys, or in the event where neither of those was available, the eligibility screening/comprehensive assessment from enrollment.

C2C initially intended to collect data on patients receiving medication for opioid use disorder (MOUD), but this was inaccessible to Steward due to barriers associated with federal privacy regulations around sharing patient substance use treatment information.

Utilization

Despite their initial intentions for the analysis, the Steward evaluation team was unable to provide separate utilization measure data for patients that were enrolled in the program as opposed to those who were eligible. The team provided overall utilization for all eligible patients during a nine-month span representing the pre-intervention period before the program's implementation, and the 18-month implementation. The presented data included the number of unique eligible ACO members with an ED or inpatient event (visit or revisit and admission or readmission, respectively) and the 30-day revisit rate or 30-day inpatient readmission rate.

Patient Experience

All participants who successfully completed the C2C program (n=89) were provided with a discharge questionnaire utilizing the CSQ-8 form to assess patient experience through a combination of in-person, mail, and telephone administration.

FINDINGS

Demographics

Steward enrolled 284 patients in the implementation period of the program, excluding the program pause due to the Covid-19 pandemic and 18 additional patients received a combination of care from C2C and the standard Steward behavioral health care management program during the program pause in the early months of the Covid-19 pandemic (see **The Impact of Covid-19**, above).

Available demographic data was provided for the patients enrolled outside of the program pause. The ages of patients (n=265 – age data not available for 19 patients) ranged from 20 to 84 years, with an average age of 45. Sixty one percent of patients were male (n=166) and 39% female (n=107), with data missing for 11 participants (4%). The vast majority of patients (n=199, 75%) in the program identified as White, while 4% identified as Black or African American (n=11), and 0.3% as Hispanic (n=1). The remaining group of patients chose not to report their race (n=43, 16%) or reported "other" as their race (n=11, 4%). Race data was not available for 19 patients.

Intermediate Measures (Health-related needs)

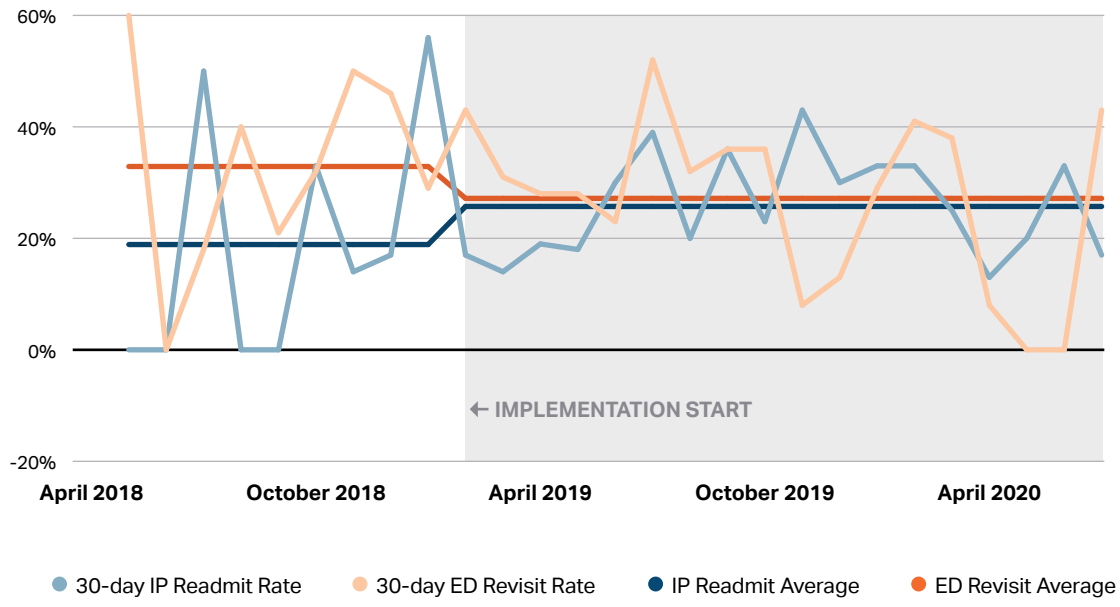
The intermediate measures that the C2C program captured are reported in a pre-post program intervention format. Available data regarding food insecurity and housing status was indicative of small improvements, while employment status and transportation access was more mixed with no clear indicators of positive change. Due to the aggregate nature of the data, low response rates on some items, small sample size, and high lost to follow-up rate, it is difficult to state whether any increases or decreases are due to the program.

Utilization

The average rate for 30-day ED revisits during the pre-intervention period was 32.9% (median for ED = 0.32; range= 0.6), while the intervention average 30-day ED revisit rate was 27% (median = 0.29; range = 0–0.52). While the changes seen cannot be directly attributed to this program, these data suggest that there was a slight decrease in the average 30-day ED revisit rate from pre-intervention to the end of the implementation period. There is no accompanying p-value with these data to determine significance.

The average rate for 30-day inpatient readmissions during the pre-intervention period was 18.9% (median = 0.14; range = 0–0.56), while the intervention average 30-day IP readmissions rate was 24.4% (median = 0.23; range = 0–0.43). While the changes seen cannot be directly attributed to this program, these data suggest that there was a slight increase in the average 30-day inpatient readmissions rate from pre-intervention to the end of the implementation period. There is no accompanying p-value with these data to determine significance.

Exhibit 9: Utilization trends for all eligible participants May 2018 – August 2020



Patient Experience

A total of 89 patients who completed the C2C program were administered the patient experience survey (of 265 who were enrolled in the implementation period). Overall, 71% rated the quality of program services as good/excellent, and 79% would recommend the program to a friend. Further, 84% of patients had a favorable response to the amount of assistance received while close to 80% of patients reported they would come back to the program if in need of assistance in the future.When asked if the program helped them to deal more effectively with their problems, 72% agreed.

LIMITATIONS

Steward faced several barriers in SUD data collection: lack of substance use diagnosis and treatment data in claims due to privacy regulations, and a measure that did not initially capture patients who were already on MOUD at enrollment. This meant the program was not able to assess the impact of support for substance use treatment and the engagement in treatment

by the population and complicated determinations of eligibility for the program. A three-month lag in claims data presented challenges with data submitted to the HPC during the program's implementation. The pandemic also impacted data collection for the intermediate measure of HRSNs, since C2C lost touch with many participants who were not able to complete their 90-day HRSN surveys.The lack of follow up data meant firm conclusions about changes in HRSNs were limited. The small sample size also made assessing the impact of the program on HRSNs difficult, as it limited the statistical validity of collected data. This small sample size for collected data stemmed from both the smaller than anticipated patient population and challenges identifying eligible patients and the impacts of the program in paused enrollment and patients lost to follow-up.

In addition, the team was only able to provide utilization data for all eligible patients of the target population pre- and post-intervention rather than the more robust analysis they had hoped to provide comparing eligible and enrolled participants. This stemmed from turnover in the evaluation team, unanticipated challenges with adapting Steward claims data to the appropriate format for analysis, and challenges tracking patient data over time as ACO enrollment changed.

SUSTAINABILITY

There was strong alignment between C2C and the Steward system's goals and values, including ACO goals of increasing access to care, and reducing acute care utilization and total cost of care. The team worked to build leadership buy-in starting early in the program and were able to see positive reactions from staff outside C2C. Hospital staff and leaders noted multiple times that C2C added a valuable missing link that the hospital identified as a need for their patients. In addition, staff outside the hospital saw the benefits of the program. This included a PCP office, which C2C partnered with to embed a therapist in the practice, and an affiliated detox provider, which piloted integrating C2C staff to improve the transition to outpatient care. Staff also observed a growth in hospital-recovery coach connections during the time the program was operational, though they did not attribute this entirely to the C2C program.

Although the pandemic, patients lost to follow-up, and staffing challenges hindered the program's results, Steward remained committed to the principles of the C2C program. Their intent was to incorporate what was learned from the C2C experience into the organization's integrated behavioral health care management program. They noted the assistance with transportation and building relationships with local community organizations, especially those who could provide peer recovery coaches, as the two most significant aspects they hoped to continue. Steward care management staff also planned to continue the partnership with MLPB. They hoped these additional elements would realize the key aims of the C2C program: better integrated care and reducing HSRNs as barriers to care for the larger integrated behavioral health care management population.

APPENDIX A:
EVALUATION METHODS

The Request for Proposals for the SHIFT-Care Challenge program stated a requirement for awardees to conduct their own evaluations of their programs.[xi] Awardees responded to this requirement in one of several ways: completing the full evaluation with an internal team, contracting out the full evaluation, or some combination of internal and external work (see **Exhibit 10** for an overview of each awardee's approach). They were permitted to design their own evaluation methods for analysis of utilization data for participants in the program.

Exhibit 10: Awardee Evaluation Teams

AWARDEE	EVALUATION TEAM
Baystate Health Care Alliance ("Baystate")	Internal and external evaluation team members including from University of Massachusetts (UMass) Medical School/Baystate's Institute for Healthcare Delivery and Population Science, the UMass Amherst School of Public Policy, and the Public Health Institute of Western Massachusetts.
Boston Medical Center (BMC)	Internal evaluation team including members of investment program leadership and staff from the Research and Population Health department within BMC
Community Care Cooperative (C3)	Internal evaluation by C3's Medical Economics Team, and external evaluation support in the development of the Social Return on Investment (SROI) tool by The Dartmouth Institute and evaluation of the SROI tool by a team from Institute for Community Health
Hebrew SeniorLife (HSL)	External evaluation including UMass Boston contracted to prepare evaluation report, and Healthcentric Advisors contracted for Medicare utilization data
Holyoke Health Center (HHC)	External evaluation by a team from the Department of Health Promotion and Policy at the School of Public Health and Health Sciences at UMass Amherst.
Steward Health Care Network ("Steward")	Internal evaluation team based in Behavioral Health department.

During the course of the program, awardees were required to complete a number of deliverables for submission to the HPC related to their program evaluation. An Evaluation Design, Evaluation Design Update, Evaluation Outline, and Final Evaluation Report were all required deliverables. A six-month period for the completion of the final evaluation report occurred immediately after the 18-month implementation period of the award. After awardees turned in final evaluation reports, these were reviewed by members of the HPC team for completeness and clarity, and revisions were requested as needed.

In addition to the evaluation-related deliverables, the HPC collected additional qualitative and quantitative deliverables from awardees throughout the program. Written reflections from awardees on their performance were collected quarterly. These were qualitatively coded using NVIVO[19] software to identify key themes.

Awardees were also required to submit quantitative data to the HPC on a quarterly basis. These data were focused on the demographics of program participants, the required utilization measures, and awardee designed measures to assess the extent to which programs addressed HRSNs or increased access to behavioral health care. This quantitative data formed the basis of the evaluation reports submitted by awardees.

xi Request for Proposals document available at: https://www.mass.gov/doc/updated-2162018-shift-care-challenge-rfp-v3/download

Awardees were additionally charged with implementing some survey measure of patient experience for participants in the program. Awardee tools and methodologies for this varied, as described in the awardee subsections of this report. One requirement of the awardees was the use of a "willingness to recommend" question within the patient experience survey.

Using a mixed methods approach was critical to accurately characterizing the experience of each initiative with regard to implementation, impact, and sustainability. Qualitative and quantitative data were analyzed separately for each awardee. Qualitative materials were used to answer questions about implementation, impact, and sustainability. Following qualitative coding, quotes were arranged into thematic groupings and organized into an outline. Quantitative data was largely drawn from submitted awardee evaluation reports, but quarterly data was sometimes used to verify or supplement the data in evaluation reports.

The HPC adapted an evaluation framework developed by the RAND Corporation for potential use with the Centers for Medicare and Medicaid Services Health Care Innovation grant program evaluation for use in this evaluation of the SHIFT-Care Challenge programs. This evaluation framework, described by Berry et al.,[20] employed broad categories in its conceptual framework including implementation effectiveness, program effectiveness and impact on populations, and how these may relate to program sustainability to assess innovative programs across their lifespans. The HPC further adapted these categories into a framework suitable for our program evaluation

- **IMPLEMENTATION:** Was the intervention fully deployed? What were the key lessons learned or challenges faced during implementation?
- **IMPACT:** Did the intervention achieve program goals?
- **SUSTAINABILITY:** Did the intervention produce lasting changes?

This evaluation report was developed based on outlines of qualitative data and the contents and findings of the submitted awardee evaluation reports. This material was synthesized and assessed for quality by HPC staff and was described in a standardized format for clarity in this report.

It is important to note the limitations of the evaluation findings. The programs served relatively small samples of participants and often experienced significant numbers of participants being lost to follow-up, which limits the ability to draw generalizable conclusions and statistical efficacy. In addition, there was variability in the quality of the patient experience data from awardee to awardee which may affect the reliability of the conclusions from these data in the report. Finally, as noted elsewhere in the report, data collection challenges or confounding effects of reductions in utilization due to the Covid-19 pandemic experienced by some awardees limited the quantitative measures or analyses available to inform this report.

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ACKNOWLEDGMENTS

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