



Hospital to Home Initiative

Reducing Avoidable Hospital Emergency Department Visits While Improving Stability and Health

Outcome Report: February 2015

Introduction

Access to appropriate and timely healthcare and social services is an ongoing problem for many people in the United States, leading many to seek care through the emergency department. A relatively small segment of the population uses a disproportionately large amount of hospital emergency department and inpatient resources (Doren, Raven, & Rosenheck, 2013). These individuals tend to have numerous, complex needs, including chronic health conditions and mental health issues complicated by social concerns like housing instability. This group of patients is of particular interest to healthcare reform efforts because their multifaceted concerns “seem to be poorly met by standard care systems” and can lead to avoidable health care expenses through the frequent use of emergency departments and other crisis services. To address this issue, the Affordable Care Act aims to decrease hospital readmissions and associated emergency department use by addressing gaps in insurance coverage and primary healthcare needs for these individuals. However, access to healthcare alone is unlikely to address the spectrum of care needs for this population (Doren, et al., 2013).

The Hospital to Home initiative was developed to address the urgent need to reduce costs and better serve these patients. It aims to decrease emergency department use and inpatient hospital admissions by targeting some of the highest need and highest cost patients and providing an alternative intervention that better addresses the complex issues affecting their health.

It was first piloted in 2009 with seven individuals who demonstrated promising outcomes. Based on these positive outcomes, the initiative expanded in 2012 to a second cohort of participants, increasing the initiative’s capacity to serve up to 25 individuals.

This report describes outcomes from 17 participants with approximately one year of enrollment as of April 2014. Please see the Appendix for more information about the sample and methods included in this report.

About the initiative

Hospital to Home provides ongoing support, for as long as participants require, for chronic care management.

Hospital to Home works with a network of community partners to:

- Support participants in securing stable housing, which is a strong determinant of positive physical and mental health outcomes.
- Reduce participant emergency department visits, thus freeing up emergency department resources for acute medical crises and reducing unnecessary healthcare expenditures.
- Increase participant relationships with primary care clinics so they will seek medical care from clinics rather than emergency departments.
- Assist participants with accessing affordable medications from a limited number of pharmacies to allow for enhanced coordination of care and optimal use of medication to promote health and recovery.
- Promote participant self-reliance and life functioning.

This is a unique approach compared to other initiatives, such as the hospital In-Reach Service Coordination model established in Minnesota in January 2012 which also aims to reduce emergency department and other unnecessary healthcare utilization. In-Reach provides navigator services to individuals who frequently use emergency departments, but these services are limited to a 60-day period, they often focus on acute care management, and they do not include the same level of assistance with securing stable housing as Hospital to Home is able to provide.

How it works

The Hospital to Home initiative targets adults who:

- Used the Regions Hospital Emergency Department five or more times in the past year;
- Have one or more chronic medical conditions, such as diabetes, high blood pressure, and traumatic brain injury;
- Have mental illness of a serious nature with or without other occurring disorders, such as substance use disorders; and

- Have long histories of homelessness, specifically those who have been continuously homeless for one year or homeless four times in the past three years (the federal Housing and Urban Development [HUD] definition of chronic homelessness).

Once engaged in the initiative, participants work voluntarily with a person-centered, multi-disciplinary Mobile Community Health Services Team, which provides individually tailored care based on participant needs and preferences. Serving as the central hub of comprehensive care coordination, the Team is accountable to either provide directly, or arrange for and coordinate, all needed services including physical health, behavioral health, housing, social, and employment services.

The mobility of the Team allows services to follow participants, wherever they are, thus keeping participants engaged in their own plan. Mobile outreach and engagement strategies help to build and sustain trusting relationships with participants and remove barriers to success.



Participant service use

As of April 2014, the 17 participants in the Hospital to Home initiative have been enrolled for between 10 and 56 months (median of 14 months, average of 20 months). Participants received an average of between four and 19 contacts per month (average and median of 10 contacts per month). These contacts lasted an average length of one hour (median of 45 minutes).

The two most frequent types of services received by participants were intensive case management and medical nursing contacts which, when combined, accounted for over 70 percent of contacts. Intensive case management includes conducting a variety of assessments, developing a care plan based on needs identified and participant preferences, assisting the participant to obtain services, and monitoring the delivery of such services. Additionally, participants receive direct assistance in finding, securing, and keeping housing. Medical nursing contacts relate primarily to management of health conditions, assistance with medications, and referrals to and ongoing coordination with primary care providers.

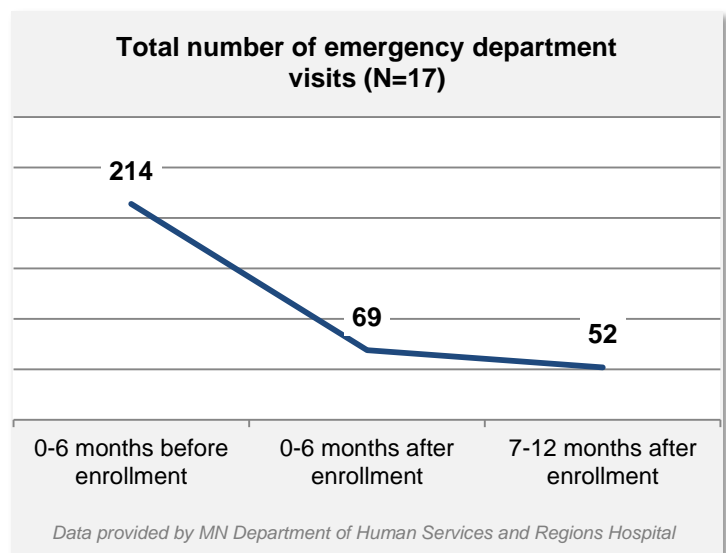
In addition to providing services directly to participants, staff spent approximately 20 percent of their time working on behalf of participants, including: negotiating with third parties, such as landlords or employers; trying to connect with participants for case management; and receiving case management supervision.

Participant outcomes: Changes in healthcare use

Emergency department use decreased after enrollment.

- **The total number of emergency department visits by participants decreased** from 214 visits in the six months prior to enrollment to 69 visits six months after enrollment and 52 visits between six and twelve months after enrollment.

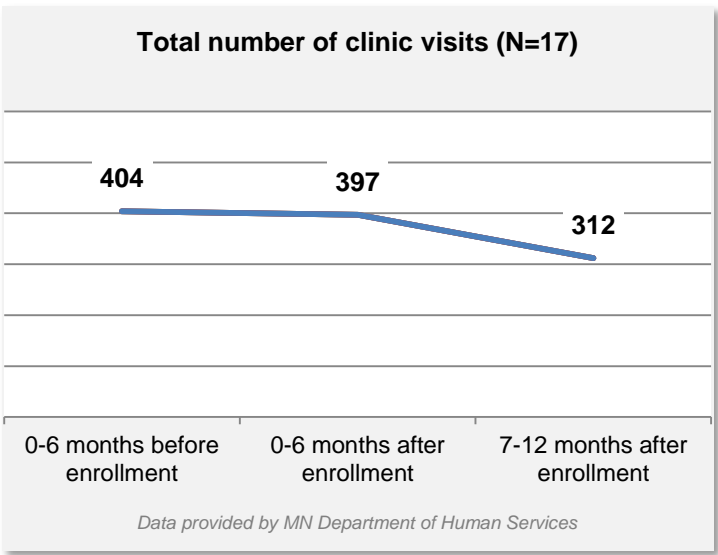
The average number of visits per participant decreased over time as well, from 13 visits prior to enrollment to 4 visits in the six months after enrollment and 3 visits six to twelve months after enrollment.



- **All participants decreased their use of emergency departments after enrolling in Hospital to Home.** The decrease ranged from 1 to 26 fewer visits per person between the six months before enrollment and the most recent six month period for which data are available (median of 6 fewer visits; average of 10 fewer visits).
- After enrolling in the Hospital to Home initiative, **most participants decreased the number of locations visited** for emergency department care to one or two. However, three participants still visited four emergency departments during a six month period.
- Emergency department visits were assigned International Statistical Classification of Diseases and Related Health Problems (ICD-9) codes, which were grouped based on the overarching health conditions associated with each code. Based on this classification system, **most emergency department visits had multiple diagnoses associated with them.** The most common diagnoses recorded for emergency department visits after enrollment included injuries (34% of visits), such as sprains, contusions, or head trauma and diseases of the musculoskeletal system and connective tissue (34% of visits), such as pain in the joints, back, or muscles. Mental health issues (18% of visits), such as depression, anxiety, psychosis, or personality disorders; substance use-related issues (17% of visits); and diseases of the digestive system (16% of visits) were also common diagnoses associated with emergency department visits.

Clinic use decreased after the first six months of enrollment

- **Participants used clinics at similar rates during the six months before (404 visits) and after enrollment (397 visits).** Aggregate clinic use then decreased to 312 visits between six and twelve months after enrollment.



- **Individual participants had very different patterns of clinic use over time.** Eight participants (47%) increased their use of primary care clinics, while five participants (30%) decreased their use of clinics after enrollment, and four (24%) stayed relatively consistent in their clinic use. During the most recent six-month period for which medical claims data is available, individuals had between 1 and 71 primary care clinic

visits (median of 15 visits; average of 18 visits), versus between 2 and 117 visits in the six months prior to enrollment (median of 14 visits; average of 24 visits).

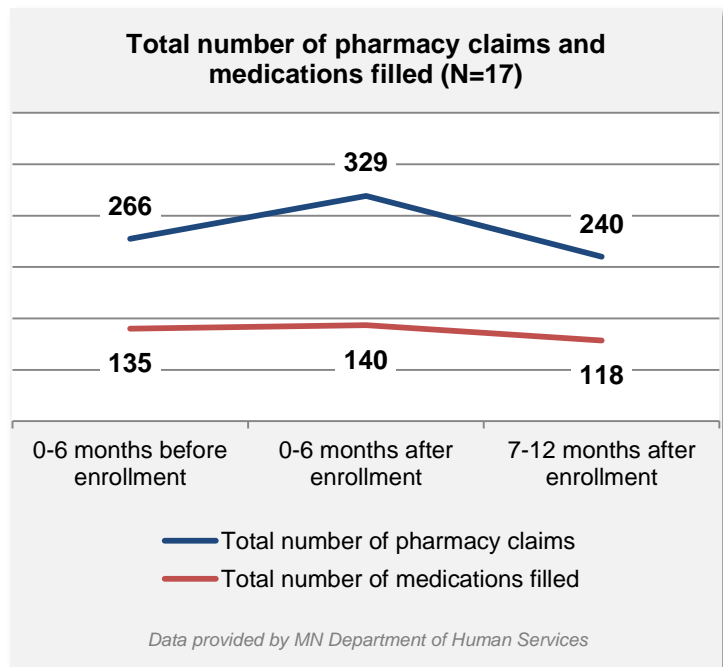
- **Overall, participants tended to visit fewer clinic locations the longer they were enrolled in the initiative.** In the six months prior to enrollment, participants visited 75 different primary care clinics. They visited 66 clinics in the first six months after enrollment. Twelve months after enrollment, the number dropped to 45 different clinics. When paired with the relatively consistent number of clinic visits during the same time frame, this finding demonstrates that participants accessed care repeatedly at the same location over time.
- **Over half (57%) of clinic visits after enrollment included a mental health diagnosis.** Most clinic visits had multiple diagnoses associated with them. In addition to the mental health diagnoses, the most common categories (ICD-9) recorded for clinic visits after enrollment included: diseases of the musculoskeletal system and connective tissue (30% of visits), such as pain; diseases of the circulatory system (13% of visits), such as hypertension, congestive heart failure, or stroke; and substance use-related issues (11% of visits).

Participants had fewer inpatient hospital stays after enrollment.

- **Over half of participants (65%) had an inpatient hospital stay in the year prior to enrollment, but fewer than half (41%) had a hospital stay in the year after enrollment.** During this time, six participants (35%) had their stays in the first six months, while only two (12%) had an inpatient stay between six and twelve months after enrollment.
- **Participants had fewer hospital stays, but they tended to last longer after enrollment.** In the six months before and after enrollment, the average length of a hospital stay was eight days (median of 4 to 5 days). During these time frames, approximately half of the hospital stays (8 of 16 before enrollment and 4 of 9 after enrollment) lasted four days or less, while about a quarter (4 of 16 before enrollment and 2 of 9 after enrollment) lasted 15 days or more. Between six and twelve months after enrollment, there were fewer inpatient hospital stays (7 total), but they tended to last longer, with six of seven stays lasting more than five days, and two lasting more than 15 days (median and average of 11 days).
- **Diagnoses associated with inpatient hospital stays included physical and mental health issues.** The most common primary diagnosis categories (ICD-9) for inpatient hospital care after enrollment included mental disorders, such as severe bipolar disorder, psychosis, or depressive symptoms (36%); complications associated with pregnancy or childbirth (14%); and diseases of the respiratory system, such as pneumonia or respiratory failure (14%). In addition, primary diagnoses for inpatient stays included infections (9%), injuries (9%), appendicitis (5%), and osteoarthritis (5%).

Participants are accessing medications more consistently the longer they are enrolled.

- Overall, **participants had more total pharmacy claims initially after enrollment** (329 claims) than they had prior to enrollment (266 claims). The number of claims then decreased between six and twelve months after enrollment to 240 claims, which is lower than the number of claims prior to enrollment.



- **The number of medications filled decreased after six months of enrollment.** Participants had similar numbers of medications filled in the six months prior to (135 medications) and following enrollment (140 medications), which then fell to 118 medications between six and twelve months post-enrollment.

- **Pharmacy claims over time for individual participants varied.** Over half of participants (53%) increased their pharmacy claims in the first six months after enrollment, while 12 percent decreased their claims, and 35 percent remained stable. Changes in pharmacy claims for individual participants from the six months before to the six months after enrollment ranged from a decrease of 16 claims to an increase of 19 claims (median and average of four more claims).
- **The number of pharmacies visited has remained relatively stable over time.** It has ranged from 16 locations prior to enrollment to between 13 and 16 locations in six-month intervals after enrollment.

Participant outcomes: Changes in participant stability

All participants moved into stable housing within four months of enrollment in Hospital to Home.

- Based on self-report, participants were homeless for between 1 and 22 years prior to enrollment, with an average of seven years (median of 5 years).

- The majority of participants (65%) moved into stable housing within two months of enrollment, and the remaining participants became housed within three (18%) or four months (18%).
- As of April 2014, 88 percent of the 17 participants were living in apartments. In addition, 71 percent were continuously housed post-enrollment. Of those who experienced housing disruptions, the most common reasons were due to severe substance abuse and mental health needs that required long-term treatment, incarceration, or domestic violence situations in which the participant voluntarily returns to the abuser. These events can result in discontinuation or interruptions of the housing services as the Housing and Urban Development (HUD) rental assistance program, which is the subsidy used by the Hospital to Home initiative, requires that subsidies be terminated if participants are unable to live in the housing for over 90 days.

Average self-sufficiency scores were higher after Hospital to Home enrollment.

The Arizona Self-Sufficiency Matrix assesses participants' self-reliance and the level of support they need in the following 14 domains: community involvement, education, employment, family relations, food, healthcare coverage, housing, income, legal issues, life skills, mental health, mobility, safety, and substance abuse. A lower score on the Matrix indicates lower self-sufficiency and a greater need for support while a higher score indicates greater self-sufficiency. The tool was administered initially by retrospectively reflecting on the participants' self-sufficiency at enrollment and was then re-administered every six months to track changes over time.

- Participants were rated low in most domains when they were initially assessed.
- Participants' average scores were higher at follow-up than at baseline in every domain, except employment, which stayed the same over time.
- Most participants increased their ratings in the domains of housing (75%) and safety (67%) from baseline to follow-up. In addition, over half of participants had increased self-sufficiency when it comes to legal issues (58%), community involvement (54%), and healthcare (50%).

Most participants (82%) had no criminal charges after enrolling in Hospital to Home.

- According to Minnesota court records, 76 percent of Hospital to Home participants have a criminal history. A criminal history can interfere with participants' ability to access stable housing and community services.
- Most legal issues occurred more than a year prior to enrolling in the program, with only one participant having legal issues within a year before enrolling in the program. Prior to enrollment, there were 86 conviction records involving the 13 participants, though the

number of convictions for individual participants ranged from one to 21 (median of 5 convictions; average of 7 convictions). Over one-third of convictions before enrollment were misdemeanors (39%) or gross misdemeanors (36%), while one-quarter were felonies (25%).

- As of April 2014, three participants (18%) have had post-enrollment charges. One participant had three felonies for violating an order for protection, selling drugs, and terroristic threats. Another participant had one felony and two misdemeanors for receiving stolen property, driving while intoxicated, and disorderly conduct. The third participant had two gross misdemeanors for domestic assault and trespassing.

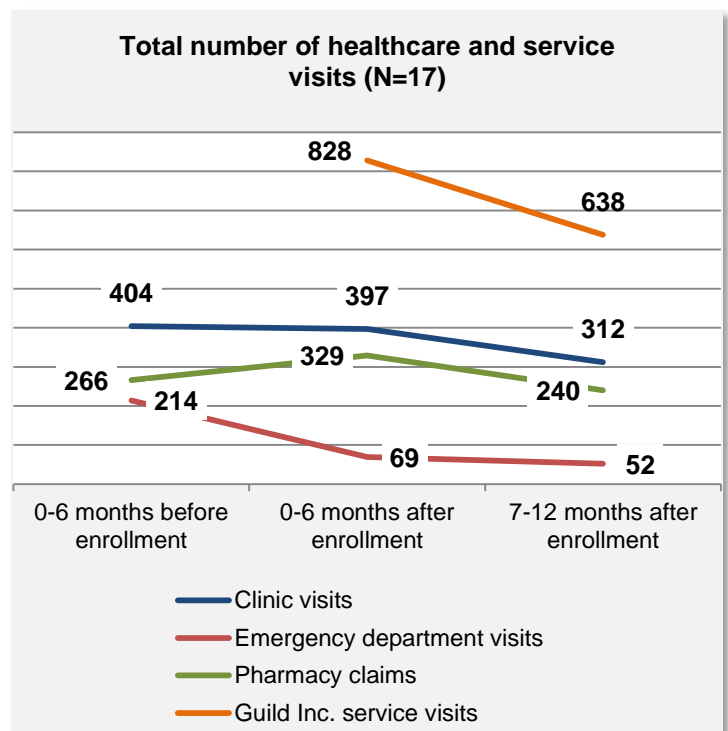
Participant outcomes: Connections between changes

Changes across healthcare systems

Clinic use has consistently been higher than emergency department use both before and after Hospital to Home enrollment. In the first six months after enrollment, clinic use remained steady while emergency department use decreased. During this same time period, pharmacy claims increased.

It is likely that during the first six months, as participants received more appropriate care and achieved greater housing and life stability after enrollment, previously untreated health needs emerged, “pent up” needs for preventative care were addressed, and use of specialized clinic services increased. This may have contributed to the relatively high rates of clinic and pharmacy use immediately following enrollment.

As the participants were enrolled longer, their clinic and pharmacy use dropped off after these immediate needs were addressed and more stability was achieved. In addition, the participants began visiting the same clinic and pharmacy locations more consistently and experiencing greater continuity of care over time.



Overall, these patterns reflect the Hospital to Home goals of reducing unnecessary emergency department use through increased use of primary care clinics and aligning clinic use and medication access.

Changes in service use and healthcare use

Similar to clinic use and pharmacy claims, service provision was especially high in the first six months of the program, when more intensive support and identification of needs was required. Then as participants achieved greater stability, Hospital to Home service decreased in intensity, while staff remained responsive and engaged with participants.

Participants were more likely to interact with Hospital to Home staff than to receive medical care at either an emergency department or clinic in the year after enrolling in the Hospital to Home initiative. The participants with the highest level of healthcare usage, particularly in the first six months of enrollment, also tended to have the highest level of contact with staff. It is likely these participants also have the greatest service needs and, therefore, are the people receiving the greatest dosage of services. This reflects the feature of the Hospital to Home initiative in which services are tailored, including the intensity of services, to participant need.

Conclusions

Effects on participant stability

- This report summarizes significant, positive, long-term participant outcomes of Hospital to Home consistent with the “triple aim” of better care, improved outcomes for people, and reduced costs of care.
- All participants have increased their individual functioning in multiple areas since enrolling in Hospital to Home. Specifically, participants quickly accessed stable housing, decreased their use of emergency departments, stabilized their use of primary clinics and pharmacies, and improved their self-sufficiency in several domains.
- This report illustrates the multiple complex and ongoing issues within Hospital to Home’s target population, including the chronic health conditions, mental illness, and homelessness that made these individuals initially eligible for enrollment. Therefore, the goals for their health and well-being cannot focus on curing or resolving their conditions. Rather, the focus must be upon sustaining participant stability and engagement in their own care in order to address ongoing issues over time (Wagner et al., 2001).
- It is important to recognize that even in the instances in which participants moved out of stable housing after enrollment, they were still requiring and receiving tailored, mobile

support services. This ensured that the periods of housing instability were shorter than those before enrollment and, in some cases, were in more appropriate settings, such as psychiatric or substance abuse treatment facilities.

- While the findings of this report are consistent with the goal of the initiative to decrease inpatient hospital admission by increasing preventative medical and mental health care and treatment, there is an acknowledgement that the participants have severe, chronic conditions that will require hospitalization at times. It may be that with increased stability in participants' self-management of health issues and use of healthcare services, lingering medical issues can be diagnosed and treated appropriately to facilitate improved health in the future.

Broader impacts on costs and resources

- Although actual cost-benefit analysis is outside of the scope of the current evaluation, estimates from the Minnesota Department of Human Services and the Minnesota HealthScores Cost of Care website indicate that a clinic visit costs, on average, about one-quarter of the cost of an emergency department visit.
- Because these participants do not have access to private insurance, the costs associated with these medical services are public costs. Based on the disproportionately high cost of emergency department visits, fewer public resources will be needed if overall emergency department visits decrease for conditions that are preventable or could be treated in a clinic.
- While the primary goals of Hospital to Home involve stabilizing the lives of the individuals served, the initiative also seeks to decrease avoidable emergency department use, which then helps to reduce unnecessary healthcare expenses.
- Patients receiving the right care in the right place, including primary care clinics, will free up other resources within emergency departments to allow them to better serve the patients in need of emergency care.

Core elements of Hospital to Home effectiveness

The staff of the Hospital to Home initiative have identified four core elements of the model that are most associated with the positive outcomes demonstrated in this report. These elements should continue to be evaluated and supported through resource allocations and policy initiatives.

Coordination across systems

In a healthcare home model, there is a designated primary provider (i.e., personal physician or clinician) who is responsible for coordinating care across all elements of the healthcare system.

In the Hospital to Home initiative, the healthcare home function is customized to fit the needs of a high-risk, mobile population which has multiple, complex conditions. Guild Incorporated's Community Health Services Team fulfills the care coordination function and essentially serves as the healthcare home for the participants. The Team, which includes nursing and mental health professionals, is responsible for collaborating with all known healthcare providers to assure planned and integrated care that addresses physical and mental health conditions as well as social determinants of health simultaneously.

Tailored, person-centered care

The Hospital to Home initiative recognizes that an individual's physical, behavioral, emotional, and social health all intersect in complex ways that contribute to their need for support (American Hospital Association, 2012). Therefore, a core element of the initiative is to address the full complexity of participants' needs by completing an in-depth assessment, including neuropsychological testing when possible, to better understand what appropriate care and treatment entails for them. Staff have identified that the process can take between six and nine months to gather and assess the overall individual context and identify how different conditions affect one another for that individual. One example of this includes the assessment of participants experiencing head trauma, which can affect their executive functioning and ability to carry out tasks related to managing their own care. By identifying cases in which head trauma has occurred, staff can tailor approaches to make them more accessible and achievable for participants, and staff can be aware of future head trauma which may exacerbate symptoms.

This upfront investment in assessing participant needs and identifying the person-centered approaches for addressing those needs reflects features of the evidence-based Critical Time Intervention model of case management, which is designed to prevent homelessness in people with mental illness (Susser et al., 1997). In this model, the first phase involves assessing needs, providing support, and connecting participants to appropriate resources, such as housing and primary care. The second phase involves monitoring and strengthening the participants' skills and support networks, including making changes and modifying networks as necessary. The last phase involves transferring care to the established support networks. Because most participants require the ongoing support and care coordination that Hospital to Home provides, the initiative focuses primarily on the first two phases. However, the initiative maintains the goal of keeping participants housed in community settings, versus more restrictive settings, such as long-term care facilities. The first year of participant enrollment is particularly focused on these first two phases, and the changes in healthcare use and service provision described in this report reflect these tasks.

Mobile services

In this model, services follow the participant regardless of living arrangement, a feature of service delivery that is necessary to engage, build, and sustain relationships with participants over time. The Team goes to where the participant is (e.g., in-home, in-community, in a hospital, on the street, etc.), carefully tailoring services to fit diverse and distinctive needs, preferences, and individual goals. While most participants were stably housed throughout this evaluation period, the three participants who experienced housing changes, and even those who did not, had life transitions and service needs that required flexibility and mobility. This mobility allows for continuity of services and adjustment of service intensity as needs change.

Housing support

The ability to get and keep people housed is at the foundation of managing chronic health conditions and achieving optimal health outcomes. Hospital to Home successfully connected participants to stable housing within four months of enrollment. The rental subsidies provided by HUD's Supportive Housing subsidy and administered by Guild Incorporated, as well as the housing subsidies administered by Hearth Connection, have been essential to this result. Participants pay 30 percent of their income towards their housing. Combining this with a rental subsidy makes basic housing affordable and has been key to breaking the cycle of homelessness. Once participants are housed, the Team has provided continued support by forging relationships with landlords, monitoring living conditions, and intervening as needed to mitigate the risk of eviction. Without both the upfront and continued support, and ongoing access to a rental subsidy, participants would likely not have been able to maintain their stable housing over time.

Future directions

- Consistent with the findings from the pilot, this report summarizes many positive participant outcomes. Given the complexities of the population, however, it will take additional time before all of the initiative impacts can be seen.
- Multiple funding sources are used to support the comprehensive activities and services of the initiative. While “braiding” multiple sources together increases the solvency and sustainability of the initiative, this strategy also introduces additional administrative complexity. The initiative will continue to seek opportunities to simplify the administration of funding.
- High-quality care transitions, within the collaborative care approach taken by the partners in this initiative, are essential to achieve and maintain the desired changes in healthcare use for this population. Timely and effective information flow, supported through Organized Health Care Arrangements, will support coordinated and continuous care.

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Appendix

Overview of evaluation

The purpose of the evaluation is to better understand the characteristics and needs of the individuals served by Hospital to Home, and the initiative's impact on participants, including:

- Changes in healthcare use
- Changes in participant stability and self-sufficiency
- Connections between health care and service use

For the current report, Wilder Research analyzed existing medical claims data from the Minnesota Department of Human Services, housing and life functioning data from Hearth Connection, and service and participant records from Guild Incorporated. Regions Hospital also provided medical care data to supplement the information received from the Minnesota Department of Human Services.

Healthcare use data is only available through March 2014 because medical claims may be processed for up to one year after a service was received. At least nine months must lapse between the service date and the data retrieval date in order to allow adequate time for the delay in claims processing. To increase consistency, all data included in this report are from participant initiative enrollment through March 2014. The baseline healthcare usage reported is likely an underrepresentation of actual usage because most participants had inconsistent healthcare coverage prior to enrollment.

In order to capture approximately one year of outcomes, this report includes individuals enrolled before July 2013 and enrolled for at least three months before exiting the initiative.

A total of 17 participants met these criteria; including 14 participants enrolled under the initiative's expansion the three participants who were part of the pilot initiative. The remaining four pilot participants died while enrolled in the initiative. The cause of death was available for three of these individuals, and in each case, the cause was related to the health conditions that originally made them eligible for the initiative.

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Department
Richelle Jader, Administrative Director
Emergency Department
James McClean, Manager Government
Relations
Bjorn Westgard, M.D.

Wilder Research

Jennifer Bohlke, Technical Design Specialist
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Manager
Nancy Hartzler, Communications Manager

This is the second in a series of reports for the Hospital to Home expansion. The first report (February 2014) provides background information about the initiative and the participants receiving services. For more information about the pilot initiative that this expansion is based on, refer to the series three reports describing the Cohort I participants (June 2011) and their outcomes for approximately one year (December 2011) and two years (November 2012) after enrollment.

Wilder Research

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451 Lexington Parkway North
Saint Paul, Minnesota 55104
651-280-2700
www.wilderresearch.org



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For more information

For more information about this report, contact Kristin Dillon at Wilder Research, 651-280-2656 or Julie Grothe at Guild Incorporated, 651-925-8481

Author: Kristin Dillon, Ph.D.

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