Implementation Guide for Public Health Practitioners

The Grady Heart Failure Program: A Model to Address Health Equity Barriers

National Center for Chronic Disease Prevention and Health Promotion
Division for Heart Disease and Stroke Prevention

Acknowledgements

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Commonly Used Acronyms

APP	advanced practice professional
CDC	Centers for Disease Control and Prevention
CDU	clinical decision unit
CHW	community health worker
CVD	cardiovascular disease
DHDSP	Division for Heart Disease and Stroke Prevention
ED	emergency department
EMR	electronic medical record
EMS	emergency medical services
FTE	full-time equivalent
GHFP	Grady Heart Failure Program
GHS	Grady Health System
GMH	Grady Memorial Hospital
HF	heart failure
HHS	Department of Health and Human Services
IT	information technology
LOS	length of stay
MARTA	Metropolitan Atlanta Rapid Transit Authority
MIH	Mobile Integrated Health
MMWR	*Morbidity and Mortality Weekly Report*
NCCDPHP	National Center for Chronic Disease Prevention and Health Promotion
PCP	primary care physician
SES	socioeconomic status

1. Introduction

The purpose of this guide is to support public health practitioners and health care professionals who are focused on improving health equity by providing a detailed description of an intervention intended to address health disparities among heart failure (HF) patients. The Grady Heart Failure Program (GHFP) is located at Grady Memorial Hospital (GMH) in Atlanta, Georgia, and was designed to address socioeconomic barriers to care at the individual level. This guide is based on insights gained from an evaluation of the GHFP. The goal of the evaluation was to assess how the intervention reduced barriers to health equity, defined here as "every person has the opportunity to 'attain his or her full health potential'"[1] in cardiovascular disease (CVD).

This guide can benefit health care professionals including cardiologists, nursing staff, administrators of cardiac care clinics or departments with similar responsibilities, and any public health professionals concerned with continuity of care and addressing barriers to health equity for CVD patients. The guide provides considerations for replication of this implementation approach, taking into account the facilitators, challenges, assets, and needs of patient populations, as well as the unique characteristics of organizational settings to enhance tailoring of the GHFP's core elements.

This guide is divided into five main sections:

1. Introduction
2. Getting Started With a Health Equity-Focused Program
3. Core Elements of the Grady Heart Failure Program
4. Program Monitoring and Evaluation
5. Conclusions

References are included at the end of the document, and a glossary of key terms is provided **Appendix A**.

1.1 Background

Health disparities are particular health inequities that result from a systematic, unfair distribution of the social determinants and conditions that support health, such as safe neighborhoods, access to healthy food, safe housing, and access to quality health care.[2,3] There are deep inequities that affect access to health care and can lead to wide disparities in overall health status, especially for members of racial and ethnic minority groups.[4] Limited access to education, health care, and other resources may begin at a young age and shape the health trajectory at every life stage. For example, nationwide, African American people experience average lower educational attainment, higher unemployment, and greater risk of being in a household below the poverty level and more often have no health insurance than White people.[5] Patients with lower incomes have higher rates of morbidity and mortality compared with patients with higher incomes.[6] Even when health care is accessible, disadvantaged communities may experience a lower quality of services.[7] These circumstances lead to disparities in chronic disease–related behaviors, health care access and use, and health-related quality of life.

Regarding cardiovascular health, African American people develop heart disease at an earlier age, and deaths from heart disease are higher than among White people.[8] African American people also have a higher incidence of congestive HF and greater mortality at earlier ages.[9,10] For both African American and White populations, HF-related mortality showed an upturn after 2012.[11] Additionally, chronic conditions such as diabetes and obesity are more prevalent in African American communities and increase heart disease risk.[12] In particular, hypertension is both more prevalent and less likely to be controlled among African American people.[13]

With these considerations in mind, the Centers for Disease Control and Prevention's (CDC) Division for Heart Disease and Stroke Prevention (DHDSP) sought to identify promising programs that showed evidence of addressing barriers to health equity in the communities they serve and that were ready for a rigorous evaluation. The GHFP was identified through a systematic screening and evaluability assessment process as one such program.[14]

The GHFP is a hospital-based intervention that has the potential to build equity through activities that lead to greater patient health among underserved populations. Hospitals play a vital role in creating a more equitable society through health care, wellness, educational, and service opportunities. At a system level, health inequities include lack of access to care, insurance coverage, and cultural competency.[15] The most effective hospital-based interventions enroll patients from underserved communities and position themselves as part of a broader ecosystem of resources and community institutions acting together to transform patients' lives. By recognizing and thinking through the needs of their patients and community, the GHFP developed core components and built partnerships that create seamless pathways from sickness to health.

The GHFP is a hospital-based intervention that has the potential to build equity through activities that lead to greater patient health among underserved populations.

1.2 Program Overview

The GHFP is based in the Grady Health System (GHS), a public safety net hospital located in downtown Atlanta, Georgia, that serves patients throughout the region. The GHS annually serves more than 600,000 patients, has 650 inpatient beds, and has many outpatient services, including six neighborhood clinics and an emergency department (ED).[16,17] The GHS maintains a strong, ongoing commitment to the health needs of the underserved communities in the Atlanta metro area, especially its two most populous counties, DeKalb and Fulton, and offers specialized medical services for the greater Atlanta region. The population of focus for the GHFP is patients of low socioeconomic status (SES) with diagnosed HF. In the Atlanta area, the population primarily includes African American people, who make up 93% of GHFP participants. The GHFP was launched in 2011 to improve the quality of care and health and reduce hospital readmissions, length of stay (LOS), and ED visits. The GHS patients may be eligible for the GHFP if they have documented HF, an absence of other major medical problems that might limit survival (e.g., end-stage renal disease, a discharge to palliative or hospice care), and the ability to attend the HF clinic.

The GHFP was launched in 2011 to improve the quality of care and health and reduce hospital readmissions, length of stay, and emergency department visits.

The foundation of the GHFP is reducing socioeconomic barriers to health equity to promote adherence to an outpatient medical plan and achieve improved quality of care and patient health outcomes. The five core elements of the program that address healthy equity are as follows:

Core Element 1: Provide the Initial 30-Day Medication Supply—Upon discharge from the hospital, the patient receives a 30-day supply of free or discounted medications to promote medication adherence.

Core Element 2: Assist With Financial Counseling—While at GMH, the patient receives financial counseling, which paves the way for easier future access to GHS services. A GHS financial counselor is also familiar with other public programs that can assist patients.

Core Element 3: Assist With Transportation for Outpatient Visits—Following primary discharge, patients can access free or discounted reliable transportation to and from follow-up appointments.

Core Element 4: Provide Mobile Health Visits—Patients can receive an in-home visit from GHS emergency medical services (EMS) if needed.[18]

Core Element 5: Link to Community Services After Discharge—A community health worker (CHW) conducts needs assessments, provides counseling, and helps patients identify and connect to other services and community resources they may need.

The GHFP provides patient education on HF, plans the outpatient care, and coordinates care for the transition from inpatient to outpatient services. The program logic model (**Appendix B**) provides an overview of program inputs, activities, and expected outcomes.

As illustrated in *Figure 1*, patient interaction with the GHFP begins upon admission. Eligible patients are usually admitted to the ED or directly to the cardiac unit and are typically flagged in the GHS's electronic medical record (EMR) system, Epic. They then receive an initial consult with one of the GHFP providers. During the initial consult and afterward, GHFP providers provide patient education, assess socioeconomic barriers, provide treatment and disease management recommendations, and offer referrals to outpatient and follow-up services to address any social needs.

The foundation of the inpatient consult is gathering data on the patient's socioeconomic status and other barriers to health equity. Much of this information is collected in the Healthy Planet module of the Epic EMR system by the advanced practice professionals (APPs). This customized module includes questions related to the patient's experience of barriers such as transportation needs, social support, and medication affordability.[19] The program aims to conduct a post-discharge follow-up call within 72 hours, followed by a post-discharge outpatient clinic visit within 7 days. These activities help ensure that patients are rapidly connected to follow-up care upon release from the hospital, stay engaged with both the GHFP and the broader GHS, and are linked to any needed community-based services.

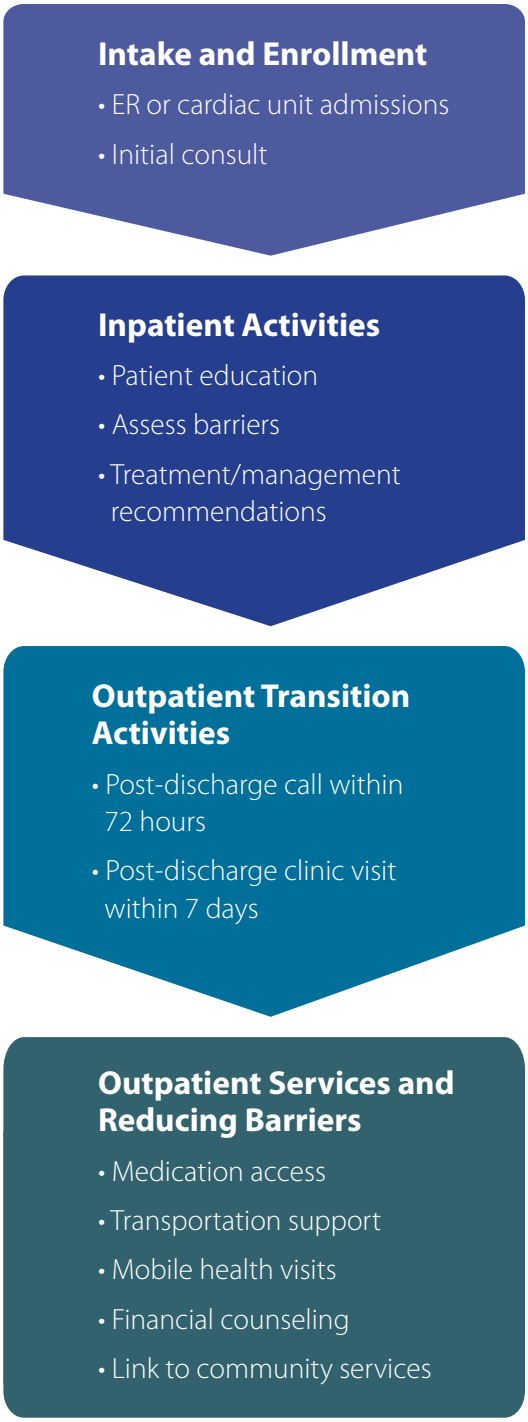


Figure 1: GHFP-Patient Engagement from Intake to Post-Discharge

1.3 Why Consider This Model?

As a path to promoting health equity, the GHFP model warrants consideration for several reasons:

- **Core elements targeting barriers to health equity:** With achieving health equity as a central concern, strategies such as providing transportation services and initial medication supplies directly address common social determinants of health barriers. Understanding obstacles faced by their patients allowed the GHFP to identify appropriate actions.

- **Positive cardiac-related outcomes:** Analyses before CDC's evaluation show that patient participation in the GHFP is associated with reductions in cardiac-related patient readmissions and with success in reaching goals for follow-up patient contacts and appointments.[14] These outcomes benefit the patient and the health system by reducing the burden of illness on the patient, the community, the health system, and practitioners.

- **Connection to the community:** Hospitals are important anchor institutions in the community, and the community can have an important influence on patient outcomes. By identifying community resources and services that can reduce health inequities, partnering with community resources, and providing patient referrals, the GHFP became better connected to community representatives and organizations and more responsive to the communities it serves.

- **Alignment with public health goals:** CDC's National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) has stated its interest in advancing health equity, defined as a situation where "every person has the opportunity to 'attain his or her full health potential'" and no one is disadvantaged in achieving this potential because of "social position or other socially determined circumstances."[20] Furthermore, the Department of Health and Human Services (HHS) has set achieving health equity and eliminating disparities as one of five overarching goals in HHS's Healthy People 2030 Framework.[21]

2. Getting Started With the Grady Heart Failure Program

There are several critical planning tasks in developing a cardiac care program focused on advancing health equity. Implementing and sustaining a program like the GHFP requires an understanding of the specific circumstances and resources of your health system and community. The following tasks can inform your development and tailoring of your implementation strategy:

- **Identify needs, assets, and barriers.**
- **Consider staffing structures and funding mechanisms.**
- **Plan for sustainability.**

Identify Needs, Assets, and Barriers

First, health care systems should identify the needs, assets, and barriers of the patients and communities they serve. *Table 1* suggests questions and resources that can help identify needs, assets, and barriers for consideration before tailoring the GHFP to your community.

Consider Funding Mechanisms and Staffing Structures

Next, health care systems should consider ways to fund and staff the program. A consistent funding stream is critical for sustainability. Health systems can potentially initiate a similar program using existing cardiology resources, including staff and budgets. Funding for the GHFP comes directly through the GHS, as part of its primary mission as a safety net hospital for the Atlanta region.

The current GHFP includes seven full-time staff, including

- A program manager to monitor program operations.
- APPs to provide initial patient consults and follow-up care.
- A CHW to link patients to community resources.
- A patient liaison to arrange a variety of needs, such as scheduling follow-up appointments and coordinating ride services.

Taken together, this level of staffing requires a substantial investment of resources. A summary of resources for the GHFP can be found in **Appendix C** for planning purposes.

Plan for Sustainability

Finally, it is important to plan for sustainability when creating a program implementation plan. To sustain a program of this scale over time requires support from multiple collaborators committed to promoting health equity. The program should have a champion within the organization: an individual who is well acquainted with the patient population and with the barriers and resources of the community served by the health system. The champion should also have strong relationships with higher leadership in the health system—the decision makers involved in setting system priorities and making decisions for allocating funding. In the GHFP model, the champions are the medical director and program manager.

Table 1. Assessing Needs, Assets, and Barriers

Potential Questions	Potential Data Sources
» What is the cardiovascular health status of the community you serve? » What are the health service resources available in the community? » How accessible are existing health resources to community members? » What are the locations of hospitals? Neighborhood clinics? What are the locations of community pharmacies? » What are the locations of primary care physicians (PCPs) and of specialists such as cardiologists? » What social services are available for the community? » If a patient cannot afford a private car and lives alone, do they have access to a ride service through their insurance? » Is there public transit that is convenient to both them and the location they need to access for follow-up care? » Are there ride services available that focus on transporting senior citizens, chronically ill people, or people with disabilities? » What are the locations of grocery stores in the neighborhoods where patients live? » Are there food pantries or food delivery services that can provide healthy food options? » How might mental illness (e.g., depression, anxiety) or isolation affect patients? What is the prevalence of mental illness or isolation in the community? Are mental health services available in the community? » Are there community or senior centers that can provide social support or low-impact fitness options (e.g., walking track, swimming)?	» A survey or inventory of health and social resources within priority communities » Community needs assessments or surveys » Focus groups with underserved communities » EMR queries or reports » Community needs assessment by your hospital/ health system » Data or input from community organizations, partners, and collaborators (e.g., surveys, interviews) » County health rankings **(https://www.countyhealthrankings.org)** » Behavioral Risk Factor Surveillance System **(https://www.cdc.gov/brfss/index.html)** » CDC *Morbidity and Mortality Weekly Report* (MMWR) **(https://www.cdc.gov/mmwr/index.html)** » Interactive Atlas of Heart Disease and Stroke **(https://nccd.cdc.gov/DHDSPAtlas/)**

3. Grady Heart Failure Program Core Elements to Reduce Barriers to Health Equity

This section describes implementation of the five core elements of the GHFP to reduce barriers to health equity:

- **Core Element 1:** Provide the initial 30-day medication supply.
- **Core Element 2:** Assist with financial counseling.
- **Core Element 3:** Assist with transportation for outpatient visits.
- **Core Element 4:** Provide mobile health visits.
- **Core Element 5:** Link to community services after discharge.

Although there are a multitude of barriers that health care systems can address, the GHFP identified and used available resources to focus on the major barriers to achieving health equity encountered by HF patients in the GHS. *Figure 2* shows how the core elements work to address barriers and improve health equity.

Figure 2. GHFP's Five Core Elements in Response to Barriers to Achieving Health Equity

Barrier	Core Element	Patient Impact	Health Equity Impact
Pharmacy Access and Cost of Medications	Core Element 1: Provide the initial 30-day medication supply	Greater ability to adhere to a medication regiment	Greater equity due to better access to care
Access and Cost of Health Care	Core Element 2: Assist with financial counseling	Easier access to GHS services	Greater equity due to better access and continuity of care
Access to Transportation	Core Element 3: Assist with transportation for outpatient visits	Greater ability to keep appointments	Greater equity due to better access and continuity of care
Access to Health Care When Confined to Home	Core Element 4: Provide mobile health visits	Greater ability to receive treatment	Greater equity due to better continuity of care
Access to Community Services	Core Element 5: Link to community services after discharge	Increased use of community services	Greater equity due to better access to basic needs (e.g., food, housing)

The five core elements to promote health equity are woven within the program's coordinated care for the transition from inpatient to outpatient care, as shown in *Figure 1*. Key aspects of the inpatient and outpatient transition activities include

- **The initial consult.**
- **A post-discharge call within 72 hours.**
- **A post-discharge clinic visit within 7 days.**

These key transition activities are briefly described to provide context for the core elements to reduce barriers to health equity. Then, each of the 5 core elements to address health equity barriers is described with implementation considerations, including the resources needed.

Initial Consult

Patients enter the GHFP during their initial inpatient or ED admission for HF. The patient is flagged within the Grady EMR system, and the GHFP staff are notified. An APP visits each patient to discuss HF with the patient. The APP clearly explains the symptoms and causes of HF, the medication regimen the patient will begin, and the lifestyle changes the patient should make. This process usually lasts about an hour. The initial consult also serves to start building the relationship between the individual patients and GHFP staff. The APP staff devote about 30% of their time to the initial consults.

To help answer any questions, the *Grady Heart Failure Patient's Survival Guide* (hereafter called the *Guide*) was created to give to patients as part of the initial consult. The APP discusses the *Guide* with each patient. The *Guide* is a comprehensive resource written to be easily comprehended at a fifth-grade reading level. It includes information on HF symptoms and causes; home symptom management, including monitoring of blood pressure and of symptoms; dietary and exercise suggestions; and a table for at-a-glance management of medications. The initial consult visit is also a time for the APPs to discuss any potential barriers to achieving health equity that the patient may face as they begin treatment for HF.

Post-Discharge Call Within 72 Hours

GHFP staff continue to build relationships with the patients through the discharge process and after they transition to outpatient status. The APPs spend 15% to 20% of their time on additional inpatient contact after the initial consult. The APP who met with the patient in the hospital manages the patient's outpatient HF care. Participants are provided contact

information for the program, allowing them to contact GHFP staff at any time. In addition, most APP staff provide patients with their cell phone numbers so that patients can contact them directly if needed. Staff also try to schedule an initial follow-up appointment within 7 days of discharge.

To ensure a smooth transition to outpatient care, GHFP staff call patients within 72 hours of discharge. The purpose of the call is to follow up on how the patients are doing and remind them of their follow-up appointment or arrange the appointment if one was not previously scheduled. This call serves as the initiation of the relationship between the patients and the patient liaison. The patient liaison calls patients to remind them of appointments and is the most likely staff member to answer the phone when patients call with questions. The patient liaison devotes about 60% of their time to follow-up calls and scheduling appointments. Quick follow-up (i.e., within 72 hours) helps reinforce to patients that GHFP staff truly care about the patients and are willing to do what they can to help. The call also serves as a way for patients to ask any questions they have thought of since their initial consult and inpatient care.

Post-Discharge Clinic Visit Within 7 Days

A follow-up appointment is scheduled for each participant within 7 days of discharge. This appointment is scheduled during the patient's initial visit to the GHS. Like the post-discharge call within 72 hours, the post-discharge clinic visit helps maintain the momentum of care started in the hospital and engages the patient with outpatient care. In the GHFP, the APP staff devote about 30% of their time to follow-up appointments.

One of the reasons for the post-discharge clinic visit is to review the patient's medication regimen. During this visit, the APP can alter the patient's medication regimen to mitigate side effects and encourage medication adherence. Another reason for this visit is to create a chance for another discussion with the patient about their barriers to care since discharge. This visit also encourages APPs and patients to develop a habit of regular clinical follow-up. To encourage attendance, any participant who needs help with transportation can get a ride to and from their initial follow-up appointment at no cost to themselves (the GHFP used Uber or Lyft; see **Core Element 3: Assist With Transportation for Outpatient Visits** in section 3.3).

Core Element 1: Provide the Initial 30-Day Medication Supply

In the box below, highlights for providing the initial 30-day medication supply (Core Element 1) are summarized.

Core Element 1 Highlights	
Summary of Component	Partner with a hospital/health system pharmacy to provide a onetime 30-day supply of prescribed medications, free or at a nominal cost, when HF patients are discharged
Considerations for Implementation	• Arrange with the pharmacy to cover the costs of the initial medication supply • Ensure that a system is in place to deliver medications to patients before they leave the hospital • Use the opportunity to discuss with patients how they can maintain access to prescriptions once the initial supply runs out
Infrastructure Required	An in-hospital pharmacy; an alternative is to explore partnering with pharmacies in the neighborhoods where most patients live
Key Staff Involved	The patient's in-hospital physician, the program APP consulting with the patient, a pharmacist, a patient liaison, and a CHW
Associated Costs	Will vary substantially depending on typical medications prescribed, health system purchasing practices, and willingness of partners to help subsidize the cost. The GHS paid an estimated $51,000 for medications for 650 new eligible patients for a recent year. In addition, the HF liaison spends 10% of their time helping patients get their medicine if they did not receive it in the hospital.

Description of the Initial 30-Day Medication Supply

An important barrier to living a healthy life with HF is access to medications. Being able to afford medications is difficult for patients without insurance and with a limited income, particularly if they have been prescribed multiple medications. To assist patients in adhering to their medication schedule and to help with the cost of medication, GHFP participants are prescribed and provided a 30-day supply of their HF medication at discharge. This supply aids in the financial and logistical burden of adhering to a medication regimen.[22,23] This precaution also ensures that many patients are guaranteed to have their necessary medications until their next follow-up appointment, especially since GHFP participants typically have this appointment within the first week of discharge. Providing participants their medication also saves them the burden of visiting a pharmacy (e.g., securing transportation).

Implementation of the Initial 30-Day Medication Supply

Patients' initial 30-day supply of medication is ordered through the hospital pharmacy before discharge and sent to the patient's room. At GMH, patients are frequently moved to a discharge lounge if they are ready to leave but their transportation has not yet arrived. If the patient is moved to the lounge and discharged before delivery of their medication, then the patient liaison may arrange to deliver the medications or to have the prescription filled at a pharmacy near the patient. About 10% of the liaison's effort is dedicated to following up on such deliveries. The APPs may also provide some medication assistance. The medications are provided free or at a discounted rate, depending on the patient's need. The medication is financed by the program to ensure that each patient starts off with the ability to adhere to their prescribed regimen and has the time to find other resources to continue access to their medication.

Providing an initial medication supply to participants is not a long-term solution to medication access. In rare circumstances, such as extreme financial need or having medication stolen, a GHFP patient may be able to get a second 30-day supply of medicine, but this can happen no more than once per calendar year. However, medication adherence is a critical component to HF management. Providing the initial 30-day supply is the first step to improving medication adherence and allowing all patients the same quality of care, regardless of financial status.

Implementation Cost for Providing Initial 30-Day Medication Supply

The cost of this core element will likely vary widely, depending on health system purchasing practices, the medications commonly prescribed to HF patients within the system, and the extent to which pharmacy partners or pharmaceutical manufacturers and suppliers may assist in subsidizing the cost. Not all patients receive this benefit, which is based on need; the cost to the GHS for the GHFP is about $51,000 per year. An additional minor cost related to medication access is that GHFP staff provide about 36 pillboxes a year to patients in need to help them organize and remember to take their medications. In addition to the patient liaison, other staff may help with arranging the medication supply and with the socioeconomic barriers to medication adherence.

Figure 3. Intended Process at Patient Discharge

Cost of Providing the Initial 30-Day Medication Supply				
Resource	**Unit**	**Unit Cost**	**% on Component**	**Total**
Pharmacy costs (prescription support)	650	$78.10	100	$50,765
Patient liaison	1 full-time equivalent (FTE)	$63,750.00	10	$6,375
Pill boxes	36	$0.14	100	$5
Total (may vary depending on additional staff time): $57,145–~$71,000				

Considerations for Providing the Initial 30-Day Medication Supply in Your Community

When implementing the initial 30-day supply of medications upon discharge in your community, consider the following recommendations:

- Establish a partnership with the hospital pharmacy; their support can enable additional help to patients in great need.
- Ensure that you have an efficient system in place between the ordering physician, the hospital pharmacy, and discharge staff so that patients do not leave without receiving their medication.
- When providing patients their medication, begin the discussion about how they can maintain access to their medication after the initial 30 days.
- Establish rules for the circumstances and frequency with which patients may be able to receive additional supplies of medication at no cost.

Core Element 2: Assist With Financial Counseling

In the box below, highlights for assisting with financial counseling are summarized (Core Element 2).

Core Element 2 Highlights	
Summary of Component	Establish counseling within the health system for low-income and uninsured patients to be readily readmitted and access services. Financial counselors may also assist with connecting patients to public programs.
Considerations for Implementation	• Have financial counselors available within the health system to consult with patients before discharge • Provide training and resources needed for counselors to assess patient eligibility for government and other insurance programs and other services that can reduce financial burdens • Be able to counsel patients on obtaining needed documentation to establish eligibility for insurance and services
Infrastructure Required	Financial counselors within the health system or appropriate training for persons in related roles (such as social workers or a CHW)
Key Staff Involved	APPs, financial counselors, and other staff in related roles (such as a CHW)
Associated Costs	No direct cost to the program if similar staff roles already exist in the health system; otherwise, this function can be carried out by program staff, a CHW, or someone in a similar role. A financial counselor at GMH spends 15% to 20% of their time providing counseling to all eligible GHFP patients (around 700 patients annually). Additionally, key staff spend 5% to 10% of their time arranging financial counseling and assistance.

Description of Assisting With Financial Counseling

Beyond the initial medications, accessibility and affordability are important barriers to the clinical care needed to reduce health disparities. This is a challenge for patients without insurance and with a limited income, particularly with the rigorous follow-up required to adequately control HF. The GHFP refers patients to assessment of their financial status by GMH staff. Receiving financial assistance allows the patient ready access to future services from the GHS, reducing income and insurance barriers.

Implementation of Assisting With Financial Counseling

Before discharge, the GHS provides financial counseling to patients to help alleviate the financial strain that often accompanies health care. GHFP participants who express financial concern are eligible for this service and are referred to the financial counselors to assess the options and resources available to them.

The GHS has a mission to provide access to care for low-income and uninsured populations. Financial assistance is available to patients who live in Fulton or DeKalb County with little or no income. To be eligible for financial assistance, patients must present a picture ID, proof that they live in Fulton or DeKalb County, and proof that they are not working or have a limited income. The biggest barrier to receiving financial assistance for otherwise eligible patients is that they do not have all the required documentation. This is particularly difficult for the homeless population, who cannot provide proof of a fixed address. The financial counselors, along with the CHW, can help the patients determine where to get the proper documentation. For example, some homeless shelters and churches can help people get IDs.

The GHS offers a sliding scale of costs to make services more affordable. First-time patients who live out of county and come to the ER will be seen free of charge if they have financial need. After that, they receive a 30% discount. Financial counselors are familiar with other resources that patients may not know about or understand how to obtain, such as disability or food stamps. Patients often qualify for Medicare, Medicaid, or Department of Veterans Affairs benefits of which they were unaware, and these services may allow them to receive medications at no or reduced cost. The counselors will work with patients to help them find the most affordable option to get their medications.

Implementation Cost of Assisting With Financial Counseling

The financial counseling process is part of the GHS standard services to patients. This component brings no extra direct cost to the GHFP or the patient. The staff and resources for this activity represent a 17.5% level of effort required to counsel eligible patients in the GHFP. Other health systems that serve as safety net hospitals may have a similar process in place. If not, a staff member familiar with local programs may be able to counsel patients on the process and documents needed. Additional program staff may contribute time for arranging financial counseling and assistance.

Cost of Assisting With Financial Counseling				
Resource	**Unit Cost**	**% on Component**	**No. Patients**	**Total**
Financial Counselor	$43,750.00	17.5	700	$7,656
Total (may vary depending on additional staff time)**: $7,656–~$68,000**				

Considerations for Assisting With Financial Counseling in Your Community

When providing or implementing a service similar to assisting with financial counseling in your community, consider the following recommendations:

- Know how to counsel patients about where to get copies of important documents, such as birth certificates, wage information, and credit checks, and resources that can help them obtain these documents.
- Ensure information presented to patients is at a readily understandable level, taking literacy into account.
- Ensure financial counselors at your hospital are knowledgeable on resources available to residents who do not live in your community but want to access your services.

Core Element 3: Assist With Transportation for Outpatient Visits

In the box below, highlights for assisting with transportation for outpatient visits are summarized (Core Element 3).

Core Element 3 Highlights	
Summary of Component	Arrange for patients with limited mobility or no personal vehicle to obtain rides to outpatient clinic visits, ensuring access and continuity of care
Considerations for Implementation	• Identify paratransit or other ride services covered by patients' insurance (such as Medicaid) • Identify public transit options and discounts • Partner with a ride service (such as Uber or Lyft) to arrange rides as a last resort
Infrastructure Required	Local public transit between patients' neighborhoods and the hospital or outpatient clinic space used by your program; Uber/Lyft partners that can provide rides on short notice
Key Staff Involved	A patient liaison or CHW staff to assist patients as needed in learning their options or in calling for rides
Associated Costs	No direct cost to the program from public transit or services covered by insurance; ride partner costs will vary depending on the average distance traveled by patients and the number of rides your program can afford to subsidize. The GHFP provides about 100 rides per year at an average cost of $12, for a total of $1,200 annually. The patient liaison spends around 10% FTE arranging transportation services for patients. Additionally, key staff may spend 5% to 15% of their time helping to reduce transportation barriers.

Description of Assisting With Transportation for Outpatient Visits

An important barrier to attending follow-up appointments and ensuring continuity of care for lower-income patients is transportation.[24,25] Particularly with elderly patients or those with limited mobility, navigating sidewalks, walking long distances, or taking the bus or train can be difficult.

There are three methods GHFP uses to help patients access transportation:

- Transportation covered by insurance. Some insurers, such as Medicaid, may pay for transportation to appointments for their patients.
- Public transit. In Atlanta, patients with low incomes can qualify for half-fare cards that allow them to use public transit at a discounted rate. Patients with limited mobility can also qualify for rides to transit stops.
- Ride services (e.g., Uber, Lyft). The GHFP partners with a local ride service, CommonCourtesy, Inc., to provide Uber/Lyft rides to and from appointments for patients.

GHFP staff help patients access any of these services for which they qualify and will also attempt to help with other transportation barriers that participants experience. For example, some patients can drive but do not have a disability tag, which GHFP staff can help them obtain. Another barrier experienced by some patients who are able to drive themselves is the cost of parking ($5 per day at GMH), which is too high for them to easily afford. The patient liaison dedicates about 10% of time to helping patients arrange transport; the CHW arranges about 20–25 rides per month. There are pros and cons to each transportation method as noted in the following section.

Implementation of Assisting With Transportation for Outpatient Visits

Transportation Covered by Health Insurance

A few insurance plans, such as Medicaid, cover transportation to and from doctor's appointments for eligible beneficiaries. Patients can be counseled about availability and access to these resources if they are not already aware.

Pros

» Patients can obtain transportation at no additional cost to themselves or the program.

Cons

» Patients may have long waits for pickup and be late to appointments and/or have to wait long after their appointment to get picked up.

» Reservations for rides may have to be made days in advance and are not always guaranteed.

» Longer ride times as a result of this service may lead some patients to skip taking medications that promote increased urination (e.g., diuretics).

» There may be a limit to the number of rides patients are allowed each year.

Public Transit

The Metropolitan Atlanta Rapid Transit Authority (MARTA), the local public transit provider in Atlanta, Georgia, has stops near GMH, but fares can be expensive for patients with low incomes ($2.50 one way). Senior citizens or patients with physical or mental disabilities are eligible for half-fare cards from MARTA. GHFP staff can work with patients to help them get reduced fare cards, which allow patients to ride for $1 one way. In addition, MARTA offers MARTA Mobility, which provides Americans with Disabilities Act–compliant paratransit service to patients with disabilities who live too far to walk to a set transit stop. GHFP staff can help patients access and make reservations for this service, which costs $4 per ride. Other transit organizations may have similar programs.

Pros

- Discount fares allow for more affordable transportation for patients.
- Patients can attend appointments at a reduced cost and without cost to the GHFP.
- Patients are able to access regular public transit without long wait times.
- Patients have guaranteed door-to-door rides to and from their appointments.

Cons

- Some patients may have difficulty affording public transit, even at reduced cost.
- Transit routes may not be available for some neighborhoods.
- Patients with HF may find it difficult to walk to and from stops as routes are fixed. Because there are usually several passengers at a time, MARTA Mobility makes multiple stops, so it can add considerable time (e.g., a car drive that may take 30 minutes could take 2 hours on MARTA Mobility).

Ride Services

As a last-resort transportation option, GMH has a partnership with CommonCourtesy that allows it to call Uber/Lyft rides for patients to attend appointments. This service is free to GHFP participants. In 2018, the average cost per ride was about $12 for the GHFP, and the program provided about 100 patient rides. When the follow-up appointment is made, the scheduler will ask the participant whether they require transportation. If so, the scheduler will schedule pickup and drop-off for the patient. This service saves patients money and provides them reliable, on-time transportation, encouraging attendance at their appointments and promoting continuity of care.

Additionally, the GHS has its own transportation system, Grady Transport, which patients can use for $10 per round trip. However, this is cost-prohibitive for many participants and can have long wait times.

Other options for ride services may exist within your community. These may include nonprofit organizations and government agencies that provide ride services based on age or health needs. The National Center for Mobility Management provides a listing of volunteer driver programs by state.

Pros

- Patients have guaranteed, timely door-to-door rides to and from their appointments.
- There is no cost to patients.

Cons

- Some services may be costly to the program (e.g., Uber, Lyft) or participant (e.g., Grady Transport).
- The services are not designed to be the primary way patients get to appointments.

Cost of Implementation

The cost of implementation will vary depending on the options available. Public transit or ride services covered by insurance should impose no extra cost on the program but may not solve transportation needs for all patients. Ride service costs to the program will vary depending on the frequency with which they are used; the GHFP treats these as a last resort to minimize the frequency of use and subsequent cost to the program. Currently providing nearly 100 rides per year at an average cost of more than $12, the GHFP spends nearly $1,200 annually on this service. The patient liaison spends about 10% of their time coordinating this service. Additional staff may also coordinate this service and assist with transportation barriers.

Cost of Assisting With Transportation for Outpatient Visits				
Resource	**Unit Cost**	**% on Component**	**No. Rides**	**Total**
CommonCourtesy (drivers)	$12.00–$12.50	100	94	$1,148
Patient Liaison	$63,750.00	10		$6,375
Total (may vary depending on additional staff time)**: $7,523–~$46,000**				

Considerations for Assisting With Transportation for Outpatient Visits

When implementing a plan to assist with transportation to outpatient visits, consider the following recommendations:

- Determine the availability of transportation as provided by the patient's insurance provider, but recognize the possible limitations of scheduling and availability.
- Investigate the availability of public transit discounts or paratransit services, but recognize the possible limitations of convenience and ease of access.
- Be willing to help patients navigate the transportation system and to help them schedule transportation services as necessary.
- Look for community partnerships to provide Uber or similar ride services, but recognize the possible cost to the program if rides are to be offered free to participants.

Core Element 4: Provide Mobile Health Visits

In the box below, highlights for providing mobile health visits are summarized (Core Element 4).

Core Element 4 Highlights	
Summary of Component	Provide mobile health visits that go to the patient if help is requested or if they are unable to travel to an appointment, ensuring access and continuity of care
Considerations for Implementation	• Use an existing mobile health service within your health system, if available • Use only in cases of greatest need, to allow availability for emergencies • Build a strong working relationship between HF program staff and mobile health staff
Infrastructure Required	Vehicles; medical supplies; facilities to support operating and maintaining vehicles; overhead expenses for insuring and operating service
Key Staff Involved	Program staff (e.g., a CHW) to arrange and support this service; nurse practitioners to conduct visits; drivers
Associated Costs	No direct cost to the program if such a service is already available through your health system and your program does not need to contribute to costs

Description of Providing Mobile Health Visits

Attendance at follow-up appointments is another barrier to achieving equity in cardiovascular health. Patients who experience chronic or acute symptoms that make it difficult to leave their home may miss appointments, making it even more difficult to improve their cardiovascular health. GHFP participants have the opportunity to receive mobile health visits at home from the Grady Mobile Integrated Health (MIH) program.[26] This service can help patients adhere to medication schedules, monitor their health at home (e.g., utilizing their blood pressure cuffs), and promote continuity of care. GHFP staff can arrange visits from MIH. Mobile health services can have a significant impact on health outcomes in underserved groups.[27] This strategy is well suited to the community served by GHFP.

Implementation of Providing Mobile Health Visits

Grady MIH consists of two full-time nurse practitioners and two trucks that can perform mobile clinic services for patients. These visits are usually reserved for patients considered to be at very high risk (patients who have not appeared for follow-up appointments or who the APPs feel are at a high risk for readmission). Orders for mobile health can also be put in before the patient is discharged. MIH serves all of the GHS and usually sees around six HF patients a month. This service is offered free of charge to patients. There are four ways in which staff can utilize MIH visits:

- Staff can schedule an MIH visit before discharge if they believe a patient may be incapable of adhering to their medications or attending their follow-up appointment following discharge.
- Staff can schedule a visit if they believe there is a need either due to the urgency of the situation or to get a better idea of the patient's living situation.
- MIH staff can check on patients, run tests, or investigate the patient's home environment; they make specific notes during the visit and can call the APP if needed.
- MIH staff can bring patients to the hospital if the situation requires it.

Implementation Cost of Providing Mobile Health Visits

MIH is part of the GHS's regular services. As a result, there is no direct cost to the GHFP for this service. Each visit does use staff and equipment resources, however, and represents a cost to the GHS of $200–$300 per visit. Approximately 10–12 visits per month (around 144 annually) are arranged by GHFP staff, representing a cost of some $36,000 per year. Other key staff (e.g., the CHW, APPs) may spend some of their time arranging and supporting this service for their patients. For example, the CHW conducts a needs assessment for the home visit, communicates with the provider, and provides patient support.

Cost of Providing Mobile Health Visits			
Resource	**Unit Cost**	**No. Visits**	**Total**
Grady EMS (mobile health visits)	$250/visit	144	$36,000
Total (may vary depending on additional staff time)**: $36,000–~$71,000**			

Considerations for Providing Mobile Health Visits in Your Community

When providing mobile health visits in your community, consider the following recommendations:

- Use an existing mobile health system, if possible.
- Reserve mobile health visits only for the strongest perceived need so that the service can be available for emergency cases.
- Encourage a strong working relationship between APP staff and mobile health workers.

Core Element 5: Link to Community Services After Discharge

In the box below, we summarize the highlights for providing links to community services after discharge (Core Element 5).

Core Element 5 Highlights	
Summary of Component	Hire a CHW who has a strong understanding of the neighborhoods where most program patients live, assesses patient needs, and provides referrals to community services
Considerations for Implementation	• Ensure that continuous funding is available for the position • Ensure that the CHW demonstrates cultural competence and is known and trusted within the community • Be aware of the main health and socioeconomic challenges confronting program patients, and have a well-developed, comprehensive list of community resources and services for possible referrals
Infrastructure Required	Position funding; contact information for relevant community resources and programs
Key Staff Involved	CHW
Associated Costs	Salary and benefits for the CHW position

Description of Links to Community Services After Discharge

Another important barrier to achieving health equity is access to basic human needs such as food and shelter. Patients who are unable to afford these entities are likely eligible for services that will help them, though many do not know of these services or how to access them. In these circumstances, outpatient medical appointments or even medication adherence may be nearly impossible to achieve. To ensure that GHFP participants are maximizing the resources available to them in their community, a CHW is an integral part of the staff. This role is a key element of the health equity component of the program. CHWs are frontline public health workers who have a close understanding of the community they serve. This role enables them to serve as advocates and liaisons between their patients and other health and social services outside the GHS. This linkage helps patients access services and improve the quality of their lives while reducing hospital admissions and potentially reducing costs.[28-30] The GHFP CHW is skilled in cultural competency for the GHS community and builds patients' self-sufficiency and capacity by increasing health knowledge through a range of activities, including counseling; support; connections to food banks, religious services, and housing support; health education; and more. In addition to providing some assistance with Core Elements 2, 3, and 4, about 40% of the CHW's time is spent linking GHFP patients to resources.

Implementation of Links to Community Services After Discharge

The CHW position at the GHFP was originally implemented with grant funds in November 2015 but was cut in January 2017 when funding ended. Program champions compiled a case for funding the position, and the GHS provided the funds for the position to return to the GHFP in early 2018. Following the needs assessment during the initial consult, patients in need of additional help and resources are referred to the CHW. Through identifying community programs and linking patients with these resources, CHWs help patients overcome barriers related to homelessness, food insecurity, substance abuse, depression, and disability, all of which are significant problems among GHFP patients. The CHW builds an ongoing relationship with patients in order to better meet their changing needs.

In 2017, a GHFP survey revealed that about 50% of patients experience symptoms of depression. Starting in 2018, patients are regularly screened for depression when they come in for appointments. If the screening score is high, the patient is connected with the CHW. The GHFP CHW has a background in mental health, providing the tools to evaluate patients, and spends a substantial amount of time counseling patients about depression and substance abuse. GHFP staff cannot connect patients directly to a behavioral health specialist because the referral needs to come through primary care. While a CHW is not a substitute for HF patients who need to access a mental health care provider, the CHW also serves as a go-between for the patients and a behavioral health specialist.

If it is not possible for your program to support a dedicated CHW position, consider training a staffer in counseling and case management, community resources and the referral process, and other skills relevant to this role. This could assist in connecting patients to needed services without supporting a separate staff position.

Implementation Cost of Links to Community Services After Discharge

The CHW is a full-time position to serve approximately 900 patients or 1,200 HF patient encounters annually (17% uninsured, 24% homeless in the past year, and 15%–40% with substance abuse) and is part of the overall direct staffing cost for the GHFP. Approximately 40% of the CHW's time is spent linking patients to community resources. Other health systems may already have CHWs in place; if so, it may be possible to direct part of their effort to this type of program, but that may require some additional training to support these patients and their specific needs. In addition, APPs may spend 15%–60% of their time linking patients to resources depending on the availability of the CHW and patient needs.

Cost of Links to Community Services After Discharge			
Resource	**Unit Cost**	**% Time**	**Total**
CHW	$70,000	40%	$28,000
Total (may vary depending on the availability of the CHW and additional staff time needed)**: $28,000–~$140,000**			

Key Factors to Implementing Links to Community Services After Discharge

When employing a CHW or someone in a similar role to link patients to services after discharge in your community, consider the following recommendations:

- Ensure that continuous funding is available for the position.
- Ensure that the CHW or someone in a similar role demonstrates a high level of cultural competence and is strongly embedded in the community.
- Consider hiring a CHW with mental health expertise, such as a trained counselor or social worker, or training staff to address mental health issues.
- Ensure information is presented to patients at a literacy level they can understand.
- Be aware of the primary issues your population is dealing with (e.g., homelessness, substance abuse, mental health), and have a well-developed list of relevant community services and programs for referrals.
- Consider screening all patients for depression and having resources ready to help patients who screen positive for depression.

4. Program Monitoring and Evaluation

This section provides general guidance and a brief overview of core concepts in program monitoring and evaluation, as well as details on these practices in the GHFP. Indicators of health equity can be incorporated into EMR and reported regularly, just like other outcomes.

Program monitoring and evaluation provides several benefits to public health practitioners. These include:

- Measuring inputs that can reduce health inequities.
- Monitoring and identifying opportunities for program improvement.
- Demonstrating program effectiveness to collaborators.

There are multiple types of evaluations. For the GHFP program evaluation, these included process, outcome, and economic evaluations. Additionally, the CDC Framework for Evaluation in Public Health (**http://www.cdc.gov/eval/framework/index.htm**) is a valuable reference resource that can help guide evaluation planning and implementation.

A. Steps for Planning Program Monitoring and Evaluation

Below are key steps to include when planning program monitoring and evaluation efforts of a comprehensive, health-equity focused program.

1. Engage Collaborators

Paramount to any program evaluation is collaborator engagement. Collaborators can inform the evaluation by giving context to the situation and providing the evaluator different points of view for consideration. Collaborators should be engaged to classify important activities and advise evaluation questions to determine the impact of the program. They can also help to inform sustainable and effective solutions given their understanding of the context.

As part of the implementation and evaluation of this program, the GHFP identified and engaged collaborators within the GHS and in the community. The more that collaborators are involved, the more informative and well received your evaluation will be. In the case of the GHFP, collaborators included GHFP staff, the GHS, community partners and organizations, and the priority patient population. Incorporating multiple viewpoints allows for a more well-rounded and better-informed understanding of your program.

2. Develop Logic Model

A logic model can serve as a foundation for program monitoring and evaluation. The logic model visually depicts a program and shows the links between resources, activities, program outputs, and outcomes (separated into short term, intermediate, and long term). Logic models are helpful to program planners and evaluators because they help determine appropriate measures of implementation and program effectiveness. Once established, logic models can help keep an evaluation focused. An example of a logic model for the GHFP is in **Appendix B**. Note that program outputs include reduced barriers to health equity and the health outcomes include reduced health disparities.

3. Develop Evaluation Questions

Once a program logic model has been developed, information gathered about a program can be used to create appropriate evaluation questions and design. Evaluation questions are typically aligned with the program's objectives. There are two main types of questions in current evaluation and monitoring activities: process and outcome. Process evaluation questions facilitate the exploration of a program's implementation. Outcome evaluations focus on examining specific outcomes for program participants. For a focus on health equity, as with the GHFP, outcomes may include not just patient health status but also the patient's ability to manage barriers to access and care (such as transportation issues) and social and economic challenges. An overview of process and outcome evaluation and examples of questions for the GHFP, appear in the table below.

Differences Between Process and Outcome Evaluation Questions	
Process Evaluation	Process evaluation is used to determine whether a program is being implemented as intended. Process evaluations focus on the process portion of the program logic model. Process evaluations help determine the linkage between your program activities and program outcomes. In theory, by demonstrating that the implementation of the process portion of the program is going as intended, the program outcomes should be accomplished as well. **Examples of Process Evaluation Questions for GHFP** » What are the barriers and facilitators to implementation of the GHFP? » What are the core components of the GHFP?
Outcome Evaluation	Outcome evaluation focuses on the short-term, intermediate, and sometimes long-term outcomes of the program. Outcome evaluation is used to determine program effectiveness based on expected outcomes. **Examples of Outcome Evaluation Questions for GHFP** » To what extent does the GHFP reduce hospital readmissions for participants? » To what extent does the GHFP reduce transportation barriers to health equity for participants?

4. Develop the Evaluation Design

Following the formulation of evaluation questions, the program's evaluation design can be created. At the core of program evaluation are three approaches: qualitative methods, quantitative methods, and mixed methods. Issues of health equity can be examined with both qualitative methods (e.g., asking patients about specific barriers to care, asking staff about training in cultural competency) and quantitative methods (e.g., incorporating questions about access and barriers into the EMR).

- Qualitative methods collect descriptive information from verbal responses, transcripts, and written responses. Examples of qualitative methods may include interviews or focus groups asking patients and staff about their feelings toward the program and whether it helped them. The responses would then be analyzed to determine different themes and patterns.

- Quantitative methods collect information on a sample representative of the priority population and use descriptive and inferential statistics to assess differences. For instance, the GHFP health indicators (e.g., systolic and diastolic blood pressures) are used to determine whether there are differences before and after implementation.

- Mixed methods approaches combine qualitative and quantitative methods to answer the evaluation questions.

Once the method or methods for program evaluation are chosen, a key decision is whether the evaluation will rely on existing data sources or whether additional primary data will be collected. Primary data are collected directly for the purposes of the evaluation. Secondary data include data that are currently available, and the primary purpose of the data is use outside of the evaluations. Multiple factors determine the type of data that is needed; however, all data collected should be based on the evaluation questions.

To serve as a guide for the program evaluation, an evaluation matrix should be created to organize the planning process and ensure all evaluation questions are addressed. The evaluation matrix should contain all the variables that will be collected by the program. An excerpt of the GHFP evaluation matrix is below.

Excerpt of the GHFP Evaluation Matrix

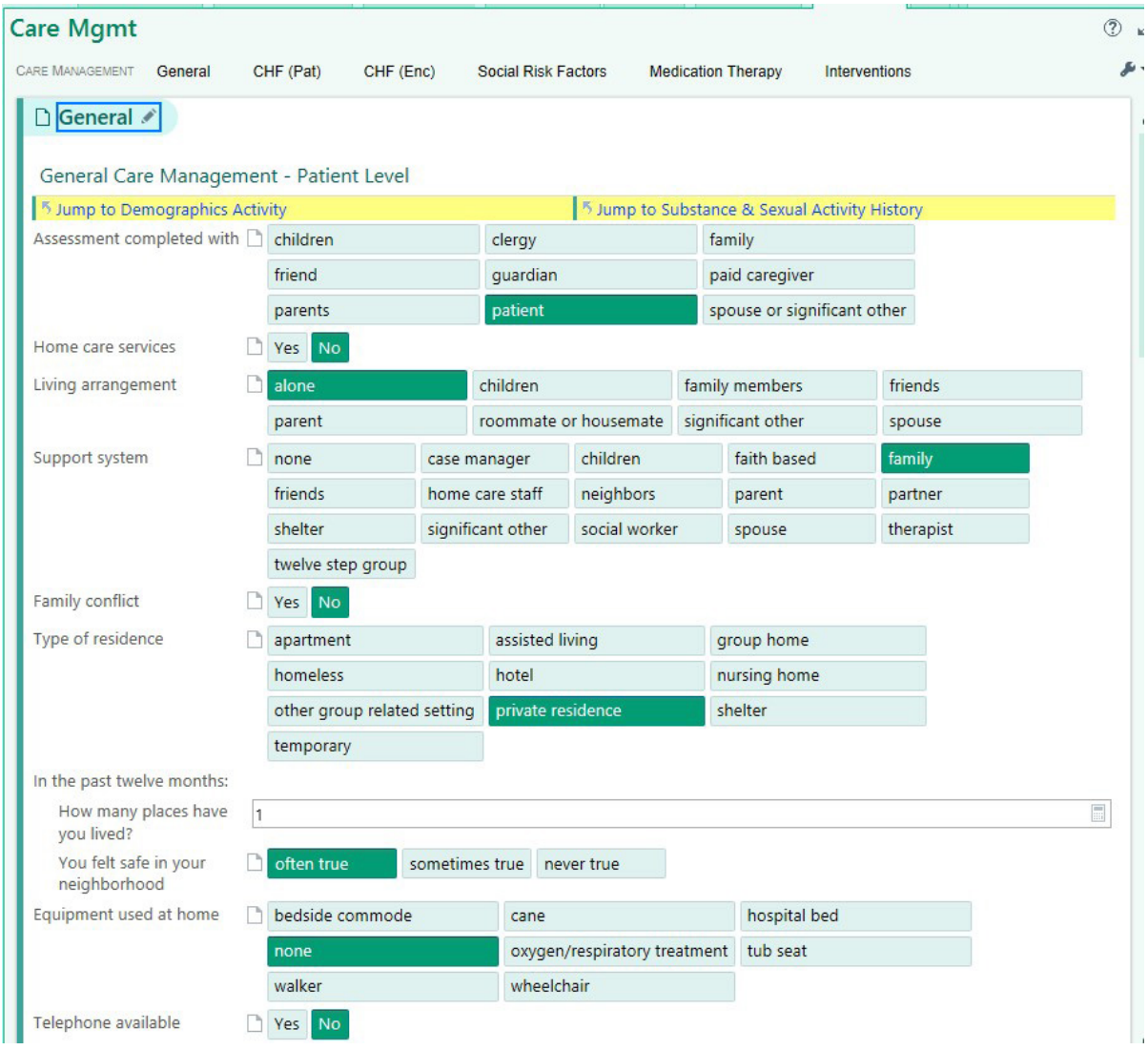
Evaluation Question	Data Source	Methods	Indicators	Analyses
To what extent do barriers to health equity influence short-term outcomes for patients?	Healthy Planet EMR data	Data summary from Healthy Planet	» 30-day readmissions » LOS » Transportation barriers » Financial stress	» Descriptive statistics » Inferential statistics

5. Select Key Indicators to Assess Barriers to Advancing Health Equity

Key indicators are measures by which program progress and success will be judged. They can be drawn from any source that is relevant to the evaluation. For the GHFP, key indicators were taken from both EMRs and interviews. In this evaluation, a mixed-methods approach was applied, incorporating both qualitative and quantitative process and outcome indicators.

Addressing barriers to the advancement of health equity is important for reducing death and disability related to CVD.[31] Looking at the social determinants of health within a program is an approach to addressing health equity barriers. Social determinants of health that affect CVD include SES; race, ethnicity, and racism; social support; access to medical care; and residential environments.[31] One of the goals of the GHFP is to advance health equity among its priority population. The Healthy Planet module of GHS's EMR system captures most of the data relevant to health equity barriers; the screenshot below shows data elements for patients' living situations and social support.

Screenshot From Healthy Planet Module



The following matrix shows a sample of the GHFP's indicators that measured barriers to health equity, the evaluation approach, type of evaluation, data source, and type of analysis.

Indicators of Barriers to Health Equity Matrix

Indicators of Barriers to Health Equity Indicators	Approach	Evaluation Type	Data Source*	Analysis
Type of transportation assistance needed	Quantitative	Outcome	Healthy Planet data	Descriptive
Barriers to affording medications	Quantitative	Outcome	Healthy Planet data	Descriptive
Barriers to food security	Quantitative	Outcome	Healthy Planet data	Descriptive
Description of how the ride service has positively affected access	Quantitative	Outcome	Staff interviews	Thematic analysis

*Healthy Planet data = variables added to the Grady EMR through the Healthy Planet module

6. Monitor Costs

To plan for future program years and to understand the cost drivers of your program, program costs can be monitored. Program costs can also be useful for evaluating the cost effectiveness of your program. The GHFP did not have a separate cost center, so program costs were estimated based on the reported program inputs using the cost categories and data sources shown below.

Economic Monitoring Matrix

Cost Categories	Approach	Process or Outcome	Data Source	Expected Analysis
Staff				
Staff time, salary, and benefits	Quantitative	Process	» Staff time survey » Salary from GHS records	Descriptive
Staff training	Quantitative	Process	GHS records	Descriptive
Office/Overhead				
Equipment and supplies	Quantitative	Process	» Invoices » Inventory and internet	Descriptive
Facilities	Quantitative	Process	GHS records	Descriptive
Materials/Supplies for Patients				
Educational materials	Quantitative	Process	GHS records	Descriptive
Home supplies (e.g., scales, blood pressure cuffs) for self-monitoring	Quantitative	Process	Invoices	Descriptive

7. Select Analytic Approaches

How data will be analyzed is critical to answering the evaluation questions. The analytic approach should align with the data available and collected through the evaluation. As part of the GHFP evaluation, three types of analyses occurred. The first type, thematic analysis, utilized qualitative data to identify key themes from interviews and focus groups transcripts. Two independent reviewers developed and refined separate lists of coding categories for staff and patients, consulting at several points to identify additional themes or unused themes that could be discarded. Thematic coding was done using NVivo v11 software. Interrater reliability was calculated for each interview, with a target of 80%.

The second type, quantitative analysis, was used to provide summaries of continuous or discrete data. An example of quantitative data for the GHFP included key indicators of care and outcomes in order to assess whether the program was meeting its goals. Below are examples of the monthly reporting from the GHFP's data dashboard, which provided this data to key staff and other collaborators.

EMR systems and information technology (IT) staff can be an important resource for evaluating this type of program. Before the evaluation, it is important to assess EMR systems and staff capabilities. For the GHFP, datasets from GHS's Epic EMR system are pulled by the IT staff and sent to analytical staff for analysis. Most analytical staff will require specialized analytical programs to conduct analyses. Common commercial statistical packages include SAS (SAS Institute), STATA (StataCorp), and SPSS (IBM).

	12 Month Avg	Monthly Goal	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17
Volume									
Impatient Discharges	145	126	156	128	148	141	166	129	143
Completed CHF Clinic Visits	318	231	***215***	**242**	**292**	**262**	**287**	**284**	**302**
Completed Kirkwood CHF Clinic Visits	78				46	57	84	81	75
Completed IP Consults	155	151	**181**	***137***	**189**	***139***	**165**	***143***	***146***
Completed CDU Consults	28		43	20	35	29	36	42	31
No Show Excluding Cancellations	32.9%	30.0%	***39.9%***	***35.8%***	***31.4%***	***30.4%***	***32.5%***	**29.1%**	***30.4%***
Outcomes									
Average LOS	5.65		7.39	5.91	5.76	5.98	5.86	4.78	6.20
Expected LOS	5.04		5.04	5.01	4.98	5.20	5.21	4.94	5.50
LOS Ratio	1.12	1.01	***1.47***	***1.18***	***1.16***	***1.15***	***1.12***	**0.97**	***1.13***
Observed Mortality	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Expected Mortality	1.37		1.68	1.12	0.85	1.70	1.10	2.05	1.58
Mortality Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Avg	Monthly Goal	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17
Aldoesterone Antagonist at discharge (Target: 75%)									
Numerator	128		11	8	8	5	16	5	11
Denominator	147		16	9	11	6	19	6	11
Rate	87.1%	75.0%	***68.8%***	**88.9%**	***72.7%***	**83.3%**	84.2%	**83.3%**	**100.0%**
Anticoagulation for Atrial Fibrillation or Atrial Flutter (Target: 75%)									
Numerator	307		27	18	26	22	34	25	24
Denominator	340		31	20	27	24	35	26	26
Rate	90.3%	75.0%	**87.1%**	**90.0%**	**96.3%**	**91.7%**	97.1%	**96.2%**	**92.3%**
Hydralazine Nitrate at Discharge (Target: 75%)									
Numerator	236		28	21	23	11	30	19	15
Denominator	268		48	33	44	17	39	21	20
Rate	88.1%	75.0%	***58.3%***	***63.6%***	***52.3%***	***64.7%***	**76.9%**	**90.5%**	75.0%
DVT Prophylaxis (Target: 75%)									
Numerator	937		95	72	96	74	70	85	55
Denominator	1009		102	81	108	77	76	90	62
Rate	92.9%	75.0%	**93.1%**	**88.9%**	**88.9%**	**96.1%**	**92.1%**	**94.4%**	**88.7%**

Legend: **Meets or Exceeds Target** ***Below Target***

The third type of analysis, a cost analysis, can be used to inform the program (see Economic Monitoring Matrix for example cost categories and sources, and a cost data collection template can be downloaded from **https://www.cdc.gov/asthma/program_eval/asthmaprogramguide_mod6.pdf** [PDF, 3.07 MB]). Costs can be summarized for the total and for the outpatient program (fixed and variable) and the social needs activities. The fixed costs will inform the costs that are needed to operate the program and that will not vary by the number of patients. Program leadership and analysts can consider how the cost data will be used and what program documents and other resources are available.

8. Disseminate Information

Once data collection and analysis are complete, it is important to interpret the evaluation data to determine what the data says about the program. The method in which the evaluation results will be disseminated and shared should be considered before the end of the evaluation period. During this process, it is important to engage collaborators to review the data and provide additional context.

When reporting findings, consider multiple communication channels and diversity in the types of collaborators. Examples of dissemination channels include journal publications, newsletters, fact sheets, evaluation reports, and presentations. Most importantly, the findings should be written in a way that most people can understand.

5. Conclusions

5.1 Overall Strengths of the Grady Heart Failure Program

The GHFP shows promise in reducing barriers to health equity for HF patients in a health care setting. The core health equity components of the GHFP provide initial 30-day medication supply, assist with financial assistance, assist with transportation to outpatient visits, provide mobile health visits, and link to community services after discharge. The execution of these core elements ensures that the GHFP is able to address their patients' barriers to accessing quality health care despite challenging social and community contexts. In evaluating the GHFP model, some of the strengths identified for the GHFP's approach to advancing health equity were as follows:

- Building relationships between staff and patients.
  - » By building an ongoing relationship through the staff's care and commitment, recognized by patients, the program encourages engagement with outpatient services, continuity of care, and adherence.
- Advancing health equity through identifying and modifying barriers to care.
  - » By focusing on reducing barriers to care among low-SES HF patients, the program addresses tertiary prevention. The specific barriers addressed may have co-benefits for primary prevention by addressing social determinants in the communities that the GHS serves.
- Increasing capacity to address health equity by developing collaborations across departments and with community partners.
  - » By working in coordination with other components of the GHS (e.g., financial counseling, mobile health), resources are used more effectively by all; by collaborating with community partners (e.g., ride services, referrals to community programs), the program engages with the community and makes them partners in its success.
- Increasing health equity at a lower cost.
  - » Addressing health inequity is a substantial effort. This may be offset by reducing costs to the health system (through reducing readmissions and LOS), improved quality of life among low-SES HF patients, and greater health equity in the community (by improving access to care and the quality of care).

5.2 Key Considerations for Implementation

This evaluation resulted in the following considerations in developing and implementing a program similar to the GHFP to improve health equity by reducing disparities in cardiovascular health in health care settings:

Identify Barriers to Health Equity

Although there are commonly recognized barriers to health equity (e.g., lack of insurance, lack of transportation), the relative importance of different barriers depends on the local circumstances of the patient population. Understanding the unique local barriers, as well as the individual assets of the community, is a prerequisite for developing an intervention that can focus on promoting health equity. A key part of identifying barriers is asking patients what barriers they experience to understand their perspective on the obstacles they face.

Ensure Team Commitment to the Program

Participants in the GHFP noted a strong sense of caring and commitment from staff. The strength of this staff–patient relationship is enhanced by team understanding of the goals of health equity, the assets and barriers experienced by patients, and the resources they have for helping patients respond to those barriers.

Establish Strong Community Partnerships

By partnering with community organizations and working closely with resources within the community, ties are strengthened, and socioeconomic barriers can be addressed by working together.

Secure Data Management and Monitoring Systems

Tracking patient outcomes for a health equity–oriented program requires more than just measures of patient readmissions or adherence, though these are important. It also requires identifying measures of health equity-related outcomes (e.g., transportation access, social support, quality of life). This can require moving beyond common EMR data elements to put in place additional measures that can track the extent of such barriers and identify trends or changes over time that can inform program practices and partnerships.

Appendix A. Glossary

Advanced practice professionals—Advanced practice professionals are a group of medical professionals who include physician assistants and advanced practice registered nurses.

Cerebrovascular disease—Cerebrovascular disease includes a variety of medical conditions that affect the blood vessels of the brain and the cerebral circulation.

Community health worker—A community health worker is a frontline public health worker who is a trusted member of and/or has an unusually close understanding of the community served. In some communities, this is known as a *promotor (de salud)*.

Cultural competency—Cultural competency is the ability to interact effectively with people of different cultures.

Descriptive analysis—Descriptive analysis is used to describe the basic features of the data in a study. It provides simple summaries about the sample and the measures. Means, standard deviations, and frequency distributions are descriptive analyses.

Economic evaluation—Economic evaluation is the process of systematic identification, measurement and valuation of the inputs and outcomes of programmatic activities, and the subsequent descriptive or comparative analysis of these.

Electronic medical record—An electronic medical record is an electronic record of an individual's health-related information that can be created, gathered, managed, and consulted by authorized clinicians and staff. It can be useful for tracking patient health over time and across different types of medical encounters.

Essential hypertension—Essential hypertension is high blood pressure that does not have a known secondary cause. It's also referred to as primary hypertension.

Get With The Guidelines®—The American Heart Association's Get With The Guidelines® for heart failure is an in-hospital program for improving care by promoting consistent adherence to the latest scientific treatment guidelines. The criteria are defined by the American Heart Association. Numerous published studies demonstrate the program's success in achieving significant improvements in patient outcomes, such as 30-day readmissions.

Health disparities—A particular type of health difference that is closely linked with social, economic, and/or environmental disadvantage other characteristics historically linked to discrimination or exclusion. Health disparities adversely affect groups of people who have systematically experienced greater obstacles to health based on their racial or ethnic group; religion; socioeconomic status; gender; age; mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; or geographic location.

Health equity—The attainment of the highest level of health for all people. Achieving health equity requires valuing everyone equally with focused and ongoing societal efforts to address avoidable inequalities, historical and contemporary injustices, and the elimination of health and health care disparities. Specifically, it requires prioritizing addressing obstacles to health, such as poverty, discrimination, and their consequences, including lack of access to good jobs with fair pay, quality education and housing, safe environments, and health care. For the purposes of measurement, the CDC Office of Minority Health and Health Equity recognizes that health equity means reducing and ultimately eliminating disparities in health and its determinants that adversely affect groups that have been excluded or marginalized and that these groups are not static over time.

Healthy Planet—The Healthy Planet module is a customizable module of Epic's EMR system. It can include questions related to patients' experience of such barriers to health equity as transportation needs, lack of social support, lack of neighborhood safety, and food insecurity.

Ischemic heart disease—Ischemic heart disease is also known as coronary artery disease or hardening of the arteries. Cholesterol plaque can build up in the arteries of the heart and cause ischemia, meaning the heart is not getting enough blood flow and oxygen.

Logic model—A program logic model visually illustrates the linkages between program inputs, activities, outputs, and outcomes. Logic models can help guide evaluation activities and assist in interpreting the findings.

Mixed methods—A mixed-methods design is a research methodology that involves collecting and analyzing both quantitative and qualitative sources of data and synthesizing the results so that each type of data informs the other.

Outcome evaluation—Outcome evaluation measures program effects in priority a target population by assessing progress in the outcomes that the program is intended to achieve.

Primary data—Primary data is collected by a researcher from firsthand sources, using methods such as surveys or interviews, and reflects data that were collected for a particular purpose.

Process evaluation—Process evaluation measures program activities and inputs to determine whether a program has been implemented as intended.

Program champion—A program champion is a person who voluntarily takes extraordinary interest in the success of a program. He or she will be knowledgeable about the program and can help garner interest and support for the program.

Qualitative data—Qualitative data is data that approximates or characterizes but does not directly measure the attributes, characteristics, or properties of a thing or phenomenon. Interview transcripts are an example of qualitative data.

Quantitative data—Quantitative data is data that can be measured and expressed as a number. Length of stay for a hospital admission is an example of quantitative data.

Safety net hospital—The National Academy of Medicine defines a safety net hospital as a hospital that organizes and delivers a significant level of health care and other health-related services to patients with no insurance or with Medicaid.

Secondary data—Secondary data is data gathered from studies, surveys, or experiments that have been run by other people or for other research. An example of secondary data in the GHFP model is the EMR data.

Social determinant of health—According to the World Health Organization, social determinants of health are the conditions in which people are born, grow, live, work, and age. These circumstances are shaped by the distribution of money, power, and resources. Health inequities are largely due to social determinants.

Socioeconomic barriers—Socioeconomic barriers are factors that limit a patient's ability to achieve health equity. Barriers include limited access to resources including insurance, medical care, healthy foods, safe places to walk, and sanitary living conditions.

Social needs—Individual-level social needs may result from the social, economic, and structural conditions in a community.

Socioeconomic status—According to the American Psychological Association, socioeconomic status is the social standing or class of an individual or group. It is often measured as a combination of education, income, and occupation.

Appendix B. Grady Heart Failure Program Logic Model

Inputs

Core Staff
- Registered nurses/nurse practitioners
- Certified medical assistants
- Administrative representative
- CHW

Ancillary Staff
- Medical director
- Executive director
- Physicians—cardiologist and others
- Nurse educator
- Pharmacists
- Case managers
- Social workers
- Multidisciplinary HF team

Partners
- CommonCourtesy
- Grady EMS
- Pharma companies
- Medical device companies
- Home health companies

Program Materials
- *Grady Heart Failure Patient's Survival Guide*
- HF order sets for admission and discharge
- Milner Fenwick education videos
- Outcome Health wallboards, videos, and tablets
- Scales, blood pressure cuffs, and pillboxes

Funding
- Fulton and DeKalb counties
- Medicare, Medicaid, managed care, and self-pay
- GHS

Other
- Population health

Quality Improvement and IT
- Epic
- Jvion
- Vizient

Activities

Identifying and Enrolling Patients
- Consult—ED, clinical decision unit (CDU), and inpatient
- Outpatient referrals
- Patients on quality and discharge list (who did not receive consult on admission)

Inpatient Services
- Patient education
- Treatment and disease management recommendations
- Aquapheresis (ultrafiltration)
- Intensive cardiac care unit
- Medication titration
- Palliative care
- Discharge placement
- HF advanced therapy guidance and referrals
- Specialty referrals
- Transition to outpatient services
- (Re)admission to CDU/inpatient for decompensated HF
- Assess socioeconomic barriers

Outpatient Services
- Follow-up call post-discharge (within 72 hours)
- Clinic follow-up visit post-discharge (within 7 days)
- MIH visits
- Cardiology request for urgent follow-up
- Monitoring of labs
- Medication titration/pharma department
- Home-based assistance and management of inotropes
- Hospice care
- Patient education: seminar and support group

Reducing Socioeconomic Barriers
- Transportation support via Uber (through CommonCourtesy or Southeast Transport)
- Medication access
- Picture IDs for GHS

Outputs

Identify and Enroll Patients
- No. patients screened
- No. patients enrolled

Inpatient Services
- No. patients with heart failure receiving inpatient care
- No. patients receiving disease management recommendations
- No. patients receiving HF education
- No. HF-related advanced therapy referrals
- No. patients transitioned to outpatient services

Outpatient Services
- No. post-discharge follow-up calls
- No. post-discharge clinic follow-ups at GMH and Kirkwood Health Center
- No. referrals to outpatient clinic by PCPs
- No. mobile health visits
- No. cardiology requests for follow-up
- No. labs
- No. receiving home-based assistance and management of inotropes

Reducing Socioeconomic Barriers
- No. patients needing/using transportation assistance
- Frequency of transportation assistance use
- No. patients needing/using medication assistance
- Frequency of medication assistance use
- Types of social barriers identified

Outcomes

Short-Term Outcomes
- Reduced hospital readmission rate
- Reduced LOS
- Decreased no-show rates for follow-up patient appointments
- Increased patient knowledge of managing HF condition
- Increased patient compliance according to Get With the Guidelines®
- Increased patient access to HF specialists
- Increased number of staff implementing Grady HF protocols and Get With the Guidelines®

Long-Term Outcomes
- Reduced rates of HF-related mortality
- Improved management of disease progression
- Reduced socioeconomic barriers to HF-related treatment and services
- Decreased disparities in quality of care for Grady HF patients
- Decreased disparities in HF-related outcomes for Grady HF patients

Appendix C. Program Resource for Planning Purposes

The table below describes the program resources for the current GHFP and early implementation considerations. Some resources are based on the number of patients served.

Core Program—Fixed	Description and Early Program Implementation Considerations
Medical director—0.05 FTE	The medical director champions the program and may contribute more time during planning and start-up. Depending on the context, start-up may benefit from additional leaders to provide guidance and to advocate for the program.
Program manager—1.00 FTE	The program is nurse led and the program manager is a clinician, a champion of the program, and administers the program. This role is key for starting and maintaining the program.
Data dashboard and analytic support	In the first year of the GHFP, there was no data analytic support for monitoring and evaluation. Data can help tailor the program and track progress on quality improvements.
Space and utilities	The program does not pay rent. Dedicated space is needed for staff and to see patients.
Equipment » **Blood pressure cuff** » **Workstations** » **Laptops** » **Phones** » **Printer**	In the first year of the program, equipment included » 1 cuff » 4 workstations » 2 laptops » 2 computers » 4 phones » 1 printer
Joint Commission certification	For more information: **https://www.jointcommission.org/accreditation-and-certification/certification/certifications-by-setting/hospital-certifications/cardiac-certification/advanced-cardiac/advanced-heart-failure/**

Core Program— varies by size of program or no. patients	Description and Early Program Implementation Considerations
Nurse practitioners—4.00 FTEs	In the first year of the GHFP, the program was half the size and had two full-time nurse practitioners. GHFP nurse practitioners also assist with social needs activities described in the *Guide*.
CHW—1.00 FTE	The CHW assists with social needs described in the *Guide*. In the first year of the program, there was no CHW. The amount of time a nurse practitioner spends addressing social needs may vary based on the availability of the CHW and the needs of the patient population.
Patient liaison—1.00 FTE	The patient liaison is a licensed practical nurse and assist with social needs activities described in the *Guide*. In the first year of the program, there was no patient liaison.
Front desk—0.50 FTE	In the first year of the program, this position was 0.25 FTE.
Additional nursing staff—1.80 FTEs	The GHFP is supported by a registered nurse and a contract nurse. In the first year of the program, there were no additional nursing staff.
Medical assistant—0.80 FTE	In the first year of the program, there was no medical assistant.
Phlebotomist—0.80 FTE	In the first year of the program, this position was 0.4 FTE.
Supplies, guidebooks, and trainings for patients	The program may require additional miscellaneous supplies (e.g., gloves) for staff and may provide supplies for patients to use at home (e.g., blood pressure cuffs). The GHFP also provides a caregiving workshop and an HF guidebook for patients to take home. They estimate that providing caregiving training costs $2,000 per workshop and each guidebook costs $5 to print.

To consider:

(1) May require a substantial effort to gain support and plan the program. Planning and start-up could include developing partnerships, assessing risks and assets in the community, developing processes, hiring staff, training staff, purchasing equipment, developing educational materials, and more.

(2) Some activities may be reimbursable and there may be resources within the community.

Additional resources:

For planning and budgeting, salary estimates can be found at the Bureau of Labor Statistics: **https://www.bls.gov/oes/current/oes_nat.htm#29-0000**.

For cost estimates, see MacLeod KE, Chapel JM, McCurdy M, Minaya-Junca J, Wirth D, Onwuanyi A, Lane RI. The implementation cost of a safety-net hospital program addressing social needs in Atlanta. Health Serv Res. 2021 Jun;56(3):474–485. doi: 10.1111/1475-6773.13629. Epub 2021 Feb 12. PMID: 33580501; PMCID: PMC8143691.

Appendix D. Resources for Health Equity

General Resources	
GMH Resources	**Annual Report** The 2017 Annual Report describes past performance in GMH, along with plans for further improvements. **https://www.gradyhealthfoundation.org/file/financials/Grady_2017AR.pdf** (PDF, 6.23 MB) **Grady Fast Facts** Grady Fast Facts gives quick statistics about and a brief timeline of GMH. **https://www.gradyhealth.org/pdf/Grady_Fast_Facts.pdf** (PDF, 106 KB) **What is Epic Healthy Planet?** This website describes the Healthy Planet module added to the Epic EMR, which helps gather data related to health equity barriers. **https://www.healthcareitleaders.com/blog/what-is-epic-healthy-planet/** **Grady Health** This is the main website for GMH. **https://www.gradyhealth.org/**
Evaluation Resources	**A Framework for Program Evaluation** This website describes CDC's DHDSP evaluation tools and resources to assist state health departments, tribal organizations, communities, and partners in their programmatic and evaluation efforts. Although many of them were developed primarily for use by DHDSP-funded programs, these tools and resources may also be of interest to entities not funded by DHDSP or working in other chronic disease areas. **https://www.cdc.gov/eval/framework/index.htm**

General Resources	
Health Equity Resources	**Creating the Healthiest Nation: Advancing Health Equity** This resource provides a thorough description of and the importance of attaining health equity along with ways to promote health equity. **https://www.apha.org/-/media/files/pdf/factsheets/advancing_health_equity.ashx?la=en&hash=9144021FDA33B4E7E02447CB28CA3F9D4BE5EF18** (PDF, 489 KB) **Health Equity** This website defines health equity and provides links to promote and evaluate health equity. **https://www.cdc.gov/chronicdisease/healthequity/index.htm** **Healthy People 2030** Healthy People 2030 provides objectives to accomplish by the year 2030 and steps to achieve these objectives. Achieving Health Equity is an overarching goal of the Healthy People 2030 Framework. **https://www.healthypeople.gov/2020/About-Healthy-People/Development-Healthy-People-2030/Framework** **How Do Safety Net Clinics Pay for Social Care Programs?** This resource provides ways for safety net hospitals to finance new programs that can help promote health equity. **https://sirenetwork.ucsf.edu/tools-resources/resources/how-do-safety-net-clinics-pay-social-care-programs** **Promoting Health Equity** This resource from CDC is an in-depth look at how a community can address and promote health equity. **https://www.cdc.gov/nccdphp/dch/programs/healthycommunitiesprogram/tools/pdf/SDOH-workbook.pdf** (PDF, 4.69 MB)
Data Resources	**Behavioral Risk Factor Surveillance System (BRFSS)** The BRFSS is the nation's premier system of health-related telephone surveys regarding health-related risk behaviors, chronic conditions, and use of preventive services. **https://www.cdc.gov/brfss/index.html** **Morbidity and Mortality Weekly Report (MMWR)** This website is the main vehicle for published public health information and recommendations from CDC. **https://www.cdc.gov/mmwr/index.html** State health departments may publish data on different aspects of cardiovascular health for counties within a state. Check the website of your state's health department. Larger counties or cities may also be able to provide data from their own health departments.
Core Component 1: Medication Resources	**GoodRx** This website is a resource to identify the pharmacies that are the cheapest option for each medication. **https://www.goodrx.com/**

General Resources	
Core Component 2: Financial Assistance Resources	**Financial Assistance Program** This resource provides further information on how patients can receive financial assistance within the GHS. **https://www.gradyhealth.org/financial-assistance-program/**
Core Component 3: Transportation Resources	**National Center for Mobility Management** This website provides a map showing volunteer ride services by state. **https://ctaa.org/nvtc-map/** **GoGoGrandparent** This website allows users, primarily senior citizens, to access Uber or Lyft services without the need for a smart phone. **https://gogograndparent.com/** **Rides in Sight** This website provides information on senior transportation options in local communities. **https://ridesinsight.org/** **Ride to Wellness** This is a resource from the National Center for Mobility Management. **https://nationalcenterformobilitymanagement.org/wp-content/uploads/2014/09/Rides-to-Wellness-Implementation-Guide-final1.pdf** (PDF, 439 KB)
Core Component 4: Mobile Health Visit Resources	**Mobile Integrated Health** The following website provides more information on GMH's MIH services. **https://www.grady-ems.org/services/mobile-integrated-health/**

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