Implementation Study

Building a System of Care: Integration across the Heart Failure Care Continuum

Jackie Cawley, DO
Cassandra Cote Grantham, MA

Abstract

Context: MaineHealth provides chronic disease programs using The Planned Care Model as its framework. Over time, programs have evolved from working in silos to integrating across care arenas and organizations, resulting in a coordinated, reliable, and standardized system of care. Nowhere is this more apparent than in the system's heart failure (HF) programs. For years, disparate HF services existed across MaineHealth. The system lacked a comprehensive, integrated approach to support patients and families transitioning across multiple care environments.

Objective: Develop and implement a systemwide set of interventions to facilitate communication between clinicians in different care environments, consistent approaches to patient and clinician education, and improvement of clinical performance.

Design: An interdisciplinary Joint Heart Failure Workgroup was convened. Relationships were developed between "champions" from diverse care settings and professions. Champions assisted MaineHealth in leading the workgroup, creating a comprehensive set of strategies that better linked HF activities and care settings across the health system.

Main Outcome Measures: Readmission rates, core measures, use of home telemonitoring, patient confidence in self management.

Results: The impact of collaboration and integration has been substantial, resulting in better communication, coordination, reliability, and standardization of HF care.

Conclusion: Through the use of a comprehensive set of improvement strategies, MaineHealth has been successful in overcoming many cultural and structural barriers to increase communication and integration across programs and care settings, and leveraging resources to improve outcomes in patients with HF.

Introduction

Heart failure (HF) is a chronic, progressive disease characterized by frequent hospital admissions, high mortality rates, and high consumption of medical resources that have made it one of the leading causes of health care expenditures in the US.[1] According to the American Heart Association, HF currently affects well over 5 million people in the US and there are 670,000 new cases diagnosed each year.[1] In 2002, MaineHealth, an integrated health care system that serves 11 of Maine's 16 counties and 75% of the state's population of 1.3 million, began recognizing HF as a high-volume diagnostic-related group with a myriad of needs from different clinicians across the health care system.

MaineHealth is a nonprofit family of leading high-quality providers and other health care organizations working together to make their communities the healthiest in America. Ranked among the nation's top 100 integrated delivery networks by Modern Health Care in 2010,[2] MaineHealth includes 11 community hospitals, physician practices, long-term care facilities, home care agencies, and support services in Maine's southern, central, midcoast, and western regions. With a median age of 41.2 years, Maine is the "oldest" state in the nation with almost 58% of Maine's elders residing in rural areas, more than twice the national average.[3] In addition, Maine ranks second nationwide for percentage of residents age 65+ living in rural areas[3]; has the fourth highest chronic disease rate in the US; the fourth highest percentage of deaths caused by cardiovascular disease, cancer, chronic lung disease, and diabetes, and 75% of Mainers die from one of these diseases.[4,5]

The system began addressing issues related to an aging population with a high incidence of chronic illness, including HF, by launching

Jackie Cawley, DO, is the Senior Medical Director for the Clinical Integration Department of MaineHealth in Portland, ME. E-mail: cawlej@mainehealth.org.
Cassandra Cote Grantham, MA, is the Program Manager of Child Health and Community Health Improvement Department for MaineHealth in Portland, ME. E-mail: cotec1@mainehealth.org.

a variety of programs, many of which were supported by the MaineHealth Clinical Integration Department. These efforts were evidence based, but often locally focused in specific communities or care settings. Many of the resulting HF programs had their own set of clinician education materials and tools, there was no standard approach to care in the home health setting, and a lack of consistency on who received home telemonitoring services and for how long. No consistent method was used to identify which patients were engaged in specific interventions, nor was there a process to identify which interventions might be best for an individual patient. Additionally, there was lack of integration across multiple electronic medical record systems used in the inpatient, outpatient, home health, and home telehealth settings, affecting the flow of critical health information across clinicians and care settings. These cultural boundaries and a lack of coordinated communication among care settings, educational initiatives, and coaching models contributed to a fractured, inefficient, and confusing system for HF clinicians and their patients, who were often transitioning to and from multiple care environments.

As health care delivery has moved into an era of heightened accountability, the need for a higher level of integration, coordination, and standardization of quality care has become increasingly apparent. Recognizing that a more comprehensive, system-level view and collaborative environment were needed to address challenges and foster change, MaineHealth moved from working within silos to integrating across care arenas and organizations to facilitate a more efficient, coordinated, and reliable system of care. The Planned Care Model was used as the framework for these efforts.[6]

Although MaineHealth's conception and implementation of this quality-improvement effort for its HF programs is unique to its health care system, other national and international health systems, hospitals, and programs have used similar processes to bring about improvements in HF care. In 1997, Good Samaritan Community Healthcare in Puyallup, WA formed a Congestive Heart Failure Steering Committee, whose goal was to design, implement, maintain, and monitor a superior communitywide system of care for patients with HF through standardized patient and clinician education, proactive interventions, and medication management.[7] Similar to the MaineHealth Joint Workgroup model, this committee was interdisciplinary, representing clinicians from across settings, including home health, cardiac rehabilitation, inpatient units, outpatient family practice clinicians, and cardiologists. By focusing on standardizing educational systems for clinicians and patients and by working across care settings to facilitate increased communication, Good Samaritan discovered that "An interdisciplinary approach is optimal for heart failure care" and that care improvement "requires a clear vision, collaboration and continuing program development to be successful."[7]

In exploring the barriers and facilitators to the implementation of a collaborative model, researchers in New South Wales, Australia documented the importance of clinical leadership, champions, communications, and team cohesion in overcoming the latent political, social, and cultural agendas of the different clinicians represented across the HF continuum of care.[8] These identified components are key aspects of the MaineHealth improvement efforts. Likewise, in North Carolina the Onslow County Hospital Authority used HF disease management as the basis for a new approach to performance improvement by creating the opportunity for dialogue among clinical leaders and staff, by developing a shared knowledge base of the population and current practice, by establishing performance measures to assess outcomes, and by seeking participation of stakeholders from across the system of care. Although slightly different from MaineHealth's framework for HF care improvement, the underlying principles are much the same: integrate and standardize health care services for a patient population across the continuum through collaboration with the entire range of clinicians in the community.[9]

Methods

In 2008, the MaineHealth Clinical Integration HF and associated cardiac programs underwent a change in clinical leadership and program management. In assessing the effectiveness of the systems' historic outcomes related to HF and the resources used to achieve these outcomes, it became apparent that there was lack of awareness of what others were doing in the system, a lack of coordination of activities, and limited opportunities for collaboration around HF care.

To effectively overcome these barriers, a paradigm shift in how traditional workgroups and programs related to and worked with one another was imperative. MaineHealth needed to develop a comprehensive and collaborative strategy to increase communication across programs and initiatives and to leverage existing resources across

the MaineHealth system to improve outcomes in patients with HF.

Strategies for Interventions

The first step was to create awareness of the many HF-related initiatives across the system and showcase the lack of communication, coordination, and collaboration among those activities. To improve communication and awareness, relationships were developed between key HF "champions" from diverse care settings and different health care professions. Those champions then assisted MaineHealth in leading an interdisciplinary workgroup, which was instrumental in forming a more comprehensive set of strategies and specific interventions that better linked activities and care settings (Table 1). These included:

- Formal adoption of the Planned Care Model to define strategies and implement interventions in HF care[5] (Figure 1).
- Formation of a new Joint Heart Failure Workgroup, comprised of primary care physicians and cardiologists, inpatient nurses, home health staff, cardiac rehabilitation and palliative care specialists, quality managers, transitions coaches and care managers. This group brought together perspectives and initiatives in a new collaborative environment and encouraged behavioral change in collaborating across care settings and professions to develop a shared vision, goals, and objectives.
- Comprehensive approach to patient and clinician HF education and materials that better linked caregivers across care settings and created a common set of resources; education materials and tools for clinicians and patients; access to resources despite care setting or community; consistent, evidence-based decision support tools; and increased access to services/interventions in more rural communities.
- Better integration vertically (hospital to outpatient setting), horizontally (resources and programs available across all MaineHealth communities), and across professions using common patient and clinician educational materials and tools, clinical pathways, and protocols.
- Implementation of a Home Health Heart Failure Clinical Pathway, adopted by all seven MaineHealth-affiliated home health agencies.
- Establishment of common quality measures for HF care.
- Reorganization of related programs in Clinical Integration under the Transitions of Care Team (palliative care, HF, and readmissions) to enhance coordination and communication.

Table 1. Comprehensive strategy to improve the system of care for heart failure

Planned care model pillar	Intervention
Self-management support	• Weigh Every Day Free Scale Program; increased access to standard, patient-centric scales; standards for providing free scales, reduced wastage; and negotiated better contracts with vendors for cost savings • Increased access to standardized, evidence-based patient education materials and classes including a Living Well Heart Failure Program for patients provided live and electronically to increase access in rural communities
Delivery system design	• Standardized and innovative care protocols; Home Health Heart Failure Clinical Pathway, Home Lasix Protocol • Follow-up phone calls from inpatient clinicians posthospitalization • Transition coaching posthospitalization • Advanced Heart Failure Clinic • Primary care-based chronic care managers • Home telemonitoring for home health patients with HF • Inpatient and outpatient access to palliative care resources
Decision support	• Evidence-based, standardized clincian education series; five HF modules for clinicians available electronically • Standardized, evidenced-based HF clinical pathway implemented in all seven home health agencies • Adoption of common performance measures for HF
Clinical information systems	• Clinical Improvement Registry Heart Failure Module • Electronic medical records in the home health, inpatient, outpatient settings
Health system	• Adoption of the Planned Care Model as a framework for improvement • Convened system level, multidisciplinary Joint Heart Failure Workgroup • Collaborative strategic planning exercise, development of shared vision, goals, and objectives • Enhanced linkages between diverse programs, care settings, and initiatives through reorganization of Clinical Integration leadership
Community	• Relationships with statewide HF initiatives • Provide access to patient and clinician education materials and tools for broader community • Participation in state telehealth collaborative

HF = heart failure

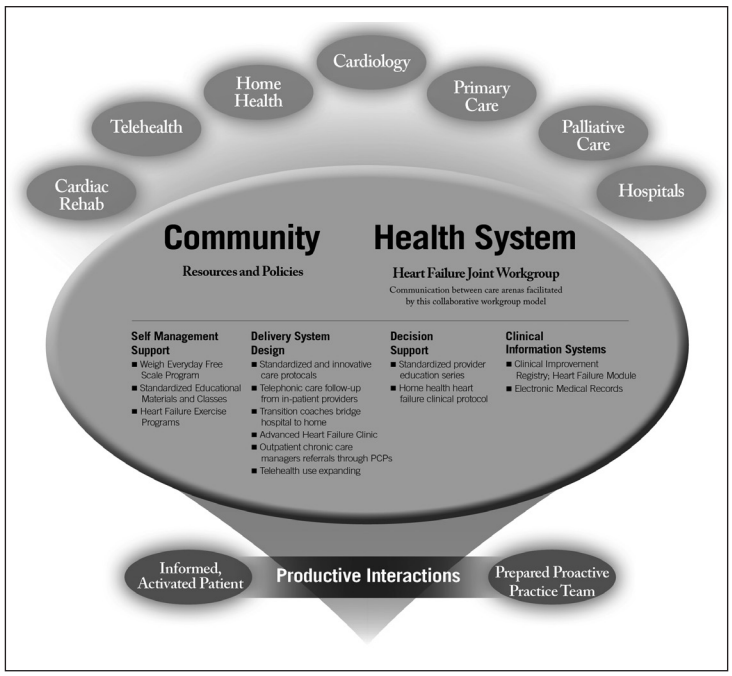

Figure 1. MaineHealth Heart Failure Planned Care Model.

Results

The impact of collaboration and integration has been substantial, with the end result of better communication, coordination, reliability, and standardization in HF care across our health system. Table 2 describes the findings attributed to our strategic interventions.

In addition to our above-reported outcomes, one of our most valuable results is the creation of a cohesive, committed, diverse team that continues to enhance efficient and standardized HF care in the communities MaineHealth serves. Most recently, the Joint Heart Failure Workgroup developed and is piloting an outpatient lasix protocol for the home health setting. Several other collaborative initiatives are planned (see section: Next Steps) and the group continues to operate with a shared vision, goals, and strategies, which are updated on a routine basis to incorporate new ideas, recent findings, and MaineHealth-related priorities.

To facilitate systems-level change, it is essential to first build strong, trusting relationships among clinical leaders and champions.

Discussion

Within the MaineHealth system, HF care was previously comprised of multiple evidence-based, but disparate efforts and services. Using the multiple aforementioned improvement strategies, MaineHealth has been successful in overcoming many cultural and structural barriers, increased communication and integration across programs and care settings, and leveraged resources to improve outcomes in patients with HF.

Dedicated and innovative leadership has been critical to our success. To facilitate a patient-centered, integrated system of HF care it is essential to work across care arenas, foster collaboration among clinicians, leverage resources in innovative and creative ways, and create comprehensive, evidence-based programs.

To facilitate systems-level change, it is essential to first build strong, trusting relationships among clinical leaders and champions. To foster these types of relationships, MaineHealth invited a senior champion from our home health agency and one from our inpatient clinical community, each representing two groups that had met as separate teams in the past, to meet with MaineHealth staff and discuss how communication between these groups had traditionally functioned. They discussed the many cultural barriers and challenges to open dialogue that existed between the care arenas, but expressed a desire and commitment to lead their colleagues in working together. These leaders then introduced the concept of a joint workgroup to their teams and together created a collaborative and open environment in which participants from different care settings and professions felt valued and willing to work together in new and innovative ways. Clinicians and health care professionals from other backgrounds were invited to participate based on their role in the HF care pathway. They were identified by colleagues already involved with the MaineHealth Heart Failure program and represented multiple disciplines and geographic areas in the system.

Each Joint Heart Failure Workgroup meeting was co-led by our inpatient clinical champion and our home health champion. Meeting agendas were built to allow time for open dialogue, realizing that it is sometimes necessary to move more slowly at the beginning when bringing together representatives from different cultural backgrounds. With assistance from MaineHealth staff and the HF champions, the Joint Heart Failure Workgroup quickly engaged in a strategic planning exercise that included brainstorming as well as developing a shared vision, goals, and strategies under a

common quality and safety agenda. They followed this exercise with a discussion regarding which evidence-based projects, culled from a list created by MaineHealth staff based on research into the latest evidence and innovative systems, would best support their vision and goals. This process allowed MaineHealth staff to focus on a limited number of projects supported by interdisciplinary subcommittees that held working meetings and used finite resources (both financial and time) in creative and efficient ways to improve outcomes for patients with HF in multiple settings. Joint Heart Failure Workgroup participants agreed on where funds and time were spent, so there was no animosity over which group was benefiting most from the system's resources.

After meetings concluded, it became common for representatives from different disciplines to have "off-line" conversations about specific projects that could benefit from collaboration or input from others. MaineHealth staff was informed that these informal interactions were extremely helpful in engendering trust and open communication across care settings, and they even led to changes in workflow processes between groups that otherwise would not have occurred.

At the same time as the formation of the Joint Heart Failure Workgroup, the Clinical Integration Department underwent a reorganization of its own to better integrate the work around HF with other programs focused on transitions of care, palliative care, and prehospital care. By intentionally changing the organizational structure of the Clinical Integration Department and creating an interdisciplinary HF workgroup, MaineHealth fostered increased vertical, horizontal, and

Table 2. Results of better integration across the heart failure continuum

Enhanced communication and integration	• Joint Heart Failure Workgroup meeting regularly • Home health, care managers and transition coaches meeting regularly, consistent approach and messages to patients, increased cross referrals and communication • Standardized HF education materials for patients deployed for inpatient, outpatient, cardiac rehabilitation, and home health care settings • Standardized patient HF education classes deployed in four additional community settings • Standardized clinician education materials and tools developed and implemented • Increased promotion of cardiac rehabilitation for patients with HF and development of a HF cardiac rehabilitation scholarship program • Home Health Heart Failure clinical pathway implemented at all member and affiliated home health agencies
Improved outcomes Home health	• Telehealth improved readmission rates; 18% vs 23% for general population • Increased patients "stable or improved" in oral medications from 82% (2006) to 94% (2009) • Increased patients "stable or improved" in dyspnea: 79% (2006) to 86% (2009)
Center for Medicaid and Medicare Services core measures	• Reduced readmission rate: 18.5% (2001) to 12.67% (2009) • Increased completed discharge instructions form: 65% (2004) to 87% (2009) • Increased Ace inhibitor prescribed at hospital discharge from 77% (2004) to 96% (2009) • Increased smoking cessation counseling from 77% (2004) to 97% (2009)
Enhanced patient self management	• 100% of patients with HF enrolled in care management set self-management goals (2009) • 99% of patients who received transition coaching (n = 95) had increased confidence in self managing their disease
Improved efficiencies	• Increased use of specific Weigh Everyday Free Scale products for patients in higher risk categories; from 2008-2010, number of digital scales provided increased from 8 to 63, and number of XL talking scales provided increased from 9 to 67 • Increased access to home telemonitoring for patients with HF; from June 2009 to March 2010, usage of telemonitoring during the first episode of care increased from 28% to 39%, and in March 2011 stands at 35%. Increases in this rate are dependent on home health agencies' abilities to purchase additional units. Two home health agencies are negotiating contracts to begin using telemonitoring. • Single, standard set of educational materials and tools for clinicians and patients • Reduced overall number of Clinical Integration workgroups and meetings • Reduced duplication of services

HF = Heart failure

cross-professional integration, the sharing of resources and creation of common patient and clinician tools, the development of new workflows, and satisfaction among workgroup participants and executive leadership.

Next Steps

MaineHealth has learned a great deal about what it takes to move towards a comprehensive, coordinated, and efficient HF care program, but there is still much to do to realize the vision of a fully integrated system for patients, families, and clinicians across the continuum of care. Key to the continued success of this work will be ongoing support for the Joint Heart Failure Workgroup to foster collaboration between clinicians, leverage resources, and create additional innovative, evidence-based programs. Currently, the Joint Heart Failure Workgroup is developing an inpatient risk stratification protocol, piloting a default to the home health care referral program and to the home health medication protocols. In addition, they are collaborating with the health system's Palliative Care program on palliative care education for HF and other clinicians. All HF programs have been reorganized and now report to a more comprehensive Transitions of Care Program, which focuses on reducing readmissions and preventable hospitalizations, to foster an even higher level of coordination and collaboration within this important area of quality improvement.

Health systems must commit to continually working toward the vision of a fully integrated care delivery model if such efforts are to be effective long-term.

Conclusion

Intentionally using a constructive quality improvement framework to integrate programs and services, increasing collaboration and communication across different care settings, and the development of a shared vision, goals, and priorities has resulted in improved outcomes and a more efficient, coordinated, and reliable system of care for patients with HF, families, and clinicians. Health systems must commit to continually working toward the vision of a fully integrated care delivery model if such efforts are to be effective long-term. ❖

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

References

1. Lloyd-Jones D, Adams R, Carnethon M, et al; American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics—2009 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Circulation 2009 Jan 27;119(3):480-6. Erratum in: Circulation 2009 Jan 27;119(3):e182.
2. Carlson J. Integrating success. Top-performing health networks offer lessons in using efficiencies, expertise to improve patient care. Mod Healthc 2010 Jan 25;40(4):28-31.
3. Hernandez LM, Wezi Munthali A, eds; Committee on Training Physicians for Public Health Careers. Training physicians for public health careers. Washington, DC: National Academy Press: Institute of Medicine; 2007.
4. Mills D. Chronic disease: the epidemic of the twentieth century. Maine Policy Review 2000 Winter;9(1):50-65.
5. Mills D. Top ten health issues faced by Maine people. Maine Policy Review 2003 Winter;12(1):30-55.
6. Bodenheimer T, Wagner EH, Grumbach, K. Improving primary care for patients with chronic illness. JAMA 2002 Oct 9;288(14):1775-9.
7. Graybeal K, Moccio-Sattler J. Heart failure management in a community hospital system. Lippincotts Case Manag 2001 May-Jun;6(3):112-8.
8. Newton PJ, Halcomb EJ, Davidson PM, Denniss AR. Barriers and facilitators to the implementation of the collaborative method: reflections from a single site. Qual Saf Health Care 2007 Dec;16(6):409–14.
9. McClatchy S. Disease management as a performance improvement strategy. Top Health Inf Manage 2001 Nov;22(2):15-23.

Of the Heart

This moves of itself and does not stop unless forever.

— Leonardo da Vinci, 1452-1519, Italian Renaissance artist, architect, and engineer