

[CASE STUDY]

January 18, 2012

Improvements in Care-Transitions: A Case Study of St. Luke's Hospital

Prepared for the Centers for Medicare and Medicaid Services



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Foreword

The Centers for Medicare & Medicaid Services (CMS) requested that The MITRE Corporation (MITRE) create three case studies in order to support organizations that want to provide services using bundled payment (BP). CMS selected three sites, each one illustrative of a set of capabilities necessary for an organization to deliver cost-effective care in a setting where it bears financial risk for that care. The Engelberg Center for Health Care Reform at the Brookings Institution (Brookings) worked with MITRE to generate the case studies, conducting interviews with organizational leaders and affiliate experts from the case study sites, as well as performing a comprehensive environmental scan of peer-reviewed journal articles, white papers, and publicly available evaluation reports from past BP pilots to inform the studies.

This case study focuses on St. Luke's Hospital, part of the Iowa Health System and describes how St. Luke's transformed the way it delivered care to patients hospitalized for heart failure. This care redesign was the foundation for its success in reducing readmissions for these patients.

Brookings and MITRE gratefully acknowledge the valuable contributions of the following experts from St. Luke's Hospital and the Iowa Health System in the preparation of this study:

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1. Introduction

St. Luke's Hospital is a private hospital serving Cedar Rapids, Iowa and surrounding suburbs (see snapshot). St. Luke's is part of the Iowa Health System, a non-profit corporation and the largest integrated health system in the Iowa/Western Illinois region. St. Luke's is recognized for its strengths in heart care, newborn intensive care, physical medicine, and rehabilitation and trauma care, and has won several national distinctions as a health care leader.

Over the past decade, St. Luke's has developed an effective program to improve care-transitions and reduce preventable re-hospitalizations. Since 2006, St. Luke's has been an active participant in the Institute for Healthcare Improvement's (IHI) work on care transitions, including the State Action on Avoidable Rehospitalizations (STAAR) initiative and Transforming Care at the Bedside (TCAB) Learning and Innovation Community. Drawing on these programs and other resources, St. Luke's designed, implemented, and refined a comprehensive readmissions reduction initiative targeted at heart failure patients. The program spans the full continuum of care and includes enhanced admission assessments, real-time handover communications, patient education and discharge instructions, and post-acute care follow-up. The core of the program is the Cross-Continuum Team, whose members include a broad set of stakeholders responsible for reviewing readmissions, assessing causes and opportunities for improvement, and implementing programmatic interventions. St. Luke's has been successful in reducing heart failure readmissions (for any cause) within 30 days of discharge from approximately 25 percent in 2006 to 15 percent in 2011 (see Appendix A for further details including methodology used to calculate readmissions rates). St. Luke's has expanded its readmissions reduction initiative to heart failure, acute Myocardial Infarction (MI), pneumonia, and chronic obstructive pulmonary disease (COPD).

The larger Iowa Health System has recognized **St. Luke's success**, and has begun spreading readmissions reduction programs to all of its member hospitals.

The larger Iowa Health System has recognized St. Luke's success, and has begun spreading readmissions reduction programs to all of its member hospitals. In 2010, the Clinical Counsel for the Iowa Health System identified reducing readmissions as one of three system-wide clinical initiatives. Reducing readmissions was important to Iowa Health System leaders because it aligned with the Health System's patient-centered ethos and the effort offered a vehicle to develop competencies in analytics and care redesign, which could be leveraged to enable other value-based reforms.

This case study reviews St. Luke's Hospital's approach to and experience with redesigning care and planning transitions to reduce preventable readmissions. It focuses on four critical capabilities that were the cornerstones of St. Luke's Hospital's care redesign work and how St. Luke's Hospital translated those capabilities into effective programmatic action. The four critical capabilities for care redesign at St. Luke's Hospital include the following:

- Cross-continuum participation and alignment;
- The development and use of standardized tools and compatible information infrastructure;
- Horizontal leadership and executive sponsorship; and
- Effective external and internal learning.

2. Background

The leadership at St. Luke's Hospital has developed a strategic plan that focuses on delivering demonstrably better care for patients. This plan reinforces the organization's mission "to give the health care we'd like our loved ones to receive." It emphasizes that care must not only be "better," but "demonstrably better" in a way that is

Institutional Snapshot: St. Luke's Hospital	
Licensed beds	534
Admissions	18,513
Emergency visits	52,598
Births	2,610
Surgeries	22,849
Volunteer hours	111,511
Employees	2,642
<i>*Year Ending December 31, 2010</i>	
Source: www.stlukecr.org	

noticeable and meaningful to patients and their families. Thus, the organization measures quality of care in two domains: clinical outcomes and patient and family experience with care. Its strategic plan—better care for St. Luke’s patients—reflects the hospital’s patient-centered culture. This accounts, at least in part, for the organic development of an initiative directed toward reducing hospital readmissions.

In 2001, St. Luke’s Performance Improvement (PI) department identified the hospital’s 25 percent readmission rate for heart failure patients as an area where there was likely to be significant opportunity for improvement, given the dislocation in patients’ and families’ lives associated with admission and then readmission to the hospital. The PI department brought the matter to the attention of the cardiac service line director. Although the hospital was reimbursed for these readmissions, the director felt strongly that reducing readmission rate should be a priority because it aligned with the hospital’s strategic plan to deliver demonstrably better care to patients. Readmissions are conspicuous indicators of quality for patients and portend significant consequences for their health. The director felt that cardiac patients were a priority population to target because they often had multiple co-morbidities and were at significant risk for complications. The director assembled a small team to assess the problem and identify possible solutions. The Heart Failure Team consisted of the director of the cardiac service line, the manager of the cardiac step-down unit, the manager of cardiac rehabilitation, patient educators, and additional staff members from the cardiac service.

The immediate barrier for the St. Luke’s cardiology team was that post-acute cardiac rehabilitation services generally were not reimbursed for their heart failure patients. The Heart Failure Team looked for other opportunities to meet the needs of heart failure patients in an outpatient setting. An early area of focus was patient education. By 2002, the team had developed a heart failure class that met quarterly and included a dietician and cardiac rehabilitation staff. The class was interactive and provided lessons on diet, medications, and healthy living for recently discharged heart failure patients. The team also reached out to a local cardiology practice—which has since become an employed physician group of St. Luke’s—to explore avenues to better coordinate care and reduce readmissions.

In 2006, the chief nursing officer at St. Luke’s approached the Heart Failure Team about joining IHI’s TCAB, a collaborative of 15 hospitals focused on developing better care transitions. By this time, St. Luke’s had achieved some success with its readmissions reduction program through the heart failure class, enhanced patient education materials, and better care coordination across the hospital. The Heart Failure Team believed that they had a story to tell and were eager to learn from others engaged in the same work.

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St. Luke’s joined the TCAB collaborative, which involved monthly conference calls, meetings, and reports shared across participating hospitals. In February 2006, St. Luke’s director for cardiac services and the medical/surgical director attended a two-day TCAB meeting in Minneapolis to share St. Luke’s experience with improving care transitions in a session focused on heart failure patients. St. Luke’s leadership marked this event as a major turning point in the development of its hospital discharge process redesign program. St. Luke’s representatives learned about successful efforts to coordinate care across other organizations and settings, many involving Patient-Centered Medical Homes (PCMH) and came away from the meeting with an important insight: the problem of readmissions is not a hospital issue but one that requires the participation of a much larger system. They recognized that their efforts to reduce readmissions needed the participation of providers across the full continuum of care.

As a result, the Heart Failure Team augmented its membership by adding representatives from a cardiologist office practice, home care services, a family member of a heart failure patient, and a long-term care/skilled nursing (LTC/SNF) facility to the team (see Appendix B for full team roster). The team met every other week to review readmissions to assess causes and opportunities for improvement. By including participants across the continuum of care and breaking down barriers to honest and candid communication, the team began to construct a comprehensive picture of how and why readmissions occurred. The work became patient and family centered

which facilitated breaking down barriers to communication. During this time, St. Luke's benefited from its membership in the TCAB collaborative and used the group to refine concepts and gain new ideas. After a year of experimentation, the TCAB collaborative catalogued their findings in an IHI "Transition to Home Toolkit." When the toolkit was completed, St. Luke's had a validated template with which to base the expansion of its readmission reduction program.

With an established operational foundation, the team began to implement and refine a set of interventions aimed at reducing preventable re-hospitalizations. Core program elements included enhanced admission assessments, real-time handover communications, patient education and discharge instructions, and post-acute care follow-up visits. From 2006 to 2010, the cross-continuum team membership expanded to include pharmacists, respiratory therapists, and palliative care personnel. During this time, St. Luke's readmissions reduction program gained executive sponsorship and support. The cross-continuum team received oversight from the Clinical Quality Steering Committee at St. Luke's, comprising several physician leaders at the hospital. The Steering Committee provided guidance and suggestions for the program, and its oversight lent support for and credibility to the initiative.

By 2010, St. Luke's had expanded its readmissions reduction program to cover four priority diagnoses: heart failure, acute MI, pneumonia, and COPD. Also in 2010, Iowa Health System made reducing readmissions a system-wide clinical priority, with the expectation that programs like those at St. Luke's would spread to other system hospitals. Given the imminence of Medicare rules that penalize hospitals financially for readmissions, and other value-based payment and delivery system reforms (such as accountable care organizations (ACOs) and BP programs), there was additional momentum to support the efforts of St. Luke's cross-continuum team. The team is developing better and more compatible data systems to share information across organizations and allow more meaningful data analysis. St. Luke's also is in the process of hiring a director of case management who will be accountable for care coordination and discharge planning for all patients across the hospital. St. Luke's hopes this broader foundation will help them accelerate the spread of their successful heart failure readmissions program to support effective transitions for all patients regardless of diagnosis.

3. Aims and Objectives

At its outset, the aim of St. Luke's care-transitions program was to reduce preventable hospitalizations for heart failure patients. This goal aligned with the hospital's strategic plan to produce care of demonstrably better quality. With the development and expansion of the care-transitions program, a secondary objective came into focus: develop data analytics, performance improvement, clinical integration, and other competencies critical to additional value-based reforms. In 2010, the Iowa Health System identified reducing readmissions as a clinical priority in part because health system leadership believed a program to enhance transitions in care would be important to support its future participation in reforms requiring greater accountability for the cost and quality of care.

4. Approach

In collaboration with local LTC/SNF facilities, physician offices, and other stakeholders, St. Luke's operates a comprehensive program to enhance transitions of care and reduce preventable re-hospitalizations for patients with heart failure, acute MI, pneumonia, and COPD. The larger Iowa Health System is engaged in a "spread initiative" to develop readmission reduction programs similar to St. Luke's at all of its member hospitals. This study of St. Luke's care-transitions program suggests that there are four elements that have been critical to its success:

- The involvement, and alignment, of providers across the continuum of care;
- The development and use of standardized tools and compatible health information infrastructure;
- Horizontal leadership and executive sponsorship; and
- Rapid and effective learning from both external and internal sources.

The following subsections provide a detailed discussion how St. Luke's developed and applied these capabilities to create effective redesign of care to achieve lower rates of readmission.

4.1. Cross-Continuum Participation and Alignment

A central principle of St. Luke's approach to reducing readmissions was a requirement for action, and coordination, across a broad spectrum of caregivers. As one St. Luke's executive noted, "A patient may only physically be in our hospital for a few days, but we feel accountable for a 30-day length of stay." What happens during that extended interval involves many other caregivers. Accordingly, optimization of care during that interval depends upon communication and coordination between and among many individuals and provider organizations that are not part of St. Luke's itself. In addition, St. Luke's leadership expressed the importance of obtaining a comprehensive understanding of the patients' stories and context of clinical and social needs.

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In order to identify and ensure that the hospital addressed the full spectrum of patient needs, St. Luke's developed a cross-continuum approach that included the following:

Engaging, involving, and empowering a wide range of stakeholders to be honest, active participants in the care redesign process: Beginning in 2006, St. Luke's invited representatives from other organizations that "touched" patients with heart failure—organizations including LTC/SNF facilities and doctors' offices—to participate in meetings of the Heart Failure Team. St. Luke's staff recognized the interdependencies that existed between these organizations and the hospital and sought to understand how St. Luke's could work more effectively as a partner to optimize care for heart failure patients.

Candid communication was not, however, immediate. Not surprisingly, LTC/SNF facilities (which saw St. Luke's as a "client") were cautious. A St. Luke's executive recounted that LTC/SNF facilities initially provided positive feedback about St. Luke's discharge procedures and identified few problems. It seemed likely that LTC/SNF facility representatives were failing to report details critical of St. Luke's to avoid offending an important client. St. Luke's believed that the key to overcoming this barrier to honest communication was a concerted, long-term effort to establish trust between the organizations. St. Luke's personnel emphasized that they were developing a long-term effort to reduce readmissions and the success of the program depended on constructing honest and enduring partnerships with outside organizations.

After only six meetings, the Heart Failure Team established a level of trust sufficient to facilitate candid communication. Once outside representatives felt comfortable sharing, they were remarkably forthcoming and helpful. For example, LTC/SNF representatives identified a gap in the knowledge of their staff about the symptoms of heart failure patients and felt that St. Luke's could play an important role in addressing that gap. One important detail LTC/SNF representatives shared was the high turnover in staff at their facilities, which necessitated more frequent educational refreshers. In response to these requests, St. Luke's arranged for more frequent educational outreach visits to LTC/SNF facilities.

LTC/SNF representatives also noted that patients returning to their facilities were sometimes confused regarding medication lists given to them when discharged from St. Luke's, and that the medications used at St. Luke's were poorly coordinated with those in use at outpatient facilities. In addition, Home Care representatives pointed out that their facilities had been faxing medication lists to St. Luke's emergency department (ED) when their patients were readmitted, but these faxes were not being received by St. Luke's. In response, the Heart Failure Team initiated a review and redesign of the medication management process and developed a mechanism to access medication lists from the Home Care agencies and pharmacies. The redesign process also considered how to make medication information more useful and comprehensible to patients. The team also consulted the St. Luke's Patient/Family Advisory Council to get a patient/family perspective on how best to display medication information. As a result, the team redesigned the medication list to call out four distinct categories of medications: continuing

medications, new medications, over the counter medications, and medications that should be stopped. Significant redesign of medication management required input from, and coordination with, St. Luke's, LTC/SNF facility partners, Home Care, physicians' offices, and patients and families.

The Heart Failure Team meets every other week to review cases of readmitted patients and assess opportunities for prevention. St. Luke's director of PI and her staff are integral members of the team; they support the analytics needed to drive that assessment from relevant data. They can produce customized reports that focus on areas of interest. For example, the team may be interested in patients who have been readmitted multiple times. The PI department will produce case lists, histograms, and other analyses that help the team understand likely causes of the problem. Then, the team will examine the cases, and individual team members will look for patterns and trends that suggest specific opportunities for intervention. By examining both the "big picture" analytically, and the details of individual cases, the team is able to construct a comprehensive picture of the causes and potential solutions for readmissions.

The mission statement of St. Luke's Hospital is **"to give the health care we'd like our loved ones to receive."** The hospital does not rely on empathy alone for the delivery of patient-centered care. It created its Patient/Family Advisory Council to review hospital policies and programs to ensure that they align with patient and family preferences and needs.

A patient and family-centered approach: The mission statement of St. Luke's Hospital is "to give the health care we'd like our loved ones to receive." The hospital does not rely on empathy alone for the delivery of patient-centered care. It created its Patient/Family Advisory Council to review hospital policies and programs to ensure that they align with patient and family preferences and needs. St. Luke's readmissions reduction program has turned to the Patient/Family Advisory Council, and extended its efforts to redesign care around patients and families by including a family member of a heart failure patient as a full member of the cross-continuum team. To assess the status of each readmitted patient and his or her family members, St. Luke's Medical Social Services Department developed a standardized tool (see Appendix C for reproduction of this tool). Information from this assessment is an important part of the team's review of each readmission, and therefore, of the data that drives

care redesign. For example, the team discovered that readmitted patients often experience depression or other psychological problems, which highlighted the need for mental health and social care within the transitional care process. By pursuing a patient and family-centered approach, the team has developed interventions that are meaningful to patients and their families—and are therefore more likely to achieve "demonstrably better care for patients" with heart failure.

Meaningful partnership with physicians: Physician engagement in care redesign is essential. St. Luke's recognized the need to include physicians as active participants in their efforts to redesign transitional care processes to achieve lower rates of readmission. When St. Luke's was developing its program, however, physicians had little financial incentive to participate in a readmissions reduction program. They ultimately were willing to participate because of the nature and quality of the relationships that St. Luke's has forged through its direct efforts to be good partners to physicians. For example, a large private practice was interested in building a "medical mall" in the area. St. Luke's offered its support and assisted the physicians in securing planning permits and funding. This cooperation led to a joint effort between the hospital and group practice to develop a community cancer center to be located in the new building. As a result of this partnership between the hospital and the group practice, the patients in the community will be the recipients of a much more effective, coordinated system of care.

Another physician partnership that was important to the success of the St. Luke's readmission process is the relationship that the hospital has developed with a 17 member private cardiology group. The Heart Failure Team determined, for example, that some patients were having difficulties getting timely follow-up appointments at their cardiologists' offices. Hospital leadership approached these cardiologists to find ways to secure open access for follow-up heart failure visits. Because of the good relationships and these negotiations, St. Luke's opened a hospital based Heart Failure clinic and was able to secure open access for heart failure patients to obtain timely follow-up appointments. The heart failure clinic is coordinated by an Advanced Registered Nurse Practitioner.

Other care coordination improvements are anticipated, as the cardiologists have now become an employed group and are key physician leaders in the development of a more integrated care delivery system. The cardiologists will also relocate their offices to the new Medical Mall and work with other physician colleagues in the community to focus on efficiency for patients and physicians in the delivery of care.

4.2. Standardized Tools and Compatible Information Infrastructure

A central concept of St. Luke’s strategy for redesigning care to reduce readmissions was standardizing tools and processes across care settings. This standardization would ensure that patients receive coordinated care and unified, consistent, and reinforcing messages from all sources. Patient education was the first area targeted for this coordination. The Heart Failure Team reviewed the educational materials delivered to patients in the hospital, LTC/SNF facility, and home settings. The team noted that these materials often delivered conflicting or confusing messages. To address this, the Heart Failure Team developed an enhanced teaching and learning strategy for coordination across all care settings. The revised materials employ succinct messages that are repeated and reinforced across the care continuum. For example, hospitalized patients are introduced to a color-coded heart failure zones table (see Appendix D). The table describes symptoms and signs that need urgent clinical attention. The patient sees the table in LTC/SNF facilities, the cardiologist’s office, and on a refrigerator magnet that the patient can refer to at home. St. Luke’s repeated this strategy for a COPD Action Plan, Healthy Eating Plan, and other educational materials. This consistency in messaging reduces the potential for patient or family member confusion and improves adherence to practices shown to reduce the risk of readmission.

Another important element of St. Luke’s educational strategy was a technique known as “Teachback.” As the name implies, Teachback involves asking patients to recall and restate in their own words what they were taught—to “teach back” to the provider what they have just learned. The hospital introduces the process to patients at the bedside during their inpatient stay. The process is repeated and the patient’s performance assessed at the 24–48-hour post-discharge follow-up visit by Home Health personnel and again in the seventh day post-discharge phone call to the patient. The Heart Failure Team tracks the rates at which patients are able to teach back their care instructions accurately. These rates form an important part of the team’s assessment of the effectiveness of the care redesign process and provide a valuable insight into the impact of educational materials. In addition, the team sets and strives to attain goals for system-wide Teachback rates.

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The ability to share data and information across organizations and care settings is also important to improving care transitions. However, it is worth noting that St. Luke’s achieved significant cooperation and alignment across care settings without a unified patient (electronic medical) record. To communicate data across organizations, the Heart Failure Team relied on team members to share, with their colleagues, reports discussed at cross-continuum meetings. As is the case in most communities across the country, using different and poorly compatible electronic health records (EHR) in the hospital, doctor’s office, and LTC/SNF facilities makes it difficult to share patient data across organizations. St. Luke’s is working on a system-wide implementation of a single electronic medical record. It hopes this will enable new capabilities for sharing data with the systems used in cardiologist and primary care physician offices. The immediate goal of this work is to develop a continuing care document that can be shared across all care settings.

4.3. Horizontal Leaders and Executive Sponsorship

The care-transitions/hospital readmissions program for patients with heart failure arose spontaneously and evolved organically. The program is the product of a permissive structure and a patient-centered culture. However, the initiative’s growth, scale, and diffusion required leadership.

St. Luke’s executives identified “horizontal leaders”—individuals who could identify system-wide trends and work effectively *across* disciplines and care setting to address patient needs—as a central element of the desired

leadership capability. These horizontal leaders were individuals with excellent interpersonal skills who had earned the trust of their colleagues. Horizontal leaders demonstrated valuable characteristics: the ability to listen to people who worked in different settings, understand their points of view, and demonstrate that understanding through action. Several of St. Luke's executives identified the chair of the Heart Failure Team as a paradigm example of such a leader. They pointed to her leadership as fundamental to the team's success in identifying strategies to foster cross-continuum understanding and action. For example, acute care nurses were invited to accompany homecare nurses to patients' homes for follow-up visits. These visits allowed acute care nurses to understand better the experience and concerns of their homecare colleagues and gave them a more complete appreciation of the opportunities and challenges in the patient's home environment. St. Luke's executives described these visits as formative events in the development of a cross-continuum understanding of readmissions.

Once St. Luke's readmissions reduction program had demonstrated signs of impact, executive leadership was eager to provide support and guidance. Leaders from the Heart Failure Team provide reports and updates to St. Luke's Clinical Steering Committee, which includes many of the hospital's physician leaders in its membership. The steering committee provides proactive executive oversight, suggestions, and guidance to the readmissions reduction program. Perhaps most importantly, the steering committee lends executive support and validation to the readmissions reduction initiative. St. Luke's also established a formal executive sponsorship system: a St. Luke's executive is personally accountable for the performance of the readmissions reduction program. Executive support and guidance have proven important factors in building the program's momentum to reduce readmissions and expand the initiative from heart failure to additional priority diagnoses.

A key to St. Luke's success in improving care transitions was its **ability to identify, adopt, and refine** concepts from other organizations or practice areas and use them to reduce readmissions.

4.4. Rapid Learning from External and Internal Sources

A key to St. Luke's success in improving care transitions was its ability to identify, adopt, and refine concepts from other organizations or practice areas and use them to reduce readmissions. The Heart Failure Team was able to employ ideas used in other departments of the hospital, best practices from leading health care organizations, and valuable lessons learned from struggling institutions. One executive said, speaking metaphorically, they "stole frequently and shamelessly" from

others (while always providing attribution). Adapting these concepts for use in improving care transitions at St. Luke's has involved extensive experimentation, but the ability to learn from others, both inside and outside of St. Luke's, was important to the program's success.

Outside Learning: IHI was a significant resource and facilitator for the learning process at St. Luke's. St. Luke's has a history of constructive involvement with IHI that predates the hospital's participation in the TCAB collaborative. St. Luke's first developed a positive association with IHI after participating in an IHI initiative on adverse drug events. Moreover, several executives from St. Luke's and the Iowa Health System are IHI faculty and maintain strong connections with the organization. Through this rich history and strong connection, St. Luke's capitalized on the learning opportunities made available through IHI.

For example, because of its relationship with IHI, St. Luke's was able to conduct site visits and collaborate with leading health care organizations, such as the University of California San Francisco and BayState Medical Center. St. Luke's benefited from evidence-based successes through these interactions with outside organizations. Because St. Luke's was able to import evidence-based models developed elsewhere, it did not have to invest a lot of its own resources to develop performance improvement strategies. Rather, St. Luke's concentrated its resources on developing data and analytic capabilities because these require a high degree of customization and could not be easily imported and applied.

St. Luke's did not limit its learning to leading health care institutions but sought out lessons learned from other organizations that had encountered difficulties. It found, for example, collaborative meetings with other Iowa

Health System hospitals to be very valuable. These hospitals were often in an earlier stage of development but brought a fresh perspective to many of the same issues confronting St. Luke's.

Internal Sharing: The Heart Failure Team also looked within St. Luke's for concepts or care models that could reduce readmissions. The team borrowed the strategy of complementary in-home follow-up visits, for example, from the Birth Center. St. Luke's Birth Center had been offering complementary in-home visits to all newborn infants. These visits occurred 24–48 hours after discharge and had been highly effective in preventing complications in the infant's health. Members of the Heart Failure Team decided to deploy the same strategy to heart failure patients and offer one complementary in-home care coordination visit after discharge. At the visits, the homecare staff would provide education, using the "teachback" questions. An important part of these visits was in home medication reconciliation, which proved to be a very successful intervention as many of the issues surrounding readmissions related to medication confusion. St. Luke's leadership discovered that when home care staff made their assessments, far more patients qualified for certified home care services than they had expected or anticipated based on the patient's assessment in the hospital. By following up with the patient in the home setting, the Heart Failure Team gained a wider perspective on patient needs and opportunities for effective interventions.

5. Conclusion

St. Luke's Hospital developed a comprehensive program to reduce preventable readmissions for heart failure patients. It did so using a multi-pronged approach that emphasizes the following:

- The involvement, and alignment, of providers across the continuum of care;
- The development and use of standardized tools and compatible health information infrastructure;
- Horizontal leadership and executive sponsorship; and
- Rapid and effective learning from both external and internal sources.

The success of the program has led to its expansion to other diagnoses at St. Luke's and diffusion to other parts of IHS. It has also positioned St. Luke's favorably to capitalize on opportunities to participate in other value-based initiatives including BP programs.

6. Acronyms

CMS	Centers for Medicare & Medicaid Services
IHI	Institute for Healthcare Improvement
STAAR	STate Action on Avoidable Rehospitalizations
TCAB	Transforming Care at the Bedside
MI	Myocardial Infarction
COPD	Chronic Obstructive Pulmonary Disease
PI	Performance Improvement
ACO	Accountable Care Organization
LTC	Long-Term Care
SNF	Skilled Nursing Facility
PCMH	Patient-Centered Medical Home

Appendix A: Readmission Rate Methodology and Figures

St. Luke's methodology to calculate readmissions rates for heart failure patients:

Patient Type: Inpatient

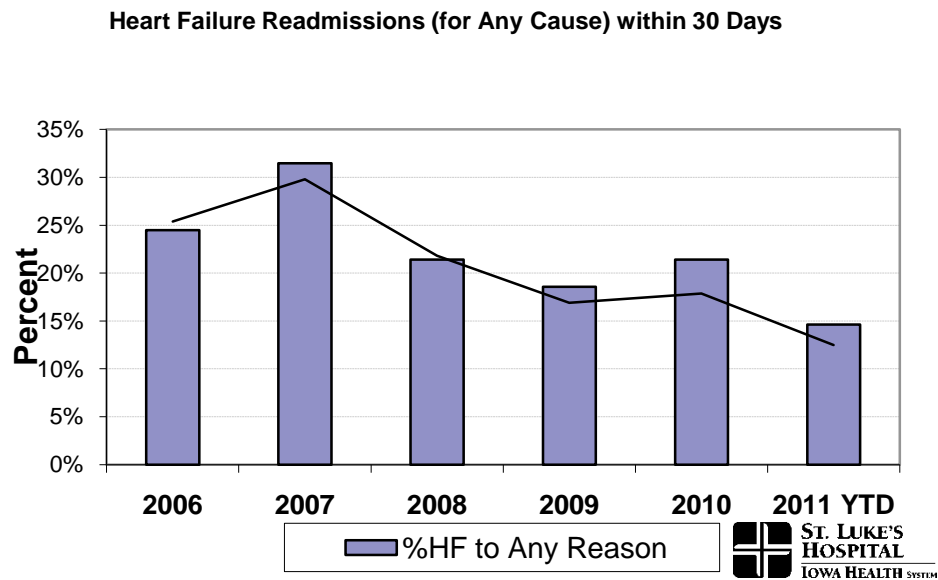
Patient Sub Type: All (Excluding behavioral health, skilled nursing, hospice, LTAC, and/or rehab)

Numerator: Number of acute heart failure inpatients (discharged from same month as denominator) readmitted to inpatient acute within 30 days

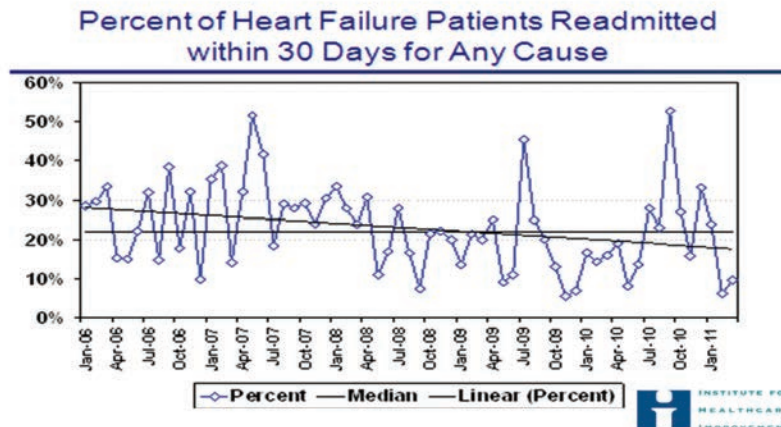
Denominator: Number of acute heart failure inpatients discharged in a particular month

Exclude patients that were discharged to another acute care hospital (02) or died (20) or were newborn

St. Luke's Heart Failure Readmission Rate (annual)



Luke's Heart Failure Readmission Rate (monthly)



Appendix B: Cross-Continuum Heart Failure Team

Heart Failure Team	
Peg Bradke, Chair, Director Heart Care Services	Carmen Kinrade, Director - Med/Surg and Case Management
Robinn Bardell, Program Manager Case Management	Shirely McCloy, Respiratory Therapist
Ann Beem, Pt. Care Coordinator - 3CTelemetry	Sandi McIntosh, Director - Emergency Department
Alexis Benion, Director of Nursing Living Center West (LTC/SNF)	Signe Munson, RN VNA Hospital Liaison
Christy Charkowski, Care Coordinator STL Hospitalists	Jennifer Owens, Social Worker Inpt.
Krissy Elder, Pt. Care Coordinator - 5C Neurology	Julie Peterson, Mgr - Cardiac/Pulm. Rehab
Karen Forster, Pharmacy	Diane Pfeiler, RN Nurse Mgr - 5E Medical Unit
Terri Grantham, RN Cardiac Outcomes	Kelly Pottebaum, Pt. Care Coordinator - 5E Medical Unit
Renee Grummer-Miller, Social Worker OP Palliative Care	Nikki Robson, ARNP Visiting Nursing Associate
Barb Haeder, RN Heart Failure Nurse	Aimee Traugh, RN Nurse Mgr - 30 Telemetry
Sue Halter, ARNP Heart Failure Clinic	Jean Vorwald, RN VNA
Lesley Haro, ARNP Orthopedics	Jean Westerbeck, Administrator Living Center West (LTC/SNF)
Sherrie Justice, Director Performance Improvement	Pam Williams, Jones Region Medical Center, Critical Access Hospital
Ad Hoc	
Doralyn Benson, Mgr - Med Social Services	Dena Fisher, Care Coordinator STL Hospitalists



Appendix D: Patient Education Material

Heart Failure Zones

<p>EVERY DAY</p>	<p>Every day:</p> <ul style="list-style-type: none"> • Weigh yourself in the morning before breakfast and write it down. • Take your medicine the way you have been told. • Check for swelling in your feet, ankles, legs and stomach • Eat low salt food • Balance activity and rest periods <p>Which Heart Failure Zone are you today? Green, Yellow or Red</p>
<p>GREEN ZONE</p>	<p>All Clear <u>This zone is your goal</u> Your symptoms are under control You have:</p> <ul style="list-style-type: none"> • No shortness of breath • No weight gain more than 2 pounds (it may change 1 or 2 pounds some days) • No swelling of your feet, ankles, legs or stomach • No chest pain
<p>YELLOW ZONE</p>	<p>Caution <u>This zone is a warning</u> Call your doctor's office if:</p> <ul style="list-style-type: none"> • You have a weight gain of 3 pounds in 1 day or: weight gain of 5 pounds or more in 1 week • More shortness of breath • More swelling of your feet, ankles, legs, or stomach • Feeling more tired. No energy • Dry hacky cough • Dizziness • Feeling uneasy, you know something is not right • It is harder for you to breathe when lying down. You are needing to sleep sitting up in a chair
<p>RED ZONE</p>	<p>EMERGENCY Go to the emergency room or call 911 if you have any of the following;</p> <ul style="list-style-type: none"> • Struggling to breathe. Shortness of breath that does not go away while sitting still • Have chest pain • Have confusion or can't think clearly

[CASE STUDY]

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