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Reducing Heart Failure Readmissions Through Standardized Daily 1:1 Education

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Reducing Heart Failure Readmissions Through Standardized Daily 1:1 Education

Abstract

Problem: In 2023, a Northern California hospital's Cardiac Procedure Unit (CPU) admitted 100 heart failure patients, with 24 readmissions primarily due to inadequate self-management education. These admissions cost over $8.4 million, highlighting the urgent need for better patient education to reduce readmissions and healthcare expenses.

Context: A quality improvement initiative was launched in the CPU that handles pre- and post-cardiac care, including for heart failure patients. The unit's focus on urgent care and other priorities resulted in insufficient patient education regarding heart failure.

Intervention: From January to June 2024, the initiative implemented daily personalized teach-back education sessions on self-management. These sessions utilized an existing education kit, incorporated motivational interviewing techniques, and were tailored to each patient's health literacy level.

Measures: The primary process measure aimed to provide 90% of patients aged 65 and older with targeted education and document it in the electronic health record (EHR) within eight hours of admission. The primary outcome measure aimed to reduce the 30-day readmission rate by 20% compared to the baseline.

Results: The personalized education intervention achieved 75% of the 90% target. From January to June 2023, there were 63 30-day CHF admissions to the CPU; from January to June 2024, this number was 59. The 30-day readmissions decreased by 27% in 2024 compared to 2023.

Conclusion: Health literacy assessments and motivational interviewing improved discharge planning, reducing 30-day readmissions by 27% and potentially saving $682,162. This
underscores the importance of prioritizing individualized heart failure self-management education to enhance care quality and reduce costs.

*Keywords*: congestive heart failure, daily one-on-one education, readmissions, teach-back, self-management, cost-avoidance
According to estimates, 6.2 million Americans suffer from heart failure, with one million new cases diagnosed annually, costing the government about $30.7 billion annually (Anzio, 2022). Heart failure is also known as the leading cause of readmission. Additionally, the Centers for Medicare & Medicaid Services (CMS) penalize hospitals with a high percentage readmission rate of 3% of the total reimbursement (Centers for Medicare & Medicaid Services, n.d.). Heart failure education should be started upon admission and continue throughout the hospital stay until discharge. Research has shown that the one-on-one daily teach-back method in heart failure education has significantly optimized heart failure disease management, improved quality of life, and reduced unplanned hospital readmissions. For this quality improvement project, the Cardiac Procedure Unit (CPU) was chosen to test this best practice.

**Personal Leadership Statement**

As a leader in the nursing field, this author is committed to leveraging strategic thinking, collaboration, and effective communication to drive quality improvement initiatives that enhance patient care. As a clinical nurse leader (CNL), personal values of compassion, integrity, and patient-centeredness guides professional actions and decisions. This CNL student envisions a future where teams are empowered to innovate, deliver top-level performance, and continuously learn and improve, all within a work environment of effective teamwork and evidence-based practice. The author aims to create a culture of engaged teamwork, evidence-based practice, and ongoing growth in the microsystem by aligning personal strengths, values, and vision with projects such as reducing heart failure readmissions through standardized education. After developing wisdom and leadership capacities through balance, new perspectives, and appreciating the value of lifelong learning, the CNL role remains critical to success and systems-based practice in the
microsystem. The author aspires to facilitate positive change as a seasoned leader in the future, ultimately transforming healthcare delivery, patient and organizational outcomes.

Problem Description

Congestive heart failure (CHF), which significantly impacts patients' quality of life and life expectancy, often leads to frequent readmissions due to relapses and inadequate rehabilitation (Bamforth et al., 2021). The CPU is a fast-paced unit that serves elective procedure patients and overflows of patients from telemetry units in the emergency department, medical-surgical unit, and intensive care unit. Nurses often perform multiple tasks while supporting post-cardiac catheterization patients. Therefore, heart failure education by frontline staff is frequently omitted due to the reality of multitasking and the prioritization of tasks. Consequently, the current system workflows cannot contribute to decreasing the number of readmissions after the initial hospitalization. The present practices only provide one day of instruction during the discharge process, making it less effective as a more proactive preventive measure. This leads to higher readmission rate and can be costly; this challenge can be addressed by increasing the time of educational exposure and understanding for patients and families (Son et al., 2020).

As a result of inadequate heart failure education, the number of patients requiring hospitalization and readmissions increased to 27% from January 2023 to December 2023 (The Permanente Medical Group, 2024). This results in variable disease management, inconsistent outcomes, and increased costs. The effects of cardiovascular disease can be debilitating, causing financial burdens and emotional strain for families and caregivers (Amini et al., 2021). Additionally, prolonged hospital stays also impact the healthcare organization, limiting the availability of scarce resources such as hospital beds in acute care settings. This limits the healthcare organization’s ability to safely admit additional hospital patients.
Specific Project Aim

To decrease the percentage of patients who are readmitted to the hospital due to heart failure in the cardiac procedure unit of a medical center in northern California from a baseline of 30% to 20% over six months.

Goals

To implement standardized heart failure education processes that include the following:

1. Identify, during admission, patients with specific heart failure diagnoses to be admitted and trigger alerts and reminders to the nursing staff that these patients require the increased vigilance and education through the implementation of specific order sets.

2. Provide nurses with resources, such as pocket cards with evidence-based interventions related to heart failure, which can be used as teaching tools during the patient’s hospital stay.

3. Identify patients who, during their stay in the hospital, have yet to receive quality, evidenced-based care and self-management education, and furnish performance feedback to staff responsible for providing patient education.

4. Provide heart failure patient education materials easy-to-understand language to the members of the nursing department.

Role of Nurse Leaders

Hospitals in the United States readmit more than 20% of patients with heart failure within 30 days after discharge and as many as 50% within six months after discharge. Patients’ lack of understanding of heart failure management is the leading cause of readmissions (O’Connor, 2019). Variation in nursing practice has been identified as one of the barriers in providing heart failure education. Nurse leaders can influence and lead changes that will impact improved patient
outcomes. The four elements of transformational leadership include idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Avolio & Bass, 2002). These four transformational leadership elements can be used to initiate changes in heart failure education.

Available Knowledge

A problem, intervention, comparison, outcome, and time (PICOT) question was created to guide the search process (see Appendix C). The emerging question was: In patients 65 years and older admitted to the hospital with congestive heart failure (P), how does one-on-one teach-back education on self-care (I) compared to current heart failure discharge teaching (C) affect heart failure exacerbation and hospital readmission (O) within six months (T)?

A systematic search was conducted to gather evidence-based practices in improving heart failure education. An electronic search was conducted of articles from different databases: PubMed, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Evidence-Based Journal, Agency for Healthcare Research and Quality (AHRQ) Evidence Reports, and Cochrane Database of Systematic Reviews. The search strategy was focused on CHF readmission and discharge education. Search terms included readmission, CHF, teach-back, and daily one-on-one teaching. Truncation was also used to expand the search for readmission. The search was limited to articles from 2005 to the present, ages 65 years old and over, and in English. Five hundred and fifty-one articles resulted from this search, and an initial review was performed by reading the title, abstract, design, and methodology. The top three articles with findings indicating a significant reduction in readmission were chosen. A critical appraisal of the evidence in the articles was conducted using the Johns Hopkins Evidence Level and Quality Guide (Dang et al., 2021).
A randomized control trial study conducted in Athens, Greece, have examined the effectiveness of different educational approaches for improving outcomes in patients with heart failure. Elpida et al. (2021) evaluated a constructivist teaching method (CTM) intervention. They found that it led to significant improvements in heart failure knowledge, self-care behaviors, quality of life, and medication adherence compared to usual care at 3 and 6 months (p < 0.001 for all outcomes). The CTM intervention also resulted in significantly lower hospital readmission rates at one month (8.2% vs 24.6%, p = 0.014) and six months (13.1% vs 36.1%, p = 0.003). Similarly, Mesbahi et al. (2020) found that teach-back training significantly improved self-care behaviors and reduced readmissions compared to conventional education. After three months, the intervention group showed significantly better self-care scores (p = 0.03) and fewer readmissions (p = 0.002) than the control group.

These findings suggest that interactive, patient-centered educational approaches like CTM and teach-back are more effective than conventional methods for improving outcomes in heart failure patients. Both studies emphasized the importance of assessing patient understanding and providing individualized education tailored to each patient's needs. The CTM encourages patients to construct their understanding based on prior knowledge, while the teach-back method allows educators to identify and address knowledge gaps. These methods enhance knowledge retention, self-care behaviors, and clinical outcomes by actively engaging patients and reinforcing key self-care concepts. This patient-centered approach should resonate with the healthcare community, fostering a sense of empathy and understanding for the unique needs of heart failure patients. However, both studies noted limitations, including single-site designs and relatively short follow-up periods, indicating a need for more extensive multi-site trials with longer-term follow-up to confirm the sustained benefits of these educational interventions for heart failure management.
The rating for this evidence is Level I A using the Johns Hopkins Evidence-Based Practice (JHNEBP) scale.

One article detailed a non-experimental quality improvement study conducted in the telemetry unit at a hospital located in the United States (Rizzuto et al., 2022). The author explained that 25% to 50% of post-discharge adverse events that lead to hospital readmissions in patients with heart failure are potentially preventable. To address this, a group of health professionals from different fields developed a trial program for self-care for people with heart failure. This program was used by 47 people in a hospital telemetry unit. Those affected were told about the disease, its treatments, how to eat and stay active, and how to spot early warning signs. Within a week of their release from the hospital, a cardiologist examined them and then contacted them via phone between 48 and 72 hours later. Following the pilot program's implementation, the number of heart failure patients who returned to the hospital within 30 days post-discharge dropped by 16.6%. Data indicated that these results had been achieved because patients receiving the intervention were more likely to follow treatment and medication plans than those who did not, which led to fewer readmissions. The rating for this evidence is Level V B using the Johns Hopkins Evidence-Based Practice (JHNEBP) scale. The article was a quality improvement study with reasonable, consistent recommendations and some reference to scientific evidence. One missing aspect of the article, however, was that the authors did not discuss and limitations of the study.

A quality improvement study was conducted in two 30-bed telemetry units in a 440-bed academic teaching hospital in Southwest Pennsylvania, United States (Anzio et al., 2022). A retrospective chart analysis was conducted to accumulate preliminary data. Three month’s records were evaluated to determine 30-day readmission rates for heart failure (HF) signs and symptoms. The clinical nurse specialist (CNS) produced a spreadsheet detailing all patient admissions to the
chosen units between August 2018 and October 2019. The CNS evaluated each patient to recognize the explanation for their admission, the rationale for their discharge, and any potential readmission after removing admitting diagnoses for cardiac issues. If the patients were readmitted, the records were analyzed to see if they had experienced HF symptoms and signs at the time of readmission. Patients had to be admitted with HF and released afterward to be included in the data collection. Analysis revealed no considerable discrepancy between the two groups (p = 0.331)—yet half of the post-intervention readmissions were reduced.

The authors adeptly elucidated the advantages of instructing patients on heart failure, including enhanced clinical results, improved quality of life, and a reduced likelihood of being readmitted to the hospital. The rating for this study was Level V B using the JHNEBP scale, as it was a quality improvement study with reasonable, consistent recommendations with some reference to scientific evidence. No evaluation was conducted to ascertain whether the patient understood the instructions. The sample size may have made it harder to find a big difference between the admission rates before and after the intervention.

**Rationale**

Adoption of the JHNEBP model was chosen to serve as the conceptual foundation for this quality improvement initiative. This model is acknowledged for its effectiveness in guiding clinical decision-making and is supported by reliable tools to aid in the change process (Johns Hopkins Medicine, 2023). Utilizing evidence-based practice enables nurses to identify optimal practices and adjust their approach to ensure the delivery of safe, high-quality care. The JHNEBP model comprises three key phases: practice questions, evidence gathering, and translation.

The studies reviewed in these articles (See Appendix A) have shown that adequate one-on-one education directly correlates with managing symptoms, improving quality of life, and reducing
unplanned hospital readmissions from exacerbated congestive heart failure. The bedside nurse primarily does conventional discharge teaching during discharge, and an assessment of heart failure education is often missed. As we have learned from nursing school, discharge teaching should be initiated at admission and reinforced daily. The evaluation of a patient's learning is equally essential for the success of their chronic care self-management.

The Plan-Do-Study-Act (PDSA), as a key component of the Institute for Healthcare Improvement Model for Improvement, is the most suitable theoretical framework for this project. It allows for planned and tested changes on a small scale, with each cycle informing the next. This iterative process ensures that the changes aligned with project objectives are continuously assessed, and adjustments are made if necessary to achieve the goals. The insights gained from each cycle will be integrated, establishing a successful and sustainable practice change to enhance education in self-care management of heart failure (Institute for Healthcare Improvement, 2021).

**Context**

A series of tools, including the microsystem assessment of purpose, patient population, professional mix of staff, unit processes and patterns (5Ps), strengths, weaknesses, opportunities, and threats (SWOT) analysis (See Appendix B), and gap analysis (See Appendix C), were utilized to understand better the proposed quality improvement project in the CPU.

**Microsystem Assessment—5P’s**

One of the foundational tasks for a Clinical Nurse Leader (CNL) is to conduct a unit-based microsystem assessment (King et al., 2019). The 5Ps associated with “metrics that matter” remain the significant components of system-based practice in the microsystem. Such a system approach was also highlighted in the new Essentials published by the American Association of Colleges of Nursing (AACN) in Domain 7 (American Association of Colleges of Nursing, 2021).
The CPU is a combined hospital unit catering to the hospital observation patient status and inpatient care for individuals undergoing cardiac procedures—distinct from the intensive care units. It admits a diverse patient population, including those with congestive heart failure, coronary artery disease, and those undergoing various cardiac interventions. Most patients are scheduled for elective procedures, with a smaller percentage coming from the emergency department or other hospital units requiring telemetry monitoring. Staffed predominantly by registered nurses (RNs), nurse practitioners, and interventional cardiologists, the unit operates under the oversight of the nurse manager and the Director of Cardiology Services. The admission process involves meticulous preparation, assessment, and explanation of procedures by the nursing staff and practitioners. Post-procedure care includes monitoring for complications and ensuring readiness for discharge. Despite generally satisfactory multidisciplinary teamwork, challenges such as nursing burnout and occasional patient dissatisfaction often arise due to workload pressures.

**SWOT Analysis**

The incorporation of standardized materials will make information about CHF more accessible. As the SWOT analysis suggests, the current weaknesses of low-quality sources may cause a threat of inconsistent outcomes. However, a modernized program will create more opportunities for partnerships with communities and improvements in telemedicine. The internal forces that can halt this project are the cost of constructing a cohesive course and additional nurse educators’ working hours. Otherwise, a high-quality program will increase the program's efficiency. Externally, it may be negatively affected by healthcare regulations and its standards for public health information. Positive external factors may include existing courses available to adapt to this project. Moreover, if the results show an increase in healthcare quality, it can attract more
grants and investors, compensating for unpredicted liabilities. Therefore, informative and effective education programs will benefit patients' health prognosis and the hospital's economic status.

**Gap Analysis**

The current system cannot decrease the percentage of readmissions after the initial hospitalization. The present state only provides one day of instruction during the discharge process, making it less effective as a preventive measure. This issue results from a need for more specific nurse training and the use of general information as a basis for course planning. This leads to higher readmissions and can be addressed by increasing the time of educational exposure for patients (Son et al., 2020). To achieve this, a protocol of essential training must be created and implemented into everyday practice with CHF patients. This will allow for more productive courses and a decrease in post-discharge complications (Cui et al., 2019). Thus, the specific action steps include standardizing education programs and professional staff training.

**Intervention**

The project began in January 2024 and will conclude at the end of June 2024 to reduce the number of CHF readmissions through standardized daily 1:1 education for patients with CHF. A microsystem assessment that utilized the 5Ps, SWOT analysis, and Gap analysis was conducted in January 2024, with a planned project rollout in June 2024. The selection for CHF champions in all adult services departments, including the CPU unit-based council, was initiated in January 2024 and will have a four-hour monthly committee meeting to reeducate the contents of the existing CHF kit (See Appendix D), nursing guidelines (See Appendix E), and discuss fallouts from CHF education practices and new workflow processes to improve patient health literacy assessment and education.
During the initial PDSA cycle (See Appendix F), our collective efforts were directed toward enhancing patients' comprehension of heart failure and their capacity for self-management of the condition. This will involve thoroughly evaluating frontline nurses' knowledge of heart failure education and identifying any obstacles hindering education provision. The process measures will be improved based on this evaluation. A one-hour training session on heart failure education will be conducted for a select group, such as unit-based council members and the CHF champion committee, who can offer valuable perspectives to advance project objectives. This focused approach has the potential to improve patient outcomes significantly.

These revised process measures will target older patient demographics—65 years and above. Feedback and data collection from patients will be integral in evaluating their comprehension of the educational materials, utilizing methods such as the teach-back technique. Rapid cycling will be halted upon attainment of project objectives.

The key stakeholders (See Appendix G) in this project are the nurse educator, the cardiologist, the registered nurses, the patient care technician, and the clinical nurse leader. The nurse educator's collaborative work with a cardiologist and CNL will be central to the program's success. Their responsibilities will include developing the instruction course that must be transferrable and comprehensive for RNs and patients of diverse backgrounds. Moreover, this information must be adaptable to varying lengths of stays, as the number of available days may differ depending on circumstances and the rehabilitation process. Internally, this team will have shared and individual goals. The cardiologist will provide accurate data on possible patient lifestyle changes and their expected effect on future readmissions. Alternatively, they can suggest an existing program and advise on how to use it. The nurse educator will evaluate the quality of the information and structure it according to the course's design. The CNL must analyze the results
of the collaborative work and standardize it for practical use, including the objectives and standards for daily practice. Therefore, this team will design and transfer the course to RNs later.

After the course was created, the RNs, the CNL, and the patient care technicians became the leading educators. The CNL observed the RNs' understanding of the program and their ability to instruct patients on the preventive measures associated with CHF. Patient care technicians provided a supportive role in evaluating the effectiveness of the course and observing the patients' reactions to the acquired information. As the timeline (See Appendix H) indicates, the practical use of designed programs began in June 2024. This deadline allowed for data collection that represented the trends in readmission rates. Therefore, the RNs were instructed and ready to perform education sessions. After a month, the CNL gathered initial nurses' feedback that was used to adjust the program and make it more effective. Thus, preparations needed to be completed by the end of January, with additional changes planned after the 30-day trial period if needed.

**Study of the Intervention**

The frontline nursing staff on all shifts are included in the population for implementing the proposed changes in the microsystem. Data was reviewed monthly after the trial period, and this data was the key driver for this quality improvement project. The initiation of CHF education, which is a continuous process, was started within eight hours of admission and continued daily throughout the patient's hospital stay. This was also discussed in pre-shift huddles and every nurse knowledge exchange during patient handoff. The nurse leader utilized the NKE audit tool to evaluate staff performance and compliance with education workflow changes. Discharged patients received the Atlanta Heart Failure Knowledge Test (A-HFKT) (See Appendix I) to determine if the standardized daily one-on-one teach-back education was effectively retained and understood before discharge. The CNL conducted patient rounding to solicit real-time feedback regarding the
education provided for heart failure. Utilizing these data allowed the team to evaluate the effectiveness of each PDSA and compliance with each process measure.

**Ethical Considerations**

This project prioritizes patient education and empowerment, aligning with the American Nurses Association (ANA) code of ethics (American Nurses Association, 2017) and the Jesuit principle of Cura Personalis (University of San Francisco, n.d.), which emphasizes holistic, patient-centered care. The faculty has authorized this performance improvement initiative using Quality Improvement (QI) review guidelines, exempting it from the endorsement of the Institutional Review Board (IRB) (See Appendix J). Services, information, and support were kept from patients during the examination of individual charts. The intervention's primary objective was to enhance patient comprehension of CHF diagnosis to mitigate morbidity with no potential harm to patients. This initiative upholds the principle of beneficence, obligating healthcare providers to act in patients' best interests and promote their well-being (Beauchamp & Childress, 2019). By educating patients about their CHF diagnosis and providing necessary information and resources, healthcare providers work to prevent harm and improve outcomes.

This initiative reflects the American Nurses Association Code of Ethics and actively promotes patient autonomy in informed decision-making through education provided by the healthcare team (Gaines, 2021). It also aligns with the Jesuit principle of Cura Personalis, emphasizing holistic care (University of San Francisco, 2023). Consistent patient education on chronic illnesses during hospital visits, regardless of admission diagnosis, along with assessment and provision of diet, laboratory tests, and resources, ensures comprehensive individual care. This approach emphasizes the importance of treating the whole person, not just their medical condition, and recognizes each patient's unique needs and circumstances. By focusing on patient education
and self-empowerment, the project aims to enhance patients’ ability to manage their condition effectively, make informed decisions about their care, and improve their overall quality of life. This holistic approach to patient care reflects a commitment to ethical nursing practice and promoting patient dignity and autonomy. The Research Determination Official (RDO) (See Appendix K) has reviewed and confirmed this project’s classification as a quality improvement initiative, not requiring IRB approval, ensuring adherence to ethical standards while focusing on enhancing patient care and education quality.

**Outcome Measure Results**

The data on CPU’s CHF admissions and readmissions over six months, from January to June 2024, showed fluctuating trends. Readmission rates varied considerably, ranging from 0 to 2 cases per month. The highest number of readmissions (2) occurred in January, February and April, while May, and June had no recorded readmissions. March showed two readmissions. Interestingly, the months with the highest initial admissions (14 in March and 11 in June) did not correspond to increased readmissions in the following months (Appendix L). The percentage of patients receiving education ranged from 40% to 75%, with April showing the highest rate of education provision (75%) and January the lowest (40%). However, there was no clear correlation between the percentage of patients receiving education and the number of readmissions in the subsequent month. Several factors could explain these variations in readmission rates and education provision.

The use of travel or float pool nurses might have affected patient education workflow and care consistency. Patients with CHF admitted for procedures rather than acute CHF exacerbations may have received post-procedural education and have been discharged the same day instead of receiving CHF-specific education. Additionally, competing priority tasks for healthcare staff could
have led to fallouts in education provision or comprehensive discharge planning. These factors could contribute to the observed inconsistencies in readmission and education rates, suggesting that a more comprehensive analysis of staffing patterns, admission diagnoses, and workflow management might provide further insights into CHF management and readmission prevention strategies.

**Summary**

The CPU faces significant challenges in managing heart failure patients, as evidenced by admission and readmission data from January to June 2024. Readmission rates varied from 0% to 25%, with April experiencing the highest rate at 25%. In 2023, the CPU admitted 100 heart failure patients (See Appendix M), highlighting the significant impact on healthcare resources and patient outcomes. While inpatient guidelines such as heart failure order sets, daily standing weights, diet restrictions, and accurate intake and output monitoring are crucial, transitioning these practices to post-discharge care remains challenging. The inconsistent adherence to nurse knowledge exchange (NKE) further complicates the continuity of care. This project supports research conducted by Dinh et al. (2019) and suggests that implementing a structured educational intervention using the teach-back method could significantly reduce readmission rates.

Moreover, this approach improved patients' knowledge of heart failure, self-care behaviors, quality of life, and medication adherence (Dinh et al., 2019). Regular follow-ups, such as telephone calls focused on patients' at-home management, proved beneficial in reinforcing education and supporting self-care practices (Dinh et al., 2019). By assessing individual learning needs and tailoring education accordingly, the CPU successfully reduced high readmission rates and improved patient/organizational outcomes despite fluctuating admission numbers and resource constraints.
Conclusion

Heart failure readmissions remain a significant challenge for healthcare systems, with far-reaching consequences for patients, families, and healthcare organizations. This quality improvement project aimed to address this issue by implementing a standardized daily one-on-one teach-back education program for patients 65 years and older admitted with CHF in the CPU. The intervention, guided by the Johns Hopkins nurse evidence-based practice model and the IHI MFI, focused on increasing patient understanding of heart failure self-management to reduce readmissions. The project's success relied on the collaboration and commitment of key stakeholders, including the nurse educator, cardiologist, registered nurses, patient care technicians, and CNL. Through a systematic approach involving staff training, patient education, and ongoing evaluation using PDSA cycles, this initiative aimed to decrease CHF readmissions from 30% to 20% over six months.

The project has several strengths, such as addressing a significant healthcare challenge, employing evidence-based approaches, fostering multidisciplinary collaboration, and aligning with ethical principles of patient-centered care. However, it has some areas for improvement, including limited generalizability to other patient groups or settings, potential challenges in maintaining staff adherence, a relatively short timeframe for assessing long-term impact, and the possibility of capturing only some aspects of patients' understanding and self-care practices.

To ensure the sustainability of this project, the team plans to employ the following tactics:

a. Review current CHF metrics through weekly reports provided by the TPMG partners.

b. Discuss current metrics results with the CHF champions from all adult service departments.
c. Ensure continuous heart failure education workflow training to new frontline staff including seasonal travel and float pool nurses.

d. CNL and other nurse leaders will continue to monitor and review CHF admissions using the CHF dashboard through HealthConnect.

e. CNL and other nurse leaders will continue to use NKE and relevant audit tools to help assess frontline staff compliance and give reminders when needed.

Continuous monitoring and data review will be crucial in assessing the effectiveness of the intervention and identifying areas for ongoing improvement. The Atlanta Heart Failure Knowledge Test (A-HFKT) and teach-back method has provided valuable insights into patients' understanding of their condition and self-care practices (Anzio et al., 2022). A CHF STOP light tool (See Appendix N) symptom checker calendar and personalized medication information (See Appendix O) can help patients better manage their condition at home (Anzio et al., 2022). By adopting these evidence-based strategies, the CPU overcame resource constraints and improved the continuity of care for CHF patients, ultimately leading to better health outcomes and optimized significant healthcare cost avoidance realities (See Appendix P). The successful implementation and replication of this quality improvement initiative has the potential to significantly improve patient outcomes, reduce healthcare costs, and enhance the overall quality of care for individuals with CHF.
References


**Appendix A**

**Evaluation Table**

**PICOT Question**
In patients 65 years and older admitted to the hospital with congestive heart failure (P), how does one-on-one teach-back education on self-care (I) compared to heart failure discharge teaching during discharge (C) affect heart failure exacerbation and hospital readmission (O) within six months? (T)

<table>
<thead>
<tr>
<th>Evidence Citation</th>
<th>Design</th>
<th>Sample Settings</th>
<th>Feasibility</th>
<th>JHNEBP Appraisal Rating</th>
</tr>
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<tbody>
<tr>
<td>Anzio, N., Saul, L., Ren, D., Miller, S., &amp; Tuite, P. (2022). Decreasing 30-Day Heart Failure Readmission through Self-Care Education. <em>MEDSURG Nursing, 31</em>(2), 99–103. <a href="https://search.ebscohost.com/login.aspx?direct=true&amp;AuthType=shib&amp;db=cul&amp;AN=156222669&amp;authtype=sso&amp;custid=s3818721&amp;site=ehost-live&amp;scope=site&amp;custid=s3818721">https://search.ebscohost.com/login.aspx?direct=true&amp;AuthType=shib&amp;db=cul&amp;AN=156222669&amp;authtype=sso&amp;custid=s3818721&amp;site=ehost-live&amp;scope=site&amp;custid=s3818721</a></td>
<td>Quality Improvement Project</td>
<td>21 patients admitted between August–October 2019</td>
<td>Implementing self-care education to reduce 30-day heart failure readmissions is feasible within healthcare settings. These education programs can seamlessly fit into current discharge planning procedures, enabling healthcare providers to furnish patients with educational materials and support before discharge from the hospital. Additionally, self-care education can be customized to address each patient's specific needs and disseminated through diverse channels, including educational sessions, printed handouts, and digital platforms.</td>
<td>V B</td>
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<td>Study</td>
<td>Design</td>
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<td>Setting</td>
<td>Findings</td>
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<tr>
<td>Dinh, H. T. T., Bonner, A., Ramsbotham, J., &amp; Clark, R. (2019)</td>
<td>Cluster randomized controlled trial</td>
<td>140</td>
<td>Vietnam National Heart Institute</td>
<td>Based on the study's findings, the teach-back method appears feasible as a self-management intervention. The intervention was implemented in real-world clinical settings, suggesting that it can be incorporated into routine care practices without significant logistical challenges. Furthermore, the study's results indicated improvements in self-care behaviors, suggesting that the intervention was acceptable and feasible for patients with heart failure.</td>
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<tr>
<td>Elpida, K., Constantinos, P. H., Ioannis, V., Athena, K., Sotirios, K., Eleftherios, K., &amp; Serafeim, N. (2021)</td>
<td>Randomized Controlled Trial</td>
<td>122</td>
<td>Single center General Hospital in Greece</td>
<td>The feasibility of implementing a constructivist approach to teaching patients with heart failure was likely assessed based on the study's findings. Feasibility considerations may have included the availability of resources, the acceptability of the educational approach to patients and healthcare providers, and the practicality of integrating this method.</td>
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<tr>
<td>Authors</td>
<td>Study Design</td>
<td>Participants</td>
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<td>Summary</td>
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<td>Mesbahi, H., Kermansaravi, F., &amp; Kiyani, F. (2020).</td>
<td>Quasi-Experimental Study</td>
<td>80 patients</td>
<td>Coronary Care Unit and Post Coronary Care Unit of a teaching hospital affiliated to Zahedan University of Medical Science in Iran</td>
<td>This study considered feasibility considerations, such as the practicality of implementing teach-back training within the existing healthcare system, the resources required for training healthcare providers, and the acceptability of the intervention to both patients and providers. Assessing feasibility helps determine whether the intervention can be effectively integrated into routine clinical practice and sustained over time.</td>
</tr>
<tr>
<td>Rizzuto, N., Charles, G., &amp; Knobf, M. T. (2022).</td>
<td>Quality Improvement Study</td>
<td>47 patients</td>
<td>Telemetry Unit</td>
<td>Reducing 30-day readmission rates in patients with heart failure is feasible through targeted interventions to improve care coordination, patient education, and post-discharge support. Feasible</td>
</tr>
</tbody>
</table>
interventions may include comprehensive discharge planning, medication reconciliation, home health services, telemonitoring, patient education programs, and timely follow-up appointments. However, feasibility may depend on resource availability, interdisciplinary collaboration, healthcare system infrastructure, and patient engagement.
## Appendix B

### SWOT Analysis

<table>
<thead>
<tr>
<th></th>
<th>Favorable/Helpful</th>
<th>Unfavorable/Harmful</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strengths</strong></td>
<td>• Experienced healthcare educators.</td>
<td>• Inconsistency in documentation of provided CHF education.</td>
</tr>
<tr>
<td></td>
<td>• Established a unit-based council.</td>
<td>• Inadequate staff training in practical healthcare literacy assessment.</td>
</tr>
<tr>
<td></td>
<td>• Accessible heart failure education materials.</td>
<td>• Lack of standardized CHF education workflow.</td>
</tr>
<tr>
<td></td>
<td>• Supportive quality improvement department and organizational culture focused on patient education.</td>
<td>• Difficulty in tracking and measuring the impact of education on patient outcomes.</td>
</tr>
<tr>
<td><strong>Weaknesses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Opportunities</strong></td>
<td>• Advancement in telemedicine technology that may aid in remote patient monitoring.</td>
<td>• Growing aging populations, leading to a higher number of CHF cases.</td>
</tr>
<tr>
<td></td>
<td>• Partnership with local community organizations and public health nursing to provide home-based care and support services.</td>
<td>• Varying levels of healthcare literacy among older adults.</td>
</tr>
<tr>
<td></td>
<td>• Government incentives and grants are available to organizations that successfully reduce CHF readmissions.</td>
<td>• Health disparities due to socioeconomic status.</td>
</tr>
<tr>
<td><strong>Threats</strong></td>
<td></td>
<td>• Inconsistency in healthcare literacy assessment and CHF education before discharge.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inconsistently providing CHF education materials and teach-back methods to patients before discharge.</td>
</tr>
</tbody>
</table>
Appendix C

Gap Analysis

<table>
<thead>
<tr>
<th>Desired State</th>
<th>Current State</th>
<th>Action Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHF-related readmissions among patients over 65 years drop to 20%.</td>
<td>Patients with CHF have a 30% risk of being readmitted. This affects the hospital’s resources sufficiently that the staff cannot entirely focus on new patients.</td>
<td>The CHF education program will be extended and started during the patient’s stay in the hospital, with the option of continuing after discharge.</td>
</tr>
<tr>
<td>CHF education includes a daily one-on-one practice that starts from admission.</td>
<td>CHF teachings are performed on the day of discharge, limiting the system’s preventive potential.</td>
<td>Nurses and physicians must conduct learning sessions with each CHF patient.</td>
</tr>
<tr>
<td>The nurses can transfer the appropriate amount of information to teach the patients to adhere to self-care rules and preventive measures after discharge.</td>
<td>The nurses conduct basic training that involves general information about the disease and its risk factors.</td>
<td>The CHF-related course should be standardized and patient-specific. The staff must learn the contents of the patient training.</td>
</tr>
</tbody>
</table>
Appendix D

CHF Kit
Appendix E

Heart Failure Nursing Guidelines

Heart Failure Summary:

- Heart failure (HF) is a chronic, progressive condition where the heart muscle is weakened and is no longer able to pump blood as efficiently to the body.
- This can cause a variety of symptoms, including:
  - Fluid overload, causing swelling in the stomach/legs/ankles/or feet and weight gain
  - Fatigue; Shortness of breath during activity or when lying down; coughing
  - Difficulties with everyday activities if not treated properly

What to Know and Discuss with Patients:

- Know what medications your patient is on, the timing, and any tapering protocols if ordered.
- Discuss ONLY the medication your patient is prescribed, not all listed here.
- Highlight the importance of medication adherence: suggest pillows and other strategies to not miss doses. Medications will ultimately make it easier for the heart to pump and reduce how fast the heart beats to a healthy rate.
- Review the prescribed medication(s) mechanism and side effects (low blood pressure, low heart rate, dizziness, abnormal potassium levels, etc) with your patient. Potential medications may include:
  - **ACE Inhibitors**: Medications end in “-pril”, like Lisinopril, Captopril, Enalapril, etc.
  - **Angiotensin Receptor Blockers (ARBs)**: Lisartan, Valsartan.
  - **Angiotensin Receptor-Nephrilysin Inhibitors (ARNIs)**: Entresto (sacubitril/valsartan mix).
  - **Aldosterone Antagonists**: Spironolactone, Eplerenone (Inspra).
  - **Beta Blockers**: Medications end in “-lol” Metoprolol, Carvedilol, Bisoprolol.
  - **Diuretics**: Furosemide (Lasix), Thiazide, Bumetanide, Torsemide, Metolazone.
  - **Inotropes**: Digoxin.
  - **Nitrates**: Isosorbide Dinitrate, Isosorbide Mononitrate, Hydralazine (often given w/nitrates, but not actually nitrates class).
  - **Sodium-Glucose Cotransporter-2 (SGLT2) Inhibitors**: Empagliflozin (Jardiance).

Diet and Exercise Guidelines:

- Low sodium diet (<2,000 mg). This is less than 1 tsp of salt.
- Hidden salt is very common in restaurants and processed foods (ex: canned foods, deli and sausage meats, frozen food, boxed foods, cheese, and sauces).
- Important to check labels, serving size, and monitor your intake.
- Restrict fluids to 64 oz (2 liters) or less a day.

Identifying Symptoms and Preventing Exacerbations:

- Intake and output should be taken and documented daily for all HF patients. If the patient is getting diuretics, call the physician if urine output is not greater than 500mls. 4 hours after the first dose.
- Take daily weights for all HF patients. Weight should be standing (if able), clothed, after urinating, before eating or drinking in the morning. Stress importance of daily weights to pt with same parameters. Instruct pt to write weight after diuresis following their hospital stay (dry weight). Encourage using own scale at home on both HF Tracking and Stoplight tool. Use tools to identify and respond to:
  - Signs of too much fluid:
    - Weight gain of more than 2 lbs in 1 day or more than 5 lbs in 5 days from dry weight range
    - Swelling in the stomach, legs, ankles, or feet
    - Shortness of breath during activity or when lying down; Coughing (wet or dry); needing to sleep sitting up
  - Urgent symptoms:
    - Struggling to breathe, unrelieved SOB while sitting still
    - Chest pain; coughing up pink/frothy sputum
    - Increased confusion, fainting or unexplained fall
- Stress the importance of:
  - Not smoking, treating sleep apnea if present, and monitoring symptoms daily.
  - Adhering to low sodium and heart healthy diet, monitoring salt and caffeine intake (refer to outpatient nutrition if desired).
  - Weighing daily with same type of clothing after voiding in the morning and before eating or drinking.
  - Visiting the doctor regularly and getting labs checked.

Patient Education: Provide HF Toolkit, Review Throughout Stay, and Reinforce Consistently

1. Heart Failure Stoplight Tool: Review daily behaviors and symptoms in the green, yellow, and red zones
2. Heart Failure Tracking Tool: Pt should use daily to track symptoms. Emphasize writing dry weight using home scale after D/C
3. Heart Failure Resources and Tips
4. KRAAMES Heart Failure booklet

*HF Patient Toolkit available within the KP Clinical Library and orderable via Inspired Results through One Link!"
Appendix F

Institute for Healthcare Improvement Model for Improvement
Appendix G

Project Charter

**Project Charter**: Reducing heart failure readmissions through standardized daily 1:1 individualized heart failure education.

**Global Aim**: By December 2024, standardize the heart failure education utilizing evidence-based practices recommended by the American Heart Association (American Heart Association, 2017).

**Specific Aim**: By July 1st, 2024, improve the percentage of patients with frequent hospital readmissions due to congestive heart disease in the CPU microsystem to 20% from a baseline of 30%.

**Background**: Congestive heart failure is a severe problem that affects a patient’s quality of life and life expectancy. This issue includes the factor of common readmissions due to relapses and lack of rehabilitation (Bamforth et al., 2021). A systematic review by Son et al. (2020) suggests this may be improved by providing specialized education to patients at risk of adverse effects and following conditions. This phenomenon is supported by Cui et al. (2019), who performed a randomized control trial on the impact of targeted educational programs on hospital readmissions and self-management skills. Studies by Dessie et al. (2021), Niman et al. (2020), and Sun et al. (2019) feature comparable results, focusing on the benefits of prevention methods over repeated emergency help. Therefore, a substantial theoretical basis proves the advantages of patient education and provides a calculated decrease in readmissions among intervention groups.

**Sponsors**

<table>
<thead>
<tr>
<th>Clinical Adult Service Director</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director of Education</td>
</tr>
<tr>
<td>Director of Quality</td>
</tr>
</tbody>
</table>

**Goals**

To provide standardized heart failure education that includes the following:

1. Identify patients with a heart failure diagnosis while admitted to the hospital, trigger alerts and reminders during admission that the patient has heart failure and require implementation of specific order sets designed to increase vigilance and education.
2. Provide nurses with education, such as pocket cards with evidence-based interventions related to heart failure, to effectively teach during the patient’s hospital stay.
3. Identify patients who have yet to receive quality, evidenced-based care education and furnish performance feedback to staff responsible for providing patient education.
Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Data Source</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Heart failure patients will be assessed for their learning references, and heart failure education will be initiated within eight hours of admission</td>
<td>Quality Report, EHR chart Review</td>
<td>90%</td>
</tr>
<tr>
<td>% # patients with CHF order set used</td>
<td>Quality Report, EHR chart Review</td>
<td>90%</td>
</tr>
<tr>
<td>% # patients with documented CHF education in medical records</td>
<td>Quality Report, EHR chart Review</td>
<td>90%</td>
</tr>
<tr>
<td>Inattention in other hospital core measures (Stroke, SSU, Sepsis)</td>
<td>Quality Report</td>
<td>10%</td>
</tr>
<tr>
<td>Float pool/Traveler staff unable to provide education due to lack of familiarity of HF education workflow</td>
<td>Observational Study</td>
<td>10%</td>
</tr>
</tbody>
</table>

Team

<table>
<thead>
<tr>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>MD Co-Lead</td>
</tr>
<tr>
<td>Nurse Leader</td>
</tr>
<tr>
<td>CNS/Educator</td>
</tr>
<tr>
<td>Quality Nurse</td>
</tr>
<tr>
<td>Staff nurse champions</td>
</tr>
<tr>
<td>CHF nurse champions</td>
</tr>
<tr>
<td>CHF Committee members</td>
</tr>
</tbody>
</table>

Measurement Strategy

**Background (Global Aim):** To implement the standardization of heart failure education based on evidence-based practice by the American Heart Association by December 2024 in the Cardiac Procedure Unit.

**Population Criteria:** Patients who are 65 years and older with congestive heart failure are admitted to the cardiac procedure unit.

**Data Collection Method:** Data from CHF admission chart audit reports will be obtained. To establish a baseline admission rate, patients with an ejection fraction of less than 45% will be identified from the chart review of a sample of 40 patient records. After baseline data is collected, 20 patient records will be reviewed for weekly project measures for Q1 2024. The data plan will be reevaluated every month based on the results.

**Data Definitions:**

<table>
<thead>
<tr>
<th>Data Element</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHF</td>
<td>Patients with an ejection fraction of less than 45% from a chart audit</td>
</tr>
<tr>
<td>CHF order set</td>
<td>Standardized adult CHF order set in Healthconnect for all CHF patients</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>CHF playbook</td>
<td>CHF plan identified in education documentation in Healthconnect q month</td>
</tr>
<tr>
<td>CHF readmission report</td>
<td>Report generated q week by the quality department to capture CHF readmissions q month</td>
</tr>
</tbody>
</table>

**Measure Description:**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Measure Definition</th>
<th>Data Collection Source</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with an ejection fraction of less than 45%</td>
<td>N = # patients readmitted for CHF D = # patients admitted with a new diagnosis of CHF</td>
<td>Chart audit of patients with CHF readmissions, and patients newly diagnosed with CHF report or chart audit</td>
<td>90%</td>
</tr>
<tr>
<td>% # patients with CHF order set used</td>
<td>N = # patients with CHF order set used D = # patients admitted for CHF</td>
<td>CHF Report or Chart Review</td>
<td>90%</td>
</tr>
<tr>
<td>% # patients with documented CHF education in medical records</td>
<td>N = # patients with documented CHF education in medical record D = # patients admitted for CHF</td>
<td>CHF education Chart Review</td>
<td>90%</td>
</tr>
</tbody>
</table>
### Appendix H

#### Timeline

<table>
<thead>
<tr>
<th>Goal</th>
<th>Lead</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td>Conduct microsystem financial assessment</td>
<td>CNL</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Completed</td>
</tr>
<tr>
<td>Select project focus and define aim statement</td>
<td>CNL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Completed</td>
</tr>
<tr>
<td>Identify team members and key stakeholders</td>
<td>CNL</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Completed</td>
</tr>
<tr>
<td>Draft project budget and plan</td>
<td>CNL</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Completed</td>
</tr>
<tr>
<td>Design the educational course</td>
<td>CNL, Nurse Educator, Cardiologist</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pending</td>
</tr>
<tr>
<td>Instruct the registered nurses</td>
<td>Nurse Educator</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Pending</td>
</tr>
<tr>
<td>Implement the new learning strategy</td>
<td>CNL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pending</td>
</tr>
<tr>
<td>Collect nurses’ feedback</td>
<td>CNL</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Pending</td>
</tr>
<tr>
<td>Adjust the educational course</td>
<td>CNL, Nurse Educator, Cardiologist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Evaluate the project outcomes</td>
<td>CNL</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Finalize the course implementation</td>
<td>CNL</td>
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<td></td>
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<td>Pending</td>
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</tbody>
</table>
Appendix I

Atlanta Heart Failure Knowledge Test

ATLANTA HEART FAILURE KNOWLEDGE TEST (AHFKT-V2)
(Correct answers are marked with an asterisk)

We have some questions about heart failure. Select one response for each question. Don't worry if you are not sure of the answers; just do the best you can.

1. Heart failure is a problem in which:
   - a. There is too much blood in the body.
   - b. The heart is unable to pump enough blood *
   - c. The blood vessels in the heart are clogged.
   - d. The heart skips beats.

2. Which of the following statements about heart failure is TRUE?
   - a. It can be cured with drugs and other treatments.
   - b. A person with heart failure cannot live a normal life.
   - c. Heart failure cannot be cured but it can be controlled. *
   - d. Heart failure means the heart has stopped beating.

People with heart failure can do many things to help themselves. Think about each of these activities and decide if they would be helpful for someone with heart failure.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Avoid salty foods</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>4. Drink lots of fluids</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>5. Stop smoking</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>6. Drink alcoholic drinks each day to relax</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>7. Skip heart failure medicines when they feel better</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>
8. Know when to call the doctor or nurse for symptoms of heart failure

9. ACE inhibitors (ex. Capoten, Vasotec, Lisinopril, or Zestril) are medicines used to treat heart failure. These drugs help the heart pump stronger by:
   - a. Removing extra fluid and salt from the body.
   - b. Causing blood vessels to get smaller.
   - c. Blocking the harmful effects of stress hormones*
   - d. Improving blood counts (reducing anemia)

10. People who have heart failure take diuretics (Lasix, "water pills") so that:
   - a. Their kidneys will make more urine and pass more water*
   - b. Their heart will beat more steady.
   - c. The blood vessels in their body will widen or relax.
   - d. Their heart will pump stronger.

11. People with heart failure who are taking a diuretic ("water pill") need to:
   - a. Know if they need to take extra potassium with their water pill*
   - b. Take the diuretic after 3-4 pm in the day.
   - c. Not worry about signs and symptoms of dehydration.
   - d. Drink lots of water to replace lost fluid.

12. If a person with heart failure gains 2-3 pounds in a few days, this usually means he/she:
   - a. Is eating too many calories and gaining weight.
   - b. Has extra water in the body*
c. Needs to drink more fluid.

d. Needs to be getting more exercise to burn calories.

13. How often should a person with heart failure weigh themselves?

a. Every day*

b. Every week

c. Every month

d. Once in a while

14. The best time of day for persons with heart failure to weigh themselves is:

a. At bedtime

b. Upon awakening in the morning*

c. At or around lunchtime

d. When they remember to do it.

15. Persons with heart failure should call their doctor if they have which of the following symptoms?

a. Weight gain of 2-5 pounds in 1-2 days

b. Increased swelling of the ankles and/or stomach

c. More shortness of breath

d. All of the above*

16. How often should a person with heart failure exercise?

a. Every week

b. Every day*
c. Several times a day

d. 2-3 times per week

17. A person with heart failure should stop and rest when doing physical activity if:

a. They feel short of breath or winded.

b. They have chest pain or discomfort.

c. They feel dizzy or lightheaded.

d. All of the above*

18. Which is a big source of sodium (salt) in the diet?

a. Processed foods (such as tv dinners)

b. Smoked or cured meats.

c. Table salt

d. All of the above*

19. Which has the LOWEST amount of sodium (salt)?

a. Fresh fruits*

b. Canned vegetables

c. Reduced sodium soup

d. Frozen dinners

20. Which food has the MOST sodium (salt)?

a. Sliced tomato.

b. Broiled fish

c. Baked ham*
21. Which dessert has the LOWEST amount of sodium?
   (a) Hot fudge sundae
   (b) Baked apple*
   (c) Low fat instant pudding made with skim milk.
   (d) Chocolate cake made from a mix.

22. Select the fast food with the LOWEST amount of sodium.
   (a) Fried chicken
   (b) Cheeseburger
   (c) Baked potato with sour cream and chives*
   (d) Taco salad

23. Some people with heart failure are told by their doctor to limit fluids. Which of the following counts as fluids?
   (a) Water and clear liquids
   (b) Milk, ice cream, and yogurt
   (c) Jello, pudding, and soups
   (d) All of the above*

24. If a person with heart failure has a headache or pain, which would be the best medicine to take?
   (a) Aspirin
   (b) Tylenol (Acetaminophen)*
25. The recommended total daily amount of sodium that persons with heart failure should eat is:

- a. 3,000 milligrams
- b. 2,500 milligrams
- c. 2,000 milligrams*
- d. 500 milligrams

Use the picture of the soup label, to answer questions 26 and 27:

26. How many servings are in the can?

- a. 1
- b. 2
- c. 2 ½*
- d. 3

27. How much sodium is in one serving of soup?

- a. 15mg
- b. 890mg*
- c. 445mg
- d. 2225mg

28. A person with heart failure who is trying to limit their fluids may reduce symptoms of thirst by:
28. What can help prevent heart failure readmissions?
   - a. Chewing gum or sucking hard candy*
   - b. Cutting back on their medications.
   - c. Drinking small amounts every 30-60 minutes to prevent thirst.
   - d. Warming fluids before drinking

29. If a person with heart failure forgets to take their medicine, they should:
   - a. Take their medicines as usual the next day.
   - b. Take the medicines as soon as remembered*
   - c. Take double the dose the next day.
   - d. Call their doctor immediately.

30. It is important for a person with heart failure to:
   - a. Make sure they get the flu shot every year.
   - b. Receive the pneumovax vaccination to prevent pneumonia.
   - c. See their heart failure doctor regularly.
   - d. All of the above
Appendix J

IRB Non-Research Determination Form

CNL Project: Statement of Non-Research Determination Form

Student Name: Neil Carlos

Title of Project: Reducing heart failure readmissions through standardized daily 1:1 education.

Brief Description of Project: There are approximately 20–30% of heart failure readmissions to the cardiac procedure unit (CPU) microsystem (Fisher, 2023). They are attributed to needing more understanding and education regarding self-care management (Son et al., 2020). Current congestive heart failure (CHF) education practices typically involve providing education daily from admission to discharge; however, it is only provided on the day of discharge and not daily. Nursing perspectives highlight factors contributing to this quality gap, including inadequate assessment of patient health literacy, nurse's knowledge of CHF self-management principles, communication of reinforcement of education during nurse knowledge exchange (NKE), documentation of provided heart failure education, omission of heart failure educational videos, and education on how to use a heart failure take-home kit.

A) Aim Statement: By August 2024, readmission of CHF will be reduced by 20%, among patients who are 65 years and older.

B) Description of Intervention: Staff will be provided with education on evidence-based heart failure education, the contents of a heart failure take-home kit, motivational interviewing techniques to assess patient health literacy, handing off provided heart failure education during nurse knowledge exchange (NKE), and utilizing pre-uploaded heart failure educational videos on the unit iPad tablets as a standardized and individualized heart failure education workflow.

C) How will this intervention change practice? The utilization of standardized heart failure education and assessment of health literacy and lifestyle will improve the delivery of heart failure education and promote consistent learning of information on self-care management for patients with heart failure.

D) Outcome measurements: Patients admitted with CHF ages 65 and older will understand the basic pathophysiology of heart failure, the importance of medication adherence, lifestyle modifications, dietary recommendations, and identification of early signs and symptoms of CHF exacerbations by using the Dutch Heart Failure Knowledge Test post-discharge (Van der Wal et al., 2005, pp. 267–268), and reduce CHF readmissions of patients 65 and older by 20% by August 2024.
References


To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (http://answers.hhs.gov/ohrp/categories/1569)

☑ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.

☐ This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

Comments:
# EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST

**Instructions:** Answer **YES** or **NO** to each of the following statements:

<table>
<thead>
<tr>
<th>Project Title: Reducing heart failure readmissions through standardized daily 1:1 heart failure education.</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>The aim of the project is to improve the process or delivery of care with established/accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The specific aim is to improve performance on a specific service or program and is a part of usual care. ALL participants will receive standard of care.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The project is NOT designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control. The project does <strong>NOT</strong> follow a protocol that overrides clinical decision-making.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does <strong>NOT</strong> develop paradigms or untested methods or new untested standards.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The project involves the implementation of care practices and interventions that are consensus-based or evidence-based. The project does <strong>NOT</strong> seek to test an intervention that is beyond current science and experience.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The project has NO funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., not a personal research project that is dependent upon the voluntary participation of colleagues, students, and/or patients.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>If there is an intent to, or possibility of publishing your work, you and the supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: “<strong>The Research Determination Committee for the Kaiser Permanente Northern California region has determined the project does not meet the regulatory definition of research involving human subjects per 45 CFR 46.102(d).</strong>”</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

**ANSWER KEY:** If the answer to **ALL** of these items is **YES**, the project can be considered an Evidence-based activity that does **NOT** meet the definition of research. **IRB review is **NOT** required. Keep a copy of this checklist in your files.** If the answer to **ANY** of these questions is **NO**, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.*
STUDENT NAME (Please print):
Neil Carlos

Signature of Student:

Neil Carlos

DATE: 03/24/2024

SUPERVISING FACULTY MEMBER NAME (Please print):
Cathy Coleman, DNP, RN, PHN, CPHQ, CNL

Signature of Supervising Faculty Member:

Cathy Coleman

DATE 3/30/2024
Appendix K

RDO Approval

[Image of Kaiser Permanente document]

Date: April 16, 2024
Subject: RDO KPNC 24 - 082
Title: Reducing Heart Failure Readmissions Through Standardized Daily 1:1 Education

Dear Dr. Williams:

The Research Determination Committee for the Kaiser Permanente Northern California region has reviewed the documents submitted for the above referenced project to be used by Neil Carlos for his MSN project. The project does not meet the regulatory definition of research involving human subjects as noted here:

**Not Research**

The activity does not meet the regulatory definition of research per 45 CFR 46.102(d): Research means a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.

This determination is based on the information provided. If the scope or nature of the project changes in a manner that could impact this review, please resubmit for a new determination. The word “research” should not appear in any posters or publications resulting from this project. Further, if publications, presentations or posters are generated from this project the following wording must be used to reference to the project research determination outcome:

“The Research Determination Committee for the Kaiser Permanente Northern California region has determined the project does not meet the regulatory definition of research involving human subjects per 45 CFR 46.102(d)”

You are expected, however, to implement your study or project in a manner congruent with accepted professional standards and ethical guidelines as described in the Belmont Report (http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html).

Additionally, you are responsible for keeping a copy of this determination letter in your project files as it may be necessary to demonstrate that your project was properly reviewed. Provide this approval letter to the Physician in Charge (PIC), your Area Manager, and Chief of Service, to determine whether additional approvals are needed.

Finally, all manuscripts/case series/case studies must receive written approval prior to submission to a journal or book. The Principal Investigator (PI) or first author (if different) must request their PIC\(^1\), or the Division of Research (DOR) Director, or the Research & Innovation Academy (RIA)\(^2\) or an equivalent level leader\(^3\) review and provide written approval for publication submission. The PI is responsible for retaining a copy of the approval.

Sincerely,

The Research Determination Committee
KPNC-RDO@kp.org

\(^1\)PIC approval is required for all manuscripts/case series/case studies that do not include a DOR employee as an author; including but not limited to medical students, residents, and fellows.

\(^2\)DOR Director approval is required for all manuscripts/case series/case studies that include DOR employees as authors.

\(^3\)For all nurse-authored manuscripts/case series/case studies, approval by the Research & Innovation Academy is required.

\(^4\)If you are not sure who this would be, please contact the Research Determination Office (KPNC-RDO@kp.org)
Appendix L

January – June 2024 CPU CHF Admissions vs Readmissions

**CHF Education**

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Admissions</td>
<td>10</td>
<td>6</td>
<td>14</td>
<td>8</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Readmissions</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
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<tr>
<td>Education Provided</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
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<tr>
<td>%</td>
<td>40%</td>
<td>50%</td>
<td>43%</td>
<td>75%</td>
<td>60%</td>
<td>63%</td>
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</tbody>
</table>

![Bar chart showing CHF Education data for January to June 2024 with admissions, readmissions, education provided, and percentages for each month.](image-url)
Appendix M

2023 CPU CHF Admissions vs Readmissions
Appendix N

Stoplight Tool

Heart Failure Stoplight Tool

Daily Behaviors

- Weigh yourself upon waking, after urinating, and before eating breakfast. Write it down and compare to yesterday's weight.
- Check for swelling in your stomach, legs, ankles, and feet.
- Drink only when thirsty. Try not to exceed 2 liters (64 ounces) of fluid per day (this includes liquid foods like soup, ice cream, and jello).
- Eat a low-salt diet (less than 2,000 mg of sodium/day).
- Take your medications as prescribed.
- Balance activity and rest periods.

Green Zone

- No shortness of breath.
- No weight gain above 2 pounds (lbs) in a day or 5 lbs in a week. (You may go up or down 2 lbs some days).
- No swelling of your feet, ankles, legs, or stomach.
- No chest pain.

Yellow Zone

- Signs of too much fluid:
  - Weight gain of more than 2 lbs in 1 day or more than 5 lbs in 5 days from your dry weight range (dry weight is your normal weight without extra fluid in your body).
  - Swelling in the stomach, legs, ankles, or feet.
  - Shortness of breath during activity or when lying down; needing to sleep sitting up.
  - Coughing (wet or dry).

- Signs of too little fluid:
  - Weight loss of 5 lbs or more in one week from your dry weight range.
  - Dizziness, feeling faint, especially if associated with low blood pressure after taking medications.
  - Systolic blood pressure (top number) less than 90.

Keep up the great work!

Use these heart failure zones as an easy way to notice changes in your heart failure symptoms.

Do not be afraid to ask for help when you need it!

Red Zone

- Struggling to breathe; unrelieved shortness of breath while sitting still.
- Chest pain.
- Coughing up pink, frothy sputum.
- Increased confusion.
- Fainting or unexplained fall.

Call 911 or go to the nearest hospital immediately.

Follow the link or scan QR code for heart failure tutorial:

[link]

[kp.qumucloud.com/view/Heart-Failure-Tutorial?ch=auto-play=false]

Warning! Call Advice Line at 1-866-454-8855

If you are receiving Home Health Services, please call your home health clinical team to report symptoms.

Non-Kaiser Permanente members, please call your local community clinic to report symptoms and to schedule your follow-up appointments.

If you smoke, the best thing you can do to help your heart and lungs is quit.

Please contact your doctor for connections to helpful courses and other resources.
# Appendix O

Heart Failure Tracking Tool

<table>
<thead>
<tr>
<th>Date</th>
<th>Weight</th>
<th>Blood Pressure</th>
<th>Heart Rate</th>
<th>Zone*</th>
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<tbody>
<tr>
<td></td>
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</tbody>
</table>

*Reference "Heart Failure Stoplight Tool" for more detail on the colored zones above.

Follow the link or scan QR code to view heart failure tutorial:

[File Link]

[QR Code Image]
Appendix P

Cost Avoidance

**Financial Model & Cost Avoidance Approach**

- 2023 CHF admissions 100 = $8,421,757.67/year
- 30% CHF readmissions = $2,526,527.30/year
- 10% reduction in readmission = $252,652/year
- One hour staff education + materials = $4,780

Total projected cost avoidance:

1st year - $247,873.00
2nd year - $252,652.00
3rd year - $252,652.00
## Appendix Q

### Budget for the Project

<table>
<thead>
<tr>
<th>Current State</th>
<th>Average # CHF Readmissions Per Year</th>
<th>Cost per CHF Readmissions Per Day</th>
<th>Average LOS Readmitted Within 30 days (X5)</th>
<th>Total Cost of CHF Readmissions Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>29</td>
<td>$3,600</td>
<td>$18,000</td>
<td>$522,000</td>
</tr>
<tr>
<td>2022</td>
<td>25</td>
<td>$3,600</td>
<td>$18,000</td>
<td>$450,000</td>
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<tr>
<td>Improved State 10% Reduction of CHF Readmissions</td>
<td>Reduction of 10% CHF Readmissions Per Year</td>
<td>Cost per CHF Readmissions Per Day</td>
<td>Average LOS Readmitted Within 30 Days (X5)</td>
<td>Annual Cost Avoidance</td>
</tr>
<tr>
<td>2023</td>
<td>2.9</td>
<td>$3,600</td>
<td>$18,000</td>
<td>$52,200</td>
</tr>
<tr>
<td>2024</td>
<td>2.5</td>
<td>$3,600</td>
<td>$18,000</td>
<td>$45,000</td>
</tr>
</tbody>
</table>

### Improvement Cost

<table>
<thead>
<tr>
<th>Improvement Cost</th>
<th>Number</th>
<th>Hourly Rate + 0.3 Benefit</th>
<th>Initial Improvement Cost (60 mins class sessions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse Educator</td>
<td>1</td>
<td>$137.80</td>
<td>$138</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>35</td>
<td>$119.60</td>
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</tr>
<tr>
<td>Patient Care Technicians</td>
<td>5</td>
<td>$54.20</td>
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<tr>
<td>Unit Assistants</td>
<td>3</td>
<td>$45.50</td>
<td>$137</td>
</tr>
<tr>
<td>Education materials/supplies</td>
<td></td>
<td></td>
<td>$48</td>
</tr>
<tr>
<td>Total costs for 1-1-hour class session</td>
<td></td>
<td></td>
<td>$4780</td>
</tr>
</tbody>
</table>

### Project Savings/Cost Avoidance (Return on Investment)

<table>
<thead>
<tr>
<th>Reduced Hrs (of LOS /day)</th>
<th>Cost Avoidance</th>
<th>Annual Project Cost Avoidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023 Reduce LOS by 10%</td>
<td>$3,600/day</td>
<td>$52,200</td>
</tr>
<tr>
<td>2024 Reduce LOS by 10%</td>
<td>$3,600/day</td>
<td>$45,000</td>
</tr>
</tbody>
</table>
Appendix R

Key Driver Diagram

**AIM**
- Reduce CHF readmissions by 10%
- Patients will have an understanding of the basic pathophysiology of CHF.
- Patient will know the symptoms and management of CHF.

**Primary Drivers**
- Patient health literacy
- CHF symptoms
- CHF management

**Secondary Drivers**

**Change Ideas**
- Assessment of health literacy using motivational interviewing techniques.
- Assessment of preferred language to understand CHF teaching.
- Discuss fluid overload, fatigue and difficulties with everyday activities.
- Discuss medications, diet and exercise guidelines and exacerbation prevention.
Appendix S

January to June 2023 CPU CHF % Admissions vs Readmissions
Appendix T

2024 CPU CHF % Admissions vs Readmissions
Appendix U

Power Interest Grid

- Keep Satisfied
  - Patient Care Coordinators
  - Medical Social Worker

- Manage Closely
  - CPU Staff Nurses, PCT & UA
  - Cardiology
  - Hospital Based Specialist

- Monitor
  - Home Health
  - Skilled Nursing Facilities
  - Pharmacy
  - Education

- Keep Informed
  - Chief Nurse Executive
  - Clinical Adult Service Director
  - Nurse Manager
  - Assistant Nurse Managers
Appendix V
Heart Failure Patient Resources and Tips

### DIET
- Follow a low sodium diet = 2,000 mg or less
  - Why? Salt causes fluid build-up. This makes the heart work harder
  - 2,000 mg of salt is less than 1 teaspoon

### MEDICATIONS
- Review discharge orders to review medications ordered for you
  - Common heart failure medications:
    - Diuretics: rids body of extra fluid; will relieve symptoms of over load
    - Common names: Lasix, Thiazide, Bumetanide, Torsemide
    - ACE Inhibitors: lowers blood pressure and relaxes blood vessels; allows heart to pump more easily
    - Medications end in “-pril”: Lisinopril, Enalapril, etc.
    - Beta Blockers: slows or helps control heart rate to reduce risk of death
    - Medications end in “-lol”: Metoprolol, Carvedi loI, Bisoprolol
    - SQI/SDi Inhibitors: reduces risk of hospitalization and death
      - Common names: Jardiance, Farxiga
      - Common side effects:
        - Abnormal potassium levels
        - Dizziness, Leg cramping
        - Low blood pressure
        - Too slow of a heart rate

### TO-DO LIST
- Monitor your weight at the same time every morning after urinating with your clothing on. Keep a log to track this weight daily
- Monitor symptoms daily using Heart Failure Tracker and Stoplight Tool
- Monitor your fluid intake. Do not drink more than 64 ounces in a day
- Exercise per your doctor’s orders. Typically recommended exercises are light cardio, walking, swimming, biking, yoga, strength, and stretching
- Get your labs done regularly
- Take medications exactly as prescribed and do not stop before consulting with your doctor
- Follow up with your doctor and/or cardiologist within 5-7 days after any CHF-related hospital discharge

### SYMPTOMS
- Know target/dry weight and use Stoplight Tool to know when to get help

Summary of symptoms to watch out for:
- Weight gain of more than 2 pounds in a day or more than 5 pounds in 5 days
- Shortness of breath different from baseline with activity or with rest
- Swelling in stomach, legs, feet, or ankles
- Inability to lay flat when sleeping or resting due to difficulty breathing
- Loss of appetite; new cough
- Confusion, dizziness, or depression-like symptoms

Call the Advice Nurse for urgent issues at 1-866-454-8855 and refer to discharge instructions for specific follow up appointment and referral

### OTHER RESOURCES
- kp.org/healthy/kaiserpermanente/northern-california/health-wellness/health-encyclopedia/heivative#advice87
- American Heart: heart.org/en/health-topics/heart-failure/heart-failure-treatment-resources
- Medline Links: medlineplus.gov/heartfailure.html
- Support Group: heart.org/supportnetwork

Follow the Link or Scan QR Code for Heart Failure Tutorial:
kp.qmuc.com/
view/heart-
Failure-Tutorial?id=cf7&autoplay=1#text

Kaiser Permanente