Implementation of a Functional Capacity Assessment in Adult Patients with Heart Failure

by

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Abstract

Problem & Purpose: An estimated 6.2 million American adults are diagnosed with heart failure. Efforts to reduce hospitalizations and improve outcomes include interventions to maintain health, manage symptoms, and preserve functional ability. Assigning a New York Heart Association functional class of I-IV in patients with heart failure based on activity and associated symptoms is a best practice in clinical management. One means of assessing functional capacity is the 60-foot walk test, in which walk times greater than 30 seconds are associated with heart failure patients at increased risk for hospitalization or health status decline. A lack of functional capacity assessment and documentation in patients with heart failure was identified as a practice problem in a transitional care clinic. The associated medical facility has a heart failure readmission rate that is higher than the national average, making it a focus for process improvements. The purpose of this quality improvement project was to implement the 60-foot walk test in the transitional care clinic in the Fall of 2019 to objectively assess functional capacity and target high risk heart failure patients for interventions to reduce rehospitalization.

Methods: During the 12-week project period, all patients with heart failure who presented to the transitional care clinic, unless unwilling or unable, completed the 60-foot walk test to determine and document functional class. Patients who were identified as high risk for readmission were provided resources for prevention.

Results: There were 84 patient encounters during project implementation. The 60-foot walk test was performed 67 times (80%) and functional class was documented 64 times (76%). There were 11 readmissions and 7/11 (64%) were identified as high risk. The average readmission rate was 13.1%, a reduction of 7.4% compared to the average readmission rate of 20.5% prior to implementation.

Conclusion: The 60-foot walk test was useful in the transitional care clinic to identify heart failure patients at high risk and target them for interventions to aid in maintaining health status and reducing rehospitalization.

Introduction

Heart failure (HF) is defined as the inability of the heart to pump sufficient blood supply to meet the metabolic demands of the body. The prevalence of HF continues to rise over time with the aging population. In 2019, the American Heart Association (AHA) estimated that 6.2 million American adults are diagnosed with HF with approximately 550,000 new cases each year. HF continues to be a leading diagnosis for 30-day hospital readmissions (McCabe et al., 2017) and costs the nation an estimated $30.7 billion annually. HF affects people of all ages, occurs with equal frequency in men and women, with African Americans being 1.5 times more likely to develop HF than Caucasians (AHA, 2019).

HF is a clinical diagnosis comprised of various causes, symptoms, and assessment findings. Treatment includes interventions to maintain health, manage symptom exacerbations, and preserve functional ability. A commonly used method to describe the extent of the disease status is through categorizing their functional class using the New York Heart Association (NYHA) system (Table 1). This system categorizes patients according to symptoms associated with activities, progressing from class I-IV, where class I represents no limitation of activity due to symptoms, and class IV represents symptoms at rest. This assessment is often provider driven and can lead to subjectivity (Williams et al., 2017; Yap et al., 2015). Therefore, an objective measurement of functional capacity in patients with heart failure is preferred, as it likely is more accurate in determining appropriate medical and/or mechanical treatment options.

Transitional care clinics (TCC) have been created to fill the gap in care from hospital discharge through thirty days of follow up with primary providers or specialists. The goal of the TCC is to provide interim management, education, and care coordination to patients with high-risk features for early rehospitalization, including those with heart failure. Currently the

readmission rate for HF patients at the associated medical facility is above the national average and a focus for quality improvement. The problem identified was lack of an objective measurement and limited documentation of functional capacity in patients with HF in the TCC. Assessment and documentation of functional status in patients with HF is a best practice and an essential component of determining appropriate treatment strategies to manage symptoms and prevent adverse events (Harris et al., 2017). The 60-foot walk test is a screening tool that objectively assesses patient functional ability and identifies those at higher risk for rehospitalization. A depiction of the walk test is shown in Figure 1. Outcome goals included increased assessment and documentation of functional status to identify high risk patients and target them to receive resources to prevent hospitalization. The purpose of this quality improvement project was to implement the 60-foot walk test in the TCC to objectively assess functional capacity in patients with HF and increase documentation of NYHA class.

Literature Review

A review of the evidence was conducted to identify objective functional capacity assessment tools in patients with heart failure. A summary of the evidence is presented in Appendix A. The evidence supports the use of an objective assessment of functional status in patients with heart failure as an essential component of determining appropriate treatment strategies to manage and prevent adverse events (Harris et al., 2017). The review included the role of the New York Heart Association (NYHA) classification system and formats for evaluating functional capacity in determining functional class in relation to symptoms. The review concludes with the evidence supporting the use of assessment of functional capacity in determining health outcomes such as decline in health status and risk for hospitalization.

Functional capacity is a medical term defined as the ability to carry out usual activities of daily living (Pollentier et al., 2010). Assessment of functional capacity in patients with chronic conditions such as HF provides important clinical information. An increase in symptoms such as shortness of breath, fatigue, or chest discomfort with usual activities can be an indicator of disease progression and poor prognosis and may result in a gradual functional decline, and greater risk for hospitalization and death (Harris et al., 2017; McCabe et al., 2017). Objective testing through use of an assessment tool was shown to be more reliable than patient self-report and provider subjective determination (Williams et al., 2017; Yap et al., 2015).

As a best practice, patients with HF are classified using the NYHA functional class system which correlates symptoms of heart failure and activity level (Harris et al., 2017; Pollentier et al., 2010; Yap et al., 2015). Symptoms of heart failure commonly include but are not limited to fatigue, shortness of breath, heart palpitations, chest discomfort and peripheral swelling. The functional class system is used to describe the extent of disease stability, progression, or exacerbation. Formats for evaluating functional capacity include cardiopulmonary exercise testing (CPEX), a 6-minute walk test (6MWT), and a more recent option the 60-foot walk test. The objective data acquired from these tests has shown reliable correlation with NYHA functional class and severity of symptoms in patients with multiple chronic conditions such as HF, chronic obstructive lung disease and peripheral arterial disease.

Functional capacity assessment was found to be an effective means of determining health outcomes such as clinical decline in health status and risk for hospitalization (Harris et al., 2017; Kommuri et al., 2010; McCabe et al., 2017; Tabata et al., 2014). Researchers correlate NYHA class with 6MWT distance (Yap et al., 2015) and correlate 6MWT distance with 30-day readmission risk (Kommuri et al., 2010; McCabe et al., 2017; Tabata et al., 2014). The greater

distance one can walk in six minutes denotes a better health status, and less risk for hospitalization. Harris et al. (2017) developed the 60-foot walk test and reported that it was a comparable objective assessment tool to the CPEX and 6MWT. One particular benefit is that the 60-foot walk test can easily be performed in the outpatient clinic setting. The test measures the time the patient with heart failure walks 60 feet on a floor marked area; the less time it takes the patient to walk 60 feet denotes a better health status, and less risk for hospitalization. In a cohort study, Harris et al. (2017) report comparable findings in assessing clinical risk of decline and for early rehospitalization or death as compared to the 6MWT.

The evidence review summary concludes that assessment of functional capacity is an important marker of health status, is a best-practice in the management of patients with HF, and is most accurate when obtained using an objective measurement.

Theoretical Framework

Heart failure is a clinical diagnosis driven by management of comorbid conditions and patient symptomatology. The Symptom Management Model is a middle-range nursing theoretical framework that helped guide the implementation steps in this quality improvement project. The model was developed and subsequently modified by nurse scientists to organize and improve a process of thinking about the symptom experience, management strategies, and outcomes of symptom management (Larson et al., 1994; Dodd et al., 2001; Humphreys et al., 2014). The theory outlines the relationships among the three key concepts of symptom experience, symptom management strategies, and symptom outcomes which provides a framework that derives interventions and outcomes (Humphreys et al., 2014). It proposes to be relevant across populations experiencing illness-related symptoms (Dodd et al., 2001) and has

been established as a useful framework for research among adults with a variety of health and illness states (Wallace et al., 2013). A structure of the theory is depicted in Figure 2.

There are three domains in the theory: person, environment, and health and illness. The domain of person includes demographic, psychological, sociological developmental, and physiological factors. The domain of environment includes physical, social, and cultural aspects. The domain of health and illness includes risk factors, health status, and disabilities. These are expressed through three dimensions: symptom experience, symptom management strategies, and symptom outcomes. Symptoms are defined as the individuals' perception of the meaning of the symptoms to include intensity, location, temporal nature, impact, and response. Symptom experience includes the process of perception of symptoms, evaluation of symptoms and response to symptoms and encompasses the aspects of mortality, morbidity, and quality of life. Symptom management is a fluctuating process that can require changes in strategies over time. It includes the who, what, where, when, and why of the theory process. Assessment of the system experience is through evaluation of symptom outcomes and includes functional status, self-care ability, emotional status, and adherence. Relationships are depicted on the figure through bidirectional arrows within the model and indicate a simultaneous interaction among all three concepts. The symptom experience is conceptualized as impacting and being impacted by both symptom management strategies and symptom status outcomes (Humphreys et al., 2014). The process continues until symptoms either resolve or are stabilized. Adherence is illustrated by a broken arrow between the management strategies and outcomes, as the process is affected when non-adherence occurs.

The theory can be applied to any group of patients who experience or are at risk for experiencing symptoms. Patients with HF experience a multitude of symptoms that are the focus

for management approaches and improved outcomes. Symptom management strategies comprise clinical practice interventions of the transitional care program. The model conceptualizes assessment of the symptom experience through evaluation of symptom outcomes, including functional status, aligning it with the focus of the proposed practice change. The concept of adherence and its effect on outcomes further delineated the appropriateness for use as non-adherence has been well described as an important factor in the management of patients with HF and a key cause of hospital readmissions and mortality.

Methods

This quality improvement (QI) project was implemented over a 12-week study period. The setting was a community hospital-based outpatient TCC. An application for the project was submitted to the medical center institutional review board prior to implementation, and was designated as non-human subject research. The TCC receives referrals from several medical facilities for interim management and education of patients with high-risk features for early readmission, including those with heart failure. The project included all patients referred to the TCC after a HF hospitalization. Key interventions and measures collected included (1) performance of the 60-foot walk test in all patients who were referred and presented to the TCC after a hospitalization for HF and (2) documentation of NYHA functional class. The goal was to achieve 100% compliance in both measures by the end of the implementation period. Implementation procedures included obtaining buy-in from stakeholders such as clinic leaders and staff members. A meeting with all clinic staff and providers to present the proposal gained support for the practice change. A location to perform the walk test and a consistent timing device was determined. Educational materials were developed and the staff and providers were educated on the performance of the walk test, and performed the test on each other to develop

competency. The clinic intake form was edited to include walk test and NYHA class information for review by the provider. Audit tools to collect data were created and data was collected weekly and analyzed monthly. Data collection tools are presented in Appendix B. Data analysis was designed to determine the percent change pre- and post-implementation. The data elements included the number of HF patient encounters, the number of walk tests performed, and the number of charts with NYHA class documented. Once implementation was initiated, all HF patients completed the walk test unless physically unable or unwilling. From this data, a NYHA functional class was determined and documented. Patients who were either unable to walk or took longer than 30 seconds to perform the test were identified as high risk for readmission and subsequently provided resources for prevention. These resources included an in-home monitoring system, extra telephone surveillance, or weekly clinic visits. The in-home monitoring system provided daily patient input of vital signs, weight, and symptoms and electronic transmission to a nurse care manager in the clinic. If any of these were abnormal, the patient was contacted by the nurse or provider.

Results

Over the 12-week implementation period, 62 patients participated in a total of 84 clinic encounters which were included in the data collection. Several patients performed the test more than once due to having multiple visits during the implementation period. Data was analyzed and presented as percent change pre- and post-project implementation. Baseline data obtained the initial two weeks determined no assessment of functional capacity and limited documentation of NYHA class. Subsequent data compilation showed the walk test was performed 67 times (80%) and NYHA documentation was completed 64 times (76%) of the 84 encounters. Twenty-two times (26%) patients were unable to perform the test or took longer than 30 seconds to

complete the walk test, identifying them as high risk. Of these, 15 (68%) were not rehospitalized within thirty days. A total of 11 (13.1%) patients were readmitted within 30 days of hospital discharge during the study period, 7 (64%) of these readmissions were identified as high risk. The average readmission rate was reduced by 7.4% compared to the average readmission rate of 20.5% prior to implementation of the same timeframe.

Key facilitators that impacted the project outcomes included continued support of the medical director and clinic administrator. The 60-foot walk test is simple to perform and provides valuable information regarding patient status. The clinic staff embraced the practice change without hesitation after education and competency. There was no significant negative feedback from the patients or family members as the test was incorporated and presented as a part of the clinic visit. The project leader maintained weekly on-site visits to provide support and consistency. A barrier included patient resources such as the need to obtain portable oxygen and a wheelchair, which was acquired from the associated medical facility. There were no identified unintended consequences in terms of failures or costs. Changes in practice included edits to the intake sheet and visit process for patients with heart failure. A hallway space of thirty feet was identified and marked for test performance and no other structural changes were needed. One unexpected benefit was the ability to target resources, particularly the use of in-home monitoring for patients who were identified at high risk. Prior to implementation all HF patients were offered this in-home monitoring technology and the data management was at times overwhelming due to the volume of patients. After implementation, care strategies and resources could be streamlined to those patients identified as high risk.

Discussion

Functional capacity assessment and documentation was not performed prior to

implementation of this project and successfully increased by the end of the study period. Although 80% of HF patients completed the walk test, the goal of 100% by the end of the implementation period was not met as some patients were physically unable or unwilling to perform the test. A total of 15 HF patients did not complete the 60-foot walk test in weeks one and two of project implementation as this timeframe was used to educate the staff, prepare the clinic setting, and obtain baseline data. Documentation of NYHA functional class in HF patients improved to 76% but the goal of 100% by the end of the implementation period was not met, possibly due to lack of designated documentation space in the electronic health record. Additional encouragement to providers to document the NYHA functional class is an ongoing process. Implementation of a HF care pathway into the electronic health record will include a mandatory input for functional class which will improve compliance and enhance sustainability. Concomitant and subsequent chart review determined that HF readmissions were reduced by 7.4% over the 12-week implementation period, but the goal of 25% was not met. More strategies aimed toward readmission reduction are in discussion and the use of the walk test to determine patients at high risk will be continued. This may include increased use of in-home monitoring for patients identified as high risk as this resource was identified as a possible contributing factor to readmission reduction. Nevertheless, every patient not readmitted saves the medical facility unnecessary costs and decreases unintended hospital or emergency room utilization.

The original research study comparing the 60-foot walk test to the 6-minute walk test (Harris et al., 2017) reported that patients taking longer than 30 seconds to complete the walk test were at greatest risk for HF hospitalization or death (hazard ratio: 2.13; 95% CI 1.18-3.84; p=0.01). The DNP project findings correlate with these study results, supporting the use of the

60-foot walk test to be a useful tool to assess functional capacity and identify patients at risk for readmission. Due to the ease of use in the outpatient setting, lack of an additional charge to the patient, and obtaining the data in real-time, the 60-foot walk test was selected to be implemented in the TCC. The 60-foot walk test in the TCC was successful in providing objective clinical information regarding functional capacity. Determining functional capacity helped to drive and target individualized patient management strategies and treatment options with the goal of reducing hospital readmissions.

Conclusions

The goal of any measure of functional status is to provide an accurate representation of activity limitation associated with a patient's disease process and remove bias associated with patient self-report and provider subjective opinion. Assessment of functional capacity and assignment of NYHA functional class assisted in identification of patients with HF at higher risk for hospitalization or health status decline. This QI project helped to target high risk patients with interventions aimed to maintain health status and reduce 30-day hospital readmissions. Continued use and sustainability of the project will further be achieved through integration of the walk test information and NYHA documentation into the medical electronic health record. Implications for future practice include expansion of the use of the test to other practice sites and its potential for spread for use in other health conditions, such as chronic obstructive pulmonary disease. Future QI projects and ongoing education focusing on the assessment of functional capacity are needed to further improve patient health status and outcomes.

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Table 1.

The NYHA functional classification system for patients with heart failure

Functional Capacity	**Objective Assessment**
Class I. Patients with cardiac disease but without resulting limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnea, or anginal pain.	**A.** No objective evidence of cardiovascular disease.
Class II. Patients with cardiac disease resulting in slight limitation of physical activity. They are comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnea, or anginal pain.	**B.** Objective evidence of minimal cardiovascular disease.
Class III. Patients with cardiac disease resulting in marked limitation of physical activity. They are comfortable at rest. Less than ordinary activity causes fatigue, palpitation, dyspnea, or anginal pain.	**C.** Objective evidence of moderately severe cardiovascular disease.
Class IV. Patients with cardiac disease resulting in inability to carry on any physical activity without discomfort. Symptoms of heart failure or the anginal syndrome may be present even at rest. If any physical activity is undertaken, discomfort is increased.	**D.** Objective evidence of severe cardiovascular disease.

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The 60-Foot Walk Test

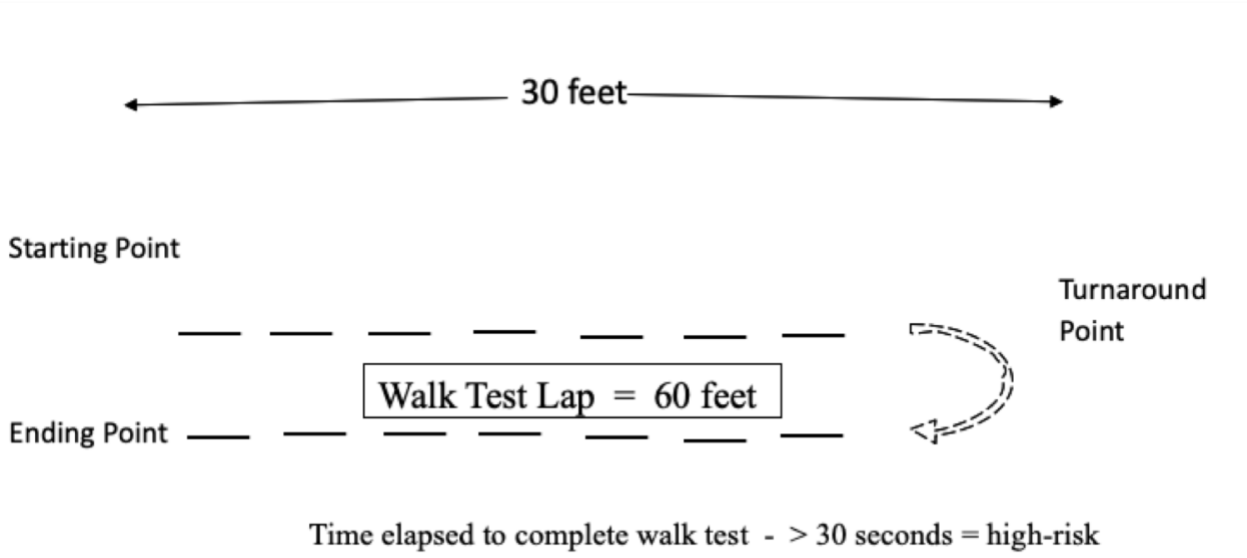

Figure 1. Depiction of the 60-foot walk test.

The Symptom Management Model

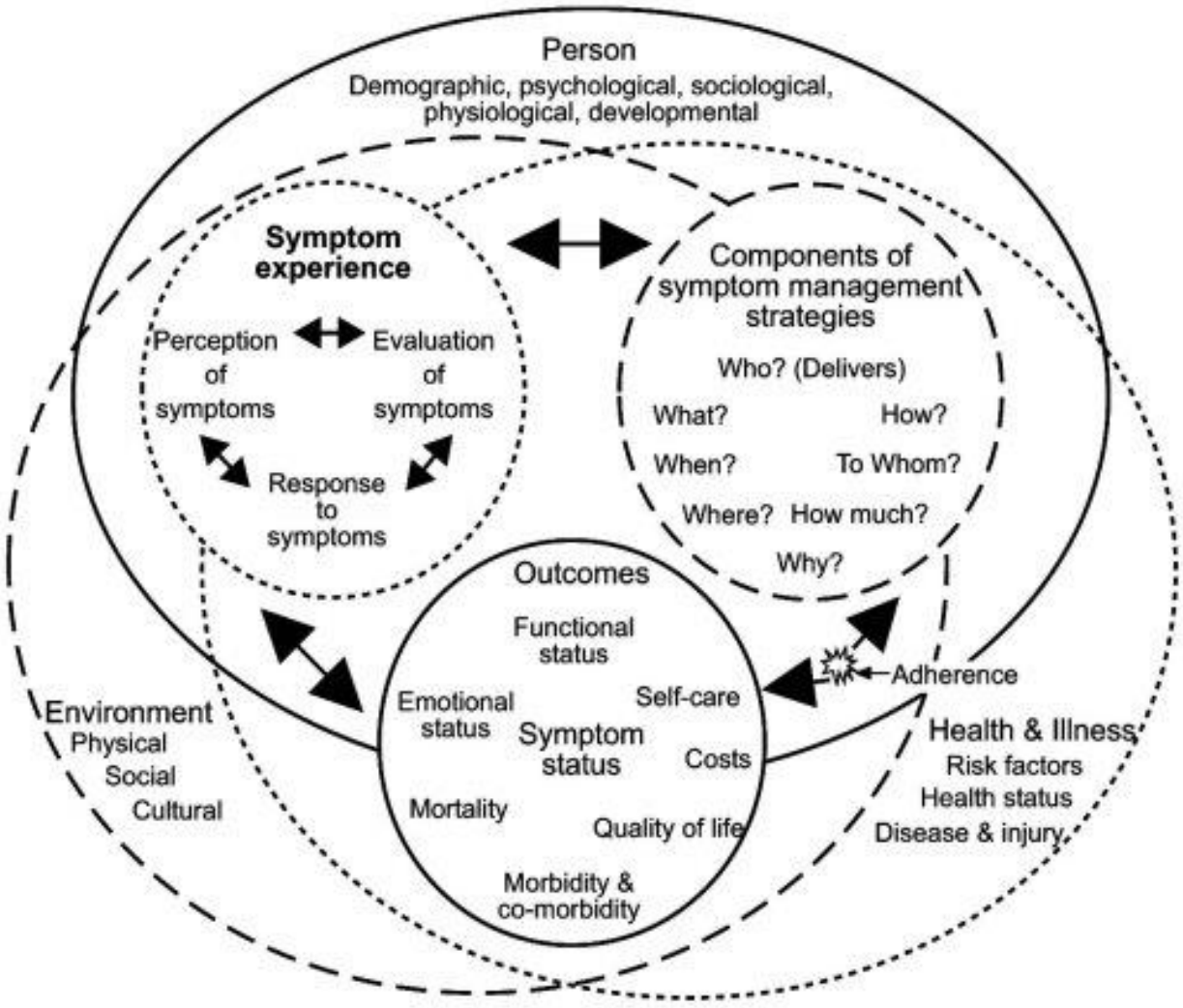

Figure 2. Symptom Management Model taken from Dodd, M., Janson, S., Facione, N., Faucett, J., Froelicher, E., Humphreys, J., Lee, K., Miaskowski, C., Puntillo, K., Rankin, S. & Taylor, D. (2001). Advancing the Science of Symptom Management, *Journal of Advanced Nursing, 33*(5), 668-676.

Appendix A. Evidence Review Table – Suzanne O'Keefe

Project Name: Implementation of an Objective Assessment of Functional Capacity using the 60-foot Walk Test in a Transitional Care Program for Patients with Heart Failure (HF).

Author, year	Study objective/ intervention or exposures compared	Design	Sample (N)	Outcomes studied (how measured)	Results	*Level and Quality Rating
Harris et al., 2017	To report the development and predictive value of the 60-foot walk test (60ftWT) to measure functional status for patients with heart failure. .	Planned secondary analysis of a larger prospective observational cohort study (BETRHEART).	144 patients with heart failure in an outpatient clinic setting; Convenience sample; Power analysis?	Comparison data collected to 6-minute walk test (6MWT) which is a current practice standard. Establish median 60ft walk duration 26 seconds, longer times associated with shorter 6MWT distance ($p<0.001$) and with higher symptom severity. Also correlated at three months. Both walk tests predicted long-term clinical outcomes, with patients taking longer than 31 seconds to complete the test at greatest risk for HF hospitalization or death ($p=0.01$)	60-foot walk test is an easily administered test for assessment of functional status that was shown to predict adverse events, symptoms, and health status, comparable to findings of the reliability and validity established with the 6-minute walk test.	IV B

Kommuri et al., 2010	To evaluate whether 6-minute walk test distance predicts 30-day hospital readmission for HF patients.	Control trial	210 patients with HF and left ventricular dysfunction underwent 6-minute walk test prior to discharge.	Walk distance > 400 meters had a 30-day readmission rate of 15.9%; walk distance ≤ 400 meters had a 30-day readmission rate of 30.3% (p=0.016)	Lower 6-minute walk distance predicted early hospital readmission in patients with heart failure. Report *p* values if available for significance of study results.	III A
McCabe et al., 2017	Goal to determine the relationship between 6MWT distance and 30-day readmission in patients with heart failure	A secondary analysis of a larger HF trial (BETRHRT). Hospitalized HF patients performed 6MWT prior to discharge, followed for 30 days to determine readmission	71 hospitalized HF patients with NYHA class II/III symptoms. Convenience sample not powered for this outcome.	Logistic regression used to determine relationships between 6MWT distance and 30-day readmission. 30-day readmission occurred in 14 (19.7%) patients. Avg 6MWT distance 756.4 ft (±403.2) Higher distance correlated to decreased 30-day readmission.	6MWT distance predicted 30-day readmission in this study warranting further investigation on how 6MWT can be used to predict readmissions and guide treatment for HF patients.	V B
Pollentier et al., 2010	Goal to evaluate the reliability and validity of the 6-minute walk test (6MWT) to predict functional capacity in patients with chronic heart failure.	Systematic review	14 studies used. Comparison of the studies investigated reliability, reproducibility of 6MWT to VO2 levels (functional capacity)	6MWT showed good test-retest reliability and reproducibility, demonstrated moderate correlation with peak VO2 levels, and ability to predict functional capacity.	The 6MWT has good reliability, validity, and ability to predict functional capacity in patients with CHF who do not walk > 490 meters.	I A

Tabata et al., 2014	Investigated whether 6-minute walk distance at the time of hospital discharge predicted readmission in patients with heart failure	Cohort study	252 patients admitted for first time due to heart failure. Sample size powered for outcome.	Of 252 patients, 103 readmitted within 3 years. 6-minute walk distance at the time of discharge was significantly shorter in readmitted patients the non-readmitted patients ($p<0.001$) and was a significant predictor of readmission ($p<0.001$)	6-minute walk distance found to be an independent predictor of hospital readmission in HF patients, with a cut-off value of 390 meters	III A
Williams et al., 2017	Compared patient vs. provider NYHA assessments, and both to distance walked on a 6-minute walk test (6MWT)	Prospective study Method- Patients self- assigned NYHA functional class, provider blinded to patient rating, and performed rating NYHA class. Patient completed 6MWT.	101 patients with heart failure Convenience sample	Patient and provider determined NYHA class were poorly correlated. Patients consistently reported better NYHA class than providers (72% vs 15%); Provider-determined NYHA had a stronger correlation with 6MWT.	Patients and providers exhibited poor agreement in NYHA assignment supporting the importance of objectively obtaining measured data.	IV B
Yap et al., 2015	To correlate the NYHA functional class system and the 6-minute walk test (6MWT)	Systematic review	37 studies, 5678 patients	There is an inverse correlation between NYHA class and 6MWT distance. class. Subjectivity of the NYHA classification system should be considered.	There is significant heterogeneity across studies in 6MWT distance within all NYHA classes.	I A

Rating System for Hierarchy of Evidence

Level of the Evidence	Type of the Evidence
I (1)	Evidence from systematic review, meta-analysis of randomized controlled trails (RCTs), or practice-guidelines based on systematic review of RCTs.
II (2)	Evidence obtained from well-designed RCT
III (3)	Evidence obtained from well-designed controlled trials without randomization
IV (4)	Evidence from well-designed case-control and cohort studies
V (5)	Evidence from systematic reviews of descriptive and qualitative studies
VI (6)	Evidence from a single descriptive or qualitative study
VII (7)	Evidence from the opinion of authorities and/or reports of expert committees

Rating Scale for Quality of Evidence

A: High – consistent results with sufficient sample, adequate control, and definitive conclusions; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific literature

B: Good – reasonably consistent results; sufficient sample, some control, with fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence

C: Low/major flaw – Little evidence with inconsistent results; insufficient sample size; conclusions cannot be drawn

Appendix B Audit Tools

Weekly Audit of Performance of Walk test

	# Performed walk test	Total # CHF patient encounters	% CHF patients performed walk test
Week 1	0	9	0
Week 2	0	6	0
Week 3	6	7	85
Week 4	7	8	87.5
Week 5	7	7	100
Week 6	7	7	100
Week 7	5	6	83
Week 8	5	6	83
Week 9	7	8	87.5
Week 10	5	6	83
Week 11	3	3	100
Week 12	6	7	85

Monthly Audit/analysis of Performance of Walk Test

Month	# HF patients performed walk test	# HF patient encounters	% of HF patients who performed test
September	22	32	68.75
October	27	31	87.10
November	18	21	86.00
Overall totals	67	84	79.76

Weekly Audit of Documentation of NYHA functional class

	Total # CHF patient encounters	# CHF patient charts with NYHA class documented	% CHF patient charts with NYHA class documented
Week 1	9	1	9
Week 2	6	0	0
Week 3	7	3	43
Week 4	8	7	87.5
Week 5	7	6	85.7
Week 6	7	7	100
Week 7	6	6	100
Week 8	6	3	50
Week 9	8	7	87.5
Week 10	6	5	83.3
Week 11	3	3	100
Week 12	7	5	71

Monthly Audit /analysis of Documentation of Walk Test and NYHA class

Month	# HF patient clinic encounters	# HF with NYHA class documentation	% of HF patients with NYHA class documentation
September	32	21	66
October	31	26	84
November	21	17	81
Overall totals	84	64	77

30 DAY READMISSION DATA

Pre - Implementation Data

MONTH	# ENCOUNTERS	# READMITS	% READMITS
JUNE 2019	32	9	28.1
JULY 2019	31	3	9.7
AUGUST 2019	49	11	22.4
TOTALS	112	23	20.5

Implementation Data

MONTH	# ENCOUNTERS	# READMITS	% READMITS
SEPTEMBER	32	2	6.2
OCTOBER	31	7	22.5
NOVEMBER	21	2	9.5
TOTALS	84	11	13.1

September 2019 19 patients / 32 encounters 2 readmitted
5/19 = >30 sec or unable = high risk
2 + *vivify = no readmit
2 = no vivify = + readmit
1 = no vivify, no readmit

October 2019 25 patients / 31 encounters 7 readmitted
11 = >30 or unable = high risk
5/7 > 30 2/5 + vivify no readmit, 3/5 no vivify
2/7 < 30 1/2 + vivify

November 2019 18 patients, 21 encounters 2 readmitted
6 = > 30 or unable = high risk 1 < 30 and 1 > 30, no vivify
3/6 + vivify = no readmit; 1 > 30, no vivify + readmit

*vivify = in-home monitoring system