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Effect of Home Telehealth on Vterans with Chronic Heart Failure

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Abstract

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by

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Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

More than 5 million Americans have heart failure, with approximately 5% of those affected being veterans. As the number of patients with CHF continues to rise, new treatment options are needed to improve the quality of care. Current studies show Telehealth is one treatment option. The purpose of this scholarly project was to determine if veterans diagnosed with CHF were able to maintain optimal weight and blood pressure following participation in Care Coordination Home Telehealth (CCHT) program. The CCHT program provides care to veterans, through the use of monitoring devices placed in their home. Bandura's self-efficacy theory was used as a guide to develop veterans' self-management skills. A retrospective chart review was conducted on 26 veterans with CHF enrolled in the CCHT program. Post participation weight and blood pressure were analyzed at 16 weeks to determine whether there was a difference from the pre-participation measures. There was no change in systolic blood pressure, diastolic blood pressure, or weight levels during the 16-week period. Limitations of this project were the small sample size ($n = 26$), attrition rate ($n = 43$), no data on nurse interaction, and a short follow-up period. Implications for nursing practice and enhancing the program's efficacy are recommended. This scholarly project has the potential to support social change by expanding veteran's access to care.

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Section 1: Nature of the Project

Introduction

Chronic heart failure (CHF) is one of the most common health epidemics in the United States. It affects 5.8 million Americans each year and "is associated with high morbidity, mortality, and healthcare expenditures" (Gheorghiade, Vaduganathan, Fonarow, & Bonow, 2013, p. 391). CHF is defined as a condition in which the heart cannot pump enough blood to keep up with the demands from the rest of the body. The National Heart, Lung, and Blood Institute (NHLBI) estimated in its "Congestive Heart Failure Data Sheet" that more than 550,000 cases of heart failure are diagnosed every year (2014).

The most common causes of CHF are coronary artery disease (CAD) and high blood pressure. In time, CAD and uncontrolled high blood pressure cause the heart muscles to weaken. This leads to poor circulation of the blood through the heart, which also causes the congestion of fluid in other parts of the body. Moreover, patients with CHF have a high incidence of non-cardiac comorbidities such as diabetes, renal disorders, and chronic obstructive pulmonary disease. These comorbidities lead to difficulty in treating CHF and frequent admissions. On average, 1 million hospitalizations for CHF occur each year, with most being for males younger than the age of 65 years (Hall, Levant, & DeFrances, 2012). As a result, patients with CHF are more likely to experience hospital readmissions.

According to Kim and Han (2013), "approximately 50% of HF patients are rehospitalized within 6 months of discharge, and 70% of the rehospitalizations are related to a worsening of previous diagnosed HF" (p. 224). Congestive heart failure is one of the top diagnosis-related groups (DRGs) for admission. This excessive hospitalization rate costs the United States an estimated $32 billion a year (Centers for Disease Control and Prevention, 2013), with an average cost per rehospitalization of $13,000 per patient (Rizzo, 2013). Under the Affordable Care Act, if a patient is readmitted within 30 days after discharge, the hospital will be penalized with reductions in reimbursement (Kim & Han, 2013). This law has placed enormous pressure on health care facilities to reduce their readmission rates or to forgo reimbursement.

One plausible solution to reducing hospital readmissions is telehealth (Baldonado et al., 2013). McCartney (2012) defined *telehealth* as the remote monitoring of a patient through the use of wireless technology. Telehealth is a cost-effective and suitable method of providing health care treatment to patients via health information and disease management technologies. These technologies can be used for providing consultations, diagnosing patients, monitoring patients, and improving their health status (Schlachta-Fairchild, Elfrink, & Deickman, 2008). Telehealth increases early detection of deterioration. For example, weight gain and elevated blood pressure, important indicators of CHF, can alert practitioners to degeneration, and timely intervention can prevent the need for hospital admission.

The Veterans Health Administration (VHA) is the largest integrated health care system in the United States, serving 8.76 million veterans each year. The VHA is challenged with limited resources, as it must treat an increasing number of older veterans needing complex care. Nearly 5% of veterans seen at Veterans Affairs (VA) medical centers are admitted with a diagnosis of CHF. The Care Coordination Home Telehealth (CCHT) program was started in 2007 at the Atlanta VA Medical Center. In March 2012, a total of 264 veterans were enrolled in the home telehealth program, 240 in March 2013 and 220 in August 2014 (VHA Support Service Center, 2014).

Telehealth plays a supporting role in the delivery of health care service to veterans with CHF in their homes. Telehealth within VHA is referred to as CCHT. Veterans enrolled in CCHT are monitored from their homes in a variety of ways: through videophones, telemonitors, or in-home messaging devices. The CCHT model applies an in-home messaging device (the size of a clock radio), one of which is the Health Buddy, to monitor veterans' health status.

On a daily basis, the veterans respond to questions related to their health by pushing buttons on the Health Buddy in-home communication and monitoring appliance. The appliance collects the data entered, such as the veterans' vital signs and physiological status, and transmits the data over the telephone line to a secure data center. The nurse care coordinator at the hospital accesses the veterans' clinical information via a web-based desktop application. The data are then reviewed by the nurse care coordinator, who

contacts the veteran if the data are out of range so that deterioration of the veteran's clinical condition may be prevented.

Problem Statement

The number of patients with CHF will approximately double by 2037 (Maurer, 2008). As the number of patients with CHF continues to rise, new treatment options are needed to improve the quality of care and increase access to health services while reducing health services use. Due to the drastic increase in the cost of treatment and care of patients with CHF, it is important for veterans to use means other than face-to-face interaction with a health care professional to prevent admissions. Telehealth is one such strategy for managing CHF; it helps to combat episodes of exacerbation, preventing rehospitalization and visits to the emergency room and urgent care.

Purpose Statement

The purpose of this project was to determine whether veterans diagnosed with CHF can maintain optimal weight and blood pressure following the implementation of CCHT and to make recommendations about the use of CCHT as part of the veterans' plan of care.

Project Objectives

- Evaluate whether veterans diagnosed with CHF can maintain optimal weight and blood pressure following the implementation of CCHT.
- Create recommendations about whether CCHT should become part of the veterans' plan of care for CHF.

Project Question

In veterans with heart failure, does participation in the CCHT program assist veterans in achieving and maintaining optimal weight and BP levels?

Nature of the Doctoral Project

Home telehealth is an effective way to manage CHF in the home setting. The high prevalence of heart failure makes it inevitable that an intervention is needed for this increasing age population. Maudlin, Keene, and Kobb (2006) conducted a 2-year study on CHF-diagnosed veterans who were suffering from a life-limiting illness. The researchers determined the effectiveness of a home telehealth–based care method. During the 2-year pilot, 92% of patients reported that home telehealth helped them to feel more connected to the VA hospital and members of the team, and that it gave them a sense of security. There were 66% fewer hospital admissions, 19% fewer emergency department (ED) visits, and 77% fewer bed days of care, with an average cost savings of $126,652.

Telehealth enables patients to know their weight and vital signs so they realize the negative consequences and higher costs of not following the recommended diet or not taking prescribed diuretics on time. When CHF patients are actively involved in controlling and managing their disease progression, they find themselves well-informed and capable of controlling and managing their disease. This, in turn, aids in reducing readmission rates.

Implications for Social Change in Practice

The potential significance for social change offered by this study is its evaluation of the benefits that CCHT programs can offer for a veteran's plan of care and its recommendations about CCHT adoption. This change will help to improve outcomes for veterans living with CHF. This study seeks to establish community-based responses for patients so that they can be in a position to change their attitude, policies, and behaviors to improve their quality of life.

Definition of Terms

Heart failure. A condition in which the heart cannot pump enough blood to keep up the demand from the rest of the body.

Telehealth. The remote monitoring of a patient's blood, pressure, weight, and oxygen levels through the use of wireless technology.

Self-management. A "naturalistic decision- making process that individuals use in the choice of behaviors that maintain physiological stability (symptom monitoring and treatment adherence) and the response to symptoms when they occur" (Radhakrishnan & Jacelon, 2012, p. 34).

Assumptions and Limitations

The three assumptions of this study were as follows: first, that telehealth improves outcomes in patients with CHF by reducing blood pressure and weight levels; second, that telehealth is an effective intervention for the treatment of CHF; and third, that telehealth is an effective intervention for CHF patients. Daily monitoring of blood

pressure and weight will help to detect early deterioration and lead to timely intervention. This proactive method will make telehealth an effective intervention in the management of CHF.

Several limitations affecting the generalizability of the findings are anticipated in this study: access to information, lack of available data or missing data, and sample size. Generalizability of the results to nonveterans and patients with other chronic diseases are dependent on the sample size. Access to information strictly depends on ongoing collaboration with the home telehealth program. Available or missing data will become an issue if no one confirms or finds the data firsthand.

Significance

As the number of individuals who are living with CHF increases, so does the urgency of the need to find an intervention to help patients manage their CHF more effectively. One population of concern is veterans with CHF. Nurses play a unique role in coordinating the transition of patients to a lower level of care and are in the prime position to close the gaps with discharge planning.

Discharge planning for CHF patients is more complex than routine discharges. These patients require a closer follow-up to ensure that behaviors such as weighing daily, monitoring blood pressure, and taking medications are carried out as instructed. Interventions that support patients and enhance their knowledge are beneficial for patients with CHF (Kent, Cull, & Phillips (2011). Further, improving patient outcomes through telehealth improves patients' quality of life. Patients who are identified as being

at high risk for readmission should be referred for telehealth services. Decreased emergency room visits and readmissions and increased quality of life have all been influenced by telehealth (Cherofsky, Onua, Sawo, Slavin, & Levin 2011).

Summary

CHF is the number one admitting diagnosis for veterans and Medicare patients, and its prevalence increases with age. Telehealth is a promising intervention used to treat this growing health problem. The Atlanta VA has an established a CCHT program for CHF patients, and this program can successfully reach many veterans with CHF if it is shown to improve outcomes and reduce rehospitalization. The purpose of this project was to determine whether CCHT helps veterans to achieve optimal clinical outcomes with blood pressure and weight.

Section 2: Background and Context

Literature Review

A literature search was conducted using CINAHL, MEDLINE, PubMed, EBSCOhost, and Cochrane Library for relevant articles. The search terms *heart failure*, *telehealth*, *telemonitoring*, *readmissions*, *home care*, *case management*, *disease management*, and *veterans* were used. Reference lists from articles were also used for further inquiry. More than 400 articles were identified from the electronic database search. Abstracts and conference presentations were excluded. Full-text articles published in English and articles indicating that telehealth were an acceptable treatment for veterans with CHF were included. After an intensive review, 21 articles were selected. Four meta-analyses of research using randomized controlled trials (RCTs) to assess telemonitoring and CHF were examined; 17 studies involving telemonitoring and CHF and using RCTs were also examined. RCTs are the gold standard for experimental research and are used to test the effectiveness of an intervention. The following literature review of selected research articles will be organized into two categories: telehealth and evaluation of outcomes.

Telehealth

Several studies have demonstrated that telehealth programs are associated with reduced hospitalization (Antonicelli et al., 2008; Berg, Wadhwa, & Johnson, 2004; Dunagan et al., 2005; Inglis, 2010; Kashem, Droogan, Santamore, Wald, & Boye, 2008; Lee & Park, 2010; Woodend et al., 2008; Xiang, Li, & Liu 2013); fewer ER visits (Berg

et al., 2004; Dansky, Vasey, & Bowles, 2008); shorter hospital stays (Berg et al., 2004; Dunagan et al., 2005; Woodend et al., 2008; Xiang et al., 2013); and reduction in all-cause mortality (Clarke, Shah, & Sharma, 2011; Inglis, 2010; Polisena et al., 2010; Xiang et al., 2013). Recent telehealth disease management models were developed from earlier telemedicine models and incorporate telecommunications and information technology into health care delivery. With telehealth applications, the patient remains at his or her residence and has direct communication with the health care provider at the health care facility. Given the decreasing cost of technology, telehealth has become more affordable and, consequently, more popular. Telehealth models for managing CHF are attractive for many reasons.

First, telehealth may help relieve the nursing shortage and reduce costs. Nurses can efficiently manage more patients remotely with technology than if they were to travel to each patient's home. Because the patient or provider incurs no travel costs, telehealth has the potential to be more cost effective. Telehealth transports data instead of people, enabling monitoring of patients at considerably less expense (Noel, Vogel, Erdos, Cornwall, & Levin, 2004). Second, telehealth models may improve access to health care by reducing barriers, such as lack of proximity to the health care facility and/or lack of mobility, that prevent a patient from seeking care. Therefore, telehealth models are attractive for use in rural areas and among older adults or populations with disabilities. Third, telehealth models may provide better integration of health care services, because

interdisciplinary teams are frequently involved in managing the patient's care (Dinesen et al., 2012).

Many home telehealth models are currently being evaluated by the VHA as plausible solutions to the management of this chronic illness. For example, CHF is a high-utilization disease within the VHA, with more than 50% of discharged patients with CHF readmitted within 180 days. If telehealth can reduce the readmission rate, this would significantly lower the cost of caring for these individuals. Thus, the VHA is actively searching for innovative solutions such as telehealth to efficiently and effectively manage CHF.

The focus of care delivery within the VHA has shifted from managing patients "just in case" to "just in time" (Darkins et al., 2008, p. 3). That is, instead of being hospitalized, the patient is treated proactively before a major hospitalization may occur. The VHA has created a model of care that extends disease management to connect home telehealth with care coordination. The model is referred to as CCHT and involves using technology to provide interdisciplinary health care services to veterans in the home setting. Veterans enrolled in CCHT are monitored from their homes in a variety of ways: through videophones, telemonitors, in-home messaging devices, or instamatic cameras. Because more than one half of the hospitalizations for CHF are theoretically preventable, it is important to determine which disease management program can reduce health care use while providing high-quality care. It is also important to evaluate which interventions might improve the survival of patients with CHF, because CHF is associated with a very

high mortality rate. More than 300,000 patients die each year with CHF as the primary or contributory cause (Polisena et al., 2010).

The number of persons with CHF will continue to rise. Thus, new treatment options need to be identified in the evidence and translated into practice with the hope of improving quality of care and access to health services while reducing health services use. Evaluating the outcomes of those receiving innovative health care services such as telehealth will provide health care planners, clinicians, patients, and other stakeholders with guidance as to which innovations work best.

Evaluating the Outcomes

Little current evidence exists to support improved outcomes in weight and blood pressure from telehealth interventions. A recent search using key words *home telehealth*, *weight*, and *blood pressure* elicited only one article. Schofield et al. (2005) implemented a home telehealth program at a local VA medical center and found significant improvements after enrolling 92 patients. Improved early outcomes were found in weight (196 to 192 pounds, $p < .01$) and blood pressure (129/73 to 119/69 mm Hg, $p < .05$). Also, the number of bed days of care dropped from 630 the year before the program began to 122 during the program. However, there is older evidence to demonstrate that telehealth is a plausible solution in managing patient outcomes such as weight and blood pressure. Louis, Turner, Gretton, Baksh, and Cleland (2003) evaluated optimal blood pressure control and weight loss in a systematic review of 24 CHF disease management programs using telehealth. The observational studies in this review showed significant

reductions in weight levels and blood pressure abnormalities; however, the studies had small sample sizes. The RCTs evaluated in the same review had mixed results: Two of the four studies showed reductions. Research has found that CHF telehealth models are associated with a reduction in weight gain and BP variations among veterans with CHF (Benatar, Bondmass, Ghitelman, & Avitall, 2003; Dansky et al., 2008; Poses & Avitall, 2003).

In Fiscal Year 2015, the AVAMC continued to have higher readmission rates for CHF than other VAs (24.7%) in Atlanta compared with an average readmission rate of 22%; (VSSC 2015); because research done by Boyne et al. (2012) illustrated the significance of home telehealth with CHF patients, home telehealth may significantly reduce the AVAMC's readmission rates for CHF patients.

Therefore, it appears that using telehealth in the AVAMC health care system may allow health care professionals to overcome barriers and provide maximum services to veterans. Moreover, teaching patients about self-monitoring, such as "self-weighing and monitoring of symptoms," as well as "interpretations of changes" in these symptoms, can help them take appropriate actions when the situation demands, thus helping them in improving their outcomes (Darkins et al., 2008).

Concepts, Models, and Theories

Bandura's Self-Efficacy theory. Bandura's self-efficacy theory is the theoretical framework for this project. It is based on the idea that achievement is based on an individual's ability to believe in himself or herself. Based on that, the theory is highly

suitable to inventing a framework that provides self-efficacy to the CHF patient. See Figure 1 (Appendix B) for a graphical representation of Bandura's self-efficacy theory.

For self-efficacy to develop, the patient must believe that he or she is in control and he or she has the power to produce specific results. Thus, he or she will be motivated to make and sustain change. In telehealth, the patient is responsible for daily communication with the care coordinator. He or she is responsible for taking blood pressure and weight readings and sending that information to the care coordinator. Self-efficacy theory indicates that veterans with CHF who feel in control of their health care may change their behaviors and have increased motivation, helping them achieve the best clinical outcomes from the home telehealth program.

Developing self-efficacy has four elements:

1. Successful performance. The patient must experience success in order for self-efficacy to develop. Nurses can help patients accomplish this by setting easier goals initially, such as calling the CCTH coordinator daily for 1 week.
2. Vicarious experience (social modeling). This involves observing a task to perform. The nurse can assist the patient in successfully performing a task, such as using the telehealth monitor.
3. Verbal persuasion. Encouragement or positive affirmations are used to overcome self-doubt.
4. Physiological response. Stress plays a role in how a person feels about successfully completing a task. Minimizing stress increases self-efficacy.

The theory of self-efficacy is a psychological theory of how mind and motivation shape what people can and cannot do. People who have strong self-efficacy view challenging life problems as mere problems that can be solved easily or with willpower; are able to recover from illnesses and the setbacks in life; and tend to be strong-willed in the activities that they engage in. However, people who have a weak self-efficacy tend to avoid life challenges because they think of them as complex situations. They quickly lose motivation when faced with challenges. They believe that challenging life situations cannot be changed, and they quickly lose their motivation when faced with overwhelming issues (Suter, Suter, & Johnston, 2011).

Summary

Heart failure is a complex disease that challenges patients emotionally, psychologically, and physically. Patients with congestive health failure are at risk for exacerbations and repeated hospitalizations. Long-term chronic management is an important skill in the management of heart failure and the literature review demonstrated that telehealth is a plausible solution to the complex management of health failure. Through the application of Bandura's self-efficacy theory, telehealth can be used to empower patients to care for their own care management.

Section 3: Collection and Analysis of Evidence

Introduction

The purpose of this project was to determine whether veterans diagnosed with CHF were able to maintain optimal weight and blood pressure following the implementation of CCHT and to make recommendations for use of CCHT as part of the veterans' plan of care. A retrospective chart review was conducted after approval by both the AVAMC and Emory University Institutional Review Boards. Medical charts were reviewed to evaluate if veterans diagnosed with CHF were able to maintain optimal weight and blood pressure 16 weeks post-CCHT. The CCHT model is interfaced with VA's current health information technology (HIT) systems. The computerized patient record system (CPRS) and VistA are the inpatient and outpatient electronic health records for VA patients. On a daily basis, the veteran responds to questions related to their health by pushing buttons on the CCHT in-home communication and monitoring appliance. The appliance collects the data entered, such as the veterans' vital signs and physiological status, and transmits the data over the telephone line to a secure data center. The care coordinator at the hospital accesses the veterans' clinical information via a web application. The data are then reviewed by the care coordinator, who contacts the veteran if the data are out of range so that deterioration of the veteran's clinical condition may be prevented. Nurse interaction is limited to the initial consultation and contact when needed.

Population

The population for this project was made up of veterans who received care at the Atlanta VA Medical Center during the period between January 2013 and December 2014 and had a diagnosis of CHF. Specifically, participants met the following criteria: each had a new diagnosis of CHF, and each was enrolled in the telehealth program at the Atlanta VA Medical Center between January 2013 and December 2013.

Sources of Evidence: Data Collection

A list of veterans meeting the inclusion criteria was pulled for the period of January 2013 to December 2013. Demographic data (age, gender, and race) of the sample were collected. Data for weight and blood pressure (systolic and diastolic) were collected pre-CCHT and for 16 weeks post-CCHT to determine whether a difference in weight and blood pressure existed. Data were entered into a Microsoft Excel password-protected spreadsheet and kept on VA Research's network drive.

Data Analysis

After the chart review was completed, the data were coded and entered into SPSS. The data were then cleaned and evaluated for normalcy and distributions. Descriptive statistics was used to describe the sample. Statistical process control (SPC) charts were created to analyze the data. SPC charts are often used to assess the effectiveness of an intervention. The charts allow conclusions to be drawn about whether a process is stable or whether it varies with time. Given this, SPC was used to test whether optimal weight and blood pressure were maintained by the veterans during a 16-week period (Polit &

Chaboyer, 2012). Using the results of the project, recommendations were constructed to establish guidelines to increase CCHT program use.

Summary

As the number of persons with CHF continues to rise, new treatment options need to be explored to improve quality of care and increase access to health services while reducing health services use. Policy makers, hospital administrators, stakeholders, health care providers, and patients are waiting for convincing evidence that telehealth programs are effective. Evaluating the outcomes of telehealth will provide guidance as to which innovations work best. It is expected that this project will prove that the CCHT program is an acceptable intervention for CHF patients.

Section 4: Findings and Recommendations

Findings

Descriptive Statistics

A sample of 69 patients who fit the inclusion criteria was generated from the active enrollment list of veterans who were involved in the CCHT program from January 2013 to December 2013. Initially, 63 of the participants (91%) were males and six (9%) were female. Of the participants, 35 (51%) were Caucasians, 31 (45%) were African American, and 3 (4%) identified as unknown. The average age of the sample was 67 years (SD = 11.3) with a range of 37–92 years. Of the 69 patients, 18 dropped out or died before completing the program; 25 were still in the program at the time data were collected and were excluded. Thus, the final sample was made up of 26 participants with an average age of 63.5 (SD = 12.2). Five (19%) were female and 21 (81%) were male. Nine (35%) of the participants were Caucasians, 16 (62 %) were African American, and 1 (3%) identified as unknown (Table 1).

Paired *t* Test and SPC Chart Results

A paired sample t test was used to compare blood pressure (systolic and diastolic) and weight pre- and post-CCHT participation. There was not a significant difference in weight pre-CCHT and 16 weeks post-CHHT: $t(25) = .044$, $p = .96$. There was not a significant difference in systolic blood pressure pre-CCHT and 16 weeks post-CHHT: $t(25) = .402$, $p = .69$. Last, there was no significant difference in diastolic blood pressure pre-CHHT and 16 weeks post-CHHT: $t(25) = .987$, $p = .33$ (Table 2). SPC charts were

created to analyze data (Figures 2–7). No variation was found in the SPC charts, which depict a stable process.

Discussion of Findings in the Context of the Literature

The purpose of this project was to determine whether veterans diagnosed with CHF were able to maintain optimal weight and blood pressure for 16 weeks after they began the CCHT program. The findings indicated that there was no difference in pre- and post-participation weights or in systolic and diastolic blood pressures, and there was no variation found in the SPC charts.

Only a few studies have evaluated home telehealth's ability to help CHF patients achieve optimal BP and weight levels. A systematic review of 24 CHF disease management programs found that using telehealth helped to control blood pressure and reduced weight levels (Louis et al., 2003). The observational studies in this review showed significant reductions in weight levels and BP abnormalities; however, these studies had small sample sizes. The RCTs evaluated in the same review showed mixed results: only two of the four studies showed reductions in weight and blood pressure. Current evidence suggests that using telehealth, as part of the continuum of care in transitioning patients to the outpatient setting, may be of value. So in comparison to the literature, this project also shows that telehealth is a plausible solution for monitoring CHF patients. The project found that AVAMC patients were able to maintain stable weights and blood pressures throughout the 16-week duration of the intervention.

Recommendations

As demonstrated in this project, the CCHT program is a plausible solution to monitoring important measures of CHF. The first recommendation would be to increase nurse interaction with patients, because there is no face-to-face contact and because the patient's physical self is not present for holistic evaluation. This increase in interaction can be achieved by providing daily contact for the first 2 weeks, ensuring that the patient is comfortable with the process of logging on and inputting the information. After the first 2 weeks, the contact could be staggered, ending with nurses only following up with patients when issues are identified. This will also promote the patient's self-efficacy skills, which will in turn increase patient empowerment. Suter et al. (2011) stated that nurses, as health professionals, were in a particularly good position to assist patients in building self-efficacy. Engaging patients to use telehealth systems may be important in helping to control their CHF, which may lead to decreased hospital admissions and readmissions.

Second, some changes in the CCHT program would make it more successful. An assessment of the reasons that CHF patients enroll in the CCHT program at lower rates than patients with other chronic conditions should be completed. More intensive screening should be carried out to identify patients that are appropriate for the program. The perception from older veterans that health monitoring means daily in-person monitoring in their home should be addressed; older veterans are fully capable of using the CCHT technology, and the stereotype that they are reluctant to use technology has

been contradicted (Dansky et al., 2008). Newly diagnosed patients with CHF need to be targeted for early intervention and better management. The CCHT program must be started promptly during treatment, which is most efficacious when CHF patients are deeply involved in the treatment.

Third, all services involved in referring a patient should be re-educated on the CCHT program. Ongoing education should be a particular priority for nurses, because they represent the most stable staff position (the medicine residents and medical academic staff rotate monthly). Posters could also be placed in the team offices to serve as reminders to refer all eligible patients to CCHT. At discharge, a nurse from CCHT should visit the patient to explain the program. The patient should also review the equipment that will be used in the home prior to discharge. This will also allow for the patient to become comfortable and ask questions before leaving the hospital.

Finally, a work group needs to be formed to come up with ideas on how to keep patients engaged so that participation is sustained. Incentives to stay in the program should be discussed. Patients should graduate from the program as an award for participation. Surveys should be given to patients who decline CCHT monitoring when they are discharged from the program, so that factors that prevented participants from completing the CCHT program are examined.

Implications for Nursing Practice

This project provides a recent evaluation of home telehealth in the treatment of CHF. There is some evidence this program is beneficial. The nurse's role in telehealth is

significant; nurses are needed to advance the use of telehealth, and Crundall-Goode & Goode (2014) recommend that nurses use telehealth as a case management tool. Telehealth technology allows nurses to interact with patients remotely and provide real-time data. Nurses act as the conduit between the patient and the physician.

Veterans are a special population and sometimes their access to health care is problematic. Treating patients where they are is necessary. Nurses must continue to advocate for programs that put veterans first. Home telehealth is instrumental for this purpose.

Limitations of the Project

Limitations of this project were the sample size, attrition rates, no data on nurse interaction, and the short follow-up period. One of the four categories of care in the CCHT program is noninstitutionalized care, the longest-term category of care, which entails a continuum of care with check-ins done at 6-month intervals. Most patients are placed in this noninstitutionalized care category. Patients who had been enrolled in this type of care for more than 3 years made up nearly 60% of participants, which made evaluating post-participation outcomes impossible and led to missing data. Although patients in all stages of heart failure were included in the sample, patients in the later stages were more likely to be referred, and eight (44%) died while in the program.

Section 5: Dissemination Plan

Introduction

The results of this DNP project will be presented to the leadership of the CCHT program. Dissemination of the findings to the Home Telehealth department, AVAMC Nursing Research newsletter, peer-reviewed journals, and research venues via abstracts are also planned for this project. The Nursing Research Committee is heavily involved in the dissemination of completed work and will be asked to make recommendations for peer-reviewed journals and research venues.

Since 2013, the CCHT program has undergone leadership changes and is now better staffed. The CCHT program recommendations should help to strengthen the program. Even though the project was not a success, it will also be disseminated to Nursing Shared Governance to help reinforce the importance of the nursing role in implementing new processes and in initiating a Yellow Belt Project.

Analysis of Self

When I started the DNP program at Walden University, I had been a staff nurse for 25 years and was in utilization management (UM). I had my master's of science in nursing (2009) but was unsure of my long-term goals. I had been in the UM department 5 years and knew I wanted more responsibility. I was the lead UM reviewer (unofficially), could work in all the UM roles, but still felt inadequate. I had given reports to leadership and had chaired committees, but I believed there was so much I did not know. My decision to return to school for my DNP was to help give me the confidence I needed to

compete at a higher level. So I developed a professional development plan (PDP) to push me to higher goals. A PDP helps you map out your personal and professional career (Roberts, 2014). After much debate with others, I enrolled in the DNP program.

In the DNP program, I recognized I did possess leadership traits. The program changed my mindset. The skills and knowledge I learned encouraged me to apply for my present position, which is the nurse manager of UM. The nurse manager position had been vacant for more than a year. I knew I was qualified, but again I was still unsure of my abilities. The DNP program has taught me how to be a transformational leader, who motivates her team and have nudged my team to change. My team has gone from poor performers doing retrospective reviews to meeting our measures during concurrent reviews. We have been accepted to the National UM Collaborative this year. I have empowered several nurses to volunteer for leadership positions on shared governance committees. I have received many accolades since accepting this position. I have also been promoted to a Level 3 nurse. This has been a great journey in finding me. After I have completed this program, I plan on getting my nurse executive certification and looking at positions that will take me to a Level 4 nurse.

Summary

CHF is one of the most common health epidemics in the United States. This project found no statistical difference in patients' weight or blood pressure between pre-participation levels and levels at16 weeks post-participation in the CCHT program. Low patient enrollment was found to be a limitation. Recommendations center on education

and finding interventions that will motivate patient interest and engagement in the program. This is what nurses do. If implemented properly, the CCHT will improve heart failure readmission rates and mortality rates. Our veterans deserve this investment in them.

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Appendix A: Tables

Table 1

Descriptive Statistics

	n (%)	Mean (*SD*)
Age	*N* = 26	63.5 (12.2)
Gender		
Male	21 (81%)	.80 (.40)
Female	5 (9%)	.19 (.40)
Race		
Caucasian	9 (35%)	.34 (.48)
African American	16 (62%)	.64 (.48)
Unknown	1 (3%)	

Table 2

Paired t Test: Preintervention and 16 Weeks Postintervention

	Paired differences							
				95% CI				
	Mean	*SD*	*SEM*	Lower	Upper	*t*	*df*	Sig. (2-tailed)
Pre-CCHT weight 16 weeks post-CCHT weight	-.154	17.77	3.485	-7.332	7.024	-.044	25	.965
Pre-CCHT systolic BP 16 weeks post-CCHT systolic BP	1.538	19.537	3.832	-6.353	9.430	.402	25	.691
Pre-CCHT diastolic BP 16 weeks post-CCHT diastolic BP	-2.192	11.324	2.221	-6.766	2.383	-.987	25	.333

Appendix B: Illustration of Self-Efficacy

Bandura's Self-Efficacy Theory

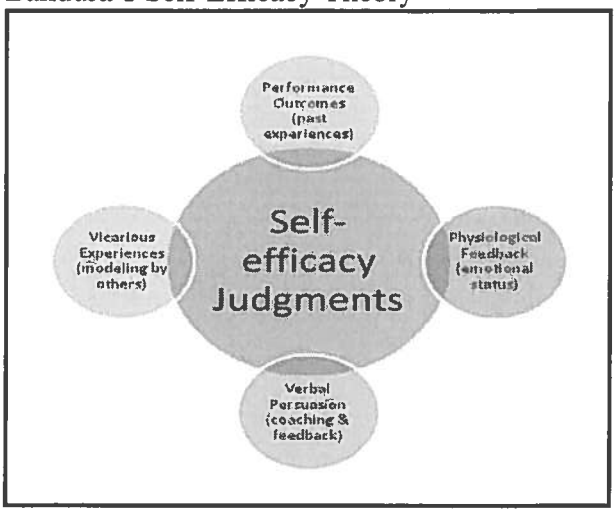

Figure 1. Self-efficacy: Sources of information.

Note. Reprinted from Self-efficacy and Social Cognitive Theories, B. F. Redmond, 2014, retrieved from https://wikispaces.psu.edu/display/PSYCH484/7.+Self-Efficacy+and+Social+Cognitive+Theories#id-7.Self-EfficacyandSocialCognitiveTheories-Self-EfficacyTheory.

Appendix C: Weight Pre- and Post-CCHT

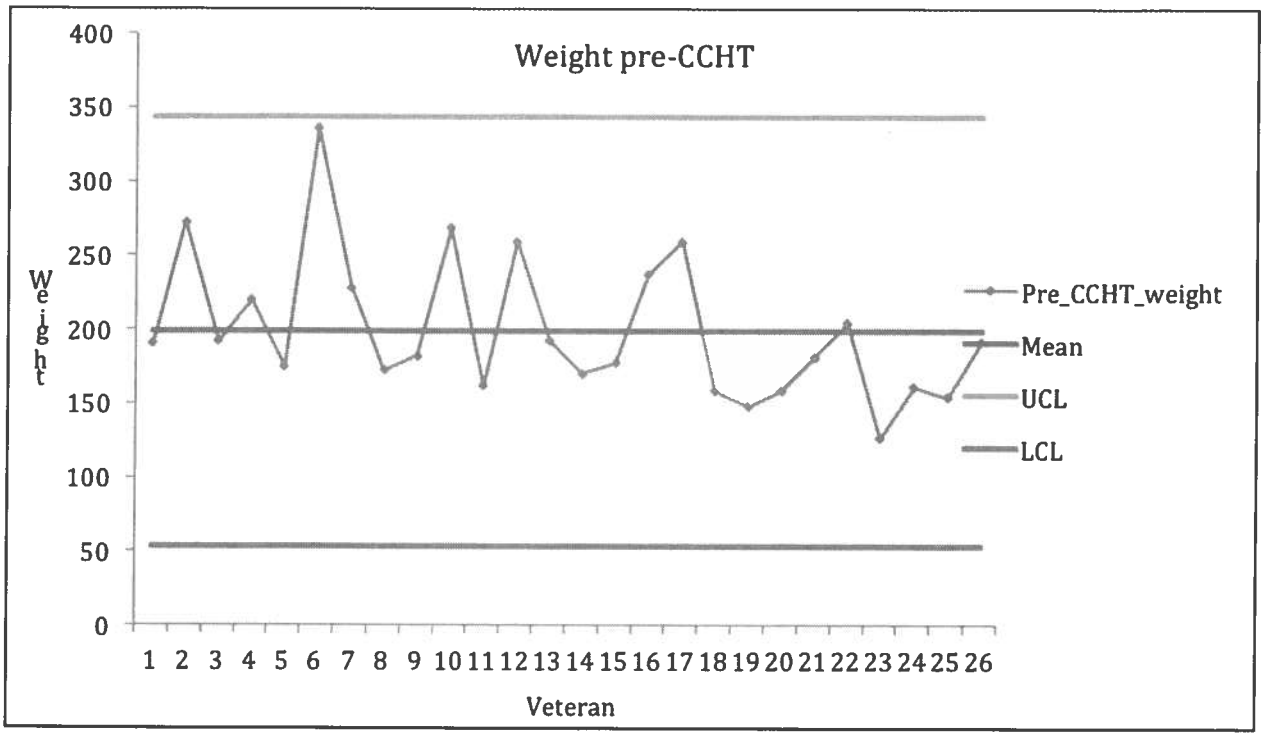

Figure 2. SPC chart of weight pre-CCHT.

Note. SPC = statistical process control; CCHT = Care Coordination Home Telehealth.

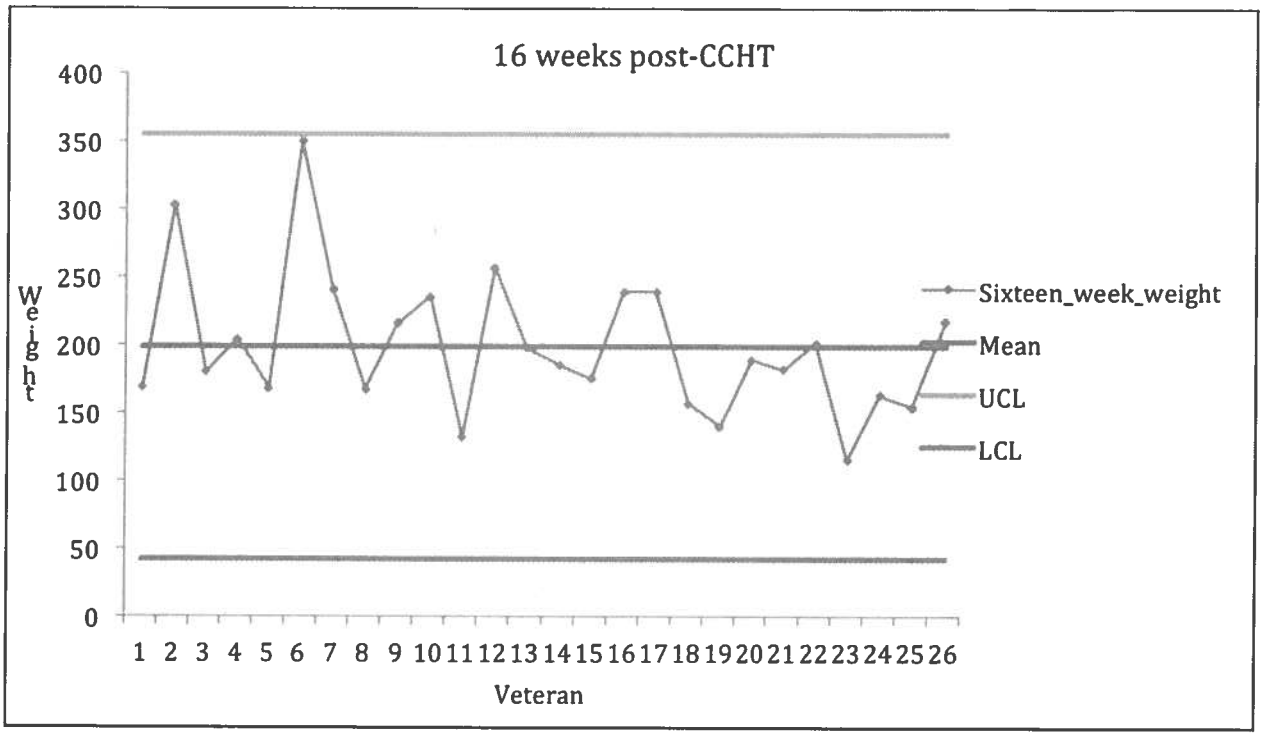

Figure 3. SPC chart of weight 16 weeks post-CCHT.

Note. SPC = statistical process control; CCHT = Care Coordination Home Telehealth.

Appendix D: Diastolic BP Pre- and Post-CCHT

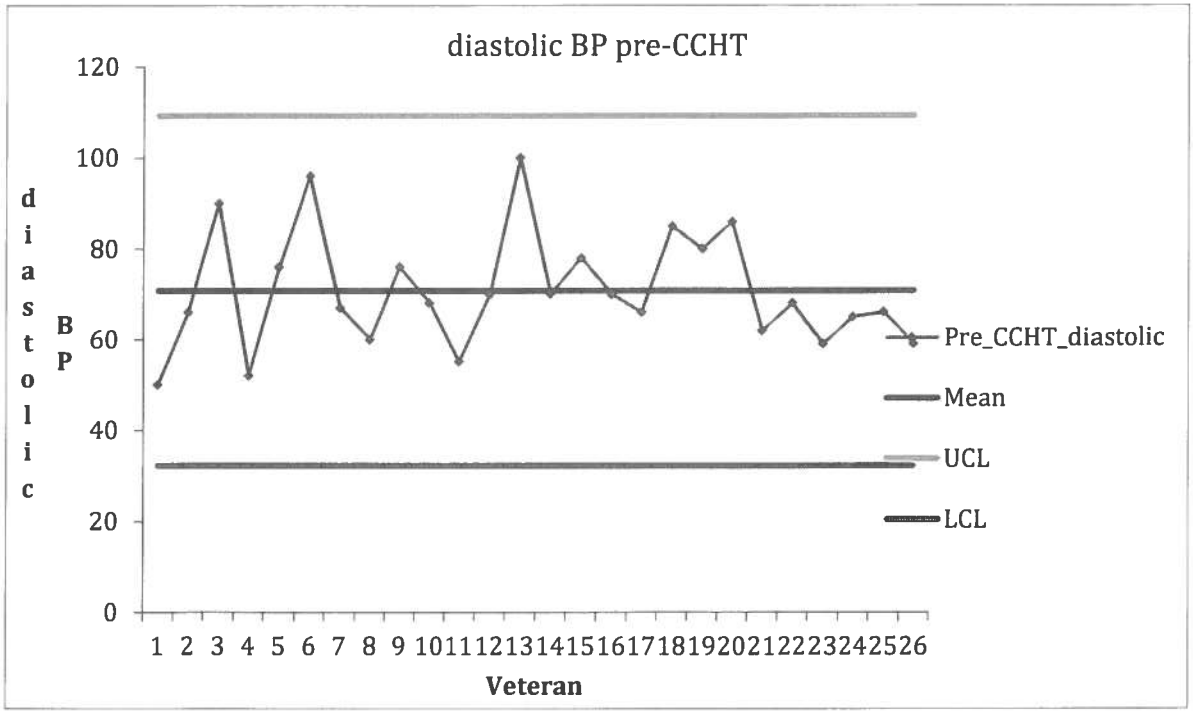

Figure 4. SPC chart of diastolic BP pre-CCHT.

Note. SPC = statistical process control; BP = blood pressure; CCHT = Care Coordination Home Telehealth.

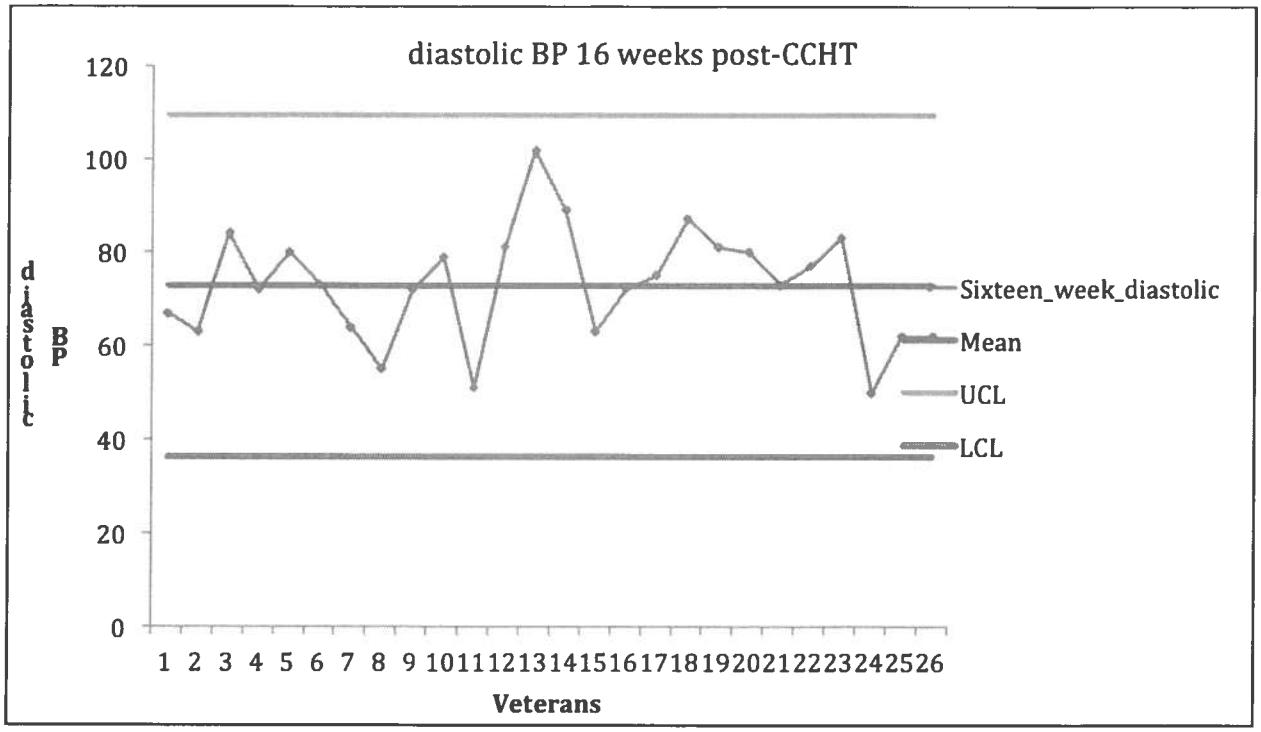

Figure 5. SPC chart of diastolic BP 16 weeks post-CCHT.

Note. SPC = statistical process control; BP = blood pressure; CCHT = Care Coordination Home Telehealth.

Appendix E: Systolic BP Pre- and Post-CCHT

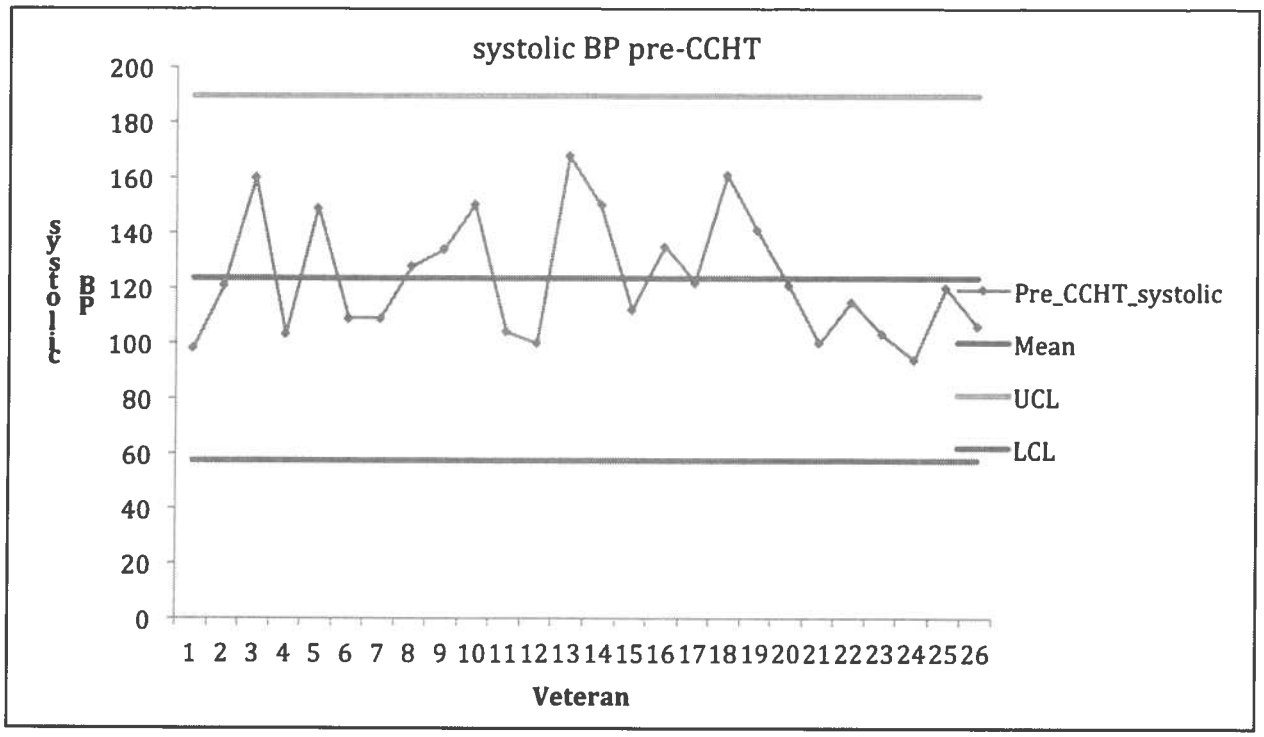

Figure 6. SPC chart of systolic, BP pre-CCHT.

Note. SPC = statistical process control; BP = blood pressure; CCHT = Care Coordination Home Telehealth.

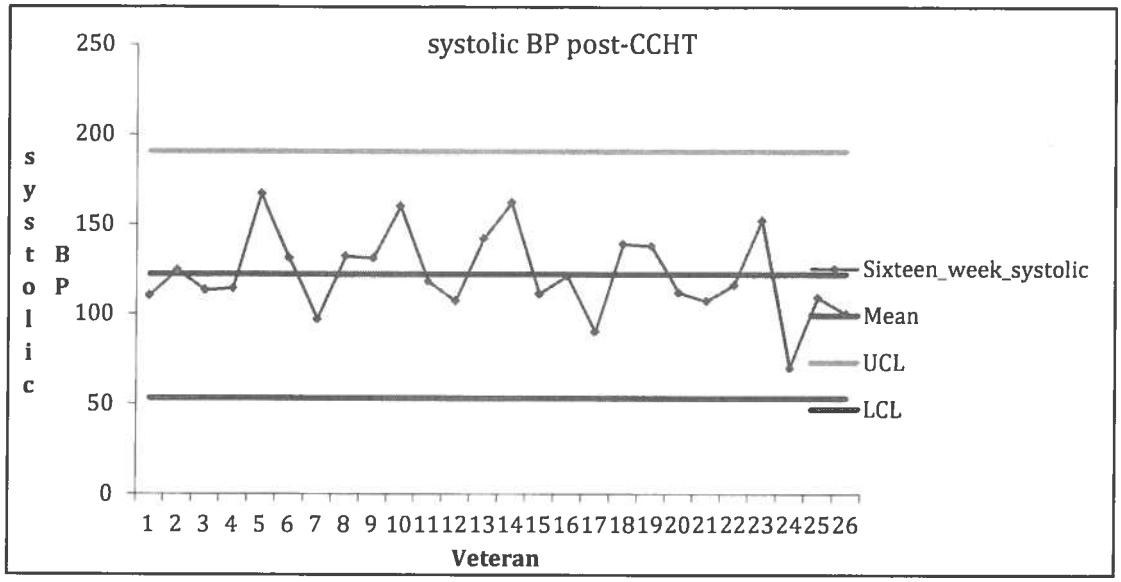

Figure 7. SPC chart of systolic BP, 16 weeks post-CCHT.

Note. SPC = statistical process control; BP = blood pressure; CCHT = Care Coordination Home Telehealth.