

Telephone Follow-up to Reduce Thirty Day Readmission in Heart Failure Patients

Christie M. Simon-Waterman

University of Maryland School of Nursing

DNP Scholarly Project Proposal

## ABSTRACT

**Background:** Unplanned hospital readmissions occur frequently in the United States (U.S.), placing great financial burdens on the healthcare industry and creating complications for patients. Approximately 20% of patients are readmitted to the hospital within 30 days of discharge and three-quarters of these readmissions could have been prevented (Chaudhry, Barton, Mattera, Spertus, & Krumhoiz, 2006). A 30-day hospital readmission rate of 19.6% among Medicare fee-for service enrollees has also been reported. The estimated cost of approximately US \$17.4 billion in unplanned hospital readmissions for Heart failure (HF) complications has been reported (Purdy 2012). Telephone follow-up is thought to be an effective strategy in reducing the 30- day readmission rate for adults with heart failure, and this intervention will be explored. Early readmission is a common and costly occurrence, particularly among HF patients. HF remains a high risk, chronic disease and readmission within 30 days is common. Because of the complexity of HF treatment, discharged patients find it difficult to manage all required aspects of their care effectively. Telephone follow-up addresses gaps of uncertainty that may exist and allows patients to gain clarity or further explanation about their conditions.

**Objective:** The purpose of this DNP scholarly project is to design, implement and evaluate an NP telephone follow-up policy for HF patients discharged from the targeted sub-acute rehabilitative institution to a home setting.

**Design and Methods:** The design for this project is a quality improvement initiative project. The setting will include a Long term care / sub-acute rehabilitative institution where the DNP student leader made phone calls to patients in their places of residence (to include personal homes and/or other residential sites). Patients were advised about the project and asked to sign a participation consent form prior to discharge from the LTC/ sub-acute rehabilitative setting if they are willing to participate. The telephone call, and subsequent interventions to patient, occurred only after patients were discharged to their homes or place of residence.

**Sample:** A sample of 44 patients total was studied. Retrospective chart reviews were completed and data collected on 21 people. The other 23 people were contacted 1-3 days post discharge and then weekly for 30 days. Patients were considered for participation in the project based on certain predetermined criteria, as follows. Be scheduled for discharge from the facility to their place of residency within the project implementation timeframe, have a diagnosis of HF for their most recent hospital admission, primary admission diagnosis of heart failure needs to be clearly noted in the medical record. Be alert, verbally responsive, and able to hear clearly, and speak/understand English and have a working telephone.

**Results:** no differences between the groups from the demographic characteristics age, gender, and race. Participants largely female, Caucasian between ages 71-80. Mean age 70.45. . Retrospective chart reviewed indicated 43.47% of the intervention group and 47.61% of the non-intervention group were readmitted within 30 days prior to this last admission. Decrease noted in the 30 days readmission rate for both groups. Patients who received telephone intervention

had a 17.39% readmission rate post 30 days compared to those who did not receive the intervention at 38% readmission rate

**Conclusions:** The results of this study demonstrates that telephone follow-up provided by an NP post discharge from a LTC facility , at least initially decreased 30 day hospital readmission, but the difference did not reach statistical significance.

## Telephone Follow-up to Reduce Thirty Day Readmission in Heart Failure Patients

Unplanned hospital readmissions occur frequently in the United States (U.S.), placing great financial burdens on the healthcare industry and creating complications for patients (Harrison, Hara, Pope, Young, & Rula, 2011). Approximately 20% of patients are readmitted to the hospital within 30 days of discharge and three-quarters of these readmissions were preventable (Chaudhry, Barton, Mattera, Spertus, & Krumhoiz, 2006). A 30-day hospital readmission rate of 19.6% among Medicare fee-for service enrollees has also been reported, at an estimated cost of approximately US \$17.4 billion (Purdy 2012). It was estimated that over 23% of Medicare patients discharged from a sub-acute nursing facility will be readmitted to the hospital within 30-days of their discharge (Riegel, Carlson, Glaser, Romero, 2006). Many of the Medicare readmissions are attributed to lack of communication during transitions, inadequate education and care before discharge in the skilled nursing facilities, and a lack of support and engagement in the patient's medical care by providers and caregivers (Mor, Intrator, Feng, Grabowski, 2010). One of the most frequent causes of admission and rehospitalization for older patients continues to be heart failure (HF), a cardiac diagnosis that continues to increase affecting over 5.7 million Americans (Wakefield et al., 2007).

Rehospitalizations for adults with HF have been linked to inappropriate continuity of care post discharge and telephone follow-up has been associated with improved outcomes related to readmissions for HF patients (Purdy 2012). Woodend et al. (2008) reported that older adults coping with multiple comorbid conditions and complex therapeutic regimens are particularly vulnerable during the transition from hospital to home. Post discharge follow-up telephone calls to discuss medication management, patient (or caregiver) identification of signs and symptoms

of worsening HF, and patient adherence to low sodium diet requirements, can bridge communication gaps with patients that often occur following hospitalization (Wakefield et al., 2007; Purdy 2012). Telephone calls offer important opportunities for early and effective interventions, and prevention of future problems (Wheeler and Waterhouse, 2006). Patients mortality and increased compliance with care recommendations have also been seen when telephone follow up post hospitalization was employed (Ferrante, et. al., 2010; Ingles, et al., 2011).

Although telephone follow up has been studied in post hospital patients, there is a need to identify whether a telephone follow up for HF patients with a secondary discharge from a sub-acute facility can also influence later re hospitalization. This project proposes to design, implement and evaluate a Nurse Practitioner led telephone follow up program for patients discharged from a sub-acute rehabilitation facility. These patients are given standard hospital discharge instructions and an additional one page of instructions on medication administration, weight monitoring and signs and symptoms to call a provider from the sub-acute facility.

The conceptual framework guiding this project is The Knowledge to Action (KTA) framework (Graham et al., 2006). The purpose of using this framework is to facilitate the translation of knowledge to practice. The necessary knowledge and action required for these patients is supplementation of complex discharge instructions involving medications, self-care, and symptoms indicating need for further evaluation or treatment resulting in increased risk for adverse outcomes and hospital readmissions. It is hypothesized that this project will reduce rehospitalization of the subacute facility HF patients through increased monitoring and self-care education.

This project was submitted to and approved as non-human subjects research by the University of Maryland, Baltimore IRB. The Health Care Providers did not require IRB approval.

## **Methods**

### **Design, Sample, Settings**

This Quality Improvement Initiative Project utilized a convenience sample of patients enrolled in “The Heart Failure Protocol Program” at an inner city LTC / sub-acute rehabilitative facility. Participants were referred by the nurse practitioners and physicians from a provider group who provided medical care at the facility. Participants were included based on predetermined criteria: schedule to be discharge home within 30 days from the project start date; a diagnosis of HF for their most recent hospital admission and a previous 30 day hospital readmission. Participants were excluded if they were not alert, verbally responsive, able to hear clearly, speak/understand English and have a working telephone. Potential participants were offered information about the project by their NP or MD who obtained their consent for participation. A non-intervention sample was selected from a retrospective chart review of patients in the facility based on the same criteria as the intervention group. The control and intervention groups were selected at two different time period.

### **Measures**

**Demographic data:** Demographic data including diagnosis, hospital and sub acute facility discharge date and an identification number was provided by the participant’s primary care giver

**Self-Care of Heart Failure Index (SCHFI):** The SCHFI was used as a model for the telephone call as well as a data collection tool. The SCHFI is a 22 question measure rated on a 4-point likert scale. It is divided into three sections which measures ' ability to monitor symptoms and follow treatment regimens; symptoms of worsening heart failure and confidence in their ability to perform heart failure self -care (Riegel & Dickson, 2008). The ten items in the Self-Care Monitoring scale measure how routinely patients' follow treatment regimens. The six items of the Self-Care Management scale measure patients' ability to recognize symptoms when they occur, treatment implementation in response to symptoms and treatment evaluation. The Self-Care Confidence scale uses six items to evaluate patients' understanding of how to become involved in each phase of the self-care process. Each of the three scales are scored separately. Each scale score is standardized and a raw score between 0 to 100 range obtained

The documented validity and reliability of the SCHFI was noted in both qualitative and quantitative approaches allowing this tool to be used effectively in clinical practice (Vellone, et.al., 2013; Riegel, et al., 2011). A non-intervention sample was selected from a retrospective chart review of patients in the facility selected for their demographic similarity to the intervention group.

### **Procedures**

Participants were called by telephone 24--72 hours post discharge, then weekly for three more weeks. After an introductory paragraph, the phone call followed the SCHFI interview order. (See Appendix B) All responses were documented and any abnormal findings were followed up with education or intervention. Participants who had been readmitted were noted. Readmission was defined by the Center for Medicare and Medicaid Services as the number of

stays with 1 subsequent hospital stay within 30 days divided by the total number of hospital stays in the given period. A data tracking information sheet utilizing numbers to represent each patient was used to document data (See Table 1 & Appendix D).

### **Data Analysis**

Descriptive statistics were computed on all study variables. Continuous data are presented as means and standard deviations, and categorical data presented as percentages. Cronbach's alpha was calculated for the SCHFI to evaluate reliability of the measures in this sample. SCHFI subscale were calculated using the established standards (Riegel et al., 2009; Vaglio et al., 2004; van der Wal et al., 2005). Mean scores were calculated for each self-care subscale. Chi square will be the statistical test utilized for this project. The variables to be measured include the difference in hospital readmission within 30-days for the patients enrolled in this project, self-care: maintenance, management, and confidence once telephone intervention is implemented. This will be compared to the participants identified in the retrospective chart review who received no telephone intervention post discharge. This test will be used because of its ability to test the hypotheses with difference in groups (Polit & Beck, 2012). As stated by Terry (2012) the Chi square test is able to demonstrate if the frequency in each category is different from outcomes without an intervention. Chi- square test can be conducted if there is a sample size of ten or more and a nominal level of date to be measured. Readmission rate calculation will be achieved by numerator divided by denominator multiplied by one hundred. Statistical Package for social Sciences (SPSS) will also be used to analyze the data.

## Results

Demographic characteristics of the telephone intervention and non-intervention groups were explored with differences noted (see table 1). There were no differences between the groups from the demographic characteristics age, gender, and race. Participants were largely female, Caucasian between ages 44-90. Mean age 70.45. Percentage of readmission rate was determined by the utilization of CMS calculation (Table 2). A decrease was noted in the 30 days readmission rate for both groups. Patients who received telephone intervention had a 17.39% readmission rate post 30 days compared to those who did not receive the intervention at 38% readmission rate (Table2). The hypothesized/ expected relationships between 30 day readmission rates and telephone intervention (i.e., whether or not fewer patients who received telephone treatment were subsequently readmitted within 30 days of initial discharge than patients who did not receive treatment) was initially explored using chi-square test. No statistically significant difference was found ( $df=1$ ,  $p=.124$ ) see table 3. SCHFI subscales were calculated using the established standards (Riegel et al., 2009; Vaglio et al., 2004; van der Wal et al., 2005). Mean scores were calculated for each subscale (see table 5). Score for each subscales varied. Confidence scores ranged from 0-100 with a mean of 28.68. Self-care maintenance scores ranged from 6.67- 99 with mean score noted at 49.46. Self-care management score ranged from 10-100 with Mean scores were calculated at 36.66

## Discussion

The results of this study demonstrates that telephone follow-up provided by an NP post discharge from a LTC facility , at least initially decreased 30 day hospital readmission, but the difference did not reach statistical significance. These results differ from previous studies that showed statistical significance when subjects were discharged from a hospital setting. Sample

differences could also be responsible for the lack of statistical significance and intervention effectiveness. The sample in this project could have been more ill and further along in the progression of their disease. These subjects had had HF for some time and maybe this had decreased their enthusiasm for self-care and made them less willing to follow discharge instructions. Caregiver help may also be limited in this sample hence the LTC admission prior discharge home. The mean age of this sample could also attribute to early onset of dementia which could have affected the results.

Additional research will be required to compare this type of setting and population with telephone intervention to reduce 30 days readmission post discharge to home. Demographic variables will also need to be compared to determine if this affects the results. The results of this project are limited by the small sample size and limited timeframe.

## References

- Chaudhry, S., Barton, B., Mattera, J., Spertus, J., Krumhoiz, H. (2006). Randomized Trial of Tele-monitoring to improve Heart Failure Outcomes. *Journal of Cardiac Failure*, 13(9), 709-714
- Ferrante, D., Varini, S., Macchia, A., Soifer, S., Badra, R., Nul, D., Dovi, H. (2010). Long-term results after a telephone intervention in chronic heart failure: DIAL follow-up. *Journal of the American College of Cardiology*, 56, 372-378.
- Graham I.D., Logan J., Harrison M.B., Harrison M.B., Straus S.E., Tetroe J., Caswell W. & Robinson N. (2006) Lost in knowledge translation: time for a map? *Journal of Continuing Education in the Health Professions* 26(1), 13–24
- Harrison, P.L., Hara, P. A., Pope, J. E., Young, M. C., & Rula, E. Y. (2011). The impact of post discharge telephonic follow-up on hospital readmissions. *Population Health Management*, 14(1), 27-32. doi:10.1089/pop.2009.0076
- Inglis, S., Clark, R., McAlister, F., Finlay, A., Stewart, S., & Cleland, J. (2011). Which components of heart failure programmes are effective? A systematic review and meta-analysis of the outcomes of structured telephone support or telemonitoring as the primary component of chronic heart failure management in 8323 patients: Abridged Cochrane Review. *European Journal of Heart Failure*, 13(9) 1028-1040
- Mor, V., Intrator, O., Feng, Z., Grabowski, C. (2010) The revolving door of rehospitalization from skilled nursing facilities. *Health Affiliation*, 29(1), 57-64.

- Purdy, S. (2012). Tackling avoidable hospital admissions improving or compromising quality. *Quality in Primary Care*, 20(4), 234-244.
- Riegel, B., Carlson, B., Glaser, D., & Romero, T. (2006). Randomized Controlled Trial of Telephone case Management in Hispanics of Mexican Origin with Heart Failure. *Journal of Cardiac Failure*, 12(3), 211-219
- Riegel, B., & Dickson, V. (2008). A situation specific theory of heart failure self-care. *Journal of Research in Nursing & Health PSYCHOMETRIC TESTING OF THE SCHFI V.6.2/VELLONE ETAL*. 511 *Cardiovascular Nursing*, 23 , 190-196. doi: 10.1097/01.JCN.0000305091.35259.8
- Riegel, B., Lee, C. S., Albert, N., Lennie, T., Chung, M., Song, E. K., ... Moser, D. K. (2011). From novice to expert: Confidence and activity status determine heart failure self-care performance. *Nursing Research*, 60, 132-138. doi: 10.1097/ NNR.ObO13e3182O978ec
- Riegel, B., Lee, C. S., Dickson, V. V., & Carlson, B. (2009). An update on the Self-Care of Heart Failure Index. *Journal of Cardiovascular Nursing*, 24, 485-497. doi: 10.1097/JCN.0b013e3181b4baa0
- Riegel, B., Moser, D. K., Anker, S. D., Appel, L. J., Dunbar, S. B., Grady, K. L., Whellan, D. J. (2009). State of the science: Promoting self-care in persons with heart failure: A *scientific statement from the American Heart Association*. *Circulation*, 120, 1141-1163. doi: 10.1161/CIRCULATIONAHA.109.192628
- Vaglio, J., Jr, Conard, M., Poston, W. S., O'Keefe, J., Haddock, C. K., House, J., & Spertus, J. A. (2004). Testing the performance of the ENRICH social support instrument in cardiac patients. *Health and Quality of Life Outcomes*, 2, 24. doi: 10.1186/1477-7525-2-24

- Vellone, E., Riegel, B., D'Agostino, F., Fida, R., Rocco, G., Cocchieri, A., & Alvaro, R. (2013). Structural equation model testing the situation-specific theory of heart failure self-care. *Journal of Advanced Nursing*. Advance online publication, doi: 10.1111/jan.12126
- Wakefield, B. J., Ward, M. M., Holman, J. E., Ray, A., Scherubel, M., Burns, T. L., Kienzle, M. G., & Rosenthal, G. E. (2007). Evaluation of Home Telehealth Following Hospitalization for Heart Failure. *The American Tele-medicine Association*, 14(8), 753-761.
- Wheeler, E., Waterhouse, J. (2006). Telephone Interventions by nursing students: Improving Outcomes for Heart Failure Patients in the Community. *Journal of Community Health Nursing*, 23(3), 137-146.
- Woodend, K., Sherrard, H., Fraser, M., Lynne, S., Cheung, T., Struthers, C. (2008). Telehome monitoring in Patients with Cardiac Disease Who are At Risk of Readmission. *The Journal of Acute and Critical Care; Heart and Lung*, 37(1), 36-45

Table 1

## Demographic Characteristics of Patients by Group

	Control (n =21)	Intervention (n = 23)	Total
<b>Patient Sex</b>			
Female	10 (47.6%)	15(65.2%)	25(56.9%)
Male	11 (52.3%)	8 (34.8%)	19(43.1%)
Total	21 (47.8%)	23(52.2%)	44(100%)
<b>Patient Race</b>			
White	12 (57.1%)	13(56.5%)	25(56.7%)
Black	9 (42.9%)	10 (43.4%)	19(43.3%)
Total	21(47.8%)	23 (52.2%)	44(100%)
<b>Patient Age</b>			
41-50	2	2	4 (9%)
51-60	2	1	3 (7%)
61-70	7	7	14 (32%)
71-80	7	9	16 (36%)
81-90	3	4	7 (16%)
Total	21	23	44

Table 2

Comparison of Readmission Rate within 30 days of Pre and Post-Intervention Groups

Groups	Number of Readmission within 30 days	Percentage of Readmission within 30 days
Control group n=21	8	38%
Intervention group n=23	4	17.38%
Total n=44	12	55.38%

Table 3

Chi Square Test Result

Statistics	Value	Df	Asymp.sig. (2-sided)	Exact sig. (2-sided)	Exact sig. (1-sided)
Pearson Chi-Square	2.372	1	.124		
Continuity Correction	1.443	1	.230		
Likelihood Ratio	2.400	1	.121		
Fisher's Exact Test				.179	.115
Linear-by-Linear Association	2.318	1	.128		
N of Valid Cases	44				

a 0 cells (0.0%) have expected count less than 5. The minimum expected counts 5.73

b Computed only for a 2x2 table



Table 6 – Descriptive Statistics

	Variables	N	Mean	Std. Deviation	Pearson Correlation				
					1	2	3	4	5
1	Self-care (Y)	36	39.664	15.961					
2	Patient age	44	70.45	11.655	0.081				
3	Patient sex	44	0.43	0.501	0.113	.296*			
4	Patient race	44	0.43	0.501	0.037	0.101	-0.019		
5	Receive Telephone Treatment	44	0.52	0.505	0.211	0.121	-0.177	0.006	
6	Confidence	44	24.257	21.816	.813**	0.085	0.002	-0.063	.57**
* Significant at .05									
** Significant at .01									

## Appendix A

## Permission to use Self Care of Heart Failure Index

Hello Christie, you are welcome to use the SCHFI in your project. You don't actually need permission to use it but please check out the website <http://www.self-careofheartfailureindex.com/> and let me know if you have questions. Good luck in your project!

Barbara Riegel, PhD, RN, FAHA, FAAN  
Professor and Edith Clemmer Steinbright Chair of Gerontology  
Director, Biobehavioral Interest Group (BIG)  
Senior Fellow, Leonard Davis Institute  
University of Pennsylvania, School of Nursing  
Claire M. Fagin Hall  
418 Curie Boulevard  
Philadelphia, PA 19104-4217  
briegel@nursing.upenn.edu  
215-898-9927 Phone  
240-282-7707 eFax  
Editor, *The Journal of Cardiovascular Nursing*  
<http://journals.lww.com/jcnjournal/pages/default.aspx>  
<http://www.self-careofheartfailureindex.com/>

## Appendix B

**SELF-CARE OF HEART FAILURE INDEX***All answers are confidential.*

Think about how you have been feeling in the last month or since we last spoke as you complete these items.

**SECTION A:**

Listed below are common instructions given to persons with heart failure. How routinely do you do the following?

	<b>Never or rarely</b>	<b>Sometimes</b>	<b>Frequently</b>	<b>Always or daily</b>
1. Weigh yourself?	1	2	3	4
2. Check your ankles for swelling?	1	2	3	4
3. Try to avoid getting sick (e.g., flu shot, avoid ill people)?	1	2	3	4
4. Do some physical activity?	1	2	3	4
5. Keep doctor or nurse appointments?	1	2	3	4
6. Eat a low salt diet?	1	2	3	4
7. Exercise for 30 minutes?	1	2	3	4
8. Forget to take one of your medicines?	1	2	3	4
9. Ask for low salt items when eating out or visiting others?	1	2	3	4
10. Use a system (pill box, reminders) to help you remember your medicines?	1	2	3	4

**SECTION B:**

Many patients have symptoms due to their heart failure. Trouble breathing and ankle swelling are common symptoms of heart failure.

In the past month, have you had trouble breathing or ankle swelling? Circle one.

- 0) No
- 1) Yes

11. If you had trouble breathing or ankle swelling in the past month...

(circle **one** number)

	Have not had these	I did not recognize it	Not Quickly	Somewhat Quickly	Quickly	Very Quickly
How quickly did you recognize it as a symptom of heart failure?	N/A	0	1	2	3	4

Listed below are remedies that people with heart failure use. If you have trouble breathing or ankle swelling, how likely are you to try one of these remedies?

(circle **one** number for each remedy)

	Not Likely	Somewhat Likely	Likely	Very Likely
11. Reduce the salt in your diet	1	2	3	4
12. Reduce your fluid intake	1	2	3	4
13. Take an extra water pill	1	2	3	4
14. Call your doctor or nurse for guidance	1	2	3	4

15. Think of a remedy you tried the last time you had trouble breathing or ankle swelling,

(circle **one** number)

I did not try anything	Not Sure	Somewhat Sure	Sure	Very Sure

How <u>sure</u> were you that the remedy helped or did not help?	0	1	2	3	4
--	---	---	---	---	---

**SECTION C:**

In general, how confident are you that you can:

	<b>Not Confident</b>	<b>Somewhat Confident</b>	<b>Very Confident</b>	<b>Extremely Confident</b>
16. Keep yourself <u>free of heart failure symptoms</u> ?	1	2	3	4
17. <u>Follow the treatment advice</u> you have been given?	1	2	3	4
18. <u>Evaluate the importance</u> of your symptoms?	1	2	3	4
19. <u>Recognize changes</u> in your health if they occur?	1	2	3	4
20. <u>Do something</u> that will relieve your symptoms?	1	2	3	4
21. <u>Evaluate</u> how well a remedy works?	1	2	3	4

Designed by: [Metatechnical](#) Contact [Dr. Barbara Riegel](#)

## Appendix C

## Consent to contact form

---

**Patient's name:**

**The Ellicott City Health and Rehabilitation Center in conjunction with Five Star Physicians Group is implementing a new initiative to follow-up with patients via phone who have been discharge to assist with managing your care post-discharge. We invite you to take part in a quality improvement project which seeks to contact you via phone from June to July 2016**

**The purpose of this project is:**

**This quality improvement project purpose is to design, implement and evaluate an NP telephone follow-up policy for heart failure patients discharge from this rehabilitation center to a home setting**

**We are asking your permission to allow a student working with our practice to contact you after our discharge as part of a quality improvement initiative. We will review the effectiveness of this initiative to determine it helped improved care of our patients and implement practice changes. You do not need to allow us to contact you for this purpose after discharge.**

**Name**

**Signature**

**Date**

Appendix D

Data Tracking Information Sheet

Will be placed on Excel spreadsheet

Patient identification number

Was phone call successful? Yes or No

Did the patient have a readmission? Yes or No

## Appendix E

## Introduction statement

Good day may I please speak to Patient name here. My name is Christie Simon-Waterman. I am the DNP student who will be conducting your weekly telephone calls. How are you today? I will be asking you some specific questions from a tool call the Self Care of Heart Failure Index. These questions should take about five minutes. You will receive a call from me again on the same day around the same time next week for three more weeks after today. You will be provided with the instructions at the beginning of every session on what the required answers could be. Thank you for agreeing to participate in this project.