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Inpatient Education of Heart Failure Patients: Do Patients Retain Knowledge and Does it Help in Preventing Readmissions?

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Inpatient Education of Heart Failure Patients: Do Patients Retain Knowledge and Does it Help in Preventing Readmissions?

by

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THESIS

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Abstract

Background: Heart failure (HF) is a chronic and costly condition that affects approximately 5.8 million people in the United States with an additional 670,000 diagnosed each year. With a 30-day hospital readmission rate of 21%, the importance of determining effective means of preventing readmissions is imperative. Despite published guidelines emphasizing the importance of education in preventing readmissions, the most effective means of educating hospitalized patients with HF about their self-care remains unknown.

Objective: The objective of this study was to determine if hospitalized HF patients educated with the teach-back method retain self-care educational information and whether it is associated with fewer hospital readmissions.

Methods: A prospective cohort study design was utilized and included 276 patients hospitalized with HF over a 13-month period. Patients were educated and evaluated using the teach-back method as part of usual care. Data were collected related to their ability to recall educational information while hospitalized and during follow-up approximately seven days after hospital discharge. Readmissions were confirmed through follow-up phone calls and review of electronic medical records.

Results: Patients correctly answered three out of four or 75% of self-care teach-back questions 84.4% of the time while hospitalized and 77.1% of the time during follow-up phone call. More time spent teaching was significantly associated with correctly answered questions ($p<0.001$). Patients answering teach-back questions correctly while hospitalized and during follow-up had non-significant ($p=0.775$ and $p=0.609$) reductions in all-cause 30-day hospital readmission rates but a trend toward significance ($p=0.15$) was found in patients who had readmissions for HF.

Conclusions: The teach-back method is an effective method and tool to assess learning in hospitalized HF patients. Patients whose education is over a longer period retain significantly more information than those with briefer teaching. Correctly answering HF specific teach-back questions is not associated with reductions in 30-day hospital readmission rates. Future studies that include patients randomized to receive usual care or teach-back education to compare readmissions, deaths, and knowledge acquisition would provide an educational comparison between the groups.

Key Words: heart failure, inpatient, education, readmission, teach-back

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Background

Despite advances in technology and medical therapy, heart failure (HF) readmission rates remain high. In fact, a recent analysis of data from more than 30,000 patients aged 65 years and older admitted for HF demonstrated a 30-day readmission rate of 21%.[1] Approximately 5.8 million people in the United States have HF, and each year an additional 670,000 are newly diagnosed. The cost of HF in 2009 was $37.2 billion dollars, accounting for the largest single Medicare expenditure. With a one in five lifetime risk of developing HF, these numbers will continue to rise. [2]

It has been estimated that up to half of all HF readmissions are preventable.[3] Lack of compliance with medications, failure to adhere to a reduced sodium diet, and delays in seeking medical attention are among the primary reasons related to rehospitalization.[4]

The need for HF education prior to hospital discharge is well documented. Among others, the American Heart Association and The Joint Commission have guidelines in place promoting the benefit of education to prevent hospital readmissions.[5,6] The recommended patient education topics include: activity level, adherence to prescribed medications, low sodium diet, importance of weighing daily, and signs/symptoms that warrant provider/physician notification.[5,6]

Studies have been published involving education of hospitalized HF patients.[7-11] However, most of these studies do not use a specific method to educate patients and far fewer evaluate comprehension. Also, nearly all involve some form of post-discharge support. Thus, the optimal method for ensuring adequate retention of in-hospital educational information remains unclear.

Conceptual Model

One method of educating patients about their self-care is called teach-back.[12-14] The concept underpinning teach-back education involves asking patients to restate information that has been presented to them. This technique (Figure 1) allows the educator to check for lapses in recall and understanding, reinforce and tailor messages, and engage in an open dialogue with patients.[12] Ensuring recall and comprehension is especially important for patients with chronic health conditions such as HF, because of the complex treatment regimens, medication schedules, and importance of self-monitoring for changes in health status.[12] Teach-back education can serve as a method of education *and* a tool to assess learning.

Teach-back Education Studies

Kripalani et al (2008) demonstrated that teach-back was an effective and efficient method to assess retention of informed consent for research participation in a study of low-literacy adults with coronary heart disease.[13] Research has shown that prospective research participants understand just 30-81% of information contained in standard consent forms.[15] Kripalani and colleagues found that participants were able to correctly teach-back consent and privacy information on the first attempt 57-93% of time.[13] Patients answering incorrectly were further educated, and all patients eventually demonstrated understanding of the consent information. The researchers concluded that asking participants to teach-back information allowed immediate determination of how well information was understood, and provided an opportunity to repeat information until understanding was achieved.[13]

In 2008, Wilson et al. [14] used teach-back to assess recall of polio and pneumonia immunization information in a small study of low-income and low-literacy mothers. Despite receiving handouts and verbal instruction, the mothers (n=30) were only able to correctly

teach-back the information 21-79% of the time. The authors concluded that the inconsistency of the mothers to communicate critical vaccine information indicated the need to further assist parents in understanding vaccine information.[14] More importantly, significant knowledge gaps cannot be identified if healthcare providers do not ask patients to teach-back information

The teach-back method of education has also been referred to as "closing the loop."[12] In 2003, Schillinger and colleagues [12] conducted an observational study involving 38 physicians and 74 low-literacy patients with diabetes. The primary aim was to measure the extent of which patient recall and comprehension of new concepts was assessed during outpatient encounters. The researchers found that the physicians assessed recall and comprehension in just 20% (n=12) of the 61 visits and 12% (n=15) of the 124 new concepts. Patients whose physicians assessed recall and comprehension were more likely to have hemoglobin A1C levels below the mean of 8.6 (odds ratio, 8.96; 95% confidence interval, 1.1-74.9) (P = .02). Also, patient's whose physicians used this interactive education strategy were more likely to obtain better glycemic control regardless of differences in literacy levels.[12] These findings help demonstrate the usefulness of the teach-back method as a teaching tool and method of assessing comprehension.

Teach-back is endorsed by the National Quality Forum [16] as the preferred method for confirming understanding of consent information, but the authors are unaware of any research study that examines the teach-back method of educating adults hospitalized with HF.

Research Questions

Therefore, the purpose of this study was to determine if hospitalized HF patients educated using the teach-back method retain self-care information and whether teach-back education was associated with hospital readmissions. Specific research questions were:

(1) What are the characteristics of patients who answered teach-back questions correctly (as defined by answering three out of four teach-back questions correctly) while hospitalized;

(2) What are the characteristics of patients who answered teach-back questions correctly at home during a follow-up phone call;

(3) Is there a relationship between the amount of time spent teaching and correctly answered teach-back questions while hospitalized;

(4) Is there an association between correctly answered teach-back questions and 30-day hospital readmission rates?

Methods

Study Sample and Setting

Study participants included hospitalized HF patients 65 years and older admitted to the cardiology and medical services at the University of California, San Francisco Medical Center. The Institutional Review Board (IRB) approved the study. Individual consent for participation was not required as all patients received this patient education as part of their usual care. Inclusion criteria were patients with HF patients admitted to the medical or cardiology services that had a primary or secondary diagnosis of heart failure who were age 65 and older. Exclusion criteria included: severe cognitive impairment as judged by orientation times one (time, place, or person) or severe dementia noted in the medical record.

Data collection occurred between July, 2009 and August, 2010 and a total of 397 patients were screened for eligibility. Sixteen patients died during their index visit leaving 381 patients eligible for teach-back education and 105 patients did not receive the teach-back education and questions. The most common reasons for not receiving teach-back education include: death during index admission, refusal to participate, and short hospital stay defined as less than 24 hours.

A total of 276 patients were included in the study. Demographic data are found in Table 1. Of the 276 patients who received teach-back in the hospital 188 received teach-back at home within seven days of hospital discharge. Reasons for non-participation in follow-up self-care education were: death, inability to read, unable to contact or refusal to participate, and transfer to another hospital.

Study Design

Either an Advanced Practice Nurse or a Bachelor's degree-prepared Registered Nurse educated patients during their hospitalization for HF. The education intervention lasted an average of 34 minutes but ranged from 15 to 120 minutes. At the completion of the education session, patients were asked to teach-back the information that had been presented to them at that time. The 4 teach-back questions were:

(1) What is the name of your water pill?

(2) How much weight gain would you want to report to your MD?

(3) What high-salt foods do you need to avoid/be aware of?

(4) Please name 3-4 symptoms in the yellow zone (warning signs of when you want to call the MD)?

Patients' recall of the teach-back questions was then assessed via follow up phone call at approximately 7 days following discharge. Patients with incorrect responses were then reeducated. Each patient who received teach-back education also received handouts that corresponded to each of the teach-back questions. The handouts were developed by an interdisciplinary team using American Heart Association guidelines and are available in English, Spanish, Tagalog, Russian, and Cantonese. Family members and caregivers were also educated when available and willing to participate. We are unable to quantify the number of patients with family members present for teaching as the families were not the focus of our education intervention.

Measurement

The two nurses who provided the education learned the teach-back method of education during a two-day course offered through the Institute for Healthcare Improvement.[17] This insured the consistency of information presented to patients. The nurses worked together to develop a database of patient demographics to identify patients in need of HF education. Documentation of time spent teaching, topics covered, and patient responses were collected. This made retrieval of data reliable and served as a prompt to cover all education topics with all patients. Some patients did not receive all educational topics if they were deemed unnecessary. For instance, if patients were not taking Furosemide at home, they did not receive the education related to naming their water pill. Also, patients receiving outpatient hemodialysis did not receive education related to reporting specific weight gain to their MD.

Heart failure specific education was provided to the patients and included information related to: activity level, rationale for fluid and sodium restrictions, importance of adherence

to pharmacological therapies, rationale for daily weights, cigarette cessation (when appropriate), and signs and symptoms warranting provider notification. Patients' family members, caregivers, and/or support persons were also educated when available.

Learning was assessed using the four teach-back questions at the conclusion of the educational session. Patients with incorrect responses were provided further education until understanding was achieved. Learning was again assessed via follow-up phone call at approximately seven days following hospital discharge. The calls were intended to assess retention of learning, but patients answering incorrectly were provided with further education until understanding was achieved.

Data Analysis

All data were analyzed using SPSS statistical software version 18.0. A researcher (MW) not involved with the patient education process completed the data analysis. Alpha levels were pre-set at $p<0.05$ and confidence intervals (CI) were set at 95%.

Descriptive statistics were used to examine demographic and clinical characteristics. Frequencies were utilized to determine the number of correctly answered teach-back questions. To determine patient characteristics associated with correctly answered questions Chi-square for categorical data, Fisher's exact test for dichotomous data, and Student's t-tests to compare quantitative data were utilized. A McNemar test was utilized when comparing the proportion of patients who answered correctly while hospitalized and then on follow-up. Correctly answering teach-back questions was defined as correctly answering 75-100% or three to four of the self-care teach-back questions.

Information related to rehospitalization events was collected during follow up phone calls and from the electronic medical record. Causes for readmissions were stratified using

the electronic medical record. Mortality was assessed using the electronic medical record and the Social Security Death Index. [18]

Results

Characteristics of the sample are seen in Table 1. The mean age was 80 years and slightly more than half were female. Although 85% (n=235) of our patients were alert and oriented to person, place, and time only 31% (n=86) were independent with their activities of daily living prior to admission. Despite their level of dependence 81.5% (n=225) were discharged home with varying degrees of support from family, home health, or alone. Almost 19% (n=52) of our study sample died during the 15-month follow-up period although just 19% had a Do Not Resuscitate (DNR) order.

Teach-back Effectiveness

Patients correctly answered three out of four or 75% of the teach-back questions 84.4% (n=233) of the time while hospitalized and 77.1% (n=145) of the time during follow-up (Table 2, Table 3). The teach-back question most often answered incorrectly while hospitalized was “Please name 3-4 symptoms in the yellow zone” which was answered incorrectly 21% (n=51) of the time (Figure 2). The teach-back question most often answered incorrectly during follow-up was “How much weight gain would you report to your MD?” which was answered incorrectly 25% (n=41) of the time.

The teach-back question most often answered correctly during hospitalization and follow-up was “What high-salt foods do you need to avoid/be aware of?” This question was answered correctly 98% (n=271) of the time during hospitalization and 99% (n=181) of the time during follow-up. Significantly more patients answered the teach-back question “How much weight gain would you want to report to your MD?” correctly during hospitalization

when compared to follow-up (86% and 75%, p=0.001). Patients discharged to a skilled nursing facility answered significantly fewer (p=0.05) teach-back questions correctly while hospitalized. Patients who were oriented only to time or place or person (times 2) answered incorrectly significantly more often during follow-up (p=0.037).

Time Spent Teaching

The amount of time-spent teaching was significantly ($p<0.001$) associated with the patient's ability to correctly answer the teach-back information. The 233 patients who answered correctly while hospitalized received a mean education time of 36 minutes (SD 13.66). The 42 patients answering incorrectly while hospitalized received a mean education time of 28 minutes (SD 10.43). All 17 patients who received ≥60 minutes of education correctly answered the teach-back questions while hospitalized. Analysis of patients answering teach-back during follow-up was also significant (p=0.023) for time-spent teaching while hospitalized. The 145 patients answering correctly received a mean education time 37 minutes (SD 14.78), and the 42 patients who answered incorrectly during follow-up received a mean education time of 32 minutes (SD 9.69). All 14 patients who received education lasting ≥60 minutes of education answered teach-back questions correctly during follow-up.

Readmissions

Correctly answering teach-back questions was not associated with reduced hospital readmissions (p=0.775). Thirty days after discharge 14.9% (n=41) of the 276 patients were readmitted. HF-specific readmissions occurred in 3.3% (n=9) of the sample. Readmissions occurred in 16.3% (n=7) of patients answering incorrectly and 14.6% (n=34) of patients answering correctly while hospitalized (p=0.464). Readmissions occurred in 16.3% (n=7) of

patients answering incorrectly and 12.4% (n=18) of patients answering correctly during follow-up (p=0.609).

Discussion

In this study of older adults hospitalized with HF the data showed: (1) the teach-back method is an effective method for teaching self-care; (2) correctly answered questions are associated with significantly longer time spent teaching; and (3) correctly answering teach-back questions is not associated with lower hospital readmission rates. The study sample was able to correctly answer the HF specific teach-back questions at a rate of 84.4% prior to hospital discharge, and 77.1% of the time during follow-up. Characteristics of patients who answered correctly versus incorrectly were not significantly different with two exceptions: 1) Patients who were discharged to a skilled nursing facility answered incorrectly more often and; 2) Patients who were oriented times two answered incorrectly more often. Overall comprehension of the teach-back education was remarkable despite the patients' older age and level of disability.

Signs and symptoms warranting provider notification was the teach-back question most often incorrectly answered while hospitalized, and when to report weight gain was most often answered incorrectly during follow-up. These findings are noteworthy as it is common for HF patients to delay seeking medical attention when symptoms worsen.[4] Schiff et al. [19] (2003) found that worsening HF symptoms are often present for days to weeks before patients are hospitalized for HF exacerbations. If providers are aware of a patient's symptom progression preventable hospital readmissions may be avoided. Although patients may not want to acknowledge weight gain when to report weight gain is an essential teaching point to stress to patients during an inpatient educational session to avert a possible hospitalization.

In addition, when to report weight gain was the only teach-back question associated with significant loss of retention from time of hospitalization to follow-up. Indeed, these data suggest that patients do not retain information that could potentially prevent a HF readmission. Ni et al. [20] (1999) found that 17% of patients did not know whether to weigh themselves daily and 22% thought weighing themselves daily was not important. Together, these findings indicate that daily weight monitoring is an uncommon practice among HF patients. Further, failure to report weight gain may lead to an objective sign of volume overload not being relayed to a patient's MD.

Cacciatore et al. [21] (1998) found that cognitive impairment was independently associated with HF in a study of patients older than 65 years. Similarly, we found patients that were alert and oriented times two answered teach-back questions incorrectly significantly more often during follow-up. Whether or not the teach-back method of education is of benefit to patients with cognitive impairment (as defined by alert and oriented times two) requires further study. We involved the family members and/or caretakers in the education of patients with cognitive impairment when they were available and willing to participate.

While individual patient characteristics (i.e. health literacy, ability to read or see, language, disease status, and cognitive status) undoubtedly contribute to knowledge acquisition the required length of time for teach-back is not known. Koelling et al. [9] (2005) found significant reductions in HF readmissions after the addition of a one-hour one-on-one education intervention, but data related to assessment of learning was not reported. Gwadry-Sridhar et al. [10] (2005) found that the addition of a 2.5-hour multidisciplinary education intervention delivered just prior to or immediately following discharge led to higher

knowledge levels in HF patients. The knowledge changes were evident immediately following the education and were sustained over the one-year follow-up. However, the authors did not examine 30-day readmission rates so it is not known whether the knowledge acquisition led to important changes in patient outcomes such as reduced readmissions.

In this study patients who received longer education times were more likely to correctly answer teach-back questions. Also, all patients who received self-care education lasting ≥60 minutes correctly answered the teach-back questions while hospitalized and during follow-up. No data are published that report the length of time needed for effective use of the teach-back method, but Schillinger et al. [12] (2003) have noted that the average visit time between physicians assessing recall of learning did not increase significantly over physicians who did not assess learning recall. Given our findings, adequate staffing to allow for patient teaching is required to ensure HF patients achieve knowledge acquisition using the teach-back education method. The advantage of the teach-back method is that, ultimately, the length of the education session is determined by the patient's ability to correctly recall the information that has been presented to them allowing flexibility in nursing time.

We found no significant difference in 30-day hospital all-cause readmission rates among the patients answering correctly while hospitalized or during follow-up. In addition, we found no significant difference in relation to 30-day hospital readmission rates for HF among the patients answering correctly. However, there was a trend towards significance ($p=0.15$). Koelling et al. [9] (2005) were the first to demonstrate that a patient-targeted educational intervention delivered only at the time of discharge leads to decreased readmissions in HF patients. They found a 51% reduction in rehospitalizations for HF during the 180-day follow-up.

Our all-cause 30-day readmission rate was noted to be 14.9% while our HF-specific readmission rate was only 3.3%. Recently published studies place the 30-day all-cause readmission rate for HF patients at approximately 21-23%.[1,22] In their study of 122,630 HF patients age ≥65 years, Braunstein et al. [23] (2003) found the presence of noncardiac chronic diseases increased both the risk of hospitalization and potentially preventable hospitalizations. These risks increased with the number of chronic conditions present. Hypertension, COPD, and chronic renal failure were the comorbidities identified with the highest risks of hospitalization in HF patients older than 65 years. They also noted that 50% of all hospitalizations were potentially preventable, and that HF accounted for 55% of these potentially preventable hospitalizations. Hypertension (60.9%), COPD (15.9%), and chronic renal failure (8%) were present in a similar proportion of our patients. Of our 41 hospital readmissions, only 3.3% (n=9) were readmissions for HF exacerbation. The frailty of our study population is best demonstrated by their mean age of 80 years and an 18.8% mortality rate within 15 months following their index hospitalization. Further, only 31% were independent with their activities of daily living at baseline.

Limitations

This study has several limitations. The lack of a control group prevented a comparison to those not receiving the teach-back method. At the time of this study our facility had already incorporated teach-back as usual care and our readmission rate for HF was very low (3.3%). Data were not available during follow-up teach-back for 88 patients. Despite our efforts, these patients were unable to participate because of: death, inability to read, unable to contact or refusal to participate, and transfer to another hospital or skilled nursing facility.

One challenge of the teach-back method that should be noted is that it is difficult to control the fidelity of procedures due to the interactive and open nature of the teach-back method. The nurse providing the education using the teach-back method must also assess retention of learning and, when necessary, provide supplemental education until learning is achieved leaving the potential for bias. In addition, education received from other nurses, physicians, and/or nutritionists as part of usual care was neither quantified nor controlled for in this study. Despite these limitations, this is the first study to examine the effect of the teach-back method that was provided to hospitalized HF patients and presents a beginning understanding about the effectiveness of teach-back in an older hospitalized HF population

Future Studies

Future studies that include patients randomized to receive usual care or teach-back education to compare readmissions, deaths, and knowledge acquisition would provide an educational comparison between the two groups. Moreover, a study of this design would provide further insight into the ability of the teach-back method to provide both a method of education and a tool to assess learning in patients hospitalized for HF. Adequate time required for education of hospitalized HF patients using the teach-back method is also needed. Testing whether there is a relationship between teach-back education and adherence is an additional area for future exploration.

Conclusion

The teach-back method is an effective method of providing HF education. It provides a tool to assess learning in hospitalized HF patients and the learning extends into the home where actual utilization of the content must take place. Patients educated for longer periods of time retain significantly more information than patients educated with shorter educational

times. While correctly answering HF specific teach-back questions is not associated with reductions in 30-day hospital readmission rates there was a trend toward significance in patients who were rehospitalized for HF.

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FIGURE 1

The interactive communication loop in clinician-patient education

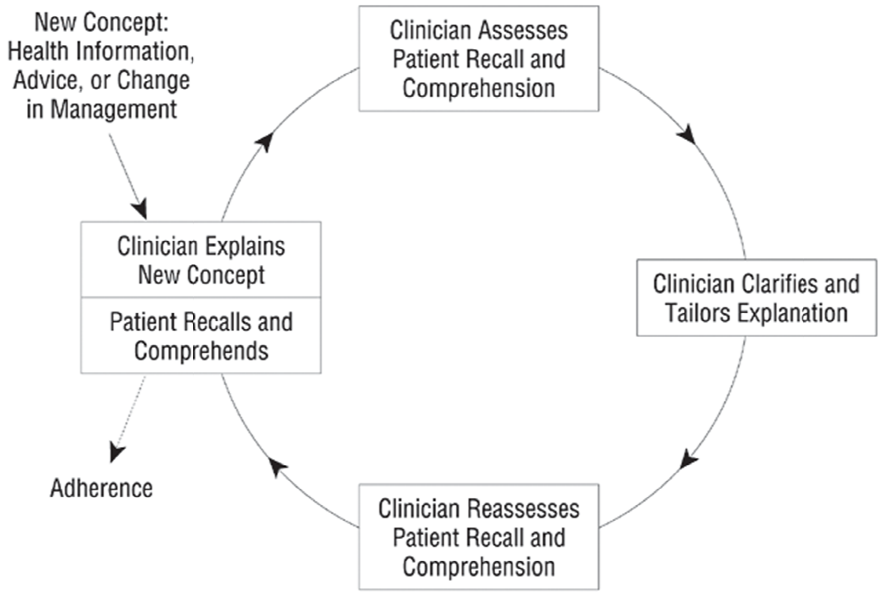

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Table 1.
Patient Characteristics

characteristic	value
Age, years n=276	80.2 ± 8.9
Women n (%)	153 (55.4%)
EF <60%, n (%)	97 (35.3%)
Alert and Oriented n (%)	235 (85.1%)
Independent with activities of daily living n (%)	86 (31.2%)
On Home Oxygen n (%)	34 (12.3%)
DNR, n (%)	54 (19.6%)
Time spent on teach-back, min (SD) n=275	34.4 ± 13.5
Discharged to home n (%)	225 (81.5%)
Rehospitalized within 30days of discharge n (%)	41 (14.9%)
Rehospitalized within 30days of discharge for HF n (%)	9 (3.3%)
Died after hospitalization n (%)	52 (18.8%)
BNP, pg/dL (SD) n=149	975.6 ± 986.3
Hemoglobin, mg/dL (SD) n=183	11.34 ± 1.7
Serum sodium, mEq/L (SD) n=182	137.07 ± 3.7
Past Medical History of Hypertension n (%)	168 (60.9%)
Past Medical History of End-stage Renal Disease n (%)	22 (8%)
Past Medical History of Diabetes Mellitus n (%)	96 (34.8%)
Past Medical History of COPD n (%)	44 (15.9%)

Table 2

Characteristics of patients answering teach-back while hospitalized

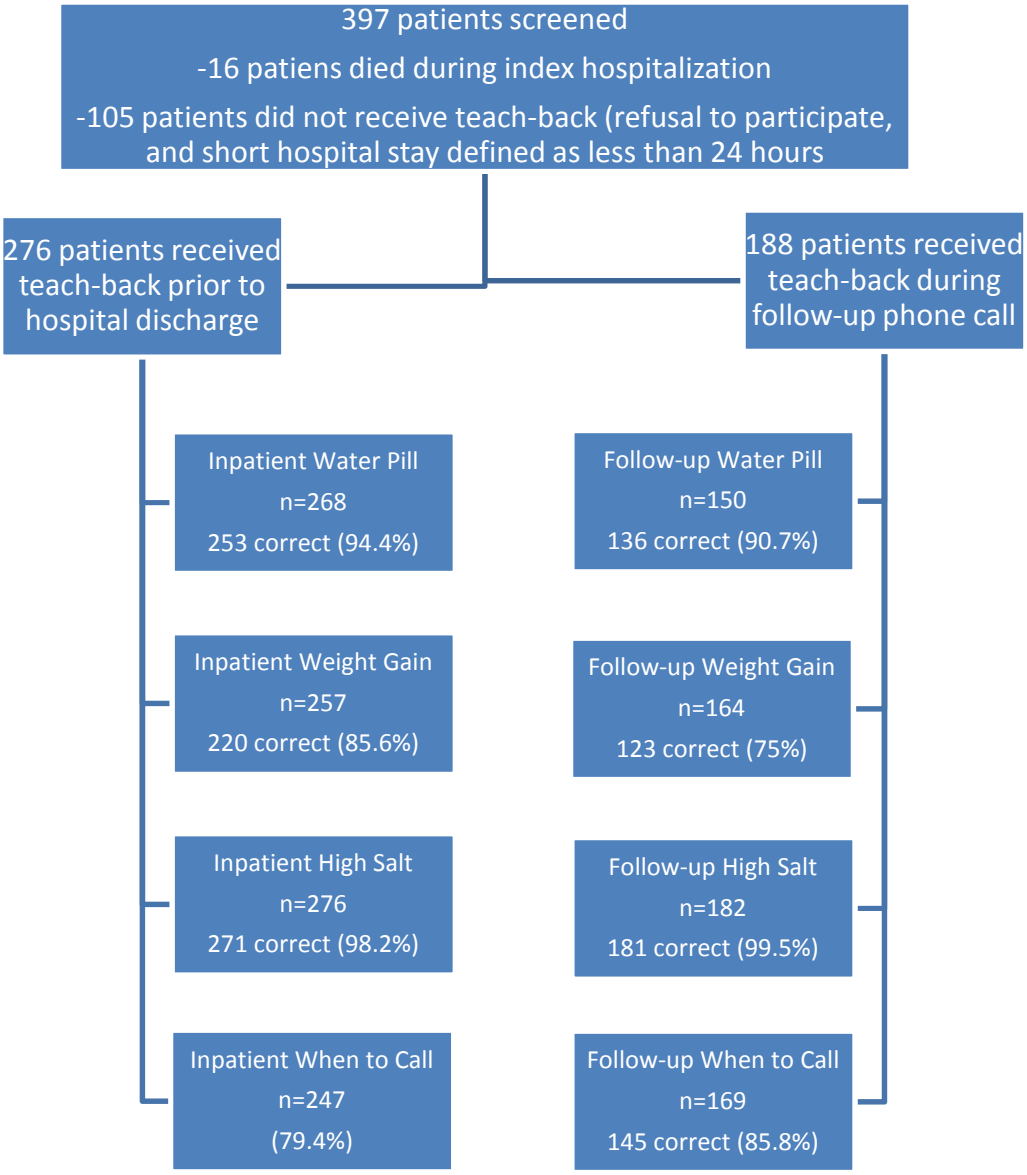
	Total N=276	**Answered Teach-Back Incorrectly**	**Answered Correctly**	**p value**
	N=276	n=43 15.6%	n=233 84.4%	
n=276	Age in years at admission	n=43 mean=82.27 SD 9.5	n=233 mean 79.78 SD 8.7	0.90
n=276	Male n=123 Female n=153	n=15 12.2% n=28 18.3%	n=108 87.8% n=125 81.7%	0.184
n=252	Systolic HF n=97 Not Systolic HF n=155	n=19 19.6% n=22 14.2%	n=78 80.4% n=133 85.8%	0.294
n=267	Alert n=235 Not Alert n=32	n=36 15.3% n=5 15.6%	n=199 84.7% n=27 84.4%	1.000
n=262	Independent at baseline n=86 Not Independent n=176	n=10 11.6% n=31 17.5%	n=76 88.4% n=146 82.5%	0.277
n=271	Do Not Resuscitate n=54 Full-Code n=217	n=9 16.7% n=34 15.7%	n=45 83.3% n=183 84.3%	0.837
n=275	Minutes spent on teach-back	n=42 Mean 27.5 SD 10.4	n=233 mean 35.60 SD 13.7	**<0.001**
n=267	D/C to home n=225 D/C to Nursing Facility n=42	n=28 12.4% n=13 31%	n=197 87.6% n=29 69%	**0.005**
n=208	D/C with follow-up appointment n=165 D/C without follow-up n=42	n=23 13.9% n=4 9.5%	n=142 86.1% n=38 90.5%	0.66
n=276	Rehospitalized within 30 days n=41 Not Rehospitalized n=235	n=17 17.1% n=36 15.3%	n=34 82.9% n=199 84.7%	0.464
n=276	Rehospitalized within 30 days for HF n=9 Not Rehospitalized for HF n=267	n=3 33% n=40 15%	n=6 66.7% n=227 85%	0.15
n=276	Died after visit n=52 Alive as of 11/10 n=224	n=12 23.1% n=31f 13.8%	n=40 76.9% n=193 86.2%	0.135
n=149	BNP at admission	n=25 mean=964.8 SD=1.2	n=124 mean=982.6 SD=956.18	0.935
n=183	Hgb at discharge	n=27 mean=11.1 SD=1.6	n=156 mean=11.4 SD=1.8	0.381
n=182	Serum Na+ at discharge	n=27 mean=137.52 SD=3.6	n=155 mean=137 SD=3.8	0.500

Table 3

Characteristics of patients answering teach-back during follow-up

	Total N=188	Answered Teach-Back Incorrectly	Answered Correctly	p value
	N=188	n=43 22.9%	n=145 77.1%	
n=188	Age in years at admission	n=43 mean=80.89 SD=10	n=145 mean=80.19 SD=8.94	0.663
n=188	Male n=80	n=16 20%	n=64 80%	0.484
	Female n=108	n=27 25%	n=81 75%	
n=176	Systolic HF n=65	n=14 21.5%	n=51 78.5%	0.715
	Not Systolic HF n=111	n=27 24.3%	n=84 75.7%	
n=181	Alert n=163	n=34 20.9%	n=129 79.1%	**0.037**
	Not Alert n=18	n=8 44.4%	n=10 55.6%	
n=180	Independent at baseline n=66	n=13 19.7%	n=53 80.3%	0.465
	Not Independent n=114	n=29 25.4%	n=85 74.6%	
n=185	DNR n=36	n=10 27.8%	n=26 72.2%	0.511
	Full-Code n=149	n=33 22.1%	n=116 77.9%	
n=187	Minutes spent on teach-back	n=42 mean=32.14 SD=9.70	n=145 mean=36.62 SD=14.78	**0.023**
n=184	D/C to home n=179	n=40 22.3%	n=139 77.7%	0.321
	D/C to Nursing Facility n=5	n=2 40%	n=3 60%	
n=171	D/C with follow-up appointment n=136	n=27 19.9%	n=109 80.1%	0.240
	D/C without follow-up n=33	n=10 30.3%	n=23 69.7%	
n=188	Rehospitalized within 30 days n=25	n=7 28%	n=18 72%	0.609
	Not Rehospitalized n=163	n=36 22.1%	n=127 77.9%	
n=188	Died after visit n=27	n=5 18.5%	n=22 81.5%	0.805
	Alive as of 11/10 n=161	n=38 23.6%	n=123 76.4%	
n=103	BNP at admission	n=21 mean=841.90 SD=698.33	n=82 mean=971.71 SD=969.68	0.566
n=126	Hgb at discharge	n=30 mean=11.59 SD=1.65	n=96 mean=11.31 SD=1.67	0.422
n=126	Serum Na+ at discharge	n=30 mean=137.13 SD=3.40	n=96 mean=137.44 SD=3.64	0.686

Figure 2 Flow of patients through the study



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