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“Teach to Goal”: Theory and Design Principles of an Intervention to Improve Heart Failure Self-Management Skills of Patients with Low Health Literacy

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Abstract

Self-management is vital for achieving optimal health outcomes for patients with heart failure (HF). We sought to develop an intervention to improve self-management skills and behaviors for patients with HF, especially those with low health literacy. Individuals with low health literacy have difficulty reading and understanding written information and comprehending numerical information and performing calculations, and they tend to have worse baseline knowledge, short-term memory, and working memory compared to individuals with higher health literacy. This paper describes theoretical models that suggest methods to improve the design of educational curricula and programs for low literate audiences, including cognitive load theory and learning

mastery theory. We also outline the practical guiding principles for designing our intervention, which includes a multi-session educational strategy that teaches patients self-care skills until they reach behavioral goals (“Teach to Goal”). Our intervention strategy is being tested in a randomized controlled trial to determine if it is superior to a single-session brief educational intervention for reducing hospitalization and death. If this trial shows that the “Teach to Goal” approach is superior, this would support the value of incorporating these design principles into educational interventions for other diseases.

Heart failure (HF) affects 5 million people in the US, causing 266,000 deaths and costing \$25.8 billion annually. (American Heart Association. Heart Disease and Stroke Statistics—2004 Update. Dallas) Optimal medical care can significantly reduce the morbidity and mortality associated with this condition. (Hunt 2005) In addition, patient self-management plays a critical role. Self-management training teaches self-care skills and reinforces behaviors, including recognizing symptoms of worsening HF, monitoring weight, restricting dietary salt, exercising, adhering to medications, and implementing plans for what to do in the event of a HF exacerbation. Of 29 trials examining HF disease management programs, (McAlister, Stewart et al. 2004) the four that taught patients self-management skills reduced HF-specific hospitalizations by 33%. (Serxner S 1998; Jaarsma, Halfens et al. 1999; Harrison, Browne et al. 2002; Krumholz, Amatruda et al. 2002) This suggests that teaching self-management skills should be a fundamental goal for HF care. However, few health systems systematically teach HF self-management skills, and few studies have examined optimal educational strategies.

Some patients may struggle to learn and perform self-care, especially those with low health literacy. The American Medical Association's (AMA) Ad Hoc Committee on Health Literacy defined *functional health literacy* as, “the ability to read and comprehend prescription bottles, appointment slips, and the other essential health-related materials required to successfully function as a patient.” (1999) Low health literacy is an independent risk factor for both all-cause hospitalization, (Baker, Parker et al. 1998; Baker, Gazmararian et al. 2002) HF-specific hospitalization, (Murray, Tu et al. 2009) overall mortality, (Baker, Wolf et al. 2007) and cardiovascular mortality. (Baker, Wolf et al. 2007) Health literacy is an important consideration for HF self-management education programs, because both HF and inadequate literacy are common among the elderly. (Gazmararian, Baker et al. 1999; McCullough, Philbin et al. 2002)

Few studies have examined the effectiveness of different strategies to improve HF self-management skills among patients with low health literacy. None of the four studies of self-management training cited above measured patients' health literacy. One pilot study tested an intervention specifically designed to improve self-management among patients with HF and low literacy. (DeWalt, Malone et al. 2006) Participants (N=123) were randomly assigned to receive a multifaceted HF self-management training intervention versus an HF educational brochure (written at the 7th grade level); 41% had inadequate literacy. The intervention included an initial one-hour educational session with a trained health educator, a digital bathroom scale, an educational notebook, and a series of 6 follow-up telephone calls over 2 months followed by monthly calls for 10 months to reinforce the educational messages. The intervention increased HF-related knowledge (+12%), self-reported daily weight measurement (88% vs. 21%), and HF-related self-efficacy. The intervention reduced the combined endpoint of hospitalization or death by 44%. Participants with low literacy appeared to benefit as much or more than those with adequate literacy. However, the study was conducted at a single site, and the differences in hospitalization or death only barely reached statistical significance.

To examine the benefits of self-management training for patients with HF and low health literacy, we are conducting a multi-site, randomized trial to determine whether: 1) a literacy-sensitive, multi-session educational intervention that teaches patients HF self-care skills until they reach learning goals (“Teach to Goal” – TTG) is superior to a single-session Brief Educational Intervention (BEI) for the combined outcome of hospitalization or death over 1 year; and 2) whether patients with lower literacy skills benefit equally from the intervention compared to those with higher literacy. In addition, we will determine if the TTG is more effective than the BEI for improving knowledge, self-care behaviors, and HF-related quality of life. The general, overall study design is described elsewhere. (DeWalt, Broucksou et al. 2009) This paper goes into much greater depth about the design of the TTG intervention. We discuss the challenges in teaching individuals with low health literacy, the theoretical considerations in the design of educational curricula and programs for low literate audiences, and the practical guiding principles for the design of our HF self-management educational curriculum, materials, and longitudinal education methods. We conclude with a description of our evaluation plan and the implications of this for future investigations.

Challenges in Teaching Individuals with Low Health Literacy

There are a variety of challenges in teaching individuals with low health literacy. The first is obvious: They have limited reading fluency. These individuals typically read slowly and struggle with individual words and phrases, so that by the end of a sentence or paragraph they have lost the meaning. Consequently, overall comprehension of written health education materials is poor. These individuals also usually have low numeracy and have difficulty understanding and using numerical information and performing basic math skills. Numeracy is needed for many health-related activities, such as understanding the correct timing and dosing of medications, understanding risk and risk-benefit information, and understanding whether a measured value is within a recommended range. (Apter, Paasche-Orlow et al. 2008; Lipkus and Peters 2009) The latter is particularly important for HF self-management, because patients are often told to weigh themselves daily and are given action plans if their weight changes by a certain amount (e.g., take two diuretic pills instead of one if your weight increases by four or more pounds above baseline).

Much has been written about how to optimally design written materials for low-literate audiences, including the use of simpler words, shorter sentences, proper syntax, and appropriate graphics to illustrate key points. (Doak 1996) However, studies have shown that well-designed print education materials result in only small knowledge gains compared to materials that do not meet these design principles. (Davis, Fredrickson et al. 1998) Multimedia tools also have often achieved relatively small increases in knowledge, or none at all. (Meade, McKinney et al. 1994) Recent studies suggest some possible reasons why prior educational programs have had limited success and how to improve upon them. The challenges of teaching low-literate patients go far beyond the simple principles that have been emphasized in the literature up until now. As a group, individuals with low literacy levels have worse short-term memory and working memory compared to individuals with higher literacy. (Baker, Gazmararian et al. 2002; Morrow, Clark et al. 2006; Levinthal, Morrow et al. 2008; Federman, Sano et al. 2009) Working memory is the ability to manipulate information stored in short-term memory, (Baddeley 2003) and this is discussed in detail below. For example, in a study of patients 65 years of age and older, those with inadequate literacy were less likely to be able to recall 3 spoken items (“apple”, “penny”, and “table”) and less likely to be able to follow 3-step oral instructions (“Take the paper in your right hand. Fold the paper in half. Put the paper on the floor”). (Baker, Gazmararian et al. 2002)

But perhaps the most important challenge in teaching individuals with low literacy is that they are likely to have far less knowledge of basic anatomy, biology, and disease processes. (Williams, Baker et al. 1998; Williams, Baker et al. 1998; Gazmararian, Williams et al. 2003; Kandula, Nsiah-Kumi et al. 2009) Baseline knowledge facilitates acquisition of new knowledge in an area, as well as true understanding of conceptual information. Thus, it may be harder for individuals with limited literacy to learn self-management skills, especially the reason why recommended behaviors are important. For example, a patient with inadequate literacy may be less likely to understand why it is important to weigh himself daily or to take medications even if he has no symptoms. Moreover, with less baseline knowledge, those with inadequate literacy simply have more to learn.

Thus, individuals with low literacy have difficulty reading and understanding written information, comprehending numerical information and performing calculations, and understanding ranges of normal values, and they tend to have worse baseline knowledge, short-term memory, and working memory compared to individuals with higher literacy. All of these factors should be addressed when designing educational interventions to reach this group.

Theoretical Considerations in the Design of Educational Materials and Programs

We used multiple theoretical and practical considerations in the design of the educational materials and educational components of the overall intervention. We briefly review these here.

Working Memory and Cognitive Load

Working memory is a theoretical construct within cognitive psychology that conceptualizes how we temporarily store and manipulate information in short-term memory. Baddeley postulated that working memory is critical in almost all complex cognitive tasks (reading, mathematics, reasoning, and problem solving), particularly those that require holding information in the face of distraction, or conducting simultaneous activities. (Baddeley 2003) With respect to reading fluency, working memory is vital for readers to focus on particular elements of what they read, keep track of and monitor information in texts (including self-monitoring their ongoing understanding). Working memory also functions to allow individuals to deactivate or ignore less essential elements and avoid information overload.

Working memory has a relatively fixed capacity. For example, Miller found that the maximum number of elements that young adults could remember and manipulate was around seven, regardless whether the elements were digits, letters, words, or other units. (Miller 1956) The more a person has to learn in a shorter amount of time, the more difficult it is to process that information in working memory. The demands that are placed on working memory during instruction are referred to as *cognitive load*.

Recent studies have shown two key findings about the limits of working memory. First, memory span is larger if an individual is familiar with the content presented; i.e., a person can remember more if the words presented are familiar as opposed to being in another language. (Hulme 1995) This may occur because familiar information that is stored in long term memory can be retrieved into working memory. Thus, individuals with low literacy, who are likely to have less baseline knowledge of health-related topics, will have a greater cognitive load placed on their working memory during instruction. Second, working memory can be effectively expanded if the information is stored in “schemas” or “chunks” that can be recalled as a group. (Clark, Nguyen et al. 2006)

These findings have important implications for educational program design. First, new information should be presented in a sequential manner so the learner can more effectively use stored (previously learned) material in new learning tasks. Second, patient education and health communication tools should be designed to present “chunks” of information to build schemas that can later be recalled and used during subsequent learning segments. This will lessen future demands on working memory (i.e., decrease cognitive load) and allow learners to more fully apply their cognitive abilities to solve problems or understand instructions. For example, teaching patients the signs that their body has too much fluid and ensuring this information is learned and retained will help decrease cognitive load and facilitate understanding when patients are later taught how to adjust their diuretic dose if they have signs of fluid overload.

Mastery Learning and “Teach to Goal”

Mastery Learning Theory posits that people learn at different speeds, but all can master material if they are given multiple opportunities. (Ryan 1979; Guskey 1985) Individuals’ learning speed may be related to basic cognitive processes, such as their working memory and information processing speed. The concept of Mastery Learning complements the concept of working memory by suggesting that although the amount that an individual can learn in a given time is relatively fixed, with repetition most students can achieve mastery. The essential components to achieve this goal are 1) formal specification of cognitive (learning) objectives, 2) division of course content and objectives into instructional units, 3) formative/diagnostic evaluations to determine whether learners have mastered material, and 4) corrective, tailored or remedial instruction until mastery has been attained.

The importance of Mastery Learning theory, particularly for individuals with low literacy, is shown in a study that examined the number of times required for patients to learn essential learning goals for an informed consent. (Sudore, Landefeld et al. 2006) All mastered the material, but only 28% achieved mastery with one pass, 52% required two, and 20% required three or more. Performance was strongly related to literacy: 36% of patients with adequate literacy required one pass compared to 11% of those with inadequate literacy. Thus, application of a Mastery Learning philosophy and a “teach to goal” approach can reduce differences in goal attainment by literacy level.

Guiding Principles for the Design of Our Intervention

These theoretical considerations led to a set of guiding principles for developing the educational curriculum, materials, and overall approach to achieving learning goals (Table 1).

Defining Learning Goals and Creating the Educational Curriculum

The first and most essential principle is to identify a limited set of learning goals. These goals become the focus for the educational materials. All information should either a) explain a behavior, b) provide background information necessary to understand the recommended behavior (i.e., define words, explain concepts, etc.), or c) promote attitude change about the behavior (i.e., explain how this will help the patient feel better or live longer, or how barriers to the behavior can be overcome). Everything else should be eliminated. Information can directly support the learning goal, or it can be a fundamental “building block” that is essential background information for patients to understand later information. A learning goal can also be deemed essential if it is thought to motivate behavior change according to theoretical models (i.e., patients must understand that they are at risk before they will follow a recommended behavior).

The essential point is to “work backward” from the desired behavior or attitude to the messages that will best promote progress toward these goals. We tried to identify the minimum information necessary to cover the most essential learning topics that will enable and motivate a patient with newly diagnosed HF to follow key self-management behaviors, including 1) self-monitoring symptoms, 2) adhering to medications, including obtaining refills, 3) following a low-sodium diet, 4) performing regular exercise, and 5) self-titrating diuretics when signs of volume overload occur. This is an extremely challenging task because most HF patient education materials include a large number of topics with complex content within each. For each behavior, we worked backward, asking what was necessary to understand the message. For example, to follow a low-salt diet, patients need to understand that salt is the same as sodium, that some foods are high in sodium even if one doesn't add salt, that foods labeled as having 140mg or less of sodium per serving qualify as being low sodium, etc.

The learning goals then become the focus of questions to assess whether patients have mastered the information presented in the TTG; these questions comprise the “formative/ diagnostic evaluation” (component 3) under the Mastery Learning approach described above. The learning goals for the section addressing how to eat less salt are shown in Table 2; Table 2 also shows the assessment questions and answers, which are discussed below.

We organized the educational curriculum and learning guide into five discrete units (principle 2; Table 3): a) Overview of Heart Failure (“*What is Heart Failure?*”), b) Medication Adherence (“*Medicine*”), c) Salt Avoidance (“*Less Salt*”), d) Exercise (“*Exercise*”), and e) Daily Self-Assessment (“*Daily Check-Up*”). Patients in the TTG arm had a sixth topic covered: Diuretic Self-Adjustment and Having a Plan. Once units are identified, it is essential to present them in the order that best prepares learners for subsequent material (principle 3). Yet, we also needed to consider clinical concerns. It might seem sensible to first teach patients the daily self-assessment and creation of an action plan to decrease the chance of deterioration and hospitalization. However, we decided that for the first face-to-face educational session, we should start with the behaviors that could prevent deterioration (e.g., adherence to medications, avoiding salt) and conclude with the most crucial behaviors: the Daily Self-Assessment for both groups and Diuretic Self-Adjustment for the TTG group.

When establishing learning goals, it is important to anticipate obstacles to successfully achieving skill mastery and behavior change. For example, in addition to teaching patients about the need to take their medicine even when they are feeling well, we described concrete strategies to help patients to remember to take their medication and emphasized that this would increase their chance of success. (Liu and Park 2004) In addition to teaching patients about high-salt foods, we described foods they could substitute that contained less salt. Some patients were discouraged or afraid to exercise because this evoked shortness of breath. We therefore emphasized that dyspnea with exertion was not a danger sign, that it would get easier to exercise over time if done regularly, and that this would increase their ability to do things they want to do in daily life.

Communicating Learning Goals in Plain Language and with Pictorial Aids

Much has been written about the need to develop plain language materials for adults with low literacy and the methods for doing so (Principle 4), (Doak 1996) and this will not be reviewed here. However, two points should be emphasized. First, following the guidelines for developing “plain language” materials is not a substitute for a well organized educational curriculum (see above). Plain language and low literacy design principles cannot ameliorate the problem of presenting too much information, presenting information for which someone does not have the background knowledge required for comprehension, or presenting

material in a poorly organized manner. Second, studies suggest that all patients, regardless of literacy level, benefit from plain-language materials. (Davis, Bocchini et al. 1996; Kandula, Nsiah-Kumi et al. 2009) Some patients may find plain-language materials with limited learning goals simple and easily mastered, but they can proceed to learn more having a strong knowledge of fundamental concepts that will facilitate future learning. Therefore, our materials were designed to be used by all patients, not just those with low literacy.

Pictorial aids should be used as much as possible to help explain abstract concepts or complex instructions and to recall information. This is helpful regardless of literacy level. (Houts, Doak et al. 2006) The use of pictorial and visual cues was crucial for the “daily heart failure action plan,” which sought to make a single tool for identifying patients’ ideal weight (at which the patient’s total body water and salt was optimal), providing a place to record daily weights, showing whether the daily weight was in the target range, showing the usual dose of “fluid pills,” and indicating the number of pills to take if the weight was too high or too low. (DeWalt, Pignone et al. 2004) Similarly, the daily check-up used visual cues to help remind patients of key HF signs and symptoms. It is essential to involve patients in developing and testing graphical, pictorial, and visual cues and tools.

Confirming Mastery of Learning Goals: Teach to Goal

Principle 5 is that the educator should confirm understanding after each unit and perform corrective, tailored instruction until mastery has been attained. The TTG approach embodies this principle, which is a direct application of two of Mastery Learning’s essential elements (see above). Our project extended beyond just mastering *knowledge*; rather, we sought to help patients master *how to perform self-management* (e.g., how to read food labels and how to correctly perform the daily self-assessment). We also sought to increase self-efficacy by gradually building knowledge and skills so these would result in true behavior change (e.g., eating less salt) and ultimately better health outcomes.

Before describing the TTG intervention, we describe the initial in-person educational session that all patients received after agreeing to participate and providing baseline demographics and health status information. To determine the incremental benefit of the TTG approach, we thought it was important to provide all patients with a high-quality, basic HF educational session that followed the principles described here. The initial educational session was approximately 40 minutes long and reviewed the topics shown in Table 3. The educational manual *Caring for Your Heart: Living Well with Heart Failure*, which was developed following the principles outlined in the preceding sections, was used as a guide throughout the initial session (available at <http://nchealthliteracy.org/hfselfmanage.html>). Following this, patients were randomized to the BEI group (initial session only) or the TTG group. Those randomized to the TTG group received additional instruction during the initial in-person session on daily weight monitoring and recording, and instruction on diuretic self-adjustment. Patients in both groups received the guide to take home as well as a digital scale.

Over the next 12 months, the patients in the TTG group received several follow-up phone calls from the educator to reinforce the material covered and to guide the patient toward better self-management skills. The calls were more frequent at first and were tapered over time. An overview of the content and planned timing of calls is shown in Table 4. The actual frequency of the follow-up calls was determined by the pace of which mastery of each learning goal was achieved. Patients that excelled had less frequent calls than patients who were struggling. The education manual that was given to patients at the initial face-to-face educational session was used to help guide learning during the calls, especially if a patient had difficulty achieving a learning goal or self-management skill. Once mastery of learning goals for each topic was demonstrated, the focus of the call was on promoting the daily self-

assessment (*daily check-up*) and the behavioral goals that were set by the patient. Barriers to achieving goals were identified and goals were modified as needed. Educators also instructed patients on how and when to contact their physicians, but they did not contact their physicians for them. We used this approach in order to test the specific effect of self-care training as opposed to the benefits of care coordination or disease management.

Linkage to Behavioral Goals

If a patient learns about high-salt foods and how to identify them but does not make a specific plan to change eating habits, little is gained. Conversely, if a patient sets a goal to eat less salt but does not know that many foods have “hidden salt” or how to read nutrition labels, little is gained. Knowledge, skills, and behavioral goals need to be tightly linked conceptually and temporally (Principle 6). In many cases, educational interventions transmit information but do not simultaneously establish behavioral goals, leaving goals to be established at a later time when patients see their health care provider. It is probably more effective to establish a behavioral goal immediately after a patient has mastered the rationale and practical skills necessary for performing it. This approach of linking education immediately to completion of personal action plans has been successful in a pilot study of patients with diabetes. (Wallace, Seligman et al. 2009)

For this project, at the end of the sections on medications, salt, and exercise covered in the BEI, there were places for patients to record behavioral goals immediately after learning why these goals were important and how to accomplish them. For medications, patients were asked to write down specific ideas to help remember to take medications. For the salt unit, patients were asked to choose 1 or 2 specific options for using less salt (e.g., use salt-free seasoning) or to list their own idea, and for the exercise unit, patients were asked to choose 1 or 2 things to increase their physical activity (e.g., take a short walk every day).

Plans to Evaluate the Incremental Value of Teach to Goal

Our study seeks to determine whether the theoretically-based TTG intervention is superior to a single session BEI for reducing hospitalization or death and for improving HF-related quality of life. This comparison of the TTG intervention to an “active” control group rather than “usual care” will allow us to determine the true marginal benefit of longitudinal education and self-care management training. Importantly, we will examine the pathways through which the TTG may be better than the BEI. The central hypothesis on which the TTG is based is that patients in the TTG group will have greater knowledge, skills and self-management behaviors (i.e., medication adherence, dietary salt avoidance, exercise, daily self-assessment, and ability to adjust their diuretic dose to restore themselves to their target weight), and this will lead to fewer hospitalizations and better health outcomes. Analysis will be done with nested multivariate models to assess knowledge and behaviors as mediators of better outcomes. We also aim to determine whether the effect of the TTG intervention varies by literacy level. We hypothesize that all patients will benefit from the TTG, but those with limited literacy will benefit more than those with adequate literacy.

Summary

Educating and motivating patients with HF to undertake behavior change is important for reducing hospitalizations, improving quality of life, decreasing mortality, and reducing costs. The most effective and efficient methods for self-management education remain unclear. Current patient education and training for patients hospitalized with HF may be inadequate for preventing adverse events. (Jha, Orav et al. 2009) In a recent report on comparative effectiveness research, one of the top priorities was “Compare the effectiveness of literacy-sensitive disease management programs and usual care in reducing disparities in

children and adults with low literacy and chronic disease (e.g., heart disease).”(Sox and Greenfield 2009)Our study is testing a theoretically-based approach to improve comprehension, retention of essential learning goals, and performance of specific behaviors. The TTG intervention was designed to be applicable to the vast majority of patients with HF and administered over the phone so that, if beneficial, it could be implemented by most health care providers and health systems. This study will be an important step in creating an evidence base for the relative benefits of different educational strategies.

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Table 1**Principles for Developing the Educational Curriculum, Materials, and Overall Approach to Achieving Learning Goals.**

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1. Define a limited set of the most important learning goals and eliminate all information that does not directly support the learning goals
 2. Present information in discrete, identified units (“chunks”)
 3. Determine the optimal order for teaching the topics
 4. Develop simple, plain language text to explain essential concepts for each learning goal and use graphics to help increase comprehension and recall whenever possible
 5. Confirm understanding after each unit, perform corrective or remedial instruction until mastery is attained, and review previously learned concepts until stable mastery is achieved
 6. Link all knowledge to a specific attitude, skill, or behavioral goal
-

Table 2

Sample Learning Goals, Questions to Assess Achievement of Learning Goals, and Teach to Goal Responses/ Reinforcements (shown in italics)

<p>1. Understand that sodium is the same thing as salt</p> <p>What is sodium?</p> <p><i>Sodium is another name for salt.</i></p> <p><i>Any food that says sodium on the label has salt in it.</i></p>
<p>2. Understand why salt is bad for someone who has heart failure</p> <p><i>Salt causes your body to hold on to water.</i></p> <p><i>Remember, salt is like a sponge.</i></p>
<p>3. Know three signs that your body has too much salt and water</p> <p>When you eat too much salt and your body holds on to water, what are the three changes you might notice in your body or how you feel?</p> <p><i>a. Your weight goes up</i></p> <p><i>b. Your legs swell</i></p> <p><i>c. You can get fluid in your lungs that will make it harder for you to breathe</i></p>
<p>4. Know three steps to cut down on how much salt you eat</p> <p>When we had the teaching session at the clinic, we talked about the 3 steps for cutting down on how much salt you eat. Can you tell me what the 3 steps were?</p> <p><i>a. Choose foods that are low in salt</i></p> <p><i>b. Don't add salt when you cook</i></p> <p><i>c. Take the salt shaker off the table, and don't add seasonings with salt to your food</i></p>
<p>5. Know that 140 mg of sodium per serving identifies foods low in salt</p> <p>How can you tell whether something you buy has too much salt?</p> <p><i>Look at the label. If the label says less than 140 mg of sodium per serving, it is safe.</i></p>
<p>6. Be able to read food labels and identify high salt foods</p> <p>Now, I want you to open your heart failure binder to page X.[*] This shows some different labels from foods. Label 1 is from a bottle of Ranch salad dressing. How much sodium per serving does it have? Is this a good one for you to buy? Now look at label 2. This is from a bottle of Italian dressing. How much sodium per serving does it have? Is this a good one for you to buy? There are two more labels below. Label 3 and label 4 are both from containers of vegetables. Which one is a good choice?</p>

^{*}This refers to the binder given to all patients during the Brief Educational Intervention

Table 3**Major Headings and Subtopics for the Educational Curriculum*****Medication Adherence**

- Taking pills at right times/not skipping doses
- Instruction on refilling prescriptions
- Discussing systems for taking pills – medication list
- Stress bringing pill bottles to every doctor's visit
- Identify the patient's water pill

Salt Avoidance

- How salt effects the body
- Most foods contain salt
- Common food high and low in salt
- Tips to decrease salt intake
- How to read food labels
- Choosing food with 140 mg of sodium or less per serving

Exercise (instruct only if approved by patient's MD)

- Benefits of exercise
- Signs for when to stop exercising
- Is patient exercising now?
- Options for exercise
- Start slowly, work up to more

Daily Self Assessment

- Assessing shortness of breath when walking
- Assess shortness of breath when sleeping
- Assessing dizziness/faintness
- Assessing swelling of the legs
- Weighing self daily

Action Plan for Worsening Symptoms

- Know when to call doctor
- Provide phone number for patient to call

Diuretic Self Adjustment[†]

- Set target weight and record on Water Pill Guide
- Set diuretic adjustment schedule and record on Water Pill Guide
- Identify water pill with sticker on bottle
- Explain how to adjust water pill based on weight
- Explain how to record daily weight and water pill dose
- Practice adjusting water pill dose with examples of different weight values

* An overview of all topics was given during the initial brief educational intervention. For the Teach to Goal group, each topic was reinforced during the telephone calls.

[†] This was taught only to the Teach to Goal group

Table 4

Educational Curriculum for Teach to Goal Telephone Calls to Achieve Knowledge and Related Behaviors during the First Month of the Intervention Period*

	Call 1 (day 3)	Call 2 (day 7)	Call 3 (day 10)	Call 4 (day 17)	Call 5 (day 24)	Call 6 (day 28)
Daily Self Assessment & Having a Plan						
<i>BEHAVIOR – Verify the patient:</i>						
• weighs self daily and at the correct time	P	P	P	P	P	P
• records weight and water pill dose on the Daily Water Pill Plan (Figure 4)	P	P	P	P	P	P
• assess symptoms of heart failure (SOB, edema, dizziness)	P	P	P	P	P	P
• takes the correct dose of diuretic according to their weight	P	P	P	P	P	P
• knows to phone doctor when appropriate	P	P	P	P	P	P
Medication Adherence						
<i>KNOWLEDGE – Verify the patient knows:</i>						
• his/her water pill			P	P		
• What to do if they have side effects from their medications			P	P		
• That they still need to take their medications even if they feel good			P	P		
• what to do if they are unable to pay for their medications			P	P		
• how many refills they have left			P	P		
• how to get refills			P	P		
• what to do if they are out of pills			P	P		
• the importance of having a successful system for taking their medication			P	P		
• to take all their medications to their doctors appointments and to review them with the doctor			P	P		
Salt Avoidance						
<i>KNOWLEDGE – Verify the patient knows:</i>						
• what sodium is				P		P
• why salt is bad for someone with heart failure				P		P
• ways to eat less salt				P		P
• how to tell whether something has too much salt				P		P

	Call 1 (day 3)	Call 2 (day 7)	Call 3 (day 10)	Call 4 (day 17)	Call 5 (day 24)	Call 6 (day 28)
• which foods are good choices based on reading nutrition labels and knowing how much sodium per serving a food has				P	P	P
• which foods out of a list of 20–30 common foods are good choices				P	P	P
• if foods that say “lower sodium” or “reduced sodium” are good choices				P	P	P
• what foods could be substitutes for high sodium foods				P	P	P

Exercise

KNOWLEDGE – Verify the patient knows:

- that it is safe for someone with heart failure to exercise
- how exercise helps people with heart failure

P – Planned topics to cover during the call

p – Topics planned to cover during the call if mastery of the material was not previously achieved

*

We aimed to complete 5-8 calls with each participant during the first month. The goal for these calls was to ensure adherence to daily check-up behavior and to review the knowledge for each topic area at least one time. Discretionary calls during the first month were used if the participant did not correctly answer the Teach to Goal questions.