ABSTRACT

• **Objective:** To describe the self-care college, an innovative initiative designed to reduce hospital readmissions for congestive heart failure (CHF) patients.

• **Methods:** CHF patients at North Mississippi Medical Center are asked to participate in a “self-care college” prior to discharge. Participants rotate through 3 learning stations: weight, diet and medications. At each station, they are asked to perform the tasks they will be required to do at home. By engaging patients in the learning process, they are activated to assume responsibility for their care. This approach has the added advantage of providing a feedback loop, allowing the health care team to “road test” the proposed care plan to determine the likelihood that the patient (and family caregivers) will be able to execute follow-up discharge.

• **Results:** Since the self-care college was implemented in 2011, the 30-day readmission rate for CHF patients at NMMC has been reduced from 16.8% to 12.85%. There has also been a reduction in the observed to expected CHF readmissions ratio, from 0.90 to 0.71.

• **Conclusion:** Although the self-care college targets CHF patients, it is likely that this type of initiative could be applied for rural patients with other chronic illnesses, such as asthma, COPD, and diabetes. It is a relatively simple and inexpensive program (approximately $30,000 per year, primarily in personnel expenses, or roughly the cost of 3 hospital readmissions) that does not require sophisticated technology or equipment, and could easily be replicated in health care settings across the country.

Congestive heart failure (CHF) is a chronic and costly condition that affects approximately 5.1 million people in the United States, with an additional 670,000 diagnosed yearly [1]. Heart failure is the most common cause of hospitalization among adults over 65. Nearly 25% of patients hospitalized with heart failure are readmitted within 30 days [2].

Medical management of people living with CHF and other chronic illnesses presents a challenge for health care providers. Due to their often complex medical conditions and limited opportunities to learn self-management skills, patients in rural areas with CHF are at increased risk for complications and hospital readmission [3]. Many approaches have been considered to reduce heart failure readmissions, including efforts to improve self-management skills. Initiatives that engage patients in the process of learning to self manage their illness may activate them to assume responsibility for their care.

North Mississippi Health Services (NMHS) is an integrated regional health care organization with over 5000 employees that serves more than 700,000 residents of 24 primarily rural counties in north Mississippi and northwest Alabama. The flagship of the NMHS system is North Mississippi Medical Center (NMMC), a 650-bed regional referral center in Tupelo. NMHS is one of the largest rural health systems in the United States, and the statistics for its service area reflect these challenges: the prevalence and age-adjusted mortality rates for most chronic illnesses exceed those for the nation as well as for Mississippi, which itself historically ranks at or near the bottom of almost all health status indicators [4–6]. On average, 800 patients with CHF are discharged annually from NMHS’s hospitals, and more than 2900 patients diagnosed with CHF are active NMMC clinic patients.

NMHS is addressing these challenges through a series of innovative quality improvement initiatives. NMHS's
newest initiative is the CHF self-care college. In this paper, we describe the initiative, its implementation, and evaluation to date.

SELF-CARE COLLEGE

Background

The idea for the self-care college grew out of discussions with Nurse Link coaches, registered nurses employed by NMHS, who call CHF patients at their homes following discharge. The first call, within 48 hours following discharge, is to reconcile medications, conduct patient education, and confirm follow-up appointments. Three subsequent weekly calls focus on additional education and recognizing “red flags” utilizing the IHI “teach back” method, in which patients are asked to restate instructions or concepts in their own words. During regular biweekly meetings with physicians to monitor patient progress, Nurse Link coaches observed that many patients (and in some cases, their caregivers) had difficulty following their discharge instructions. In particular, patients did not understand how to properly weigh themselves, how and when to take their medications, or how to ensure their diet met physicians’ guidelines. Although patients were being provided with written and oral instructions as part of the discharge process and through post-discharge follow-up communications, they did not properly implement those instructions once they returned home.

A multidisciplinary team consisting of NMHS physician leaders and representatives from pharmacy, dietary, physical therapy, cardiac rehabilitation, nursing, and case management met to brainstorm ways to overcome this challenge. What emerged from these discussions was the idea for a simulation-based learning experience for patients prior to discharge.

Simulation-based learning is not a new concept. It has been utilized for many years in aviation, healthcare, and the military as a way to train people in high-risk professions, using realistic scenarios in a controlled environment, without risk to participants. To our knowledge, the concept of simulation learning has not been extended to patient education initiatives.

Simulation-based learning would actively engage patients in learning the necessary self-care skills rather than being passive recipients of information. As the self-care college team often says, “You don’t learn to ride a bike by reading a book; neither should you be asked how to manage CHF by reading a pamphlet.”

Learning Stations

Participants in the self-care college rotate sequentially through 3 learning stations: weight, diet, and medications. The main location for the self-care college is a conference room on the cardiac unit of NMMC. At each station, patients are asked to perform the tasks they will be required to do at home. If they cannot complete the task, the deficit is recognized and addressed. This might include referring the patient to home health care, ensuring that a Nurse Link coach contacts him or his caregiver to reiterate medication instructions or ensuring that his case manager refers him to appropriate social services. Although no formal cognitive assessment is conducted, if the team perceives that the patient has a cognitive impairment that could prevent him from being able to perform self-care activities, this information is relayed to the case manager.

At the weight station, a physical therapist or cardiac rehabilitation professional stresses the importance of weighing daily and has the patient demonstrate weighing himself, providing feedback if necessary, to ensure that each patient knows how to properly weigh himself. If the patient does not own a scale, or needs an adaptive scale (such as one with extra large numbers or one that “talks”) and is financially unable to purchase one, he is given one to take home.

At the diet station, a registered dietitian asks the patient what he eats on a typical day, and he is given helpful dietary choices based on his responses. A display at this station provides sample food labels from some common foods, so that patients can see where and how to locate important nutrition information, such as sodium content. The dietitian also discusses fluid restriction and provides the patient and/or caregiver with a written copy of dietary recommendations. In the words of one self-care college patient, “I had to push that salt shaker away, but I also learned that salt comes in cans and boxes. I
learned to read food labels for sodium content and to stay away from processed foods.”

At the medication station, a pharmacist reviews the patient’s heart failure medications, has the patient simulate how he will obtain, organize, and remember to take his medications at home, offers feedback and instruction, and answers questions. The pharmacist also provides the patient with a 7-day medication planner for home use and has the patient demonstrate completing the planner.

After the patient has been through the 3 learning stations, a Nurse Link coach enrolls him in the 4-week call-back program. In addition, home health care representatives are available to discuss the benefits of home health to help manage their CHF at home. Finally, each patient receives a CHF self-care college folder, with educational materials including a weight log/calendar; information on smoking cessation, medications, and prescription assistance; a personal health record; control zones for CHF management; red flags and warning signs/symptoms to report; and when to call the doctor.

When the patient has completed the self-care college, the self-care college team “huddles” to ensure that the patient is adequately prepared to transfer to their next health care destination. If not, recommendations are made to their provider to ensure a smooth transition. Family members and/or caregivers are encouraged to participate in the self-care college experience whenever possible and are included in the huddle.

**Implementation**

Prior to implementing the self-care college, the team identified 4 major challenges and developed strategies to address them. In many cases, strategies were effective in addressing more than one challenge.

- Coordinating the allocation of resources among different departments: as with any new initiative, finding time in everyone’s schedule to accommodate additional tasks is a challenge. In order to ensure that the self-care college was streamlined into everyone’s schedule, the team determined a set time of day that it would take place.

- Gaining buy-in from referring physicians: because referrals from physicians would be critical to the success of the self-care college, the team spent significant time meeting face-to-face with physicians to explain the reason for the program and how it would be implemented. In almost every case, physicians enthusiastically agreed to refer appropriate patients to the self-care college. Although NMHS operates in a fee-for-service environment (and physicians therefore are not financially incentivized to reduce readmissions), it has a strong culture of compassion and caring, focused on innovation, vision, and performance results. Physician buy-in was also facilitated by rolling out the program one floor at a time, so that the team and the physicians could become comfortable with the process. The nurses and case managers on each unit were educated about the program and could prompt the physician to consider placing a referral to the program if warranted.

- Logistical issues in getting the patients to the self-care college room: many CHF patients have significant mobility challenges, and the team discovered that it was not always possible for the patient to be transported to the room where the self-care college was set up, particularly as the program expanded into different wings of the medical center. As a result of feedback from patients and staff regarding the logistical issues around transporting patients to the college, the team developed a mobile version that is brought directly to the patient’s room. A cart holds scales, patient folders, medication planners, and all the tools necessary to present the program. Each member of the team rotates into the room to present their piece of the program. In addition to ensuring that patient mobility issues were not an obstacle to participation, developing the mobile program made the most efficient use of the team’s time in serving these patients, and no patient has been turned away due to having reached capacity at the stationary self-care college.

- Completing the self-care college in a timely fashion: In order to make most efficient use of time (for both the team and the patient), the content for each station was designed to last no more than 15 minutes on average. We have also worked with physicians to encourage referrals prior to the day of discharge, so that patients can be scheduled efficiently.

**PROGRAM EVALUATION**

Because the self-care college is one of several initiatives being implemented by NMHS with a focus on reducing readmissions for CHF patients, it is difficult to identify the specific effect of the self-care college on readmissions. However, since implementation in 2011, we have seen a relative rate reduction in CHF readmissions of approximately 23%, and a reduction in the observed to expected CHF readmissions ratio from 0.90 to 0.70.
In addition, referrals have steadily increased since the program began, which suggests that physicians are confident in the program and its ability to improve outcomes. Beyond the quantifiable measures available to us, comments from patients indicate that the self-care college is improving the quality of life for many of our patients. Two patients noted the following:

“I felt like I wasn’t just thrown out there by myself...I was scared because I didn’t know anything about this disease. The program let me know I wasn’t alone.”

“I eat much differently. I am learning to eat less and eat the right foods...I check my blood sugar every day now, and I weigh myself every day. I know if I weigh more than 244 pounds, I need to call someone.”

While patient and physician feedback has been very positive as far as the effectiveness in teaching patients important self-care skills, we discovered another benefit: not only does the self-care college give patients hands-on practice with skills they will need and the opportunity to ask questions, the team has an opportunity to observe patients actually performing self-care activities, ask the patient questions about how they will follow their discharge instructions, and evaluate whether they are ready to be discharged. Given the distances that many of these patients travel to receive care in the hospital, having insight into their capability prior to discharge is an important advantage.

For example, a patient completing the weight module was having difficulty reading the numbers on the scales due to poor visual acuity, which had not been otherwise noted in his hospital records. The team was able to fit him for a scale with large numbers. In other cases, we have found patients who are unable to identify low-sodium foods. To help them meet dietary guidelines, the dietitian uses a food prop to show them how to read and understand the Nutrition Facts label and then discusses alternative food choices with them. At the medication station, patients bring in all the medications they are currently taking and are asked to identify when, how, and why they take each medication. Frequently, we find that patients do not understand the instructions on the label or that they have duplicate medications because one is a generic and another is a brand name. We can provide the patient with a medication planner that helps ensure their medications are taken properly.

LESSONS LEARNED

As with any new initiative, the self-care college team learned important lessons throughout the implementation process. Chief among these was that flexibility is critical to success. We listened to feedback from patients, physicians, and hospital staff and modified the program to ensure that it was integrated as seamlessly as possible into everyone’s schedule. Feedback was obtained through a variety of methods, including medical staff meetings, discussions with patients and their family members, and feedback from Nurse Link coaches. Feedback led to a number of changes, including development of the mobile self-care college and changing the timing from the day of discharge to the day prior to avoid conflicts with other day-of-discharge activities.

An additional lesson learned, which was actually a process of learning, was how important it is for self-care college team members to be active listeners. As opposed to the didactic approach, where clinicians provide instructions to patients, the self-care college team learned to ask questions of the patients and to actively listen to the responses, filling in the gaps where necessary. Interestingly, we found that this was also a learning process for the patients, many of whom are unaccustomed to engaging in dialogue with their doctors and to being active participants in their health care. They were not all initially comfortable with the concept of simulation, but our staff learned different ways to introduce patients to it, so that ultimately most seemed to enjoy the program.

TAKE-AWAY POINTS

For health care organizations considering implementing a self-care college or similar initiative, we offer a few key points:

1. Consider the benefits beyond reducing readmissions: at NMHS, we have found that the self-care college has positively impacted patient satisfaction. For the past 2 years, our HCAHPS scores have consistently been well above the top performance threshold, a top quartile performer in Premier’s quality database (Premier, Inc., a health care performance improvement alliance of approximately 3000 U.S. hospitals). While it is difficult to correlate patient satisfaction scores with any one initiative, we hear from patients, physicians, and nursing staff that the self-care college greatly increases effective communication between provider and
patient. We have also found that some of our biggest advocates are now the cardiologists who refer patients.

2. Analyze your operational readiness: this is a low-tech but high-touch program. While it requires a minimal financial investment DISCUSS, it does require strong organizational leadership and staff buy-in to make it successful. Nursing staff are likely to buy into the program because they will not have to deliver discharge education to patients in addition to the many other responsibilities they have. Administrators should see that patient satisfaction will improve and readmissions will decrease. Ultimately, it is up to the program “champion” to make it clear to key stakeholders what the advantages are, and to include them in the process of developing the self-care college.

3. This is the future of medicine: The self-care college is just one example of a team-based approach to medicine. Most of the disciplines on our team did not know each other prior to the program. We now have established a line of communication that permeates throughout the hospital to the outpatient setting.

Based on our success with the CHF self-care college, the next logical step will be to create self-care colleges for other common disease states, such as asthma/COPD or diabetes. However, while the value of this model for patient education has clearly been demonstrated, the team has also contemplated its application for staff training. Many large hospitals already use patient simulation manikins in nursing education, but the cost of this high-tech equipment is out of reach for many smaller, community hospitals. The possibility to create low-cost, low-tech simulation training experiences for clinicians similar to that provided by self-care college for patients bears examination.

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