Prevention of Avoidable Heart Failure Readmissions: A Case Study and Review of the Current Evidence Based Interventional Recommendations

Nancy Raborn

University of Cincinnati

Abstract

**Objective:** To test the effects of a multidisciplinary intervention designed to improve patient outcomes and reduce heart failure readmission rates.

**Methods:** A registered nurse discharge advocate worked with heart failure patients who met identified criteria for admission to Project RED. The patients were located on the third and fourth floor of the cardiac tower and were free of cognitive impairment. They were also not admitted from a skilled nursing facility or being discharged to one. Additionally, those with aortic stenosis did not qualify. The Project RED patients received education regarding the definition and management of heart failure through dietary changes, fluid intake limitations, medications, and medical management. The telemonitoring number and educational tools were given. The discharge advocate then collaborated with the multidisciplinary team to ensure the discharge process ran smoothly and the patient had proper services upon discharge.

**Results:** Participants in the intervention group had a 61% reduction in readmissions compared to those receiving usual care.

**Conclusion:** The use of a nurse discharge advocate in collaboration with a multidisciplinary team reduced the 30 day readmission rate for heart failure patients.

**Introduction**

With the coming reduction in Medicare reimbursement for same cause 30 day readmissions, many hospitals are focusing of process improvement and patient outcomes in cardiovascular services with a specific emphasis on heart failure management. This effort aims to prevent unnecessary readmissions and improve patient quality of care and satisfaction [1]. Heart failure readmissions have proven to be unplanned and costly events [2]. Nineteen percent of Medicare patients are readmitted to the hospital with heart failure exacerbation within thirty days of discharge [2]. Only half of these readmitted patients saw their doctor between discharge and readmission [2]. According to Hernandez et al, 62% of heart failure patients did not see a physician within 1 week post discharge [3]. Approximately ninety percent of thirty day readmissions are unplanned [2]. These unplanned hospital visits cost Medicare approximately seventeen billion dollars per year [2]. Hospitals whose patients had early physician follow-up appointments had 15% less all-cause 30 day readmission rates [3].

This article presents a case study of a 581 bed non-profit hospital located in Augusta, Georgia in which the leading readmission rates occur in those with Heart Failure. University Hospital is a multifaceted health system offering a comprehensive and integrated range of services to people living within a 25-county region in Georgia and South Carolina. University leads the region in diagnosis and treatment of cardiovascular disease and cancer, and is noted as a leader in obstetrical and gynecological care for women. The system’s services span from outpatient diagnostic testing, to leading-edge inpatient treatment, to rehabilitation, home health care, and hospice. The nearly 500 independent physicians who practice at University Hospital represent nearly every medical and surgical specialty. Founded in 1818, University is the oldest hospital in Augusta and the second oldest in the state. Its comprehensive scope and volume of services, technology, support and quality is unmatched in the area. University has been named Consumer Choice Award winner in the Augusta metropolitan statistical area for thirteen consecutive years based on overall quality and image and is the only hospital in Augusta to have earned the Magnet designation for excellence in nursing. Described in this article are the characteristics aimed at the improvement of patient outcomes and the reduction of heart failure readmissions at University Hospital with the use of a systematic approach funded by ARHQ called Project RED. Incorporated is the use of a Heart Failure Discharge Advocate working collaboratively with the Heart Failure Clinic Nurse Practitioner and Cardiologist, Telemonitoring, Home Health, Palliative Care, Hospice, Nurse Managers, Case Managers, Heart Failure patients, and their families in an effort to prevent avoidable thirty day heart failure readmissions. This process exemplifies the importance of reduction of readmissions related to the Health Care Affordable Act signed into law March 23, 2010 [7]. In 2013, Medicare reimbursement for same cause 30 day readmissions will be decreased [7].

Within the walls of University hospital lies the Disease Management Clinic, a Primary Care Nurse Practitioner managed clinic which is the disease management hub. The nurse practitioner sees all patients with 30 day readmissions who have a primary diagnosis of heart failure in addition to the hospitalized patients who are indigent or without a cardiologist. The Nurse Practitioner conducts assessments, diagnoses, prescribes, and reinforces patient education. Additionally, the Clinic Cardiologist sees patients there bi-monthly. The Clinic provides evidence-based medical management to a population of patients that is 85% indigent, without consistent income, or underinsured. The clinic is able to purchase medications for those unable to afford though a grant from the University Hospital Volunteer Board. Additionally, there is a pharmaceutical medication assistance program within the clinic. The hospital pharmacy agreed to provide medications for clinic patients at significantly reduced costs, with most ranging from $5 to $10 for a 30 day supply. The prescriptive management is handled by the Nurse Practitioner and the Pharmacy assists in providing the products and cost-effective guidance of the funds awarded. This support reduced barriers to medication non-adherence and impact on hospital readmissions.

Post discharge adverse events occur in one in five hospitalizations resulting in avoidable readmissions [4]. In 2004, a randomized, controlled trial was conducted evaluating the effectiveness of the implementation of Project RED (Re-engineered discharge) [4]. In this study, a nurse discharge advocate visited inpatients, conducted education, medication reconciliation, and arranged follow up appointments [4]. Additionally, the discharge advocate gave the patient an individualized at home care plan that was also sent to the primary care provider [4]. This was followed by a call from the clinical pharmacist within 4 days post discharge [4]. The study determined the Project RED intervention decreased 30 day general medical service readmissions by approximately 30% [4]. Many individual elements are similar to the models developed by Eric Coleman, Brian Jack, and Mary Naylor [4]. The common factor of these models is disease management education early in the course of the hospitalization, repetition of discharge instructions, medication reconciliation, self care and recognition of signs and symptoms of pending exacerbation [4].

**Methods**

University Hospital implemented project RED March 21, 2011 in an effort to reduce heart failure

readmissions. The multidisciplinary team consisted of the performance improvement/disease management

director, nurse practitioner, discharge advocate, medication assistance representative, telemonitoring nurses, case

management, patient care services, cardiac rehab, home health, and hospice. All entities communicated in an

effort to reach a common goal. The Project RED inclusion criteria involved patients on the 3rd and 4th floor of

the cardiac tower with a primary diagnosis of systolic and diastolic dysfunction. Those with aortic stenosis or

being admitted from or discharged to a skilled nursing facility were excluded. Additionally, those with cognitive

impairment were excluded.

Although the interdisciplinary staff were on board, there were some beginning challenges. For example, the staff nurses and case managers were concerned the discharge advocate would coordinate their work. The Hospitalist discharges were not routinely predictive. Staff nurses were very busy and it was difficult for them to take the time for education. Home health and hospice were not getting appropriate referrals. Telemonitoring needed awareness of Project RED patient admission. It was also difficult for many patients to afford medications and measurement tools such as scales and 8 ounce cups. Additionally, the at home care plan took much of the discharge advocate’s time.

These challenges, however, were quickly overcome. Bi-weekly interdisciplinary meetings were held to review patient readmissions and processes. Monthly department of cardiology meetings were held to discuss the discharge process and anticipation of discharge. The discharge advocate developed a train the trainer program in which CNS’s were trained in the cardiac tower. Heart failure education became a mandatory requirement for staff nurses available on the house wide aspen system. Physician communication forms were used to relay the discharge advocate’s identification of necessity of services, such as hospice or home health. These forms were placed in front of the physician orders on the chart to ensure physician awareness of the need for such services. Telemonitoring nurses were trained to identify Project RED patients and need for follow-up. The Hospital Foundation provided funding for scales and 8 ounce cups. Additionally, the at home care plan was standardized for the heart failure patient saving the discharge advocate’s time.

**Interventions** The discharge advocate accessed University Hospital’s Portal to identify patients who meet Project RED admission criteria. Seven to 10 day post hospital follow-up appointments were made with the patients private Cardiologist or Heart Failure Clinic. If private cardiologist was unavailable or patient was a 30 day heart failure readmission, the patient was scheduled to see the clinic nurse practitioner within 7 days of discharge. The at home care plan was individually devised for each patient. This is imperative as a large national survey of hospital care revealed that only 50% of patients with congestive heart failure received written instructions upon discharge [6]. Three copies were printed; one for the patient, one was scanned in as a part of the patients medical record and one for the discharge advocates records. The discharge advocate then took the at home care plan along with other educational materials and conducted inpatient heart failure education. Research supports that patients who have a clear understanding of the after hospital care instructions and the importance of follow up appointments are 30% less likely to be readmitted [5]. The management of heart failure were taught to the patient upon admission and continued through discharge. Patient understanding was assessed with the use of the teach back method. Dietary modifications including sodium and fluid restrictions were reviewed with the patient. Eight ounce tumblers were given and patients were instructed to stay below the daily fluid restriction level. Mrs. Dash samples and low sodium recipes were given. Weighing procedure was reviewed with the patient. Scales were given to those patients who could not afford them. Additionally, a daily weight log was given. The patient was instructed to take the weight log along with the at home care plan to every physician visit in case up titration or adjustment of medications was necessary. Medication reconciliation and questions regarding tests were completed before discharge. The heart failure booklet along with a bullet point brochure and map of the hospital were also given to the patient. The patients were all given a red enclosed folder to keep all papers to prevent loss during the discharge process. The discharge packet included a refrigerator magnet with the local and toll free number for telemonitoring.

Upon discharge, the discharge advocate faxed the face sheet to Telemonitoring along with any additional phone numbers for the patient and necessary information to enhance patient compliance. The at home care plan was then faxed to the patient’s Cardiologist or Clinic NP. The telemonitoring nurses were all Registered Nurses. They were available by phone 24 hours a day 7 days a week and were armed with a physician signed protocol for up titration of diuretics/potassium as appropriate and notified the nurse practitioner and discharge advocate. Patients who are medicated by telemonotoring were called daily until symptom resolution. If no resolution, the patients were referred back to their cardiologist or the clinic. Telemonitoring nurses called the Project RED patients within 48 hours of discharge and weekly thereafter. They ensured treatment regimen, medication, and follow-up appointment compliance. Additionally, they reviewed education with the patients using the teach back method.

The process metrics involved for the statistical analysis was the use of the Midas database. The discharge advocate selected new or readmit to Project RED, if the readmission was within 30 days of discharge, and if the 30 day readmission was a heart failure readmission. The discharge advocate documented if patients already had scales or were given scales. Additionally, the date and time the patient was first seen by the discharge advocate was entered along with the follow up visits the discharge advocate made to the patient. The patient’s follow-up appointments were tracked to ensure a 7 day hospital follow-up was made. Any services, for example, home health were also documented in Midas. Telemonitoring also documented in Midas regarding compliance with follow-up appointments. If the appointment was missed the reasoning was entered and a second follow-up appointment was made by the telemonitoring nurse.

**Outcomes Measures**

With a more standardized discharge process, patients experienced improved outcomes in addition to less readmissions. Symptoms of exacerbations became less frequent. Patients exhibited an awareness of impending exacerbations and knowledge of when to call the telemonitoring nurse. There was an increase in appointment show rate and less unnecessary hospital visits. Overall, there was a sense of patient self satisfaction with being able to manage the disease at home. The average University Hospital heart failure readmission rate from March 2011 to August 2011 was 24.1%. Patients enrolled in University Hospital’s Project RED from March 2011 to August 2011 had a 9.5% readmission rate. This is a 61% reduction in readmissions for Project RED patients. Of the 362 heart failure patients admitted from March-August 2011, 44.7% were admitted to Project RED. The total University Hospital heart failure readmission rate was 24.1%, therefore 87 patients would be readmitted at that rate. Project RED heart failure readmissions were 9.5%, therefore 34 patients would be readmitted at that rate. So 53 patients were prevented from readmissions x $12,000 each for a cost avoidance of $636,000. Average length of stay for readmissions is 6.75 days so days saved are 358 days. Therefore, 72 additional paying patients could be brought into the system. Reimbursement at $10,000 per patient would add $720,000 additional revenue. This translates to $1,356,000 cost avoidance and revenue generated by decreased average length of stay in a six month period.

**Conclusion**

A standardized multidisciplinary approach in discharge planning with the use of a nurse discharge advocate was associated with significantly reduced 30 day heart failure readmission rates and improved patient outcomes. The heart failure program is innovative as it involves an extensive multidisciplinary team working collaboratively to reach a common goal. This case study demonstrated the effectiveness of closing the gaps of communication in patient care. A safe transition from hospital to community is imperative for positive patient outcomes. Rehospitalization rate is a valuable tool as it is a measure of our overall hospital performance [2].

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