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RESEARCH NOTES

Impact of delayed prescription fill on readmission rates for chronic obstructive pulmonary disease and heart failure

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ABSTRACT

Objectives: In an effort to reduce reimbursement penalty from the Centers for Medicare and Medicaid Services, hospitals have looked to evaluate the effectiveness of existing programs as well as adopt innovative practices to reduce 30-day readmission rates. The objective of this study was to evaluate the impact of delaying prescription fill on 30-day readmission rates for patients with heart failure (HF) and chronic obstructive pulmonary disease (COPD). Identifying an association between delaying prescription fill and readmission rate would validate programs that provide patients with their medications before discharge.

Methods: A retrospective chart review was performed for all patients admitted to Henry County Medical Center with an HF or COPD exacerbation from January to October 2016. Outpatient pharmacies were contacted for each patient to determine time of prescription fill. Time of fill was compared with time of discharge, and patients were separated into 2 subgroups: those who filled within 48 hours of discharge and those who filled after 48 hours. The primary outcome was 30-day readmission rate, and a secondary end point was to identify patient characteristics associated with delayed prescription fills.

Results: A total of 104 patients were included in the study. COPD patients experienced a lower readmission rate when delaying prescription fill at least 48 hours ($P = 0.23$). HF patients experienced a higher readmission rate when delaying prescription fill at least 48 hours ($P = 0.48$). No baseline characteristics were associated with a significantly higher rate of delaying prescription fill.

Conclusion: Delaying discharge prescription fills resulted in a nonsignificant increase in the rate of HF readmission but did not increase the rate of readmission for COPD. Rate of delaying prescription fill was not statistically greater for any of the baseline characteristics.

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Lower hospital reimbursement rates and greater reimbursement regulations for institutions have decreased returns for patient care, endangering the survival of rural hospitals. In fiscal year 2012, the Centers for Medicare and Medicaid Services introduced the Hospital Reimbursement Reduction Program that enforced a reimbursement penalty based on 30-day hospital readmission rates for medical conditions including heart failure (HF) and, as of fiscal year 2015, chronic obstructive pulmonary disease (COPD).[1] These penalties sought to provide hospitals with financial incentive to provide greater focus on transitional-care interventions. Institutions nationwide have sought to adapt their programs to this changing reimbursement structure by evaluating existing procedures and developing innovative programs that further reduce 30-day readmission rates.

Coinciding with reimbursement concerns, the prevalence of HF is projected to rise by approximately 46% within the next 15 years resulting in an increase of 127% in annual direct and indirect costs or approximately $69.7 billion total each year.[2] Prevalence of COPD has remained stable since 1998 in part owing to increased government regulations on cigarettes as well as increasing education and advertisement of adverse effects associated with nicotine use.[3]

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Increasing prevalence of HF as well as the hospital's need to improve HF readmission rates influenced its selection for this study. The hospital where this study was conducted failed to reach the target 30-day readmission rate for HF of 15%. Furthermore, the HF readmission rate remained stable in each of those previous 3 fiscal years, varying by less than 1% (18% in fiscal year 2014 and 17% in fiscal year 2013) despite the initiation of several transitional-care interventions. These interventions included direct counseling by a pharmacist before discharge, creation of an on-site outpatient pharmacy, and offering chronic disease management classes for patients to improve education of their chronic conditions including both HF and COPD.

Despite a stable prevalence rate across the nation, COPD was selected as the second targeted disease state owing to its highest incidence being within the East South Central region of the United States where the hospital is located.[3] Although the hospital had a low COPD readmission rate of 7% in fiscal year 2015, the fluctuation in previous fiscal years (18% in fiscal year 2014 and 6% in fiscal year 2013) further prompted its selection. The hospital also supported a large indigent population, which is associated with a greater smoking population. Smoking increases the risk of exacerbation of and, therefore, readmission for both targeted disease states.

Previous literature regarding discharge prescription fill has focused on whether patients elect to fill their prescriptions after discharge, which is termed primary adherence. Two previous studies demonstrated a primary adherence rate ranging from 60% to 80% after emergency department discharge. Insurance type was not shown to cause significant difference in adherence rate although insufficient funds was the issue most often reported.[4,5] Two additional studies, one evaluating patients with hypertension and the other patients with diabetes, found an average primary adherence rate of approximately 84%. These studies determined that primary adherence rates were significantly influenced by both copay and disease severity.[6,7] Current data have indicated that lower levels of medication adherence in HF result in a statistically significant rise in cardiovascular-related emergency department visits.[8]

Limited data exist concerning the impact of any delay in discharge prescription fill, and therefore any delay in adherence, on 30-day readmission rate. Leathers et al. compared the readmission rate of pediatric patients who utilized their facility's discharge prescription program versus patients who did not. Their discharge program sent prescriptions to specific pharmacies better equipped to provide prompt prescription fill and offered additional patient-specific materials including taper calendars and clearly marked syringes. Participation in this program decreased readmissions, but the difference was not statistically significant.[9] Dudas et al. evaluated the impact that telephone calls performed by a pharmacist 48 hours after discharge had on readmission rate. These calls served to identify if prescriptions were filled, offer counseling, and identify possible medication errors. These calls significantly decreased emergency department visits within 30 days.[10]

The majority of 30-day readmissions occur within the first 48 hours after hospital discharge. The majority of data supporting this time frame referred to patients discharged directly from the intensive care unit, although data available on general medical patients also support this time frame.[11-13] Although the high risk of this transitional period is likely multifactorial, it is unknown whether delay in prescription fills significantly affects the rate of hospital readmission. The present project is significant because if such an association were identified, it would support those programs that provide patients with options to fill discharge prescriptions immediately or that aid in addressing possible barriers to prompt medication compliance.

Objectives

The objective of this study was to evaluate the impact of delaying prescription fill on 30-day readmission rates for patients with HF and COPD.

Methods

Setting

The setting of this study was a rural community hospital, Henry County Medical Center (HCMC), located in northwestern Tennessee. HCMC comprises 142 licensed inpatient beds and hosts an average daily census of 60 patients.

Patient selection

Patients were selected for inclusion after an electronic chart review for a hospital admission from January to October 2016. To meet inclusion criteria, patients were required to be at least 18 years of age, admitted for a COPD and HF exacerbation, provided a new prescription relevant to the condition in acute exacerbation before hospital discharge (titrations of existing medications were included), and discharged home. Patients were excluded if they were discharged to a rehabilitation facility, nursing home, or assisted-living facility. Patients discharged home with patient assistance programs such as home health were not excluded, because most HF patients sent home received these services for strengthening and conditioning (Table 1).

Measures

The primary end point was to assess 30-day readmission rate associated with delayed prescription fills. Once patients met the inclusion criteria, their documented primary outpatient pharmacy was contacted to determine the time of discharge prescription fill defined as the time of purchase. For those without a documented primary pharmacy, all outpatient pharmacies within a 20-mile radius were contacted. If none of these outpatient pharmacies had a record of a patient's prescription fill, that patient was excluded from final analysis. Patients were divided into groups based on primary diagnosis at hospital admission, and those groups were compared separately.

The amount of time elapsed from hospital discharge to prescription fill was used to stratify patients into 2 subgroups: those that filled within 48 hours and those that filled after 48 hours. The 48-hour interval was selected based on the study by Dudas et al. as well as other existing literature demonstrating this interval as the highest-risk period for readmission.

Electronic records were reviewed to determine whether any patients were readmitted to HCMC or transferred from the