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Utilization of the Health Care System of Community Case Management Patients

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ABSTRACT

Purpose of Study: The Centers for Medicare & Medicaid Services (2015) has reduced payments to hospitals that have excessive readmissions. This mandate has made it imperative for hospitals to implement a plan to manage readmissions and transitions of care for patients they serve. The purpose of this study was to ascertain whether an advanced practice, nurse-led, community-based model is effective in reducing acute health care utilization.

Primary Practice Setting: The community case management (CCM) program was created more than 20 years ago to assess and manage care of patients demanding frequent emergency department (ED) visits and frequent hospitalizations, by providing in-home visits and care coordination by an advanced practice nurse or masters-prepared nurse.

Methodology and Sample: The charts of 307 patients who were referred to CCM were reviewed to assess their utilization of the health care system after referral. There were 2 groups of patients: those who accepted CCM services ($N = 151$) and those who refused CCM services ($N = 156$) upon referral.

Results: It was found that if patients accepted CCM services, they had 55% fewer visits to the ED and 61% fewer hospital admissions than patients who refused CCM services. Utilization of urgent care was decreased by 47% in the patients who accepted CCM services, but this decline was not statistically significant.

Implication for Case Management Practice: The results of this study indicate that CCM is effective in decreasing hospital admissions and ED visits for the patients using CCM services. Implementing a CCM program could be an effective method for decreasing utilization of the hospital and ED by adult patients with at least 1 chronic disease.

Key words: *advanced practice nurse, case management, readmission*

In 2013, the Affordable Care Act (ACA) mandated that hospitals be penalized for readmissions of patients (Centers for Medicare & Medicaid Services, 2015). Since then, several programs have been implemented to help ease the transition of patients with complex chronic conditions from hospital to home or other setting. A local hospital currently has accrued no penalties for readmissions since the inception of the ACA (Medicare, 2016). According to Hospital Compare (Medicare, 2016), a service provided by Medicare, the readmission rates of the local hospital is "no different than the national average."

One reason that this hospital has not accrued any penalties is that for the past 20 years, it has provided a community case management (CCM) service to the most complex and highly vulnerable patients. The program was created to assess and manage care of patients needing frequent emergency department (ED) and hospital visits by providing home visits and care coordination. The community case managers' staff consists of three advanced practice nurses, three masters-prepared nurses, and one licensed clinical social worker. The program's goals are to promote increased patient independence and coping through care management and coordination, education, and referral to other resources.

Patients of community case management must to be patients within the University of Colorado Health System North and can be referred to CCM by any concerned party; a doctor's order is not required. Community case management services are offered at no charge and are not a billable service. The funding for the CCM program is part of the nursing budget of the hospital. At the initial visit, a complete assessment is conducted in the home that includes review of medical history and limited examination; medication review and reconciliation; evaluation of psychosocial status, functional status, and limitations; home safety; advance directives; and identification of

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other services being utilized and financial resources. An ongoing visit plan is established on the basis of patient complexity and needs.

Community case managers work closely with primary care providers, other care managers, and community agencies to coordinate care. Patients may refuse services to CCM. The purpose of this study was to determine whether there is a difference in health care utilization between CCM patients who accept services and those who do not. Nonacceptance may be due to the patient refusing services, the program personnel's inability to contact the patient, or the patient having other services in place.

Do community case-managed patients utilize the acute health care system less frequently than nonmanaged patients? It is estimated that nearly one in five Medicare beneficiaries will be readmitted to the hospital within 30 days, at a cost of $26 billion annually. The national average for readmission of Medicare beneficiaries was 19% throughout 2007–2011, 18.5% in 2012, and 17.9% in 2013 (Centers for Medicare & Medicaid Services, 2014). This drop in readmissions can be accounted for, in part, by some provisions of the ACA. One of the objectives of the ACA is to emphasize primary and preventive care and link with community prevention services (U.S. Department of Health & Human Services, 2014). Currently, under this Act, case management is paid for under Medicare (Centers for Medicare & Medicaid Services, 2014). A total of $500 million, over 5 years, has been allocated under the ACA for transitional programs to serve high-risk Medicare patients (Institute of Medicine, 2011). The CCM program is not currently funded by the ACA, yet it is providing transitional care and has the same goal as the ACA: to decrease readmissions of high-risk patients. It is a program that is funded by the hospital system with no codes for reimbursement. Anecdotal data have shown that the community case-managed patients decrease their visits to the hospital and the ED. However, anecdotal data cannot validate the role of CCM in reducing visits. Thus, there was a need for a study that compares the utilization of the ED and hospital by community case-managed patients with utilization by nonmanaged patients.

Literature Review

The literature review for this study examined current community-based care management programs and their effectiveness in reducing readmissions. The search history included only peered-reviewed research articles in CINAHL from 2005 to 2015 with the following key words: case manage and readmission, with exclusion of psychiatric and pediatric. Articles that related only to inpatient case management were excluded. The search yielded 21 articles from this period and an additional three articles from before 2005 that were heavily cited in the 21 articles. Although there were several themes present in the reviewed articles, this study focused on outcome measures that included readmissions to the hospital, ED, and urgent care.

Outcome Measures

In the literature, readmissions were the main outcome of measurement used to determine whether a community-based program was effective. In these articles, readmission rates were measured at 30, 60, 90, and 180 days post-hospital visit. Emergency department visits were also tracked, but the time frame varied. There were no articles that measured urgent care visits. Readmission rates to the hospital significantly decreased after case management services were provided by an advanced practice nurse in a patient's home (Baldwin, Black, & Hammond, 2014; Brooten, Youngblut, Deatrick, Naylor, & York, 2003; Coleman et al., 2004; Daly, Douglas, Kelley, O'Toole, & Montenegro, 2005; Naylor et al., 2004). A review of articles by Naylor, Bowles, et al. (2011) was done to explore the best models for transitional care, and it was recommended that a nurse be the team lead (especially a nurse prepared for advanced practice), the program have an in-person home visit, and the program should focus on patient self-management. Nonsignificant decreases in hospital readmission and ED visits were found in pilot groups of patients visited by an advanced practice nurse in their home after hospital discharge (Ornstein, Smith, Foer, Lopez-Cantor, & Soriano, 2011; Takahashi et al., 2013). These limited results show there is further need for study in this area.

Models that incorporated a registered nurse and/or a social worker showed a decrease in readmission rates (Joo, 2014; Joo & Huber, 2014; Watkins, Hall, & Kring, 2012; Wee et al., 2014; Wong, Chow, Chan, & Tam, 2014). For less frail patients, a transitional coach was also found to be effective in reducing readmissions and ED visits (Coleman et al., 2004). A model that incorporated a team of registered nurses, navigators, social workers, and

pharmacists was shown to lower readmission rates (Kolbasovsky, Zeitlin, & Gillespie, 2012).

Critique and Gaps in Literature Review

Because there has been a focus on reducing readmissions nationwide, case management is being increasingly examined as an effective method for reducing utilization of health care services. There are two main forms of CCM; the Transitional Care Model (TCM) and Care Transitions Model (CTM). Both have reduced readmissions in chronic disease populations that they serve at home (Baldwin et al., 2014; Brooten et al., 2003; Chow & Wong, 2014; Coleman et al., 2004; Daly et al., 2005; Naylor et al., 2004). The TCM uses an advanced practice nurse who makes regular visits to the patient's home to help coordinate care, collaborate with caregivers and providers, and engage the patient in his or her health care decision making (TCM, 2015). In contrast, the CTM uses a transitions coach, who is a nurse, social worker, or layperson, who is taught how to be a support person for the patient. The transitions coach meets patients in their homes and makes phone calls to help them increase their self-management skills and empower them to be an active participant in their health care (Care Transition, 2015).

The education level of the community case manager was not always easy to determine in the literature review. Yet, that is significant information when implementing a CCM program. It must be clear whether the community case manager is a nurse, advanced practice nurse, or social worker, for example, if the program were to be replicated. Some studies would state they were using the TCM as a theoretical framework; yet, they would not use advanced practice nurses, which is a key element in the model (Jackson, Trygstad, DeWalt, & DuBard, 2013; Joo, 2014). Understanding the difference between case management, transitional care, navigator roles, and care coordination is important because they have different settings, goals, and target populations (Naylor, Aiken, Kurtzman, Olds, & Hirschman 2011). Case management has taken many forms in the health care system since the implementation of the ACA. Moreo, Moreo, Urbano, Weeks, and Greene (2014) found that many case managers who provided case management services are ill prepared to offer these services to patients. The education level and background of case managers can vary from bachelors-prepared individuals in any area, to registered nurses, to social workers, to advance practice nurses. Transitional care is a form of care for the chronically ill adult that focuses on avoiding and preventing poor outcomes for the highly vulnerable and chronically ill (Naylor, Aiken, et al., 2011). Therefore, when evaluating the literature, it is imperative to understand what model is being used, what the education of the case manager is, and what interventions are being implemented to completely appreciate a program's effectiveness.

The studies in the reviewed articles collected data on readmission rates only after a patient had been in the hospital or ED (Baldwin et al., 2014; Brooten et al., 2003; Chow & Wong, 2014; Coleman et al., 2004; Daly et al., 2005; Naylor et al., 2004; Ornstein et al., 2011; Takahashi et al., 2013). There were no studies that showed how utilization of acute health care services changed before the introduction of CCM services as compared with after introduction of services. There were also no studies that track the usage of urgent care visits. The purpose of this study was to cover these two gaps in the evidence by tracking urgent care visits and not limiting data collection to only after a patient has been in the ED or hospital.

Concepts and Definitions

All patients referred to the CCM program must be patients within the University of Colorado Health System North, 18 years or older with no upper age limit, and have at least one chronic condition. Patients who are referred to CCM also meet all, or most of, the following criteria:

- ineligible for home health care,
- have a chronic condition that has potential for complications,
- have confusion with medication management or treatments,
- have complex diagnoses needing additional education,
- have frequent ED visits or hospitalizations,
- have poor coping skills,
- have inadequate family or support system,
- have caregivers who demonstrate high stress,
- have insufficient financial resources,
- have frequent missed appointments, or have frequent visits for unnecessary problems, and
- may have impaired cognitive ability due to dementia.

The CCM program being studied provides a comprehensive assessment by a masters-prepared nurse or advanced practice nurse in the home at no charge to the patient or his or her insurance company. It is a service provided by the hospital to the patient through the nursing budget of the hospital. The CCM program provides education to the patient and referral of the patient to other resources to increase the patient's competency and coping through his or her treatment plans. There is also a foundation fund that CCM can utilize to pay for medication or necessary medical equipment. A goal of the CCM program is to assist the patient in utilizing the health care system in an appropriate manner through periodical oversight

A goal of the CCM program is to assist the patient in utilizing the health care system in an appropriate manner through periodical oversight that can last weeks to months.

that can last weeks to months. The average length of service in 2015 was 3 months. The CCM program collaborates with caregivers and all pertinent health care providers to provide care to the patient to ensure early identification of health risks.

Theoretical Framework

The TCM served as the theoretical framework for this project because of its similarities in structure to the CCM program. The TCM was developed by Dr. Naylor and colleagues in 1989 at the University of Pennsylvania. This model supports the patient and caregivers following patient hospitalization to form a collaborative network that promotes positive health and cost outcomes (TCM, 2015). The TCM has been shown to decrease readmissions, improve health outcomes, improve patient satisfaction, and reduce total health care cost to patients with multiple chronic conditions, recent hospitalizations, and poor self-rated health (Naylor et al., 1994, 1999, 2004). It is a model that utilizes the expertise of a masters-prepared nurse to engage patients and caregivers to meet their health care goals. The masters-prepared nurse makes home visits following a hospitalization to ensure early identification of health risk and promote quick and appropriate response. The nurse collaborates with all parties involved to ensure the best possible outcomes.

The TCM has 10 key elements that include:

1. a masters-prepared nurse as the primary coordinator of care,
2. in-hospital assessment with collaboration with other health care workers,
3. home visits and phone visits for an average of 2 months,
4. ability for the nurse to accompany the patient to first follow-up appointments,
5. assess each patient's goals and needs,
6. engaging caregivers and patients,
7. plan for early identification of health symptoms,
8. multidisciplinary approach to include health care providers, the patient, and the patient's family,
9. having a physician and nurse collaboration across the episode of acute care, and
10. facilitating communication between patients, caregivers, and health care providers. (TCM, 2015)

The CCM program differs because it does not have a regular in-hospital assessment, but this assessment is used on rare occasions. The CCM program also has a less strict referral process than the TCM and assists patients who are younger than 65 years.

Methods

The patients whose data were sampled in this study were referred to CCM services between January 1, 2015, and July 31, 2015, by Medical Center of the Rockies and Poudre Valley Hospital (two hospitals within the University of Colorado Health System). The intervention group were the patients who accepted CCM services. The control group were those patients who refused services, those patients the program personnel were unable to contact, or those patients who had other services in place. For simplicity, the patients in the control group were designed as those who had refused CCM services.

The date a patient is referred to and accepted by CCM can vary. In the case of a patient who refuses CCM services, the referral date served as the start time for data collection. In the case of a patient accepting CCM services, the date CCM opened the patient to services served as the start time for data collection. A chart review continued for 90 days after the patient was accepted or refused CCM services. The data collection consisted of counting the number of ED visits to Medical Center of the Rockies and Poudre Valley Hospital, the number of urgent care visits within the University of Colorado Health System, and the number of hospitalizations to Medical Center of the Rockies and Poudre Valley Hospital.

Each community case manager gave the principal investigator the charts of the patients who were referred to them between January 1, 2015, and July 31, 2015. Each chart was reviewed to see whether the patient accepted or refused CCM services, and the number of ED visits, urgent care visits, and hospital visits was recorded. To protect patient privacy, this information was stored on a flash drive and stored in a locked box.

The institutional review board (IRB) of University of Colorado Health reviewed this project and stated this project is not human subject research and does not need IRB approval. Maryville University IRB approved this project on January 14, 2016.

Data Analysis

Three hundred twelve patients were referred to the CCM program between January 1, 2015, and July 31, 2015. One of these referrals was noted as being an error, and four referrals were duplications. Duplication referrals occurred because we encourage nursing and social workers to work in partnership with a patient when needed. That left 307 patients, with 151 patients who accepted

CCM services and 156 patients who refused CCM services. An independent-samples *t* test was calculated.

Results

The independent-samples *t* test was calculated to determine whether the case management group differed from the refuse case management group in utilization of services. The case management group had significantly fewer visits to the ED ($M = 0.56$, $SD = 1.02$) than the refuse case management group ($M = 1.01$, $SD = 1.57$), $t(305) = 2.97$, $p = .003$, and the case management group had fewer hospital admissions ($M = 0.27$, $SD = 0.57$) than the refuse case management group ($M = 0.44$, $SD = 0.78$), $t(305) = 2.02$, $p = .04$. Although the case management group showed a lower utilization of urgent care, the difference was not statistically significant: case management group ($M = 0.08$, $SD = 0.36$), refuse case management group ($M = 0.17$, $SD = 0.62$), $t(305) = 305$, $p = .10$. Tables 1 and 2 show the results.

Case Study

R.Y. was a 71-year-old man who was referred to CCM after being treated in the ED on several occasions for falls, pain-related complaints, and psychiatric evaluations. R.Y. was unable to follow through with any medication or treatment recommendations and would repeatedly decompensate upon discharge from facilities. The patient had no primary care provider, no mental health provider, or community support. He was diagnosed with schizoaffective disorder, bipolar type, uncontrolled diabetes, neuropathy, hypertension, and chronic obstructive pulmonary disease. A CCM advanced practice nurse and a CCM licensed clinical social worker teamed to assess R.Y.'s situation and resources. The personnel conducted home visits in which his medications were reconciled, educated him on compliance, and engaged him in treatment that would support his ability to remain

TABLE 1
Mean Comparison of Accepted CCM and Refused CCM

Group Statistics	CCM	*N*	Mean	*SD*	*SEM*
EDV	Refused CCM	156	1.0128	1.56571	0.12536
	Accepted CCM	151	0.5629	1.02356	0.0833
HOSPTV	Refused CCM	156	0.4359	0.78024	0.06247
	Accepted CCM	151	0.2781	0.56756	0.04619
URGENTV	Refused CCM	156	0.1731	0.62386	0.04995
	Accepted CCM	151	0.0795	0.35634	0.029

Note. CCM = community case management; EDV = emergency department visit; HOSPTV = hospital visit; URGENTV = urgent care visit.

TABLE 2
Comparison of Health Care Utilization of Accepted CCM and Refused CCM

Independent-Samples t Test		Levene's Test for Equality of Variances		t Test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (Two-Tailed)	Mean Difference	SE Difference	Lower	Upper
EDV	Equal variances assumed	8.093	.005	2.97	305	.003	0.44991	0.1515	0.15179	0.74802
	Equal variances not assumed			2.989	268.085	.003	0.44991	0.15051	0.15358	0.74623
HOSPTV	Equal variances assumed	13.74	0	2.02	305	.044	0.15775	0.07808	0.00411	0.3114
	Equal variances not assumed			2.031	283.301	.043	0.15775	0.07769	0.00483	0.31067
URGENTV	Equal variances assumed	9.976	.002	1.607	305	.109	0.09361	0.05824	−0.02099	0.20821
	Equal variances not assumed			1.621	247.982	.106	0.09361	0.05776	−0.02015	0.20736

Note. EDV = emergency department visit; HOSPTV = hospital visit; URGENTV = urgent care visit.

In retrospective, it would have been beneficial to identify the demographics of the patients involved in the study. It may have provided more information as to which populations of patients benefit from CCM and those who may not. The recommendations of the study would be that CCM is effective in decreasing hospital admissions and ED visits for the patients they visit and that future work may indicate decreased urgent care use as well. Therefore, implementing a CCM program could be an effective method in decreasing utilization of the hospital and ED by adult patients with at least one chronic disease.

independent in his home. The CCM program set up R.Y. with a primary care provider, arranged transportation and accompanied him to medical appointments, completed applications for Veteran's benefits and assisted in obtaining a cell phone for him, and helped him manage his medical bills. Finally, CCM connected him with the local outpatient psychiatric team that provided him with in-home long-term support services. Six months prior to CCM involvement, R.Y. had 11 visits to the ED by ambulance and three visits to the local psychiatric hospital; R.Y. has had no visits to the ED or hospital since CCM participation.

Discussion

This case study supports the argument that CCM programs using advanced practice nurses/masters-prepared nurses are effective in reducing patient use of the ED and the hospital. It also begins to address a gap in the literature regarding the effectiveness of CCM on urgent care utilization. This study shows the benefits of having a community case manager involved with a patient's care. Further studies could more clearly identify what interventions benefit the patient most and at what period in time these interventions are utilized. Community case managers offer a unique and individualized approach in caring for patients in their home. Other health system organizations could reduce their overutilization by establishing a CCM program that utilizes the expertise and knowledge of advanced practice nurses/masters-prepared nurses making in-home visits to patients with at least one chronic disease.

Limitations

In this study, the primary researcher only had access to the electronic health record that is used within the studied hospital system. There are currently two hospital systems within the study area, so it cannot be determined whether the patients utilized a different hospital system for their ED visits and hospital admissions. Yet, it should be noted that health insurance companies discourage patients from receiving health care out of network by providing limited coverage.

In addition, the primary researcher could not determine whether a patient moved or died during the data collection period. This can mean that patients showed a decrease in the utilization in the acute health care system because they simply were not present. Yet, one can assume that patients who were accepting CCM services would be alive and be present in the town to receive services and the patients who refused CCM services would have the possibility of being deceased or transferred to a different location. In the latter case, those patients would show a decrease in their utilization more so than the accepting group, thus increasing the difference.

Application to Practice

All patients referred to the CCM program have the mandatory requirements of being patients within the University of Colorado Health, 18 years or older with no upper age limit, and have at least one chronic condition. Yet, typical patients are between the ages of 50 and 95 years, they have multiple chronic conditions, and they are high utilizers of the health care system. If the requirements for referral to CCM were stricter, then it could be clearer what type of population benefits most from CCM services.

In retrospective, it would have been beneficial to identify the demographics of the patients involved in the study. It may have provided more information as to which populations of patients benefit from CCM and those who may not. The recommendations of the study would be that CCM is effective in decreasing hospital admissions and ED visits for the patients they visit and that future work may indicate decreased urgent care use as well. Therefore, implementing a CCM program could be an effective method in decreasing utilization of the hospital and ED by adult patients with at least one chronic disease.

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The authors and planners have disclosed that they have no financial relationship related to this article.

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