Improving Care Transitions: Complex High-Utilizing Patient Experiences Guide Reform

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Thirty-day hospital readmission rates are high among individuals with complex medical and psychosocial needs.[1,2] Although findings of randomized controlled trials (RCTs) have shown care transition interventions can reduce hospital readmissions in older adults[3,4] and those with specific diagnoses,[5,6] populations with multiple comorbidities and mental illness or substance abuse present special challenges. Some programs report success in improving services for this population,[1,2,7,8] but we identified no RCTs showing reductions in readmission. The purpose of this paper is to describe the clinical characteristics and health service needs of readmitted patients with complex medical and psychosocial needs, with implications for linkages between inpatient and outpatient care management programs.

At our academic medical center, a number of care management programs focused on diseases or settings were developed to improve care transitions and reduce readmissions. Most evolved through separate administrative units without establishing communication or collaboration processes across units or levels of care. As these programs grew, one vexing gap in coordination occurred between inpatient and outpatient programs. This was highlighted in 2010 when changes to inpatient discharge planning were undertaken and renamed care management without coordinating with the outpatient care managers caring for many of the most complex patients. Therefore, we wished to build coordinated care management protocols between inpatient care management nurses and social workers and the outpatient care management social workers working with complex patients. This program, our Complex Care Management Program (CCMP), is primarily staffed by social workers due to patients' behavioral and socioeconomic needs. To facilitate this process, we applied the Lean process from Toyota,[9] which asserts that problems are best analyzed and addressed by the individuals closest to the data from the point of delivery. Specifically, we undertook a patient-level analysis of a cohort of complex patients with 30-day readmissions.

ABSTRACT

OBJECTIVES: Care management has been adopted by many health systems to improve care and decrease costs through coordination of care across levels. At our academic medical center, several care management programs were developed under separate management units, including an inpatient-based program for all patients and an outpatient-based program for complex, high-utilizing patients. To bridge administrative silos between programs, we examined longitudinal care experiences of hospitalized complex patients to identify process and communication gaps, drive organizational change, and improve care.

STUDY DESIGN: This descriptive study analyzed the care experiences of 17 high-utilizing patients within the authors' health system.

METHODS: Chart audits were conducted for 17 high-utilizing patients with 30-day hospital readmissions during 2013. Clinical and social characteristics were reviewed for patterns of care potentially driving readmissions.

RESULTS: Patients had heterogeneous social factors and medical, psychological, and cognitive conditions. Care management interventions apparently associated with improvements in health and reductions in hospitalization utilization included movement to supervised living, depression treatment, and achievement of sobriety. Monthly case management meetings were restructured to include inpatient, outpatient, ambulatory care, and emergency department care managers to improve communication and process. During 2014 and 2015, hospital readmission rates were overall unchanged compared with base year 2013 among a comparable cohort of high-utilizing patients.

CONCLUSIONS: Joint review of clinical characteristics and longitudinal care experiences of high-utilizing, complex patients facilitated movement of historically siloed care management programs from their focus along administrative lines to a longitudinal, patient-centered focus. Decreasing readmission rates among complex patients may require direct linkages with social, mental health, and substance use services outside the healthcare system and improved discharge planning.

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TAKEAWAY POINTS

To bridge administrative silos between care management programs, we examined longitudinal care experiences of hospitalized complex patients to identify process and communication gaps, drive organizational change, and improve care.

- Charts of 17 high-utilizing patients with heterogeneous medical and psychological conditions were reviewed for clinical and social characteristics and patterns of care potentially driving readmissions.
- Care management interventions apparently associated with improvements in health and reductions in hospitalization utilization included movement to supervised living, depression treatment, and achievement of sobriety.
- We are restructuring our monthly case management meetings to ensure simultaneous participation of case managers from inpatient, outpatient, ambulatory care, and emergency department service lines to eliminate communication and process gaps and better serve the wide range of clinical and social service needs of complex high-utilizing patients.

The Complex Care Management Program

The CCMP provides care management to individuals with significant challenges in several of 5 domains based on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* classification system: major psychiatric conditions, behavioral and substance use disorders, active medical conditions, lack of social support, and inadequate physical resources (eg, precarious housing or food, limited transportation, or multiple socioeconomic barriers). At the time of this study in 2013, patients were enrolled in CCMP primarily through record review of Medicaid- and Medicare-enrolled and uninsured patients discharged from inpatient and emergency department (ED) services. A complex care manager conducted a phone assessment of each candidate patient, using questions covering the 5 domains with additional tailored follow-up questions, such as their understanding of and ability to obtain medications and keep appointments.[10] Most received only this phone call, but during the study period, approximately 10% to 15% of patients assessed were identified as complex based on care managers' qualitative judgment—usually indicating challenges in at least 3 of the 5 domains—and, if the patient was not known to CCMP care managers, were enrolled for ongoing care management. Incorporating key elements of successful care management programs for complex patients, CCMP care managers coordinate services for patients, accompany them to primary care and specialty appointments,[7-9] visit them in inpatient settings,[3,6,7,11] and help to identify and reduce socioeconomic barriers to treatment.[12-16] The usual caseload of complex patients per care manager is 25 to 35 patients.[9] The CCMP serves approximately 450 patients annually.

METHODS

Setting and Sample

We conducted a descriptive longitudinal analysis of patient experiences of a consecutive cohort of complex patients across levels of care at our institution. Seventeen CCMP patients with 1 or more 30-day readmissions during the first 3 quarters of 2013 were audited, including all with 30-day readmissions in 2 (n = 7) or 3 (n = 1) of the first 3 quarters. In addition, 7 patients with at least 1 readmission from the third quarter (the most recent data available) and 1 patient from each of the previous 2 quarters were audited (n = 9). Most were readmitted multiple times during the study period.

A nurse practitioner experienced in working with similar populations but unassociated with the medical center analyzed the data, identifying patients' clinical conditions, presenting complaints at each hospitalization, types of healthcare professionals caring for the patient, and services provided during and between hospitalizations. Clinical judgment was used to identify factors potentially influencing readmission. Factors were qualitatively organized in categories mirroring the 5 domains used as enrollment criteria for CCMP.

RESULTS

Demographic and Socioeconomic Factors

Patients ranged in age from 18 to 61 years; 7 were women and 10 were men. All but 1 had income below the federal poverty line, and most had Medicaid or Medicare or were uninsured. All patients had 2 or more chronic medical problems, multiple socioeconomic barriers, and/or were nonadherent to treatment. Many used food assistance programs and had limited social support, strained family relationships, and transportation problems (sometimes complicated by assistive devices, such as walkers). Several patients lived in group homes; 8 had precarious housing situations (**Table**). Frequent housing changes complicated patient management and follow-up for medical and psychological conditions.

Medical and Functional Factors

The most common chronic medical diagnoses were diabetes, hypertension, angina, chronic obstructive pulmonary disease (COPD), end-stage renal disease, and congestive heart failure. Two patients died during the 6-month audit period as a result of medical complications. Inpatient admissions over the study period ranged from 2 to 5 per patient (mean = 3.3). Common admission diagnoses were alcohol or substance toxicity/withdrawal, respiratory disease (asthma/COPD), chest pain, and psychological conditions (depression, suicidality, and psychosis). With the exception of alcohol/substance use–related admissions, readmissions were often for a different diagnosis than the previous admission, and no simple pattern emerged.

TABLE. Patient Characteristics Related to Domains in Which Impairment May Occur

	Five Domains in Which Impairment May Occur				
Age/ Gender	**Active Medical Conditions**	**Major Psychiatric Disorders**	**Behavioral/Substance Use Disorders**	**Lack of Social Support**	**Inadequate Physical Resources (eg, precarious housing/food, limited transportation, multiple socioeconomic barriers)**
28 F	Hypertension Diabetes (type 1) Congestive heart failure	Depression PTSD Oppositional defiant disorder	Nonadherence	Foster mother died History of abuse	Needs supervision of treatment Group home recommended
64 M	Renal failure ESRD	Depression	Substance use	Positive with sister, strained with brother	Medication logistics Precarious housing
61 M	Diabetes (type 2) Lung cancer COPD	Schizophrenia	–	Conflicts with clinic staff	Community Mental Health Food stamps Group home recommended Home oxygen/walker
63 M	Ulcerative colitis	Depression	Drug-seeking behavior Polysubstance use	Limited	Precarious housing
42 M	Cirrhosis ESLD	Depression	In recovery	Positive with father/ mother died	Lives with father Received depression treatment
57 M	Peripheral vascular disease Hepatitis C	Depression	Polysubstance use	Estranged from family	Precarious housing Panhandling/jail
47 M (deceased)	Diabetes (type 2) ESRD	Anxiety Depression	–	Limited	Transportation problems for emergency department/dialysis: uses wheelchair
37 F	Behcet's syndrome Wolff-Parkinson-White syndrome Pacemaker	Anxiety (relating to heart disease)	Narcissistic personality disorder Intravenous narcotic use	Positive family support	Medicare Positive: income/car/home
36 F (deceased)	Hypertension Diabetes (type 2) Hypertensive crisis	Cognitive defects	Nonadherence Substance use	Limited	Washtenaw Health Program insurance
56 M	Chest pain Gastrointestinal bleeding	Depression	Substance use	–	Medicare Transportation problems Uses wheelchair
18 F	Diabetes (type 1)	Depression Attention-deficit/ hyperactivity disorder	Nonadherence	Strained	Bluecaid/Community Mental Health Financial problems Precarious housing
61 F	Anemia Chest pain Congestive heart failure	Depression	Nonadherence	Strained	Charity Care financial assistance Food insecurity Transportation problems (home oxygen/walker)
48 M	Pulmonary embolism Wound care	Schizophrenia Depression	Substance use	Poor	Precarious housing
43 F	Urinary tract infections Chest pain Congestive heart failure	Depression	Nonadherence Suspected substance use	Significant other recently killed	Precarious housing Transportation problems/impaired mobility Caregiver
29 M	HIV Hypertension	Depression Anxiety Bipolar disease	Substance use	Mother and brother recently killed	Limited information Difficulty contacting
61 M	Hypertension Colitis	Bipolar disease Anxiety	Substance use	No local family	Medicare Homeless/precarious housing
60 F	Asthma COPD	Depression Cognitive deficit	–	–	No phone Precarious housing

COPD indicates chronic obstructive pulmonary disease; ESLD, end-stage liver disease; ESRD, end-stage renal disease; F, female; M, male; PTSD; posttraumatic stress disorder.

Psychological and Behavioral Factors

Sixteen patients had psychiatric or psychological conditions; 1 had cognitive impairment. The most common psychological condition was depression, followed by anxiety, schizophrenia, and bipolar disorder. These conditions sometimes complicated efforts to manage medical conditions. In 2 patients, hallucinations and psychiatric medication adjustments caused behavioral changes that complicated self-management and access to healthcare. In others, depression or anxiety interfered with the ability to manage their conditions but was not considered severe enough to justify intervention by county Community Mental Health psychiatric providers, resulting in treatment delay. In another case, a patient was eligible for a program in which his psychiatric medication was monitored; however, no medication monitoring was available for his medical condition and he was re-hospitalized for that condition.

Eight patients had substance use disorders, with alcohol dependence being the most common. Most readmissions in this group were related to substance use. Two were lost to follow-up during the study period.

Care Coordination Gaps and Institutional Response

Patients accessed health, behavioral, and social services at the community level, as well as multiple levels within the health system, and communication gaps between these services further challenged their care. In some cases, these challenges appeared to be factors in readmission, either through missed communication or the inability to effectively treat the patient's medical or psychological conditions. In addition to primary care, emergency, and inpatient services, most patients saw 1 or more medical specialists and used community services related to housing, transportation, food, medications, health insurance, or mental health.

One important challenge was that the electronic health records (EHRs) used in the community, outpatient, and inpatient services were not accessible by other agencies or different levels in the health system. Although CCMP personnel had access to health system records, health system personnel did not have access to CCMP records and neither group had access to community service records, possibly contributing to missed communication between levels of care. In 2 patients transferred to skilled nursing facilities, for example, medications for chronic medical/psychiatric conditions were not given, leading to 1 readmission and 1 loss to follow-up. In others, late or incomplete communication about laboratory results, medication dosages, or specialty follow-up preceded readmission. In addition, no system existed to communicate patient hospitalizations to CCMP staff and inpatient care managers were not always aware of CCMP resources.

Identifying and acting on these communication challenges offered an early way for the health system to respond and potentially reduce readmissions. Administrators and care managers from the inpatient and CCMP programs reviewed the care experiences and communication gaps described in the audit at meetings throughout 2014. Timely communication among the patient, CCMP, and healthcare personnel was identified as a critical need related to readmission and coordination of posthospital services and referrals. As a result, program reform shifted toward improving communication, and patient-specific care planning was initiated between the inpatient care managers and the CCMP case managers who coordinated posthospital services.

In early 2015, monthly meetings between inpatient care managers and CCMP care managers grew to include primary care–based care managers. Through most of 2015, meetings focused on communication and documentation protocols to enhance the visibility of care planning notes among inpatient, CCMP, and outpatient care managers, for example, by creating a new, more recognizable label for EHR encounters (eg, "complex care management" rather than the more generic "telephone note"). Early recognition of CCMP patients by inpatient care managers was improved through use of a flagging system in the EHR that indicated the patient's enrollment in the CCMP and contact information for the CCMP care manager, allowing them to be invited to inpatient care planning meetings. In 2016, outpatient social workers began to participate in these care planning meetings. Bolstered by relationships established at these meetings, joint assessment and care planning are now routine and referrals from inpatient care managers to those from the CCMP have increased. The value of the CCMP in behavioral management planning and bridging between inpatient settings and primary care also motivated increased communication between inpatient and ED care managers and CCMP; these groups now meet regularly for patient care planning and process improvement. Use of a consistent EHR across all levels of care in the health system has also improved communication.

In addition to communication within the health system, communication is critical between the health system care management programs and community services providing patients with ongoing treatment or safer hospital transitions. Although incompatible EHRs remain, it was clear that case managers in both the health system and community worked to identify services relevant to patients' physical and psychological conditions. In some cases, medications or treatments were obtained after substantial communication with insurance companies, specialty care providers, or pharmacies. In others, identifying relevant nonmedical community services improved patients' self-management of their chronic conditions. For example, 2 patients improved after low-cost counseling was identified and provided for depression and anxiety, 2 after movement to group homes, and 1 after becoming sober. Regular meetings are also held among CCMP personnel and community agencies.

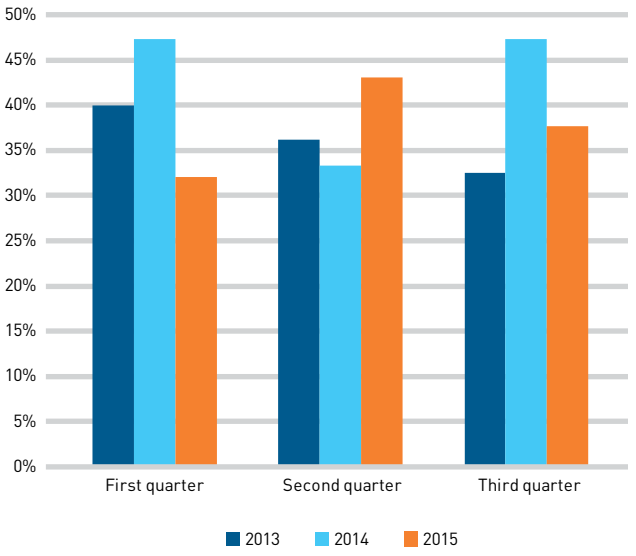
Improving care planning around behavioral conditions is recognized as a priority but has been more difficult to address. Barriers include the historical lack of involvement by Community Mental

Health providers when patients undergo a medical admission, even when care of the medical condition is complicated by the patient's psychological condition. A work group including University of Michigan Psychiatry, the CCMP, inpatient care management, and Community Mental Health is being convened to facilitate communication among these settings while patients are in the ED or inpatient services.

Readmission Rates

Despite improvements in early recognition, patient-specific root-cause analysis, and coordinated care planning, 30-day hospital readmission rates for all hospitalizations among CCMP clients have been relatively stable over time (**Figure**). Patient-specific readmission rates showed similar results (not shown).

FIGURE. Thirty-Day Hospital Readmission Rates Among CCMP Patients



CCMP indicates Complex Care Management Program.

DISCUSSION

We undertook a patient-centered approach to begin to develop process solutions to reduce readmissions and support patients as they transition from inpatient to community settings. We used a readily available resource, longitudinal patient records, to examine patient experiences across levels of care and community services. Coordination gaps identified were used to develop improved communication processes among the multiple settings providing services to this population. Other factors contributing to readmissions were varied and included the complexity and severity of medical conditions, psychological and socioeconomic conditions that complicated disease management and care access, and substance use. This is consistent with prior work finding that lack of social support or resources, a history of substance abuse and/or mental illness, and difficulty obtaining medication or transportation impacted posthospital transitions of adults,[16] veterans,[17] and homeless individuals.[18]

Several factors may explain the lack of effect on hospital readmission rates among CCMP patients. Overall, the portion of preventable hospital costs among high-risk populations has been estimated at just 6%.[19] In addition, studies demonstrating a relationship between effective discharge planning and decreased readmission rates have largely not been conducted in this population.[20] Decreasing avoidable hospitalizations in this population will likely require larger system reforms that address psychosocial determinants of health, the supply of behavioral health providers, and improved coordination of social service organizations with primary care.

Although the system modifications we have begun have not resulted in measurable reductions in readmission rates, important changes have occurred. By using a review of patient experiences as a starting point rather than administrative protocols, new and productive conversations across units occurred. Previously siloed care managers in inpatient and ED settings now meet regularly with outpatient care managers to coordinate care for individual patients. Care management documentation protocols have been shared and made more visible in the EHR across units. Perhaps most importantly, working relationships among staff and managers from different administrative units have developed, fostering interest in continuing to find new ways to promote patient-centered, rather than unit-centered, care management at all levels, including care managers, program management, and senior leadership.

Limitations

Only qualitative analysis was conducted; future research should include quantitative analysis of other factors such as length of stay and cost. In addition, the sample size was small, limiting generalizability. Finally, only 3 quarters were examined. However, consistent themes emerged across patients, suggesting that relevant factors had been identified for this population.

CONCLUSIONS

Effective care management programs for populations with medical, psychological, and social issues require collaboration across levels and disciplines, particularly with mental health and substance use providers,[3,14] identification of patients at high risk of readmission,[21,22] involvement of interdisciplinary teams in ongoing patient care,[23] and building of trusting relationships between patients and care providers.[7] However, development of horizontal organizational reforms that require collaboration across administrative units can be challenging in organizations where these units have

historically operated independently. Using actual patients' longitudinal experiences across inpatient and outpatient settings can help break down barriers to collaboration and joint planning, and foster trust and cultural transformation to promote further reform. ■

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