

# Nurse Case Manager

## Measurement of care coordination activities and quality and resource use outcomes when caring for the complex patient with hematologic cancer

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**BACKGROUND:** The lack of coordination of care for complex patients in the hematology setting has prompted nurse case managers (NCMs) to coordinate that care.

**OBJECTIVES:** This article aimed to identify the frequency of NCM care coordination activities and quality and resource use outcomes in the complex care of patients in the hematology setting.

**METHODS:** NCM aggregate data from complex outpatients with hematologic cancer were retrieved from electronic health records at a comprehensive cancer center in the midwestern United States. Total volume of activities and outcomes were calculated as frequency and percentage.

**FINDINGS:** Care coordination activities included communicating; monitoring, following up, and responding to change; and creating a proactive plan of care. Quality outcomes included improving continuity of care and change in health behavior, and resource use outcomes most documented were patient healthcare cost savings.

### KEYWORDS

nurse case manager; care coordination; complex populations; hematology

### DIGITAL OBJECT IDENTIFIER

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**MANY LEUKEMIA AND LYMPHOMA DIAGNOSES ARE COMPLEX** because of cancer treatment, nonmalignant comorbidities, and needs associated with older adults (Gorin et al., 2017). Patients with complex needs associated with cancer and treatment may benefit from care coordination by nurse case managers (NCMs) (Hickam et al., 2013; Institute of Medicine [IOM], 2011). Care coordination (often by NCMs) is considered one of 20 priorities recommended for national action to transform healthcare systems (IOM, 2011). Decreasing hospitalizations and visits to the emergency department are two benefits when an NCM is a member of the patient's interprofessional healthcare team (Newman et al., 2017). NCMs have roles in the care of patients who are abusing opioids (Sortedahl, Krsnak, Crook, & Scotton, 2018), as well as in oncology care (Grob, Bläuer, & Frei, 2017), primary care (Askerud & Conder, 2017), intensive care (Alfieri et al., 2017), and chronic care (Uittenbroek, van der Mei, Slotman, Reijneveld, & Wynia, 2018). NCM interventions have been evaluated as effective in 81% of studies measuring outcomes, including screening, patient experience with care, and quality of end-of-life care (Gorin et al., 2017).

The purpose of this study was to assess NCM care coordination activities and quality and resource use outcomes associated with caring for complex patients with hematologic (malignant and nonmalignant) cancer. The project's first aim was to identify the NCM care coordination activities (communicating, supporting self-management tools, monitoring, follow-up and responding to change, linking to community resources, facilitating care transitions, aligning resources with patient and population needs, assess needs and goals, and developing plans of care). The second aim was to assess the quality outcomes (patient self-management, patient adherence, change in health behavior, and improved continuity of care) and resource use outcomes (patient healthcare cost savings, prevented admission or readmission to the hospital, and prevented emergency department visit) associated with the care provided by NCMs.

This project is significant in that poor care coordination of patients with cancer has been associated with inadequate symptom control, medical errors, and high healthcare costs (Gorin et al., 2017). Inadequate care

coordination is estimated to cost from \$25 billion to \$45 billion U.S. dollars because of avoidable complications and unnecessary hospital admissions (Berwick & Hackbarth, 2012). Therefore, to support the NCM role in academic and community medical centers, the benefits of nurse case management require evaluation.

### Complex Patients With Hematologic Cancer

Many complex (or high-risk) patients tend to be older adults and are more likely to have multiple comorbidities, higher risk for treatment side effects, altered functional and cognitive impairment, and increased need for social support, as well as require care from multiple providers (Gorin et al., 2017; Nekhlyudov, Levit, Hurria, & Ganz, 2014). Patients with hematologic cancer have significant physical and psychological symptom burden toxicities, poor performance status, and high levels of distress (Manitta, Zordan, Cole-Sinclair, Nandurkar, & Philip, 2011). Often, patients with hematologic cancer who are admitted to the intensive care unit have high mortality rates (Cornish, Butler, & Green, 2016) and require a large amount of support when discharged. Patient issues, such as stress associated with a serious diagnosis, loss of work, and financial concerns, are situations in which an NCM can be beneficial (McGrath, 2017).

The time of NCM contact increases when the patient has a larger number of healthcare barriers, adding 16% more time needed to address the barriers, such as insurance difficulties (27%), social support (18%) and transportation (14%) (Carroll, Winters, Purnell, Devine, & Fiscella, 2011). Intensity can be influenced by patient barriers when assessing complexity and evaluating effectiveness of the NCM (Carroll et al., 2011). Intensive NCM involvement is needed for complex medical patients who have additional social and financial barriers (Roberts, Crigler, Ramirez, Sisco, & Early, 2015). NCMs who are embedded in the interprofessional team improve communication and enhance teamwork (Luther, Barra, & Martial, 2019).

An estimated 20% of patients require 50% of the NCM's coordination time; patients with the highest care complexity require the greatest time and focus (Popejoy et al., 2015). Patients with a hematologic diagnosis or malignancy require extensive clinical information so that they can make treatment decisions (Rood et al., 2015). To address unmet needs of patients with lymphoma, providers educate them about treatment options, side effects, and clinical recommendations (van Bruinessen et al., 2016). For patients with hematologic cancer, the need for medical information is a high priority compared to the need for psychosocial information (Rood et al., 2015).

Care coordination can be provided by an oncology nurse navigator (ONN), an RN with oncology-specific clinical knowledge. The Oncology Nursing Society (ONS) established core competencies for ONNs and defines the role that is designed to overcome healthcare system barriers. According to ONS (2017), an ONN

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**“Care coordination activities are in accordance with industry regulations and provide additional resources that the complex patient requires.”**

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facilitates informed decision making and access to quality health and psychosocial care to patients with cancer.

### Nurse Case Management

Case management addresses disease and treatment complexity and can be offered by social workers, nurses, and other healthcare providers who are responsible for clinical oversight, knowledge, and care coordination (American Case Management Association [ACMA], 2018; Case Management Society of America [CMSA], 2016; Hickam et al., 2013). Nurse case management is a component of general case management and is defined by the CMSA (2016) as “a collaborative process of assessment, planning, facilitation, care coordination, evaluation, and advocacy for options and services to meet an individual’s and family’s comprehensive health needs through communication and available resources to promote patient safety, quality of care, and cost-effective outcomes” (p. 8).

The NCM acts as a bridge among the patient, the care team, the health system, and community resources (Hickam et al., 2013; Thoma & Waite, 2018). NCMs are experts in building consensus and empowering the patient when making treatment decisions. NCMs can also reduce costs (Treadwell & Giardino, 2014), reduce the patient’s psychological distress (Hudon, Chouinard, Dubois, et al., 2018), manage symptoms from disease or treatment (Ozcelik, Fadiloglu, Karabulut, & Uyar, 2014), and improve the patient’s quality of care (Berry-Millett & Bodenheimer, 2009). Patients who benefit most from NCMs are those with multiple complex conditions, conditions where family support or financial resources are limited, patients with language and/or cultural barriers, and patients who are early in the disease trajectory (Vanderboom, Thackeray, & Rhudy, 2015). Nurse case management is beneficial to patients with cancer who have difficulty navigating the healthcare system (Hickam et al., 2013).

## Nurse Case Manager Role

NCMs are used in acute care settings (Grootveld, Wen, Bather, & Park, 2014; Kummarg, Sindhu, & Muengtaweepongsa, 2018; Smith & Larew, 2013), in community and primary care (Askerud & Conder, 2017; Joo & Huber, 2014), and in patient-centered medical homes, with one study reporting a 99% satisfaction rate (Treadwell & Giardino, 2014). Based on studies of the NCM role, NCMs have been shown to improve access, communication, coordination, decision making, and transitional care, and they are the preferred contact for the patient for information, support, advocacy, and help with navigating the healthcare system (Hudon, Chouinard, Diadiou, Lambert, & Bouliane, 2015). Patients receiving NCM services had 50% fewer hospitalizations, a 46% decrease in length of stay when there was an admission, and a 64% cumulative decrease in charges for unplanned emergency department visits and admissions (Berry, Rock, Smith Houskamp, Brueggeman, & Tucker, 2013) and general hospital readmissions (Joo & Liu, 2017). When patient care is coordinated by NCMs, physicians report saving at least 30 minutes per patient per month in ambulatory clinics (Berry et al., 2013).

The NCM performs standard care coordination activities, such as communication, follow-up, support of self-management, transitional care, help with resources, and understanding of the needs and goal of the patient and family (ACMA, 2018). These types of activities can occur in the oncology ambulatory care clinics and can also include symptom management and ongoing survivorship care concerns (Hsu, Chai, Lin, Wang, & Chen, 2017). Activities, such as symptom management and transitional care, are important to older, complex patients with cancer and occur in inpatient settings and after discharge (Stanton, Franco, & Scoggins, 2012). The NCM can work among other professionals, such as navigators, social workers, nurses, advanced practice providers, and physicians, and patients and families to reach a common goal. When the NCM coordinates care in the outpatient setting, coordination is longitudinal, with a focus on follow-up care rather than the NCM role in inpatient care, which focuses on discharge planning.

## Quality and Resource Use Outcomes

To maintain quality outcomes for ambulatory complex patients with cancer, quality metrics require monitoring (Kim et al., 2019). The NCMs document and monitor any change in patient behaviors that may prevent complications or treatment delays (Hickam et al., 2013). Other outcomes, such as maintaining follow-up visits (Zhang et al., 2017), adherence to the treatment plan (Greenberg, 2008), self-management (Turner et al., 2019), and resource use, are also monitored by the NCM. Understanding prime concerns of the patient and having a plan of care that can help enhance quality of life and address quality indicators is within the scope of the NCM (Zahrieh et al., 2019).

When evaluating the NCM role and resource use outcomes, a study by Ozcelik et al. (2014) showed no statistical advantage

**FIGURE 1.**  
AMBULATORY NURSE CASE MANAGER  
HIGH-RISK PATIENT REFERRAL CRITERIA

### REQUIREMENTS FOR REFERRAL BY NURSE CASE MANAGERS

- Agreement among the providers, patient, and system regarding the problems identified
- Use of high-risk screening criteria to assess for inclusion for longitudinal management

### EXAMPLES OF HIGH-RISK SCREENING CRITERIA

- Complex care coordination between multiple providers and agencies for new and existing patients
- Medical, psychological, social, and/or functional limitations
- Requires support for self-management skills or has lack of education or understanding of the following:
  - Disease process
  - Current condition
  - Medications
  - Treatment plan
- Lack of family or social support or lack of a primary caregiver
- Low-income, self-pay, or has financial issues
- Exhibit family and/or caregiver stress
- Compromised patient safety
- Inappropriate delay from other levels of care
- Nonadherence to plan of care (e.g., treatment plan, medication adherence, financial)
- Aged 75 years or older or frail
- Poor symptom control or difficulty managing treatment-related toxicities
- Poor functional status
- Potential need for home care or durable medical equipment usage
- History of mental illness or substance use disorder
- Chronic illness (e.g., end-stage renal disease, diabetes, congestive heart failure)
- Social issues (e.g., history of abuse or neglect, no known social family support, lives alone)
- Repeated emergency department visits
- Repeated unplanned admissions (e.g., greater than 3 hospitalizations within 6 months)
- Disability
- Poor nutritional status
- Palliative/end-of-life care
- Complications related to medical, psychological, or functional issues
- Patients staying in skilled nursing facility, long-term acute care hospital, or acute rehab postdischarge
- New chemotherapy patient
- Stage IV cancer diagnosis

**Note.** Information courtesy of the Ohio State University Comprehensive Cancer Center—Arthur G. James Cancer Hospital and Richard J. Solove Research Institute.

based on healthcare costs and hospital stays. However, another study by Clarke et al. (2015) suggests that NCM coordination of the patient's plan of care reduced emergency department visits by 20%, resulting in a practice cost savings of \$450,000 (taking into account NCM salary and benefits). A study of NCMs coordinating the transition of a young adult care plan to an adult care plan indicated a 28% cost reduction per month, a 78% reduction in acute hospital admissions, and a 60% reduction in emergency department visits (Maeng, Snyder, Davis, & Tomcavage, 2017).

## Methods

The Ohio State University Comprehensive Cancer Center–Arthur G. James Cancer Hospital and Richard J. Solove Research Institute (The James) is a 308-bed, freestanding academic National Cancer Institute–designated comprehensive cancer center in Columbus. The hematology clinics serviced 41,889 patient visits in 2018.

## Sample

The sample included aggregate data from complex patients with hematologic cancer who received care by an NCM from July 1 to December 31, 2018. Patient electronic health records (EHRs) were searched for patients aged older than 18 years who were considered a complex patient with hematologic cancer. Complex patients with hematologic cancer were defined by using criteria developed by The James to recognize complex patients to target additional services and support often required by patients and families (see Figure 1). Patients with hematologic cancer were diagnosed with chronic lymphocytic leukemia, acute leukemia/myeloid disorders, lymphomas, multiple myeloma/plasma cell dyscrasias, or benign hematology, or had received bone marrow transplantation. The hematology clinic is an interprofessional ambulatory model that integrates the ambulatory NCM to teams that consist of physicians, advanced practice providers, nurses, pharmacists, and social workers. The NCM self-assigns to those patients who are determined to be complex or high risk. All NCMs had at least one year of experience with the hematology service. Each NCM has a caseload of 50–75 active complex patients per month. Each eligible NCM was assigned to two to four teams as determined in accordance with clinic visit volume, clinic days, and patient profile. NCMs were expected to provide care based on case management standards of practice (ACMA, 2018; CMSA, 2016). All patient and NCM data were deidentified to ensure privacy of protected health and personal information by a data analyst.

All hematology clinics were classified into subspecialties that included chronic lymphocytic leukemia, acute leukemia/myeloid disorder, lymphoma, multiple myeloma/plasma cell dyscrasia, benign hematology, and bone marrow transplantation. The hematology clinic teams were comprised of 26 hematologists, 25 advanced practice providers, 50 clinic primary care nurses, 12 NCMs, and other clinic team members that included pharmacists,

patient care assistants, and clerical staff. Patients return to clinic based on the individual clinical treatment plan, which could entail multiple visits per week in this setting or with local oncologists or a longer time span between visits, depending on the care plan developed. The NCM collaborates and communicates across

**FIGURE 2.**

QUALITY AND RESOURCE USE OUTCOMES RELATED TO NURSE CASE MANAGEMENT BASED ON THE ANALYTIC FRAMEWORK

### QUALITY OUTCOMES

#### Patient treatment adherence

- Adherence to treatment plan: NCM actions led to an increased or successful adherence by patient to treatment plan, including medication adherence.

#### Improved continuity of care

- Assured continuity of care with post-acute provider: NCM actions led to patient's ability to attend appointment with provider.
- Corrected after-visit summary: NCM actions led to a correction or addition of information to the after-visit summary or instructions for patient after ambulatory visit or inpatient discharge.
- Patient attended outpatient visit: NCM actions proactively identified that patient needed outpatient visits arranged with a provider. This can include referrals to community providers or NCM follow-up of patient-identified and mitigated barrier to outpatient visit attendance (e.g., transportation issue, schedule conflict, unaware of appointment).
- Quicker follow-up with provider: NCM actions led to coordination of a quicker follow-up with a provider.

#### Patient self-management

- Symptoms and side effects improved or managed: NCM actions assisted in management or improvement of symptoms and/or side effects.
- Proactively identified emerging complication: NCM proactive assessment assisted in identification of emerging issue (clinical or psychosocial).

#### Change in health behavior

- Risk-targeted intervention prevented complication: NCM actions (targeted at a potential risk to the patient) prevented a potential complication.
- Prevented treatment/therapy delay: NCM actions directly prevented a delay in patient receiving treatment or therapy.

### RESOURCE USE OUTCOMES

- Patient healthcare cost savings: NCM actions prevented patient from incurring additional costs.
- Prevented emergency department visit: NCM actions prevented patient presenting to an emergency department.
- Prevented admission or readmission to the hospital: NCM actions prevented patient being admitted or readmitted to the hospital; facility, or outlying hospital.

NCM—nurse case manager

**Note.** Based on information from Hickam et al., 2013.

settings when required. Of note, ONNs are also used in many organizations to conduct similar tasks as defined in this project as an NCM. The facility where this project was conducted defines the role of the ambulatory NCM for outpatients to provide longitudinal follow-up during the course of illness and the inpatient NCM to provide discharge planning and clinical review to payers. All NCMs had three to five years of experience as a nurse in oncology or as a case manager and a bachelor's degree in nursing.

## Procedures

The EHR was the source of aggregate data. No patient identifiers were included in querying. To address aim 1, a data query included 78 documentation data fields associated with NCM care coordination activities in the care of complex patients with hematologic cancer, as defined by the care coordination measurement framework (McDonald et al., 2014). NCM care coordination activities were recognized according to the definitions for each activity. To address aim 2, nine quality outcomes (risk-targeted intervention prevented complication, prevented treatment/therapy delay, assured continuity of care with post-acute provider, quicker follow-up with provider, patient attended outpatient visit, corrected after-visit summary, adherence to treatment plan, proactively identified emerging complication, and symptom and side effects improved or managed) and four resource use outcomes (patient healthcare cost savings, prevented emergency department visit, and prevented admission or readmission to the hospital) were recognized by the analytic framework (Hickam et al., 2013) (see Figure 2). The NCM activities and outcomes were obtained from the EHR from July 1, 2018, to December 31, 2018. Patient visits were provided in private rooms in the designated clinic areas. Each hematologist had at least one half-day or one full-day patient service clinic per week.

## Instruments

The Agency for Healthcare Research and Quality (AHRQ) sought to provide an atlas to identify appropriate measures in assessing care coordination conducted by an NCM, a navigator, a social worker, or any other professional conducting care coordination. The care coordination measurement framework (McDonald et al., 2014) consists of two categories: activities and broad approaches. The first category consists of the activities or actions that help achieve care coordination, and the second consists of the broad approaches that incorporate multiple activities and are aimed at improving healthcare delivery. The care coordination measurement framework consists of eight categories of care coordination activities: supporting self-management tools; monitoring, following up, and responding to change; facilitating transitions of care; communicating; linking to community resources; creating a proactive plan of care; assessing needs and goals; and aligning resources with patient and population needs. The care coordination measurement framework was developed based on data from EHR systems, consumer

surveys, administrative claims databases, a review of AHRQ health information technology projects, national organizations' information on care coordination measurement activities (including National Quality Forum measures), expert and stakeholder panels, and a comprehensive literature search (McDonald et al., 2014). The care coordination measurement framework is published as a table that can be used to record the activities from the patient and family, healthcare provider, and systems perspective (McDonald et al., 2014).

The most prevalent care coordination activities occurring in the care coordination measurement framework were communicating, assessing needs and goals, and facilitating transitions, which accounted for 79% of NCM time (Popejoy et al., 2015). The care coordination measurement framework also identified care coordination activities in accountable care organizations, the Independence at Home Demonstration, and a community-based care transitions program (DuGoff, Dy, Giovannetti, Leff, & Boyd, 2013). The care coordination measurement framework does not include a score; it is designed to guide the identification of care coordination activities.

The analytic framework guides categorization of quality and resource use outcomes for the ambulatory case management of adults with medical illness and complex care needs and was developed for a project for the AHRQ (Hickam et al., 2013). The analytic framework included the quality outcomes of patient self-management, patient treatment adherence, improved continuity of care, and change in health behavior. The resource use outcomes were prevented emergency department visit, prevented readmission or admission to the hospital, and patient healthcare cost savings.

## Ethics

The NCM data were requested through the data quality release form from The James. For this project, the director of quality and patient safety approved the retrieval of NCM data to be led by the director of case management.

## Data Analysis

To address both aims, the total volume of each activity and outcome was calculated as a frequency and percentage. The data were queried using structured query language coding. A report was built and accessed via Crystal Reporting. Data were displayed using Tableau, version 10.5.

## Results

There were 1,790 distinct patient records assigned to NCMs in the EHR from July 1 to December 31, 2018. The documented care coordination activities ( $n = 25,555$ ), quality outcomes ( $n = 8,296$ ), and resource use outcomes ( $n = 472$ ) were associated with 12 NCMs.

The first aim was to identify the care coordination activities performed by NCMs. Sixty-eight of the 78 care coordination



activity options were documented in the EHR. They were sorted individually and allocated to the appropriate eight categories. The most frequent NCM activity category was communicating, followed by monitoring, following up, and responding to change; creating a proactive plan of care; assessing patient needs and goals; supporting self-management tools; aligning resources with patient and population needs; and helping with links to community resources (see Table 1).

The second aim was to determine the frequency of quality and resource use outcomes resulting from the care coordination activities performed by the NCM. The individual nine outcomes were categorized to four appropriate outcome categories. The quality outcome category observed most frequently was improved continuity of care, followed by change in health behavior, patient self-management, and patient treatment adherence. The individual four resource use outcomes were categorized into the three appropriate outcomes. The resource use outcome category observed most frequently was patient healthcare cost savings, followed by prevented emergency department visit and prevented admission or readmission to the hospital (see Table 2).

## Discussion

The challenge in determining NCM effectiveness in care coordination has been because of lack of standardized measurement tools and limited outcomes from the levels of healthcare provider, team, and systems (Gorin et al., 2017). Consistent measurement processes are required to provide accurate and clear data when evaluating NCM effectiveness (Hickam et al., 2013). This project identified the frequency of care coordination activities and quality and resource use outcomes of the NCM caring for complex

**TABLE 1.**  
CATEGORIZATION OF CARE COORDINATION  
ACTIVITIES AND ASSOCIATED EFFORT (N = 25,555)

ACTIVITY	n	%
Communicating	10,864	43
Monitoring, following up, and responding to change	5,611	22
Creating a proactive plan of care	2,971	12
Aligning resources with patient and population needs	2,783	11
Assessing needs and goals	2,136	8
Facilitating transitions of care	540	2
Supporting self-management tools	514	2
Linking to community resources	136	1

Note. Because of rounding, percentages may not total 100.

**TABLE 2.**  
QUALITY AND RESOURCE USE OUTCOMES  
DERIVED FROM NURSE CASE MANAGER ACTIVITIES  
(N = 8,766)

ACTIVITY	n	%
<b>Quality outcomes</b>		
Improved continuity of care	4,536	52
Change in health behavior	1,858	21
Patient self-management	1,295	15
Patient treatment adherence	605	7
<b>Resource use outcomes</b>		
Patient healthcare cost savings	348	4
Prevented emergency department visit	78	1
Prevented admission or readmission to the hospital	46	1

Note. Because of rounding, percentages may not total 100.

patients with hematologic cancer. Analysis of this project's data can support quality standards associated with effective NCM coordination of the plan of care.

As this project's data confirm, a primary activity of the NCM is communication. Patients with the highest complexity require increased coordination and communication (Berry et al., 2013). Communication for this project included 12 activities that were subcategorized into information transfer and interpersonal communication. Examples of these activities include handoff from or to case managers and/or social workers; telephone calls to patients, families, and providers; personal visits in the clinic or other outpatient area; family meetings; provision of emotional support; and postdischarge telephone calls. To meet the needs of complex patients, the NCM should have broad communications skills (McDonald et al., 2014). Improving communication and coordination between the oncologist and family can prevent contradicting information and enhance the decision-making process, particularly for patients who are very ill or frail (Adelman, Greene, Phongtankuel, & Silva, 2019; Hudon, Chouinard, Aubrey-Bassler, et al., 2018; Puts et al., 2017).

As the data from this project show, NCM communication includes communicating with primary care and specialist providers (Lawrence, McLoone, Wakefield, & Cohn, 2016). Communication among providers enhances the probability that the patient will fulfill care management recommendations (Freud et al., 2016). Studies show that primary care providers express the desire to receive regular communication from oncology providers concerning cancer treatment and conditions (Puts et al., 2017). Regular in-person, email, or EHR-based

communication enhances continuity for complex and seriously ill patients (Dudley, Ritchie, Rehm, Chapman, & Wallhagen, 2019). NCMs are central to care for high-risk patients, particularly during transition to home or other care facilities (Thoma & Waite, 2018).

The frequency of the top reported care coordination activity, communicating ( $n = 10,864$ ), was slightly less than the combined frequency of the remaining four of the top five care coordination activity categories (monitoring, following up, and responding to change; creating a proactive plan of care; assessing needs and goals; and supporting self-management) ( $n = 11,232$ ), suggesting that experience in all aspects of managing a complex patient is critical for NCMs. NCMs can coordinate care for complex populations; this care can be intense and lengthy (Roberts et al., 2015). NCMs who are knowledgeable on specified disease processes and treatments can effectively assess clinical characteristics after treatment and collaborate with providers to improve symptom management and patient satisfaction (Ozcelik et al., 2014).

The care coordination activities of aligning resources to patient needs, facilitating transitions of care, and linking to community resources were the least documented. The task of making a referral (referrals to and coordination with home care, infusion, obtaining appropriate durable medical equipment, or primary care providers) occurred less frequently compared to other activities that occurred repetitively. Documentation related to these three categories includes completing other care coordination activities to address these needs, which are then measured in the other corresponding categories. It is also possible that the social workers, nurses, or other healthcare providers may have performed these tasks, but the documentation was in a different area of the EHR.

As this project's data confirm, care coordination activities (communicating; supporting self-management tools; monitoring, following up, and responding to change; linking to community resources; facilitating transitions of care; aligning resources with patient and population needs; assessing needs and goals; and creating a proactive plan of care) are in accordance with industry regulations (ACMA, 2018; CMSA, 2016) and provide additional resources that the complex patient requires. Care coordination of patients with cancer leads to improvements in about 81% of healthcare outcomes, such as screening, quality of life, and satisfaction with care (Gorin et al., 2017). Focused coordination for complex populations aids in team collaboration to ensure their individual needs, including their physical, psychosocial, and financial needs, can be addressed at the highest level (Berry et al., 2013). Patients with the highest complexity require the most effort and time.

This project's data indicate that the greatest NCM effect on a quality outcome was improved continuity of care by supporting follow-up care visits. Follow-up is often a poorly recorded activity but is critical to treatment plan adherence (Monfardini et al., 2017). In a study by Schoeman, Swanepoel, and van der Linde (2017),

#### IMPLICATIONS FOR PRACTICE

- Increase the ability to assess patients who have multiple high-risk factors in each setting to provide additional assistance.
- Develop training and methods to improve communication with patients, caregivers, and providers around crucial conversations.
- Use a care coordination measurement framework to standardize outcome metrics to show the value of nursing care coordination efforts.

patient follow-up with recommended appointments occurred about 17% of the time in some areas of the world. Telephone follow-up can be an effective NCM task to improve continuity of care because lack of follow-up care for complex patients with hematologic cancer can be detrimental. Follow-up clinics after patient discharge can reduce patients' risk for complications, but follow-up clinics are uncommon (Lasiter, Oles, Mundell, London, & Khan, 2016). Discharged complex or older patients need additional support for follow-up care (Hestevik, Molin, Debesay, Bergland, & Bye, 2019).

During the six months that project data were analyzed, 78 (1%) potential emergency department visits and 46 (1%) potential admissions or readmissions to the hospital were avoided. Although these rates are low, the findings suggest that NCMs can save organizations, patients, and families money during a serious illness, such as a hematologic malignancy. When NCMs are added to the healthcare team, patient hospitalization and emergency department visits decrease (Newman et al., 2017). In a study by Kind et al. (2012), NCMs in a Veterans Administration hospital cut readmissions to the hospital by one-third and had a cost savings of \$1,225 per patient. In a study by Park, Branch, Bulat, Vyas, and Roevers (2013), older patients discharged from a skilled nursing facility who underwent transitional care from a postdischarge clinic experienced a lower prehospitalization rate compared to no transitional care.

#### Limitations

A limitation of the project was that the patient and provider perspectives were not included. A depiction of NCMs from patients and providers would provide further context of services, benefits, and barriers to the role. Barriers to the NCM role include a lack of understanding of skills required for complex care coordination, lack of integration on interprofessional teams, inconsistency of data documentation by NCMs, and varied expectations of NCMs by team members. The project did not include a cost estimate analysis of the savings based on numbers of prevented emergency department visits and/or admissions or readmissions, which could support resource use outcomes and provide values to return on investment of the NCM.

#### Implications for Practice

Communicating is the largest care coordination activity. Understanding the importance and extent of information transfer and interpersonal communications is critical to an NCM. Communication must include patience, clarity, conciseness, and

command of content, particularly when discussing important information with patients and families encountering a complex diagnosis. NCMs must have the skills to discuss the sensitive issues of diagnosis and prognosis, which are vital aspects of communication, and training is essential (Newman, 2016).

Improved continuity of care was the quality outcome that was documented by NCMs. NCMs must consider notions of relationship building, timeliness for patients in getting help when needed, mutuality in that providers and patients are equal in the decisions related to care, respect for choices made by the patient and family, and empowerment of the patient with knowledge of the disease and treatment strategies (Biringer, Hartveit, Sundfør, Ruud, & Borg, 2017). Many of these skills come from NCM experience; however, expertise is dynamic and must be cultivated to best serve patients and families. Continuity of care is not universally defined; some commonalities include longitudinal care, relationships, and coordinated care, all of which are well within the scope of the NCM (Meiqari, Al-Oudat, Essink, Scheele, & Wright, 2019).

The resource use outcome category that was most documented was patient healthcare cost savings, which should be a reality to all NCMs. The role of the NCM has the potential to save costs for payers, healthcare systems, and patients (Fink-Samnick, 2019; Soril, Leggett, Lorenzetti, Noseworthy, & Clement, 2015). NCMs must be aware of the potential to create necessary savings by balancing resources with the needs of the patient and family. This type of quality data can provide the nurse leader insight into efficient staffing of NCMs, patient/family needs, and training needs. Identifying common care coordination activities by using the care coordination measurement framework can provide a useful metric to demonstrate the need and usefulness of the role of the NCM. Data in support for the NCM role are often requested by hospital leadership and are used to identify care coordination activities; resource use outcomes can be very important to those processes.

## Conclusion

The project confirmed that the most frequently performed care coordination activities by NCMs are communicating and monitoring, following up, and responding to change. Improved continuity of care and change in health behavior were the most documented quality outcomes. Patient healthcare cost savings was the most documented resource use outcome. The use of the care coordination measurement framework was vital in identifying the care coordination activities, and the analytic framework was important to identify quality and resource use outcomes. The NCM provides a comprehensive service to people who are diagnosed with a complex illness.

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