

# Nurse-Led Telephonic Symptom Support for Patients Receiving Chemotherapy

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**PROBLEM STATEMENT:** The use of evidence-informed symptom guides has not been widely adopted in telephonic support.

**DESIGN:** This is a descriptive study of nurse-led support using evidence-based symptom guides during telephone outreach.

**DATA SOURCES:** Documentation quantified telephone encounters by frequency, length, and type of patient-reported symptoms. Nurse interviews examined perceptions of their role and the use of symptom guides.

**ANALYSIS:** Quantitative data were summarized using univariate descriptive statistics, and interviews were analyzed using directed descriptive content analysis.

**FINDINGS:** Symptom guides were viewed as trusted evidence-based resources, suitable to address common treatment-related symptoms. A threshold effect was a reported barrier of the guides, such that the benefit diminished over time for managing recurring symptoms.

**IMPLICATIONS FOR PRACTICE:** Telephone outreach using evidence-based symptom guides can contribute to early symptom identification while engaging patients in decision making. Understanding nurse activities aids in developing an economical and high-quality model for symptom support, as well as in encouraging nurses to practice at the highest level of preparation.

**KEYWORDS** symptom management; practice guidelines; patient-centered care; evidence-based practice  
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Cancer care is complex, and costs are expected to reach \$246 billion by 2030—an increase of 34% since 2015 (Mariotto et al., 2020). Most people with cancer are older adults (aged older than 65 years) and are often living with at least one comorbidity (Williams et al., 2016). In fact, the top four most prevalent cancers have high rates of comorbidity (lung = 53%, colorectal = 41%, breast = 32%, prostate = 31%) (Williams et al., 2016). Accordingly, providers routinely engage in decision making related to cancer therapy in the context of other complex health conditions while communicating and coordinating care with an evolving cast of primary care providers and specialists (American Society of Clinical Oncology [ASCO], 2016; McCorkle et al., 2011; Nekhyudov et al., 2014).

Not surprisingly, significant gaps in communication and shared decision making remain, and clinicians often misjudge patients' preferences and needs (Levit et al., 2013). At the same time, individuals with cancer indicate the value of being active participants in the making of health-related decisions (Alston et al., 2012). An Institute of Medicine (IOM, 2001) report titled *Crossing the Quality Chasm: A New Health System for the 21st Century* illustrates a relationship among poor care coordination when providers are at multiple sites, inadequate symptom management, medical errors, and higher costs.

Handley et al. (2018) address future reimbursement changes that amplify the need for a more deliberate approach to cancer care delivery and support. These authors highlight predicted reimbursement reductions for outpatient Medicare payments based on efforts to reduce variation by assessing quality of care and evidence of performance improvement. Embedded in Handley et al.'s (2018) five-tiered strategy to reduce acute care utilization is enhanced access to the care team and care coordination, as well as the use of standardized clinical pathways for symptom support.

Collectively, challenges related to quality, costs, and patient illness complexity have generated urgency and a national mandate to transform cancer care delivery, with care coordination emerging as a promising solution (Berwick et al., 2008; IOM, 2001; Levit et al., 2013; Smith & Hillner, 2011).

Despite multiple labels (e.g., oncology nurse navigation, home telehealth, nurse case management), definitions, and models, care coordination has emerged as a foundational workforce strategy to address the complexity, fragmentation, quality, efficiency, and costs in cancer care (ASCO, 2016; Gorin et al., 2017; Levit et al., 2013). Although nurses have been coordinating patient care for decades, efforts to quantify the role are more recent. An American Nurses Association white paper by Camicia et al. (2013) underscored the value of RN-led care coordination across settings and populations to improve outcomes such as the following:

- Reduced emergency department visits, inpatient charges, medication costs, and hospital readmissions
- Increased savings per patient, patient self-care efficacy, and safety
- Improved quality of care, patient outcomes, and patient satisfaction

In a meta-analysis by Gorin et al. (2017), care coordination nearly doubled the odds of appropriate healthcare utilization (odds ratio = 1.9) when compared with usual care, as well as improved healthcare processes and reduced costs among cancer survivors.

Reasons driving potentially preventable healthcare utilization, such as hospital readmissions, stem from treatment side effects, including infection, nausea and vomiting, and nutritional challenges (Bell et al., 2017). Symptoms, such as nausea and dehydration, and general symptom resolution are considered nurse-sensitive indicators and are amenable to early nursing intervention (Burston et al., 2014). This observation underscores the importance of symptom assessment, triage, and intervention competencies for nurse care coordinators (Baileys et al., 2018; Gaguski et al., 2017) to potentially reduce avoidable healthcare utilization (Bell et al., 2017; Givens & Sherwood, 2005; McKenzie et al., 2010; Vandyk et al., 2012).

Surprisingly little evidence quantifies or describes the specific nursing activities that comprise RN-led care coordination (Camicia et al., 2013). The current authors used the parent randomized pragmatic trial (hereafter termed the randomized controlled trial [RCT]) of a technology-enabled care coordination intervention for patients undergoing chemotherapy

to conduct this secondary analysis. In the RCT, participants in the technology arm used a personalized mobile health application to facilitate communication, manage information and calendars, log symptoms (if desired), and concurrently receive nurse-led care coordination and symptom support. The control group received nurse-led care coordination and symptom support without the mobile health application. The purpose of the current study was to describe components of the nurse care coordination role and the use of symptom guides. Specific aims were to (a) categorize the nature of nurse-led care coordination activities, including symptom support; (b) quantify the nurse workload; and (c) describe nurses' perceptions of the usefulness of evidence-based symptom guides during outgoing telephone support.

## Methods

### Design

This was a descriptive study. The participants (N = 60) in the RCT received remote telephone support from RN care coordinators every two weeks for as many as six months, with the intervention group receiving biweekly remote telephone support with a technology-enabled platform and the control group receiving RN-led care coordination alone. Nurses monitored and managed chemotherapy-related side effects and health concerns, connected patients to community resources, and coordinated healthcare services across agencies and providers. The study protocol was reviewed and approved by the institutional review board at the University of California Davis (UC Davis).

### Participants and Setting

The three RNs who provided the intervention for the RCT were employed full-time at UC Davis, a large urban academic medical center, and they had extensive case management experience with patients with chronic conditions. Patient enrollment for the RCT occurred from December 2014 to May 2016 at UC Davis Comprehensive Cancer Center, where about 10,000 adults and children receive care each year.

### Evidence-Informed Symptom Assessment and Management

To assess, triage, and intervene regarding specific symptoms, the RN care coordinators used the pan-Canadian Oncology Symptom Triage and Remote Support (COSTaRS) tool. These 13 treatment-related symptom guides are designed to support decision making for remote (telephone) nurse-led assessment

of cancer treatment-related symptoms (Stacey et al., 2013). Developed using a rigorous process including synthesis of international evidence on best practices and expert review, COSTaRS is organized to support evidence-based assessment, severity determination and triage decision making, review of medications, review of self-management strategies, and documentation (Ottawa Hospital Research Institute, 2020; Stacey et al., 2013). COSTaRS is structured to supplement nurses' clinical expertise and knowledge while promoting a person-centered approach to care and considering patients' needs, preferences, and illness experience.

Nurses involved in the current study participated in 10 hours of standardized study-specific orientation, including the COSTaRS web-based nurse training tutorial (Ottawa Hospital Research Institute, 2020; Stacey et al., 2014), telephone encounter role-playing, use of study-related technology, and guidance on how to address urgent clinical issues.

Prior to each RN-led care coordination telephone encounter, patients completed the Edmonton Symptom Assessment Scale, a validated 10-item clinical screening tool used to assess symptom severity (Chang et al., 2000). Based on the Edmonton Symptom Assessment Scale rating and the patient-reported most bothersome symptom (that which is most concerning), the RN care coordinator selected the associated COSTaRS practice guide(s) to assess symptom severity, review medications, discuss self-care strategies, and formulate an ongoing plan of care. Each patient encounter was summarized and documented in the electronic health record (EHR), with clinical concerns triaged to the cancer clinic nurse and/or oncologist, as needed.

### Data Collection

Data were collected from the EHR for each RN-led care coordination telephone encounter, as well as from RN care coordinator timesheets and from semi-structured RN care coordinator interviews.

**Quantitative—nature of care coordination:** Characterizing the components of care coordination included describing the length of care coordination, the frequency of outreach calls, and the nature of the symptom support provided to participants. In addition, specific patient-level interventions provided by the nurse for each care coordination encounter were analyzed. Data were summed to quantify the following:

- The number of RN-led care coordination encounters across the duration of care coordination for each patient; an encounter was defined as any

documented communication (telephone or email) with the patient.

- The duration (in months) of care coordination participation, from enrollment through the last documented encounter, and reason(s) for discontinuation of care coordination services for each patient
- Specific patient-reported symptoms and the primary most bothersome symptom reported by patients during each RN-led care coordination call
- RN care coordinator activities, categorized using oncology nurse generalist competencies (Gaguski et al., 2017) and oncology nurse navigator competencies (Baileys et al., 2018)

### Quantitative—RN care coordinator workload:

During the intervention, the RN care coordinators were asked to document the time they spent on each telephone encounter and to describe the associated activities by type. Data from monthly logs were summed to quantify features of patient care-related activities between April 2015 and March 2016. The nurses provided 0.2 full-time equivalent (FTE) hours each, for a total of 0.6 FTE hours, or 8 hours per week, on the current study. Care activities were reported in 15-minute increments and categorized as either direct patient care (e.g., all patient communication by email or telephone, charting, consultations with other providers about care) or indirect patient care (e.g., administrative functions, outreach efforts made to patients attempting to schedule follow-up calls).

**Qualitative—RN care coordinator experience of care coordination:** Semistructured in-person or telephone interviews of about 40 minutes were conducted to explore the experiences of RN care coordinators providing care for patients during cancer treatment, including their perceptions of barriers and facilitators to nurse-led telephone symptom support and the use of evidence-based symptom guides. An interview guide, developed to capture a priori domains (see Figure 1) was used by both interviewers (J.F.B., S.C.R.) to standardize the interview process and maintain fidelity. Written consent was obtained, and a \$40 gift card was given to participants. All interviews were digitally recorded and transcribed verbatim by an experienced transcriptionist.

### Data Analysis

The consistency, quality, and completeness of narrative data found in medical records can pose challenges for reliable abstraction and analysis (Engel et al., 2009). To strengthen the consistency and reliability of data collection and reduce bias, a standardized abstraction

form was developed by the research team for the RN care coordinator's narrative documentation in the medical record (Engel et al., 2009; Jansen et al., 2005). Quantitative data were summarized in Microsoft® Excel with univariate descriptive statistics (percentage, mean, standard deviation). The first author (A.D.) and a graduate nursing student tested inter-rater reliability on random EHRs before completing formal data collection. Regular meetings to review coding variations served as a form of continuous abstractor training. In addition, 92% agreement was achieved between data abstractors for narrative chart review data (Engel et al., 2009), with areas of disagreement resolved by consensus.

Qualitative data were analyzed using directed descriptive content analysis (Hsieh & Shannon, 2005; Sandelowski, 2000). The recorded interviews were reviewed by the first author to determine fidelity to the interview guide and analyzed for transcription accuracy. Then each was simultaneously read and listened to for content, creating initial codes. Text not fitting in predetermined domains was given a new code (Hsieh & Shannon, 2005). Codes, themes, and supporting text were reviewed by three researchers (A.D., J.F.B., S.C.R.) and organized as responses aligned with a priori categories; coding was modified, as needed, to reflect the data as accurately as possible (Sandelowski,

2000). Discrepancies in findings were discussed by the research team and reexamined until consensus was reached. Select exemplars demonstrating descriptive evidence of categories were reported. In this analysis, the concept of saturation was not applicable because there were only three potential nurse participants, all of whom agreed to participate. All common and divergent perspectives were examined.

## Results

The three RN care coordinators had practiced as RNs for an average of 25 years (range = 21–30 years) and had specialized in chronic illness care management for an average of 18 years (range = 14–23 years). Although all were experienced in RN-led care coordination for chronic illness, none had specialized expertise in oncology nursing. All were female; two had bachelor's degrees, and one had a diploma degree.

Patient characteristics are summarized in Table 1. The mean age was 59.66 years (SD = 10.12, range = 22–79 years); most were female and reported White non-Hispanic race/ethnicity.

### The Nature of Care Coordination

Overall, 52 of the 61 patients enrolled in the current study participated in care coordination, whereas 9 enrolled but never participated. Of the 52 patients who took part in care coordination, 21 completed six months of care coordination, 15 had a treatment or health status change, 8 requested termination, and 8 did not respond to RN care coordinator outreach (at least two calls not answered or returned).

Although the primary study protocol standardized the duration of care coordination at six months, patients could elect to stop services at any time. The average length of care coordination was 4.8 months (range = 0–9 months). The average number of patient encounters was 11.4 (range = 0–24).

The total number of routine telephone encounters was 594, during which participants reported between one and six symptoms. The most prevalent bothersome symptoms among the 52 patients who received care coordination were fatigue/tiredness (n = 32), nausea/vomiting (n = 20), pain (n = 16), and peripheral neuropathy (n = 16). Some participants continued to report these bothersome symptoms on repeated telephone encounters. Other less commonly reported most bothersome symptoms included appetite loss (n = 10) constipation (n = 7), depression (n = 7), and anxiety (n = 6). There were additional symptoms also reported but not considered to be the most bothersome. When

## FIGURE 1. RN Care Coordinator Interview Guide

### Perceived Role of RN Care Coordinator During Cancer Treatment

- Please describe your role providing care coordination.
  - What were the primary things you addressed with patients?
  - Was your role more in the realm of physical or psychosocial support?
- What do you feel were the benefits of care coordination in this population of patients?
- What do you feel were the barriers to engaging patients in care coordination?
- Can you describe other general issues (not related to symptom management) that were part of the care coordination you provided?

### Perspectives on the Use of COSTaRS

- What is your impression of the value of COSTaRS or its role in cancer symptom management?
- What other comments would you like to make about your experience providing care coordination for this study?

COSTaRS—pan-Canadian Oncology Symptom Triage and Remote Support

the most burdensome and coexisting symptoms were analyzed together, fatigue/tiredness, nausea/vomiting, pain, peripheral neuropathy, constipation, and depression were collectively the most common.

Although the primary focus of each telephone encounter was symptom assessment and intervention using COSTaRS, the RNs recorded 108 occasions of education and/or psychosocial support (see Table 2), including 80 collaborative communications with cancer center team members, including oncologists, nurses, social workers, pharmacists, nurse navigators, dietitians, physical therapists, advanced practice nurses, primary care providers, dentists, and wound care specialists. In addition, the RN care coordinators documented 15 referrals to cancer-specific resources, such as peer support groups and American Cancer Society services.

### Workload of Care Coordination

During the most active 12 consecutive months of study participation, each nurse averaged a census of 11 patients at 0.2 FTE hours (8 hours per week). The initial intake assessment averaged 90 minutes (range = 70–125 minutes), and follow-up telephone encounters averaged 30 minutes (range = 16–47 minutes). Interactions with patients accounted for about 85% of the RN care coordinators' time each week, with the remaining 15% being used to respond to missed outgoing calls, leave messages, and schedule RN-led care coordination calls.

### Nurses' Professional Experience

RN care coordinators described several benefits of scheduled outreach calls and one important barrier. These nurses had not previously used evidence-based symptom guides but generally found them to be useful in providing targeted symptom support for this population. Figure 2 summarizes RN care coordinators' perceptions of the benefits and barriers to RN-led care coordination via telephone outreach.

### Perceptions of RN-Led Care Coordination Outreach

RN care coordinators described their role as facilitating patient-centered care:

I was their nurse care coordinator and help[ed] follow up with symptom monitoring, providing them with the self-management tools, the protocols to help with those symptoms that they were having with the chemo[therapy]; just the coaching and follow-up to help them avoid [emergency department] visits, when they should be following

up with their cancer oncologist, nurse, and other providers, to kind of be that liaison for them, as well as providing them with different cancer-related resources—that was the main thing.

The nurses found that the telephone encounters initially focused on managing symptoms, but over time, as rapport was built, they evolved into more of a support role. As one nurse explained,

But, to be honest, after a couple weeks, it was more of the emotional kind of check-in. . . . And I always encouraged cancer-related support groups

**TABLE 1. Characteristics of Patients Receiving Nurse-Led Care Coordination (N = 52)**

Characteristic	$\bar{X}$	SD
Age (years)	59.66	10.12
Characteristic	n	
Cancer type		
Breast	19	
Gastrointestinal	12	
Lymphoma	5	
Lung	4	
Head/neck	4	
Gynecologic	3	
Other	5	
Cancer stage		
I	7	
II	20	
III	9	
IV	16	
Education level		
High school graduate	7	
Some college	12	
College graduate	13	
More than 4 years of college	19	
Missing data	1	
Marital status		
Married	32	
Single	17	
Unmarried but living with partner	3	
Race/ethnicity		
White non-Hispanic	46	
Black non-Hispanic	3	
Asian non-Hispanic	2	
Other	1	

and therapists. But a lot of times they just wanted to hear that voice on the other end of the line that they could depend on weekly or every other week. They felt yucky and [could] talk to somebody and then kind of move on.

Perceived benefits of the care coordination role included functioning as a liaison between the treatment team and community resources, as well as providing professional psychosocial support, such as through offering supportive listening, easing anxiety, and validating and normalizing patient experiences. As one nurse reflected,

It usually started out with a new patient that [was] just starting chemotherapy, where a lot of the emphasis was on managing the physical side

effects. As our [outreach calls] continued, often the same symptoms or side effects were showing up time and time again, and [they] had already been addressed and the patient had the tools and tips and strategies to manage that, and our interactions tended to evolve more toward supportive listening and validation and talking about depression and anxiety.

The nurses described the emotional needs of patients with cancer as greater than those of other populations of patients with chronic illness. In addition, they found the care of patients with cancer to be more challenging than expected. One RN explained further:

I would say that the emotional impacts of their cancer diagnosis and treatment [were] more

**TABLE 2. Care Coordination Activities and Encounters, With Selected Competencies Supported by COSTaRs**

Activity and Frequency	ONG Competencies	ONN Competencies
Symptom assessment; 583 calls	<ul style="list-style-type: none"> <li>■ Clinical care: uses clinical practice guides in assessment; implements symptom management and monitoring parameters based on selected therapy</li> </ul>	<ul style="list-style-type: none"> <li>■ Coordination of care: uses assessment tools and motivational interviewing; ensures documentation of encounters and provided services</li> <li>■ Communication: provides person-centered care consistent with goals</li> </ul>
Interprofessional collaboration; 80 calls	<ul style="list-style-type: none"> <li>■ Teamwork: participates in the coordination of care based on evidence-based practice; uses effective therapeutic communication skills during interactions with people with cancer</li> </ul>	<ul style="list-style-type: none"> <li>■ Communication: advocates for patients to promote optimal care and outcomes; acts as a liaison to optimize outcomes; facilitates interprofessional team communication to prevent fragmentation</li> </ul>
Psychosocial support; 56 calls	<ul style="list-style-type: none"> <li>■ Clinical care: provides holistic nursing care addressing the physical, psychosocial, and spiritual needs of people with cancer</li> <li>■ Teamwork: uses effective therapeutic communication skills during interactions with people with cancer</li> </ul>	<ul style="list-style-type: none"> <li>■ Communication: provides support and referral during times of high emotional stress and anxiety</li> </ul>
Patient education; 52 calls	<ul style="list-style-type: none"> <li>■ Clinical care: provides education addressing the needs of the patient and caregivers</li> </ul>	<ul style="list-style-type: none"> <li>■ Education: is related to side effect management, personalized education, and support; provides educational materials</li> <li>■ Communication: advocates for patients to promote patient-centered care that includes shared decision making and patients' goals of care with optimal outcomes</li> </ul>

COSTaRs—pan-Canadian Oncology Symptom Triage and Remote Support; ONG—oncology nurse generalist; ONN—oncology nurse navigator

**Note.** The ONG competencies are based on Gaguski et al. (2017), whereas the ONN competencies are based on Baileys et al. (2018).

intense than for many of my regular care coordination patients. I mean, I do have regular care coordination patients who do have depression, anxiety, psychosocial issues, that kind of thing. But especially for the newly diagnosed and just starting treatment, there was a lot of fear, anxiety, depression, worry, that sense of [patients feeling overwhelmed by their diagnosis and information]. So, in that respect, it was more intense.

A related observation was made by one nurse who raised concern about the isolated nature of remote RN-led care coordination for patients with complex needs and serious illness; nurses in the current study worked from an off-site location, away from the treatment team:

While it was a very good experience and rewarding . . . for our regular care coordination patients . . . here in this department, I have colleagues who are doing the same work. If I get off the phone with a particularly challenging patient, there are colleagues all around me that I can kind of bounce it off of. For this study, it felt very remote because we were so separate from the rest of the team. Because we're physically located, you know, we were geographically distant.

Finally, the RN care coordinators shared their concern that the frequency of care coordination telephone calls may be a burden to patients, in particular given the demands of treatment. Patients were juggling chemotherapy, attending clinic appointments, and sometimes receiving concomitant daily radiation therapy; all these may have included traveling a significant distance to the treatment center. One nurse said,

Some of them were really busy, as far as they had radiation five days a week and they had chemo- [therapy] one of those afternoons. And some of them were driving from really, really far away, like not [location] but some of these little towns I've never even heard of way out, like an hour-and-a-half drive. So, their lives were really busy, and it was sort of all-consuming.

### Use of COSTaRS Guides

Overall, the individual symptom guides were perceived to be a great benefit to the RN care coordinators. They described them as a trusted evidence-based guide and an aid in normalizing the emotional effects of illness. They felt that the guides

were suitable and relevant to patient symptoms; they used some guides more than others.

A barrier to the use of COSTaRS, as described by RN care coordinators, was diminished applicability over time for nurse-initiated calls, particularly when symptoms persisted. For example, the peripheral neuropathy guide had limited usefulness once all interventions and self-care strategies had been used. According to one nurse, "I think that over time it kind of felt a little bit redundant, you know, because they had the same symptoms, and we'd gone over all the self-management tools, they tried them, and we'd go over them again."

Another nurse echoed these thoughts:

As the weeks progressed, they fell off a little bit. . . . They didn't think there was going to be any real magic; there wasn't going to be anything really new. Then they would go over them again, but it just seemed that that was one of the side effects that was not going to disappear.

## Discussion

The current authors extend the aims of the underlying RCT concerning the integration of technology in cancer support to specifically address nurse-led care coordination activities, improving understanding of the work nurses do to support patients during

### FIGURE 2. Benefits and Barriers of RN-Led Care Coordination and Use of COSTaRS

#### Perceptions of RN Care Coordinator Role

##### Benefits

- Provision of professional guidance
- Liaison to treatment team
- Guidance in evidence-based self-care strategies
- Psychosocial support

##### Barrier

- Burden on time and energy reserves

#### Perceptions of Use of COSTaRS

##### Benefits

- Trusted evidence-based resource
- Symptom specific
- Normalization of emotional experiences
- Systematic assessment, triaging, and guidance in medications and self-care strategies

##### Barrier

- Diminished added benefit over time

COSTaRS—pan-Canadian Oncology Symptom Triage and Remote Support

chemotherapy. Although lists of skills and competencies are available to guide the profession, little research is available that has measured the actual role components.

Prior research has described the challenges of quantifying nursing activities. Although the extent, fidelity, timeliness, and quality of care coordination have been explored, specific activities have not been quantified (Freijser et al., 2013; Gorin et al., 2017). Although Gorin et al.'s (2017) meta-analysis described outcome measures related to RN-led care coordination, a description of the scope of the nurse's role was not included. The current study adds to existing literature by uniquely capturing nurse workload components and experiences, and by providing metrics related to the duration of care coordination, average length of telephone calls, and caseload information. In seeking to clarify assumptions of the oncology nurse care coordinator's role, Freijser et al. (2013) synthesize and conceptualize elements of the care coordination role through their literature findings, as well as through data collected from practice-based participants. Their findings align with the current study in differentiating administrative functions from clinical-level functions and emphasizing psychological support, triaging of symptoms, and partnership with other services to provide holistic care as important components of the RN care coordinator role. Taken together, these findings provide useful data that may help to inform the RN care coordinator workload and prioritize key role functions.

Evidence-based symptom management and support are fundamental to oncology nursing practice; however, little research quantifies or describes the experiences of nurses using such guides (Gorin et al., 2017; Stacey et al., 2012; Yatim et al., 2017). Ballantyne and Stacey (2016) illustrated how COSTaRS yields more efficient team communication and earlier symptom identification and intervention. Macartney et al. (2012) also found that nurses viewed the use of COSTaRS positively; in addition, they reported that for symptoms they were less confident in addressing, such as anxiety and depression, such guides can aid in decision making. RN care coordinators in the current study viewed the evidence-based COSTaRS guides positively and felt reassured by the use of a systematic process for each encounter call.

Such standardization has been observed to reduce variation and potentially affect unplanned health resource utilization (Handley et al., 2018). Effective and timely symptom intervention reduces

physical and emotional distress and improves quality of life (Hoffman, 2013). In addition to affecting health system utilization, the current study found that the use of symptom-specific guides, coupled with clinical expertise, helped RN care coordinators normalize the physical and emotional experiences patients reported. When evaluating the most burdensome reported symptoms, nurses valued the level of detail in the guides for symptom-specific assessment, intervention, and patient-centered self-care strategies.

All three nurses interviewed in the current study acknowledged the emotional toll of caring for patients with cancer (most of whom were recently diagnosed) and their own need for peer support. They found the regular patient outreach to be rewarding but emotionally difficult at times. Delivering remote telephonic support from an off-site location and not working directly with the treatment team added to a sense of isolation. Observations of RN care coordinators in the current study echo the ongoing narrative of emotional challenges reported by oncology nurses and reiterate the critical need for workplace support (Giarelli et al., 2016; Perry et al., 2011; Sirilla, 2014).

The current authors found no literature that specifically addressed the construct of "intervention dose," defined as the number of encounters needed for optimal proactive telephone support by an RN care coordinator. In the current study, nurses observed that with ongoing and recurring symptoms, COSTaRS had a somewhat limited effectiveness factor. For instance, after two or three calls with a persistent physical symptom, the nurses found little need to continue to review the same self-help strategies and concluded that the guide was no longer helpful for this purpose in subsequent encounter calls. It is important to note that COSTaRS was initially designed to triage incoming calls from patients reporting concerning symptoms; COSTaRS was not designed to be used for regular biweekly outgoing symptom support for the duration of treatment, as in the current study. The threshold effect may be a byproduct of the RCT design, and alternative delivery strategies may maximize effectiveness. Assessing and collaborating with patients to manage their symptoms using scheduled (outgoing) telephone support could be adequately accomplished during initial treatment cycles; patients could then be transitioned to patient-initiated (incoming) calls for any subsequent treatment-related symptom support.

The current authors also found that nurses spent 15% of their time providing indirect care, defined

as communication efforts (telephone or email) to schedule or provide a scheduled call. At a glance, many might agree that such outreach is a normal part of outpatient nursing practice. In the absence of other studies enumerating care coordination activities, it is not known if this is normative or excessive. Cost-effective improvements may be achieved by incorporating clerical support to improve health-care team workflow. Maximizing the productivity of each team member so that they may function at the highest level of their preparation is consistent with the aim of reducing healthcare resource utilization and is a potential area of further exploration (Berwick et al., 2008; Handley et al., 2018; Levit et al., 2013).

### Limitations

This is a retrospective study using EHR data with inquiry established *ex post facto*; therefore, the current authors were limited in the availability of variables to examine. Findings have been aligned with existing professional oncology nursing competencies; however, the current authors recognize that the study sample was small and that the RN care coordinators were not oncology-certified nurses. Care coordination in the current study was conducted by nurses without specific oncology nursing experience; findings may need careful evaluation before they are translated to oncology practice settings. Finally, the authors recognize that the nurses' role in this study was primarily focused on symptom support; as a result, findings may not be representative of a wider range of RN-led care coordination activities typical of an outpatient oncology nursing practice.

### Implications for Practice

Recognizing that this study demonstrated successful use of chemotherapy-related symptom guides with nononcology specialists working in an external department, the current authors believe that next steps should involve examination of the feasibility of integrating their use into the workflow within an oncology setting. Future research may also explore adapting COSTaRS for ongoing care coordination activities, building on previous work focused on triage of episodic patient concerns (Basch et al., 2016; Mooney et al., 2017; Nichol et al. 2015). Care coordination early in the treatment trajectory has been documented to reduce the length of time patients need support, suggesting that patients can be empowered and educated early to manage symptoms and reduce future calls and need for outreach (McCorkle

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### KNOWLEDGE TRANSLATION

- This study describes elements of telephonic nurse-led patient support, adding specific workload metrics.
  - Chemotherapy symptom guides can be successfully integrated into the clinical workflow and used by nononcology specialty nurses to deliver high-quality telephone outreach.
  - Future research should examine best practices for nurse-led symptom support in outpatient settings, evaluating nurses' influence on patient experiences as well as preventable health resource utilization.
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et al., 2011; Ow et al., 2017). Accordingly, future research may involve looking into a tailored approach regarding the use of COSTaRS to address concerns of specific patient populations (e.g., grouped by type of chemotherapy regimen or diagnosis) and optimize the delivery of RN-led care coordination primarily on the front end of treatment cycles, providing early support, education, and intervention. In accordance with these goals, research is needed to demonstrate a relationship between using a standardized preemptive approach to symptom identification and intervention and positive patient outcomes (Macartney et al., 2012).

The most bothersome symptoms reported by patients in this study are consistent with other research identifying symptom-specific issues, such as fatigue/tiredness, nausea/vomiting, and pain (Vandyk et al., 2012), that are amenable to nursing interventions (nurse-sensitive outcomes) (Coleman et al., 2009; Givens & Sherwood, 2005, Macartney et al., 2012). Gathering patient-reported outcome data, such as symptoms, improves clinical outcomes and must remain a top priority for nursing (LeBlanc & Abernethy, 2017). Findings from the current study contribute to the discussion on how and when to provide nurse-led symptom support for patients during cancer treatment, with the goal of improving patient outcomes as well as optimizing health service utilization and efficiencies.

Findings also highlight the need for ongoing support for nurses caring for patients with cancer. Understanding the stressors of caring for patients with serious, potentially life-limiting illness and its impact on quality work and care delivery is relevant in today's healthcare environment (Hlubocky et al., 2016). The RN care coordinators in the current study illuminated the importance of positive and supportive professional relationships for well-being

and sustainability. Education and training needs remain for individuals to develop healthy resiliency strategies. In addition, organizations hold an equal responsibility to provide creative ways to improve the work environment (Hlubocky et al., 2016; Pfaff et al., 2017).

Nursing practice would benefit by clarifying optimal administrative time within the care coordination role. The current authors suggest that the most efficient use of nursing expertise and time spent on tasks deserves additional investigation to support nurses functioning at the highest level of their preparation. Research measuring health outcomes and health resource utilization using a care coordination model should include such metrics.

## Conclusion

Providing symptom support is a core element of oncology nursing practice (Gagusi et al., 2017), and using best practices aligns with national recommendations to reduce variations in the delivery of cancer care. Nurses play a pivotal role in supporting patients through treatment and should lead efforts to standardize workflow processes that improve efficiencies and quality of care for individuals and populations. Symptom guides summarizing current best-practice evidence have long existed; however, a gap remains in uptake of the processes that systematize their use. The current study describes the use of such guides, as well as begins to quantify elements of an RN care coordinator role. Evidence suggests that oncology nurses using timely interventions can minimize symptom severity and avert nonurgent or preventable use of health services. Future research efforts are recommended to examine the influence of preemptive symptom support from oncology nurses on patient experiences, health outcomes, and health resource utilization.

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