Oncology Nurse Navigation
Development and implementation of a program at a comprehensive cancer center

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BACKGROUND: Oncology nurse navigation programs enhance coordination of care and patient satisfaction.

OBJECTIVES: The objective was to evaluate the effect of oncology nurse navigation on access to care, patient and provider satisfaction, and clinical trial enrollment of patients with hematologic or gynecologic malignancies.

METHODS: A descriptive cohort study with a historic control was undertaken. Data were collected from electronic health records and patient and provider surveys in two disease-specific groups.

FINDINGS: A significant decrease in the mean days from first provider visit to first therapy was observed in the hematology population. In both groups, time from contact to first visit and from first visit to initiation of treatment decreased. Mean satisfaction survey scores for both groups were high regarding relationships with the navigator and care received. Providers were highly satisfied with the program, and the navigation program did not increase clinical trials enrollment.

PROGNOSIS OF PATIENTS WITH CANCER HAVE IMPROVED over the years because of advances in oncologic therapies. However, patients with cancer still face a long and arduous treatment journey, one that is often poorly coordinated and challenging to navigate (Thygesen, Pedersen, Kragstrup, Wagner, & Mogensen, 2011). Patients recently diagnosed with cancer face significant barriers to accessing timely and quality cancer services, as well as challenges in navigating the healthcare system (Hunnibell et al., 2012; Lobb, Allen, Emmons, & Ayanian, 2010; Wulff, Thygesen, Søndergaard, & Vedsted, 2008).

Given the interprofessional nature of cancer care and the realities of the healthcare system, patients are frequently left on their own to coordinate care with numerous treatment providers, balance conflicting information, and make treatment decisions, all the while coping with their disease and treatment side effects (Horner et al., 2013).

The Institute of Medicine (2001) report Crossing the Quality Chasm: A New Health System for the 21st Century outlines the six aims for healthcare improvements: providing safe, effective, patient-centered, timely, efficient, and equitable care. Embedded in these aims is the responsibility of healthcare systems to provide prompt patient access to coordinated care. The primary goal of care coordination is improved health through timely support of patients and families regarding diagnosis and therapy options, better access to care, and improved patient satisfaction (Lee et al., 2011). One approach to enhancing coordination of oncology care is the implementation of nurse navigation programs. In this model of care, an oncology nurse navigator coordinates the overall care of patients throughout discrete phases of cancer care by (a) removing barriers to care to address the critical disconnect between time of diagnosis and start of therapy (Freeman & Rodriguez, 2011) and (b) providing timely access to care by supporting them and their families through the many decisions associated with early cancer care (Wagner et al., 2010; Wells et al., 2008). Timely delivery of cancer care services can positively affect patient outcomes. Delays often lead to referrals in diagnosis, late-stage disease, and poor prognosis (Aiello Bowles et al., 2008). Treatment delays, lack of coordination of care, gaps in patient education, and unaddressed psychosocial issues (Aiello Bowles et al., 2008), as well as financial and transportation barriers, can negatively impact patient outcomes.
obstacles (Campbell, Craig, Eggert, & Bailey-Dorton, 2010), are barriers to quality cancer care.

**Literature Review**

Studies support positive outcomes for navigated patients, including adherence to screening and diagnostic follow-up (Battaglia, Roloff, Posner, & Freund, 2006; Paskett, Harrop, & Wells, 2011; Psooy, Schreuer, Borgaonkar, & Caines, 2004; Robinson-White, Conroy, Slavish, & Rosenzweig, 2010), reduced time from biopsy to the initiation of cancer treatment (Dudley et al., 2012), and reduced time from diagnostic biopsy to the first consultation (Freund et al., 2014; Hunnibell et al., 2012; Koh, Nelson, & Cook, 2011), particularly for older adults (Basu et al., 2013). In two studies, navigated patients experienced a shorter time to diagnosis after abnormal findings than non-navigated patients (Campbell et al., 2010; Ramirez et al., 2014). Nurse navigators have improved timely follow-up by addressing barriers related to patients’ understanding of health coverage, recommending referrals to providers and needed services, assisting with decision making about treatment, and managing conditions and care received by multiple providers (Ramirez et al., 2014). In addition, nurse navigators have improved cancer care outcomes by facilitating access to appointments, providing emotional support, proactively assisting with problem solving, and providing education (Korber, Padula, Gray, & Powell, 2011; Lee et al., 2011; Swanson & Koch, 2010).

Nurse navigation also has been associated with increased overall patient satisfaction (Campbell et al., 2010; Ferrante, Chen, & Kim, 2008; Fillion et al., 2009; Hook, Ware, Siler, & Packard, 2012; Koh et al., 2011; Lee et al., 2011; Swanson & Koch, 2010). Having a nurse navigator as part of the healthcare team decreases patient distress and increases overall quality of life, resulting in improved satisfaction (Swanson & Koch, 2010). Navigated patients report significantly better experiences, particularly related psychosocial care, care coordination, and receiving information (Carroll et al., 2010; Hook et al., 2012; Wagner et al., 2014).

Nurse navigators increase clinical trial accrual (Guadagnolo et al., 2011; Holmes, Major, Lyonga, Alleyne, & Clayton, 2012). Studies demonstrate that patients benefit directly from participation in clinical trials in terms of improved clinical outcomes and positive patient experience. Therefore, access to clinical trial participation is essential (McGrath-Lone, Day, Schoenborn, & Ward, 2015). Early successes in increasing enrollment of minorities to clinical trials have been documented (Guadagnolo et al., 2009; Holmes et al., 2012; Wujcik & Wolff, 2010). Oncology nurse navigators in California who worked on community-based recruitment of African American patients to clinical trials doubled the number of clinical trial participants from 3% to 7%; the national average for adult participation in cancer clinical trials is about 3% (Holmes et al., 2012; Moffitt et al., 2010). Nurse navigators increase clinical trial participation by improving patient awareness, knowledge, and access to appropriately matched clinical trials (Moffitt et al., 2010). Low clinical trial refusal rates (14%) were noted in study-eligible patients who received navigation (Holmes et al., 2012).

**Objective and Aims**

At Rutgers Cancer Institute of New Jersey in New Brunswick, patient satisfaction scores have been high (X̄ score = 93%), and lower scores in care coordination (X̄ score = 89%) have provided an opportunity for improvement. On average, new patients have to wait about two weeks to see an oncologist. Because of high volumes and complex therapies associated with hematologic and gynecologic malignancies, navigation services were piloted to all new patients with these diagnoses. The objective of the current project was to evaluate whether employing an oncology nurse navigator for newly diagnosed patients with cancer improved outcomes. The specific aims of the project were to evaluate the effect of the oncology nurse navigator program on the following:

- Access to care as measured by a decrease in patient time to first oncologist consultation and time from first oncologist consultation to start of therapy
- Patient and provider satisfaction
- Patient referrals to clinical trials as measured by an increase in accrual rates

**Methods**

This descriptive quality improvement cohort project with historic control evaluated the oncology nurse navigation program at a National Cancer Institute–designated comprehensive cancer center, Rutgers Cancer Institute of New Jersey in New Brunswick. This study was limited to patients with gynecologic and hematologic cancers and their providers. Patient inclusion criteria

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“The time from initial consultation to start of therapy improved in both groups with the implementation of the oncology nurse navigators.”
included adults aged 18 years or older with a newly histologically confirmed diagnosis of gynecologic or hematologic malignancy who could read and write English. Exclusion criteria included any history of treatment for cancer or receipt of previous nurse navigation. The historic control group also consisted of patients with a newly histologically confirmed diagnosis of gynecologic or hematologic malignancy. Those with any history of cancer were excluded. About 7,580 new patients received care at this cancer center in 2015. Of those, 662 patients had a gynecologic malignancy and 423 patients had a hematologic malignancy.

All patient information and data were collected, deidentified, and protected according to the center’s institutional review board guidelines and Health Insurance Portability and Accountability Act regulations. The center’s institutional review board approved the project. Informed consent was waived because of exempt research status (secondary research: descriptive quality improvement cohort project).

Oncology Nurse Navigators
Two oncology nurse navigators were hired to support patients newly diagnosed with cancer early in their treatment and to target gaps in care. The nurse navigators followed these patients from initial physician consultation through completion of therapy to survivorship. Navigators received similar navigation training and have a clinical background (five or more years of oncology experience, with certification in oncology) in promoting identification and response to the psychosocial needs of patients, as well as in answering clinical questions about diagnosis and treatment (Oncology Nursing Society, 2015). They were the primary point of contact for patients and their family members (business cards with contact information were provided to each patient and family member). The key responsibilities of the oncology nurse navigators, as delineated in their job description, are listed in Figure 1.

Measures and Data Collection
AIM 1 AND AIM 3
A generated electronic health record report and chart review were used to collect all data from the electronic health record pre- and postimplementation. This report tracked and generated a list of patients newly diagnosed with hematologic or gynecologic malignancies and recorded demographic characteristics and cancer variables, including age, gender, race, ethnicity, primary language, marital status, diagnosis, and if the patient was enrolled in a clinical trial. Another electronic health record report provided the interval from first patient call (or first referring provider call) to first oncology provider consultation, and from the first oncology provider consultation to the first day of therapy. Per the current institutional policy, these time intervals were measured in consecutive calendar days. The collection period started after the oncology nurse navigators practiced for at least two months, and data collection occurred during the same periods for both groups of patients (hematology and gynecology), from March 1 to December 31, 2015. To serve as a comparison group, the researchers gathered data from the same period during the previous year. This comparison group represented patient care without the benefit of a nurse navigator.

AIM 2
Navigated patients newly diagnosed with hematologic or gynecologic malignancies completed two onetime postimplementation surveys. The first was the Patient Satisfaction With Interpersonal Relationship With Navigator (PSN-1) (Jean-Pierre et al., 2012), a nine-item questionnaire that assesses adequacy of time spent with the patient, the patient’s level of comfort, perceived navigator’s dependability, courtesy and respect, listening ability, ease of patient–navigator communication, perception of a caring relationship, navigator’s problem solving, and accessibility of the navigator. This survey has been shown to have high internal consistency, indicated by Cronbach coefficient alphas ranging from 0.95–0.96 (Jean-Pierre et al., 2012). The second questionnaire, Patient Satisfaction With Cancer Care (PSCC) (Jean-Pierre et al., 2011), is a 17-item measure that assesses patient satisfaction with care. High internal consistency has been reported as indicated

FIGURE 1.
KEY RESPONSIBILITIES OF THE ONCOLOGY NURSE NAVIGATOR

- Support patients newly diagnosed with cancer face-to-face to explain the navigator role. This includes answering questions, building a working relationship with the patient and family members, providing emotional support to patients and family members to reduce distress, and addressing any early concerns about patient’s diagnosis and/or treatment. Follow up as needed with weekly phone calls and/or face-to-face interaction.
- Facilitate communication between providers by working in collaboration with the patient’s interprofessional care team.
- Enhance services of the Office of Human Research Services by identifying patients eligible for clinical trials. Initiate conversations and education about clinical trial options.
- Identify and eliminate barriers to treatment.
- Direct patients to support services and outreach program resources, such as transportation services, counselors, language translators, chaplains, nutritionists, lymphedema clinics, social workers, exercise programs, hospice care workers, or representatives who assist with financial support.
- Act as a liaison between the cancer program and referring physicians to streamline the patient care pathway while securing referrals.
- Educate patients about their disease and the treatment process.
- Orient patients to the cancer institute’s system by referring all new patients to the new patient orientation program, including educational services (i.e., Resource and Learning Center).
by Cronbach alphas ranging from 0.95–0.96 and appropriate face validity, as well as adequate convergent and divergentvalidities (Jean-Pierre et al., 2011). Patients responded to each item on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). A total scale score for the PSCC was calculated by summing all 17 items (total possible range was 17–85), with higher scores indicating greater satisfaction with cancer-related care.

Medical health assistants, responsible for initial patient assessment, provided eligible patients with paper surveys in an

### Table 1.
Sample Characteristics by Group

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Gynecology HISTORIC DATA (N = 32)</th>
<th>Postimplementation (N = 93)</th>
<th>Hematology HISTORIC DATA (N = 75)</th>
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envelope to complete. When the patients arrived to the clinic, the assistants provided them with the survey to complete while waiting to be seen by their provider. The surveys were collected in the envelopes at the end of the clinic consultation. Participants were assigned a number on each of the surveys; therefore, no identifying data existed.

Physicians and advanced practice nurses in the two disease-specific groups were asked to fill out a provider satisfaction questionnaire regarding the services provided by the oncology nurse navigator. This questionnaire was developed for this project using an expert cancer specialist panel (a medical oncologist, surgical oncologist, advanced practice nurse, and nurse educator) to establish content validity for an eight-item survey with a five-point Likert-type scale ranging from 1 (strongly agree) to 5 (strongly disagree). Possible scores ranged from 8–40, with higher scores indicating greater levels of provider satisfaction with the services the oncology nurse navigator delivered. The one-page paper surveys were hand delivered to each provider. Each provider was asked to either send the survey back to the investigator via the interoffice envelope provided with the survey or call the investigator for pick-up.

Data Analysis
The sample demographic characteristics, cancer variables, interval times, and satisfaction scores were analyzed using descriptive statistics. A two-sample t test and Pearson chi-square test were used as appropriate to compare the demographic characteristics, cancer variables, and interval times between the groups before and after the implementation of the navigator. An a priori power analysis using a medium effect size, alpha set at 0.05, and power set to 0.8, based on the primary outcomes of access to care, suggested a sample size of 51 per group. All patients queried in the database who met eligibility served as historic controls. Data and statistical analysis used two-sided p values with significance set at 0.05 and were performed using SPSS®, version 22.

Results

Demographic Characteristics
The median age of participants in the current project was 61 years for the gynecology group (historic N = 32, postimplementation N = 93) and 60 years for the hematology group (historic N = 75, postimplementation N = 89). Most participants with gynecologic cancer were White, married, English-speaking women, whereas most participants with hematologic cancer were White, married, English-speaking men, which is consistent with the demographics of the cancer center and the disease types (see Table 1). The demographic data were analyzed for differences in the pre and post groups using a Pearson chi-square test. No statistically significant differences in age, gender, race, ethnicity, marital status, or primary language were noted (p > 0.05 for each variant).

Most participants in the gynecology group were diagnosed with endometrial cancer, followed by ovarian cancer. Common hematology diagnoses were non-Hodgkin lymphoma, multiple myeloma, and acute myeloid leukemia. No significant differences were noted in the pre and post diagnosis data (p > 0.05) (see Table 2).

Access to Care
Regarding the time from the first patient call (first referring provider call) to first oncology provider consultation, a decrease of more than four days was observed between the historic (X̄ = 15.3, SD = 26.9) and postimplementation (X̄ = 10.7, SD = 8.1) gynecology groups, but it was not statistically significant (p = 0.36). Similarly, regarding the time from the first oncology provider consultation to the first therapy, a decrease of seven days was observed between the historic (X̄ = 47.8, SD = 34.2) and postimplementation (X̄ = 40.7, SD = 22.3) gynecology groups, but it was not statistically significant (p = 0.29). In the hematology population, there was a decrease of almost three days from the time of the first patient call to the first provider consultation from historic (X̄ = 11.1, SD = 10.6) to postimplementation (X̄ = 8.5, SD = 6.8, t[121.72] = 1.79, p = 0.08). In addition, there was a statistically significant decrease of 11 days from the first provider consultation to first oncology provider consultation.
to the first therapy from historic (X = 27.1, SD = 28.5) to postimplementation (X = 16.0, SD = 9.7, t[88.94] = 3.21, p = 0.002) in the hematology population. All t tests used adjusted degrees of freedom because of unequal variances.

Patient and Provider Satisfaction
The PSN-1 survey revealed favorable responses. Sixty-six eligible patients with gynecologic cancer and 54 eligible patients with hematologic cancer who were scheduled for a physician consultation were solicited to complete the surveys. Fifty-four participants with gynecologic cancer returned the surveys, and 47 participants with hematologic cancer returned the surveys. The PSCC also revealed favorable responses. The results are shown in Table 3.

On the provider satisfaction questionnaire, the gynecology providers (n = 5) had a mean score of 4.95 (SD = 0.07, range = 4.8–5) and the hematology providers (n = 12) had a mean score of 4.39 (SD = 0.6, range = 3.1–5) out of a total score of 5 on each of the eight items.

Clinical Trial Accrual
Three of 32 patients in the historic gynecologic group were in clinical trials and none in the postimplementation. This was considered statistically significant (Fisher’s exact p = 0.02). No difference (Fisher’s exact p = 0.72) existed between the historic hematologic sample (n = 8) and postimplementation sample (n = 8).

Discussion
Access to Care
The current study was designed to evaluate a newly implemented oncology nurse navigation program at a National Cancer Institute–designated comprehensive cancer center as measured by navigated patients’ access to care, patient and provider satisfaction, and clinical trial accrual. This project revealed a decrease in the days from the initial patient/referring provider call to the initial oncology provider consultation and from the initial oncology provider consultation to the start of therapy, but it was not statistically significant in the gynecology sample.

Limited benchmarks or quality care measures help assess timely access to care in the United States. Of note, the Commission on Cancer’s Cancer Program Standards: Ensuring Patient-Centered Care seeks to establish standards to ensure quality comprehensive cancer care delivery in healthcare settings, and the Commission on Cancer published measures for eight cancer types, examining wait times from diagnosis to therapy. Wait times for these measures can range from 42–108 days within 4–6 months of diagnosis to receiving therapy (American College of Surgeons, 2016).

Although the current authors did not measure wait time from diagnosis to consultation, the average time from initial consultation to start of therapy was 40 days in the gynecology groups and 16 days in the hematology groups, respectively, which falls within the Commission on Cancer’s standards for the time from diagnosis to receiving therapy. The time from initial consultation to start of therapy improved in both populations with the implementation of the oncology nurse navigators, which was statistically significant in the hematologic population. One could postulate that navigation nurses assist in accomplishing pretreatment testing, which allows for earlier treatment planning and implementation. Looking forward, these average time intervals can be used as a benchmark for improvement. Examining institutional processes and setting improvement targets for continuous monitoring can help detect delays in access to care (Koh et al., 2011).

Patient and Provider Satisfaction
Patient satisfaction with the oncology nurse navigators was uniformly high in both populations. Patients were also highly satisfied with the cancer care they received. The findings of the current study are comparable to those reported by Post et al. (2015), who found high participant satisfaction with navigators with the use of the validated PSN-1 survey. They determined that participants who were highly satisfied with their navigators also demonstrated increased satisfaction with cancer care over time. The current findings were also comparable to those of Campbell et al. (2010), who found that navigated patients were highly satisfied with their cancer treatment overall.

Although studies are limited, two studies (Campbell et al., 2010; Hunnibell et al., 2012) revealed that providers were satisfied with nurse navigators’ effect on patient care. The current findings confirmed the results of previous studies, reporting a provider satisfaction average score of 4.95 for the gynecology providers and 4.39 for the hematology providers out of a total

<table>
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<tr>
<th>TABLE 3. SATISFACTION SURVEY RESULTS OF GYNECOLOGIC (N = 54) AND HEMATOLOGIC (N = 47) GROUPS</th>
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<tr>
<td><strong>GROUP</strong></td>
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<td>-----------------------------</td>
</tr>
<tr>
<td>PSCC survey</td>
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<td>Hematologic</td>
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PSCC—Patient Satisfaction With Cancer Care; PSN-1—Patient Satisfaction With Interpersonal Relationship With Navigator

Note. Items on the PSN-1 were scored on a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating greater patient satisfaction with their navigator relationship. Items on the PSCC were scored on a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating greater satisfaction with cancer care.
score of 5. One hematology provider (advanced practice nurse) rated the navigator services low on five out of eight questions, which led the authors to believe that further integration of the navigator may be needed in practices with advanced practice nurses.

Clinical Trial Accrual
The study findings indicated no significant difference in the number of patients recruited for clinical trial participation. A lack of appropriately matched, available clinical trials for the gynecology population existed during the postimplementation period of this study. Other factors, such as disease site, stage of presentation, comorbidities, or performance status, could have disqualified patients from enrollment in a clinical trial. These factors have been found to restrict clinical trial participation in other studies as well (Ghebre et al., 2014).

For this study, nurse navigators were not integrated into the research department. Once a patient is thought to be eligible for a clinical trial, he or she is referred to the research nurse clinician, who then works closely with the patient during the clinical trial process. This hand-off manner can be redesigned to ensure that the navigator continues to assist the patient through the research process.

Limitations
Limitations of this project were the small sample size and the lack of a comparison group for measuring patient and provider satisfaction. The patient sample used in this project represented only patients with hematologic and gynecologic cancers, limiting generalizability to other populations and cancer types. Content and face validity were established for the provider satisfaction survey; however, studies of reliability were not performed on the survey.

Future Research
Future projects may evaluate whether specific aspects of cancer-related care are improved through navigation and the impact of navigation at various times through the patient care trajectory (e.g., survivorship, recurrence). Monitoring which ancillary services are used in navigated patients may be useful for planning and budgetary purposes. Inclusion of these ancillary service administrators should be considered in planning navigation programs so they are aware of and can plan for escalation of timely diagnostic studies. Additional studies are also needed to explore if nurse navigation programs are a promising approach to address barriers to cancer trial participation. The financial implications of nurse navigation need clarification.

Conclusion
An oncology nurse navigation program at a National Cancer Institute–designated comprehensive cancer center was explored, revealing its effects on the care of patients with hematologic and gynecologic cancers as measured by access to care, time to receive initial care, and patient and provider satisfaction. This project successfully provided a baseline evaluation of these time intervals to use as a benchmark for future improvements. Patients and providers were highly satisfied with the navigator role, and continual evaluation can help to expand and integrate navigation services. Additional evaluation is needed to confirm these findings, to explore the effect navigation has on patients with other cancer diagnosis, and to distinguish when is the best time to introduce oncology nurse navigators along the trajectory of oncology care to improve patient outcomes.

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REFERENCES

IMPLICATIONS FOR PRACTICE
- Facilitate patient access to care through oncology nurse navigation.
- Understand that navigation programs demonstrate high patient and provider satisfaction.
- Establish institutional benchmarks in oncology nurse navigation programs to monitor goal attainment and improvements.


