Chemotherapy-induced nausea and vomiting (CINV) is a common and severe symptom experienced by patients undergoing cancer treatment during the acute or delayed period. Individual characteristics can compound risk for CINV. Identification of risk factors for CINV and structured, nurse-led telephone follow-up are effective, evidence-based methods to support patients undergoing cancer treatment. The authors successfully implemented a structured, nurse-led CINV intervention to improve assessment, follow-up, and support for 30 patients undergoing chemotherapy within an adult ambulatory oncology clinic.

At a Glance
- CINV is a common and severe symptom for patients undergoing chemotherapy.
- A nurse-led assessment and telephone follow-up intervention was able to successfully monitor patient-reported CINV during the acute and delayed periods.
- A structured, nurse-led telephone intervention is a feasible way to allow patients to report symptoms outside of a clinical visit.

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Chemotherapy regimens are categorized based on level of emetogenicity (Roila et al., 2010), and typical antiemetic treatments are tailored based on mild-, moderate-, or high-level categories. In addition to the emetogenicity of the drug, certain personal characteristics place a patient at increased risk for CINV. These factors include female gender, aged 60 years or younger, minimal alcohol use, and past experiences with motion sickness, CINV, or chemotherapy (Pirri et al., 2011; Thompson, 2012). In addition, anticipatory CINV, or having an expectation that CINV will occur, is known to predispose a patient to CINV (Molassiotis et al., 2014; Roscoe, Morrow, Aapro, Molassiotis, & Olver, 2011).

Treatments for CINV have improved with new medication regimens, but the symptom often may be undertreated when the patient is outside of the clinic diagonal acute or delayed symptom experience. Therefore, providing a mechanism for patients to receive support outside of the clinic appointment is important. Structured, nurse-led telephone follow-up and support, in addition to interdisciplinary management of symptoms, can improve patient-reported symptom outcomes (Anderson, 2010; Aranda et al., 2012; Craven, Hughes, Burton, Saunders, & Molassiotis, 2013; Cussack & Taylor, 2010; Kimman et al., 2011).

Study Objectives

The primary study objective was to evaluate the process of implementing a structured, nurse-led assessment and telephone follow-up intervention. The authors describe participant enrollment, attrition and completion rates in the study, frequency of completion of nurse-led telephone follow-up, and time to complete the follow-up. A secondary objective was to evaluate the occurrence of acute and delayed CINV in the sample, describe the frequency of anticipatory CINV, and describe frequency of changes in antiemetic prescription after the nurse-led intervention.

Methods

The current study included a descriptive, evidence-based practice project conducted at a community ambulatory
oncology infusion clinic affiliated with Dana-Farber Cancer Institute. Institutional review board approval was obtained prior to beginning the study procedures. Adult patients with a cancer diagnosis were recruited consecutively from the ambulatory infusion clinic during a three-month period. Eligible participants were at least 18 years of age and scheduled to start cycle one of a new chemotherapy regimen.

**Procedure**

At this clinic, a standard of care is for all new patients starting chemotherapy to receive a nurse-led, prechemotherapy teaching session. The nurse provides the patient with information about treatment and expected symptoms, including detailed CINV education. During the teaching visit or at the first chemotherapy session, the clinic nurse approached each eligible patient about the study. Interested patients were provided details of the study by a nursing member of the study team, and written informed consent was obtained.

After obtaining consent, the treating nurse completed a risk factor assessment checklist. The risk factor checklist assesses patient and treatment factors, such as chemotherapy regimen, emetogenicity of the regimen, gender, age, alcohol consumption, history of motion sickness or morning sickness, previous chemotherapy, and expectation or anticipation of CINV, that are associated with CINV based on current evidence (Pirri et al., 2011; Thompson, 2012). Risk factor assessment results were communicated to the treating clinician and incorporated into the electronic medical record. The treating clinician was able to document on the checklist any changes to the antiemetic regimen. A brief participant self-reported demographic form also was completed.

A clinic nurse completed a structured telephone follow-up call to the participant at 24 and 72 hours (plus or minus 24–48 hours depending on day of the week) post-chemotherapy treatment, using the Multinational Association of Supportive Care in Cancer Antiemesis Tool (MAT) (Molassiotis et al., 2007) to assess acute and delayed CINV and to reinforce CINV treatment plans and education. The MAT measures both acute and delayed CINV. Responses included “yes” or “no” and assessed the number of times the symptom was experienced and the severity of the symptom on a scale from 0–10. Participants were also provided an opportunity to discuss any other questions or concerns during this follow-up. Each telephone call was documented in the electronic health record, and any pertinent symptom experience was communicated to the treating clinician through email and the electronic health record.

A retrospective medical record review was completed after participants had completed study procedures, noting whether the telephone follow-up occurred and what was discussed. Descriptive measures of central tendency were calculated for all objectives.

**Results**

Thirty-two consecutive, eligible patients were approached for study participation, and 30 consented. Table 1 describes the pertinent information about the study sample and as the emetogenicity of the treatment regimen. Of note, 15 participants reported anticipatory CINV on the risk factor checklist.

Table 2 presents results for the primary and secondary objectives. The majority of participants completed the risk factor checklist and received both nurse telephone follow-up calls. In about half of the participants, clinicians changed the standard antiemetic regimen based on the risk factor checklist information. The time to complete the telephone calls ranged from 5–10 minutes. Frequencies of CINV reports diminished from 24–72 hours post-treatment. In five instances, a participant reported a symptom other than CINV that required clinician follow-up and intervention.

**Discussion**

A structured, nurse-led assessment and telephone follow-up intervention was successfully implemented in 30 participants receiving chemotherapy within an ambulatory oncology practice. The MAT and the follow-up telephone calls were completed in a reasonable and feasible amount of time. The majority of participants experienced nausea, particularly during the first 24 hours, indicating that this may be the most important time frame in which to reach out to patients in the future. The authors were able to identify symptoms requiring intervention in addition to CINV and promote treatment change for patients experiencing or anticipating CINV through structured assessment and follow-up. The next steps include implementing the intervention as the standard of care by assessing all patients for CINV risk and following up with all patients via a telephone call to provide additional support. The follow-up telephone calls will specifically be targeted to the 24-hour time period when participants reported the most symptoms of CINV.

**Limitations**

The authors’ study findings cannot be generalized outside of a community

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**TABLE 1. Sample Characteristics (N = 30)**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>56</td>
<td>29–85</td>
</tr>
</tbody>
</table>

**TABLE 2. Results of Primary and Secondary Study Outcomes (N = 30)**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary outcomes</strong></td>
<td></td>
</tr>
<tr>
<td>Risk factor checklists completed</td>
<td>26</td>
</tr>
<tr>
<td>Two nurse calls completed</td>
<td>29</td>
</tr>
<tr>
<td><strong>Secondary outcomes</strong></td>
<td></td>
</tr>
<tr>
<td>Reports of nausea at 24-hour call</td>
<td>24</td>
</tr>
<tr>
<td>Reports of nausea at 48-hour call</td>
<td>11</td>
</tr>
<tr>
<td>Reports of vomiting at 24-hour call</td>
<td>3</td>
</tr>
<tr>
<td>Reports of vomiting at 48-hour call</td>
<td>2</td>
</tr>
<tr>
<td>Changes made to antiemetic regimen</td>
<td>14</td>
</tr>
</tbody>
</table>

*Other diagnoses included leukemia, larynx cancer, and lymphoma. CINV—chemotherapy-induced nausea and vomiting.
ambulatory oncology clinic in which nurses have set aside time for pretreatment teaching sessions. The high rate of enrollment and CINV results may not be generalized beyond a sample or population dominated by middle-aged adult women.

**Conclusion**

Structured, nurse-led assessment and telephone follow-up was a feasible way to support patients experiencing cancer symptoms, including CINV. Assessment and structured telephone follow-up was completed in a timely manner and was useful for patients to report symptom experiences outside of the clinic. Future work should aim to evaluate the patient- and system-level impact of implementing the assessment and follow-up procedure in multiple sites and to assess longer term results.

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**References**


