

# Emergency Department Waiting Times for Patients With Cancer With Febrile Neutropenia: A Pilot Study

Anita Nirenberg, RN, MS, Lisa Mulhearn, RN, BSN,  
Susan Lin, DrPH, and Elaine Larson, RN, PhD, FAAN, CIC

**Purpose/Objectives:** To determine the time frame for evaluation and treatment of adult patients with febrile neutropenia in the emergency department (ED).

**Design:** Prospective, descriptive survey.

**Setting:** ED in a large, urban, academic health center.

**Sample:** 19 patients with febrile neutropenia during 23 ED visits in eight months.

**Methods:** Demographic and treatment variables and durations of time were recorded from ED and medical records.

**Findings:** Patients had fevers a mean of 21 hours (range = 1–72 hours) before seeking treatment. Median waiting time from ED admission to examination was 75 minutes, 210 minutes before antibiotics were given, and 5.5 hours to hospital admission. Patients with more comorbidities and more extensive cancer waited significantly longer than those at lower risk ( $p < 0.002$ ).

**Conclusions:** Although the standard of care is to treat febrile neutropenia as an oncologic emergency, patients waited prolonged periods prior to receiving treatment. Studies are indicated to examine early intervention for febrile neutropenia and to determine whether early intervention improves clinical outcomes.

**Implications for Nursing:** Nurses may repeat this study at other settings and with other populations of people with cancer. Other studies may provide evidence that clinical outcomes are dependent on rapid intervention for febrile neutropenia in the cancer population or evaluate the efficacy of education that oncology nurses deliver to people with cancer and febrile neutropenia.

## Key Points . . .

- Febrile neutropenia is considered to be an oncologic emergency.
- People with cancer and febrile neutropenia waited at home with a fever before coming to the healthcare facility.
- Participants with extensive cancer waited the longest time before being seen and treated for this oncologic emergency.

of serious medical complications (Paesmans, 2000). When the neutrophil count decreases to less than 1,000 cells/mm<sup>3</sup>, increased susceptibility to infection can be expected, with frequency and severity inversely proportional to neutrophil count (Hughes et al., 2002). Patients with hematologic malignancies receiving remission-induction chemotherapy or bone marrow or stem cell transplants are at greatest risk because of frequent prolonged neutropenia (Forrest, Schimpff, & Cross, 2002).

About 70%–75% of deaths from acute leukemia and 50% of deaths in patients with solid tumors are related to infection secondary to neutropenia (Barber, 2001). At least half of neutropenic patients who become febrile have an established or occult infection, and at least one-fifth of patients with neutrophil counts of less than 100 cells/mm<sup>3</sup> have bacteremia (Hughes et al., 2002). Significant advancements in supportive care for neutropenic patients have been made in the past decade. Despite these achievements, infection continues to be the major cause of morbidity and mortality in this population (Barber). Advancements have resulted in response rates to initial antimicrobial therapies that exceed 70%, and fewer than 10% of patients with cancer with febrile neutropenia die as a result of their infections (Elting & Cantor, 2002).

The American Society of Clinical Oncology developed guidelines for the use of hematopoietic growth factors in 1994 and updated them in 2000 (Ozer et al., 2000). The recommendations include initiating treatment with colony-stimulating factors

**F**ever and neutropenia are among the most common side effects related to cancer treatment. Patients with febrile neutropenia are at risk for developing life-threatening sepsis and septic shock. To prevent the development of sepsis, prompt initiation of empiric antibiotics is the standard of care for this patient population. Because most cancers are treated in the community setting, patients with febrile neutropenia as a result of cancer therapy frequently must use the emergency department (ED) to receive treatment for this complication. The purpose of this study was to determine the time frame for the evaluation and treatment of adult patients with cancer with febrile neutropenia who sought care in the ED of an academic health-care center. The components of an ED visit that were measured were time from onset of fever to a patient's presentation in the ED, time from the patient's ED admission to assessment and initiation of therapy, occurrence of sepsis and septic shock, and duration of time that the patient was febrile and neutropenic.

## Literature Review

Patients with cancer with febrile neutropenia constitute a heterogeneous population with a variable risk for development

*Anita Nirenberg, RN, MS, is director of the oncology program and assistant professor of clinical nursing, Lisa Mulhearn, RN, BSN, is a research assistant, Susan Lin, DrPH, is an assistant professor, and Elaine Larson, RN, PhD, FAAN, CIC, is an associate dean and professor, all in the School of Nursing at Columbia University in New York, NY. This study was funded by the Neutropenia Research Grant from the ONS Foundation. (Submitted May 2003. Accepted for publication November 15, 2003.)*

Digital Object Identifier: 10.1188/04.ONF.711-715