

# Febrile Neutropenia: Improving Care Through an Oncology Acute Care Clinic

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**BACKGROUND:** Patients with cancer are at risk for oncologic emergencies, including febrile neutropenia (FN). Timely treatment of FN can prevent complications. Providing this care in the outpatient setting has been shown to be safe and effective.

**OBJECTIVES:** This project implemented and evaluated a new process using an outpatient acute care clinic (ACC) to manage FN in patients with hematologic cancer. The aims were to reduce the time from fever identification to antibiotic administration, decrease emergency department (ED) visit rates, and evaluate patient satisfaction.

**METHODS:** Using a pre-/postimplementation design, an interprofessional team was educated about a new process of caring for patients with hematologic cancer and FN at an outpatient ACC using a comprehensive algorithm.

**FINDINGS:** 31 patients participated in the project (15 pre- and 16 postimplementation). Time to antibiotic administration decreased from 144.88 minutes to 63.69 minutes. Participant visits to the ED decreased by 2.33 times per month on average. Overall, patients were satisfied with the ACC. These findings support using a dedicated outpatient ACC for patients with FN receiving hematology care.

## KEYWORDS

febrile neutropenia; antibiotics; outpatient; emergency department; ambulatory

## DIGITAL OBJECT IDENTIFIER

10.1188/23.CJON.33-39

**THE PREVALENCE OF CANCER CONTINUES TO GROW**, affecting nearly 15.5 million people each year, and is projected to increase to 26 million people by 2040 (Alfano et al., 2019). Patients with cancer are at risk for oncologic emergencies, such as febrile neutropenia (FN), tumor lysis syndrome, and hypercalcemia (Klemencic & Perkins, 2019). FN is a complication of cytotoxic chemotherapy, occurring in as many as 50% of patients with solid tumors and in as many as 80% of patients with hematologic malignancies (Klemencic & Perkins, 2019). Significant complications, including hypotension and acute respiratory, renal, or heart failure, can occur in about 30% of patients with FN (Taplitz et al., 2018). In addition, FN is associated with mortality rates of as much as 11% (Bruce, 2021; Taplitz et al., 2018). Appropriate and timely management of FN in patients with cancer is required.

Many patients with hematologic malignancies who develop FN are admitted to the emergency department (ED) or directly to an inpatient unit for care, which includes IV antibiotics or IV hydration and close monitoring. However, studies have shown that ED physicians do not consistently evaluate patients for FN (Alsharawneh et al., 2020; Richards, 2020). To treat and manage FN, the National Comprehensive Cancer Network (NCCN, 2022) recommends administering empiric broad-spectrum antibiotics within 60 minutes of the patient's presentation of neutropenic fever after blood cultures have been obtained. Delays in treatment, particularly in administering IV antibiotics, present significant risks to the patient (Alsharawneh et al., 2020). Factors contributing to antibiotic delays may include ED crowding, higher-acuity patients, and inconsistent definitions or treatment regimens for FN (Keng et al., 2015; Peltan et al., 2019). Treating patients with cancer and FN in the ED or inpatient settings may be an ineffective use of these resources. There have been calls to reduce the costly and potentially avoidable use of some healthcare services, such as ED visits and inpatient admissions (Lash et al., 2017). As healthcare systems and processes respond to these concerns, patients with FN at low risk for severe complications may receive treatment in the outpatient setting (Rivas-Ruiz et al., 2019). However, to prevent unnecessary admissions to the ED and inpatient settings, it may be necessary to establish infrastructure in the outpatient setting to quickly treat and manage FN (Coyle et al., 2019).

In the Duke University Health System, a comprehensive academic health system in Durham, North Carolina, patients with symptoms of an oncologic