Implementation of an Evidence-Based Order Set to Impact Initial Antibiotic Time Intervals in Adult Febrile Neutropenia

Janie T. Best, DNP, RN, CNL, ACNS-BC, Karen Frith, PhD, RN, NEA-BC, Faye Anderson, DNS, RN, NEA-BC, Carla Gene Rapp, PhD, RN, CCRN, Lisa Rioux, BSN, RN, OCN®, and Christina Ciccarello, PharmD

Neutropenia, one of the most common side effects of chemotherapy, places patients with cancer at increased risk for systemic infection (sepsis) and infection-related death. Chemotherapy depletes infection-fighting resources, specifically neutrophils, and infection may be masked by the absence of the normal febrile response (National Comprehensive Cancer Network [NCCN], 2011). Fever related to neutropenia (febrile neutropenia) is a major reason for hospitalization of chemotherapy recipients. In addition to increased healthcare costs, delays in chemotherapy decrease overall quality of life and may prevent optimal treatment outcomes (Coughlan & Healy, 2008; Donohue, 2006; Kuderer, Dale, Crawford, Cosler, & Lyman, 2006; Nirenberg et al., 2006a). Patients who develop febrile neutropenia following chemotherapy require hospitalization to receive antibiotic therapy. Delays in initiation of antibiotics can occur at any point in the admission process, increasing the patient's risk for sepsis and death (Baltic, Schlosser, & Bedell, 2002). The purpose of this project was to evaluate the effects of the implementation of a standardized order set on the time interval in initiation of antibiotic therapy for adult patients with cancer and febrile neutropenia who were admitted to the oncology unit of an urban hospital.

Febrile Neutropenia

NCCN guidelines (2011) define a fever as a single temperature of 38.3°C or higher orally or 38°C or higher over one hour. Infection may be subtle in patients with a low absolute neutrophil count because of a compromised immune response, with fever often being the only sign of a serious infection (Camp-Sorrell, 2005; Coughlan & Healy, 2008; Kannangara, 2006). Febrile neutropenia is defined by the presence of fever in a patient who has an inadequate amount of circulating neutrophils to fight infection (Book, 2008) or an absolute neutrophil count lower than 500/mcl (NCCN, 2011). Although 6% of febrile neutropenic events occur during the first cycle of chemotherapy treatment, about 11% of patients are at risk for experiencing a febrile