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5-2021

Optimizing Empiric Vancomycin Use in Febrile Neutropenia Patients

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Citation

Tadros, Nicole; Dittmar, Erika; and Gopalani, Radhan, "Optimizing Empiric Vancomycin Use in Febrile Neutropenia Patients" (2021). *All Publications*. 3991.

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Abstract Title: Optimizing empiric vancomycin use in febrile neutropenia patients

Introduction: Febrile neutropenia (FN) is a complication of chemotherapy resulting in a temperature 100.4°F or greater plus an absolute neutrophil count (ANC) below 500 cells/mm³ or an ANC below 1000 cells/mm³ and expected to decrease below 500 cells/mm³ within 48 hours. Timely administration of broad-spectrum antimicrobial therapy is a cornerstone for the initial management of FN. However, prolonged empiric antimicrobial treatment can lead to resistance and toxicity. National guidelines and published literature do not support vancomycin as a routine part of empiric antimicrobial regimens in FN; it is only recommended in patients with specific clinical indications. This study aims to evaluate current use of vancomycin in FN and improve compliance with a guideline-driven algorithm (GDA) to ensure appropriate prescribing and therapy duration in a community hospital.

Methods: This single-center, biphasic, quality improvement project includes both retrospective (Phase I) and prospective (Phase II) review of adult patients receiving empiric vancomycin therapy for FN at Baptist Hospital. Phase I took place from January to December 2019, while Phase II took place from January to March 2021. Data collection points included patient demographics, indication, pertinent labs and cultures, therapy duration and compliance with the GDA. In Phase II, pharmacist interventions were made to recommend de-escalation or discontinuation of vancomycin as warranted. Primary outcomes included percent compliance with the GDA and duration of vancomycin therapy, while secondary outcomes included number of pharmacy interventions made and accepted in Phase II.

Results: A total of 48 patients were reviewed during phase I of the study while 32 patients were reviewed during phase II. The percent compliance with the GDA increased from 15% in phase I to 38% in phase II. The average duration of therapy in phase I was 4.77 days (ranging from 1-16) vs 2.69 days in phase II (ranging from 1-9). The percentage of patients continued on vancomycin beyond 48 hours decreased from 81% in phase I to 34% in phase II. A total of 18 pharmacist interventions were made in phase II with an acceptance rate of 100%.

Discussion: Pharmacist intervention had an impact in increasing compliance to national guideline recommendations and decreasing the duration of empiric vancomycin therapy in patients with FN.