Time to First Antibiotic Administration in Adult Oncology Patients with Fever Who Present to the Emergency Department and Infusion Centers

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PURPOSE

The objective of this study is to assess the time to antibiotic administration in adult oncology patients presenting to the emergency department (ED) and infusion centers with fever as well as characterize the antibiotic regimens these patients received.

BACKGROUND

- Febrile neutropenia (FN) is a complication that occurs in 10-30% of oncology patients receiving chemotherapy and is deemed a medical emergency. Fever is typically the only sign to indicate potential infection since patients are often unable to mount an adequate inflammatory response due to a decreased neutrophil count.[1]
- With the growth of outpatient chemotherapy administration, it is becoming more common for patients to present to the ED.[2]
  - Factors encountered in the ED that may affect timely treatment include inappropriate identification of risk, priority of treatment to patients with more severe illnesses, and ED crowding.[1,2]
- Due to the likelihood of quick progression of infection and the significant mortality associated with FN, it is recommended that patients receive urgent empirical antibiotic therapy.[3,4]
  - Multiple organizations have emphasized prompt administration of antibiotics, a time frame which has been likened to within 60 minutes of presentation.[3,5,6,7]
  - Despite these recommendations, several studies have demonstrated that there are significant delays in time to antibiotic administration (TTA) in FN patients and these delays have been associated with negative patient outcomes.[1,2,4,8,9]
- Guidelines written by the Infectious Diseases Society of America state that in patients considered high risk, first line antibiotic monotherapy is recommended using cefepime, meropenem, imipenem-cilastatin, or piperacillin-tazobactam, for coverage of *Pseudomonas aeruginosa*.[3]
- The results of this study may be utilized to develop a FN pathway and will identify areas for quality improvement.

STUDY DESIGN

- Retrospective chart review of ED and adult oncology infusion center records
- **Inclusion criteria**
  - ≥ 18 years of age
  - Presentation to the main ED or adult infusion center
  - Diagnosis of malignancy, melanoma in situ, or carcinoma in situ, as identified by ICD-9 or ICD-10 codes
  - Diagnosis of:
    - Fever as identified by ICD-9 or ICD-10 code with or without neutropenia as identified by ICD-9 or ICD-10 code **OR**
    - Neutropenic fever as identified by ICD-9 or ICD-10 code
  - Most recent chemotherapy treatment ≤ 30 days prior to presentation
- **Exclusion criteria**
  - < 18 years of age
  - Immunosuppression unrelated to administration of chemotherapy
  - Most recent chemotherapy treatment > 30 days prior to presentation
  - Direct admission to an inpatient unit
  - No temperature ≥ 100.4°F either patient reported or recorded in the patient's EMR
- The primary objective of this study will be to calculate the percentage of adult oncology patients that present with fever who receive broad spectrum antibiotics within 60 minutes of ED registration or infusion center arrival.
- Secondary objectives of this study:
  - To calculate the average and median TTA in the identified study population
  - To characterize the antibiotic regimens administered in the identified study population
  - To evaluate time to blood culture draw, time to antibiotic order, time to antibiotic verification, and time to antibiotic administration in the identified patient population.

Disclosure:
Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:
- Breana Goscicki – nothing to disclose
- Janine Barnaby – nothing to disclose

METHODS

- Emergency department (ED) and infusion center encounters between June 1, 2013 and September 30, 2016 will be reviewed
- Data to be collected will include:
  - Patient age, gender, height, weight, race
  - Patient date of presentation, location of presentation, date of last chemotherapy treatment
  - Temperature, absolute neutrophil count (ANC), cancer type, patient allergies, type and location of intravenous access
  - Time of registration, time of blood culture order release, time of blood culture, time of first antibiotic order, time of first antibiotic order verification, time of first antibiotic administration (TTA), and antibiotic regimens (drug, dose, route).
  - Additional data to be collected in patients presenting to the ED include: acuity category as assigned upon arrival, admission status, time of admission (if applicable), sepsis alert status, and time of sepsis alert (if applicable).
- Descriptive statistics will be used to summarize the clinical and demographic characteristics of our sample. Subgroup analyses may also be conducted dependent on final sample to compare the percentage of patients who received antibiotics ≤ 60 minutes after presentation, based on the following:
  - Location of presentation (i.e. infusion center or ED)
  - Whether or not the patient presented before or after the commencement of the sepsis initiative at LVHN

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