Background: Fluoroquinolone prophylaxis has been widely used in high-risk neutropenic patients with hematologic malignancies, which may reduce bloodstream infection (BSI) and mortality. However, concerns about antibiotic resistance also exist. The aim of this study was to assess the impact of new institutional strategy of restricting fluoroquinolone prophylaxis and saving carbapenem in neutropenic patients.

Methods: We retrospectively reviewed all consecutive intensive chemotherapy episodes for acute leukemia from April 2016 to March 2017 at the Catholic Hematology Oncology Program. Neutropenia was defined as absolute neutrophil count < 500/μL. Antibiotics were classified as broad-spectrum antibiotics (vancomycin, piperacillin-tazobactam, meropenem, carbapenem, and orlistat), fluoroquinolone prophylaxis (ciprofloxacin, levofloxacin), and specific targeted antibiotic therapy (e.g., fluoroquinolone prophylaxis restricting enterococci, rationally carbapenem use, especially in patients with febrile neutropenia). Preemptive β-lactam therapy was recommended to patients with febrile neutropenia and reported β-lactam allergy. This showed low admission rates for febrile neutropenia and a reported history of β-lactam allergy in the neutropenic population.

Results: Fluoroquinolone prophylaxis restriction and carbapenem saving strategies resulted in significant reductions of resistant bacterial BSLs, without increase in febrile neutropenia, BSI, septic shock, and BSI-related death. Antibiotics stewardship program can be tried in neutropenic patients, which may improve the ultimate outcome.

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2677. Effect of β-Lactam Allergy on Appropriateness of Antibiotic Use in Patients with Febrile Neutropenia

Zachary A. Yetmar, MD; Prakash Vijayvargiya, MBBS; Brittit Tosh, MD; Mary J. Kasten, MD; Mayo Clinic, Rochester, Minnesota

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Background: Over 80% of patients with hematologic malignancies develop some form of infectious complication, most commonly febrile neutropenia. Patients with febrile neutropenia have 10% mortality, which increases if antibiotic administration is delayed past 36 hours. Studies have suggested β-lactam allergy may delay administration of antibiotic while putting patients at greater risk for inappropriate antibiotic choice and adverse effects stemming from this. We sought to describe the risks associated with β-lactam allergy in the neutropenic population.

Methods: We conducted a retrospective, descriptive study from January 2016 to December 2017 identifying patients with febrile neutropenia and a reported history of β-lactam allergy. Baseline characteristics, allergy data, treatment data, and outcomes were collected and analyzed.

Results: We identified 31 patients with febrile neutropenia and β-lactam allergy during the study period. Eighty-six percent of neutropenia were hematologic malignancies (78.7%), stem cell transplantation (12.9%), solid-organ malignancy (22.6%), and autoimmune (3.3%). Reported reactions to β-lactams were rash (41.9%), hives (9.7%), anaphylaxis (3.2%), urticaria (9.7%), and unknown (35.5%). Average time to antibiotic administration was 142.5 minutes. Antibiotic choice was cefepime (61.3%), piperacillin–tazobactam (6.5%), carbapenem (22.6%), fluoroquinolone (6.5%), and cefepime and fluoroquinolone (3.2%). Other antibiotics were collected and analyzed.

Conclusion: Our study estimated the antibiotic usage patterns and outcomes in patients with febrile neutropenia and reported β-lactam allergy. This showed low adherence to an established guideline for antibiotic choice in these patients. With rising antimicrobial resistance, there is a need for developing strategies to reduce inappropriate antimicrobial use, especially in patients with febrile neutropenia. Preemptive β-lactam allergy evaluation warrants further evaluation in the neutropenic population.

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2678. Infection-Related Outcomes in Patients With Malignancy-Related Febrile Neutropenia

Background: Febrile neutropenia (FBN) is a life-threatening oncological emergency requiring hospitalization and early treatment with broad-spectrum antibiotics. We aimed to study differences in infection-related outcomes for febrile neutropenia in various malignancies.

Methods: The National Inpatient Sample (NIS) data set was queried from 2007 to 2014 to identify all patients with a diagnosis of neutropenic fever (ICD-9 998.1x or 284.4x). Diagnoses for various cancers were determined via their respective Clinical Classification Software (CCS) codes. Diagnoses of pneumonia (481.x, 482.x), bacterial meningitis (320.x), Clostridium difficile (008.45), infectious colitis due to neoplastic agents (099.x), urinary tract infection (599.0x), pyelonephritis (590.1x, 590.80), skin and soft-tissue infection (682.x, 684.x, 686.8x, 686.9y), mucositis (528.01), influenza (CCS 487), sepsis (995.91), severe sepsis (995.92), septic shock (785.32), E. coli septicaemia (038.42), Pseudomonas septicaemia (038.12) and Streptococcal septicaemia (038.0) were identified using their respective ICD/CCS codes.

Results: We studied 381,043 patients with FBN. Leukemia was the most common malignancy associated with FBN (140,190 patients, 36.8%). Mortality was 3.2% at 30 days and 16.1% at 90 days. Patients with hematologic malignancies associated with FBN were significantly associated with brain cancer, while other infections were associated with a range of malignancies. (Table 1) Methylcellulose-resistant Staphylococcus aureus was associated with cancers of the bone, breast and non-hodgkin lymphoma, while other microorganisms varied across different malignancies (Table 2). Septic shock was associated with cancer of the pancreas, lung, bone, breast, leukemia, bladder, kidney, thyroid, myeloma, patient, sepsis, cervix, brain, melanoma, non-hodgkin lymphoma, compared with other malignancies (Table 3).

Table 1: Significant association of an infection with malignancies at different location

Table 2: Significant association of specific bacterial infection with malignancies at different locations
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2678. Characterizing Hospitalizations and Infections Among Older Adults Receiving Palliative Chemotherapy for Hematologic Malignancies
Natalie Uy, MD; Rupak Datta, MD; Noofar Bar, MD; Manisha Juthani-Mehta, MD; Yale School of Medicine, Yale New Haven Hospital, New Haven, Connecticut

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Background: As cancer survivorship improves, the number of patients with hematologic malignancies receiving palliative chemotherapy will grow. Older adults with hematologic malignancies often carry poor prognoses and experience high risks of infection. We evaluated the frequency of CDC criteria confirmed infection and antimicrobial use during hospitalizations following initiation of palliative chemotherapy.

Methods: We conducted a cohort study of patients aged ≥ 65 years who received non-curative palliative chemotherapy between January 1, 2016 and September 30, 2017 and were subsequently hospitalized by January 31, 2018. Hematologic malignancies were verified with medical record review. Infections were identified using CDC criteria, and antimicrobials were categorized by indication for use.

Results: We identified 268 patients receiving palliative chemotherapy for hematologic malignancies (Table 1) who had a total 591 hospitalizations (Table 2) during follow-up. There were 162 readmissions (27%) among 92 patients. Among all patients, 128 (48%) died during follow-up. Forty-one (15%) deaths were within 30 days of discharge. The most common site of death was hospice, in and outpatient (27%). Two hundred forty-nine (42%) admissions were for infectious causes; of the 34 patients who died inpatient (non hospice), 56% had been admitted for infectious causes. Antimicrobials were prescribed for prophylaxis in 57% (n = 337/591) of hospitalizations. Antimicrobials were prescribed for suspected infection in 48% (n = 282/591) of hospitalizations. Only 30% (n = 178/591) of hospitalizations had antimicrobials given for CDC confirmed infections. Figure 1 shows the most common indications for antimicrobial use.

Conclusion: Infections are an important cause of the morbidity and mortality in older adults receiving palliative chemotherapy for hematologic malignancies. Hospitalizations for infectious causes were frequent in our cohort. Nearly half of hospitalizations involved antimicrobial use for suspected infection, but CDC confirmed infections were less common. This population warrants further investigation to improve antimicrobial use. Future studies should identify the subset of patients at high risk for recurrent admissions to optimize medical care.

Table 1. Patient Population

| Age, mean (SD) | 67 (14) years |
|----------------|--------------|
| Sex            | Male (50%)   |
|                | Female (50%)  |
| Had prior chemotherapy | 134 (50%)   |

Malignancy

| Plasma cell dyscrasia | 93 |
| Non Hodgkin’s lymphoma (B cell type) | 52 |
| Chronic lymphocytic leukemia | 40 |
| Acute myeloid leukemia | 31 |
| Myelodysplastic syndrome | 23 |
| Chronic myeloid leukemia | 9 |
| Non Hodgkin’s lymphoma (T cell type) | 7 |
| Other* | 13 |

* Malignancies with n ≤ 5 (Myeloproliferative neoplasm, Acute lymphocytic leukemia, Chronic myelomonocytic leukemia, Hodgkin’s lymphoma)

Table 2. Hospitalization Data

| Hospitalizations (n=591) |
|--------------------------|
| Length of Stay, mean (SD) | 7 (6) days |
| 30 Day Readmission | 162 (27%) among 92 patients |
| Infectious Reason for Admission | 249 (42%) |

Deaths: 128 (48%)
In hospital: 34 (13%)
Out of hospital: 13 (5%)
Hospice: 72 (27%)
Unknown location: 9 (3%)
Deaths within 30 days of Discharge: 41 (15%)

Palliative Chemotherapy Timing
< 2 weeks of death: 29 (11%)
< 1 month of death: 24 (9%)
< 2 months of death: 25 (9%)
> 2 months of death: 39 (15%)
Unknown timing: 11 (4%)

Hospitalizations with Antibiotics Administered

| Prophylaxis | 337 (57%) |
| Suspected infection | 282 (48%) |
| Confirmed infection | 178 (30%) |

*Infections with n ≤ 5 (CNS, cardiovascular, viremia, fungemia)

Fig 1. Confirmed infection subtypes as per CDC criteria

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2679. Factors Associated with Multidrug-resistant Gram-Negative Bacteremia in Acute Leukemia Patients with Neutropenic Fever, a Retrospective Study
Dudrudee Chaithipporn, MD; Klarapat Prasongdee; Sunisa Kongkaikhamon, MD; Kanmonwan Jutivorakool, MD; Jakapat Yanichanan, MD; Faculty of Medicine, Chulalongkorn University, Bangkok, Krung Thep, Thailand; King Chulalongkorn Memorial Hospital, Bangkok, Krung Thep, Thailand

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Background: Gram–negative bacteremia in acute leukemia patients with neutropenia is associated with high morbidity and mortality rate. Appropriate antibiotic for empirical treatment is crucial; however, antibiotic selection is challenging especially in setting with high prevalence of infections with multidrug-resistant (MDR) organisms. Data on associated factors of MDR Gram-negative bacteremia in this population is limited.

Methods: A retrospective study was conducted in King Chulalongkorn Hospital, Bangkok, Thailand. Medical records of patients aged ≥15 years with acute leukemia who were hospitalized in our institute and had neutropenic fever between 1 January 2001 and 31 December 2016 were reviewed. Demographic data, causative organisms, treatment and outcomes were documented. Episodes of MDR Gram-negative...