Table 3. Significant association of the severity of sepsis with malignancies at different location

Severity of Infection	Malignancy – Percentage (%)
Sepsis	Pancreas (9.69%), Lung (8.71%), Bone (3.55%), Bladder (10.57%), Kidney (3.73%), Brain (4.55%), Hodgkins (5.17%), Rectum (7.03%), Colon (8.09%), Breast (6.13%), Melanoma (5.88%), Leukemia (7.60%), Non Hodgkins Lymphoma (7.96%), Myeloma (5.66%)
Severe Sepsis	Lung cancer (5.08%), Bone (1.08%), Melanoma (1.37%), Breast (1.70%), Kidney (2.56%), Brain (2.16%), Leukemia 7.60 (4.14%), Liver (2.77%), Testis (2.62%), Thyroid (1.37%), Non Hodgkins Lymphoma (3.81%), Pancreas (3.21%)
Shock	Pancreas (2.22%), Lung (3.46%), Bone (1.49%), Breast (1.21%), Leukemia (3.03%), Bladder (1.66%), Kidney (2.16%), Thyroid (0.40%), Myeloma (2.27%), Prostate (1.86%), Testis (1.69%), Cervix (1.28%), Brain (1.78%), Melanoma (1.57%), Non Hodgkins Lymphoma (2.76%)

Disclosures. **All authors:** No reported disclosures.

2678. Characterizing Hospitalizations and Infections Among Older Adults Receiving Palliative Chemotherapy for Hematologic Malignancies

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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 hematology 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

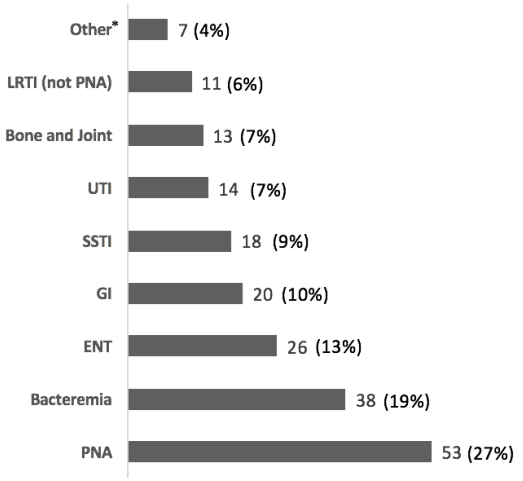
Patient Demographics (n=268)	
Age, mean (SD)	67 (14) years
Sex	
Male	134 (50%)
Female	134 (50%)
Had prior chemotherapy	134 (50%)
Malignancy	
Plasma cell dyscrasia	93
Non Hodgkin's lymphoma (B cell type)	52
Chronic lymphocytic leukemia	40
Acute myeloid leukemia	31
Myelodysplastic syndrome	23
Chronic myeloid 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%)
Outcomes	
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%)

Fig 1. Confirmed infection subtypes as per CDC criteria



*infections with n ≤ 5 (CNS, cardiovascular, viremia, fungemia)
LRTI = lower respiratory tract infection, UTI = urinary tract infection,
SST = skin /soft tissue infection, GI = gastrointestinal, ENT = ear, nose, throat
PNA = pneumonia

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2679. Factors Associated with Multidrug-resistant Gram-Negative Bacteremia in Acute Leukemia Patients with Neutropenic Fever, a Retrospective Study

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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

bacteremia were compared with non-MDR group. Associated risk factor was assessed by multivariate logistic regression

Results: From total 405 admission records of 227 acute leukemia patients, 587 episodes of neutropenic fever occurred with 131 episodes of Gram-negative bacteremia. Majority (81.68%) were bacteremia without source of infection. Most common causative pathogens were *E. coli, P. aeruginosa* and *K. pneumoniae,* respectively. Sixty episodes of Gram-negative bacteremia (53.57%) were caused by MDR pathogen. Associated factor for MDR Gram-negative bacteremia was prior colonization or infection with MDR Gram-negative bacteria within 3 months ($P = 0.049$). Subgroup analysis in patients with non-lactose fermenter bacteremia showed higher rate of intensive care unit (ICU) admission and in-hospital death in MDR group ($P = 0.03$ and $P = 0.004$).

Conclusion: Prior colonization or infection by MDR Gram-negative bacteria within 3 months was associated with MDR Gram-negative bacteremia in acute leukemia patients with neutropenic fever. Thoroughly review of previous culture data and active screening for colonization may increase chance of appropriate empirical antibiotics.

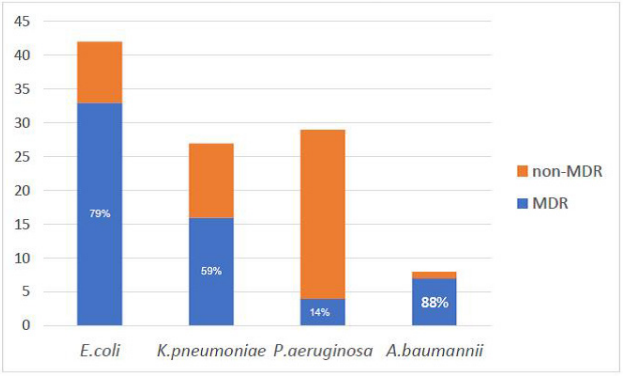
Table 1. Causative organisms of bacteremia in acute leukemia patients with neutropenic fever

Gram-positive bacteria (N=25)	Prevalence n (%)	Gram-negative bacteria (N=131)	Prevalence n (%)
S.aureus	6 (24)	Enterobacteriaceae	
MSSA	5 (20)	*E.coli*	42 (32.06)
MRSA	1 (4)	*K.pneumoniae*	27 (20.16)
		E.cloacae	4 (3.05)
Coagulase-negative straphylococcus	1 (4)	*P.vulgaris*	1 (0.76)
		M.morganii	1 (0.76)
Viridans streptococci	3 (12)	Non-lactose fermenter	29 (22.14)
S.pneumoniae	1 (4)	*P.aeruginosa*	8 (6.11)
Enterococcus spp.	2 (8)	*A.baumannii*	11 (8.40)
Streptococcus group D	4 (16)	*Aeromonas* spp.	4 (3.05)
Streptococcus group G	1 (4)	*S.maltophila*	2 (1.53)
Bacillus spp.	5 (20)	*Moraxella* sp.	1 (0.76)
Clostridium tertium	1 (4)	*C.jejuni*	1 (0.76)
Corynebacterium spp.	1 (4)	*Capnocytophaga* sp.	

Table 2. Multivariate analysis of factors associated with multidrug-resistant Gram-negative bacteremia

Factors	Adjusted Odds ratio	95% confidence interval	P value
Induction chemotherapy	1.132	0.346-3.697	0.838
History of antibiotics in 3 months	0.695	0.111-4.359	0.698
History of hospitalization in 3 months	0.731	0.266-2.008	0.544
History of multi-drug resistant gram-negative infection or colonization within 3 months	2.850	1.003-8.097	0.049
Retained central venous catheter	2.002	0.620-6.462	0.246

Figure 1 Ratio of multi-drug resistant Gram-negative bacilli causing bacteremia



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2680. Infections in Patients Receiving Cerdulatinib for Treatment of Lymphoid Malignancies

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Background: Cerdulatinib (PRT062070) is an inhibitor of Spleen Tyrosine Kinase (SYK) and the Janus kinase (JAK) receptors, which have central roles in B-cell signaling. Cerdulatinib has shown promise in clinical trials in patients with B-cells malignancies, including chronic lymphocytic leukemia (CLL) and diverse types of lymphoma. Both SYK and JAK have knowmn critical roles in immunity against various pathogens. We aimed to determine the scope of infections in patients with lymphoid malignancies receiving Cerdulatinib therapy.

Methods: Retrospective chart review of patients at Memorial Sloan Kettering Cancer Centers (MSKCC) who received at least 30 consecutive days of Cerdulatinib. Infections were defined based on Infectious Diseases Society of America criteria and revised 2008 European Organization for Research and Treatment of Cancer/Invasive Fungal Infections Cooperative Group guidelines. Serious infections were defined as infections requiring hospitalization and/or parenteral antimicrobial therapy.

Results: We identified 31 patients who received cerdulatinib at MSKCC. One patient was excluded due to receipt of less than 30 days of Cerdulatinib.In the 30 patients who were included mean age was 67 (range 23–80) years; 18 (58%) were men. All were receiving Pneumocystis jirovecii (PJP) prophylaxis with either TMP-SMX, Dapsone or Atovaquone and 17 patients (57%) were receiving Acyclovir or Valacyclovir prophylaxis. 8 patients (26%) developed serious infections during the follow-up period. These included two patients with invasive fungal infections, including one with invasive pulmonary aspergillosis and one with Scedosporidium endophtalmitis, one patient with cutaneous Mycobacterium avium infection, two patients with intraabdominal infections, one patient with disseminated Zoster (was not receiving antiviral prophylaxis), and two with influenza A infection one of which was complicated by bacterial pneumonia. All patients who developed infections were receiving Cerdulatinib monotherapy. Only one had been neutropenic or had received corticosteroids prior to development of infection.

Conclusion: Our data suggest that patients receiving Cerdulatinib therapy for lymphoid malignancies are at risk for serious infections, including invasive fungal infections.

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2681. Outcomes Related to Respiratory Viral Infections in Cancer Patients on PD-1 Inhibitors

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Background: The PD-1 inhibitors or check point inhibitors (CPI) are commonly used for the treatment of many solid tumors (ST) and hematological malignancies (HM). By blocking PD-1 in fatigued T cells, an increase in viral clearance may be noted as evidenced in cases of JC virus. Our objective was to assess the outcomes related to cancer patients with microbiologically documented acute respiratory viral infections while on CPI.

Methods: All patients who were infected with either influenza, respiratory syncytial virus (RSV), parainfluenza virus (PIV), and human metapneumovirus (HMPV) from 9/2016 to 6/2018 with prior or concurrent CPI therapy were included in this study. Demographics and clinical data were collected retrospectively. Comparisons were done between patients with concurrent (group 1) or prior (group 2) CPI therapy.

Results: A total of 92 cancer patients were identified and of those, 50 patients (54%) were on concurrent CPI therapy at the time of infection. Most patients had ST, mainly non-small cell lung cancer, and most were predominantly infected with Influenza (Figures 1 and 2). Side effects-related to CPI therapy and steroid use prior to infection were uncommon (13%). When compared with group 2, patients in group 1 had a trend toward less lower respiratory tract infections (24% vs. 40%, $P = 0.11$), decreased median length of stay (3 vs. 8 days, $P = 0.1125$) and lower 30-day mortality (4% vs. 12%, $P = 0.2396$).

Conclusion: Our data demonstrated trends toward improved outcomes in patients with respiratory viral infections on concurrent CPI therapy. Whether improved outcomes are related to enhanced immune responses to these viral infections need to be determined in a larger prospective observational cohort of patients.