immunosuppressive drugs, and high-dose corticosteroid therapy. Demographic, clinical, treatment, and outcome data were collected.

Results. *Nocardia* species were identified in 112 patients. Mean age was 55 ± 17 years; 52% were men, 97% lived in an urban setting. There were 67 IC (60%) and 45 (40%) non-IC. Diagnosis was initially missed in 50% of patients. Ten IC patients (15%) were on TMP-SMX for pneumocystis prophylaxis. IC patients were more likely to have dissemination (27%/9%, P = .0001), pulmonary involvement (76%/44%, P = .001), cavitation (20%/0%, P = .019), and hospitalization (84%/38%, P = .0001). Non-IC patients were more likely to have had trauma prior to infection (22%/9%, P = .05) and this was associated with localized infection in the eye and subcutaneous tissue. IC patients were more likely to be treated with intravenous TMP-SMX, and/or a carbapenem (69%/23%, P = 0.0001). Non-IC patients were more frequently treated with an oral agent (73%/39%, P = 0.001). All-cause 1-year mortality was 19% and was significantly higher in IC (27%) than non-IC (7%) (P = 0.013). Nine IC deaths were attributed to nocardiosis vs. 1 non-IC death.

Conclusion. A higher incidence of *Nocardia* infection was seen in non-IC patients than previously reported; infection in non-IC was less severe. IC patients had more complications and higher mortality. It is important to consider nocardiosis for both IC and non-IC patients in order to initiate early appropriate treatment for this potentially fatal disease.

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2377. Prophylactic Antibiotic Therapy and Blood Stream Infections in Leukemia Patients Presenting to the Emergency Center

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Background. Patients undergoing chemotherapy for leukemia are at high risk for infection and routinely receive antibiotic prophylaxis. The types of breakthrough bloodstream infection (BSI) based on choice of prophylaxis is not well-characterized. Here, we describe antibiotic prophylaxis patterns and the influence of antibiotic choice on BSI epidemiology in leukemia patients presenting to the emergency center (EC) with neutropenic fever (NF).

Methods. This was a retrospective chart review of patients with leukemia and NF (absolute neutrophil count [ANC] <500 cells/mm^3; temperature ≥38.3°C) who presented to the EC at MD Anderson Cancer Center from January 2014 to January 2015. Patients receiving levofloxacin (LEV), ciprofloxacin (CIP), amoxicillin–clavulanate (ACL), or cefpodoxime (CEF) were included. We assessed current antibiotic prophylaxis at presentation to the EC, and correlated with microbiologically proven bloodstream infections (BSI) within the first 48 hours following presentation.

Results. A total of 284 patients (mean age 56 ± 17 years; 63% male) were assessed. Eighty-four% of patients had neutropenia >7 days in duration and the median ANC at presentation was 0 cells/mm^3 (range: 0–490 cells/mm3). Most patients received LEV (42%) followed by CIP (27%), CEF (25%), and ACL (6%). Forty-seven of 284 patients presented with Gram-negative BSI (16%) and 36 (13%) had Gram-positive BSI. Rates of common organisms causing BSI are presented in Table 1.

Conclusion. In leukemia patients with NF presenting to the EC, rates of BSI differed significantly based on antibiotic prophylaxis choice, with *P. aeruginosa* BSI more common in patients receiving ACL and *E. coli* in patients receiving LEV. The epidemiology of breakthrough infections on different prophylactic agents may help guide empiric antibiotic choice.

Table 1. Causative organisms of BSI.

BSI Type	LEV (n = 118)	CIP (n = 77)	CEF (n = 72)	ACL (n = 17)	P-value
Any Gram-negative (n = 47)	21 (18)	7 (9)	13 (18)	6 (35)	0.05
E. coli (n = 25)	18 (15)	3 (4)	3 (4)	1 (6)	0.02
P. aeruginosa (n = 13)	2 (2)	1 (1)	6 (8)	4 (24)	<0.01
Any Gram-positive (n = 36)	18 (16)	10 (13)	7 (10)	0	0.26
Alpha-hemolytic *Streptococcus* (n = 11)	4 (4)	4 (5)	2 (3)	0	0.90
Enterococcus spp. (n = 5)	0 (0)	2 (3)	3 (4)	0	0.12

All values presented as n (%).

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2378. Multi-Drug-resistant Organism (MDRO) Infections in Liver Transplant Recipients 30 Days Post-Transplant

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Background. The leading cause of morbidity and mortality in liver transplant recipients (LTR) is bacterial infection, with the highest rates seen in the first 30 days after transplantation. LTR may be at increased risk for MDROs due to their complicated pre- and post- transplantation course.

Methods. We performed a retrospective chart review of the clinical characteristics of LTR to determine risk factors for the development of MDROs post transplantation. A secondary analysis was performed to determine the role of Rifaximin in the development of MDRO infections given its known antimicrobial properties. All adult, first time LTR (January 2012 to December 2016) were included in this study. We determined relative risk for specific clinical characteristics by performing a univariate analysis.

Results. Of the 329 adult LTR, 92 (27.9%) developed a bacterial infection and 36 (11%) developed MDRO infections in the immediate post-operative period; MDROs accounted for 39.1% (36/92) of all infections. The majority of MDRO infections were due to gram-negative rods (62%). However, the most common isolates were: Vancomycin-Resistant *Enterococci* (23.8%) and *Klebsiella pneumoniae*(19%). The most common sites of infection were: respiratory tract (32%), urine (23%), and intraabdominal (20%). The following pre transplant risk factors for the development of an MDRO infection included: prior antibiotic treatment and ICU admission (P < 0.05). However, spontaneous bacterial peritonitis (SBP) prophylaxis alone was not associated with an increased risk for an MDRO infection. Post transplant risk factors for the development of an MDRO infection included: prolonged ICU stay, return to the OR, renal replacement therapy, and mechanical ventilation (P < 0.05). Rifaximin use was associated with a relative risk of 2.2 (P = 0.0198) for the development of an MDRO infection. In patients who had received Rifaximin, the MELD score of those who developed MDRO infections was higher at 28 vs. those who did not develop an MDRO infection at 23 (P = 0.017).

Conclusion. Nearly 40% of LTR who develop post-operative infections are due to MDROs with antibiotic exposure and post-transplant critical care complications as contributing factors. Pre-transplant Rifaximin use may be associated with the development of MDRO infections in LTR.

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2379. *Clostridium difficile* Infection in Solid Organ and Haematopoietic Stem Cell Transplant Recipients

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Background. Solid organ transplantation (SOT) and haematopoietic stem cell transplantation (HSCT) recipients have a higher incidence of *Clostridium difficile* infection (CDI) in comparison to non-transplantation patients. We examined rates of CDI before and after SOT or HSCT, as well as rates of recurrent CDI.

Methods. A retrospective study of adults >18 years of age undergoing SOT or HSCT between January 1, 2010 and February 21, 2017, at a large tertiary transplant center in Copenhagen, was conducted. Patients were followed using national electronic data capture from 6 months prior to transplantation until closure of the study period. Relative risks were estimated by Poisson regression analyses, adjusted for age, gender, and year of transplantation. CDI occurring up to 6 months prior to transplantation was assessed as a risk factor for post-transplantation CDI.

Results. Among 1,150 SOT and 586 HSCT recipients, a total of 252 (15%) developed a CDI after transplantation. Incidence rate (IR)s were highest within the first 2 months post-transplantation, especially among those undergoing liver, lung and myeloablative HSCT (Table 1 and Figure 1). Pre-transplantation rates of CDI were similar to those seen after the first 2 months post-transplantation. There was a greater risk of developing early CDI in SOT, but not in HSCT, recipients who had experienced a pre-transplantation CDI (IR ratio (IRR) 6.1 (95% confidence interval (CI) 2.2–17.1) and 1.5 (95% CI 0.5–4.1), respectively). Rates of recurrent CDI after transplantation (i.e., the second CDI after transplantation) were comparable for SOT and HSCT recipients (Table 1).

Conclusion. Transplantation type, close proximity to time after transplantation, and a CDI episode prior to transplantation (in SOT recipients) influences the risk of