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Background. *Yersinia enterocolitica* is usually transmitted through ingesting or handling undercooked pork products and is an uncommon cause of diarrhea, mesenteric adenitis and bacteremia in the United States. There is limited information regarding its clinical course in immunosuppressed and cancer patients. We describe the clinical presentation and outcomes of cancer patients diagnosed with *Y. enterocolitica* at a Comprehensive Cancer Center in the United States before and after the use of nucleic acid amplification testing (NAAT) using GI multiplex panel (GIMP).

Methods. We studied all patients with *Y. enterocolitica* isolated from cultures or identified by NAATs. We then obtained demographic information, comorbidities, co-infections, clinical characteristics, treatment and overall mortality at 30 days post diagnosis.

Results. Sixteen cases were identified (Table 1). The most common symptom of *Y. enterocolitica* infection was diarrhea [10/16 (62%)], followed by abdominal pain [8/16 (50%)] and fever [4/16 (25%)]. Ten of the cases were identified by NAAT over a 2-year period, compared with six cases identified prior to April 2016 over 70 years. Stool cultures confirmed *Y. enterocolitica* infection in two cases identified by NAAT (20%). Three patients had co-infection with *Clostridium difficile*, and four patients had a history of *C. difficile* infection. All but one patient was treated, mostly with a fluoroquinolone. Thirty-day mortality was 7.7%. Cause of death was most often a complication of advanced cancer. The one patient who did not receive antibiotics had maxillary sinus squamous cell cancer and had spontaneous resolution of symptoms.

Conclusion. GIMP NAATs have increased the rates of *Y. enterocolitica* identification in patients with cancer, suggesting that this disease was underdiagnosed or is now more common as patients receive increasingly intensive immunosuppression. GIMP NAATs will likely re-define the epidemiology of *Y. enterocolitica* infection in cancer patients. In patients with *Y. enterocolitica* who are at high risk for *C. difficile* relapse and in whom no recent immunosuppression or evidence of systemic illness is present, it may be reasonable to consider observation or shorter course of antibiotics.

Table 1. Characteristics and Outcomes of *Y. enterocolitica* Infection.

Patient Characteristics/Outcomes	*Y. enterocolitica* Infection N = 16
Age (years, mean, standard deviation)	58 ± 15
Gender	
Male n(%)	9 (56)
Female n(%)	7 (44)
Race	
White n (%)	12(75)
Black n(%)	1(6.2)
Asian n(%)	3(19)
Other n(%)	
Ethnicity	
Latino n(%)	4(25)
Underlying Malignancy	
Solid n(%)	9(56)
Hematologic n(%)	7(44)
Stem cell n(%)	5(31)
No malignancy n(%)	0
Clinical Presentation	
Fever n(%)	4(25)
Nausea/vomiting n(%)	3(19)
Abdominal pain n(%)	8(50)
Diarrhea n(%)	10(62)
Bacteremia n(%)	2 (13)
Pseudoappendicitis n(%)	1 (6.2)
C. Difficile	
Co-infection n(%)	3(19)
Previous Infection n(%)	4(25)
Imaging Studies	
Colitis n(%)	2 (13)
Adenitis n(%)	1 (6.2)
Date of diagnosis	
1941-04/2016	6
04/2016-04/2018	10
Treatment used	
None	1(6.3)
Tetracycline	1(6.3)
Sulfa	1 (6.3)
Fluoroquinolone	7 ((44)
Carbapenem	1 (6.3)
Cephalosporin	4 (25)
Penicillin	2 (13)
30 day mortality (%)	7.7%

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1540. Left Ventricular Assist Device Driveline Infections: Relapsed Infections and Minimum Inhibitory Concentration Changes

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Background. Treatment of left ventricular assist device (LVAD) driveline infections (DLIs) pose difficulties given the permanent nature of the LVAD. Few studies have examined the minimum inhibitory concentration (MIC) changes over time or resistance patterns of implicated pathogens causing recurrent infections.

Methods. This retrospective descriptive epidemiology study identified patients with DLIs in the Vanderbilt LVAD registry or INTERMACS data from January 2013 to August 2017. Driveline infections met International Society for Heart and Lung Transplantation definitions in addition to positive driveline drainage, blood, or sternal wound culture. Relapse included a DLI with an organism associated with previous DLI in the preceding year and similar MICs or new resistance to an antibiotic that was utilized. The LVAD registry and chart review were utilized to collect data. Patients were followed until transplant, death, or August 1, 2017.

Results. A total of 330 patients underwent LVAD implantation. Thirty (9%) met criteria for DLI. Median duration of follow-up was 26 months (IQR 16, 39). There were 74 courses of infection, 40 new infections, and 34 relapsed infections. Median time to first DLI was 171 days (IQR 83, 403). Most common organisms in new DLIs were *S. aureus* (MRSA 11, MSSA 10), diptheroids (6), coagulase-negative staphylococci (6), and *P. aeruginosa* (5). *S. aureus* was the most common pathogen in patients with DLI associated bacteremia (n = 16) as well as relapsed infection (n = 11). There were 42 MIC changes in nine patients with relapsed infections from *S. aureus*, *P. aeruginosa*, and mycobacterium. Median time to first MIC change was 56 days (IQR 36, 88) and type of MIC change was an increase in five cases, decrease in two cases, and both increase and decrease in two cases. Time to first relapse from initial infection was longer in those who received suppression, 60 days vs. 83 days, P = 0.047.

Conclusion. Few patients had DLIs, but relapsed infections were more common with *S. aureus* and *P. aeruginosa.* MIC changes were quite variable and may not be the major contributor to relapsed infection.

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1541. Infectious Complications in Adult Patients with Hemophagocytic Lymphohistiocytosis: A Single-Center Experience

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Background. Hemophagocytic lymphohistiocytosis (HLH) is a rare hematologic disorder which is characterized by excessive immune activation. In adults, it is typically secondary to an underlying process such as autoimmune disease, infection, or malignancy. Guidelines based on expert opinion suggest prophylaxis (PPX) with antiviral, antibacterial, and/or antifungal agents for patients undergoing treatment for HLH; however, the incidence of infectious complications is not known. We aimed to study the scope of infection in patients with HLH to help determine the best strategy for antimicrobial PPX.

Methods. We performed a retrospective chart review of 56 adult patients who fulfilled clinical diagnostic criteria for HLH treated at Stanford University Hospital between 2012 and 2018. Infections diagnosed up to 1 month prior and up to 6 months after a diagnosis of HLH were reviewed.

Results. A total of 57 episodes of HLH in 56 patients were reviewed. Infection was determined to be the trigger of HLH in five cases (EBV in three cases, Histoplasma in one case, MAC or HHV6 in one case). Antiviral PPX was used in 72%, PCP PPX in 75%, and antifungal PPX in 77% of HLH episodes. At least one infectious complication occurred in 33 of 57 episodes of HLH (58%) with 69 total infections diagnosed after HLH diagnosis: 46 bacterial, 12 viral, and 11 fungal. Bacterial infections included bacteremia (43%), pneumonia (15%), skin and soft tissue (13%), intra-abdominal infection (11%), urinary tract infection (13%), and others (5%). Of the viral infections, CMV viremia was the most prevalent and occurred in four patients (7% of HLH episodes). Fungal infections occurred in 19% of HLH episodes and included four yeast and seven mold infections (five proven and two possible). Three of these cases were not receiving antifungal PPX prior to infection; the remaining eight were breakthrough infections.

Conclusion. Infectious complications of HLH are common, and likely result from a combination of host immune factors related to underlying disease and induced by immunosuppressive chemotherapy. Most noteworthy is the incidence of fungal infections which supports the use of antifungal PPX in this patient population. Even with this, breakthrough infection, including with opportunistic molds, is not uncommon.

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1542. Infectious Complications in Patients Following Umbilical Cord Blood Transplant (UCBT) for Hematologic Malignancy

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Background. UCBT can be performed in pt with hematologic malignancies who do not have a matched donor, but engraftment often takes longer than with a standard allogeneic stem cell transplant. Delayed engraftment can increase the risk for infections, but characteristics of specific infections & outcomes have not been well characterized in adults undergoing UCBT.

Methods. All adults who underwent UCBT between January 1, 2006 and January 1, 2016 at our two centers were included. Infectious episodes within 6 months before and up to 2 years after UCBT were reviewed.

Results. Fifty-seven patients underwent UCBT. Mean age was 43 ± 14 years, and 34 patients were women. Thrity-nine (60%) had acute leukemia. Only 47 patients had neutrophil engraftment. One hundred and seventy-nine infectious episodes occurred in 55 patients, 73 (41%) within 30 days post-UCBT. Viruses caused 85 (47%) infections. HHV-6 occurred in 28 episodes, 24 of which were viremia alone, and was most common within 30 days of UCBT. One patient died of HHV-6 encephalitis. CMV caused 32 infectious episodes, 24 of which were viremia only, was most common from Days 30–100, and caused no deaths. BK viruria occurred in 18 episodes. Bacteria were responsible for 82 (46%) infections; most common were bacteremias due to *Staphylococcus*, van-R *Enterococcus* and *Enterobacteriaceae*. Three patients had mycobacterial infections, two of which were fatal. Of 11 invasive fungal infections (IFI), nine were invasive aspergillosis, of which four were fatal. Overall mortality was 56% in the first year, including 13 deaths from infection. Eleven of these 13 infections occurred in the first 100 days post-UCBT and seven of them in the first 30 days. Patients who died within 100 days were significantly more likely to have had IFI ($P = 0.04$) or infection with VRE ($P = 0.03$) or *Enterobacteriaceae* ($P = 0.03$) within 30 days after UCBT. Among the 10 patients who never had neutrophil engraftment, nine died within 100 days post-UCBT, six from infection.

Conclusion. Infectious complications were common after UCBT, especially in the first 30 days. Deaths from viral infections were fewer than expected, most likely because of increased screening and prophylaxis for CMV infections. Delayed engraftment and nonengraftment continue to convey increased risk for fatal bacterial and fungal infections post-UCBT.

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

1543. The More Resistant, the More Fatal: Results of 414 Bacteremia Episodes in Febril Neutropenic Patients

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Background. The objective of this study was to investigate the features of antimicrobial resistance in the microorganisms isolated from blood cultures of cases with FN and the relationship between resistance and mortality rates.

Methods. We conducted a single-centre retrospective surveillance study of hospitalized cases with FN who had bloodstream infection (BSI) between 2012 and 2016. Organisms were identified according to current conventional procedures.

Results. We determined 414 episodes of BSI in 252 patients of whom 53.6% were male and median age was 50 years. Distribution of common microorganisms causing BSI is presented in Figure 1. Rates and patterns of resistant microorganisms are presented in Table 1 and Figure 2. Catheter-related bacteremia constituted 49.8% (206/414) of total episodes and 30-day mortality was significantly lower ($P < 0.007$) in this group. In total, 30-day crude mortality rate was 14.7% (61/414 episodes). The mortality rates were 7.4, 18.6, 32.4 and 50% in BSI episodes due to Gram-positive, Gram-negative bacterial, polymicrobial and fungal etiology, respectively. Among Gram-negatives 30-day mortality was significantly associated with the presence of resistance; extended-spectrum β-lactamase (ESBL) ($P = 0.006$), carbapenem resistance ($P < 0.0001$), piperacillin/tazobactam resistance ($P < 0.0001$) and colistin resistance ($P = 0.009$). Among Gram-positives 30-day mortality was not associated with presence of resistance.

Conclusion. The rate of carbapenem and colistin resistance has increased over the years. Changing antimicrobial resistance pattern particularly in Gram negatives is among the most decisive parameters for the success of empirical treatment and antimicrobial stewardship.

Table 1: Resistance Profiles of Common Isolates

Microorganisms	ESBL(+)	Carbapenem Resistance	Colistin Resistance	Multi-Drug Resistance (MDR)	Methicillin Resistance	Vancomycin Resistance
Echerichia coli (*n* = 82)	31	7	0	28	—	—
Klebsiella spp. (*n* = 64)	42	24	6	41	—	—
Pseudomonas spp. (*n* = 31)	—	13	0	13	—	—
Acinetobacter baumannii (*n* = 17)	—	14	2	12	—	—
Coagulase negative staphylococci (*n* = 172)	—	—	—	—	141	0
Staphylococcus aureus (*n* = 6)	—	—	—	—	1	0
Enterococcus spp. (*n* = 20)	—	—	—	—	—	8

Figure 1. Distribution of pathogens.

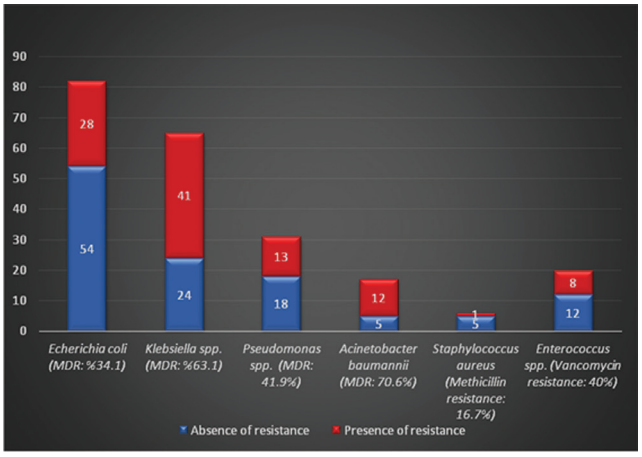

Figure 2. Rate of resistant microorganisms.

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1544. Kinetics of BK Virus in Urine Associated with BKV DNAemia and BKVAN in Pediatric Kidney Transplantation

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Background. BK polyoma virus (BKV) is an important pathogen for immunocompromised children. After kidney transplantation (KTx), asymptomatic BKV DNAemia and further BKV associated nephropathy (BKVAN) may result in damage or loss of allograft. BKV DNA are usually detected in urine preceding the development of BKV DNAemia and BKVAN, therefore urine BKV loads can be used for screening. However, the correlation between its kinetics and clinical outcome is not fully investigated, especially in pediatric KTx recipients, who often develop primary BKV infection after KTx. The purpose of this study was to analyze the kinetics of urine BKV load after KTx to correlate the clinical outcome such as BKVAN, BKV DNAemia and rejection.