skin lesion, 9 postherpetic neuralgia, 2 visceral involvement and 3 disseminated infection. Of 100 patients, 16 patients need hospitalization due to VZV infection. In multivariate analysis, deceased donor KT (Hazard ratio (HR) 1.6; 95% CI 1.0-2.39, $p = 0.05$), mycophenolate maintenance immunosuppressive therapy (HR 0.3; 95% CI 0.14-0.75, $p = 0.01$) and rejection episode (HR 0.31; 95% CI 0.14-0.71, $p = 0.01$) were independently associated with VZV infection development after KT.

Conclusion. About one tenth of CMV seropositive KT recipients developed zoster after 1-month ACV prophylaxis during CMV preemptive strategy, especially in those who received deceased donor KT, mycophenolate therapy, and rejection episodes.

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1107. Third Generation Cephalosporins Monotherapy Experience in Pediatric Patients with High-Risk Febrile Neutropenia

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Session: P-49. Infections in Immunocompromised Individuals

Background. Fever during neutropenia is common in children with cancer. The updated guidelines recommend empirical antibiotic monotherapy using an antipseudomonal ß-lactam, a fourth generation cephalosporin or a carbapenem for high-risk febrile neutropenia. However, local epidemiology and resistance patterns should be evaluated regularly. In our hospital there are not *Pseudomonas aeruginosa* isolates in oncology pediatric patients, therefore, we use ceftriaxone as monotherapy in high risk febrile neutropenia without other risk factors. The goal of our investigation is to describe the experience of using third generation cephalosporins in these patients.

Methods. Descriptive study of high-risk febrile neutropenia episodes in patients admitted to the Pediatric Oncology Unit of Hospital Dr. Sótero del Río, Santiago, Chile. We included patients ≤15 years from June 2016 until December 2019.

Results. We found 140 episodes in 53 patients, 42 (79%) were leukemia and 11 (21%) solid tumor patients. Of the 140 episodes, 97 (69%) had clinical signs at admission, mostly respiratory in 48 (49%) of the cases. Ninety one (65%) cases started ceftriaxone at admission, 27 (30%) maintained ceftriaxone for 7 days of treatment. Sixty four (70%) cases changed treatment: 38/64 (42%) started second line antibiotics for clinical worsening, 19/64 (20%) required second and third line antibiotics for persistent fever and clinical worsening, and 7/64 (8%) received third line antibiotics from the start for past microbiological history. Eighteen (13%) cases evolved with sepsis requiring intensive care unit management.We had 32 (23%) episodes with positive blood culture, 13 (41%) due to gram positive bacteria, 16 (50%) gram negative bacteria, and 3 (9%) cases of fungal infections. Of the gram negative bacteria, 7 (44%) were ESBL producers, without *Pseudomonas aeruginosa* isolates.One case died (0.7%) for refractory sepsis due to gram negative bacteria.

Conclusion. Monotherapy with ceftriaxone is not a good option as initial therapy for high risk febrile neutropenia patients due to the spread of ESBL strains. The empiric therapy has to be evaluated regularly and should always be based in local epidemiology.

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1108. Transplantation and Immigration: Comparing Infectious Complications Between Foreign-born vs. U.S.-born Kidney Transplant Recipients in Minnesota

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Session: P-49. Infections in Immunocompromised Individuals

Background. Immigrant patients face barriers to kidney transplantation due to language, cultural, and economic issues. Unprepared health systems and providers further contribute to health disparities in transplantation. Foreign-born patients are also at risk for reactivation of latent infections which differ from U.S.-born population. Stratifying transplant recipients according to country of birth could guide clinicians in the prevention, anticipation, diagnostics, and treatment of post-transplant infections.

Methods. A retrospective, observational, multicenter study of patients that underwent kidney transplantation from 1/2014-12/2018 at the University of Minnesota Medical Center and Hennepin Healthcare is being conducted. Sociodemographic, clinical, and laboratory data are collected, including infectious episodes during the first year post-transplant.

Results. One-hundred patients are included in this preliminary analysis (recruitment goal is 800 patients). Sixty-five patients were males (65%), with median age 56 years (range 20 – 77). The majority were Caucasians (64%), followed by Asians (12%) and Africans (9%). Living donation was 59%. Seventy-eight patients developed infectious complications during the first year after transplantation, for a total of 175 infectious episodes: viral etiology (51%), followed by bacterial (42%) and fungal (7%). No tropical diseases were found. Comparing foreign-born (30%) vs. U.S.-born (70%), foreign-born recipients had a higher frequency of latent tuberculosis infection (LTBI) (37% vs 1%, $p< 0.001$), hepatitis B core antibody positive (20% vs 0, $p< 0.001$), and deceased donor transplant (67% vs 30%, $p= 0.001$). CMV mismatch (3% vs 36%, $p= 0.002$) was more frequent in U.S.-born recipients; CMV reactivation was similar in both groups. While not statistically significant, more foreign-born recipients had an infection in the first year post-transplant (90% vs 73%, $p= 0.1$), and higher median infectious episodes (2 vs 1, $p= 0.6$).

Comparison of foreign-born vs U.S.-born kidney transplant recipients (n=100, preliminary data)

Characteristics	Foreign-born transplant recipients n=30 (%)	U.S.-born transplant recipients n=70 (%)	*p* value
Previous transplantation	3 (10)	18 (26)	0.13
Higher education	11 (37)	50 (71)	0.02
Travel abroad before transplantation	11 (37)	3 (5)	<0.001
Donor			0.001
- Deceased	20 (67)	21 (30)	
- Living	10 (33)	49 (70)	
Latent tuberculosis	11 (37)	1 (1)	<0.001
Hepatitis B core antibody positive	6 (20)	0	<0.001
CMV mismatch (D+/R-)	1 (3)	25 (36)	0.002
Patients with infectious complications	27 (90)	51 (73)	0.1
Median of infectious episodes	2	1	0.6

Conclusion. Per this preliminary data, foreign-born transplant recipients had a higher frequency of LTBI, hepatitis B core antibody and infectious complications, but lower frequency of CMV mismatch. No cases of tuberculosis, hepatitis B reactivation or tropical diseases were observed.

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1109. Valgancyclovir Dosing for Cytomegalovirus Prophylaxis in Heart Transplant Recipients

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Session: P-49. Infections in Immunocompromised Individuals

Background. Cytomegalovirus (CMV) is one of the most common infections after transplantation and continues to cause significant morbidity and mortality. Current guidelines recommend 3-6 months of post-transplant prophylaxis with 900mg daily of valganciclovir in heart transplant recipients. At our institution, however, the protocol is to use 450mg daily of valganciclovir for 6-12 months for intermediate risk (R+) patients and 900 mg daily for high risk (D+/R-) patients. In this study we aimed to identify underlying patient characteristics associated with detectable viral load above the quantifiable threshold.

Table 1. Comparison of patients with a CMV viral above and below 137.

Table 1. Comparison of patients with a CMV viral above and below 137.			
	CMV viral load > 137 (n = 38)	CMV viral load < 137 (n = 59)	p-value*
Transplant age - years	60.5 (IQR 48.5-64)	57 (IQR 46-63)	0.41
CMV donor/recipient mismatch	22 (57.9%)	8 (15.7%)	< 0.01
900 mg daily valgancyclovir	9 (23.7%)	2 (4.6%)	0.02
CMV IgG recipient positive (n = 55)			
	n = 16	n = 49	
Transplant Age - years	61.5 (IQR 35-65)	57 (IQR 46-63)	0.57
900 mg daily valgancyclovir	4 (25%)	2 (4.1%)	0.03
CMV donor/recipient mismatch (n = 30)			
	n = 22	n = 8	
Transplant Age - years	60 (IQR 49.8-62.3)	52.2 (IQR 34.3-57.8)	0.17
900mg daily valgancyclovir	5 (22.7%)	0	0.287

*Categorical data compared via Fischer's exact test Continuous data compared via Mann-Whitney U test

Methods. We retrospectively reviewed medical records of adult (≥ 18 years) heart transplant recipients with detectable CMV viremia from 2016-2018 resulted during routine clinical screening.

Results. Ninety-seven heart transplant recipients with a detectable CMV viral load were identified. Of those, 38 (37.2%) had a quantifiable viral load above the 137 IU/mL threshold. When compared to the individuals with a detectable viral load below the threshold (< 137 IU/mL), they had similar age at time of transplant, increased likelihood of donor/recipient CMV IgG mismatch, and were more frequently on 900mg daily of prophylaxis at time of viremia. Of the individuals with CMV DNAemia above the threshold, the median time to viremia was 271.4 days and the median peak viral load was 701 IU/mL. When limiting analysis to only recipients who were CMV IgG positive, patients with viremia had similar age and more likely to be on 900mg daily of valganciclovir as prophylaxis when compared to individuals with CMV viremia < 137 IU/mL. When comparing CMV D+/R- patients, age and rates of 900mg valganciclovir as prophylaxis were similar (Table 1).

Conclusion. We found that despite receipt of CMV prophylaxis, an appreciable number of both R+ and D-/R+ heart transplant recipients developed breakthrough DNAemia despite being on prophylaxis of valganciclovir as recommended by guidelines. Despite receipt of the higher 900 mg daily dose, high risk patients had higher rates of breakthrough DNAemia at our institution compared with R+ intermediate risk patients. More research is needed to evaluate the optimal dose and duration for prophylaxis in heart transplant patients against CMV.

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1110. Very Late Onset Infections Amongst Long Term Survivors of Kidney Transplantation

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Session: P-49. Infections in Immunocompromised Individuals

Background. Kidney transplant recipients (KTR) are at increased risk for infections immediately post-transplant due to intense immunosuppression. However, this risk decreases over time as immunosuppression is tapered. The incidence of infection in KTR many years after transplant is not well characterized. The aim of this study was to describe these "very-late onset infections" (VLIs) ≥ 10 years after KT.

Methods. We performed a retrospective chart review of patients age ≥ 18 years who underwent KT between 2003 and 2009 and who survived ≥ 10 years post-KT. VLIs included opportunistic infections (OIs) and non-OIs. Demographics, comorbidities, immunosuppression, and clinical data for VLIs ≥ 10 years from KT were collected. Simple logistic regression was performed to determine characteristics associated with risk for VLIs.

Results. Of 332 KTR that met the inclusion criteria, the majority were male (62.0%), white (59.6%), and the largest proportion was transplanted between the ages of 50-59 (28.3%); 220 (67.9%) were on mycophenolate-based regimens. The mean Charlson Comorbidity Index (CCI) was 4.7 (S.D. 2.0). Of 332, 103 (31.0%) KTR experienced ≥ 1 VLI amounting to 187 episodes. Compared to those without VLI, KTR with VLI were more likely to have diabetes (p=0.005), cardiovascular disease (p=0.004), low ALC (p < 0.001) and require dialysis (p=0.002). Of 103 KTR with VLI, 16 (15.5%) had OIs, while 87 KTR (84.5%) had non-OIs, most commonly urinary tract infection (n=85, 45.5%), pneumonia (n=35, 18.7%) and gastrointestinal infection (n=18, 9.6%). The most commonly isolated pathogens were *E. coli* (n=30, 16%), *K. pneumoniae* (n=16, 8.6%), MSSA (n=7, 3.7%), and *P. aeruginosa* (n=7, 3.7%). Higher CCI, diabetes, dialysis, cerebrovascular, cardiovascular disease and lower ALC were associated with increased risk for VLI (p < 0.05), while living donor KTR was protective (p=0.04). Additionally, every 1 year after transplant was associated with an increased risk of VLI (OR=1.31, p < 0.001).

Table 1: Demographics, comorbidities, immunosuppression, and clinical data for all patients

Variable	All Patients (n = 332)	No Very-Late Onset Infections (n = 229)	All Very-Late Onset Infections (n = 103)
Median age at time of transplant (range)	46 (18-76)	46 (18-76)	47 (20-73)
Age at time of transplant			
18-29	36 (10.8%)	30 (13.1%)	6 (5.8%)
30-39	72 (21.7%)	48 (21%)	24 (23.3%)
40-49	83 (25%)	58 (25.3%)	25 (24.3%)
50-59	94 (28.3%)	64 (28%)	30 (29.1%)
60-69	39 (11.8%)	24 (10.4%)	15 (14.6%)
70-79	8 (2.4%)	5 (2.2%)	3 (2.9%)
Living (vs. deceased)	294 (88.6%)	211 (92.1%)	83 (80.6%)
Living donor (vs. deceased/unknown)	146 (44%)	109 (47.6%)	37 (35.9%)
Retransplantation	28 (8.4%)	16 (7.0%)	12 (11.6%)
Median Years From Transplant to Last Follow Up (range)	12.1 (10-37)	11.9 (10-16)	13.1 (10-37)
Mean Charlson Comorbity Index (SD)	4.7 (2.0)	4.4 (1.8)	5.36 (2.2)
Male sex (versus female)	206 (62%)	146 (63.8%)	60 (58.3%)
Race/Ethnicity			
Asian	16 (4.8%)	10 (4.4%)	6 (5.8%)
Black	78 (23.5%)	52 (22.7%)	26 (25.2%)
Hispanic	39 (11.7%)	23 (10%)	16 (15.5%)
White	198 (59.6%)	143 (62.4%)	55 (53.4%)
Native American	1 (0.3%)	1 (0.4%)	0
Induction Methods			
Basiliximab	81 (24.4%)	51 (22.3%)	30 (29.1%)
Daclizumab	21 (6.3%)	16 (7.0%)	5 (4.9%)
Methylprednisone	116 (34.9%)	74 (32.3%)	42 (40.8%)
Thymoglobulin	57 (17.2%)	38 (16.7%)	19 (18.4%)
Unknown/Unspecified	59 (17.8%)	52 (22.7%)	7 (6.8%)
Maintenance Regimens			
Belatacept and prednisone	13 (3.92%)	6 (2.6%)	7 (6.8%)
Belatacept, mycophenolate, and prednisone	16 (4.8%)	8 (3.5%)	8 (7.8%)
Cyclosporine, mycophenolate, and prednisone	17 (5.1%)	10 (4.4%)	7 (6.8%)
Tacrolimus and Azathioprine	20 (6.0%)	18 (7.8%)	2 (1.9%)
Tacrolimus and mycophenolate	22 (6.6%)	14 (6.1%)	8 (7.8%)
Tacrolimus and prednisone	43 (13%)	27 (11.8%)	16 (15.5%)
Tacrolimus, mycophenolate, and prednisone	161 (48.5%)	120 (52.4%)	41 (39.8%)
Unknown	9 (2.7%)	8 (3.5%)	1 (0.97%)
Other	31 (9.3%)	18 (7.8%)	13 (12.6%)
Comorbidities			
Hepatitis C positive	14 (4.2%)	10 (4.4%)	4 (3.9%)
History of Diabetes	140 (42.2%)	85 (37.1%)	55 (53.4%)
Currently on Dialysis	56 (16.9%)	29 (12.7%)	27 (26.2%)
History of Cardiovascular Disease	114 (34.3%)	67 (29.3%)	47 (45.6%)
History of Lung Disease	6 (1.8%)	3 (1.3%)	3 (2.9%)
History of Chronic Liver Disease	17 (5.1%)	12 (5.2%)	5 (4.9%)
History of Cerebrovascular Injury	26 (7.8%)	13 (57%)	13 (12.6%)
History of Malignancy	54 (16.3%)	34 (14.8%)	20 (19.4%)
Number of Infection Episodes			
0	229 (69%)	229 (100%)	0
1	62 (18.7%)	0	62 (60.2%)
2	24 (7.2%)	0	24 (23.3%)
3	9 (2.7%)	0	9 (2.7%)
4+	8 (2.4%)	0	8 (2.4%)
Serologic Data			
CMV D+/R-	27 (8.1%)	21 (9.2%)	6 (5.8%)
CMV D-/R-	26 (7.8%)	21 (9.2%)	5 (4.9%)
CMV D?/R-	126 (38%)	88 (38.4%)	38 (36.9%)
CMV D+/R+	39 (11.7%)	30 (13.1%)	9 (2.7%)
CMV D-/R+	24 (7.2%)	19 (8.3%)	5 (4.9%)
CMV D?/R+	90 (27.1%)	50 (21.8%)	40 (38.8%)
Mean Absolute Lymphocyte Counts (10^3/µL)	1.37	1.48	1.11

Conclusion. VLIs were common in long-term survivors of KT and included both conventional and opportunistic pathogens. Every additional year from transplant incurred additional risk for VLI, particularly for those with multiple co-morbidities and lower ALC.

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1111. #BeASteward: Transforming Infectious Diseases Fellows Into Antimicrobial Stewards Using the IDSA Antimicrobial Stewardship Curriculum

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