Figure 1a

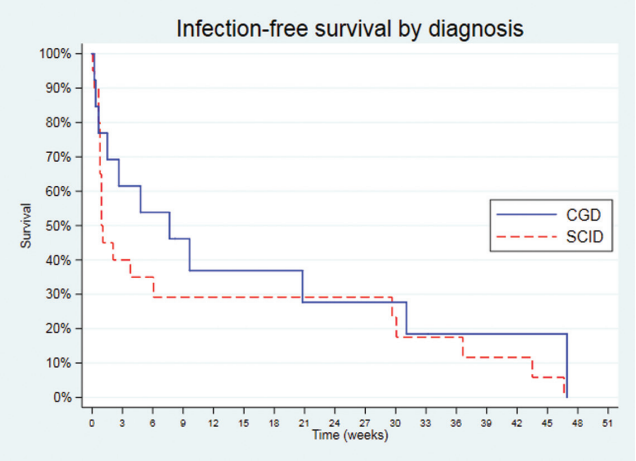
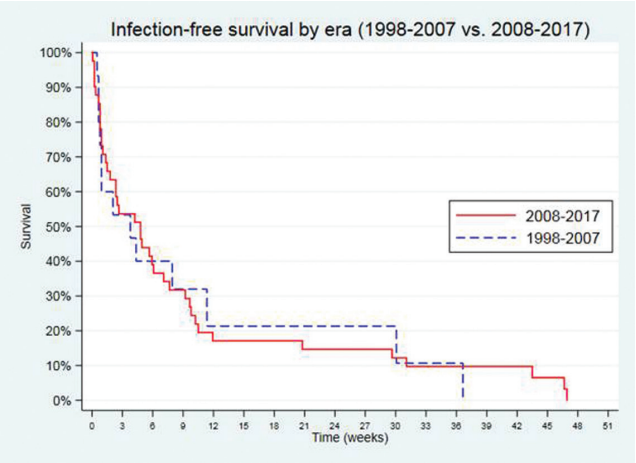


Figure 1b



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

1554. Reactivation of Varicella Zoster Virus in Solid Organ Transplant Recipients: Identification of Risk Factors Using Data Mining Tools

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Background. We created a retrospective database of solid-organ transplant (SOT) recipients using innovative data mining tools. This study describing the epidemiology of Varicella Zoster Virus (VZV) reactivation in SOT serves as a proof of concept of such techniques in clinical research.

Methods. The study design was a retrospective single-center cohort study. Using data mining tools, information was extracted from the electronic medical record and merged with data from the Scientific Registry of Transplant Recipients. First SOT from January 1, 2010–December 31, 2016 were included. Charts of subjects with ICD9/10 codes related to VZV/Herpes infections; positive VZV PCR, DFA or cultures; and recipients of acyclovir, valacyclovir or famciclovir were manually reviewed. The cumulative incidence was calculated using the Kaplan–Meier method. Cox proportional hazards models were used to identify risk factors for VZV reactivation among heart transplant (HT) recipients.

Results. A total of 1,076 SOT recipients met inclusion criteria (203 heart, 395 lung, 280 kidney, 198 liver). Forty-nine patients experienced at least one episode of VZV reactivation; median time post-transplant was 2.25 years (IQR 1.44–4.20 years). The cumulative incidence was 11.9% at 8 years post-transplant. Heart transplant (HT) recipients were at highest risk (Figure 1), with an 8-year cumulative incidence of 26.3% (Figure 2). Thirty-nine of 49 (80%) patients presented with localized disease and 4/49 (8%) with disseminated disease. In multivariable analysis (Figure 3), the risk of VZV reactivation in HT recipients after 12 months (47 patients) was associated with CMV infection before 12 months (HR [95% CI] = 4.74 [1.67–13.47]). Postherpetic neuralgia (PHN) occurred in 23/49 (47%), recurrence in 3/49 (6%), and other complications in 11/49 (22%). In univariable analysis, no risk factors for PHN were identified.

Figure 1

Patient Characteristics (Heart Transplant Recipients, N=203)

	n	% or St dev
Age (median)	58	±12.4
Gender (Male)	147	72.4%
Race/Ethnicity		
Caucasian	133	65.5%
African American	48	23.6%
Hispanic	16	7.9%
Asian	6	3.0%
Diabetes Mellitus	78	38.4%
Underlying Disease		
Ischemic Cardiomyopathy	81	39.9%
Non-Ischemic Cardiomyopathy	98	48.3%
Other	24	11.8%
UNOS listing status		
1A	156	76.8%
1B	43	21.2%
2	4	2.0%
Pre-Transplant VZV IgG seropositivity	187	92.1%
CMV serostatus		
CMV D+/R-	58	28.6%
CMV D+/R+; D-/R+	127	62.6%
CMV D-/R-	18	8.9%
CMV infection	28	13.8%
Pre-transplant LVAD	71	35.0%
Post-transplant ECMO	9	4.4%
Post-transplant RRT	21	10.3%
Rejection	62	30.5%
Pulse Steroids	30	14.8%
Induction Immunosuppression (Basiliximab)	201	99.0%
Maintenance Immunosuppression (at 1 yr)		
Prednisone	89	43.8%
Cyclosporine	99	48.8%
Tacrolimus	83	40.9%
Azathioprine	66	32.5%
MMF/MPA	117	57.6%
Other (Methotrexate/Sirolimus)	13	6.4%
Maintenance Immunosuppression Regimen (at 1 yr)		
CyA/Aza, CyA/Myc, Tac/Aza, Tac/Myc, Aza/Sir, Pred/Myc, Pred/Tac, Cya/Myc/Sir	101	49.8%
Pred/Tac/Myc, Pred/Myc/Sir, Pred/Tac/Aza, Pred/CyA/Myc, Pred/CyA/Aza	76	37.4%
Pred/Tac/Myc/MTX, Pred/Tac/Myc/Sir, Pred/Tac/Aza/MTX, Pred/Tac/Aza/Sir	9	4.4%
Slow steroid taper (12 months)	40	19.7%

Figure 2

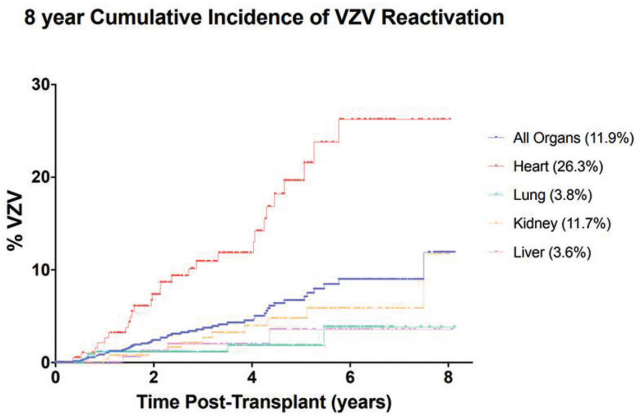

Figure 3

VZV Risk Factors in Heart Transplant Recipients: Multivariable Analysis

Factor	HR (95% CI)
Age	1.1 (0.8-1.8)
Gender (M)	0.8 (0.3-2.4)
Race	
Black	Ref
White	1.9 (0.4-9.4)
Other	2.5 (0.4-17.4)
Immunosuppression at 1 yr	
Prednisone	0.4 (0.2-1.2)
Cyclosporine (vs. Tacrolimus)	1.4 (0.5-5.0)
MMF/MPA (vs. Azathioprine)	1.6 (0.6-4.2)
CMV	4.7 (1.7-13.5)

Conclusion. HT recipients are at highest risk for VZV reactivation. CMV infection before 1 year is associated with increased risk of VZV reactivation after 1 year in HT. This information may help design clinical trials of the recombinant zoster vaccine.

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

1555. A New Perspective About Disseminated Adenovirus Infection and Its Outcomes in Pediatric Solid Organ Transplantation

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Background. Adenovirus (AdV) in solid-organ transplants (SOT) was historically associated with increased morbidity and mortality. Detection of AdV at ≥2 sites is predictive of invasive disease in other immunocompromised populations; however, data is lacking for SOT.

Methods. All SOT in children ≤18 years from January 2005 to June 2017 (n = 1,024). We evaluated host and viral risk factors associated with disseminated AdV infection (defined as AdV from ≥2 sites or DNAemia alone) and the clinical spectrum of disease.

Results. Ninety-two patients had 116 AdV infections. Overall prevalence was 9% with one death. Thirty-nine percent of patients had disseminated infection and of those, 44% received cidofovir. Patients with disseminated infection were more likely to be ≤2 years compared with >2 years (P = 0.003), infected in first-year post-transplant compared with >1 year (P = 0.05), and to present with fever compared with no fever (P = 0.02). No difference was observed for organ subtypes, presence of gastrointestinal or upper respiratory tract symptoms, peak DNAemia, mean viral load (mean $3.9\log_{10}$vs. $4\log_{10}$) between patients with dissemination compared with without dissemination. For patients who received a biopsy, dissemination was not different between patients with a positive biopsy vs. negative biopsy (46% vs. 54%). Cidofovir was given to 64% of the positive biopsy patients. No difference for age at infection or time to infection was observed between the treated and not treated groups.

Conclusion. Our data shows that younger age at infection, shorter time to infection and clinical fever are risk factors for disseminated adenovirus infection in pediatric SOT patients, supporting primary infection and enhanced immunosuppression as main factors that allow viral dissemination. Some patients with high viral loads and biopsy-proven disease were not treated with cidofovir with very low mortality, reflecting a broader spectrum of infection than previously recognized. Our data begins to define a high-risk clinical and viral phenotype for adenovirus dissemination, which can inform management strategies.

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

1556. Infectious Disease Complications with Use of Checkpoint Inhibitors in Solid Organ Malignancies

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Background. Immune checkpoint inhibitors (ICIs) are innovative cancer immunotherapies used for solid-organ and hematologic malignancies. ICIs are known for their immune-related adverse events (irAE) but there are limited reports on infectious complications of immunosuppression for these complications. The purpose of this study was to describe the spectrum of infections in patients with melanoma, renal cell carcinoma or non-small cell lung cancer receiving ICI.

Methods. Retrospective review of City of Hope patients with melanoma, renal cell carcinoma or non-small cell lung cancer on nivolumab, pembrolizumab, and/or ipilimumab from January to November 2017 and received two or more doses of ICI. Pt characteristics assessed: age, sex, prior chemotherapy, steroid use, and type of immunosuppression for irAE. Microbiology records were used to identify infections.

Results. Thirty-nine infectious episodes (35 bacterial, four viral) were identified among 111 patients. Four bacteremia (two *B. cereus*, *coagulase-negative staphylococcus*, 1 *S. aureus*), 12 urinary tract (10 Gram-negative rods, 2 Gram-positive cocci), one intra-abdominal, eight skin and soft-tissue infections (one *S. aureus*, one *Actinomyces radinge*, one *E. faecalis*, and one *E. cloacae)*. There were two probable viral pneumonias (two rhinovirus, two enterovirus) and no fungal infections. Fourteen (12.6%) infections were defined as serious (requiring intravenous antimicrobials and/or hospitalization). There was no association between the specific malignancy or ICI used and risk of infection. Steroid use was significantly associated with serious infections: 12/14 (85.7%) vs. 27/95 (28.4%); P = 0.0003), and no patients had received infliximab or other immunosuppressant.

Conclusion. Bacterial infections were most common, and the only risk factor associated with serious infections in our study was steroid use. Type of ICI did not impact the rate of infection.

Disclosures. **S. Dadwal**, Ansun Biopharma: Investigator, Research grant.

1557. Acyclovir-Resistant (ACV-R) Herpes Simplex Virus (HSV) Disease in Patients with Hematologic Malignancies (HM) and Hematopoietic-Cell Transplant (HCT) Recipients

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Background. HSV reactivation is a challenging complication of HM and HCT. ACV prophylaxis effectively decreases the incidence of symptomatic HSV episodes, but may contribute to development of ACV-R HSV disease in this population. Outcomes in patients with ACV-R HSV disease remain poorly characterized.

Methods. We identified adult HM patients and HCT recipients treated at Dana-Farber Cancer Institute who developed clinically significant ACV-R HSV disease between January 1, 2006 and March 1, 2018. HCT recipients typically receive 1 year of ACV prophylaxis after HCT, or longer in those with graft-vs. host disease. Clinical, microbiological and treatment details were collected.

Results. Nineteen patients had 27 episodes of ACV-R HSV disease during the study. Median age was 50 years (range 31–77); 15 (79%) were men. Fifteen (79%) were allogeneic HCT recipients and 4 (21%) had HM (3 CLL, 1 NHL). Thirteen (68%) had oral ulcers (HSV1), four (21%) had perineal ulcers (3 HSV2, 1 HSV1), one had HSV1 vesicles on the trunk and one had concurrent oral HSV1 and perineal HSV2 ulcers. Three patients had recurrent ACV-R HSV: two had one recurrence each and one had six recurrences. Of 19 first episodes of ACV-R HSV, 15 (79%) were confirmed by culture-based phenotypic resistance testing.

Most episodes (20/27, 74%) were treated with foscarnet at clinical diagnosis or after failure of high-dose val-ACV; four of these episodes were also treated with topical cidofovir without success before foscarnet. Three episodes resolved on high-dose val-ACV or IV ACV alone and three were treated with cidofovir or brincidofovir initially. Coinfection was present in 19 episodes (70%), most often bacterial pneumonia or blood stream infection. Twenty-two episodes (81%) resolved completely after a median of 36 days (range 10–88) of treatment. No patient died of HSV disease but five (26%) died before resolution of ACV-R HSV, a median of 25 days (range 1–117) after treatment started. Eight patients died after ACV-R HSV resolved, a median of 111 days (range 27–382) after treatment started. Among HCT recipients, six (37%) died within 12 weeks of diagnosis.

Conclusion. ACV-R HSV disease is an uncommon complication of HM and allogeneic HCT. While ACV-resistant HSV did not cause death in this cohort, death within 12 weeks of infection was common.

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1558. Commensal *Neisseria* Species as a Cause of Disease in Patients Taking Eculizumab

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