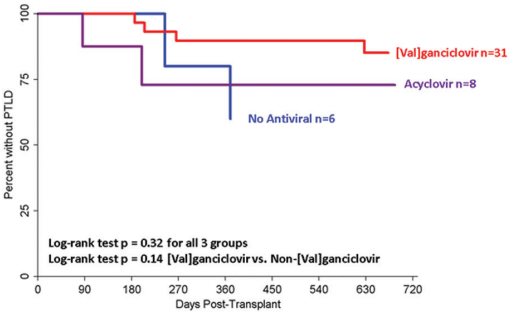

Figure 3: Time to PTLD for High EBV Risk (D+ / R–) Patients by Antiviral Use. Acyclovir is given 10 mg/kg/dose (max 400 mg) PO BID for 3 months for herpes/varicella prophylaxis. Valganciclovir 15 mg/kg/dose (if < 15 kg) or 500 mg/m2/dose (max 900 mg) or ganciclovir 5 mg/kg IV is given daily for 3-12 months for CMV prophylaxis.

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1565. Lymphocyte Subsets as Predictors of Cytomegalovirus Infection After Transplantation

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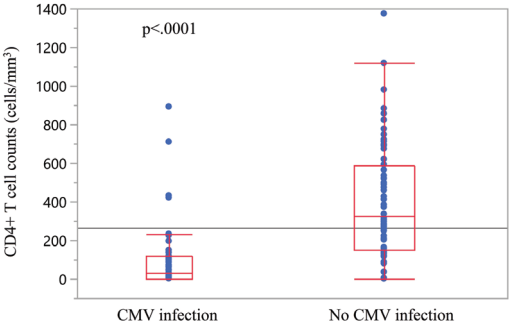
Background. Cellular immunity plays a critical role in controlling cytomegalovirus (CMV) infection after solid-organ transplantation (SOT). We correlated lymphocyte subsets with the risk and course of CMV after SOT.

Methods. We studied 130 selected kidney, heart, lung, pancreas, liver and composite tissue transplant patients who had blood samples collected for immunologic testing. We abstracted absolute lymphocyte count (ALC) and CD4+ and CD8+ T cell subsets, and correlated them with CMV infection and disease. CMV infection was diagnosed by quantitative PCR in blood and other clinical samples, or histopathology.

Results. Fifty-nine of 130 SOT patients developed CMV infection or disease. The median age was 57.5 years (IQR: 47.8–64). Gender distribution was equal. The median onset to CMV infection or disease was 10.5 months (IQR 5.5–18.7). The median ALC for the whole cohort was 565 (IQR, 310–1,083) cells/mm^3. An ALC <630 cells/mm^3 was correlated with CMV infection or disease (sensitivity 83%; specificity 70%). The median CD4+ T cell count for the whole cohort was 160.5 (IQR, 17.5–424.5) cells/mm^3. Patients with CD4+ T cell count <196 cells/mm^3 were at a higher risk of CMV infection or disease (sensitivity 88%; specificity 71%). The 59 SOT recipients with CMV infection or disease had a significantly lower median number of CD4+ T cells compared with those who did not develop CMV (29 vs. 325.5 cells/mm^3, $P < 0.0001$). A median CD4+ T cell count <45 cells/mm^3 was associated with CMV syndrome or tissue-invasive disease (sensitivity 66%; specificity 68%). Patients who had CMV relapse had significantly lower median CD4+ T cell count (9 vs. 68 cells/mm^3, $P = 0.005$). There was no association between CD8+ T cell count and CMV infection or disease. However, T cell functional analysis was not considered in this analysis.

Conclusion. Lower ALC and CD4+ counts, but not CD8+ T cell count, are significantly correlated with the risk and course of CMV infection and disease after SOT. These readily available clinical measures have the potential to assist in CMV disease management.

Figure 1. CD4+ T cell in solid-organ recipients with and without CMV infection.



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

1566. Is Primary CMV Infection Post-transplant Influenced by Circadian Rhythms?

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Background. Cytomegalovirus (CMV) infection causes significant morbidity after transplant. Patients can be stratified by donor and recipient CMV serostatus, but the infection phenotype remains variable. We hypothesized that some of this variability might be explained by circadian rhythms influenced by time of transplant.

Methods. Virological, demographic and transplant data were reviewed for liver and kidney transplant patients (n = 1,111) managed between 2002 and 2015 using pre-emptive therapy. Donor circulatory arrest time and reperfusion time in the recipient were split into four categories, chosen *a priori*. Patients were categorised into three groups depending on donor and recipient CMV serostatus. Differences between groups were assessed using chi-squared and Kruskall–Wallis tests.

Results. For the donor seropositive/recipient seronegative group (D+R–) all CMV parameters were highest when reperfusion occurred in the day or evening, and the lowest in the night or morning (see table).

			Day 10 a.m.–4 p.m. N = 101	Evening 4 p.m.–10 p.m. N = 53	Night 10 p.m.–4 a.m. N = 30	Morning 4 a.m.–10 a.m. N = 20	P Value
Developed CMV Viraemia Within 90 Days % (n)		Yes	76.2 (77)	73.6 (39)	66.7 (20)	45.0 (9)	0.039
		No	23.8 (24)	26.4 (14)	33.3 (10)	55.0 (11)	
Received anti-CMV Treatment % (n)		Yes	63.4 (64)	64.2 (34)	50.0 (15)	45.0 (9)	0.264
		No	36.6 (37)	35.9 (19)	50.0 (15)	55.0 (11)	
Among those that became viraemic	Peak viral load, copies/mL	Median (IQR)	14,870 (3,220–97,551)	23,789 (3,509–58,314)	5,685.5 (2,711–26,407)	6,238 (2,839–8,131)	0.074
	Duration viraemia, days	Median (IQR)	42 (24–63)	42 (18–70)	31 (21–57)	34 (26–35)	0.555
	Duration treatment, days	Median (IQR)	48 (33–64)	47.5 (29–67)	42 (29–66)	28 (21–41)	0.257

No such pattern was seen for circulatory arrest time, or in the D-R+ or D+R+ groups.

Conclusion. Time of day of transplant surgery appears to be associated with development of CMV viraemia and the parameters of infection in one subgroup of transplant patients. These differences could be explained by circadian rhythms of CMV replication and/or immunological parameters varying throughout the day. These data therefore provide support for further study of circadian effects on CMV replication and host CMV immunity.

Disclosures. **P. Griffiths**, shire: Scientific Advisor, funds paid to my institution not to me; chimerix: Scientific Advisor, funds paid to my institution not to me; sanofi pasteur: Grant Investigator, funds paid to my institution not to me; genentech: Scientific Advisor, funds paid to my institution not to me.

1567. Predicting Mortality Among Immunocompromised Patients Who Present with Infection

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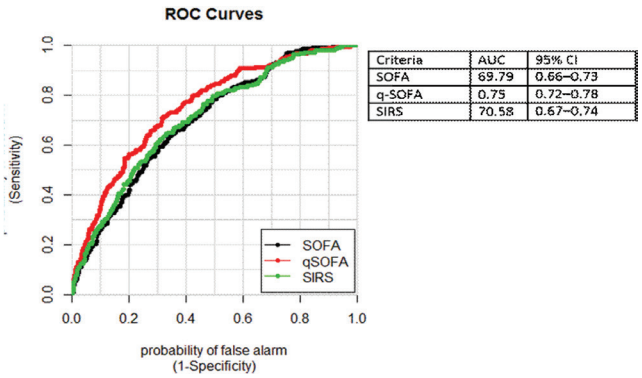
Background. Recent sepsis definitions for the general population include Sequential Organ Failure Assessment (SOFA) ≥ 2 for patients admitted to intensive care unit (ICU), and quick SOFA (qSOFA) ≥ 2 for non-ICU patients. The objective of this study was to validate the predictive value of SOFA and qSOFA in immunocompromised patients.

Methods. Adult patients admitted between 2014 and 2017 with ICD-9 and ICD-10 codes for hematologic malignancies or transplant diagnoses who had suspected infection were included. Index date of suspected infection was defined as the time when blood culture was obtained, followed by intravenous antibiotic therapy, or vice versa (based on the definition used in SEPSIS-3 study, Seymour *et al.*). SOFA, qSOFA and SIRS components within 1 day of the index date were extracted from the medical record. A baseline risk model of mortality was created including age, race, gender, and Charlson comorbidity index. Each score was added to the baseline mortality risk model as a dichotomous variable (SOFA ≥ 2, qSOFA ≥ 2, and SIRS ≥ 2). For each risk model, a receiver operating characteristic (ROC) curve

was developed and the area under ROC (AUROC) was calculated. Sensitivities of SOFA ≥ 2, qSOFA ≥ 2, and SIRS ≥ 2 for predicting in-hospital mortality were calculated.

Results. A total of 2,917 patients with a mean age of 57.0 ± 15.7 were included; 57% were male and 84% white. The most common immunocompromising conditions were solid-organ transplantation (45%), lymphoma (24%), acute leukemia (17%) and hematopoietic stem cell transplantation (6%). Two hundred and seventeen patients died during index admission (7.4%). The sensitivities of SOFA ≥ 2, qSOFA ≥ 2 and SIRS ≥ 2 for predicting in-hospital mortality were 94.9, 64.1 and 91.7%, respectively ($P < 0.001$ for each score ≥2 compared with <2). In the mortality risk model, the AUROCs for qSOFA, SOFA and SIRS were 0.75, 0.70 and 0.71, respectively (Figure). The AUROC for qSOFA ≥2 was significantly higher than for SIRS ≥2 and SOFA ≥2 ($P = 0.004$, $P < 0.001$, respectively).

Conclusion. qSOFA ≥2 was the strongest predictor of mortality in immunocompromised patients and may aid in risk stratification and clinical decision-making. Additional analyses are needed to evaluate alternative and potentially improved scoring systems for sepsis in immunocompromised populations.



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

1568. Implementation of a Standard Diet Regimen for Neutropenic High-Risk Cancer Patients: Effects on Incidence of Infections, Foodborne Diseases, and Outcome

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Background. Neutropenia is a major risk factor for infections in cancer patients. Even though evidence to support a germ-free neutropenic diet (ND) is missing, many oncology departments still maintain ND regimens. While benefits of an ND remain uncertain, restrictions of food and rigorous preparation rules impact quality of life and may further increase malnutrition rates in cancer patients.

Methods. Based on the Cologne Cohort of Neutropenic Patients database, we conducted a retrospective analysis of high-risk hematological/oncological patients with a confirmed period of neutropenia (neutrophils < 500/mm^3) which lasted longer than 5 days. The interval of four years before and after replacing the ND by a standard hospital diet (SD) in January 2008 was compared. Patients undergoing allogenic stem-cell transplantation were excluded. The relative days of febrile neutropenia (relFN) before (neutropenic diet group, NDG) and after (standard diet group, SDG) the change of diet were analyzed in a propensity score-matched cohort. Secondary outcomes were the incidence of food borne disease, bloodstream infections (BSI), antibiotic treatment, diarrhea, weight change, nausea, and death.

Results. A total of 774 neutropenic episodes of each NDG and SDG were included into the analysis. The median days of neutropenia were 11 (IQR 8–16) in the NDG and 10 (IQR 8–16) in the SDG ($P = 0.320$). The rate of acute leukemia for NDG and SDG was 47% ($P = 0.839$). The mean relFN was 0.20 in the NDG and 0.22 in the SDG ($P = 0.270$). In our multivariate model, no association between diet and relFN was identified (OR 0.03; IQR −0.04–0.09; $P = 0.410$). Diarrhea occurred in 52% in the NDG and 40% in the SDG ($P < 0.001$), nausea in 72% and 66% ($P < 0.001$). No significant changes in frequency of gastrointestinal infections (NDG: 2; SDG: 1; $P = 0.719$) or BSI related to foodborne disease (NDG: 0; SDG: 3 $P = 0.248$) were detected after change of diet. The detected BSI (NDG: 29%; SDG: 30%; $P = 0.867$), antibiotic treatment (NDG: 78%; SDG: 77%; $P = 0.760$), weight gain (NDG: 11%; SDG: 14%; $P = 0.121$), and median 28-day mortality (NDG: 13.5 (IQR 8.8–32.5); SDG: 17 (IQR 10–29); $P = 0.118$) were equally distributed after change of diet (see Figure 1).

Conclusion. We did not detect a change in relFN after replacing the ND with an SD. In our population, an SD was safe for neutropenic high-risk patients.

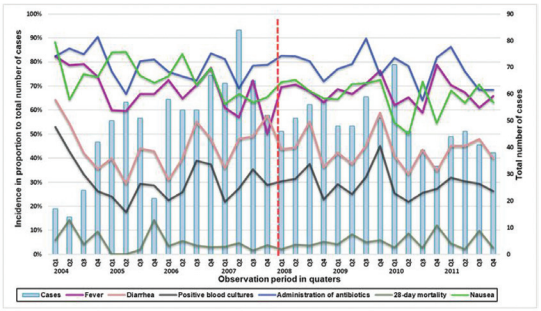

Figure 1: Infection related observations in neutropenic and standard diet group during study period for the propensity score-matched cohort. The red dashed line highlights the replacement of the germ-free neutropenic diet by a standard hospital diet in Jan 2008.

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

1569. Incidence, Risk Factors, and Impact of Antiviral Prophylaxis Duration on Cytomegalovirus (CMV) Disease in High-Risk Donor Seropositive/Recipient Seronegative [D+R−] Orthotopic Heart Transplant Recipients (OHTR)

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Background. CMV disease is a major cause of morbidity and mortality in OHTR, especially among D+R− patients. Clinical trials of longer antiviral prophylaxis have shown reduced CMV disease incidence in kidney and lung transplant recipients but have not been done in OHTR. We aimed to characterize risk factors and impact of antiviral prophylaxis duration on CMV disease in high-risk CMV D+R− OHTR.

Methods. We performed a retrospective cohort study of consecutive adult first OHTR at a single US transplant center from 5 July 2005 through 30 December 2016 with at least one year of follow-up. Standard immunosuppression included ATG induction followed by maintenance with tacrolimus, mycophenolate, and prednisone. Valganciclovir (VGCV) was given for 3 months for all R+ and for 3–6 months for D+R− at clinician discretion. CMV syndrome and end-organ disease were defined using consensus definitions. Chi square and Mann–Whitney tests were used to compare categorical and continuous variables, respectively, with $P < 0.05$ considered significant, and logistic regression was used for multivariate analysis.

Results. Key cohort ($n = 310$) characteristics included: 73% male, median age 55, 98% ATG induction, 1-year survival of 92%, and median follow-up of 44 months (IQR 22–88). Proven/probable CMV disease occurred in 27/310 (9%: syndrome 22%, end-organ 78%), and more frequently in D+R− (22/83, 27%) vs. either R+: 5/180 (2.8%) or D−R−: 0/47, $P < 0.01$. Among D+R− recipients who survived to hospital discharge, CMV disease occurred >1 year post-OHT in 10/22 (45%), and was genotypicallyconfirmed as ganciclovir-resistant in 4/22 (18%). Duration of VGCV prophylaxis ranged from 0 to 8.9 months (median 3.6, IQR 3.3–5.6). In a multivariable model that assessed baseline and time-dependent factors, longer durations of prophylaxis (analyzed continuously or discretely) were not associated with protection against CMV disease ($P > 0.05$ for all comparisons).

Conclusion. CMV disease remains a major clinical problem in D+R− OHTR, and longer durations of antiviral prophylaxis do not appear to be protective. Prophylaxis duration should be studied specifically in OHTR, rather than extrapolated from other organ transplant populations. Novel strategies to prevent CMV disease in D+R− OHTR are warranted.