Background ICIs (PD-1 inhibitors, PDL-1 inhibitors, CTLA-4 inhibitors) are increasingly used to treat various malignancies. The percentage of cancer patients in the US who may benefit from ICIs has increased from 1.54% in 2011 to 43.63% in 20181. ICIs cause unique side effects called immune-related adverse events (IrAEs). There is limited to no data regarding the safety/efficacy of ICIs in patients with pre-existing organ dysfunction, as these patients are frequently excluded from clinical trials. Our study aims to evaluate the effects of ICIs in patients with chronic kidney disease (CKD), cirrhosis, COPD (chronic obstructive pulmonary disease), and congestive heart failure (CHF).

Methods Data were obtained retrospectively for patients over 18 with any solid organ malignancy, who received at least 1 dose of ICI between 1/1/2015- 1/1/2021 and had either CKD (n=90), cirrhosis (n=20), COPD (n=142), or CHF (n=82) at our institution. Patients on chronic immunosuppression were excluded. Descriptive statistics (mean/counts/percentages) were used to summarize patient characteristics, treatment characteristics, IrAEs, and outcomes. An independent samples t-test or Wilcoxon Rank Sum test was used to assess differences in continuous variables; Chi-Square or Fisher’s Exact test was used to assess differences in categorical variables between patients with IrAEs compared to those without IrAEs. Progression-free survival (PFS) was assessed using Kaplan-Meier curves, and the log-rank test was used to assess differences in PFS. p <0.05 was considered statistically significant.

Results In this analysis, 21/90 CKD patients, 4/20 patients with cirrhosis, 34/142 patients with COPD, and 25/82 patients with CHF had a clinically significant IrAE (table 1). In each of the 4 cohorts, there were no statistically significant differences in the patient characteristics or treatment characteristics, or outcomes among patients with IrAEs compared to those without IrAEs (table 2). In the CKD cohort, those with IrAE were significantly less likely to die than those without IrAE, 52% versus 81%, p=0.009; this difference in survival was not seen in other cohorts. There was no statistically significant difference in the number of heart failure and COPD exacerbations while receiving immunotherapy in the CHF and COPD cohorts, respectively. There was no statistically significant difference in PFS between patients with IrAE and without IrAE in any of the cohorts (figure 1).

Conclusions Our study showed that ICIs are safe in patients with pre-existing organ dysfunction with a trend towards better PFS (though not statistically significant) in those with IrAEs. This is the most extensive study to date assessing ICI in this patient population.

REFERENCE
1. Haslam A, Prasad V. Estimation of the Percentage of US patients with cancer who are eligible for and respond to checkpoint inhibitor immunotherapy drugs. JAMA Netw Open. 05 03 2019;2(5):e192535.

Ethics Approval The study obtained IRB (institutional review board) approval- IRB number # 320-21-EP
Abstract 1245 Figure 1  Progression-free survival curves of patients with IrAE versus those without IrAEs in CKD, cirrhosis, COPD, and CHF patients