Introduction:
In this study, we investigated whether sequential organ failure assessment (SOFA) score performance differs based on disease state amongst patients admitted to the intensive care unit (ICU) with infection.

Methods:
This was a single center retrospective study of adult ICU patients admitted with infection between 2008 and 2018. Patients were uniquely classified into different disease states based on ICD9/10 codes. Disease states included were pneumonia, meningitis, isolated bacteremia, cellulitis, cholangitis/cholecystitis, intestinal and diarrheal disease, endocarditis, urinary tract infection and peritonitis. SOFA score performance was compared across disease states.

Results:
A total of 12,283 patients were included. Of these, 50.6% were female and the median age was 70 (IQR 57-82). The most common disease states were pneumonia (32.2%) and UTI (31.0%). Overall, 1703 (13.9%) patients died prior to hospital discharge. The mean SOFA score for the cohort was 5.4 (95%CI: 5.3-5.4). Patients with peritonitis had the highest mean SOFA score (6.7, 95%CI: 6.3-7.0) and patients with cellulitis had the lowest mean SOFA score (4.7, 95%CI: 4.5-5.0). SOFA score discrimination was highest among patients with endocarditis [area under the curve (AUC) 0.79, 95%CI: 0.69-0.90] and lowest for patients with isolated bacteremia (AUC 0.59, 95%CI: 0.49-0.70). Within each quartile of SOFA score, mortality was highest in patients with pneumonia and peritonitis and lowest in patients with cellulitis (see Figure). The addition of disease state to SOFA for the prediction of in-hospital mortality improved model discrimination (AUC 0.69, 95%CI: 0.68-0.70 vs. 0.71, 95%CI: 0.70-0.73, p<0.01).

Conclusion:
Site of infection is an important consideration when interpreting the SOFA score. This is an important finding as SOFA is utilized as an important tool in the definition and prognostication of sepsis.
Mortality rate for Disease specific SOFA score.