Healthcare resource use among hospitalized solid organ transplant recipients with COVID-19

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Abbreviations: intensive care unit (ICU), length of stay (LOS), solid organ transplant recipients (SOTR)

To the Editor:

While recent data demonstrate similar mortality among solid organ transplant recipients (SOTR) and non-transplant recipients with COVID-19 and similar comorbidities,[1, 2] the magnitude of healthcare resource consumption by SOTR with COVID-19 is incompletely described. Knowledge of hospital length of stay (LOS), intensive care unit (ICU) LOS, and duration of mechanical ventilation are essential for transplant centers to make informed decisions on resource allocation with surges in COVID-19 activity. Several studies have reported rates of ICU and mechanical ventilation in SOTR, but these studies are limited by small sample size, short or variable durations of follow-up, or single center experiences.[2-4] To address these limitations, we performed additional analyses from data in a prospective, multi-center registry of 376 SOTR hospitalized with COVID-19 with standardized 28 day follow-up, which has been previously described.[1]

Table 1 shows the rates and median durations of hospitalization, ICU LOS, and mechanical ventilation in all SOTR and by transplanted organ type, stratified by survivors and non-survivors. Thirty-three patients (8.7%) remained hospitalized at the end of the 28-day follow-up. Of 147 patients admitted to the ICU, median ICU LOS was 11 days (IQR 5-19) and 58 (39.5%) died within 28 days. Of 376 hospitalized patients, 117 (31.1%) were mechanically ventilated for a median of 12 days (IQR 7-19). ICU LOS and duration of mechanical ventilation were longer in survivors compared to non-

survivors. Among different organ groups, rates of ICU admission and ventilation were similar and there were no significant differences in hospital LOS.

These data reflect a large, multi-center cohort of SOTR with COVID-19, all of whom were followed for 28 days, with final disposition known for > 90% of patients. Our observed 40% rate of ICU admission was slightly lower but similar to a smaller study of 68 hospitalized SOTR reporting an ICU admission rate of 35%,[3] though the latter were only followed for a median of 15 days and no LOS information was reported. Another study of 98 SOTR reported a median ICU LOS of 11 days with 28 days of follow-up, similar to our findings. They reported a shorter median ventilation duration (9 days vs 12 days in our study), but only examined the first 14 days.[2] The longer duration of mechanical ventilation reported here highlights the importance of follow-up duration on temporal measures of resource consumption, as measurements from the longest hospital courses cannot be captured at shorter intervals. We also stratified by mortality, and survivors had longer median durations of ICU stay and mechanical ventilation, demonstrating that the fraction of critically ill SOTR who survive to day 28 of illness consume substantial healthcare resources, and need to be considered for future surge planning. We were unable to compare our findings to resource consumption in the general population given the wide variations and lack of standardization in data for the latter.[5] More information on resource consumption in the non-immunocompromised population with COVID-19 is important for comparison; however, these results provide practical guidance for transplant centers planning for the impact of COVID-19 on hospital resources.

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Disclosures

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