




LETTER TO THE EDITORS

# Solid organ transplantation during the COVID-19 pandemic in the United States

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Dear Editors,

The emergence of SARS-CoV-2 and the clinical syndrome of COVID-19 have significantly disrupted routine health care and life-saving procedures, including solid organ transplantation. The initial lack of personal protective equipment (PPE), the high infectivity, and rapid spread resulted in a change of practice in many transplant centers, including pausing living donor transplantation and limiting solid organ transplant to those waitlist candidates in urgent need of transplant [1-3].

In this letter, we describe the contemporary trend of organ transplant (including heart, kidney, liver, lung, and pancreas) and donor volume by organ prior to and during the pandemic along with COVID-19 hospitalizations. Data from the national organ registries, Organ Procurement and Transplantation Network, (1/1/2019-5/31/2020) and Scientific Registry of Transplant Recipients (6/1/2020-12/31/2020) were used for transplant and donor volume. For COVID-19 hospitalizations, we used data from Centers of Disease Control and Prevention (CDC) [4]. Same donors that donated multiple organs were counted with the respective organ. Therefore, the sum of the number of donors across all five target organs exceeded the actual number of donors.

COVID-19 hospitalizations had a first peak in April with 130,000 hospitalizations, followed by a larger peak in December 2020 with 170,000 hospitalizations. Donor volume for all studied organs plummeted in March 2020, reached a nadir in April, and gradually increased (Figure 1). By the end of the year, the monthly volume

appeared to return to a level similar to the same month of 2019 for kidney, liver, and pancreas. The ability to test living donors resulted in a safe return of living donor liver and kidney transplantation practice. This is related to improvement in testing and PPE supply along with more data available regarding transmission and precautions, and the recent Emergency Use Authorization of vaccines.

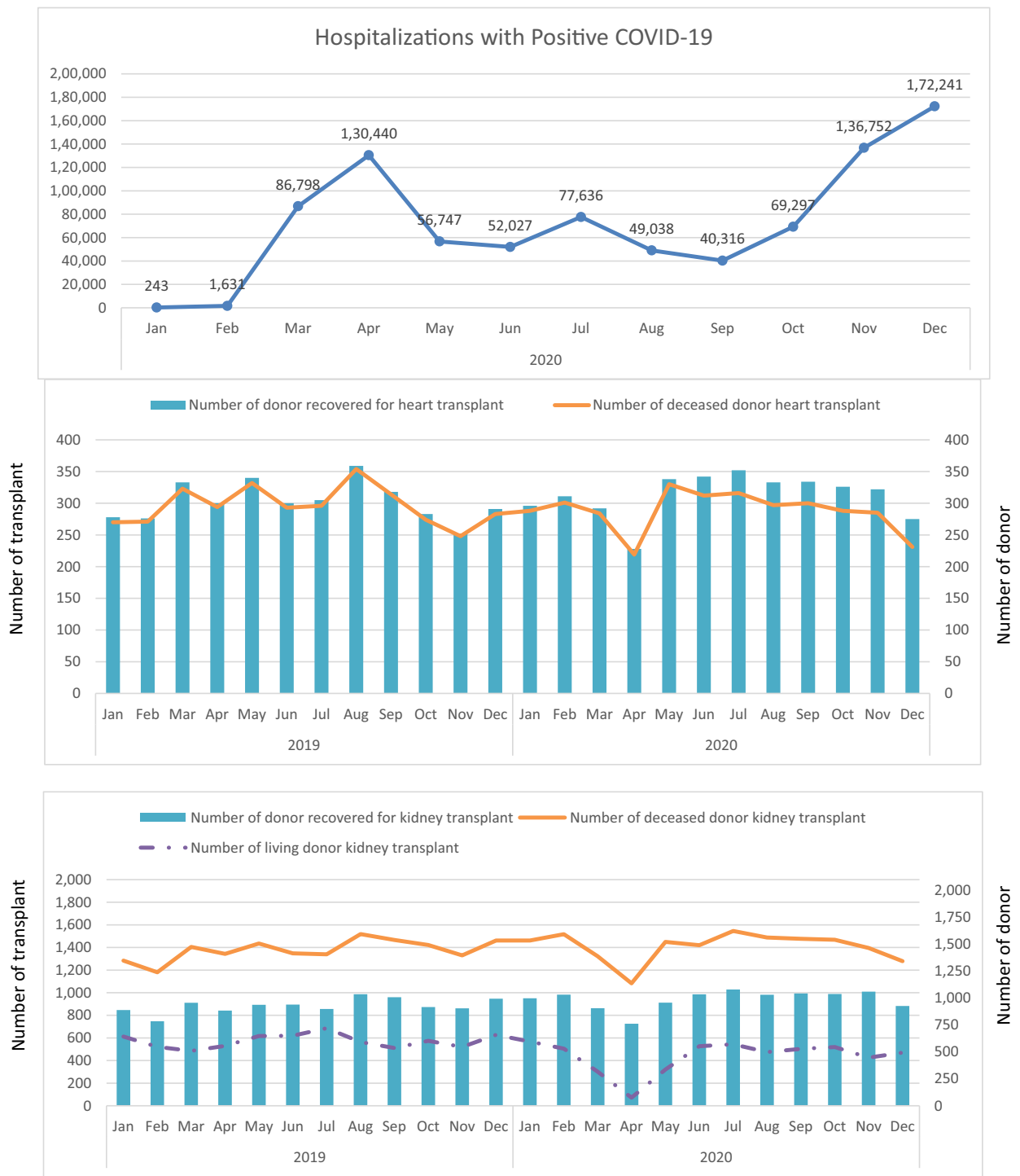
For heart and lung transplantation, the volume has increased before it went down during the second wave of COVID-19 in November-December, 2020. Lung is the main organ affected by COVID-19 with tissue injury that might be mediated directly by the virus and possible cytokine release that could exacerbate the tissue injury. The number of heart transplants is directly related to the number of status 2 patients on the list (i.e., those on temporary mechanical support). During the November - December period, there was a decrease in the number of patients referred for heart transplant consideration that were appropriate candidates for temporary mechanical support. This could also partially related to a decrease in heart failure hospitalizations that contributed to lower urgent heart transplant evaluations.

One limitation in our paper is the absence of evaluation by regions. We assume that regions with the higher decrease in transplant numbers were the regions with the higher number of COVID-19 cases.

In the midst of another peak of COVID-19 during the winter 2020, the decision to transplant cannot be applied equally across hospitals in different regions and even in the same regions. Important considerations include local COVID-19 prevalence, hospital capacity, number of patients admitted with COVID-19, and the availability of transplant center resources to manage and follow new transplant recipients.

## Funding

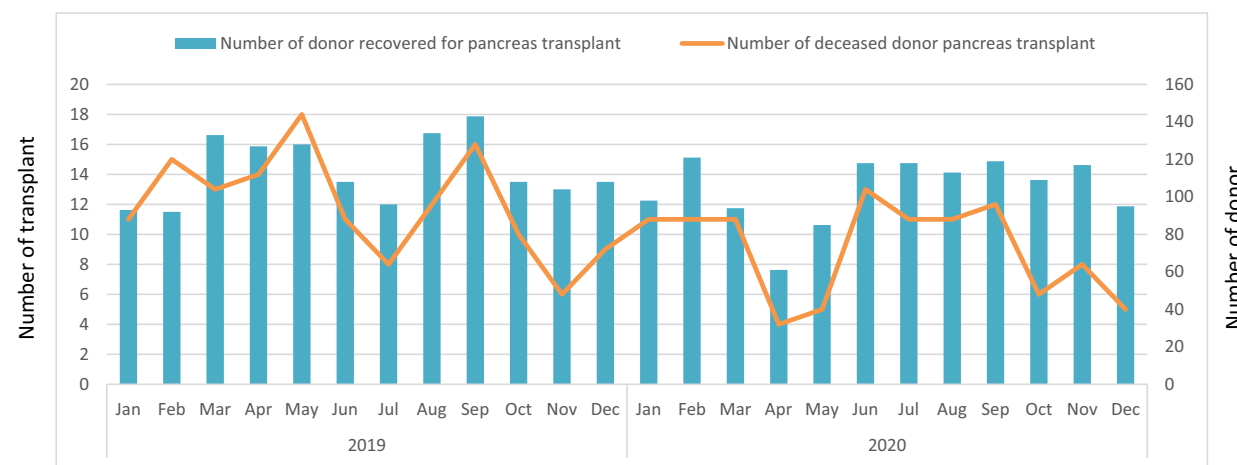
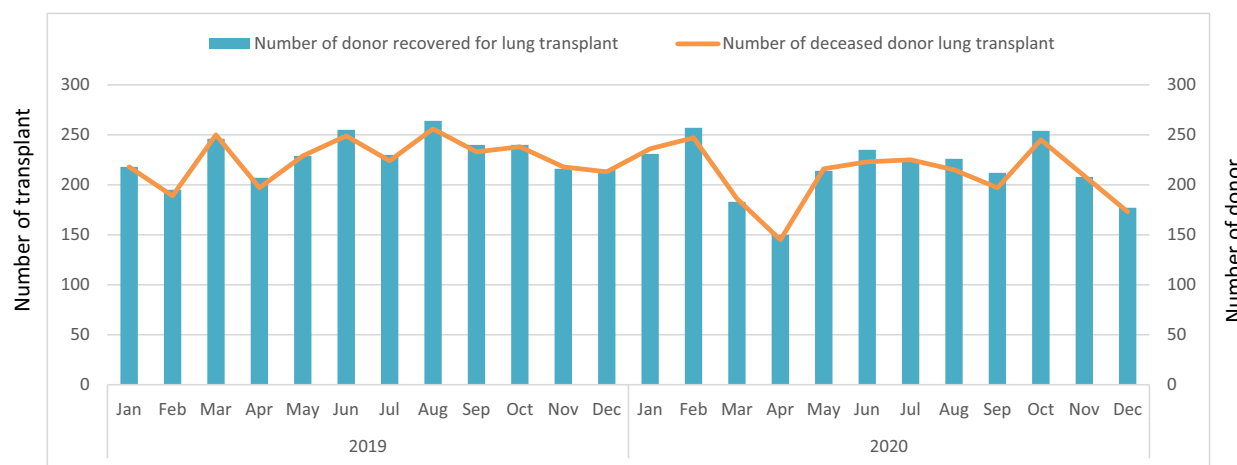
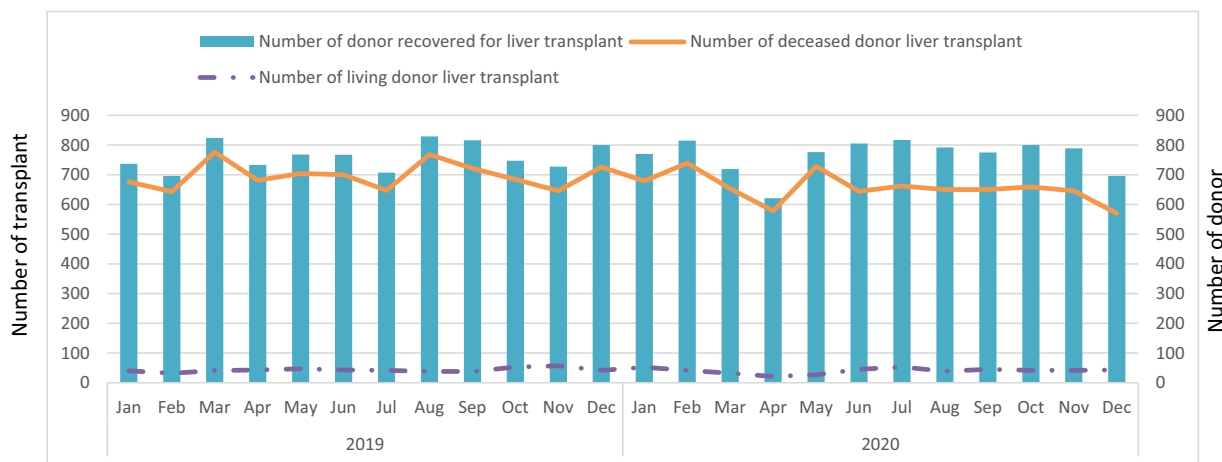
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**Figure 1** Trends of COVID-19 hospitalizations, organ transplants, and donors recovered for transplants: heart, kidney, liver, lung, and pancreas, prior to and during the COVID-19 pandemic.

**Conflicts of interest**

The authors have declared no conflicts of interest.



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