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Approach to Pancreas Transplant During the COVID-19 Pandemic

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CONTRIBUTIONS STATEMENT

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K.J.W., N.S., K.L.L., and R.F.P., were responsible for drafting the manuscript. N.S. and K.L.L. were responsible for data collection and analysis. All authors were responsible for study design, data interpretation, and critical revision of the manuscript.

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The publicly available data analyzed in this letter are IRB exempt.

COI STATEMENT

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To the Editor:

The COVID-19 pandemic has disrupted many aspects of vital medical care, including transplantation—with another surge in progress. In March 2020, faced with potential shortages of ventilators, dialysis machines, and personal protective equipment, hospital systems drastically scaled back or halted vital activities—including new transplants—in effort to mobilize resources for anticipated or realized COVID-19 admissions. As for all solid organ transplant (1-2), pancreas transplant has been impacted by the pandemic, but has received less attention. As of October 26, 2020, only 781 total pancreas transplants had been performed in the U.S. (2), which is a drop of ~10% from the corresponding date last year (Figure 1A). Based on historical volume, we would have projected 1038 total pancreas transplants in the U.S. during 2020, including simultaneous pancreas-kidney transplant (SPKT), pancreas after kidney transplant (PAKT), and pancreas transplant alone (PTA). While pancreas transplant activity has increased since June 2020, we estimate the actual number of pancreas transplants may reach about 900. Based on SRTR data (Figure 1B), pancreas transplant volume changes did not seem to be related to historic pancreas transplant center volume (3), suggesting that local pandemic conditions may be the dominant factor.

Transplants occur in the context of the larger healthcare system that has additional global constraints. Ethical and logistical balancing for transplant activity during the pandemic must take those constraints into account (4-6), many of which are beyond the influence of the transplant center. Regional hospitals may not have intensive care resources to maintain potential donors. Transplant providers may be reassigned to pandemic-related patient care. Within that context, pancreas transplantation has some unique considerations. Pancreas transplants are both lifesaving and of similar priority to kidney transplants, while fully acknowledging that require additional resources. Hence, surge and steady state risk-benefit considerations can be somewhat different (Figure 1C). Similar to kidney, pancreas transplant recipients are typically extubated in the operating room and usually do not require ICU care, although having the possibility of ICU backup is perhaps more relevant for pancreas transplant recipients. For SPKT candidates at risk of dialysis center COVID-19 exposure (7), it is intuitive to proceed as for kidney transplant candidates who requires similar immunosuppression (e.g.

cytoreductive induction immunosuppression), albeit with somewhat longer lengths of stay and possible readmission need. There are additional issues that may differentially impact pre-dialysis patients listed for SPKT or those listed for PAKT, as they are not exposed to in-center dialysis COVID-19 risk. Similarly, PTA benefits are not as clearly defined as PAK or SPK and should be individually scrutinized in the context of local pandemic conditions.

Fundamentally, the decision-making process for pancreas transplantation is similar to other transplanted organs—there is investment in resources around the time of engraftment that both extends life and reduces resource utilization long-term. There may be specific short-term surge conditions that reasonably limit transplant activity, but these considerations should be properly contextualized with donor organ scarcity, expected wait-times, avoidance of downstream diabetic morbidity and mortality, local hospital resources, and concurrent pandemic conditions.

FIGURE LEGEND

Figure 1. A. Impact of the COVID-19 pandemic on U.S. pancreas and kidney-pancreas transplantation, 2020 vs 2019, based on OPTN/UNOS data as of 10/26/2020. B. Change in SPKT and PAKT/PTA volume from April-September 2020, compared to the mean of the previous two 6 month cycles, by center. C. Decision-making balance of pancreas transplant considerations during the COVID-19 pandemic.

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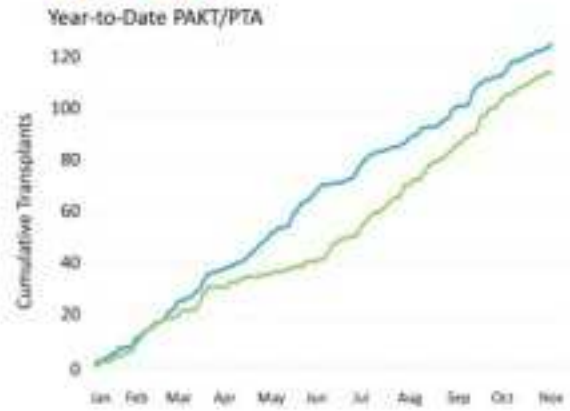
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A. 2020 2019



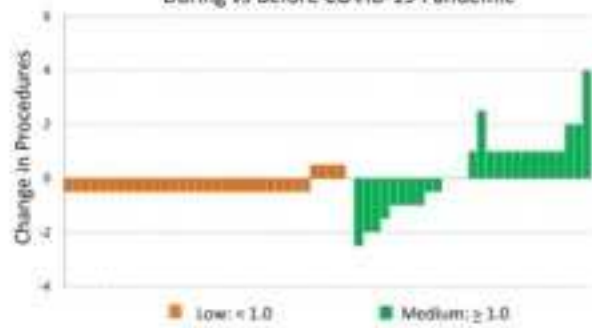
2020 2019



B. SPKT 6-month Rate Change: During vs Before COVID-19 Pandemic



PAKT/PTA 6-month Rate Change: During vs Before COVID-19 Pandemic



C.

Factors Favoring Pancreas Transplant

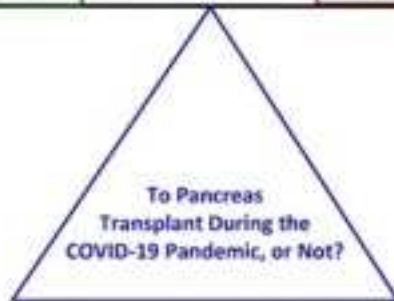
- Pancreas transplants are life saving
- Donor organ scarcity
- Candidate wait time
- Lost opportunity to minimize mortality & complications of diabetes
- Lost opportunity to limit COVID-19 spread among patients in-center dialysis

Transplant Center Can Influence

- Similar priority between pancreas and kidney transplants
 - Minimal ICU utilization
 - Acceptable LOS
 - Similar immunosuppression
 - Similar risk of COVID-19

Factors Against Pancreas Transplant

- Limited regional hospital resources for pancreas donor procurements
- COVID-19 surge conditions
- Transplant hospital resource limitations
- Patient reservations during the pandemic
- Staff availability, shortages



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