

# Compelling Evidence of the Need for Policy Change to Decrease Deceased Donor Kidney Discard in the United States

## Waste Not Want Less

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Despite the waitlisting of nearly 100,000 patients for kidney transplantation in the United States, 20% of all deceased donor kidneys continue to be discarded (1). In this issue of the *Clinical Journal of the American Society of Nephrology*, Husain and colleagues report on the use of unilateral kidney transplants (*i.e.*, transplants in which only one of two kidneys from a deceased donor was used for transplantation and the mate kidney was discarded) (2). There were 7625 unilateral transplants in the United States between 2000 and 2015, and 70% of the discarded mate kidneys did not have an isolated factor (*i.e.*, anatomic abnormality, damage, or extended ischemia) that would justify discard. The outcomes of unilateral transplants were good and comparable to those of contemporary transplants from donors of similar quality in which both mate kidneys were transplanted individually (*i.e.*, bilateral transplants). The findings suggest that approximately 5000 kidneys that may have been safely used for transplantation were discarded during the study period.

The study was on the basis of data reported by the United Network of Organ Sharing (UNOS) and included 88,209 deceased donors from whom two kidneys were removed for the purpose of transplantation. UNOS captures every deceased donor from whom at least one organ was removed for the purpose of transplantation, and records reasons why removed organs were not transplanted. UNOS does not report donors from whom organs were not removed for the purpose of transplantation, including donation after circulatory donors with warm ischemia times that were too long to allow organs to be transplanted under current clinical protocols (3). It is important to note that 27,660 discarded kidneys were not included in this analysis because both mate kidneys from the same donor were discarded. By focusing on donors in which one mate kidney was utilized for transplantation, the authors were uniquely able to provide insights into clinical practice variation related to organ acceptance and the potential utility of the kidneys that were discarded.

The authors mapped 21 discrete reasons why one mate kidney was discarded into eight overarching

categories, which were then broadly grouped into problems that asymmetrically affected one kidney precluding transplantation (*i.e.*, anatomic abnormalities, organ damage, extended ischemia) versus factors that should affect both kidneys (*i.e.*, donor kidney function, donor history, donor biopsy findings, inability to find a recipient) but did not preclude transplantation of the mate kidney. The reasons for discard were examined as a function of the kidney donor profile index (KDPI), a numerical measure that combines ten donor factors to express the quality of the donor relative to other donors (4). The KDPI is now used in the UNOS organ allocation algorithm and is associated with both organ discard and transplant survival. The authors found that only 30% of unilateral transplants were explained by asymmetric problems with the discarded kidney. Asymmetric problems with the discarded kidney were more frequently recorded for low KDPI (high quality) donors, whereas factors that would affect both mate kidneys were more frequently the reason for discard in high KDPI (lower quality) donors. The finding that unilateral transplants from high KDPI donors had good outcomes suggests that some of the discarded high KDPI kidneys may have been safely used for transplantation. The presentation of unadjusted transplant survival rates in the study likely overestimates the survival difference between unilateral and bilateral transplants. The analysis was matched on KDPI but did not account for differences in recipient, immunosuppression, and transplant factors (*i.e.*, cold ischemic time, HLA matching) that are well known to affect transplant survival and differed between unilateral and bilateral transplants in this study.

Donor biopsy findings are a commonly reported reason for discarding deceased donor kidneys (5). The fact that biopsy findings were a prominent reason for discard in this study of unilateral transplants is surprising as biopsies are expected to be similar in mate kidneys. The study could not determine if the center that accepted one mate kidney for transplantation had access to the biopsy findings that led other centers to reject the mate of the kidney they transplanted, or if the accepting center interpreted the biopsy findings

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differently or simply disregarded the biopsy findings. It is well known that the value of donor biopsies is limited by the quality of the biopsy sample, and the timely availability of an expert pathologist to evaluate the biopsy (6). Although some centers depend on donor biopsies to guide decision-making regarding organ acceptance, other centers (including those in Europe and Canada where donor discard rates are low) are able to successfully transplant kidneys from high-risk donors without the use of a biopsy. When biopsy findings are consistent with the clinical evaluation of the donor, they may be useful in making the determination about accepting a kidney for transplantation. However, in isolation, biopsy findings are of limited value and should not be relied upon for decision making. The study findings highlight the need for rapid accurate tests to better inform evaluation of deceased kidney donors.

The study also sheds light on the complexity of organ allocation in the United States and the disconnect between the practice of organ procurement organizations (OPOs) and the local transplant centers they serve. Unilateral transplants that were the result of asymmetric problems in one mate kidney were more likely to be accepted for transplantation by local centers. In contrast, unilateral transplants that were the result of factors that should affect both kidneys were more frequently accepted by transplant centers outside the OPO's local service area. OPO and transplant centers are both overseen by the Center for Medicare and Medicaid Services, but OPO performance is primarily determined by the number of organ transplants facilitated by the OPO, whereas transplant center performance is dependent on transplant outcomes. Alignment of OPO and transplant center performance metrics is likely important to ensure optimal use of every safely transplantable kidney.

The study findings indicate significant variation in the acceptance of lower quality deceased donor kidneys between transplant centers (58% of all unilateral transplants were performed by just 20% of transplant centers). Additional analyses to understand the characteristics of centers that performed the unilateral transplants would have been useful in understanding this issue. There are a number of complex factors that contribute to center level variation in acceptance of lower quality kidneys, including concerns about transplant center performance and regulatory oversight, and the higher cost of performing higher risk transplants (5). In addition, the consequences of turning down an offer for a waitlisted patient varies between centers. Patients waitlisted in centers where there is little difference in the waiting times for a high versus a low KDPI kidney may be better served by turning down a high KDPI kidney. High KDPI transplants are associated with a survival advantage only if they are used to limit dialysis exposure in older patients and patients with diabetes who tolerate dialysis poorly (7). The policy of allowing any consenting patient to receive a high KDPI kidney has led to similar waiting times for high and low KDPI kidneys in many regions, and should be reevaluated to preserve the benefit of high KDPI transplantation. Center practices regarding organ offer acceptance should be made transparent to patients, and center performance metrics should be revised to incorporate measures of patient access to transplantation.

The study finding that unilateral kidneys are discarded because of extended ischemia and failure to identify a

recipient highlights inefficiencies in the allocation of higher risk organs. Although efforts to decrease center level variation in organ acceptance practices should be pursued, it may be more feasible for OPOs to simply offer high-risk kidneys to centers most likely to accept these kidneys. UNOS requires organs to be allocated to patients instead of centers, limiting the development of strategies to expedite placement of organs at risk for discard that have been successfully implemented in other countries (8). Recent changes to the kidney allocation system in the United States focused on ensuring that the highest quality kidneys were allocated to patients with the longest expected post-transplant survival, but did little to increase the utilization of lower quality kidneys at risk for discard (1). The only change in the allocation of high KDPI kidneys was to eliminate the requirement for local allocation with the expectation that broader sharing would increase utilization. Not surprisingly, this change led to an increase in nonlocal use of high KDPI kidneys and longer cold ischemic times (9). Unfortunately, the change did not increase the use of high KDPI kidneys as anticipated, presumably because there was no policy change to increase utilization by centers that infrequently accept high KDPI kidneys, and broader sharing did not necessarily result in high KDPI kidneys being offered to centers with a track record for accepting these higher risk kidneys (9).

In summary, the study of Husain and colleagues provides compelling evidence of the need for policy change to ensure that every safely transplantable kidney is optimally utilized for transplantation. The current discard of kidneys would be hard to explain to the families of deceased donors, and is a disservice to the thousands of older and diabetic waitlisted patients who would benefit from transplantation with these higher risk kidneys and who have consented to receive them.

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#### Disclosures

None.

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See related article, “Characteristics and Performance of Unilateral Kidney Transplants from Deceased Donors,” on pages 118–127.