Decreasing the Kidney Discard Rate

This article is the second in a series of Kidney News articles addressing ways to increase kidney donation on the basis of the deliberations at a December 2016 Rogosin Institute Roundtable on increasing the rate of kidney transplantation.

The first article in this series addressed five ways that the rate of kidney transplantation in the US could be increased to save more lives and provide a better quality of life to those patients with kidney failure: 1) decreasing the need for transplant through health promotion and disease prevention, 2) increasing the supply of deceased donor kidneys, 3) decreasing the kidney discard rate, 4) increasing living donation, and 5) increasing kidney paired donation.

Of these, one immediate and practical solution is to decrease the discard rate of donor kidneys: 20 percent of kidneys procured are never used. Here, we interview 3 experts about why this discard rate is so high and what might be done to decrease it. These panels include a transplant surgeon (Sandip Kapur, MD), a transplant recipient and patient advocate (Kevin Fowler), a pre-transplant coordinator (Christina Lawton), a nephrologist who is vice chair of the board of a dialysis company (Doug Johnson, MD), and a clinical services director of an organ procurement organization (Deana Clapper).

Why do you think the kidney discard rate in the US is 20 percent?

Kapur: Because of the shortage of organs available for transplant, we are often forced to “push the envelope” when accepting potential organs for transplant. For example, we will consider using kidneys from patients with a history of hypertension or diabetes. At times, these kidneys do not show the presence of significant disease on biopsy, and we are able to transplant the organ(s). Other times, we are forced to discard the organs due to evidence of disease. In other instances, potentially transplantable organs take a long time to be allocated and/or transported to the transplant site, prolonging the cold ischemia time to an unacceptable level.

Johnson and Lawson: We consider the high discard rate to be due in significant part to an unfortunate and unintended consequence of the 2007 Centers for Medicare & Medicaid Services (CMS) Conditions of Participation for Transplant Recipients. This regulation was intended to improve transplant outcomes. However, we have seen transplant centers be more conservative in their acceptance of kidneys with a high Kidney Donor Profile Index (KDPI) score since the implementation of these standards. Although the standards have been revised twice in the past year, which is a credit to CMS, we continue to see more conservative behavior from transplant programs. In our opinion, transplant centers will be more likely to use higher-risk deceased donor kidneys (those with a KDPI > 85) if the results for these transplants do not adversely affect the program’s evaluation by the CMS.

Schold et al. (1) evaluated the association between transplant center evaluations and kidney transplant volume in 2013. Schold looked at the Scientific Registry of Transplant Recipients performance reports from January 2007 to July 2009 and found that 46 centers had at least one occurrence of a lower than expected patient or graft survival. Of these 46 centers, 72 percent had a decrease in kidney transplant volume, with a mean decrease of 22.4 transplants. Centers with low performance scores also had a decrease in the number of standard and expanded criteria donors and the use of kidneys with extended cold ischemia time (Figure 1) (3).

Schold et al. (2) updated this analysis in 2016 and evaluated the effect of a low-performance score evaluation for a transplant center. Although the outcomes for these transplant centers did improve after such an evaluation, this improvement in quality came at a cost, with an increase in times to patient removal from the waitlist (+28.6% removals per 1000 follow-up years, p < 0.001) and a decrease in transplant rates (-11.9/1000 follow-up years, p < 0.001).

Should some kidneys be discarded, and if so, what justifies discard of a donated kidney?

Fowler: If a potential kidney offers only risk to the patient, the answer is very simple. However, there are a lot of gray areas that need to be discussed between the potential recipient and transplant team. Let me provide an example. If I were to (God forbid) lose my transplanted kidney in 10 years and I had the option of receiving an extended criteria kidney, I would probably accept the potential risks of an extended criteria kidney rather than the known risks of going on dialysis. Because my chances of dying on dialysis in 5 years would be pretty high, I would be willing to take the risk with the suboptimal kidney for the potential benefit that I could gain.

Clapper: Yes. Some kidneys have to be discarded. In my opinion, if no kidneys are discarded, then it is likely that the organ procurement organization is not retrieving the maximum number of potentially transplantable kidneys. We believe that the optimal discard rate is about 15 percent.

Kapur: I agree. Some kidneys must be discarded, because they simply do not meet the standards. Donors with chronic conditions may have scarring of their kidneys that lead to their discard. Kidneys showing poor function when the organ is placed on a perfusion pump, with anatomical issues, or with surgical damage may also have to be discarded.

Figure 1. Change in transplant volume associated with centers’ receipt of low performance evaluation. Abbreviation: PSR, program-specific report. Reprinted with permission from Schold et al. (1).
What can be done to reduce the discard rate?

**Fowler:** An informed and educated patient population should be able to participate in discussions regarding the risks and benefits of extended criteria donor kidneys. The presence of the patient voice, absent to a great extent in such discussions to date, could take pressure off the transplant centers, organ procurement organizations, and federal oversight agencies.

**Kapur:** We need to educate transplant centers to take individual donor factors into account rather than just using the “label” that the KDPI score provides (see Bae et al. [3]). In addition, improving current inefficiencies in the allocation system, particularly for the more marginal organs, may help to reduce discard. Providing more opportunities for “open offers” would allow centers to match a marginal organ with the most appropriate recipient without adding to the cold ischemia time. Also, widespread knowledge of a potential “weekend effect” (the risk that fewer kidneys will be used on weekends, because professional staff is either unavailable or not sufficient; see Mohan et al. [4]) might increase awareness of this issue in the transplant community and stimulate corrective action. Every kidney is priceless, and losing one because of inconvenience or logistical issues does not make sense.

**Johnson and Lawson:** We think that a pilot demonstration should test the use of kidneys with a KDPI score >85 for beneficiaries with close monitoring but without the repercussions of increased scrutiny by CMS of the graft or patient survival outcomes for the transplant program. We simply need to know more about the use of these high-KDPI kidneys. If this pilot was part of a Comprehensive ESRD Care initiative (i.e., in the End-Stage Renal Disease Seamless Care Organization [ESCO]), recipient survival outcomes could be compared with those of dialysis patients. The ESCO presents a great opportunity to carry out this evaluation. We should seize it.

The evidence that transplantation is more advantageous to the patient than hemodialysis, even when transplant center performance is not the highest, is already available. Schold et al. [5] evaluated the Scientific Registry for Transplant Recipients performance reports for July 2003 to December 2010. They found that, even at the lowest-performing transplant centers, the adjusted hazard ratio for patients receiving a transplant was vastly superior to that of those waitlist patients receiving dialysis. Patients receiving a transplant at the lowest-performing centers had an adjusted hazard ratio of 0.40 compared with patients on a waiting list (Figure 2).

We note, in addition, that patients who receive a kidney transplant in the first year and a half on dialysis have superior survival compared with those who need to wait longer to receive a kidney transplant (6). In other words, the sooner that we can get dialysis patients transplanted, the better.

Is there a role for recipient education in reducing the discard rate?

**Kapur:** Perhaps. Educating patients about the risks and benefits of high-risk organs, including high-KDPI kidneys, is critically important. Transplant professionals should work to help patients understand the potential benefits of high-risk organs versus the risk of remaining on dialysis.

**Johnson and Lawson:** Absolutely. The patient should have the right to decide to accept a kidney with a higher-risk KDPI score. It is important to clearly discuss the potential risk of receiving a kidney with a higher-risk score but also very important to allow the patient to have the opportunity to accept this kidney.

**Fowler:** Yes. There is a lack of patient education on the meaning of the assessment of deceased donated kidneys and the risks that they present: standard criteria, extended criteria, etc. Transplant centers are stretched thin now and do not have the capacity to educate patients on this aspect of transplantation. My suggestion would be to assign authority and accountability for patient education to one entity. In this way, it would be easier to measure the progress of patient education efforts.

Is there any research being done that could reduce the discard rate in the future?

**Kapur:** Recent analyses of the effect of the new kidney allocation system (KAS) and its outcomes might help to influence centers to improve their transplant numbers. We need to know just how well the new KAS system is working in terms of risk scores and outcomes.

**Johnson and Lawson:** We would like to implement a pilot allowing use of kidneys with a KDPI score >85 (mentioned above) in Dialysis Clinic Inc.’s six ESCO locations, encompassing a total of 2,350 patients. If our pilot program is approved, we hope that the ESCOs could be a means to allow more patients on dialysis to benefit from a kidney transplant by using kidneys that have a higher likelihood of being discarded. If the outcome data show that this approach is beneficial to patients in relation to both survival and quality of life, it is our hope that this process could be applied across the country.

In summary, the donor kidney discard rate is too high. Decreasing this discard rate is both practical and achievable in the near future. Doing so will not only benefit patients in terms of quality of life and survival but also decrease health care costs. Achieving the desired lower rate of discard requires multiple efforts that include pilot relaxation of the current KDPI standards in a controlled manner with data collection and analysis; encouragement and not penalization of transplant center efforts to increase use of expanded criteria donor kidneys, now called high-KDPI kidneys (again with data collection); education of patients regarding the risks and benefits of high-KDPI donor kidney use and involvement of patients in the decision-making process; evaluation of ways to improve the new KAS to improve its efficiency and therefore decrease cold ischemia time; and use of “open offer” solutions to ensure maximal use of a donated kidney at any given transplant center. The call is clear: we must and can do better, but we need to do it together!

Next in the series is “Progress and Plans for the UNOS Kidney Transplant Learning Center.”

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References


*Figure 2. Kaplan–Meier plot of patient survival after listing by transplant status and center quality on the basis of deceased donor transplantation at a transplant center with a given performance at the time of listing. Abbreviation: Tx, transplantation. Reprinted with permission from Schold et al. (5).*