A n unfortunate fact of organ transplantation is that there are not enough deceased donor kidneys for everyone who might benefit. How to best allocate such a scarce medical resource remains unclear. In 2004, the Board of the United Network for Organ Sharing/Organ Procurement and Transplant Network (UNOS/OPTN) charged its Kidney Transplantation Committee with conducting a comprehensive review of kidney transplantation in the United States in order to consider possible changes in the allocation of deceased donor kidneys. Since that time, through a series of public hearings, open forums, regional meetings, and a recent Request for Information (RFI) that included a draft allocation proposal, the OPTN and the transplant community have become engaged in an active debate about how deceased donor kidneys should be allocated.

Organ allocation principles: justice versus utility

While never explicitly stated in any policy document, kidney allocation in the United States historically has attempted to strike a balance between two sometimes conflicting ethical viewpoints best termed justice and utility.

The justice viewpoint emphasizes that all candidates for a kidney transplant be given an equal chance to receive a transplant even if the outcome of the transplant (patient or graft survival) is very different among candidates. The current allocation system allocates deceased donor kidneys using a point system in which most of the points are accrued via wait time (defined as time since listing). This use of wait time is perceived by many to be a dominant justice factor in organ allocation.

In contrast, the utilitarian viewpoint supports allocation systems designed to maximize the overall benefit achievable from the few organs that are available. Proponents of this view would rank candidates expected to have better graft or posttransplant patient survival higher than those with lower expected survival.

The OPTN Final Rule

The OPTN Final Rule, issued in 1999, was intended to provide guidelines for development of organ allocation policy. The recommendations of the Final Rule appear sufficiently broad to leave room for a wide range of allocation policies with language that appears to support both a justice approach (“the equitable allocation of organs”) and a utilitarian approach (organ allocation policy should make “best use of donated organs” and “avoid wastage”).

However, while the Final Rule is quite general in some areas, it is surprisingly specific in others. For example, the Final Rule requires that organ allograft candidates be “ranked using objective medical criteria” and that “the use of waiting time in allocation should be de-emphasized.” The current kidney allocation system’s emphasis on wait time and its lack of ranking using objective medical criteria make it poorly compliant with the Final Rule.

Areas of general agreement

Through my participation in numerous discussions, including the February 2009 OPTN Public Forum, I believe there is general agreement in the transplantation community on several issues regarding a new kidney allocation system including:

• any new system should strive to balance justice and utility;
• one of the most important problems in the current system that negatively affects utility is the allocation of kidneys with long projected posttransplant survival to candidates with very short projected survival;
• every candidate should have a reasonable chance at receiving a kidney transplant regardless of their health status and age;
• any new allocation system should be as simple as possible;
• any new allocation system should be as predictable as possible, especially for candidates who are high risk, in order to aid in wait-list management.

Possible new kidney allocation systems

The draft proposal included in the RFI issued in the fall of 2008 described a possible allocation system with three major novel components: 1) ranking donor kidneys using a donor profile index (DPI) that provides a more granular grading system compared with the current grading system; 2) ranking candidates using Kidney Allocation Scores (KAS) in which points are awarded for wait time (defined as time on dialysis), sensitization, and Life Years for Transplant (LYFT); defines the predicted median patient survival with transplant minus the predicted median patient survival without transplant; and 3) a novel combination of donor and recipient scores in which the KAS for kidneys with good DPI scores is primarily based on the LYFT score and the KAS for kidneys with poor DPI scores is primarily based on wait time (1).

Simulations demonstrated that using this approach would likely fix the problem of allocating kidneys with long life expectancies to candidates with short life expectancies and increase the overall utility achievable from donated kidneys. The draft proposal in the RFI and the response from the American Society of Transplant Surgeons are available online (2).

The RFI accomplished one of its major goals in that it generated spirited discussions in the transplant community. One of the major criticisms was that older candidates have a much decreased chance of receiving a kidney transplant compared with the current system. For example, candidates over 65 currently receive 12 percent of deceased donor kidneys and would only receive 7 percent under the draft proposal.

In rebuttal, I contend that the draft proposal is very flexible, and minor modifications can achieve major differences in the types of patients transplanted. For example, Figure 1 shows that applying LYFT only to candidates with the highest LYFT scores and allocating a larger percentage of kidneys (in this case, approximately 50 percent) by wait time alone might accomplish two important goals: 1) allocating kidneys with long life expectancies to candidates with long life expectancies and 2) providing the opportunity for transplant to a large number of candidates regardless of age or health status.

Another criticism is that the methodology of LYFT is not adequately predictive of overall transplant outcome. While the current model poorly predicts the actual LYFT for the entire wait list population, it very accurately predicts differences in survival when comparing candidates with the longest survival to those with the shortest survival. Thus, it appears that even our current model would be useful if we were to apply it to candidates with the highest LYFT scores. This modest introduction of LYFT would provide incentive for the improvement of the LYFT using new factors.

Yet another criticism is that the system outlined is just too complex. Yet LYFT could be simplified to include only the three or four major factors (age, diabetes, time on dialysis, prior kidney transplant) and thus would be similar to the current liver allocation system (MELD). The general concepts of this system are actually quite simple, and I believe that they would make sense to candidates.

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Modifying the draft proposal to address concerns

In the draft proposal, kidneys are ranked using a donor profile index (DPI). A Kidney Allocation Score (KAS) is computed differently for different donor kidneys depending on their DPI (Figure 1a). Thus, kidneys with the poorest DPI scores are allocated by wait time (WT) alone, similar to the current system for expanded criteria donors. The KAS for the best DPI kidneys is computed as 80% of the KAS for kidneys with long posttransplant survival to candidates with very long expected posttransplant survival and 2) providing the opportunity for transplant to a large number of candidates regardless of age or health status.

Another criticism is that the methodology of LYFT is not adequately predictive of overall transplant outcome. While the current model poorly predicts the actual LYFT for the entire wait list population, it very accurately predicts differences in survival when comparing candidates with the longest survival to those with the shortest survival. Thus, it appears that even our current model would be useful if we were to apply it to candidates with the highest LYFT scores. This modest introduction of LYFT would provide incentive for the improvement of the LYFT using new factors.

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Figure 1a

Allocated by LYFT & WT

Allocated by WT Alone

100% WT

Better Donor Profile \| Poorer Donor Profile

Figure 1b

Allocated by LYFT & WT

Allocated by WT Alone

50% file DPI

Better Donor Profile \| Poorer Donor Profile

By Mark Stegall
Transplantation: Issues and Controversies

God Squad…

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Pure utilitarian philosophy—“the greatest good for the greatest number”—is seductive. This philosophical position dates to the early Hedonism philosophy of the ancient Greek philosopher Epicurus (“greatest pleasure for the greatest number,” 200 BCE). It peaked as a school of thought in 18th-century England. Outcome is the most important aspect of this philosophy that also tends to hold that “the end justifies the means.”

The usual and unavoidable clash of utilitarianism is with the concept of justice. Conceptions of “net benefit” led to conflict, and those who were (at first) attracted to the “greatest good” idea began to reconsider their position. They not only changed the name to life years from transplant (LYFT), but they also added some new provisions to the calculation in an effort to be both utilitarian and just (an impossible task).

Allocation is an all-or-none proposition. Once one compromises purity to try to make things just, the outcome becomes more political than utilitarian. This is what has happened to the KAS proposal over the last four or five years, and the losing groups appear to be older patients—ageism is the subtext of the isms (9)—and patients with diabetes. Neither the AARP nor the ADA were represented at the meetings discussing KAS.

Currently, allocation criteria are straightforward. Those under the age of 18 and those waiting the longest on the kidney wait list get priority. These rules are easily understood by patients. The formulas currently put forward by KAS are complex and not likely to be understood by the most people affected. The unintended consequences of the complex proposal, the ability to “game the system” by physicians for their patients, and the overall effects on the transplantation of solid organs in the United States have neither been tested prospectively, nor are they likely known. Those who will be hurt by the new system have not been clearly identified or notified. As of this writing, the KAS proposal is out for public comment before being put into effect.

Those who advocate the KAS proposal and were instrumental in writing it often come from the arena of statistical database analysis. They work with computer models and large group averages rather than dealing with actual individual patients. Under criticism, their usual response is threefold:

1) The government made us do it. This reminds me of “the devil made me do it.” Excuses like these from UNOS/OPTN and HSRA have become so tied that sometimes it is impossible to tell who is the cart and who is the horse. It seems unlikely that these government agencies that ultimately answer to the public would punish older individuals (voters).

2) Don’t criticize because the proposal isn’t even finished yet. Waiting for so-called “final rules” and completed regulation before offering criticism can result in a lot of damage before problems can be corrected.

3) Sure, there are problems, but KAS is better than the current system. If you don’t like KAS, come up with a better system. Well I, for one, doubt that the proposal is better than the current system and may be—probably will—much worse. Unlike the current system, KAS has not been tested. I must admit that coming up with any system, even a “better system,” is difficult. As long as there are far more patients on the wait list for kidney transplants than there are deceased donor kidneys available, all systems of allocation will appear imperfect at least, or even greatly flawed.

Allocation policy should be transparent, currently a popular concept in Washington, DC. If the policy denies deceased donor kidneys to anyone over 55 years, they should clearly state it. If the policy gives special advantages to certain minority groups or women or people with diabetes, then say so. Don’t use some ad- justment factor like “dialysis time” (DT in the current formula) that is a nontransparent parameter with implications unclear to the general public. Indeed, the complexity of the current formula takes us away from the original infatuation with utility toward the anomistry of political policy. Matas even suggested that we stop using the term “allocation” and replace it with the more correct and less misleading term “rationing” (10).

I was asked to write this article in a fashion that would provoke thought and discussion of the issues concerning allocation of deceased donor kidneys as proposed by KAS. I hope I have succeeded, and I hope readers of ASN Kidney News will continue the discussion online.

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References


…Or Allocating a Scarce Medical Resource?

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The Kidney Transplantation Committee at times used the phrase, “the right kidney for the right recipient.” I would tell candidates that they would be offered a kidney that matches their projected life expectancy. In addition, a promised time to offer for a kidney with a specific DRI score could be generated, giving a patient a better idea about their projected wait time and making the entire concept of the wait list more transparent.

One of the important positive aspects of LYFT is that it incorporates several important outcomes into one metric that actually compares the benefit of receiving a transplant versus the alternative therapy, dialysis. Giving the patient information about their relative survival with transplantation will enable them to make a more informed decision about the appropriateness of transplantation in general. This data is not available to patients today.

The path forward

While there are many different views, I believe that the current discussions will lead to the development of a kidney allocation system that appropriately balances justice and utility and is compliant with the Final Rule. As demonstrated here, the components of the draft proposal are flexible and can be altered to achieve a wide range of outcomes. Open discussion with a focus on common goals is the best path forward to a better kidney allocation system.

Mark Segall, MD, is chair of the division of transplantation surgery at the Mayo Clinic, Rochester, Minn., and former chair of the OPTN/UNOS Kidney Transplantation Committee.

References
