

INVITED COMMENTARY

The expanded criteria donor for kidney transplant: not a nearly new car

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From late 1990s, the higher number of suitable renal transplant candidates has forced the transplant community to re-explore the whole spectrum of deceased donors after brain death (DBD) as well as after cardiac death (DCD); in practice, donors of older age and donors with more chronic diseases or “medical complexities. This new kidney donor population—finally defined as extended criteria donors (ECD)—currently comprises on average 20–25%.

In his seminal paper in 2003 on the introduction of ECD in the US, Metzger *et al.* [1] covered all aspects of ECD transplantation. Even today, this paper still holds its truth on the issues of informed consent and selection of suitable transplant candidates. Since then, many reports discussed success and failure of ECD transplantation: higher rate of primary nonfunction, delayed graft function, rejection, higher costs and resources, and shorter longevity.

The Dutch report on the outcome of ECD kidney transplantation, published in this issue of *Transplant International* [2], adds to the existing awareness that more personalized use of such a donor kidney is warranted. The authors suggest from their retrospective analysis a more restricted use in future ECD

transplantation in patients aged <60 years and in diabetic patients; several sensitivity analyses, considering impact of immunosuppression, time on dialysis, presence or absence of diabetes mellitus, and DCD, did not alter their recommendation.

Old and new approach to allocate ECD kidneys

Prior to the application of ECD in the US kidney allocation procedure, the Eurotransplant International Foundation introduced in 1999 the Eurotransplant Senior Program—allocating all donors ≥ 65 years old to recipients ≥ 65 years old, solely on ABO identity and accumulated dialysis time (today, only the Netherlands stick to the original patient selection of nonimmunized patients awaiting a first renal transplant). No aggregate publication is available on the efficiency and outcome of the ESP. An ESP evaluation by the Dutch Organ Transplant Registry was out of scope of their current analysis; however, such an analysis would have been very attractive as it would be a true reflection of the ET allocation policy of donors aged 65 or more, instead of the retrospective ECD labeling. In a collaborative analysis on the 5-year

outcome of ECD kidney transplantation in the ESP and the United States [3], the ESP recipients being ≥ 65 years were more likely to outlive their transplant, followed by a return to dialysis for an average of 5.2 months, while the reverse was found for the US ECD transplant recipients, as they died more often with a functioning graft. An explanation for the ESP observation lacks: were the old phasing-out kidneys transplanted into fit and (super)selected old recipients?

In 2014, the US organ allocation organization [4] substituted the ECD allocation by a more elaborated donor risk score [5], in order to discriminate the ECD in a better way, and to reflect more accurately the donor kidney quality and, in particular, the expected longevity. The Kidney Donor Risk Index is a numerical measure that combines ten donor factors, normalized to the median and converted into a Kidney Donor Profile Index (KDPI). It must be mentioned that this KPDI is the reflection of the kidney donor within the United States; this score cannot be extrapolated to other countries or regions. Categorizing donor kidneys using a donor risk index is no longer simple to explain and overrides the simple separation in standard and extended criteria donors, or in young and old donors [6].

The US kidney allocation scheme first classifies the reported donor into one of four KDPI classes: 0–20%, 21–34%, 35–85%, and $\geq 86\%$; thereafter, for each KDPI class, a specific algorithm generates the final allocation list. Initial results after 1 year point at an unchanged overall graft survival, but caution is needed as the introduction of a new kidney allocation system always suffers from “bolus” effects—initial transient corrective forces following the presence of a “skewed” transplant waiting list at the end of the old kidney allocation system [7].

Prediction of outcome of renal transplantation—on the individual patient level

The transplant nephrologist is often confronted with the dilemma whether or not to accept a less favorable donor kidney for the selected patient on the allocation list. Aiming at the successful outcome of the transplantation, other factors are to be considered in the decision, often not known prior to transplantation: the transplant procedure itself including cold ischemic time, and the transplant candidate—presumed to be transplantable but whose actual medical status is to be evaluated upon admittance at the transplant hospital.

In that respect are predictive models to estimate the short-term and long-term graft and patient survival after transplantation using donor and recipient factors, and eventually corresponding decision support systems, very attractive. All patients are indeed different—their life span on dialysis as well as after transplantation varies. These models might offer the desired more personalized patient care; their more reliable knowledge of the patient-specific expected outcome supports the decision to transplant the patient or, even at earlier stage, to accept the patient on the transplant waiting list. Today, their integration in the decision-making process is rather cumbersome [8].

In the early 1990s, a proposal to incorporate a kidney survival prognostic index in the Eurotransplant kidney allocation system was disallowed; the ethical principles of utility and equity were out of balance (personal communication—G. Persijn, medical director—1994). Nonetheless, several kidney allocation algorithms often incorporate a mechanism to maximize donor kidney survival for a specific donor–recipient combination; for example, zero HLA-mismatched donor–recipient combinations, consistently yielding excellent graft outcomes, are prioritized by means of mandatory exchange. In the current US kidney allocation system, kidney from donors with an excellent kidney donor profile index (KDPI $\leq 20\%$) are first offered to candidates in the top 20% of the estimated post-transplant survival. The latter score is calculated on four parameters: time on dialysis, presence or absence of diabetes, first or repeat kidney transplant, and age of the candidate. Thus, the best kidneys are for the best candidates, a much larger group than the zero HLA-mismatched category. Not surprisingly, van Ittersum also advocates younger recipients and diabetics to be transplanted in the future with a nonextended criteria donor.

Future challenges

Organ allocation organizations are hesitant to implement a much more patient-oriented clinical decision support system in their organ allocation set of rules and consequently (further) restricting the autonomy of the transplant doctor on call. Currently, recommendations like those of van Ittersum will be taken care of only by a minority of the kidney transplant centers, perhaps due to market competition [9]. Let us hope for broader and stronger cooperation and good consensus about guidelines at the different organizational levels to act along validated scientific analyses.

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