In the Western world, nowadays, senior citizens (i.e. those ≥65 years) constitute ~16% of the general population, a proportion predicted to increase to 23% in 2030 and >30% by 2050. The past decades have already witnessed significant changes in the demographic characteristics of patients with end-stage renal disease (ESRD), mainly due to an increase in elderly patients over the age of 65 years and, in more recent years, >75 years of age [1]. Transplantation is considered the preferred treatment option for ESRD, because it is relatively safe and offers survival advantage over dialysis for the majority of patients [2]. This benefit is extended to all causes of ESRD (e.g. glomerulonephritis, hereditary renal disease, diabetes mellitus and hypertension) and all age categories of patients. After the first year, including excess initial mortality, the projected increase in life span of patients aged 60–74 was 4 years with a 61% decrease in their long-term risk of death. Also, recipients >65 years of age who received expanded criteria kidneys lived on average 3.8 years longer than their wait-listed counterparts, despite lower graft outcomes [3]. Clearly, the magnitude of improved patient survival is not uniform across patient subgroups such as the elderly and/or those with diabetes mellitus [2]. Nevertheless, several studies have reported acceptable outcomes for selected patients over the age of 70 years or even 80 years [4,5].

In this issue of *Nephrology, Dialysis and Transplantation*, Stevens et al. used their incident dialysis population between 1992 and 2009 to study access to transplantation among elderly patients as defined by the cumulative probability of being wait-listed for kidney transplantation and actually receiving a transplant. The likelihood of being listed for renal transplantation fell with increasing age. Within the first year after initiation of dialysis, only 4% of patients ≥65 years and 0.8% of those ≥75 years were listed. Only 8% of listed patients between 65 and 74.9 years received a deceased donor kidney transplant within 5 years.

The results of this single centre analysis by Stevens et al. are a concern in that they suggest a disadvantage for transplantation in the elderly, but they are also in contrast with experience in other European countries. Results of the Eurotransplant Senior Programme (ESP) show that the numbers of transplants performed in the elderly increased significantly in recent years. Between 1991 and 2007, there has been an increase in the proportion of kidney transplant recipients ≥65 years from 3.6 to 19.7% [6]. A significant, >5-fold increase, since the proportions of transplant recipients aged 46–64 years remained the same and those <46 years decreased. Since 1999, the ESP preferentially allocates kidneys from older (≥65 years) deceased donors, without prospective matching for human leucocyte antigens (HLAs), to older (≥65 years), local or regional, transplant candidates. The programme also includes repeat transplants or sensitized patients, provided that unacceptable antigens are identified and excluded.

The ESP allocation principle encouraged the use of older donor organs that otherwise might have been discarded and expedited the chance of the elderly to receive a kidney transplant (Figure 1). Within the same period of time, however, there has also been a substantial decrease in the numbers of kidney donors under the age of 46 years [6].

Stevens et al. [7] rightfully address the apparent disadvantage for the elderly, including lower referral rates and chances for placement on the waiting list, even in the absence of absolute contraindication for transplantation in comparison to younger counterparts. First of all, it is relevant to note that a significant proportion of the elderly may no longer desire a kidney transplant. Nevertheless, inadequate counselling for renal replacement therapy, delayed pre-transplant workup or referral while already on dialysis will all play a role. Reclusion based on age alone is considered not fair, but the difficulty of selection, taking biological age and co-morbid conditions along with the increased operative risk into account, continues to pose a significant challenge to the nephrology and transplant community. These views are supported by the observed excess initial mortality with an increased time to equal risk from 95 to 148 days in recipients aged 40–59 and 60–74 years, respectively [2]. Furthermore, there is the need for lifelong immunosuppressive therapy, while in the elderly infectious causes are among the leading primary causes of death [8]. To improve safety, the Eurotransplant Senior DR-compatible Programme (ESDP) was recently launched [6]. The important perspective remains that a successful transplantation with either a regular or even a marginal donor kidney is associated with a substantial improvement in longevity and in quality of life [2,4,5].

An allocation policy based on waiting time, however, carries the unintended consequence of a disadvantage...
directly related to life expectancy, i.e. the elderly ESRD patient. The key issue to realize remains that annual mortality rates on dialysis by far exceed the improved transplant rates. The overall annual mortality rate while on dialysis is ∼5%, but closer to 10% for older patients. Unfortunately, due to the static supply of deceased donor organs, the disparity with increasing numbers of ESRD patients placed on the waiting list, and there with waiting times, continues to increase. The median waiting times within Eurotransplant (comprising 7 countries and 210 million inhabitants) is now approaching 5 years, but also differs significantly between the respective participating countries. In line with results using the Scientific Registry for Transplant Research, the elderly carry a significant risk for not surviving before they reach the end of the queue [9]. In this study, among candidates >60 years, the chances of receiving a transplant varied greatly and not only due to factors such as blood group type or degree of sensitization but also related to geographic location.

From a utilitarian point of view, each kidney should be transplanted into the recipient in whom it will survive the longest. Allocating young kidneys with long potential survival to elderly patients or other recipients with a much shorter life expectancy may even be considered unfair. A deceased donor kidney allocation system, including a strategy to rank candidates also by the estimated incremental years of life that can be expected with a kidney transplant from a specific available donor, has been proposed. Such a concept of net benefit, termed life years from transplant (LYFT) [10], has been proposed but has received substantial criticism because of the inevitable consequence, being the diversion of kidneys away from the rapidly growing group of older patients on the waiting list. The limited number of available kidneys poses a constant challenge to maintain a socially acceptable balance between medical utility and equity of access according to objective criteria including age. The concept of matching for age categories including the benefit of HLA-DR compatibility has recently been proposed and may help to solve some of the ethical and practical dilemmas of kidney allocation [11]. Medical utility can be measured by patient survival, years added to life compared to dialysis, kidney graft survival, quality of life or preventing the inefficient use of a scarce resource. Independent of the measure, it is often more easy to quantify utility than equity of access.

The impact of allocation policy on access to transplantation of the elderly incident ESRD population is more difficult to establish [12]. Before we can decide on current policies regarding access to transplantation, we need to redefine ‘access’ based on solid data on the cumulative incidence of ESRD patients, those deemed suitable for transplantation, wait-listed patients as well as the prevalent candidates with an active status. Listed or not, it is the psychosocial and medical suitability that determines actual placement on the kidney waiting list with an active urgency. Medical care of the elderly transplant recipient is thus best served by an early and comprehensive (regular) pre-transplant evaluation of risk factors and/or timely intervention to facilitate immediate active placement on the waiting list with the initiation of dialysis.

While dealing with a life-saving but scarce medical resource such as kidney transplantation, a word of caution is also in place. Over the past decades, the kidney transplant waiting list has grown significantly older. Unfortunately, the supply of deceased kidney donors in absolute terms has not increased despite the continuous and intense pressure to expand criteria of donor acceptability including donor age. In this perspective, it can even be argued the younger patients on the kidney transplant waiting list are disadvantaged by the rapid growing group of competing ESRD patients aged ≥65 years. The most important medical argument to remain reluctant with the allocation of kidneys

![Fig. 1. Access to transplantation within Eurotransplant according to recipient and donor age by category.](image-url)
from older deceased donors to younger recipients, however, is the significant increased risk of transplant failure. In a retrospective analysis of >1200 transplant recipients, the combination of a young recipient and a donor >55 years yielded the worst outcome at 8 years with a graft survival of only 24% [13]. In relative terms, the best outcome was observed if an older donor kidney was allocated to an elderly recipient. If we, as a medical and social community, truly adopt the position that older donor kidneys, with reduced half-lives, can often provide suitable, lifelong function for an elderly recipient, the consequence should be that the remaining kidneys are preferentially allocated to younger recipients. Given the progressive shortage in kidneys from younger deceased donors (Figure 1), the upcoming medical challenge is a further extension of acceptability criteria for senior programmes including potential donors in their seventies or even octarians, with preserved renal function.

No doubt, performance indicators will turn out to vary considerably between centres and countries or across allocation organizations [9]. Besides allocation principles, donation rates are significantly higher in countries with a historical ‘opting out’ legal system and/or a donation-dedicated in-hospital organizational structure. The results by Stevens et al regarding the elderly deserves credit for posing a challenge to the transplant community and affiliated nephrology centres to reassess their counselling policies, wait-list management as well as perceived psychological and medical barriers for transplantation in the elderly. Although there has been a significant increase in the percentage of, often pre-emptive, living donor transplants in some countries, both patients and their care takers remain apparently reluctant toward issues such as elderly spousal donation, paired kidney exchange and/or the principle of ‘transplanting one generation up’. The reality of organ scarcity and prolonged waiting times for a deceased donor kidney transplant otherwise indicate that, at best, 50% of the selected elderly on the waiting list may have realistic hope to receive a timely transplant [9].

Conflict of interest statement. None declared.

(See related article by Stevens et al. Deceased donor transplantation in the elderly—are we creating false hope? Nephrol Dial Transplant 2011; 26: 2382–2386.)

References


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