waste of a kidney, and in money itself. Renal transplantation is cheaper only if the patient and graft survive more than 18 months. If a patient dies within that period, long-term costs would be saved and renal transplantation would have been a very expensive form of euthanasia. Diabetic patients and patients with cardiovascular co-morbidities should be strictly screened. This proposal is easy to monitor. The end-points are clear—failed kidney and patient's death. Units retain their clinical freedom but will have to live with the consequences of their judgment and decisions. Mandatory audit and publication of efficiency measures, such as the ratio of kidneys per working transplant and waiting times, provides further incentives to strive for excellence. This new approach would reduce the present paternalism, and patients, their family doctors, and purchasers can make an informed choice. Most importantly, patients will benefit from the improved clinical efficacy and efficiency.

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The politics of grafting cadaver kidneys

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Efficient cadaver-kidney use and equity for the waiting candidates, described by Mr Chang,[1] are not always compatible. When these objectives collide, which is the more important? Case selection always has been critical for transplantation results, no matter what the organ. Halasz,[2] as Chang notes, enumerated recipient factors in addition to sensitisation that can adversely affect kidney-allograft survival: age, previous transplantation, and various specific diseases. One could add: lower socioeconomic status, certain ethnic backgrounds, and other demographic factors. A centre whose excellence, and thus access to organs, is adjudicated solely on the basis of the previous year's results almost certainly would surreptitiously restrict candidacy to an elite low-risk group of young, affluent, white, primary kidney recipients free of co-morbid conditions.

Such a policy was common in the USA until recently. The allocation of most cadaver organs was determined by ad-hoc arrangements between donor agencies and transplantation teams, the two groups often being "synonymous" in a given area. This situation changed with the passage of the 1984 Organ Transplantation Act (the Gore Bill), which mandated the development of a national system. A task force, chaired by Dr Olga Jonasson (Ohio State), was convened to recommend how to distribute organs equitably and effectively. After public hearings, the group established broad written guidelines.[3] The task force rejected discrimination against recipients on sex, race, national origin, or socioeconomic class. It urged caution in giving any weight to such criteria as age, lifestyle, the presence of a social network, ostensible value to society, or other factors that might only be subjective judgments by the majority population of the worth of minority groups.

In 1986, a contract was issued by the US government to the United Network for Organ Sharing (UNOS), a previously private and non-profit organisation, with instructions to develop an allocation system that incorporated the recommendations of the Jonasson committee. Disputes within the organ-distribution committee of UNOS prevented such a development. To prevent a default of contract, a report,[4] at that time unpublished, of the cadaver-kidney distribution system already in place in Pittsburgh was skeletonised verbatim and used to write a single-author contract.[3] The existence of this article in press had been made known to UNOS by two of its members who had been referees for the manuscript.

This original "point system" contained many of the features recommended by Chang. It was based on three principles of which the most important operationally was regional primacy of organ use; the others were the right of the responsible physician to exercise medical judgment in any given case (subject to audit and open disclosure), and the right of the recipient to choose his or her health-care centre and doctor. Candidacy credits were given for time waiting, antigen matching, antibody analyses, medical urgency, and logistic practicality. Because of the limited credit given to matching except when perfect, a kidney was not easily catapulted from its procurement area. Waiting-time was the most important factor in placing a cadaver kidney.

The point system was installed nationally in November, 1987. However, manoeuvering with local and regional variances from the original plan and, more importantly, policy changes by the UNOS Board of Directors beginning in 1989 soon subordinated all other factors of kidney allocation (including credit for time waiting) to HLA matching. This was folly at the highest level. The institutionalisation of a predictable bias against minority (particularly black) populations[5] erupted into a national

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scandal[6,7] when prisoners of the system realised that they were waiting in vain.

The emphasis on tissue matching that wrecked the US point-system was the product of lobbying contests between the advocates of tissue matching (who for the most part managed or supplied the histocompatibility laboratories) and the transplant surgeons, who realised that tissue matching did not accurately predict outcome but lacked the passion for debate. However, even proponents of matching have delivered hammer blows to its credibility, such as Terasaki et al's report[8] that one-haplotype-matched (parent to offspring or offspring to parent) kidney allografts gave no better early or late results than kidneys from randomly matched living spouses or other non-relatives. When the physiological quality of the mismatched unrelated organ was equivalent to that of the one-haplotype-identical related kidney, there was no matching advantage. The same conclusion can be found in the magnificent summary of Folkert Belzer's lifetime experience.[9]

It would be unjust to entirely characterise the tissue matching controversy as a "battle over control of the rules of organ rationing between the cadres of immunologists and clinicians"[10] or as an attempt to protect a cottage industry of tissue typing.[5] Yet, how could such a non-predictive technology as HLA matching be used to dictate the allocation of a public resource more precious than gold? Perhaps the most important reason was that it was inconceivable that a readily measurable, genetically controlled, and therefore presumably immutable biological system would not predict clinical outcome. Kidney-transplant surgeons, tissue typers, and others who wanted to, but could not, see an influence of HLA matching in their own practice[11,12] were aware that HLA compatibility was a supreme determinant of success with bone-marrow transplantation. Why was it not equally critical for whole-organ transplantation?

A way out of the intellectual cul de sac came with the discovery that leucocytes migrate perioperatively from transplanted whole organs to widely distributed recipient tissues where they can be identified many years later.[13,14] Establishment of this linkage between haematolymphopoietic chimerism and successful organ transplantation allowed correction of the unwarranted consensus reached more than a third of a century ago that the donor-leucocyte chimerism equated with acquired tolerance[15] was irrelevant to successful whole-organ transplantation. In turn, it became possible to explain previously enigmatic observations. One of these enigmas was the failure of HLA matching to be predictive in the setting of organ transplantation and another was the rarity of graft-versus-host disease after the transplantation of immunologically active organs such as the intestine and liver (or both together).

It had become apparent that organ transplantation involved the engagement of mutuallly antagonist but ultimately reciprocally attenuated or abrogated host-versus-graft and graft-versus-host reactions between the coexisting donor-leucocyte and recipient-leucocyte populations. Disruption of the recipient arm of the interaction by the host cytoablation used to prepare bone-marrow recipients, but not the recipients of whole organs, explains the disparities in the two different kinds of transplantation. The cancelling effect of the two immunocyte populations under postoperative immunosuppression for organ transplantation explains the poor prognostic discrimination of HLA matching in such cases as well as resistance to graft-versus-host disease of the organ recipient. The time had arrived when a flawed public policy could be approached with reason, not rhetoric.[16]

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