

Chapter 1

Ethical Issues in Living Donor Transplantation

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Introduction

Live-donor transplantation is an amazing act of altruism that affects the lives of the donor, the recipient and their families forever. Some of the greatest triumphs of modern surgery are associated with live donor transplantation. All of them are characterized by a lot of inspired and tremendously hard work of multidisciplinary medical teams and the courage and determination of the patients and their families.

Live-donor kidney transplantation is the treatment of choice for end-stage renal failure. The main reasons for this are as follows: (a) the transplant is performed when the donor and the recipient are in an optimum medical condition and at a time that is convenient for them and their families, (b) recipients of live-donor kidney grafts enjoy much better long-term graft survival and quality of life compared to recipients of cadaveric kidney grafts,¹⁻³ (c) it reduces the cost for the health service for every patient with end-stage renal failure, since the cost of dialysis (£60,000/patient/year) is substituted by the cost of live-donor kidney transplant (£25,000/patient), adding the cost of the immunosuppressive medications, (£3,000/patient/year) and (d) it reduces the number of patients on the cadaveric waiting list and therefore increases the chances of patients with no potential live donor to be transplanted. This is particularly important since the gap between the number of cadaveric donors and the number of patients on the waiting list

is increasing. This can be explained partly by the development of strong national campaigns for safe driving, a significant improvement in the safety features of vehicles (e.g. airbags) and a more stringent monitoring by the police which have caused a reduction in road-traffic accidents, as well as an introduction of healthier lifestyles, which has led to the reduction of strokes. In the UK, data from UK Transplant, the national regulatory authority for organ donation and transplantation, demonstrated that between 1994 and 2003, there was an increase of 60.1% of the patients on the cadaveric list for kidney transplant and a 16.7% decrease in the number of cadaveric donors.⁴ In fact, there is a growing population of patients maintained on dialysis all over the world, while the number of donors fails to meet such demand or is even decreasing as has happened in the UK (Fig. 1). Although there is an increase in the number of live-donor kidney transplants in the UK (18% from 2002 to 2003, 372 to 439 respectively), still there is a long way to go and the number remains lower compared to the Scandinavian countries, which have the higher percentage of live kidney donors in Europe (Table 1).

Similarly, over the last two decades live-donor transplants are being performed very successfully for other solid organs, such as the lung (total or lobe), liver (lobe or lobes), pancreas (only its tail) and part of the small bowel. This is seen especially in countries such as Japan or India, where cadaveric donation is limited by religious and cultural prohibitions against the concept of brain death, and live donors may be the only source of organs for transplantation.

Retrieving an organ or part of an organ from an otherwise healthy individual and exposing them to the risks of surgery (however safe it might be in experienced hands and in modern transplant centres) as well as to the potential long-term risks for their health and quality of life, for the benefit of another person, poses several ethical questions that have initiated a great deal of medical and public debate.

Ethical Issues

Safety

The first issue is the safety of the surgical removal of organs from an otherwise healthy individual; what are the long-term consequences of living, for example, with one kidney and what is the effect of such a procedure on

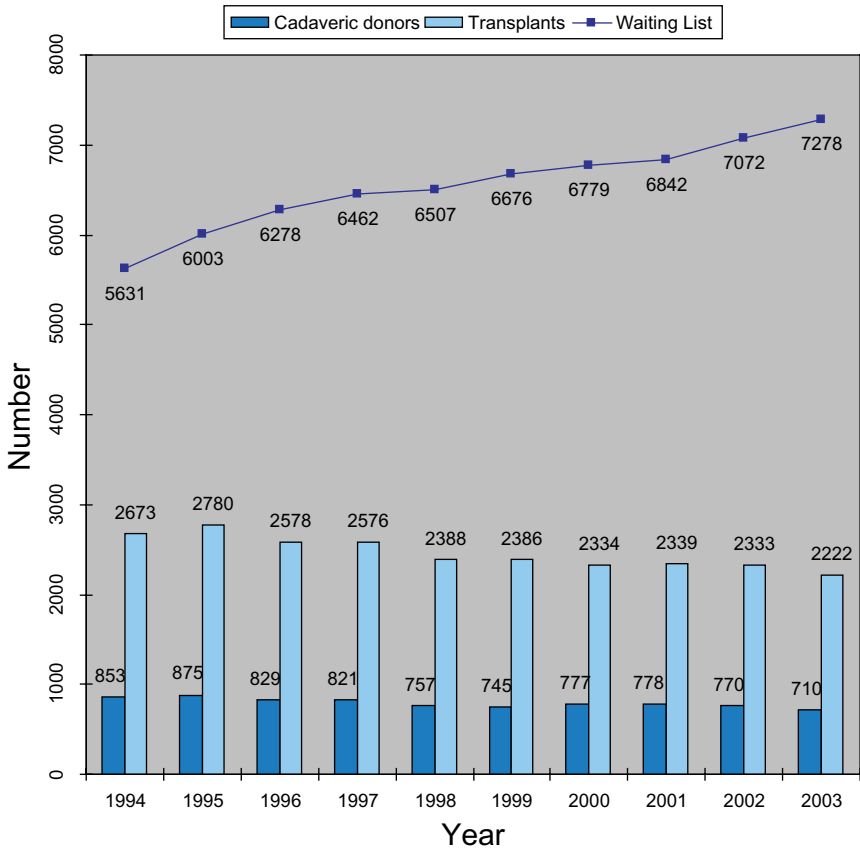


Figure 1: Number of cadaveric donors and kidney transplants in the UK and patients on the waiting list for the period 1994–2003. Obtained from UK Transplant showing the decrease in cadaveric donors and the increase in patients on the waiting list for a kidney transplant from 1994 to 2003.

quality of life? Undoubtedly the risks for living donors of segmental liver, segmental lung and segmental pancreas transplants are greater. The mortality rate of live-donor nephrectomy has been calculated to be 0.03%⁵ with the life expectancy of a live kidney donor similar to that of the general population.^{6,7} Many surveys have reported excellent quality of life for live donors^{8–12} and a meta-analysis of the minority who exhibited negative feelings regarding donation demonstrated that they had donated to recipients

Table 1: Kidney transplant activity in Europe, 2003. Figures for UK and Republic of Ireland taken from National Transplant Database, March 2004 and all others from the Organizacion Nacional de Transplantes (ONT).

	Eurotransplant ^a	France	Italy	Spain	Scandia ^b transplant	UK	Republic of Ireland
Cadaveric kidney transplants	3345	1991	1489	1991	654	1297	133
Live-donor kidney transplants	646 (16.2%)	136 (6.4%)	135 (8.3%)	60 (2.9%)	271 (29.3%)	439 (25.3%)	0
Total kidney transplants	3991	2127	1624	2051	925	1736	133

^a Eurotransplant includes Germany, Austria, Belgium, Luxembourg, the Netherlands and Slovenia.

^b Scandia Transplant includes Denmark, Norway, Finland and Sweden.

who died within one year after the procedure. Although animal studies demonstrated that glomerular hyperfiltration in the remaining kidney could eventually compromise its function, it was proven by several studies in humans, with a follow-up period of over 20 years, that the remaining kidney did not present any functional abnormality^{13,14} apart from a slight increase in the rate of proteinuria but with no clinical significance.¹⁵ The longest presented follow-up of people with one kidney was a 45-year follow-up survey of 62 World War II veterans, who had undergone uninephrectomy after renal trauma, yet their survival rate was similar to that of other veterans.¹⁶

There are three types of operations for a live-donor nephrectomy: the classic open nephrectomy with a wide flank incision, laparoscopic nephrectomy using key-hole surgery and the mini-open nephrectomy with a small loin incision of 8 ± 1 cm anterior to the eleventh rib without rib resection and with the use of laparoscopic instruments.¹⁷ The classic open operation may act as a disincentive for the donor because of increased surgical pain, increased hospital stay, poor cosmetic result and extended period of convalescence. With the introduction of minimally invasive techniques the surgical morbidity has decreased, there is earlier return to normal daily activities as well as work and the cosmetic outcome is excellent. In the beginning, laparoscopic nephrectomy was considered as harmful because of longer warm ischaemia time (the period lasting from the clamping of the renal vessels until perfusion of the retrieved kidney with cold preservation solution), but with the advent of modern devices (e.g. endocatch) that period was shortened making it comparable to open nephrectomy.¹⁸ In a survey it was demonstrated that, although the introduction of laparoscopic nephrectomy influenced positively potential recipients, probably because they anticipated minimal complication inflicted upon their donors, it had less impact on potential donors' decision to donate.¹⁹ However, in laparoscopic donor nephrectomy there is an increased incidence of ureteral complications and the pneumoperitoneum decreases renal cortical blood flow and urine output.^{20,21} The mini-open nephrectomy technique offers the advantages of laparoscopic nephrectomy and it also reduces warm ischaemia and operating times, making it even safer for the potential donor.¹⁷ Even life insurance companies in the US have acknowledged the above facts and in a conducted survey 94% of them do not consider the otherwise healthy donor to be at increased risk

of morbidity or mortality after donating, yet only 2% would increase the premium for such a donor.²²

Donor's motivation

Another important ethical issue is the motivation of the donor. From recent surveys^{23,24} several categories of motives for live-organ donors have been identified.

First of all there is a desire to help, which is very strong and often considered as something natural. Another is a feeling of moral duty, that is, in order to distinguish it from the desire to help, a perception that donation is something that you are expected to do. The majority of donors derive a tremendous degree of satisfaction and an increase in their self-esteem from doing good deeds. Also, some donors may imagine themselves in the recipient's situation, especially siblings, who are sure that the latter would act accordingly if they were in a similar state. Furthermore, spouses may be motivated by self-benefit from their companion's improved health and the improvement of the couple's quality of life. That may be the case for parents as well, together with the feeling of moral duty. A minority may feel coercion to donate especially by other family members fearing that relations among family members would be disturbed if they denied donation. There may be several factors in support of donation and others causing concern (Table 2). More rare motives may be religious beliefs or a feeling of guilt in past relationships.

Donor's feelings about donation

The decision to donate is, psychologically, a complicated one. For example, potential emotionally related donors are informed that dialysis is an alternative option and therefore kidney transplantation is not a life-saving procedure, yet still they feel that they are the only option for the potential recipient.²⁴ Another important result from a recent survey in Scandinavia is that males regard donation as an extraordinary gift, whereas females regard it as an extension of family obligations.²³ Another particular aspect of the concept of donation is that the decision to donate is spontaneous and usually donors do not experience negative consequences regarding

Table 2: Several factors work in support of the motives and the decision to donate. Other factors are of concern but did not prevent the respondents from donating.²⁴

Factors in Support

- Previous knowledge of transplantation and donation.
- Long-standing awareness of the relative's future need of a transplant.
- Getting a good health screening during assessment.
- The long waiting time for a cadaveric kidney transplant.
- Trust in the health care services.
- Support from family and friends.
- Recognition from the recipient.
- Oral and written information.

Factors of Concern

- Fear of not passing the medical screening.
 - Fear of surgery and long-term consequences.
 - Fear of poor outcome for the recipient.
 - Objections in the family.
 - Concern that alternative potential donors have not come forward.
 - Weak emotional relationship with the recipient.
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family relationships, with conflicts between the donor and the family being rare.²⁵ However, in order not to affect the sensitive family relationships, the transplant team should achieve the wider possible family consensus regarding the donor's decision to donate thus minimizing the possibility of any future conflicts. It has also been demonstrated by various surveys that the majority of donors would have made the same choice again without regretting their decision^{26,27} and would even encourage others to donate.¹² According to other surveys, although parents decide immediately to donate there is a degree of ambivalence experienced by some fathers.²⁸ In the same study it was demonstrated that the decision for siblings is more complex and may cause conflict between family of birth and family of marriage.

Recipient's feelings about donation

For the recipients, feelings of guilt are more prominent especially if they have a close relationship with the donor.²⁹ An interesting study showed

that adolescent recipients of parental grafts experienced strong feeling of obligation and debt, which led to psychological distress, and social as well as familial alienation, probably because of the enhancement of the usual parent–adolescent conflict due to the transplant procedure.²⁸ However, other studies³⁰ did not demonstrate a negative impact on family relations in parent-to-child donation, taking into consideration that the children of this study were younger and not adolescents. It is also interesting that recipients are sometimes reluctant to accept a live-donor kidney when offered to them, and as a study confirmed, more than half of the patients on dialysis declined the offer of a live-donor kidney because of concerns about the donor's health and fearing also that the procedure would compromise their relationship with the donor.³¹

Donor approach, consent and evaluation

Prior to accepting a potential donor, every effort has to be made to ensure that their offer is genuine and voluntary. The person who consents to be a live donor should be 'competent, willing to donate, free from coercion, medically and psychosocially suitable, fully informed of the risks, benefits and alternative treatment available to the recipient'.³² The most important elements of informed consent are: (a) understanding, (b) medical and psychological suitability, (c) the process of informing the donor, (d) absence of coercion and free choice, and (e) documentation of consent.

The potential donors have the right to receive and understand all the necessary information (Table 3) regarding the risks and benefits to themselves as well as the alternative treatments that could be offered to the potential recipient. The source of such information is essential and certainly could not come, for example, from brochures or the recipient's physician, as a recent study demonstrated.²³ Transplant centres seem to be the potential donor's only source of information since they possess the relative scientific experience to inform him. Yet a transplant centre may have a number of reasons for wanting an organ donation to go ahead: transplants are their source of income; they are able to increase their prestige and conduct research but they may also display a strong desire to help the recipient. Negative information should be presented to the donor. This might have a negative effect, but that is why the transplant team should

Table 3: Information elements for potential living donors (live-organ donor consensus group).³²

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- Description of the evaluation, the surgical procedure and the recuperative period.
 - Anticipated short- and long-term follow-up care.
 - Alternative donation procedures even if only available at other transplant centres.
 - Potential surgical complications for the donor, citing the reports of donor deaths (even if never experienced at that transplant centre).
 - Medical uncertainties, including the potential for long-term donor complications.
 - Any expenses to be borne by the donor.
 - Potential impact of donation on the ability of the donor to obtain health and life insurance.
 - Potential impact of donation on the lifestyle of the donor and the ability to obtain future employment.
 - Information regarding specific risks and benefits to the potential recipient.
 - Expected outcome of transplantation for the recipient.
 - Any alternative treatments (other than organ replacement) available to the recipient.
 - Transplant centre-specific statistics of donor and recipient outcomes.
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inform the donor meticulously³³ so that they can make a truly voluntary decision. For these reasons, independent donor counsellors are required with experience in issues related to live-donor transplantation and medical ethics. Others¹ have advocated that the first approach to the potential donor should come from the potential recipient and not from the latter's physician or surgeon, although they could offer their assistance in order to facilitate this process. The fact that more education is needed regarding live-donor kidney transplantation is also demonstrated by studies showing that the public may exhibit unrealistic fears regarding the issue, which may act as a disincentive for donation.^{34,35} Probably the best way to assess if a potential donor has been adequately informed is whether they are surprised by anything that happens after consent is given.³²

All potential donors should be screened for psychological and emotional stability and warned about possible psychosocial impairment that might occur in the postoperative period.³⁶ Psychosis or substance abuse might hinder the provision of effective operative and postoperative care, thus, leading to exclusion of such candidates for donation. Moreover, social evaluation of the potential donor is also necessary since financial hardship and marital problems, which indicate social instability, may

cause several problems. The person who will make the psychosocial evaluation of the potential donor should be a trained psychologist or psychiatrist.

The argument that the potential donors require a lot of information and thinking prior to deciding to donate is, according to some studies, a myth.³⁷ A quick decision to donate is valid, despite the fact that it might not be fully informed, since rapid offers made by close relatives seem to be genuine and ethically acceptable in spite of incomplete understanding of what is involved.³⁸ However, adequate information should always be provided to the potential donor as well as establishing that it is understood. A characteristic example is that for many parents it is crucial, as well as adequate, to be aware that their child is ill and they could help by donating a kidney. This does not mean that the effort to inform the potential donor has to be abandoned, but in cases where the potential donor and recipient are close and sentimentally related, rapid or instant decision making should not invalidate consent. Nor should the donor, under any circumstances, be sacrificed for the recipient even if they are prepared to accept the sacrifice; that is why an offer by a prisoner to donate his second kidney to his daughter, after having donated his other kidney again to her a few years ago, was declined.³⁹

Many of the potential donors may feel obligated to donate to their emotionally related recipients and they may feel unable to have true freedom of choice. Someone could argue how anyone could deny donation when the lives of close relatives are at stake? Moral and emotional commitments are not constraints of freedom but are rather a part of ordinary human life.⁴⁰ On the other hand, we should wonder how could anyone face their family members if they deny donation? That is why an independent experienced psychologist should establish that the potential donor is free from coercion and external pressure. The donor should also be given a certain period of time to review the decision to donate as well as the liberty to withdraw at any point of the evaluation process. Some⁴¹ believe that the reluctant donor should be provided with a medical alibi to justify his hesitation to the family. However, the general belief is that physicians should always be truthful and clear to their patients, avoiding lying and falsifying medical documents, which can clearly have catastrophic consequences.

Donor/transplant team's autonomy

It seems that the general public strongly believe that it is the donor's sole right to donate an organ and this decision should rest with the donor.⁴² Yet, for physicians the prevailing principle according to the Hippocratic Oath is to 'do no harm'. Does a surgeon have an obligation to remove a person's organ upon request? In liberal and democratic societies everyone has the right to participate in dangerous activities according to their will, but the transplant procedure involves an 'accomplice'; the transplant surgeon. Rejection of a potential donor by the transplant surgeon may seem a paternalistic act, yet physicians are also responsible for the potential donor's welfare and should act in what they believe is their best interest. Despite the low donor mortality and morbidity rate, the transplant surgeon always risks causing harm to an otherwise healthy person. It is unethical for physicians to conduct harmful interventions and create medical problems deliberately such as in the aforementioned example of the father-prisoner who wanted to donate his remaining kidney to his daughter.³⁹ If transplant physicians feel unable to accept a potential donor they should inform them of the reasons for rejection as well as offer them referral for a second opinion. A transplant surgeon may refuse to accept a donor because of: (a) a borderline medical problem (e.g. borderline hypertension) that may aggravate after donation); (b) elderly donors and (c) potential serious technical difficulties during the operation that might increase the risk of complications.

Many donors are rejected because of advanced age, although one may wonder, is it physical or biological age that counts? Donors may argue that it is upon them to decide whether to undertake the increased risk. What if a mother at added risk wants to donate to her child whose health is deteriorating, even though donation is considered by the transplant centre ill-advised?⁴³ Should the determination of acceptability, in such cases, rest with the transplant centre alone? There are great variations in the exclusion criteria used by various transplant centres.⁶ Because of these differences in the exclusion criteria (Table 4) research is required, concerning results on the outcome of increased risk donations, in order to achieve a consensus either on the aforementioned criteria or even on the way to introduce them.

Table 4: Acceptance and exclusion criteria for living donors at US transplant centres.⁶

Risk factor	Centres accepting (%)
History of renal stones	56
Microhaematuria	56
Alcohol abuse	89
Heroin and cocaine abuse	66
Risk factor	Centres excluding (%)
GFR < 80 ml/min/1.73m ²	59
GFR < 60 ml/min/1.73m ²	80
All patients with proteinuria	58
Some patients with proteinuria	90
Moderate obesity	16
Heavy cigarette use	16
Family history of type II diabetes	17
Type II diabetes	88–90

It has been suggested that donor's age ≥ 55 years negatively affected the 1- and 5-year kidney graft survival rate.^{44,45} Other researchers have not found any difference in graft survival according to the age of the donor.⁴⁶ Grafts from older donors may display tissue inflammation at the time of procurement which may increase immune recognition.⁴⁷ There are changes associated with age in the number and size of glomeruli in nephrons, a progressive decrease in glomerular filtration rate as well as increased immunogenicity of the aging kidney. This data seems to contradict those who advocate that physical age does not count and biological age of the donor should be the criterion to proceed with the transplant.

Furthermore, there is debate on the length of time that a patient suffering from renal failure should remain on dialysis. Studies have proved that an increased time on dialysis has a negative effect on graft⁴⁸ and recipient survival.⁴⁹ It is probable that the reasons are the longer history of end-stage renal disease with the accumulation of co-morbid conditions as well as the increase in the rate of acute rejection through various immunological mechanisms.^{50,51} Researchers also found that pre-emptive transplantation i.e. transplantation before exposure to any period of dialysis,

was associated with better graft survival when compared to transplantation performed after the initiation of dialysis.⁵²⁻⁵⁴ Although in an initial study the short duration of dialysis >6 months worsened graft survival but not patient survival,⁵² in a more recent study it was demonstrated that the worsening of the graft outcome only became significant after six months on dialysis, whereas the recipient survival was significantly worsened only after one year on dialysis.⁵⁵ These facts could support those who advocate that we should allow the patient with end-stage renal disease to remain on dialysis for a limited period of time, in order to become aware of the advantages and disadvantages of such treatment and compare it with the patient's quality of life after transplantation, so that they can appreciate it more.

Live unrelated donation

It has been well established that live unrelated (i.e. emotionally related donors such as spouses, partners or friends) kidney grafts have better long-term survival than cadaveric ones and are comparable to live related grafts.⁵⁶⁻⁵⁸ In the US, in 1987, spouses accounted for 2% of living kidney donors, yet by 1997 they accounted for almost 10% (Fig. 2). In a 1996 survey in the US, 90% of transplant centres accepted emotionally related donors and 60% encouraged emotionally related donation, 40% of them preferring spouses and only 21% accepting friends, demonstrating a marked change in attitudes compared to a similar survey performed in 1989.⁵⁹ Advocates of spousal donation from the US,^{59,60} Japan⁶¹ and Switzerland⁶² have reported improved family psychodynamics including strengthening of marital bond, restoration of the functional role of the husband and wife, improved sexual relationship and emotional bonding with children. On the other hand, in certain cultures where the male is a dominant figure, spouses may be forced to donate. That is why spousal donation remains illegal in France⁶³ and involves complex procedures in the UK.⁶⁴ In the UK, the Unrelated Live Transplant Regulatory Authority (ULTRA) assesses the ethical and moral issues in proposed transplants between genetically unrelated individuals requiring both potential donor and recipient to write personal statements as part of the procedure. There are propositions for its abolition⁶⁵ because spousal donation is becoming

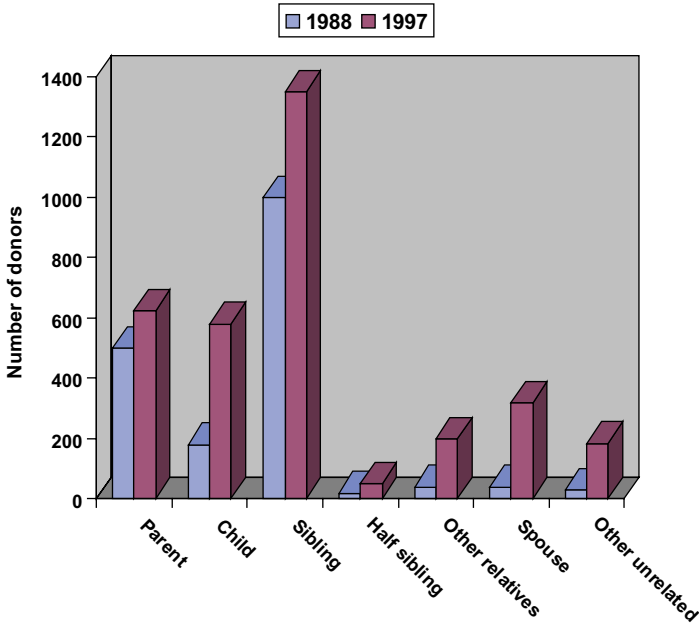


Figure 2: Relationship of live kidney donors to recipients in 1988 versus 1997 showing the increase in distant relatives and unrelated donors in the US.⁴²

acceptable by using a simplified method with which the physician takes responsibility for the emotional relationship between donor and recipient, e.g. in the US where a signed declaration by both donor and recipient that they are spouses or partners is required. There are surgeons against spousal donation advising that since 30–40% of marriages end in divorce there is no guarantee of a long-lasting loving relationship as a motive for such donation.⁶⁶

Friends have been accepted reluctantly as potential donors, despite the fact that they might feel less pressure to donate compared to a family member, although such practice has never been restricted.

Donation by strangers

In the past, the majority of transplant centres disapproved living donation between strangers (non-directed donation), expressing doubts about: (a) their

motivation and commitment to donation; (b) their understanding of the potential risks and (c) their psychological stability.⁶⁷ Yet in recent surveys in the US, there is strong medical and public support for the acceptance of strangers as donors. Studies have found no regrets or psychological implications following non-directed donation.⁶⁸ Such donors may also benefit from their act with increased self-esteem and may experience even greater satisfaction without being coerced by any sense of obligation.

Researchers have proposed that in non-directed donation, the donor and recipient should remain anonymous to each other and probably meet only after the transplant, if they both agree.⁶⁹ It has been suggested that true altruists do not need the name of those they help.⁷⁰ In case anonymity is not respected there is a risk of future financial requests from the donor. Yet, we should acknowledge that the donor might want to see the results of their good deed, and the recipient might want to express their gratitude to the donor.

In 1996, a German professor of surgery and head of a transplant centre, Dr Jochem Hoyer, voluntarily donated a kidney to an unknown recipient chosen from the Munich waiting list. This has led to proposals, in Germany, of a registry for non-directed donors.⁷¹ It seems unethical to allow potential donors to specify particular characteristics of the recipient (e.g. age or race) although some surgeons⁷² have suggested that if people were allowed to donate to someone they feel connected to, the number of donated kidneys would rise. Finally, there are individuals that doubt that anyone would consider non-directed donation without any substantial reward.⁷³

Commercialization of organ donation

Perhaps the hottest debate in live-donor transplantation nowadays is in regard to the potential financial rewards for the donor. In the UK, the Act of Parliament in 1990 made the sale of organs illegal and stipulated that proof of a relationship between donor and recipient must be genetically established before transplantation. This Act was produced after a General Medical Council's enquiry into a case of a British physician's involvement in transplants involving Turkish peasants.⁶⁵ As we mentioned earlier,

in the UK the law requires that a renal transplant in which donor and recipient are not blood related relatives (including spouses) must be approved by the ULTRA, whose chairman is appointed by the Secretary of State for Health.⁷⁴ In the US, the transplant team is responsible for determining and assessing the motive of the donor, and the sale of organs is illegal. Yet the shortage of cadaveric organs has led to a worldwide black market for living-donor organs, with patients who possess the necessary means travelling to distant locations in order to purchase a kidney for transplantation.

On one hand we consider the purchase of organs as a hideous act (deontological ethical approach), yet on the other we are obliged to consider ways to increase the live-donor pool (utilitarian ethical approach). For example, in Bombay, India, the price for a woman's kidney is alleged to be \$1,000; in Manila, the Philippines, a man's kidney is said to be worth \$2,000; and in urban Latin America a kidney can be sold for more than \$10,000 with additional payments to the brokers in all the previous cases.⁷⁵ While Americans are purchasing kidneys from strangers in China, Peru and the Philippines, the current federal law does not prevent these patients from returning to the US for post-transplantation care.^{76,77} Furthermore, there are also allegations that affluent patients from other countries have paid at least \$200,000 to undergo transplantation at US centres, as part of a package pre-arranged outside the US by international brokers, including compensation for unrelated donors.⁷⁵

Some of the arguments and counterarguments related to the commercialization of organ donation are as follows:

- (a) It is unethical to sell your body or your organs, since the importance of life is paramount and every human being is special. Organs cannot be regarded as commodities for sale. For the same reasons that we cannot accept prostitution and child trading, we cannot endorse commerce of human organs. Some might argue that in a free society, the individual is entitled to do anything they want, including selling their organs, as long as they are not restricting the liberty of their fellow citizens.
- (b) A poor donor is compelled by their financial status to donate, thus making the action non-voluntary. Yet, on the contrary, the donor may

be choosing the best from a list of bad options, since it carries significantly less risk than working, for example, under harsh and dangerous conditions, as well as offering them the pleasure of contributing to the well-being of the recipient. Although the recipient may be taking advantage of the donor's difficult economic situation, this will not improve by refusing donation.

- (c) Paid donors are, in their majority, poor and less educated, thus possibly unable to understand the risks involved. But someone could easily argue that it is the physician's duty to explain the whole procedure as simply and clearly as possible, as well as to clarify every question raised by the potential donor.
- (d) Another argument against commercialization of donation is that the rich will eventually have access to organs while the poor will not. However, it is also a fact of life that since private health care exists, the rich are able to buy better conditions of care than the poor.
- (e) The sale of organs may also cause exploitation of donors and recipients by unscrupulous middlemen and surgeons. Yet, such practice may increase even more in an illegal uncontrolled environment resulting in the provision of inferior medical care. The financial exploitation of donors could be avoided if donation was supervised and controlled by a national agency which would allocate organs nationally according to best match and clinical need criteria as well as maintain the anonymity of the donor-recipient relationship.⁷⁸ In such setting, safety for the donor and the recipient would be guaranteed with better pre-, intra- and postoperative care for them.⁷⁹ However, if such a policy is applied on a larger scale it may lead to differences in financial compensation between transplant centres and even countries resulting in 'donation tourism' from poor to wealthy areas of the world.⁷⁹ Other researchers have also proposed a closely regulated and supervised market of organs, claiming that we do not regard this as any the less a caring profession because doctors are paid.⁸⁰ Since the long-term cost of renal transplantation is less compared to the patient on dialysis, the government or medical insurance organizations would save money. It has also been proposed⁴² that wealthier patients could make financial contributions to a general and independent fund that would pay the potential donors, thus reducing the cost for the

government even more. The initial selection and screening of the potential donor could be performed by an independent physician and then the transplant centre could have the right to reject them, after consulting a specialist on medical ethics. The paid donor would not be able to select a specific recipient. Others fear that rewarding donors will potentially lead to an increase in the cost of transplantation since those who now donate their kidneys altruistically might ask to be compensated.⁸¹

- (f) Another argument against commercial donation is that the poor donor may be unable to handle their money well (compare with cases of lottery winners⁴²) thus making in the long-term no difference to their poverty. The possibility of misuse of the money paid for donation, although difficult to predict, could not justify overriding the donor's decision.
- (g) Transplantation has always relied to the altruism of donors and paid donation may lead to the disappearance of altruistic donation since it is possible that eventually all donors will request to be paid.
- (h) Even if we manage to regulate the sale of organs, there is always the fear that some people will take it to the extreme; for example, the stories of Brazilian children, kidnapped and killed for their organs, as well as stories of people being drugged and kidnapped, awaking in an alley with a flank incision and a kidney missing.
- (i) Others claim that living donation involves a 'highly artificial enforced altruism' according to which everyone is paid, including the transplant team, the transplant co-ordinator as well as the recipient who gains an important benefit and only the donor is required to be altruistic.⁸⁰ However, we have to acknowledge that those involved professionally with the transplant procedure do not receive extra payment for every transplant they perform and eventually it is their job to perform it.
- (j) We could consider the scenario of an impoverished father who has a daughter ill with leukaemia. If his daughter experiences renal failure he would want to donate her his kidney. It could be morally acceptable in the eyes of some researchers⁸² to sell his kidney in order to earn money to pay for her treatment. However, the counterargument is that in such cases a well-organized National Health Service should

be able to provide the necessary resources and financial assistance for them.

- (k) Others⁸³ consider it an act of paternalism that the rich are free to engage in dangerous sports for pleasure and the poor denied the smaller risk of selling a kidney, which may even save another life and help them with their financial situation. It is true that if kidney sales are allowed rich people will have opportunities for medical care unavailable to the poor, but this is a reality in many areas of medical care around the world and by outlawing such sales the social inequities will not be corrected.⁸⁴

Information about several types of commercial donation is already available, although centres involved in such a practice would be reluctant to report results. One study looks at recipients who purchased a kidney in an Arab country and had follow-up with nephrologists after returning home. The results demonstrate a higher perioperative (6.2%) and three-month mortality rate (12.3%), as well as an almost 12% lower one-year survival rate (81.5%), when compared to the figures of non-related renal transplantation performed in the Western countries.⁸⁵ In this study, although the graft survival rate was similar to that of live unrelated transplants done in other countries in the Middle East, there was higher incidence of serious infections including HIV and Hepatitis B.⁸⁶ Another report on commercial transplantation showed a high rate of serious complications for Palestinian children suffering from end-stage renal disease who were transplanted in Iraq.⁸⁷ In another more recent study concerning Tunisian patients who purchased a kidney in Iraq (mean cost \$10,000), Egypt and Pakistan, there was a very high complication rate.⁸⁸ Although there is still an organ black market in India, since dialysis is very expensive and cadaveric donations very rare, we have an early example of a paid donation programme,⁸⁹ which was suspended after commercial donation was made illegal. In this programme, before it became illegal, after careful screening of the donors, where even 72% were rejected, a two-year graft survival similar for related and unrelated donors was achieved. Those rejected were compensated for their time and the eventual donors were offered free three-year medical care. In Iran, there has been a compensated, controlled unrelated living-donor transplantation programme since 1988, which resulted in the

elimination of the renal transplant list by 1999.⁹⁰ In this programme, the government pays all hospital expenses as well as provides the donor with an award and health insurance, without involving any middlemen or agency. Such a programme in the Middle-Eastern countries, where strong cultural barriers exist against cadaveric donation and long-term dialysis is unavailable or very limited, could reduce the over 50,000 annual deaths due to end-stage renal disease.⁹¹ In a recent survey in Hungary⁹² 63.3% of those interviewed, who already had been donors in the past, were not in favour of selling and buying organs, but, interestingly, they stated that if they had end-stage renal failure they would have bought a kidney if one had been available. Finally, there is great concern that no matter how well regulated an 'organ market' is, dubious brokers would find a way to bypass the regulated system and use other means to obtain a better price for an organ with prospective 'buyers' bidding for the best, medically most suitable one.⁹³

Donor rewards

Even if we reject commercialization of donation, the question remains: should donors have any rewards at all? Most would agree that donors should at least not suffer from their donation, thus certain reasonable rewards are allowed. Researchers¹⁹ have discovered that recipients and potential recipients were unwilling to accept a kidney if this would inflict any financial burden on the donors. Thus, if such a donor develops later renal failure, it is suggested that he could be placed at the top of the cadaveric kidney waiting list. He should also be provided with medical insurance and reimbursed for any lost working hours or lost wages.⁹⁴ Who could provide such compensation? It is generally accepted that this should be done by some government authority such as the NHS.³³ In the UK there are sophisticated mechanisms in place to calculate the loss of working hours or loss of wages and to compensate the donors fairly.

In 2001, during the first session of the 107th US Congress, new legislation was considered for the promotion of organ donation. It included the presentation of commemorative medals to donors, the offer of tax credits, as well as the reimbursement of travel and other expenses incurred as a result of donation. Also, a 30-day paid medical leave for all federal

and some state employees, who become donors, was established. Moreover, the American Society of Transplantation (AST) is encouraging transplantation centres to provide paid medical leave for employees who become donors since they risk loss of wages or loss of employment.⁷⁵ The University of Minnesota offered a small financial aid in its transplantation programme intended to minimize donor expenses created by the procedure.⁹⁵ Also in Pennsylvania the state proposed a plan to offer \$300 to organ donors and their families to be used only for expenses such as food, housing and transportation.⁹⁶

The idea of non-cash rewards for donors might preserve the concept of altruism. The Red Cross gives, for example, T-shirts, food and drinks to those who donate blood but would not give their cash equivalent. The foundations of our society, life and liberty are values that should not have a monetary value. Thus, being awarded a medal or a certificate by the state for their generous action could be enough. This could happen in official ceremonies, thus gaining publicity through the media, which could further promote donation. The obligation of medical follow-up and the possibility of free health insurance is also a considerable reward for donors, expressing society's gratitude for such altruistic acts. The obligation of medical follow-up is also necessary in order to determine possible long-term risks for the sake of future donors and even if they are proven not to be in such a risk, their medical problems will be recognized and treated earlier. In a study in France,⁹⁷ two-thirds of the centres performed annual lifetime reviews for the donor, whereas the rest examined them once or twice before referring them to their personal physician for annual check-up (blood-pressure measurement, serum creatinine and screening for proteinuria).

Surrogate consent

The statement of the Live Organ Donor Consensus Group (LODCG) in 2000, that the donor should be competent to consent, rejects the idea of surrogates (patient's family) to consent to organ retrieval from an incompetent adult, although such examples appear occasionally⁹⁸ and have even been allowed.⁹⁹ In 1998, in Ohio, a judge ruled that a kidney could be removed from a patient in coma and given to his brother; since the

patient's condition was irreversible, he could still live with one kidney and there was evidence that he had expressed the will to become an organ donor.¹⁰⁰ The family's decision to donate the kidney of a patient who lacks decision-making capacity is obviously not to the patient's benefit since they will probably never regain consciousness to realize the action. How is it then possible to justify such an action? First of all, when family members have proven that they are expressing the patient's will, his autonomy is respected. The adult in coma has a history of life choices, values and priorities that can help his family decide. A legal analysis argues that surrogates have to consider also the best interests of the family as a whole when making such decisions.¹⁰¹

A UCLA Medical Centre Ethics Committee⁹⁹ has proposed several principles for surrogate consent: (a) the family members should be able to prove that their decision is based on the patient's will; (b) surrogates should have no benefit from the donation except the satisfaction of their altruistic act; (c) the procedure should not affect the clinical course of the donor; (d) all the parties involved in the transplant procedure as well as those involved with the donor's care must believe that the donation is ethical and (e) the consent should be evaluated by an independent multidisciplinary body, such as an ethics committee, on a case-by-case basis.

Surrogate consent should be limited to patients with the least possibility of recovery and those who will die following withdrawal of life support. Such patients could be those in a permanent vegetative state (PVS). When the vegetative state lasts more than one month in cases with no injury, over three months in cases after non-traumatic injury and over 12 months in cases of traumatic injury, it is considered as permanent and their median survival is approximately two to five years.¹⁰² Yet, are we able to determine whether a vegetative state is truly permanent? We can consider as an example the recent report of a person who recovered partially and started responding to questions after 19 years in coma.¹⁰³ That is why the surrogate should base their decision on what the patient would have chosen, regarding donation, if competent. Some¹⁰³ fear that allowing surrogates to donate non-vital organs (e.g. kidneys) of terminally-ill patients may undermine public trust in transplant programmes and expand donation to other patient groups, such as Alzheimer patients. Thus, they suggest that living-organ donation should be limited only to PVS patients.

Paired-exchange programmes

Another possible way to increase the live-donor pool is the paired-exchange programmes first suggested in 1986.¹⁰⁴ In such a programme pairs of potential donors who are incompatible with their recipients donate eventually to each other's recipient. Through an exchange arrangement between two donor-recipient pairs, donor A provides a kidney to (ABO-compatible) recipient D and donor C provides a kidney to (ABO-compatible) recipient B (Fig. 3).¹⁰⁵ Additionally, instead of direct exchange between pairs, donations could be made through an exchange donor pool. Such a programme was developed in Korea in 1991, resulting in a significant 7.3% increase of live-donor transplants.¹⁰⁶ The reasons for participating in the paired-exchange process were ABO incompatibility (75.5%), poor HLA-match (13.6%) and positive lymphocyte crossmatch (10.9%). The US also have experience with 'kidney swapping'.¹⁰⁷ In Europe paired-exchange transplantations have been attempted only in Switzerland, Romania and the Netherlands.

The consensus statement in 2000³² stated that the meeting of the donor-recipient pairs remains at their, as well as at the transplant centre's, discretion. A survey¹⁰⁸ performed among potential pairs participating in

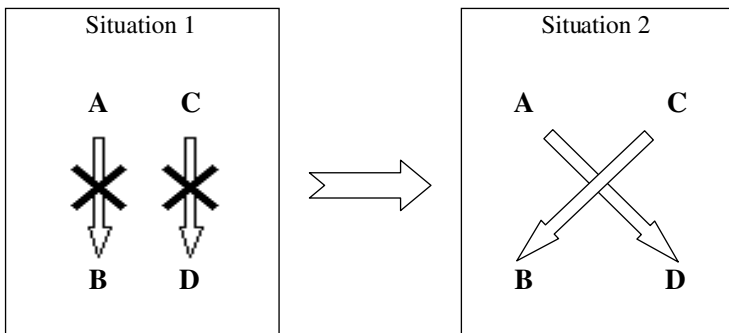


Figure 3: Paired-exchange programme. Live-donor kidney transplantation cannot happen for reasons such as blood group incompatibility between otherwise suitable donor and recipient (donor A to recipient B). The same can potentially stand for another pair of donor and recipient (donor C and recipient D). However if donor A gives a kidney to recipient D and donor C to recipient B, both transplantations are possible. An exchange of kidneys between two donor-recipient pairs.

an exchange programme concluded that all preferred anonymity, instead of becoming emotionally involved with others with similar health problems, avoiding psychological pressure that might result from acquaintance. Others¹⁰⁵ have suggested that strict confidentiality should be maintained for each donor-recipient pair because there is a possibility of frustration, anger or resentment between the two pairs, in case one recipient does not have such a good outcome as the other. It also suggested that both procedures should be performed simultaneously in order to avoid the possibility of one donor refusing after the other donor nephrectomy procedure had already been performed. It has also been suggested that in pair-exchange programmes, the psychological pressure on the donor may be greater since they are asked to give a kidney to a stranger rather than a loved one. Nonetheless, potential donors can understand that their donation will benefit indirectly their loved ones. Another ethical aspect of such a programme is the possibility of coercion since a reluctant donor cannot use an excuse such as ABO incompatibility for not donating. Thus, psychological evaluation should be more meticulous to ensure that the donor is acting voluntarily. Yet, with the advances in immunosuppression and plasma-exchange techniques, such programmes may be unnecessary, since ABO- and HLA-crossmatch incompatible transplants may be possible.

Minor donors

Another important issue under debate is whether minors, children younger than 18 years old, should be allowed to donate. The majority of kidneys transplanted to children come from their parents. However, this is not always possible for medical or other reasons. Should minors be allowed to donate to their siblings? From whom is consent required and who should decide about such a transplant? What should the minimum age be for donation?

There are some serious concerns about children donors. First of all, a child may be unable to balance and comprehend the risks and benefits of the procedure, thus may not be able to provide valid informed consent. Also, children may feel coerced by parents to donate and have no choice in the matter, risking parental love and support in that they go

against their parents' wishes. Furthermore, parents may face a conflict of interests when a healthy child is considering donation in order to help their ill child.¹⁰⁹ Finally, there are some extra risks, although limited, to the child with one remaining kidney, such as risk for trauma, neoplasm and infection that can alter their physical activity, and possibly their choice of a career, for example limiting their ability in careers such as athletics, the military, etc.¹¹⁰ Preadolescent and adolescent years are very important for the emotional, physical and intellectual development of a minor, thus there should be good justification to interrupt this process with an operation that is not medically required. We have to take into account issues of postoperative convalescence and disruption of school, activities, play, etc., which are essential in the daily life of a child at a formative age.

There is a view that we must consider older and younger children separately.¹⁰⁹ According to this view, formal operational thought has usually become well established in a child at about the age of 14, with adolescents being as competent as adults to make decisions regarding their health. In 1994, the Council on Ethical and Judicial Affairs of the American Medical Association considered adolescents of 14 years old and above, as mature enough to make decisions about their medical care, but this capacity should be evaluated in each individual case. Thus, several states in the US grant such 'mature minors' the right to provide consent to medical treatment intended for their benefit.¹⁰⁹ Before accepting an adolescent's consent, competence should be evaluated by a skilled mental health professional after consultation with the parents, who should also agree to donation. In addition, the child's competence should also be confirmed by courts as recommended by the Council on Ethical and Judicial Affairs of the American Medical Association. Data from this Council suggest that parental influence on children's decisions decreases as the children get older. In a previous study,¹¹¹ comprising young donors (16–20 years old), the vast majority appeared to be under no family pressure to donate and, one year after donating, most of them had not regretted it. The aforementioned Council also recommended that health professionals and the courts should also confirm that the adolescent is acting voluntarily. As Aaron Spital postulated 'although court involvement seems reasonable, it may be that a determination of competency and voluntarism can be achieved less

traumatically, more efficiently, and at least as accurately by qualified health professionals alone'.¹⁰⁹

Regarding the risk of nephrectomy in childhood, a large study¹¹² concluded that renal function is maintained for up to 50 years after unilateral nephrectomy in childhood. Thus, it may be too restrictive for transplant centres to accept kidney donors only over 18 years old. As Hamburger and Crossnier pointed out, it is really difficult to accept an age limit beneath which a minor is rejected as a donor since consideration should depend on the psychological maturity rather than the chronologic age of the child.¹¹³ As a result, some states in the US have started to legally accept the consent of minors over 14 years old for organ and tissue donation, e.g. in Alabama minors can consent for bone marrow donation and in Michigan they can be kidney donors to immediate family members with court approval.¹⁰⁹

However, it is very difficult to accept 'immature' minors (under 14 years old) as donors, since they are unable to make sound decisions regarding their own health and their choices are influenced greatly by their parents. On the other hand, one could argue that this approach is very restrictive and under rare circumstances even young minors should be allowed to donate.¹⁰⁹ Considering this approach, we must acknowledge that legislation accepts an incompetent individual as a potential donor only if donation is in the individual's best interests and they benefit from it. Similar psychological benefits for young children have been used by courts as justifications for approving donations by minors, whereas these benefits have actually been documented in a 7-year-old donor.¹¹⁴ Some of the benefits for a young child after donation could be: (a) avoiding trauma caused by the death of a very close relative e.g. a sibling; (b) avoiding future emotions of guilt for not donating; (c) increased self-esteem from donation; (d) maintaining the integrity of the family in which they live.¹⁰⁹ However, we should always keep in mind that we can only speculate rather than be certain about the psychological benefits to the child-donor. That is the reason why the Council on Ethical and Judicial Affairs of the American Medical Association has proposed that organ donation from an 'immature' minor potential donor should only be permitted if parents and courts agree 'that donation could provide a "clear benefit" to the donor'.¹¹⁵ It is also recommended that the minor is evaluated by a child psychiatrist

Table 5: Attitudes towards the use of minors as live kidney donors among 99 responding US transplant centres in 1989¹¹⁷ and among 117 responding US transplant centres in 1997.¹⁰⁹

Donor source	Would consider		Would not consider		Did not answer	
	1989	1997	1989	1997	1989	1997
Monozygotic twin	64%	42%	32%	56%	4%	2%
Non-twin sibling	43%	25%	53%	75%	4%	—

or psychologist and a guardian is appointed on the minor's behalf to ensure the protection of the child's interests.¹¹⁶ This procedure would require stringent safeguards such as: (a) the child is the only available organ source; (b) the transplant procedure has a very high possibility of success; (c) the recipient will benefit from the transplant; (d) the recipient is a close family member; (e) the potential donor will likely benefit from the procedure; (f) the risk of donation is extremely small; (g) the child freely agrees to the procedure, requiring the child to be old enough for that decision, probably over 7 years old.¹⁰⁹ Although these concepts reject a definite ban on donation by young children, they limit greatly the number of minors who can be considered as potential donors.

Surveys¹⁰⁹ that have been performed in transplant centres in the US have demonstrated that the acceptance of children as live donors is decreasing (Table 5) compared to the attitudes described in a previous study¹¹⁷ while there is great controversy regarding the issue of the donor's acceptable age (Fig. 4).¹⁰⁹ Finally, in the most recent of those studies,¹⁰⁹ the centres that would sometimes accept minors as donors required consent from: parents (88%), the minor donor (75%), a court (69%) and an appointed guardian (50%).

Conclusion

The many ethical issues regarding live-donor organ transplantation have been under intense debate, with much controversy and a range of ideas and practices existing between countries, transplant centres and physicians.

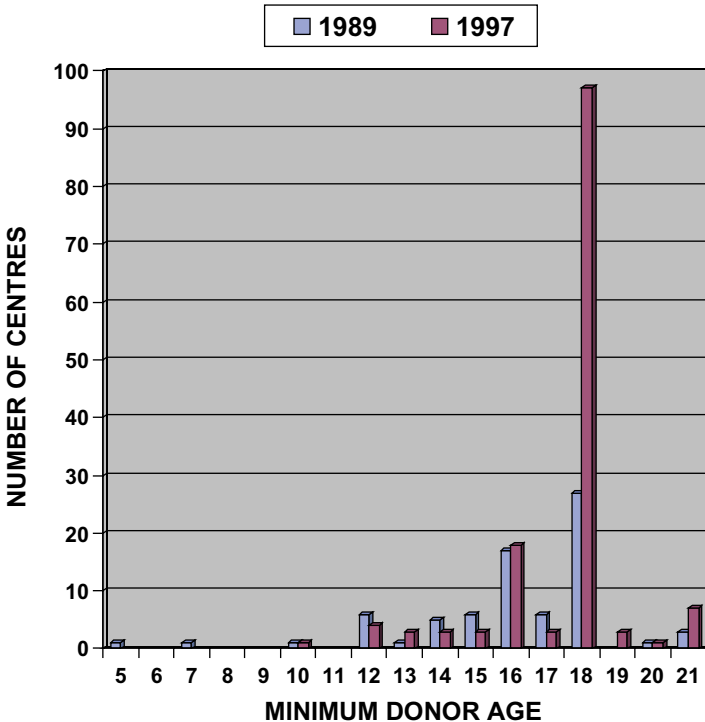


Figure 4: Minimum donor age acceptable by 74 responding US transplant centres in 1989¹¹⁷ and by 143 responding US transplant centres in 1997.¹⁰⁹

Cultural, socioeconomic and demographic factors make those issues even more complicated. However, we believe that, following an open and honest debate involving all the interested parties, an agreement on certain generally accepted principles can be achieved. Such an agreement will safeguard the potential donors, recipients and their families and can only boost the future of live-donor transplantation.

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