Human organs from prisoners: kidneys for life

L D de Castro

A proposal to allow prisoners to save their lives or to be eligible for commutation of sentence by donating kidneys for transplantation has been a subject of controversy in the Philippines. Notwithstanding the vulnerabilities associated with imprisonment, there are good reasons for allowing organ donations by prisoners. Under certain conditions, such donations can be very beneficial not only to the recipients but to the prisoners themselves. While protection needs to be given to avoid coercion and exploitation, overprotection has to be avoided. The prohibition on the involvement of prisoners in organ transplantation constitutes unjustified overprotection. Under certain conditions, prisoners can make genuinely independent decisions. When it can be reasonably ascertained that they are able to decide freely, society should recognise an obligation to help them implement their decisions, such as when they intend to donate an organ as a way of asserting their religious faith and performing a sacrifice in atonement for their sins.

Kidneys for life is the name that has been given to a proposal in the Philippines to allow prisoners to save their lives or to have their prison sentences commuted by donating kidneys for transplantation. The catchy phrase has been used to refer to convicts who might wish to take advantage of the opportunity whether they are on death row or not. The slogan takes on a peculiar meaning because the donors are invited to save their own lives and not necessarily those of the transplant recipients. From this standpoint, the preservation of the recipients' lives is only a side effect that the donors might not even care about. There are, however, good reasons for allowing organ donations by prisoners. Under certain conditions, such donations can be very beneficial not only to the recipients but to the prisoners themselves.

Admittedly, prisoners are in a very vulnerable position. They require protection from coercion and exploitation. Paternalism can, however, be overdone. Overprotection can work against the vulnerable people that it aims to protect. The prohibition on the involvement of prisoners in organ transplantation is a type of overprotection that can be exploitative. This kind of exploitation can have worse consequences for the prisoner than underprotection. The vulnerability of prisoners does not, in itself, make it wrong for them to be involved as organ donors.

Notwithstanding the restrictive character of their environment, prisoners can make genuinely independent decisions. When it can be reasonably ascertained that their decisions are truly their own, society should recognise an obligation to help them implement such decisions. This is particularly important when prisoners make the decision to donate an organ as a way of asserting their religious faith and performing a sacrifice in atonement for their sins.

THE BACKGROUND

There have been many proposals to involve prisoners in organ transplantation. Some of these would have prisoners as organ donors. Others contend that prisoners should not be disqualified from being recipients of transplanted organs. Either way, the proposals have generated controversy.

In the Philippines, prisoners were first used as organ donors in the 1970s as local doctors with specialised training in organ transplantation came back from other countries to establish local practice. Eager to practise their newfound skills to aid their countrymen, some of these surgeons personally went to local prisons to try to recruit organ donors. With the cooperation of prison officials, they sought the aid of convicts.

Some prisoners were enticed by the promise that they—or their families—would be given material rewards. In a number of cases, the prisoners were promised pardon or sentence commutation although the agreements were not made in writing.

When pardon or sentence commutation was recommended, the justification was that the prisoner had manifested eligibility by undertaking the donation sacrifice. By deciding to take the risk associated with organ donation, a prisoner exhibited the sort of good behaviour that could be taken as evidence of a reformed character. The “good conduct” provided parole officers with a basis for making a positive recommendation to the president, who had the ultimate responsibility to grant reprieve from punishment.

Some prisoners who donated organs did not receive the promised rewards. Even so, the people who broke promises apparently broke no law because there was no legislation that specifically prohibited the practice. This left the disappointed prisoners with no obvious legal avenue for complaint, forcing some of them to come out in the open and denounce their recruiters. As the country was then under martial rule, the authorities easily managed to silence the critics. Nevertheless, the transplant surgeons feared for their reputations and professional careers and the involvement of prisoners as organ donors ground to a temporary halt.

The current kidneys for life proposal surfaced after capital punishment was revived in the country. When the first convict under a new law on capital punishment was due for execution in 1999, the idea was floated that a healthy body should not have to be lost without being useful in some way. In particular, the Kidney Patients’ Association of the Philippines (KPAP) lamented that healthy human organs were being wasted when there were dying patients who had an urgent need for them. Colonel Mariano Santiago, chair of the KPAP board of trustees, announced that they were going to lobby in congress.

There were, of course, prominent detractors. Dr Alberto Romualdez Jr, Secretary of Health, was quoted as saying: “Asking [death row inmates] to donate their organs in exchange for a commutation of their sentence is similar to a poor man being compelled to sell his organs.”

On the legal front, the undersecretary for corrections at the Department of Justice was reported to have said: “To allow a
convict to donate his or her organs in exchange for a commutation would not only usurp the power of the court to review sentences but is taking advantage of a desperate individual”.

Nevertheless, the undersecretary was candid enough to admit that in the past, “the Bureau of Corrections had allowed convicts to donate their organs in exchange for a promise that the recipient will take care of the prisoner if something goes wrong during or after the transplant operation”.

Many people considered the kidneys for life idea too controversial. No senator or congressman dared to file a supporting bill in congress. Like other proposals for legislation that had a potential for controversy, the kidneys for life proposal was condemned to death for putting political careers in jeopardy.

It did not matter to the legislators at that time that some officials of the Catholic hierarchy were among those who endorsed the proposal. Bishop Teodoro Bacani, Archbishop of Manila, said he did not consider the proposal wrong provided the prisoners voluntarily made the decision to donate. He found “nothing morally objectionable” with “a creative idea by which a person makes a donation in reparation for a crime committed by an ‘anti-life’ by giving life” as he highlighted the opportunity for a murderer who had taken another’s life, to make amends by giving another person a life saving organ. To elaborate on this point, the head of the main proponent organisation expressed the view that a prospective donor should make a declaration before his execution that he is donating an organ as a gesture of atonement for his crime.

The creation of bureaucratic structures recently in the Philippines is an indication of renewed efforts to initiate a strong organ retrieval programme. Under the Organ Donation Program, the Organ Transplant Advisory Board, the National Transplant Ethics Committee, and the Kidney Donor Monitoring Unit have been established to assist the Department of Health in the implementation of a National Policy on Kidney Transplantation from Living Non Related Donors. These structures may be expected to explore various ways of expanding the criteria for possible organ donors. Considering the feeling of helplessness that organ transplant advocates elaborated on this point, the head of the main proponent organisation expressed the view that a prospective donor should make a declaration before his execution that he is donating an organ as a gesture of atonement for his crime.

The reasons that have been given for opposing the involvement of prisoners in organ transplants do not indicate that such involvement is necessarily or inherently wrong. One view that comes close to being a claim that prisoner involvement is inherently wrong holds that prisoners, by virtue of their being imprisoned, are necessarily trapped in a coercive environment. It appears to be taken for granted in ethical discourse that incarcerated individuals are not in a position to make free and informed decisions. The conditions of imprisonment are themselves coercive and not conducive to free decision making. Prisoners are liable to exploitation and manipulation because their control of their lives is considerably restricted.

Still, these limitations do not necessarily prevent prisoners from making a free and informed decision regarding the possibility of making an organ donation. While there are many prisoners who are confined under severely inhibiting conditions, there are those who have been given relatively lighter sentences and live under more open terms of confinement.

A number of high profile criminals have been held up to the public as examples of convicted prisoners who have transcended the conditions of their incarceration. They have overcome the vulnerabilities associated with prison life. Many of them have also made valuable contributions to society. They may not constitute the majority but there are enough of them who might consider making a gift of a transplantable organ to a person in need.

Given the controversy ethics phenomenon, decision makers take people’s fears, alarm, apprehension, anxiety, or some similar controversy generating emotion at face value and react accordingly. In an effort to avoid more controversy, they refrain from publicly confronting a clear articulation of the reasons for the negative attitudes. Thus, the public is unable to pursue the process of rational examination that would have been required for a more decisive conclusion. Controversy ethics leaves people struggling with shallow face value considerations. This outlook should not be allowed to dominate discussions concerning a proposal that could be very beneficial to many.

PRISONER INVOLVEMENT—NOT NECESSARILY WRONG

The reasons that have been given for opposing the involvement of prisoners in organ transplants do not indicate that such involvement is necessarily or inherently wrong. One view that comes close to being a claim that prisoner involvement is inherently wrong holds that prisoners, by virtue of their being imprisoned, are necessarily trapped in a coercive environment. It appears to be taken for granted in ethical discourse that incarcerated individuals are not in a position to make free and informed decisions. The conditions of imprisonment are themselves coercive and not conducive to free decision making. Prisoners are liable to exploitation and manipulation because their control of their lives is considerably restricted.

Still, these limitations do not necessarily prevent prisoners from making a free and informed decision regarding the possibility of making an organ donation. While there are many prisoners who are confined under severely inhibiting conditions, there are those who have been given relatively lighter sentences and live under more open terms of confinement. There are many facilities designed to involve prisoners in productive activities. There are correctional centres where convicts are engaged in farming, handicraft, and other livelihood projects from which they are permitted to earn money. At these centres, prisoners live productive lives and gain empowerment in the process. Some criminals have been helped to a life of prayer and even of ministry that provides a context for their possible involvement as organ donors.

A number of high profile criminals have been held up to the public as examples of convicted prisoners who have transcended the conditions of their incarceration. They have overcome the vulnerabilities associated with prison life. Many of them have also made valuable contributions to society. They may not constitute the majority but there are enough of them who might consider making a gift of a transplantable organ to a person in need.

Even if the conditions of imprisonment are usually coercive in nature, there are prisoners who are capable of transcending these conditions and acting as autonomous agents. They can be in command of their decisions. These prisoners can be responsible enough to take risks for themselves and to make genuine sacrifices for the rest of society.

DEALING WITH VULNERABILITIES

Although prisoners require protection because of their vulnerable situation, the nature of the protection provided has to be calibrated to fit their specific vulnerabilities. A blanket prohibition against their involvement as organ donors may be useful on the basis of a general presumption that the conditions of imprisonment are coercive to the point that free decision making is rendered impossible. If, however, it is possible to attain a reasonable level of confidence in a given situation that a particular prisoner can understand the options available and decide freely, a comprehensive ban on organ donation will serve more as an unjustified restriction rather than as a welcome protection.

Vulnerabilities should not be regarded as permanently disabling conditions. They are weaknesses that can be overcome and they should be viewed as difficulties to be overcome. An area of vulnerability need not, in itself, disqualify a person from becoming an organ donor. Instead, it should signal the necessity of providing assistance to ascertain that a
person is genuinely motivated and, if so, is in a position to achieve a noble purpose by participating in a freely chosen course of action.

**PRISONER DONATIONS AS BENEFICIAL—TO PRISONERS THEMSELVES**

A sweeping ban on the involvement of prisoners as organ donors unjustifiably deprives them of a unique opportunity to engage in productive acts that stand to be beneficial not only to renal patients but to themselves. Prisoners ought to be regarded differently from ordinary persons only in so far as they are being punished in accordance with the law. Restrictions on their actions are justifiable only to the extent that these restrictions follow from the terms of their confinement based on applicable judicial orders. Other than those that are mandated by pertinent courts, any restrictions must be regarded as excessive and unjust.

When a prisoner expresses an unequivocal desire to donate an organ, a prohibition has to be justified more strongly than by a general presumption that coercive conditions prevail whenever prisoners make decisions. A paternalistic stance has to be weighed in relation to the loss of possible benefits and the likely burden to those involved.

If the possible benefits from the involvement of prisoners as organ donors are so great (human lives saved or enhanced) and the risk of serious harm is small, an absolute prohibition on the practice would itself be unethical for another reason—by prohibiting the practice, we could be taking away benefits not only from organ recipients but from the donors themselves. That benefit consists of the prisoners’ opportunity to make an organ donation as a means of reparation for their “sins”. Prisoners could be harmed by being deprived of a legitimate vehicle for atonement that is worthy of recognition in a particular religious or cultural milieu. This vehicle should not be arbitrarily removed from a sinner’s options, especially in a country like the Philippines where there is a long tradition of physical forms of penitence.

Traditionally during the lenten season, a significant number of Filipinos have voluntarily undergone self imposed punishment in atonement for their sins. Some have asked to be crucified. Others have carried a cross and walked barefoot for hours on hot cement or asphalt roads. Many have practised self flagellation or assisted flagellation for years. In this context, donating an organ could be seen as a form of medical flagellation.

One can cite the experience in a few Philippine prisons where inmates participate in Holy Week rites in order to “relive the suffering of Jesus Christ”. The following is an account of what goes on in one institution:

In the Quezon City jail, the prisoners also relive the passion, death and resurrection of Jesus Christ, with less spectacle but perhaps with more piety and faith. Within the congested, squalid prison walls of the Quezon City jail, about 1800 inmates pray, chant the *Pasyon*, do the Stations of the Cross and otherwise reflect during Holy Week. A few make penance through self flagellation.

First time visitors to the jail during Holy Week are amazed to find a gaggle of detainees taking turns in participating in the *Pasyon*, . . . the dirge like chanting of verses from the Filipino book of the Passion of Christ, a traditional Holy Week rite in the Philippines.

Maundy Thursday, the inmates will reenact the washing of the feet .... On Good Friday, the inmates listen to religious leaders ... interpret Christ’s Seven Last Words .... From 1 pm to 3 pm, the inmates will reenact the 14 Stations of the Cross by praying before each of the stations set up in some of the jail’s 40 cells.

At around this time, some inmates, who have made it a yearly vow to whip their bodies as a form of penance, join the procession around the jail.

On Easter Sunday, they will reenact the *Salubong* at 7am with an angel (to be played by an inmate’s daughter) escorting the risen Christ from the steps of the jail’s tower to a waiting Virgin Mary (to be portrayed by a female inmate) in the chapel.

While these rituals have become part of the jail’s tradition over the years, they give the inmates a chance to retreat from their mundane life and reflect on Christ’s suffering via a via their own.

The organiser of the Holy Week activities is a convict who heads the inmates’ organisation. For inmates like him, times come “when we reflect on the life of Christ and do our own soul searching”.

If a prisoner were to offer a kidney as an extension of this soul searching it would be unfair to block the effort without being certain about the nature of the protection that this provides.

Given this kind of culture, to deny prisoners the opportunity to donate an organ merely because they are vulnerable is to exploit their vulnerability in a different sort of way. By taking a valuable option away from a prisoner we make that vulnerability work against him or her. This is a case of over protection working against the very person we want to protect.

Rather than completely prohibiting prisoners’ involvement in organ transplantation, the proper course of action is to put safety nets in place to ensure that their particular vulnerabilities cannot be exploited.

**LIKELIHOOD OF ABUSE**

Like any other activity that can bring unexpected but coveted relief from a difficult situation, kidneys for life is open to abuse. Any legitimate activity is liable to exploitation through creative but wicked moneymaking schemes, especially if it is characterised by the prospect of a windfall type outcome. There is a possibility of collusion between prisoners eager to save their lives and prison officials who might see in the procedure a creative opportunity to make money. Especially in an economically impoverished environment, kidneys for life and organs for money can easily form a convenient merger.

This possibility has to be anticipated and avoided. Safeguards such as those identified below have to be put in place.

One should not, however, be afraid to pursue a novel initiative just because it is liable to abuse.

Moreover, experience has taught us that the refusal of government to take controversial practices head on because of the fear that acknowledgement of the activity can be interpreted as giving official blessings has more often led to greater abuse and more problems. The existing organs for money black market is an example of an undesirable outcome of a general policy of non-involvement in anything that could be controversial.

This is not to deny the risk of abuse entirely. Measures to counter possible abuse can only be effective if the possibility is honestly recognised and anticipated in a guarded and timely fashion. The following discussion of possible objections to the kidneys for life proposal begins on this note and leads to some suggested safeguards to enable a programme of implementation that is cognisant of the rights and welfare of prisoners.

**ESCAPING JUST PUNISHMENT**

One objection to the kidneys for life proposal holds that it involves an unjustified conjunction of the implementation of justice with a desire to benefit a person with health problems. The point is that these are two distinct concerns that are independently important.
Considerations of justice dictate that a convicted offender should be put in prison for various kinds of offence. The law provides for that kind of punishment. Thus, a convicted prisoner would most likely have been tried and sentenced in accordance with procedures and legal norms that are reflective of the will of society. The imprisonment has nothing to do with the fact that a convict’s kidney could provide a dying person with a new lease of life.

The desire to donate an organ is founded on a beneficial motive relating to a renal patient who probably does not have anything to do with the victim of the prisoner’s crime. Thus, there are two different relationships that provide distinct frameworks for the two concerns. To mix these things up is to distort the system of justice and erect a barrier to its implementation. To allow a convicted criminal to get away with a lighter sentence is to perpetrate an injustice on the victims of a crime.

The reply to this objection is that kidneys for life fits into the mould of an already existing system for commuting sentences and granting pardon or parole. Under systems that are in place in many countries including the Philippines, convicts may be granted freedom or a commutation of sentence on the basis of “good conduct”. The pertinent rules are part of the law and are integrated into the public understanding of retributive justice, even if good conduct while in prison is not related to the crime for which a convicted offender is being punished. This mechanism has long been accepted. It has not been seen as a way of escaping justice but rather, as an integral part of it and as a legitimate tool for its effective administration.

DETERMINING A PRISONER’S REAL MOTIVATION

If kidneys for life were to be regarded as a way of recognising a criminal’s atonement for a crime, there would have to be a fairly effective method of ascertaining a prisoner’s real motivation for offering a transplantable organ. Among other things, the authorities would be aided greatly by the knowledge that a convict:

1. Is truly making the offer as a way of repairing a broken bond with society,
2. Is truly a reformed person (or one who is likely to be reformed after—or as a result of—the donation, or
3. Is going to be more of an asset than a liability to society.

These are questions that are difficult to settle either at a conceptual or practical level. In reply, it will suffice merely to point out that these are the same problems that government officials already have to deal with when they deliberate on applications for pardon or parole. For sure, they have not found it to be an easy task. The difficulties have not, however, prevented them from acting on applications from prisoners every year. The same difficulties should not prevent them from successfully facing the challenge as regards kidneys for life.

MOST PRISONERS ARE POOR AND UNEDUCATED

Most prisoners are poor and uneducated to begin with. These conditions are partly responsible for their having committed crimes. Hence, prisoners cannot be expected to make responsible decisions that reasonably take their true interests into account.

Although this is perhaps true for many (even most) prisoners, it should not prevent the few who are differently situated from being permitted to express their faith or societal commitment in a manner that they see fit. It would be wrong to exclude educated, informed, and deliberative individuals from an activity that is compatible with the terms of the punishment that is being imposed on them.

SOME SAFEGUARDS

A successful kidneys for life proposal should, of course, be equipped with safeguards to ensure that the objectives are not going to be defeated by the actual practice. One can think of the following measures that might be useful:

1. Legal representation: a prisoner is vulnerable in a number of respects. Professional representation ought to be provided to prevent these vulnerabilities from being exploited. A lawyer will be needed to look after the interests of prisoners/donors since the grounds for detention obviously have their roots in the law. Any procedure that seeks to cancel some of the effects of that law in order to provide relief to a convict will require knowledge of legal nuances such as only a professional lawyer can provide.

2. The usefulness of psychological counselling also appears obvious in view of the type of pressures that bear on the prisoner and the prisoner’s family when the kidneys for life option arises.

3. Consultation with the applicant’s family. Family consultation can facilitate a broader base for evaluating the prisoner’s options by situating it within the context of the kinship system that would have been partly responsible for early identity formation. The kinship system is also a support mechanism that enables an individual to make stable decisions in the face of external threats.

4. Determination that the detention facilities available to a particular prisoner/applicant are conducive to an acceptable level of independence in decision making. This is necessary in as much as there is a wide variation in the quality of detention facilities that provide a physical context for the decision making of prisoner/applicants. There has to be an independent examination by experts who can assess the conditions of detention and the effects that these may have on the prisoner’s independence.

5. Independent committee review. Like any ethically contentious activity, the implementation of kidneys for life for particular instances can profit from an independent committee review conducted by members who have no personal stake in the prospective donation.

6. Sufficient waiting time before a prisoner’s application is approved and implemented to ensure, among other things, that the intention is more than fleeting.

WHY COMPENSATE?

It may be argued that if the main justification for a kidneys for life programme were the need to allow prisoners to manifest their repentance in consonance with religious beliefs, they should not have to be given rewards. Thus, they should not have to be entitled to a sentence commutation. This objection appears to be valid and a decision to permit the involvement of prisoners as organ donors should not be premised on their being entitled to rewards. Nevertheless, the fact that the donor is a prisoner should not diminish society’s appreciation for the value of the donation. A human organ is a priceless contribution regardless of whose body it comes from. Perhaps it should even be more greatly valued for being an organ coming from a person in a vulnerable situation.

If only for this reason, a prisoner/donor ought to be given just compensation for giving an organ. The reasons for giving a reward are not necessarily based on the donor’s being a prisoner—any donor deserves just compensation. The form that a particular reward takes may, however, be adapted to the particular recipient’s situation.

In general, the contribution is so valuable that it would be exploitative to accept it without just compensation. The fact that a person has been convicted of a crime should not give the rest of society the right to take advantage of his imprisonment.
A volunteer to be killed for his organs

F J Leavitt

CONCLUSION
A comprehensive ban on the involvement of prisoners as organ donors appears to be anchored in a need to protect the possible donors from harm. There are, however, situations when the donation of organs by prisoners can be very beneficial to the prisoners themselves.

Although prisoners require protection from coercion and exploitation, we have to remember that overprotection can also work against them. In the case of the kidneys for life proposal, overprotection can have worse consequences for the prisoner than underprotection. When it can be reasonably ascertained that their decisions are freely made, society should be ready to assist prisoners in implementing such decisions.

REFERENCES

CLINICAL ETHICS: POINT OF VIEW

A volunteer to be killed for his organs

M ost of the audience were students and physicians. But this man looked more like a patient. The panel discussion, part of a third year round, Brain Death and Organ Transplantation, was open to the public.

I’d been arguing, on the basis of well known data,14 that “brain death” is not death. So, taking a heart from a “brain dead” (BD) patient is killing. But I would not totally oppose killing patients for their organs, provided that there is informed consent, and with further limitations. Truog’s proposal to take organs from persistent vegetative state (PVS) patients15 is too extreme. Patients in a persistent vegetative state sometimes return to various levels of consciousness.16 So killing them for their organs is a dangerous precedent. But although there is widespread belief in inevitable asystole “within a few days”,17 patients can continue in the BD state for six or more months.18 But BD patients don’t return to consciousness. So brain death seems a legitimate minimal cut off point. I also argued for a policy similar to New Jersey and Japan, which allows a donor “to choose between ‘brain death’ and ‘traditional death’”, and would go further and allow different definitions of brain death. Capron opposes such liberty.19 But if they are my organs, why shouldn’t I be free to choose when—if at all—to donate them? This kind of policy can encourage more donations. Those who agree with brain death may continue to consent as usual. Others might agree to organ and tissue donation after “cardiologic death”; making more kidneys, corneas, and skin available.

In the discussion session, the man asked how he might donate his organs. He received more enthusiasm than did I. One does not win popularity contests by criticising brain death in a medical school round on transplantation. But if “surveys show that one third of physicians and nurses do not believe brain dead patients are actually dead”,20 the position that we are killing patients for their organs, should be heard. The rabbi on the panel, one of the many orthodox who accept brain death, opposed me as strongly as did the surgeon.

After the session, the man approached me: “That doctor does not want to help me. I want them to anaesthetise me and take my organs. My life has been a waste. I want to help people.”

He admitted being under psychiatric care. He reluctantly gave me his name, and the name of his psychiatrist. My telephone call alarmed the psychiatrist. The man had never been suicidal before.

Did my statement, made in a prestigious forum, that we are killing people for their organs, influence this man to decide to volunteer for donation? Of course, he is mentally ill. But if my view, and that of Truog,2 were to become well known, might not this encourage even the same to make similar decisions, perhaps for money for their families?

The guilt ridden American prisoner, who asked to be killed for his organs, was declared “sane” in court. He was refused on grounds of an obligation to preserve life.23 If suicide is sometimes justifiable, then it might also be justifiable to kill oneself by removing one’s organs for donation, if it were possible. But if assistance is needed, an “autonomous” act does not affect only oneself. What does killing do to the killer? What psychological effect would killing conscious, ambulatory patients have on physicians? Killing potentially conscious PVS patients would be traumatic enough.

I am not ready to say that brain death is really death, when I don’t believe it. But am I justified in broadcasting my opinion and risking encouraging more volunteers?

Author’s affiliation
F J Leavitt, Chairman, The Centre for Asian and International Bioethics, Faculty of Health Sciences, Ben Gurion University of the Negev, Beer Sheva 84105, Israel; yeruham@bgumail.bgu.ac.il

Accepted for publication 7 November 2002

REFERENCES
10. See reference 2: 34.
Human organs from prisoners: kidneys for life

L D de Castro

*J Med Ethics* 2003 29: 171-175
doi: 10.1136/jme.29.3.171

Updated information and services can be found at:
[http://jme.bmj.com/content/29/3/171](http://jme.bmj.com/content/29/3/171)

**Email alerting service**

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

**Topic Collections**

Articles on similar topics can be found in the following collections

- Artificial and donated transplantation (157)
- Transplantation (82)

**Notes**

To request permissions go to:
[http://group.bmj.com/group/rights-licensing/permissions](http://group.bmj.com/group/rights-licensing/permissions)

To order reprints go to:
[http://journals.bmj.com/cgi/reprintform](http://journals.bmj.com/cgi/reprintform)

To subscribe to BMJ go to:
[http://group.bmj.com/subscribe/](http://group.bmj.com/subscribe/)