

Ethical issues in organ transplantation

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Abstract

Critical care clinicians are central to the organ transplantation process and therefore should be aware of the myriad ethical issues it raises. Organ donation can transform the lives of transplant recipients. However, it also warrants particular ethical scrutiny. Organ procurement is a procedure that cannot physically benefit the patient upon whom it is performed. Moreover, the potential donor incapacitated by terminal illness is usually unable to actively consent to donation. This article reviews contemporary debates in vital organ transplantation, including the definition of death, perimortem interventions and research, and merits of 'opt-in' versus 'opt-out' donor registries.

Keywords Death; ethics; organ donation; transplantation

Royal College of Anaesthetists CPD Matrix: 1F05

Organ transplantation is a life-saving treatment for patients with various end-stage vital organ failures. Intensive care physicians and anaesthetists are central to the organ donation process. They care for dying patients who may become organ donors, diagnose death prior to organ donation, discuss organ donation with families, care for donors during retrieval surgery and manage transplant recipients. Importantly, donation specialist physicians are often intensive care specialists. Therefore, critical care clinicians should be cognisant of the complex ethical issues raised by organ donation.¹

Recent ethical debate in organ donation has focused on the definition of death and its diagnosis, perimortem support with extracorporeal membrane oxygenation (ECMO), organ donor research, and limiting the ability of surrogate decision makers to overrule the patients registered preferences for organ donation. Common to these debates is the tension between maximizing the number of organ donations and maintaining a donation system that enjoys broad support within a multicultural society.

Diagnosing death and the Dead Donor Rule (DDR)

Under current ethical and legal frameworks, the determination of death in the potential donor must precede the procurement of vital organs for transplantation. This is formulated as the Dead

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Learning objectives

After reading this article, you should be able to:

- discuss recent debate regarding the definition of death
- discuss the controversy surrounding non-therapeutic perimortem procedures and research undertaken to facilitate organ donation
- explain the difference between 'opt-in' and 'opt-out' donor registries and the right for family to overrule donor intentions

Donor Rule. However, the concept of death and its diagnostic criteria varies across jurisdictions due to differences in legal, ethical, religious and cultural contexts.² This highlights both the persistent difficulty in achieving international consensus for diagnosing death, and under the DDR, the continuing debate as to when it is ethically and legally acceptable to procure vital organs for the purpose of transplantation.

The diagnosis of death is made by either neurological or circulatory criteria that establish the permanent or irreversible absence of function ('brain' or 'circulatory' death). Debate remains over the both the concept of 'brain death' and the concept of 'irreversibility' in circulatory death.

Jurisdictions vary as to whether death based on neurological criteria entails whole brain death or brain stem death. Practically, the clinical diagnosis of brainstem and whole brain death is identical (coma, unresponsiveness, and absent brain stem reflexes). However, conceptual problems remain. For example, the clinical diagnosis of 'whole brain death' may be associated with at least partial preservation of hypothalamic–pituitary function (e.g. approximately 50% do not develop diabetes insipidus).³ Brain death remains a challenging diagnosis to convey to a family, as the brain-dead patient receiving passive ventilation appears alive. Families must trust physicians that their warm, pink, breathing relative is, indeed, legally dead.

The diagnosis of 'circulatory death' is also complex, and the terminology, 'irreversible cessation', remains controversial. The debate is about whether irreversible as meaning 'not possible to reverse' (i.e. permanent) properly equates to 'no intention to reverse' (i.e. not necessarily permanent).⁴ In the context of severe brain injury, no technological support to replace neurological function exists. Therefore, irreversible is easily synonymous with permanent loss of brain function as any intended restoration of brain function is not possible. However, in the case of circulatory death, cessation of circulatory function is deemed irreversible because there is no intention to attempt resuscitation after arrest. Furthermore, there is no international consensus as to the minimal duration of time after circulatory arrest that death should be declared. Again, families must simply trust doctors that their relative's disease is irreversible as commonly understood, and that resuscitation would be futile.

In light of these controversies, a WHO-endorsed international forum of academic and professional experts convened recently. They sought to provide an operational definition of human death in plausible biologic terms. This forum concluded that the final pathway for human death is:

The permanent loss of capacity for consciousness and all brain stem functions, as a consequence of permanent cessation of circulation or catastrophic brain injury.²

However, important dissenting views remain as to the scientific validity of the proposed definition.^{4,5} Despite these controversies it is crucial that trust in critical care doctors is not undermined by an actual or perceived conflict of interest regarding organ donation and the determination of death. To this end, there should be a clear separation between the decision that further active treatment is futile and any discussion of organ donation.

ECMO and the potential organ donor

In controlled donation after circulatory determination of death, organs are procured soon after death following planned withdrawal of cardiorespiratory supports. Since the time of expected death is known in advance, resources can be organized to rapidly procure vital organs after the diagnosis of death. This preserves the viability of potentially transplantable organs by minimizing warm ischaemic injury. In contrast, uncontrolled donation after circulatory determination of death (uDCDD) is considered when death is imminent in a patient dying despite all available medical and surgical interventions, usually in the context of cardiorespiratory arrest refractory to resuscitative efforts. However, the potential donor's rapidly failing circulation presents logistic and technical barriers that may result in the inability to procure viable organs after death.

Extracorporeal membrane oxygenation (ECMO) is a relatively expensive and scarce resource that can be used to resuscitate an alive patient following cardiopulmonary arrest (E-CPR). It can also be used to maintain vital organ integrity and function in a dead patient for potential organ donation in the context of uDCDD. However, established inclusion criteria for instituting ECMO in E-CPR and uDCDD are very similar (see Table 1), which potentially challenges ethical consistency in the decision to use ECMO in the arrested patient, and the just distribution of ECMO as a scarce resource.⁶

For example, irrespective of whether resuscitation with ECMO is attempted or not, when should resuscitative efforts to restore life be abandoned – that is, the patient declared dead – and ECMO continued or instituted solely for the purpose of potential donation? At present, there are no internationally accepted guidelines for the termination of CPR or the transition to an uDCDD pathway.⁷ A proposed solution to this potential ethical ambiguity is to explicitly make the saving of the patient's life the primary goal of any resuscitative effort (including the use of ECMO), and for E-CPR to always be considered before initiating a uDCDD protocol.⁶

A further theoretical problem is that the separate development of E-CPR and uDCDD programmes may lead to the unjust distribution of the benefits and burdens of these potential uses of ECMO. It is conceivable (though not proven evident) that there could be a disproportionate availability of E-CPR to affluent patients, yet an equally disproportionate availability of uDCDD amongst the socio-economically disadvantaged.⁶ Arguably, if ECMO is available then in order to maintain public trust in uDCDD there should be no discrimination in accessing E-CPR.

Is it ethically acceptable to commence or continue invasive organ-support interventions such as ECMO after death? These

Inclusion criteria for E-CPR comparing uDCDD protocols

| E-CPR | uDCDD France | uDCDD Spain |
|---|---|---|
| Witnessed cardiac arrest | Witnessed cardiac arrest | Witnessed cardiac arrest |
| CPR >10–30 minutes | ACLS >30 minutes without ROSC | No specific ACLS duration |
| No flow <5–10 minutes or signs of life during CPR | No flow <30 minutes | No flow <15 minutes |
| Bystander CPR | | |
| Age <65–75 years | Age 18–55 years | Age 1–55 years |
| Lack of severe co-morbidities | Lack of severe co-morbidities | Lack of severe co-morbidities |
| VF/VT as initial rhythm | | |
| Hypothermia | Hypothermia or drug intoxication consider E-CPR | Hypothermia: Rewarm before diagnosis of death |

uDCDD: uncontrolled donation after circulatory determination of death; CPR: Cardio-pulmonary resuscitation; E-CPR: ECMO assisted CPR; ACLS: Advance cardiac life support; VF: ventricular fibrillation; VT: Ventricular tachycardia.

(from Dalle Ave AL et al., 2016)

Table 1

procedures are not intended to benefit the patient ('non-therapeutic') but are for the benefit of a potential organ recipient. It is possible that these interventions could cause harm by interfering with the dignity of the dying or dead donor, or by causing distress to the patient's family members. There are two approaches to this question. The first is a utilitarian argument, justifying non-therapeutic interventions by appeal to the substantial potential benefit to donor recipients. Some argue that this utilitarian justification is not morally acceptable, as it defies the Kantian imperative to treat people as 'ends in themselves' (rather than means to another's end or goal).

The alternative justification is argued in terms of the potential donor's ante-mortem wishes. That is, if a person wished to become an organ donor then interventions such as ECMO to facilitate this wish actually promotes their autonomy. Taken a step further, interventions may occur while it is determined whether the person wished to become an organ donor. Legally, this framed in terms of the dying or dead patient's 'best interests'. UK courts have recently broadened best interests determinations to include the person's social values, such that non-therapeutic interventions may be lawful if they wished to become an organ donor.⁸ However, there remains concern that the consent system for organ donation is not sufficiently detailed to adequately cover potential aspects of the donation process such as perimortem interventions.⁹ In this case, it is possible that the use of ECMO in uDCDD will not accurately reflect the premorbid wishes and understanding of the potential donor and increase the distress of the donor's family.

Organ donor research

A considerable number of deceased donor organs are unsuitable for transplantation and are discarded. Organ donor intervention research aims to minimize this wastage and increase the number

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