

# Islam and end-of-life organ donation

## Asking the right questions

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### ABSTRACT

أصبحت زراعة الأعضاء خيار أساسي لعلاج المرحلة النهائية لمرض العضو. ضيق كلا من العضو الحي والمتبرع الفجوة بين التزويد والحاجة لزراعة الأعضاء. أثبتت البحوث المتقدمة في علم الأحياء البشرية أن الوفاة تظهر كعملية تدريجية مع مرور الزمن وأنها ليست كحدث مفرد متميز. إن إعلان الوفاة إما نتيجة للمواصفات العصبية (تبرع بالعضو والقلب نابض) أو المواصفات الدورية (تبرع بالعضو والقلب غير نابض) يمكن من إكمال زراعة الأعضاء قبل وفاة الإنسان. على سبيل المثال، منذ بداية وفاة المتبرع. لهذا، تعتبر العملية الجراحية للأعضاء من المتبرع الوشيك من الموت الدليل الأكثر قرباً للوفاة مما يرفع أسئلة جديدة حول تبرع عضو الذي على نهاية الحياة. إنه لأمر حتمي القيام بالرعاية الأولى وفي الطليعة للمريض الذي يعتبر كشخص يتوفى. كما يجب على علماء المسلمين إعادة تقييم القوانين الإسلامية والقيام بالتزويد بالإرشاد حول الممارسات الحالية لتبرع العضو الذي على نهاية الحياة.

Organ transplantation has become an established treatment option for end-stage organ disease. Both living and end-of-life (so called deceased) organ donation narrow the gap between supply and demand for transplantable organs. Advances in human biology prove that death occurs as a gradual process over time and not as a single discrete event. Declaring death with either neurological criteria (heart-beating organ donation) or circulatory criteria (non-heart-beating organ donation) enables the procurement of transplantable organs before human death is complete, namely, from the incipiently dying donor. Thus, surgical procurement of organs from the incipiently dying donor is the proximate cause of death, raising new questions on end-of-life organ donation. It is imperative to first and foremost care for the patient as a dying person. International Muslim scholars should reevaluate previous Islamic rulings and provide guidance about current practice of end-of-life organ donation.

*Saudi Med J 2009; Vol. 30 (7): 882-886*

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Organ transplantation has become an established treatment option for end-stage organ disease. The expansion of the transplantation practice has also created a relative shortage of transplantable organs globally.<sup>1-3</sup> Living and end-of-life (so called deceased) organ donations have become a common medical practice in narrowing the gap between supply and demand. The practice of end-of-life organ donation has expanded over the past 40 years since the publication of the Harvard Report equating brain death with human death.<sup>4</sup> As this practice has expanded, concerns have arisen among Muslims regarding the religion's perspective on end-of-life organ donation. In addressing these concerns, Muslims often ask the following questions: "Is it permissible to remove an organ from the body of a dead person to be used to save the life of a living person? Is a person allowed to donate his (her) body, or part of it to be used after his (her) death to save the life of another human being? Does Islam recognize the new definition of death, such as that of brainstem death? If Islam does recognize this definition, is it permissible to remove organs for transplantation from persons who are declared dead on the basis of brainstem criteria,

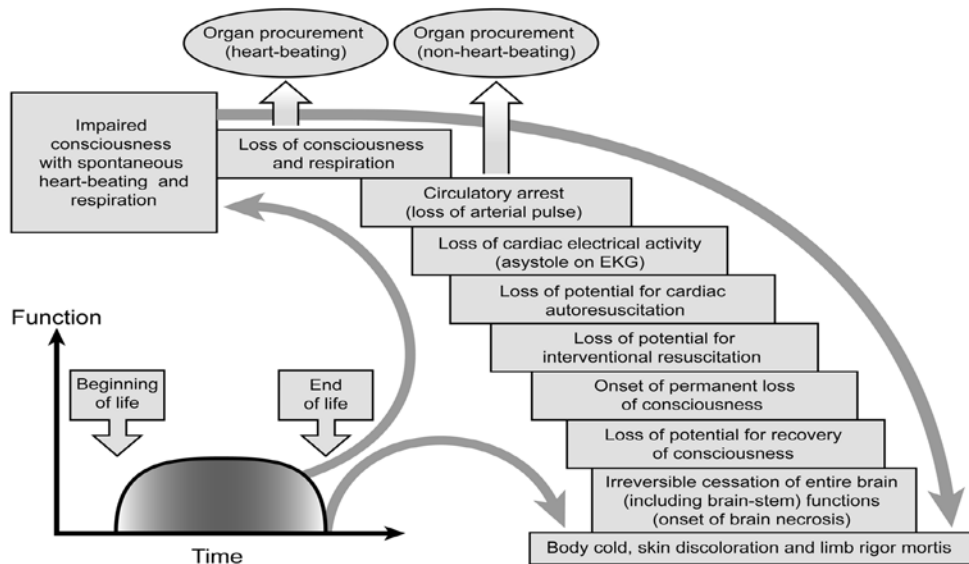
**Disclosure.** The authors have not disclosed any affiliation or financial involvement with organizations or entities with a direct financial interest in the subject matter or materials discussed in the manuscript. No funding was received for this work from any organizations.

namely, while signs of body functions, such as heart beat, temperature regulation and breathing are still present?"<sup>3</sup> Considering the Islamic rules that: 1) in case of necessity certain prohibitions are waived, 2) a person is forbidden from harming himself (herself) or others, 3) a person has the legal authority over his (her) own body, it can be concluded that the answer to each of the above questions is affirmative.<sup>3</sup> Unfortunately, these traditional questions do not take into account recent advances in medical knowledge and understanding of human biology. Recent advances in medical knowledge have created a whole new set of questions on end-of-life organ donation.<sup>5</sup> This review argues that: 1) human death is a gradual process over time and not a single discrete event, 2) end-of-life organ donation procures transplantable organs before human death is complete, namely, from the incipiently dying donor, and 3) surgical procurement of organs from the incipiently dying donor is the proximate cause of death raising new questions on end-of-life organ donation. The review concludes by presenting certain questions related to current practice of end-of-life organ donation, for the international community of Muslim scholars to address and provide answers consistent with the Islamic faith.

**Types of end-of-life organ donation.** In medical practice, there are 2 types of end-of-life organ donation. The first is called heart-beating organ donation and is performed on a person with spontaneously beating heart and circulation after declaring death using the neurological standard of whole brain (in the United States)<sup>6</sup> or brainstem death (in Europe).<sup>7</sup> The

second is called non-heart-beating organ donation and is performed on a person who has controlled or uncontrolled cessation of spontaneously beating heart and absent arterial pulse for 2 to 5 minutes.<sup>8,9</sup> There is mounting scientific evidence that neither the neurological standard (namely, whole brain or brainstem death) nor the circulatory criteria (namely, absent arterial pulse and circulatory arrest for 2-5 minutes) specifically developed to declare death for procuring transplantable organs is consistent with human death.<sup>10</sup> Human death is a gradual process occurring over time (Figure 1). There is a gradual loss of capacity for somatic integration of the whole body because of an irreversible cessation of all vital and biological functions including circulation, respiration (controlled by the brainstem), and consciousness.<sup>11</sup> The irreversibility of cessation of circulatory and respiratory functions is also inter-linked to the onset of whole brain necrosis. Therefore, human death is not a single event and cannot be determined with scientific certainty by arbitrary neurological or circulatory criteria. If transplantable organs are procured before determining with certainty that the dying process is complete, then organs are removed from an incipiently dying person and removal becomes the proximate cause of death resulting in physician-assisted death.<sup>12</sup>

**Validity of whole brain or brainstem death as a criterion for human death.** The whole brain or brainstem death was originally developed out of the necessity 1) to remove severely brain-injured persons from mechanical ventilation allowing the dying process to progress naturally, and 2) to make organ procurement



**Figure 1** - Human death is a single phenomenon occurring gradually as a process over time. Human death is not a single event and cannot be defined with scientific certainty by arbitrary neurological or circulatory criteria in heart-beating or non-heart-beating organ procurement. Procurement of transplantable organs from the incipiently dying is the proximate cause of death. (Reproduced with permission from Springer Science and Business Media.)<sup>11</sup>

from heart-beating donors possible. As early as 1968, Henry K. Beecher, chair of the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain-death believed that recovering transplantable organs from severely brain-injured persons who were "hopelessly unconscious" and on mechanical ventilation would be beneficial to society.<sup>13</sup> In January 2009, The President's Council on Bioethics published its White Paper on Controversies in the Determination of Death.<sup>14</sup> The Council concludes that there is inadequate scientific evidence for equating brain death with human death on the basis of either 1) losing biological integrative unity of the whole body, or 2) impending failure of the cardiovascular system in a living organism (pp 52-58). The Council reappraises the reality of the neurological standard by proposing replacing the term "whole brain death" with the new term "total brain failure", which corresponds to a "condition of profound incapacity, diagnostically distinct from all other cases of severe injury (page 38)." Although the Council does not say it in so many words, it implies that over the past 40 years, all statutory death laws, all diagnostic criteria for "brain death," and all transplantations from heart-beating donors have, in retrospect, been based on an invalid conceptual framework and unsubstantiated empirical facts. The conclusion reached by the President's Council on Bioethics is not surprising, since the Qur'an has described the signs of life in man more than 14 centuries ago: "*Then He fashioned him in due proportion, and breathed into him the soul (created by Allah for that person), and He gave you hearing (ears), sight (eyes) and hearts. Little is the thanks you give!*" (32:9) Brain-dead persons are indistinguishable from living human beings, except for unconsciousness and apnea.<sup>15</sup> In brain-dead persons, the heart and whole body circulation continues to function spontaneously without pharmacological support. Spontaneous circulation maintains many integrated biological functions in brain-dead persons that are indistinguishable from those functions in living human beings, and, in some cases, they can survive on mechanical ventilation for years.<sup>14</sup> Some of the biological functions include wound healing, body temperature regulation, growth to puberty, reproduction, successful completion of pregnancies, and delivery of healthy infants. In an attempt to justify organ removal from brain-dead persons, the President's Council on Bioethics proposes a novel philosophical rationale on what constitutes a living organism. The Council defines a living organism by its spontaneous ability to commerce with the surrounding environment. Therefore, brain death can be equated with the death of the human being because that person has lost the innate respiratory drive, which is the fundamental vital work of a living organism for self-preservation and commerce with

the surrounding world (page 60). Shewmon<sup>16</sup> points out that the loss of respiratory drive for determining human death would also classify conscious persons with isolated lower brainstem lesions or persons with sleep-induced central apnea as no longer living human beings. The philosophical weakness of defense of brain death as human death implicitly proves that procuring organs from heart-beating donors indeed constitutes an act of physician-assisted death.

***Validity of circulatory (cardiac) arrest as a criterion for human death.*** In 1993, the circulatory, or cardiac arrest criteria for determining death were specifically developed to increase the supply of transplantable organs by procuring organs from persons who do not fulfill the criteria of whole brain or brainstem death at the end of life.<sup>17</sup> Surgical procurement beginning after a time longer than 5 minutes of circulatory arrest may result in warm ischemic injury of organs, and poor graft function in transplant recipients can result. Death is declared after 2-5 minutes of circulatory arrest in non-heart-beating organ donation.<sup>8</sup> Circulatory arrest is determined by the loss of arterial pulse and before the complete cessation of electrical activity of the heart muscle, visible on the electrocardiogram. These individuals do not suffer from either whole brain or brainstem death before circulatory arrest occurs. There is scientific evidence that these individuals are incipiently dying at the time of surgical procurement (Figure 1). First, auto resuscitation or Lazarus phenomenon (namely, spontaneous return of circulation and recovery of cardiac and neurological functions) has been reported after 10 minutes of complete circulatory arrest in human beings.<sup>10,18</sup> This means that the circulation and heart remain viable enough to start spontaneously beating again longer than 5 minutes after organ procurement has already been started. The heart procured from this person can be transplanted into a recipient who can survive with that organ for years.<sup>19</sup> Second, extra-corporeal perfusion with cardiopulmonary bypass machine can be initiated after declaring circulatory death to preserve organs for transplantation.<sup>20,21</sup> Spontaneous recovery of brain functions, and heart beating (reanimation) is witnessed in donors, who have already been declared dead, during surgical procurement of organs. Mechanical and pharmacological means are typically used to suppress reanimation of donors during extra-corporeal perfusion with a cardiopulmonary bypass machine.<sup>21</sup>

***Caring of the dying patient versus the organ donor.*** The care of a potential organ donor can interfere with the quality and timing of end-of-life care of the dying patient.<sup>22</sup> There are donation-related procedures that must be accomplished at the end of life, and before death, to facilitate successful recovery of transplantable organs.<sup>23</sup> First, the cardiovascular system and the

respiratory system of donors must be supported for preserving organs in heart-beating or non-heart-beating organ donation. Second, invasive procedures may be required to assess the suitability of organs in potential organ donors before the decision is made to use these organs for transplantation. These invasive procedures may include bronchoscopy (for lung examination) and surgical or needle biopsy of other solid organs in the donor. In non-heart-beating donation, circulatory arrest has to ensue within 60 to 90 minutes after withdrawal of hemodynamic and ventilatory support in a controlled manner in the operating room. Potential donors have to be prepared in the operating room to enable vascular cannulation, blood exchange with cooling preservative fluids and laparotomy, after declaring death, for rapid recovery of organs before injury by warm ischemia. In heart-beating donation, the above procedures are performed, after declaring death by neurological criteria, and without general anesthesia in the operating room. In light of the above scientific evidence and the logistics of donation-related procedures certain questions on end-of-life organ donation must be asked.<sup>5</sup>

1) Should the practice of conflating the prognosis with the diagnosis of death be considered acceptable for the purpose of procuring transplantable organs? 2) Should procedures for organ preservation and procurement be permitted if they actively influence the timeline of the dying process? 3) Should Islamic rulings consider not only the goal of saving the lives of organ recipients but also the effects of organ donation on the care of dying patients and their families? In defense of organ donation as an altruistic act to save another person's life (with the premise that all donation-related actions are performed after death is declared with scientific certainty in a donor) the following verse from the Qur'an is often quoted: "...if anyone killed a person not in retaliation of murder, or (and) to spread mischief in the land - it would be as if he killed all mankind, and if anyone saved a life, it would be as if he saved the life of all mankind. (5:32)" If surgical procurement is the proximate cause of death in a person (namely, uncertain or arbitrary criteria used to declare human death for the purpose of recovering viable organs), then that act becomes a form of killing. In the above quoted verse, the condemnation of a killing or ending a person's life overrides the reward of saving a person's life. "And whoever kills a believer intentionally, his recompense is Hell to abide therein, and the Wrath and the Curse of Allah are upon him, and a great punishment is prepared for him. (4:93)"

In conclusion, advances in medical knowledge and human biology prove that death occurs as a gradual process over time and not as a single discrete event. Declaring death with either neurological (heart-beating organ donation) criteria or circulatory

criteria (non-heart-beating organ donation) enables procuring transplantable organs before the process of human death is complete, namely, from the incipiently dying donor. Surgical procurement of organs from the incipiently dying donor is the proximate cause of death raising new questions on end-of-life organ donation. It is imperative to first and foremost care for the patient as a dying person. International Muslim scholars should reevaluate previous Islamic rulings and provide guidance on current practice of end-of-life organ donation.

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