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THE NEED FOR A REDEFINITION OF "DEATH"

The recent heart transplants are the latest weapons in medicine's century-old battle against that "fell sergeant Death."¹ The success of these transplants and the potential and expected success of even more daring medical endeavors place man closer and closer to the era of Huxley's Brave New World, an era with its own special perils and problems in which the traditional distinctions between life and death are obscured by scientific advances. The blurring of this distinction necessitates a reevaluation and, most likely, a reformulation of legal distinctions between life and death in order to provide an answer to this current medical-legal problem.

In evaluating the present medical and legal definitions of death, as well as in formulating other legal regulatory measures of homotransplantation, or transplantation in which the donor is another human being, it is important to respect the rights of the donor to receive expert medical treatment as well as rights of an individual to die with dignity. One woman voiced her fears concerning the evergrowing use of homotransplantation when she said, "'Can I ever be certain that doctors would do everything possible to save my life if I had a nasty accident or a terrible disease, that they would not be influenced by what I could contribute to another person . . . ?'"² Another individual said, "'I have a terrible vision . . . of ghouls hovering over an accident victim with long knives unsheathed waiting to take out his organs as soon as he is pronounced dead.'"³ The fears expressed by these individuals necessitate answers to the following important legal, medical, and ethical questions:

When does a physician's obligation to sustain the heartbeat and breath of life end?
At what point is a human life no longer worth saving?
When does life end?
If a heart can be revived for use in a new body, why is it not revived in the old one?

The solution to these problems lies in a definition of death which has been made after giving full consideration to the recent medical advances, such as the transplant. These recent advances necessitate a redefinition of death itself, for the stopped heart is no longer the ultimate evidence of death when physicians can transplant this traditional symbol of life itself from one body to another.

The traditional legal definition of death has had as its criteria the cessation of the vital functions:

¹ Shakespeare, Hamlet, V, ii, 347.
² The Heart: Miracle in Cape Town, Newsweek, Dec. 18, 1967, at 86.
³ Id. at 87.
"Death" is a cessation of life, ceasing to exist, total stoppage of circulation of blood and consequent cessation of animal and vital functions, such as respiration, pulsation, etc., and is not [a] continuing event, but [an] event taking place at a precise time.\(^4\)

The cessation of life; the ceasing to exist; defined by physicians as a total stoppage of the circulation of the blood, and a cessation of the animal and vital functions consequent thereon, such as respiration, pulsation, etc.\(^5\)

In light of contemporary medical advances, however, one can seriously question the validity and workability of such criteria. As M. Halley and William Harvey suggest in their discussion concerning the current legal definition of death:

Death is the final and irreversible cessation of perceptible heartbeat and respiration. Conversely, as long as any heartbeat or respiration can be perceived, either with or without mechanical or electrical aids, and regardless of how the heartbeat and respiration were maintained, death has not occurred.\(^6\)

Under these terms, an individual whose ventilatory, or respiratory, functions continue because of a respirator or an iron lung and whose cardiac functions continue because of massage or defibrillation followed by attachment to a pacemaker would be considered very much alive, regardless of the fact that his brain was long since dead and he would never regain consciousness or exhibit any other signs of a living human being other than the fact that he was breathing and his heart was beating. Similarly, a physician who attached a patient to these supportive devices while his brain was still functioning could conceivably be charged with murder if he subsequently detached these devices after brain death.

The standard of heart death was satisfactory until recently. Not many years ago, when a man's heart stopped, he could be pronounced dead without the pronouncement being subjected to reasonable objection. However, it is no longer definite enough, for it is so commonplace for physicians to restore a stopped heart with electrical shock and massage that accounts of such activities are not even considered newsworthy events. If we continue to hold fast to the present legal definition of death as a cessation of perceptible heartbeat and respiration, in many instances we can not only ask when a man died but how many times as well. The current definition presents many problems to both the legal and the medical world, for because of advances in medicine, it is no longer an event taking place at a precise time but rather is often a continuing event. In order for the term to have any meaning or practicality to the legal world, legally

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\(^6\) Halley and Harvey, Medical vs. Legal Definitions of Death, 204 J.A.M.A. 424 (1968).
Death... cannot be considered as a continuing event, but must be defined as an event occurring at a precise time. This is essential in many legal relationships, such as inheritance of property, estate planning, insurance, marital relationships, survivors' benefits as well as problems involving civil or criminal liability.\(^7\)

Physicians who respect the traditional criteria are faced with a dilemma in even considering using modern devices such as a pacemaker or respirator, for a patient can be kept "alive" for great lengths of time after all brain activity has ceased. An ECG (electrocardiogram) will show a respectable heart pattern; the patient can be kept breathing; intravenous fluids will maintain an electrolyte and caloric balance. However, an EEG (electroencephalogram) will show no electrical activity in the nervous system, for physicians are unable to restore and maintain the electric activity of the brain after there is severe damage to it. The brain dead patient, although alive in other respects, has an irretrievably dead brain.\(^8\)

The relentless lethal factor to the brain is anoxia. Heart stimulators, compact respirators, and other resuscitative devices can serve to maintain the look of life in the face of death, while agonizing and expensive prolongation of false hope continues for all concerned. When the brain is so compromised the EEG can signal a point of no return, although the cardiovascular system continues to respond to supportive therapy that produces a respectable ECG.\(^9\)

Anoxia, with the resulting brain damage and, eventually, brain death, occurs when the brain does not receive a sufficient supply of oxygen to sustain the minimum metabolic requirements which are necessary to provide energy for the brain to continue functioning.

Anoxia is the term applied to that state in which the blood tissues have an inadequate supply of oxygen. This may be because the blood in the lungs does not receive enough oxygen, or because there is not enough blood to receive the oxygen, or because the blood stagnates in the body.\(^10\)

In light of the complications surrounding the traditional definition of death when construed in terms of today's medicine, the American Electroencephalograph Society has proposed the adoption of a new standard. They offer five criteria to be met before pronouncing an individual dead.

This set of conditions is offered for certifying brain death in association with cardiorespiration activity artificially sustained by mechanical aids: (1) No spontaneous respiration for a minimum of 60 minutes. (2) No reflex response (superficial, deep, organic, etc.) No change in heart rate on ocular or carotid sinus pressure. (3) EEG: Flat lines with no rhythms in any leads for at least 60

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minutes of continuous recording. No EEG response to auditory or somatic stimuli or to electric stimulation. Two longer periods of total flat recording some hours apart may be preferred by some.

(4) Normal basic laboratory data including electrolyte pattern.
(5) Share responsibility for pronouncement of death with other colleagues.\textsuperscript{11}

While there is emphasis on brain death and the EEG, it is important that all these conditions be met, not simply that of a flat EEG,\textsuperscript{12} which in certain instances will be produced even though the patient is not “brain dead,” as, for example, where hypothermia, or a lower than normal body temperature, is present or where there is a sufficient amount of barbiturates in the patient’s body to result in deceptive EEG readings.

The tests should also be repeated twenty-four or forty-eight hours later with no resulting change to ensure accuracy. If the patient is a potential transplant donor, it is necessary to keep the organs to be donated “alive” if they are to be usable. Death is to be declared after these proposed criteria have been met and the respirator turned off after the pronouncement.\textsuperscript{13}

The adoption of the standard of brain death can be accomplished in either of two ways, by legislative enactment or by court interpretation. Since there are presently homicide cases pending in the courts in which the accused are claiming the victims died as a result of having their hearts taken for transplants rather than as a result of the acts of the accused, in all probability these cases will have the initial impact. Since the time and cause of death are questions of fact, it is possible for the new standard of brain death to be adopted in these cases.

At present, the law of the United States, in all fifty states, and in the federal courts, treats the question of human death as a question of fact to be decided in every case. When any doubt exists, the courts seek medical expert testimony concerning the time of the particular individual involved. . . . Furthermore, the law assumes that the traditional method among physicians for determination of death is to ascertain the absence of all vital signs.\textsuperscript{14}

However, since the courts rely on a definition of death “defined by physicians,” the present definition is on shaky ground, for more and more physicians no longer accept the criterion of a stopped heart as conclusive evidence of death. Indeed, as a solution to the present medical-legal problem surrounding the definition of death, the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death has urged the adoption of brain death as the criterion by the entire medical community.\textsuperscript{15}

\textsuperscript{11} Supra note 8.
\textsuperscript{12} Id. at 460.
\textsuperscript{13} Report of the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death, \textit{A Definition of Irreversible Coma}, 205 J.A.M.A. 338 (1968).
\textsuperscript{14} Ibid.
\textsuperscript{15} Id. at 339.
Under the procedure used by the courts in treating the determination of time of death as a question of fact, such an adoption by the medical field could provide the means for a simple transition from the old definition to the new.

The reasons for the change and the emphasis on brain death should be obvious. Under the traditional definition, individuals would still be alive even after such experiences as decapitation, as in instances in France where persons were guillotined and their hearts continued to beat without artificial support for fifteen to sixty minutes later. Moreover, the improved supportive and resuscitative measures have resulted in increased efforts to save the desperately injured. When these attempts are only partially successful, the patient is an individual with a beating heart and an irreversibly damaged brain and loss of intellect who is a great emotional and financial burden on his family. He occupies a hospital staff's time and ability and a hospital bed, frequently denying their use to individuals with hope of becoming useful citizens. The present definition can also lead to controversy and difficulty in securing organs to be used in the transplants. Most importantly, brain death offers a much more certain definition because of its finality, its irreversibility.

At body temperature the brain's need for oxygen is so great that if blood ceases, EEG changes are apparent within 4 seconds, unconsciousness ensues within 6 seconds, and irreversible damage to the cerebral cortex and cerebellum occurs after 3 to 5 minutes. On the other hand, most tissues of the body can survive 10 to 20 minutes of severe hypoxia without residual damage. Theoretically, a person could be maintained indefinitely on a regimen of fluids, ventilators, and pacemakers in spite of complete electrical silence. But is this person alive or dead?

This irreversible quality does not apply to the heart "death" any longer. "Death" of the heart has frequently been a fluctuating, reversible affair, a continuing event rather than an event taking place at a precise instant. What is needed now is a new standard which when applied will define death in terms of an irreversible event occurring at a precise moment in time. Until science becomes so advanced as to be capable of reversing brain death, the adoption of brain death as a standard can supply the answer to the current medical-legal problem.

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17 Supra note 13 at 337.
18 Supra note 16 at 457.