

1970

The Moment of Death: An International Medico-Legal Problem Concerning Human Organ Transplantation

Byron E. Siegel

Follow this and additional works at: <https://scholarlycommons.law.case.edu/jil>



Part of the [International Law Commons](#)

Recommended Citation

Byron E. Siegel, *The Moment of Death: An International Medico-Legal Problem Concerning Human Organ Transplantation*, 2 Case W. Res. J. Int'l L. 120 (1970)

Available at: <https://scholarlycommons.law.case.edu/jil/vol2/iss2/4>

This Article is brought to you for free and open access by the Student Journals at Case Western Reserve University School of Law Scholarly Commons. It has been accepted for inclusion in Case Western Reserve Journal of International Law by an authorized administrator of Case Western Reserve University School of Law Scholarly Commons.

FORENSIC MEDICINE

THE MOMENT OF DEATH: AN INTERNATIONAL MEDICO-LEGAL PROBLEM CONCERNING HUMAN ORGAN TRANSPLANTATION

BYRON E. SIEGEL

MEDICAL SCIENCE, throughout the world, has begun to focus an increasing amount of attention on the complex subject of human organ transplantation.¹ It was not until the advent of the first human heart transplant, however, that legal scholars of the world were forced to re-examine their conceptions of the moment of death.² It has become apparent that before physicians can utilize transplantation procedures to a greater advantage, assuming the rejection phenomenon can be better controlled,³ there must be an international guideline created for the determination of the true moment of death.⁴

THE AUTHOR: BYRON E. SIEGEL (A.B., The University of Michigan; J.D., Wayne State University) is a member of the Michigan Bar and is presently completing studies toward an LL.M. in Legal Medicine at Case Western Reserve University.

¹ To help familiarize the reader with the various problems involved in human organ transplantation, see generally, Symposium on *Reflections on the New Biology*, 15 U.C.L.A. L. REV. 267 (1968); three-part series, *Transplantation*, 282 NEW ENG. J. MED. 786, 848, 896, (1970); Woodside, *The Doctor's Dilemma and the Lawyer's Responsibility*, 31 OHIO ST. L.J. 66 (1970); Halley and Harvey, *On an Interdisciplinary Solution to the Legal-Medical Definitional Dilemma in Death*, 2 INDIANA L.F. 217 (1969).

² See *Reflections on Law and Experimental Medicine*, 15 U.C.L.A. L. REV. 436 (1968), wherein Chief Justice Warren Burger of the United States Supreme Court wrote: The complaint of some is that our standards of ethics and rules of law do not keep pace with scientific developments and the potentials of experimental medicine, and thus do not give experimental programs a free rein. This is probably correct. Law and ethical standards are not subjects of research and discovery; they are fruits of slow evolutionary processes. The law does not search out as do science and medicine; it reacts to social needs and demands.

³ The rejection problem is based upon the attempt by researchers to prevent graft rejection of the transplanted tissue by the recipient's physiological mechanism. Thus, subsequent to transplantation, immunosuppressive therapeutics are instituted by administration of corticosteroids, such as Immuran or Cortisone, or recently, Anti-Lymphocyte Globulin. However, not only do such therapeutics often fail to prevent the rejection, but they also inevitably lower the body's natural resistance to bacterial infection, such as from Pneumococcal bacteria which produce pneumonia. See generally, Terasaki, *Heart Transplants — The Immunologic Questions*, 1968 HOSP. PRAC., vol. 4; *How Long Will it Take?*, 1967 MED. WORLD NEWS 35 (1967), *Cardiac and Other Organ Transplantation*, 206 J.A.M.A. 2489 (1968).

⁴ The crux of the problem of determining the exact moment of death is that if the

Only after international agreement has been reached, concerning when death actually occurs, can the more advanced problems of organ donations between countries or the transportation of organs across national borders be resolved.⁵

Recorded controversy over the actual center of life functions began as far back as the Babylonians, who thought the liver was the seat of the soul and center of life.⁶ The Egyptians, on the other hand, felt the heart was most essential for life functions.⁷ Leonardo Da Vinci, trying to observe the moment of death, spent hours attempting to view the soul as it departed from a recently-expired patient.⁸

Man gradually distinguished the religious aspects of death by deciding that the soul was the basis of spiritual life and the heart and lungs the center of physical life. Thus emerged the concept that death was "the apparent extinction of life, as manifested by the absence of heartbeat and respiration."⁹ A modification of the classic definition of death, which is slightly more precise than the older test, requires the existence of insensibility, meaning clinical absence of cerebral activity and reflexes, cessation of respiration, cessation of circulation, and irreversibility.¹⁰

These older legally accepted definitions of death raise many

transplant team waits too long after the donor has suffered failure of metabolic processes, such as brain functions, circulation, and respiration, then the tissue extracted from such donor will be decomposed and useless for transplantation purposes. Thus, anoxia, or lack of oxygen to the brain, will cause irreversible brain damage after about four minutes:

When a person stops breathing, he already has a small amount of oxygen stored in his lungs and an additional amount stored in the hemoglobin of his blood. However, these are sufficient to keep metabolic processes functioning for about two minutes. Continued life beyond this time requires an additional source of energy. This can be derived for perhaps another minute or so from glycolysis. . . .

A. Guyton, *TEXTBOOK OF MEDICAL PHYSIOLOGY* 975 (3d ed. 1966).

⁵ See generally; Stewart & Wasmuth, *Medical and Legal Aspects of Human Organ Transplantation*, 14 *CLEVE.-MAR. L. REV.* 442 (1965); Barrish, *Law of Testamentary Disposition — A Legal Barrier to Medical Advance*, 30 *TEMPLE L.Q.* 40 (1956); Leatherberry, *Heart Transplant: Legal Problems and the Need for New Legislation*, 19 *CASE W. RES. L. REV.* 1080 (1968); *Authority Asked to Use Homicide Victims' Organs*, 1969 *AMA NEWS*; Hall, *The Doctor and the Law — Some Medicolegal Problems Involved in Human Tissue Donation and Transplantation*, 1969 *NEW PHYSICIAN* 505.

⁶ Brewer, *Cardiac Transplantation: An Appraisal*, 205 *J.A.M.A.* 101 (1968).

⁷ *Id.*

⁸ *Id.*

⁹ *DORLAND'S ILLUSTRATED MEDICAL DICTIONARY* (24th ed. 1965).

¹⁰ *Medical v. Legal Definitions of Death*, 204 *J.A.M.A.* 424 (1968).

problems in light of modern medical advances. Historically, the definition of death has been left to the medical profession rather than to legislatures or the courts, as medical science is constantly changing.¹¹ In agreement with the rest of the world medical community, United States surgeons assert¹² that since the organ to be transplanted must be viable at the time of transplantation, the organ must be removed from the donor as close to the time of death as possible.¹³ Of course, if it is alleged that the tissues were excised too soon and the donor was legally alive, the transplanting surgeon could become involved in civil litigation for negligence¹⁴ and/or a criminal action for homicide.¹⁵ In addition, alleged removal of tissues before actual death could even result in claims of euthanasia against the surgeon.¹⁶

Under the older definitions of death, the patient could be assumed legally dead only if there was no evidence of cardiac function for ten minutes.¹⁷ Adherence to the classic definitions of death has led to the following rationale:

Death is the final and irreversible cessation of perceptible heart beats and respiration. Conversely, as long as any heart beats or respiration can be perceived, whether with or without mechanical

¹¹ Jinks, *California's Response to the Problems of Procuring Human Remains for Transplantation*, 57 CALIF. L. REV. 671, 688, (1969).

¹² *Id.*

¹³ Sommer, *Additional Thoughts on the Legal Problems of Heart Transplants*, 41 N.Y. ST. B.J. 196 (1969).

¹⁴ The widow of the donor in Chicago's first successful heart transplant filed a million dollar damage suit against Cook County Hospital, charging that her donor-husband died because of careless and negligent acts by the hospital personnel. N.Y. TIMES, Feb. 9, 1969, at 16, col. 2 (city ed.).

¹⁵ A heart transplant was performed in Israel, in which the surgeons who performed the operation were accused of murdering the donor-patient, because of the transplantation procedures followed. N.Y. TIMES, Feb. 3, 1969, at 8, col. 6. It has been argued that, technically, murder may be committed in the transplanting of organs from one human to another. A murder charge against a physician could result if the doctor took a vital organ from a donor who had not died from a combination of failure of circulation, respiration, and brain activity. This is based on the rationale that it is illegal to shorten life intentionally, no matter how proper the motive or how inevitable the donor's death. N.Y. TIMES, May 8, 1968, at 23, col. 1 (city ed.).

¹⁶ *Ethics in Medical Progress: Whose Responsibility?*, 1968 HOSP. PRAC. 16. *Euthanasia* is the creation of a quiet painless death by an intentional putting to death by artificial means of persons with incurable or painful illnesses. STEDMAN'S ILLUSTRATED MEDICAL DICTIONARY, Williams and Wilkins Co., Baltimore, 21st ed., (1966). Thus, a patient suffering severe pain from a hopeless case of metastatic carcinoma would be a foreseeable candidate for euthanasia. All the physician need do is triple the usual dose of the steroids usually administered to the patient. The patient's reaction would be a quiet, fairly-rapid expiration. As of March 1970, this procedure is not legal in the United States.

¹⁷ *Transplants: Hopes and Anxieties*, THE LONDON TIMES, June, 1968.

or electrical aid, and regardless of how the heart beat and respiration were maintained, death has not occurred.¹⁸

Advances in modern medicine, however, have led to a more comprehensive understanding of death, which theorizes that man and his biological system die by degrees rather than suddenly.¹⁹ In other words, death is said to occur at several levels: cellular, biological, and clinical.²⁰ Under this theory, clinical death occurs when spontaneous heart beat and breathing cease,²¹ whereas biological death is that state of damage and disorganization which even resuscitation devices cannot reverse.²² Cellular death is an irreversible degeneration or disorganization of cells which can occur long after the death of other physiological systems.²³

The older definitions of death are criticized by many surgeons who argue that the definitions unnecessarily restrict proper use of transplantable tissue.²⁴ It has been proposed that a more realistic definition be formulated to preserve tissues for transplantation and other purposes,²⁵ and that determination of the moment of death should be based on uniform and objective medical criteria, rather than a physician's determination.²⁶ These would appear to be strong arguments in cases in which, if the recipient is to benefit, action must be prompt in excising the organs, since tissues may be suitable for transplantation only if removed before the failure of cellular metabolism.²⁷ Today, many surgeons favor a redefinition of death based on neurological tests,²⁸ and the electroencephalogram (EEG) is considered to be a useful device in confirming the moment of death.²⁹

¹⁸ M. Houts, *COURTROOM MEDICINE* 17 (1967).

¹⁹ Robertson & Stanley, *The Significance and Future of Organ Banking*, 74 *CASE AND COMMENT* 19 (1969).

²⁰ Gorney, *The Biology and the Future of Man*, 15 *U.C.L.A.L. REV.* 311 (1968).

²¹ *Id.*

²² *Id.*; but see Leatherberry, *Heart Transplants: Legal Problems and the Need for New Legislation*, 19 *CASE W. RES. L. REV.* 1080 (1968).

²³ *Supra* note 20.

²⁴ *Supra* note 11.

²⁵ *Id.*

²⁶ Halley & Harvey, *On an Interdisciplinary Solution to the Legal-Medical Definitional Dilemma in Death*, 2 *INDIANA L.F.* 217,221 (1969).

²⁷ Stason, *The Role of Law in Medical Progress*, 32 *LAW AND CONTEMP. PROB.* 563, 568 (1967); see also *supra* note 4.

²⁸ Lousiell, *The Legal Problem in the Procurement of Organs for Transplantation in the United States and the United Kingdom*, F. Largiader, *ORGAN TRANSPLANTATION*, (2d ed. 1969).

²⁹ Beecher, *After the Definition of Irreversible Coma*, 271 *J.A.M.A.* 1070-1071, (1969).

Electrical recordings from the surface of the brain or from the outer surface of the head demonstrate continuous electrical activity in the brain. Both the intensity and patterns of this electrical activity are determined to a great extent by the overall excitation of the brain resulting from functions in the reticular activating system. The undulations in the recorded electrical potentials . . . are called brain waves, and the entire record is called an electroencephalogram (EEG).³⁰

A further reason some surgeons favor a redefinition of death is that the ability to maintain circulatory and respiratory functions should not be the basic determination, because such vital functions could foreseeably be maintained artificially by resuscitation.³¹ Thus, irreversible loss of cerebral function would appear to be the major part of any modern definition.³²

Current definitions thus favor a declaration of death at the time of irreversible coma and when irreparable cellular brain damage has occurred, but before other organs begin to decompose.³³ The key factor to consider is that if extensive and irreversible brain damage has occurred, the patient will never again function as a viable individual.³⁴

Several attempts at a redefinition of death have been made in the United States, especially with respect to patients who still have respiration and circulation although only "vegetating"³⁵ in an unconscious condition and unlikely to ever regain consciousness.³⁶

In the report of the Ad Hoc Committee of the Harvard Medical School to revise the definition of death,³⁷ four indications were of-

³⁰ *Supra* note 4 at 842.

³¹ Sadler & Sadler, *Transplantation and the Law: The Need for Organized Sensitivity*, 57 GEO. L.J. 27 (1968); see generally; Biorck, *Thoughts on Life and Death*, 1968 PERSPECTIVE BIOL. MED. 527; *Resuscitation* is the use of a resuscitator apparatus which forces oxygen into the lungs, thereby allowing for oxygen to get into the circulatory system. If the heart has stopped, it must be re-started by cardiac shock, massage or injection of epinephrine. Unless the heart is beating, resuscitation will prove useless, for after approximately four minutes anoxia of the brain will cause irreversible damage. *Supra* note 4.

³² *Supra* note 6; see also; Silverman, Saunders, Schwab and Masland, *Cerebral Death and the EEG*, 209 J.A.M.A. 1505 (1969); Peters, *Law and Human Organ Transplantation*, 18 MEDICO-LEGAL BULL. 2 (1969).

³³ *Use of Cadavers in Transplants Urged*, 1969 AMA NEWS 1.

³⁴ Burgh, *Is Medical Treatment Being Overlooked Because of the Vogue for Transplants?*, 1968 MED. WORLD NEWS 67; see also, Wasmuth, *The Concept of Death*, 30 OHIO ST. L.J. 32 (1969).

³⁵ Ayd, *What is Death?*, 1969 THE NEW PHYSICIAN 286.

³⁶ Castel, *Legal Aspects of Human Organ Transplantation*, 77 AM. HEART J. 131 (1969).

³⁷ Report of the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death, *A Definition of Irreversible Coma*, 205 J.A.M.A. 337 (1968).

ferred to determine the moment of death in an individual suffering from irreversible coma as a result of permanent brain damage: (1) unreceptivity and unresponsivity to externally-applied stimuli, (2) no movements or breathing for about an hour, (3) no reflexes, showing an abolition of central nervous system activity, and (4) a flat EEG.³⁸ The validity of data from the above indicators,³⁹ however, depends on the absence of either hypothermia⁴⁰ or central nervous system depressants.⁴¹

Another definition of death proposed by Dr. Paul S. Rhoads stresses more certainty in the cases where resuscitation has been used. He suggests criteria of: (1) fixed, dilated pupils, (2) the complete absence of reflexes to painful stimuli, (3) total absence of respiration and circulation for five minutes after respiration has stopped, and (4) a flat EEG.⁴²

Dr. James Z. Appel has compiled a more detailed list of the indicators of death, putting special emphasis upon optic and cardiac functions. His list includes (1) the complete bilateral dilation of pupils with no reaction to local constricting stimuli, (2) the absence of all reflexes, (3) the total cessation of respiration five minutes after cessation of mechanical respiration, (4) a falling blood pressure, and (5) a flat EEG.⁴³

It is worthwhile to note, however, that some authorities believe reliance on nearly flat or temporarily flat brain waves is not an adequate criterion for determining death, especially since severe barbiturate poisoning can produce a nearly flat EEG.⁴⁴ Furthermore an air embolism⁴⁵ developed during surgery can also lead to a temporarily flat EEG.⁴⁶ With such possibilities, it has been argued that

³⁸ *Id.* at 337-339.

³⁹ *Id.*

⁴⁰ *Hypothermia* is a condition where the body temperature is below 90 degrees Fahrenheit or 32.2 degrees centigrade.

⁴¹ *Central Nervous System Depressants* are therapeutics such as barbiturates or tranquilizers; also, ethyl alcohol.

⁴² Rhoads, *Medical Ethics and Morals in a New Age*, 205 J.A.M.A. 117 (1968).

⁴³ Appel, *Ethical and Legal Questions Posed by Recent Advances in Medicine*, 205 J.A.M.A. 513 (1968).

⁴⁴ Beecher, *Ethical Problems Created by the Hopelessly Unconscious Patient*, 278 NEW ENG. J. MED. 1425 (1968).

⁴⁵ An *air embolism* is a quantity of air bubbles which enter the body through an opening such as a wound or surgical incision where major arteries or veins are incised. This mass can enter the exposed pulmonary arteries, in a heart transplant, or other major vessels in other types of transplants. If the air bubbles reach the heart's chambers, a fatal response could result; see ROBBINS, *PATHOLOGY* 159 (3rd ed. 1967).

⁴⁶ Beecher, *supra* note 44.

the physician should observe cessation of electrical activity in the brain over an extensive period, combined with the failure to respond to any intense stimulation.⁴⁷

With such a variety of proposed criteria and the multitude of complications which are always possible, physicians are very concerned about the possibility of litigation being brought against them, such as for excising an organ from a donor who is dead for all practical purposes, but whose respiration is being maintained by a resuscitator.⁴⁸ With the numerous possibilities of litigation surrounding transplantation procedures, it has been maintained that a uniform statute is needed to set guidelines for human organ transplantation procedures throughout the United States.⁴⁹

The Uniform Anatomical Gift Act,⁵⁰ as of February, 1970, has been adopted by 41 states.⁵¹ The Act creates a right in any person of sound mind and 18 years of age to donate his body and precludes revocation of the donation by relatives.⁵² The Act also allows donation by means of a written instrument, thus avoiding probate complications, and permits survivors to donate another's organs where the deceased failed to indicate his intentions.⁵³ While this uniform legislation attempts to facilitate donation for public benefit, it prohibits removal of organs or tissues unless proper consent is given. In addition, the Act allows the donor to revoke his gift anytime before his death, names individuals and institutions who may be donees, lists the purposes for which a donation may be used, and eliminates complications of civil liability or criminal prosecution for anyone acting in good faith under the guidelines of the provisions.⁵⁴ It is important to note, however, that the Act is limited to ante-mortem donations and does not help solve the current problem

⁴⁷ *Id.*

⁴⁸ *Ethics in Medical Progress: Whose Responsibility?*, 1968 HOSP. PRAC. 16.

⁴⁹ Stewart, *Human Organ Transplantation — The Medical Miracle and the Legal Maze*, 20 S. CAROLINA L. REV. 521 (1968).

⁵⁰ Porzio, *THE TRANSPLANT AGE* 111 (1969); Stason, *The Uniform Anatomical Gift Act*, 23 BUS. LAW 919, 927-929, (1969).

⁵¹ Sadler, Sadler and Stason, *Transplantation and the Law: Progress Toward Uniformity*, 282 NEW ENG. J. MED. 717 (1970); see generally; Richards, *Medical-Legal Problems of Organ Transplantation*, 21 HASTINGS L.J. 108 (1969) — a survey of all existing state statutes on transplantation, in the United States, as of November, 1969; *Cardiac and Other Organ Transplantation*, 206 J.A.M.A. 2496 (1968).

⁵² *Supra* note 50 at 919.

⁵³ TIME, April 26, 1969, vol. 93, at 61.

⁵⁴ Fisher, *Let the Dead Help the Living*, 47 TODAY'S HEALTH 88 (1969).

of inter-vivos gifts, such as kidney donations from the living donor.⁵⁵ While this Act does not resolve the problem of determination of death, it does require in section 7(b) that:

The time of death shall be determined by a physician who tends the donor at his death, or if none, the physician who certifies the death. The physician shall not participate in the procedures for removing or transplanting a part.⁵⁶

The problem of defining the moment of death has also been a controversial subject in other countries.⁵⁷

In Canada, while there is law pertaining to various aspects of post-mortem examinations and disposal of cadavers,⁵⁸ along with the *Model Act*,⁵⁹ which deals with various aspects of human organ transplantation and donation, there is no set legal definition of death.⁶⁰ One analyst of Canadian law⁶¹ believes the trend is to require that proof of death be based on fatal injuries or conditions, especially when the central nervous system is effected.⁶²

The Soviet Union has not yet formulated a modern definition of death, since Soviet physicians have been hesitant to accept a definition of death based on absence of brain waves.⁶³ However, it has been stated that Russian scientists are interested in medical progress of this nature and have expanded their own research projects.⁶⁴

In Sweden, the Royal Board of Medicine has not agreed on a modern definition of death that would even allow for kidney transplants. A Swedish donor is not declared dead until 36 hours after heart activity has completely ceased.⁶⁵

In Israel, there is a trend away from the older definition of death,⁶⁶ based on cessation of breathing and heart beat, to the re-

⁵⁵ Woodside, *Organ Transplantation: The Doctor's Dilemma and the Lawyer's Responsibility*, 31 OHIO ST. L.J. 66, 89 (1970).

⁵⁶ Porzio, *supra* note 50.

⁵⁷ See generally; Castel, *Some Aspects of Human Organ Transplantation in Canada*, 48 CAN. B. REV. 345 (1968); Symposium, 18 DE PAUL L. REV. 345 (1969).

⁵⁸ Ontario: R.S.O., 1960, c. 14, s. 14, as amended by 1964, c.2.

⁵⁹ Ontario Act, S.O., 1962-1963, c.59, as amended by S.O. 1967, c. 38, s.2(2).

⁶⁰ *Id.*

⁶¹ Castel, *supra* note 57, at 351-352.

⁶² *Id.*

⁶³ NEWSWEEK, Nov. 18, 1968, vol. 72, at 84.

⁶⁴ *Id.*

⁶⁵ Biorck, *On the Definitions of Death*, 1967 WORLD MED. J. 137-138.

⁶⁶ SHUL. AR. ORAH HAIM cccxxix, 4; cf. RESP. HATAM SAFER, YOREH DEAH cccxxxviii.

quirement of additional technical criteria consistent with advances in modern medicine.⁶⁷ Present Israeli law provides standards for scientific research with cadavers, allows post-mortem examinations, and permits organs to be donated for transplantation.⁶⁸

There also appears to be movement toward dealing with certain problems in transplantation procedures in Great Britain.⁶⁹ The Secretary of State's Conference on Organ Transplantation declared that two independent doctors not involved with a transplant team should certify the death of the donor.⁷⁰

In South Africa much work has been done toward developing a definition of death considering the interrelated functions of the heart, lungs and brain.⁷¹ In January, 1970, a bill was presented to the South African Parliament⁷² re-defining the moment of death as that moment when the brain ceases to function. Since cardiac failure is not involved in this new determination transplant surgeons can excise a beating heart from a body in which the brain has a flat EEG.

The Ministry of Health in Czechoslovakia has resolved the definition of death problem in the same fashion as *Uniform Anatomical Gift Act* by declaring that the attending physician will have discretion to terminate support for patients with irreversable brain damage.⁷³

The government of France has been involved in several attempts to help effect criteria for human organ transplantation.⁷⁴ In 1966, the French National Academy of Medicine, in a very controversial declaration, stated that a patient may be adjudged dead if his EEG has shown an absence of brain activity for 48 hours, and surgeons should then be allowed to remove his organs for transplantation.⁷⁵ In April of 1968, the French government removed legal obstacles to transplantation procedures by defining death as the cessation of brain activity rather than respiration.⁷⁶

⁶⁷ Elon, *Jewish Law and Modern Medicine*, 4 ISRAEL L. REV. 475, (1969).

⁶⁸ Baker, *THE LEGAL SYSTEM OF ISRAEL*, Israel Universities Press, Jerusalem, Israel, 1968, at 222.

⁶⁹ N.Y. TIMES, May 31, 1969, at 32, col. 1 (city ed.).

⁷⁰ *Id.*

⁷¹ Hunt, *Defining Death*, 85 S. AFR. L.J. 201 (1968).

⁷² N.Y. TIMES, Jan. 7, 1970, at 7, col. 1 (city ed.).

⁷³ Official Directive of the Ministry of Health of Czechoslovakia, as supplementing the *Health Code of 1966*; see also Porzio, *supra* note 50, at 102.

⁷⁴ Porzio, *supra* note 51, at 102.

⁷⁵ TIME, May 27, 1966, at 78.

⁷⁶ "Official Definitional Adoption," Council of Ministers of France, April 27, 1968.

The absence of heartbeat, blood circulation and respiration are no longer to be considered as signs of death; the clinical signs of death are now the total absence of cerebral activity evidenced by several flat encephalograms as well as complete lack of reflexes for a sufficient period of time.⁷⁷

There have been several attempts at international medical meetings to define the moment of death for heart transplantation purposes.

In 1968, at an international meeting of surgeons experienced in heart transplantation, held at Cape Town, South Africa, specialists from Brazil, India, England, Canada, Argentina, South Africa, and the United States agreed that certain criteria are essential in determining the moment of death. They agreed that the absence of natural heartbeat, respiration or reflexes, and a flat EEG showing absence of brain wave function are necessary.⁷⁸

In Sydney, Australia, the World Medical Assembly adopted a code⁷⁹ which prescribes that at least two physicians must pronounce the donor dead before transplantation surgery can take place. The code suggests the physicians with the responsibility for determining the moment of death should base their decision on clinical judgment and diagnostic aids, such as the EEG.⁸⁰

In 1969 at an international symposium of medical specialists and theologians in Spain, it was argued that the determination of death should be based upon "bio-electrical silence of the brain" for 24 hours. In addition, tests must be run at 30 minute intervals to determine whether the patient exhibits the clinical symptoms of inability to breathe unaided, lack of reflexes, and alterations of the pupils and blood circulation.⁸¹

CONCLUSION

While the foregoing international medical meetings have been informative, there is a definite need for adoption of uniform laws on all aspects of human organ transplantation on an international scale. While science has made remarkable advances in transplantation, the law has lagged behind in failing to create uniform guide-

See generally Hess, *Heart Transplanted in France; Operation First Done in Europe*, N.Y. Times, April 30, 1968, at 51, col. 5 (city ed.).

⁷⁷ *Id.*

⁷⁸ TIME, July 26 1968, vol. 92, at 49.

⁷⁹ Durdin, *Physicians Adopt a Code on Death*, N.Y. TIMES, Aug. 10, 1968, at 25, col. 1 (city ed.).

⁸⁰ *Id.*

⁸¹ N.Y. TIMES, July 20, 1969, at 58, col. 7 (city ed.).

lines for the surgeons and other medical personnel involved. Determination of the precise moment of death is a major concern of all surgeons who require viable tissues for transplantation. Under the older, classic definition of death, the tissues received were often already decomposing. Thus, there should be effected an international agreement on the criteria for the moment of death, so that final determination can be made legally clear to the physician, either while attending the patient or during operation of a resuscitator.

An international agreement to resolve the issues of transplantation should be modeled along the lines of the *Uniform Anatomical Gift Act*, but should also include a more precise definition of death based on the latest international scientific findings. Such an agreement should also provide for the establishment of an international donor bank, where a computer could be used to store lists of voluntary donors of different countries, according to tissues to be donated, antigen matching, and other necessary data which would facilitate international organ transplantation procedures. To avoid technical complications, at a time when speed is of the essence, the international agreement should also allow for rapid procedures in transporting tissues across national borders, from a donor in one nation to a recipient in another.

Just as the legal profession must modify the law to keep pace with the progress of the medical profession, individuals from all nations who desire progress in international transplantation procedures should join together to effect a uniform international agreement. Only with inter-professional understanding between attorneys and physicians and an international agreement and effort between people of all nations will human organ transplantation truly benefit all mankind.

CASE WESTERN RESERVE JOURNAL

of

INTERNATIONAL LAW

Volume 2, No. 2

Spring 1970

Editor-in-Chief

JAMES E. MOORE

Executive Editor

WILLIAM D. BUSS II

Business Manager

ROGER D. MORRIS

Editors

Carl D. Dool
Lee J. Dunn, Jr.

William L. Fleming
Vilma L. Kohn

Staff

Robert B. Atkinson
William P. Bobulsky
John D. Butler
Cynthia A. Catalano
Katherine N. Cleveland
Richard J. Duffy
Jack T. Flom
Howard J. Hochman

Katherine A. Hossosfsky
David V. Irish
Roger G. Lile
Lawrence W. Nelson
Donald J. Newman
Timothy Reid
Jeffrey G. Rudolph
Kathleen V. Shartran

John C. Slovensky
James L. Sonneborn
Thomas H. Taylor
John R. Thalman
David F. Walbert
Ellen Washington
Lewis I. Winarsky