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Report No. 1, 1977

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#### FOREWORD

This study on whether Hawaii should enact a statutory definition of death was requested by Senate Resolution No. 432, S.D. 1, adoped in the 1976 Regular Session. The need for legislative attention to this issue has arisen largely because of the rapid advances in medical technology in the recent past.

In the preparation of this report, the Bureau has received excellent cooperation from the professions and practitioners most directly involved in the question. To them, the Bureau acknowledges a sincere debt of gratitude. Special thanks go to the Hawaii Medical Association and Hawaii Neurological Society for their support, to Judge Shunichi Kimura and Cynthia Chi who made available to us the tapes concerning the Cameron case, and to the Hawaii Medical Library for the use of their technical materials.

> Samuel B. K. Chang Director

January 1977

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# Chapter I

## INTRODUCTION

During the Regular Session of 1976 of the Eighth Legislature of the State of Hawaii, the Senate adopted Senate Resolution No. 432, S.D. 1, which requested the Office of the Legislative Reference Bureau to undertake a study of the definition of death. This report is the result of the study conducted in fulfillment of that request.

As a subject of legislation, as well as discussion, death has been addressed in many ways. Yet, because of the limits of man's knowledge and understanding of the processes of life and death, death in the past has primarily been reacted to, without regard to questioning the medical determination of the time of the fact of its occurrence. The advent of modern medicine and development of extraordinary life sustaining techniques, which now in medical understanding maintain certain vital processes of a human body beyond the medical death of the person in the manner of mechanical functioning, require present reflection upon a previously non-existent problem. The preservation of life is undeniably a great and grave concern as well as interest of medicine and of the law, but it is the very mechanisms and techniques which provide the heretofore unattained levels of survival and recovery which give rise to the entanglement of legal and medical need and legal and medical questions about the determination of death.

This report is concerned with the need for a definition of death, reviews some of the legal and medical background for, and ramifications of, a definition of death, and surveys existing statutes defining death. Consideration of the relative utility of particular statutory provisions, as well as definitions proposed in Hawaii and elsewhere, are undertaken, in view of the possibility of Hawaii enacting a definition of death. Lastly, recommendations resulting from consideration of the various factors and viewpoints are made, in response to the basic question of this study, "Should Hawaii adopt a definition of death?"

While some of the impetus for declaring death at its earliest medically determinable point has arisen from the interests of organ transplantation, this report does not include emphasis upon organ transplantation and its role in the determination of death except as minimally necessary to impart maximum understanding of the issue of the definition of death. All persons who die are not organ donors, and the

persuasive weight of the value of organ transplantation, if such exists, should not be a primary precipitating factor in deciding when human death occurs. There is no doubt that organ transplantation is of substantial value to society, and that it will continue to gain in value in the future. However it is not the intention of this discussion of the definition of death to balance the relative value of a potential organ donor against the relative value of a potential organ donee. It is acknowledged that organ transplantation appears to have been a factor in the development of some early criteria of brain function death, but similarly, it appears that a basic premise of the practice of medicine is that the preservation of each individual's life is of paramount importance and that wherever possible, no life will be sacrificed or shortened for another. This premise must remain a viable concept within the law.

#### SIGNIFICANT FINDINGS

Based on discussions in this report, the following constitutes a summary of significant findings:

- -- The traditional standard of determining death, recognized by medicine and law, is inadequate to meet present medical and legal needs.
- -- Medical practice has exceeded the bounds of the traditional standard of death, while law, except through case law development, has not reflected the changes in medical practice.
- -- The brain function standard of death utilized in medical practice today requires specialists and highly sophisticated equipment which are not uniformly available.
- -- The traditional standard of determining death is the predominant method of determining death, as the brain death standard is utilized in only two per cent of all cases.
- -- Not all physicians are fully committed to the brain death standard although there appears to be general acceptance of that standard.
- -- The current lack of agreement between medical practice and law has resulted in some legal entanglements, some of which resulted in judicial recognition of and acquiescence in the brain death standard.

#### INTRODUCTION

- -- Since 1970, fifteen states have statutorily recognized the brain function standard of death, but not in any uniform manner.
- -- Existence of statutes guarantees neither decrease nor increase of litigation, and will not prevent litigation.
- -- The Alice Cameron case involves the definition of death; the Karen Ann Quinlan case does not.
- -- The courts can be regarded as one mode of legally recognizing the brain function standard of death, in the absence of statutory enactment.
- -- Only legislative action can assure a uniform law.

#### RECOMMENDATION

The Bureau recommends that the State of Hawaii enact a statutory definition of death, the recommended text of which is set forth as Exhibit 1 in Chapter VIII.

### Chapter II

# MATTERS OF LIFE AND DEATH: KAREN QUINLAN AND ALICE CAMERON

The relevance of a definition of death, or any need for such a definition is perhaps made most understandable when viewed in the light of well-publicized death issues. The two most well-publicized death issues in this State are probably the circumstances surrounding the death of Alice Cameron and the life of Karen Ann Quinlan. The usefulness of reviewing in some depth the facts of the two cases primarily revolves around the necessity to clarify the definition of death as an issue, and its clear distinction from the separate issue of euthanasia.

The definition of death appears to be an attempt to determine at as nearly accurate a point in time as possible, the moment of death, or more precisely as discussions elsewhere in this report point out, the point at which a human body has progressed in the process of death when realistic medical assessment of condition is a finding of death. The statutory definition of death therefore can be viewed as a legal recognition of the medical determination of death. Actual medical death will already have occurred prior to the application of the definition of death. Euthanasia, on the other hand, appears to be a legal process which would allow some action, nonaction, or other acquiescence (depending upon the actual language) while a person is still medically The basic difference between a definition of death alive. as discussed in this report and euthanasia is thus primarily one of timing, in that the definition of death involves action following the determination of medical death while euthanasia involves some sort of action or nonaction before medical death.

The Cameron and Quinlan cases are cases which show the many facets of both issues, and by contrast, also show the vast differences between them.

#### KAREN ANN QUINLAN<sup>1</sup>

On the night of April 15, 1975, Karen Ann Quinlan entered a coma from which, as of this writing, she still has not emerged. It has been speculated that her condition was the result of a lethal combination of tranquillizers and alcohol. Blood and urine tests performed showed quinine, aspirin, and barbiturate in normal levels, with traces of Valium and Librium. The cause of her unconsciousness and the precise location of damage, however, has not been established with certainty. The effect of this uncertainty upon the physicians who have dealt with Karen Ann Quinlan has been that their ability to predict whether or not she will ever regain cognitive function has been severely or perhaps totally hampered. Thus, reliable assessment of the probability of her recovery is extremely uncertain.

Karen apparently had stopped breathing twice prior to her admission to the hospital, but she was revived on both occasions, once by mouth-to-mouth resuscitation and once by a police respirator. It is believed that anoxia, an insufficient supply of oxygen in the bloodstream, resulted from the cessation of breathing, and that brain damage was the ultimate result. Karen's breathing was artificially maintained from the time of her admission into the hospital on April 15, 1975 for over a year until May 22, 1976. During this time, the respirator was removed from Karen only for brief periods of time when an attempt was made to wean her from the respirator just prior to May 22, 1976. Karen's condition and the use of the respirator necessitated vigilant medical treatment, which included feedings through a nasogastric tube and regular administration of antibiotics to minimize the constant threat of infection in view of Karen's physical vulnerability.

There was and continues to be no time during which Karen's condition has ever met the requirements of nor corresponded to any medical definition of brain function death or irreversible coma, nor the traditional measure of circulatory-respiratory death. EEG tracings made have always shown brain rhythm, and the tracings have never been "flat" as is generally required for a finding of brain function death. There is physical reflex action to painful stimuli. Her pupils react to bright light, and thus are not dilated as also is generally required for a determination of These facts continue to be true but there also has death. been neither change nor improvement in her condition, which has been described as a persistent vegetative state. The possibility of her return to cognitive functioning is viewed as remote.

The reasons for the uncertainty surrounding Karen's condition are basically the present limitations in medical knowledge. One commentator felt that the dilemma surrounding Karen Ann Quinlan's situation was due to medical "failure to distinguish heretofore between the different parts of the brain and their functions".<sup>2</sup> The same commentator felt "that Karen Quinlan is indeed dead, because her cortex is dead".<sup>3</sup>

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With regard to Karen's EEG results, he stated that:

Cellular activity with electrical output from the brain-stem represents the same type of vegetative life that could be assigned to hair cells or heart cells that might be maintained artificially.<sup>4</sup>

Thus, that commentator may be reaching even further beyond existing proposed medical criteria of death by isolating the function of one part of the brain from all the other parts of the brain and attributing death to the failure of function of one part of the brain, the cortex. The readings on the EEG, then, are reflections of an electrical function rather than of a life function under that type of death criteria. It is in this view that the question of the definition of death is involved in the Karen Ann Quinlan case, but note the question found here may not relate to relatively common use of medical criteria. Because there is no virtual fulfillment of ordinarily utilized brain function or other death criteria, however, the definition of death question under discussion is not one which necessarily arises in discussion of the Quinlan case.

Karen Ann Quinlan's attending physicians, Doctors Robert J. Morse and Arshad Javed, believed that if Karen were removed from the respirator, she would die. Mr. and Mrs. Joseph Quinlan, Karen's parents, on July 31, 1975, executed a release authorizing Doctor Morse "to discontinue all extraordinary measures, including the use of a respirator" with regard to their daughter, despairing that she would never recover. Doctor Morse refused to comply with that release on the basis of his belief that such an action would constitute a departure from customary standards of medical practice. Hawaii physicians questioned in interviews on this point tend to concur with Doctor Morse's conclusion and feel that his refusal was proper, in view of the fact that Karen's initial medical history was absent and unknown, and in addition, that her condition did not correspond to any medical definition of death. The Quinlan case, then, appears not to be one involving the definition of death, but one which deals with the treatment decisions relating to a patient about whom there is substantial medical agreement and opinion that the patient is medically alive, albeit with negligible or no hope of recovery. Thus, the ultimate central question in the Quinlan case was whether or not Karen Ann Quinlan should be allowed to continue her life free of extraordinary support and treatments, even if that . life would mean immediate or at least, imminent death.

There have been opinions expressed on the effect of the release executed by the Quinlans on the attending physician, with one conjecture being that the existence of the release document increased rather than decreased Doctor Morse's anxiety about the possibility of a law suit.<sup>5</sup> The Quinlan action in executing the release, thus bringing the treatment of Karen out of the area of unspoken understanding between the family and the physician, may have been an unusual step. Whether or not the decisions made by Doctor Morse would have been different without the release, is of course, impossible to conjecture in retrospect, particularly in view of the medical reality of Karen's condition, that is, that Karen was indeed medically alive, although in a vegetative state.

Following Doctor Morse's refusal to discontinue the use of the respirator, Joseph Quinlan brought legal action seeking to be appointed as her guardian and to receive express legal authorization to discontinue the use of the respirator. Mr. Quinlan also sought an injunction to prevent the county prosecutor, the attending physicians, and the hospital from interfering with this authorization, and to enjoin the prosecutor from charging him with homicide in a criminal action.

Mr. Quinlan's original assertion was that Karen was legally and medically dead, but this position was revised prior to the trial, apparently when it became clear that none of the expert witnesses would testify that Karen was medically dead. The bases for his claim for equitable relief from the court involved a number of novel arguments:

- (1) Under the doctrine of <u>parens patriae</u>, the Equity Court, the protector and general guardian of all persons under disability, may intervene and allow Karen to die a natural death "in her best interests".
- (2) Karen enjoys a constitutional right of privacy which her family may assert in her behalf. The right, moreover, encompasses the right to terminate the use of extraordinary medical measures. The "right of privacy" concept was borrowed from several decisions of the United States Supreme Court involving contraception (Griswold v. Connecticut<sup>6</sup> and Eisenstadt v. Baird),<sup>7</sup> abortion (Roe v. Wade)<sup>8</sup> and possession of obscene films for private viewing (Stanley v. Georgia).<sup>9</sup>
- (3) Continuance of extraordinary means is not required by the Roman Catholic faith which Karen followed, and therefore, the continuance of use of the respirator would unconstitutionally interfere with the free exercise of religion.

(4) Continuance of extraordinary means in Karen's treatment would constitute unconstitutionally cruel and unusual punishment.

Joseph Quinlan's petition which included the above points, was denied by Judge Muir of the New Jersey Superior Court. In reaching this decision on the petition, Judge Muir found the third and fourth arguments above unpersuasive. The judge found that the Roman Catholic faith does not require continuance of the use of the respirator, but also that it neither requires its discontinuance. On this basis, a refusal to grant Joseph Quinlan's request was not viewed by Judge Muir as interfering with religious belief or the free exercise of religion. It was also stated that the State's interest in the preservation of life is of such a high level that state intervention into religious practices, if necessary, would be permissible to preserve life. Further, the Judge found that the constitutional prohibition of cruel and unusual punishment is inapplicable to a situation involving medical treatment which is generally intended to sustain life, and in any event, that the Eighth Amendment applies only to criminal sanctions, which clearly were not involved in Karen's case.

The judge decided that the question of whether or not the use of the respirator should be discontinued was a <u>medical</u> question, and because Doctor Morse made a medical decision in refusing to discontinue the use of the respirator, the court did not have the authority to compel the physician to change that decision. The finding that Karen was legally and medically alive meant, moreover, that discontinuance of the use of the respirator would amount to homicide.

Finally, Judge Muir found that while a mature, competent adult may refuse medical treatment for himself, there is no constitutional right to die deriving from a constitutional right to privacy, which a parent may assert on behalf of a mature but incompetent child. Karen had been represented by a guardian of her person for the purposes of the legal proceedings, because Judge Muir felt that the Quinlans were unable to make disinterested decisions about their daughter's medical treatment. The court-appointed guardian acted in that capacity throughout the proceedings as Karen's guardian.

There has been speculation about the ability of the law to respond to such a situation. The decision of the trial court in the Karen Quinlan case, it has been suggested, was based on the concept that the artificial maintenance machinery supported life, and under the law, the trial judge had no flexibility in reaching a contrary decision.<sup>10</sup>

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Joseph Quinlan appealed Judge Muir's decision to the New Jersey Supreme Court, which reversed Judge Muir. The New Jersey Supreme Court disagreed with Judge Muir's finding that the withdrawal of the respirator is a purely medical decision:

Such notions as to the distribution of responsibility, heretofore generally entertained, should however neither impede this Court in deciding matters clearly justiciable nor preclude a re-examination by the Court as to underlying human values and rights. Determinations as to these must, in the ultimate, be responsive not only to the concepts of medicine but also to the common moral judgment of the community at large. In the latter respect the Court has a nondelegable judicial responsibility.<sup>11</sup>

Although Karen was alive, the New Jersey Supreme Court regarded the <u>quality</u> of life as the focal point of its decision:

The prognosis as to the reasonable possibility of return to cognitive and sapient life, as distinguished from the forced continuance of...biological vegetative existence. 12

This distinction is similar to the distinction made by Pope Pius XII in his allocutio,<sup>13</sup> and by Bishop Casey in the <u>amicus</u> brief filed in the Quinlan case on behalf of the New Jersey Catholic Conference.<sup>14</sup> The Court, however, disclaimed any reliance upon the "Catholic view" as precedent for the civil law.<sup>15</sup>

Of the many considerations given the matter, it appears that the Court was ultimately convinced by the right of privacy argument which was offered by Joseph Quinlan:

We think that the State's interest <u>contra</u> weakens and the individual's right to privacy grows as the degree of bodily invasion increases and the prognosis dims.<sup>16</sup>

Karen's guardianship was transferred to Joseph Quinlan as a result of the New Jersey Supreme Court's decision on the matter, which also allowed Mr. Quinlan to assert a right of privacy on Karen's behalf under the peculiar circumstances of the case: "Manifestly, he has standing to assert his daughter's constitutional rights, she being incompetent to do so."<sup>17</sup> It appears that the Court presumes that Karen, if momentarily lucid, would choose to have the use of the respirator discontinued, in view of the irreversibility of her condition. There would be no liability for homicide because Karen's death would be due to natural causes; again, this point is similar to the position taken by Pope Pius XII. Even if the act were homicide, it would be a "lawful" homicide pursuant to a right of privacy.<sup>18</sup>

The decision of whether to discontinue the respirator was left to the guardian and the family of Karen Ann Quinlan, and the attending physicians. The Court required that a hospital ethics committee confirm the decision, although the Court did not describe the membership of such a committee. The Court went further and encouraged the use of this type of procedure for use in other instances of terminal conditions, even when the patient is not permanently comatose.<sup>19</sup> A court decision would not be required in these cases.<sup>20</sup> In one sense, therefore, the Court has delegated its responsibility in future cases, or has determined that decisions regarding terminally ill patients should be left to the patients, their families, their physicians, and hospital ethics committees.

Following the decision of the New Jersey Supreme Court, on May 22, 1976 Karen was taken off the respirator, and on June 9, 1976, she was moved from Saint Clare's Hospital, where she was confined in an intensive care unit, to a nursing home. Despite the earlier claims of physicians, the withdrawal of the respirator did not bring on immediate death. Reports since the discontinuance of the use of the respirator state that Karen continues to be fed through a nasal-gastro tube and also continues to receive antibiotics regularly. Nursing home officials and her family, apparently, however, have essentially agreed on a course of passive euthanasia, in that it appears she will not receive any extraordinary medical treatment or resume the use of a respirator in the event of medical crisis.<sup>21</sup>

#### ALICE CAMERON<sup>22</sup>

Alice Cameron was admitted to the emergency room of Hilo Hospital on November 12, 1975 where she had been taken by the Hawaii County Fire Department rescue squad. The first physician to examine her there found her "blue" and not breathing. She did not have a palpable pulse, and EKG monitoring produced a flat line. The rescue squad personnel related their contact with Alice Cameron, and explained that upon their arrival at Alice's home, she was already cyanotic (exhibiting bluish discoloration of the skin due to insufficient supply of oxygen in the bloodstream). There was a detectable pulse, although it was weak. The rescue squad did not estimate the length of time Alice had been unconscious before they began resuscitation efforts. They did, however, indicate that another person and her son had attempted to revive her with water before the rescue squad had arrived.

The emergency room physician immediately began cardiopulmonary resuscitation. Alice's heart started to beat and weak attempts at spontaneous respiration were noted. One Hilo physician in a personal interview speculated that at that point, it was already too late to attempt to revive her. However due to the onset of her condition, the lack of knowledge on the part of any physician with regard to the cicumstances leading to her collapse, the possibility of remediable drug overdose, and her youth, it appears medically logical to have attempted resuscitation at that point.

From the time of her admission into Hilo Hospital until the time she was pronounced dead, her attending physician, Doctor Walker, found no sign of brain life. Alice could not breathe without the assistance of the respirator. There were heartbeat and random decerebrate movements, which doctors later testified would persist even when the brain is dead. Although Alice Cameron's condition did not meet the Harvard criteria of "irreversible coma",<sup>23</sup> which rules out even random decerebrate movements and requires death of the entire central nervous system, testimony indicated that the Harvard criteria, though widely known, is currently outmoded.

There appear to be several reasons for the highly atypical regard with which the Cameron case is held, in terms of publicity and legal action. Among these may be:

- (1) The coma was <u>allegedly</u> produced by Alice swallowing cocaine encased in five condoms, one inside the other, and which ruptured in her stomach and released a fatal dose into her system. She apparently had been under police observation for a considerable period of time for suspicion of drug smuggling.
- (2) Since Alice Cameron was being considered as a potential organ donor, it became necessary to have an impartial inquiry to establish the fact of death.
- (3) Alice Cameron had no family in the Hilo area to look after her interests and to consult with physicians.
- (4) There was apparent disagreement among physicians as to her condition.

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Three days following her admission to Hilo Hospital, on November 15, Hawaii County Deputy Prosecuting Attorney Andrew Wilson was notified by the police that Alice had been admitted to the hospital on a case of possible drug overdose. The police wanted to know whether there was probable cause sufficient for issuance of a warrant to search her residence. Deputy Prosecutor Wilson contacted Doctor Walker for information on the question of probable cause, and was told that Alice Cameron would undergo an electroencephalogram test on November 20 to determine whether there was any brain activity. Further, if there was no finding of brain activity, Alice would be operated on to remove her kidneys and <u>thereafter</u> would be disconnected from the respirator and declared dead.

Alice Cameron's mother had given lawful consent under the Uniform Anatomical Gifts Act<sup>24</sup> for the removal of the organs, but Andrew Wilson was concerned that the pronouncement of death be made before and not after the respirator was discontinued. Wilson therefore petitioned the court for the appointment of a guardian ad litem for Alice, and the guardian ad litem in turn applied for a temporary restraining order to prevent the operation until after a hearing to determine the issue of death.

Apparently, the impending kidney removal surgery created misgivings on the parts of some individuals in addition to the deputy prosecuting attorney. Reportedly, there was lack of concurrence by some physicians and nurses as to the issue of whether Alice was in fact dead, and who did not want the operation to take place. Three persons interviewed indicated that the Cameron case created hostility which the litigation brought to the surface. The lack of unanimity among the physicians on the brain death standard, as well as the conviction on the part of the deputy prosecutor and presiding Judge Kimura that death should be a community decision, contributed to the necessity for a legal hearing on the question.

Doctor Walker pronounced Alice dead on November 21, 1975, but the respirator was not removed for another three days until after the hearing was completed. The court hearing began on November 21.

Testimony states that several tests had been performed, with negative results:

 A serial clinical examination performed by Doctor Walker in consultation with seven other physicians and a second clinical examination conducted independently by Doctor Nicholson, a neurosurgeon from Honolulu.

#### MATTERS OF LIFE AND DEATH

There was some disagreement regarding the interpretation of the clinical examination results. One physician felt that because of her reflex responses, her brain was not dead. That is, her lower brain areas were still functioning, necessitating a conclusion that Alice was not dead according to the brain death criteria. The general consensus among other physicians examining Alice is that the reflex action was such that it was of no significance.

- (2) An isotopic study of blood circulation to the brain which showed an abnormally slow rate of reaction.
- (3) An apnea test during which Alice was observed for over three minutes for any signs of respiration without support or oxygen.
- (4) Intravenous injection of atropine which did not produce an increase in heart rate.
- (5) Two serial EEG tests performed over twenty-four hours apart and interpreted as "flat".
- (6) A toxicological test for barbiturate presence which may produce death-like symptoms such as flat EEG. The test results were received by telephone on November 22.

It does not appear that at the time of the hearing that the physicians knew with certainty whether or not Alice Cameron had swallowed cocaine. The exact cause of her condition, however, was not imperative in view of the negative results of the tests conducted. That is, whether the state of coma was due to ingestion of cocaine, and whether the substance was a depressant or a stimulant, Alice did suffer from heart failure and consequently, death. One physician at the trial stated that cocaine was a stimulant to the heart that increases excitability of the heart beat, such that the heart does not beat rhythmically as a heart "pump" and further, when the heart is not an effective pumping mechanism, circulation fails and the body cells begin to die.<sup>25</sup> It is unlikely, further, that had Alice ingested cocaine, that it would have been detectable in laboratory tests for it would have most likely been metabolized long before then.

There was general consensus among the testifying physicians that it was the responsibility of the attending or primary physician to pronounce death. As indicated above, all but two would have declared her dead. However, all but one of

the eight consulting physicians agreed that Doctor Walker's diagnosis of brain death was correct. However, one physician who <u>agreed</u> with the diagnosis of brain death hesitated when asked, "Would you sign the death certificate?" Doctor Mitchel testified, "I don't know what I would do; I'd have to think, and search, and ponder, and review my moral standards and my philosophical beliefs."

In making his decision, Judge Kimura set forth the following as a standard for the interpretation of the Uniform Anatomical Gifts Act:<sup>26</sup>

The usual and customary standard of medical practice in the State of Hawaii is the standard to be used by the treating physician in determining when Alice Cameron died.<sup>27</sup>

Judge Kimura concluded that Doctor Walker had indeed met that standard and that Alice Cameron was dead. The judge did not rule directly that she was dead, but rather that Doctor Walker had made a legally acceptable determination of the time of death. (The order may be reviewed at Appendix H.)

This standard set and relied upon by Judge Kimura appears somewhat more specific than the Uniform Anatomical Gifts Act<sup>28</sup> itself provides, for the Act appears to leave the determination to the individual judgment of the attending physician. Thus, despite the fact that there is no neurologist or neurosurgeon permanently practicing in Hilo, the Hilo medical community was required to have the participation of consulting neurospecialists from Honolulu and was required to accept the standard of brain-death adhered to by those same neurospecialists.

Thereafter, the respirator was disconnected and Alice Cameron was dead. For unrelated reasons, no organ transplant was made.

#### IN RETROSPECT

In retrospect, the medical and legal distinctions between the Quinlan and Cameron cases are, as seen, many. The basic issue addressed by the individual cases is the question of death, yet one is tied to the question of the quality of life as determining whether or not there is life, and the other more closely revolves around the use of generally medically recognized criteria of determining the occurrence of death as well as interpretation of the Uniform Anatomical Gifts Act. Regardless of any determination regarding the quality of Karen Quinlan's life, medical measurement showed she was alive, for the electroencephalogram indicated that her brain was giving out electrical impulses, satisfying the brain function criteria of life.<sup>29</sup>

Thus the cases are clearly distinguishable on medical grounds, for death was generally said to have occurred by most of the physicians involved in the Cameron case, and conversely, death was generally said not to have occurred by the physicians in the Quinlan case. This important distinguishing characteristic is the difference between euthanasia and the definition of death. Pertinent observations which may be made in retrospect relate to the ramifications of the judicial decisions pronounced in the two cases.

Legally, as one might expect, the Cameron case has substantial persuasive impact in Hawaii simply because it involved a case which occurred in Hawaii. There have been similar cases elsewhere, thus the matter is not one addressed by the courts for the first time.<sup>30</sup> The Quinlan case, however, has been said to have a greater impact medically in the determination of death in Hawaii, a reflection of the acceptance of the concept of brain death by appropriate medical specialties in Hawaii. Medically, the opinion has been offered that the Cameron case had had very little effect on procedures followed and standards used in Hawaii.

Therefore the decision in the Cameron case may be an accurate reflection of current medical practice of physicians knowledgeable in the brain function criteria of death in Hawaii and the acquiescence in that practice by the law.

While the Cameron case was much simpler than the Quinlan case because the decision medically and legally to be made was relatively clear-cut, the existence of the case does not clearly confirm or deny a need for a definition of death in Hawaii. The anatomical gifts statute was construed by the court, and not the total void of the statutes with regard to any definition of death.

The consensus of those individuals involved in the Cameron case who favor taking the determination of death out of the exclusive control of physicians are generally in favor of a statutory definition. Moreover, judicial hearings, it is felt, are too cumbersome and may lead to uneven results. A number of persons interviewed mentioned the inability of a patient's relatives to actively participate in the decisionmaking process, because of grief or feelings of guilt.

What, then, is the precedential value of the Cameron case? The decision reached in the case by Judge Kimura is a state circuit court decision not binding on other circuits within the State. In a personal interview during the summer of 1976, the Judge indicated that his opinion in the Cameron case was drawn as narrowly as possible on the facts of a highly unusual case. It is interesting to note this approach in contrast to the New Jersey Supreme Court opinion which generalized the application of its decision to a wide variety of extreme cases. This, of course, in no way negates the utility of the Cameron case, for it does exhibit several important factors:

- Some procedures and current practices of physicians in Hawaii;
- (2) The ability of the legal system to respond to the litigation absent a statutory definition of death;
- (3) The differences of professional opinion among health professionals;
- (4) The difference in availability of specialist services between Hilo and Honolulu;
- (5) The conscious review and weighing of philosophical beliefs of physicians in the face of a serious medical decision;
- (6) The inability of the medical system to solve the dilemma of divergent medical opinions in the absence of family, statutes, or case law;
- (7) The dynamic nature of medicine in terms of changing and ever-advancing techniques as well as present limitations of medical science;
- (8) The variance in standards of practice between different communities;
- (9) The fact that a definition of death in the statutes may or may not have served to avoid the necessity of going to court; and
- (10) The awesomeness of the determination of death in human understanding.

Another perhaps more instructive point in viewing the value of the case is the apparent danger of writing into a statute or judicial opinion or statutory definition the operational criteria or specific medical and technical tests

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for determining death. As above stated, there was testimony that the Harvard criteria, formulated just nine years ago, are today unnecessarily thorough and already outdated.<sup>31</sup> A possible result of the <u>Cameron</u> decision may be that future legal cases may require the performance of all the tests performed, since the total results formed the evidentiary base of the court's decision. Yet, in consideration of the numbers of physicians called upon for consultation and the number and variety of tests performed in the Cameron case, it may be reasonable to conclude that these consultations and tests (even the Harvard criteria does not require an isotopic study of blood circulation to the brain) surpasses what is normally done with brain-dead patients in the State of Hawaii when there is no litigation.

# Chapter III

# **MEDICAL ASPECTS**

#### GENERAL BACKGROUND

#### HISTORIC VIEWS OF BODY FUNCTION REGULATION

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A historical review of death shows that indications of the belief that the heart and blood were viewed as primary controllers of body functions go back to prehistoric times, and has been variously reiterated since then:

In prehistoric cave paintings of cattle and wild beasts, the heart was sketched in the center of the figure with a lifeline leading to the exterior through the mouth. [T]he Edwin Smith Surgical Papyrus, dating from 3000 to 2500 B.C.,...acknowledged the heart as the center of a system of distributory vessels,...[but without any] concept of circulation.

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Hippocrates regarded the brain as the central organ of reason, thought, emotion, sensation, terrors, and dreams. The heart remained the supreme organ of reason, however, the brain relying upon the air passing through the nose for its integrity. His concepts were nevertheless important since they elevated the brain to a neurophysiological role. From Galen through Vesalius, Thomas Willis, Sigmund Freud, and Sir Charles Sherrington, the role of the central nervous system in regulating the body's economy has slowly come to light.<sup>4</sup>

Thus historically, backwards in time, the heart has received much more emphasis and has had more significance attached to it than has the brain. It has been suggested that this may be due to the comparative accessibility of the two organs, and primarily, the fact that without sophisticated techniques such as those only relatively recently developed, "the nervous system is anatomically inaccessible to experimental manipulation."<sup>2</sup>

Nineteenth century writings include indications of the then espoused pre-eminence of the heart in the physical function of the body. Death was said by one writer to be absolutely proven if there is a passage of five minutes without breathing movement of the chest. Moreover, the proof of death was regarded as the proof of absence of heart action, consistent with the view that the heart was "the first to live and the last to die."<sup>3</sup>

Despite the simplistic-appearing certainty with which the determination of death appears to have been regarded, there are indications that other nineteenth century views of death expressed the difficulty of determining death, and in fact recognized that cessation of heart action did not constitute absolute proof of death. The guillotine ironically provided early proof in France that the decapitation of an individual's body did not uniformly stop the functioning of the heart upon the severing of the head, for hearts were observed beating or twitching from 15 minutes to an hour after the executions. Brouardel reached a decision that although there were various signs and tests which may be used to determine death, there was no single sign which was independently reliable as a death indicator, thus requiring consideration of a number of tests in order to ensure reliable determination of death.<sup>4</sup>

Clearer indications of realization of death as a physical process is evident in a 1937 writing:

The stopping of the heart and respiration is the first indication that the oxygen cycle has been interrupted. It is the only reliable sign of death in the early postmortem stages. Whenever this cessation can be demonstrated beyond any doubt, the individual can be pronounced dead with perfect certainty.

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As long as the oxygen cycle is maintained the individual lives. The cells remain healthy, food and water are ingested and absorbed, and locomotion is possible.<sup>5</sup>

Also implicit in the quoted material is the narrower field of scientific medical knowledge and capability of the time, which has since been far surpassed. Significantly, the quoted passage may be said to regard the "stopping of the heart and respiration" as a "reliable sign of death in the early postmortem stages (emphasis added). This particular view may have anticipated, and well accepted the fact that heart and respiration cessation may be occurrences which may be observed after the fact of death albeit in present understanding, artificially maintained by support systems. No effort however is made to amplify upon the possible observation or measurement of the occurrence of death itself.

Clearly, the reliance of that author upon the oxygen cycle did not anticipate fully the ramifications of sophisticated artificial support systems which sustain the activities attributed to uninterrupted function of the oxygen cycle. It is commonly felt today that even if the oxygen cycle (except for any part of the cycle which may have been attributed to the brain) continues, subject to artificial maintenance systems, the individual may not be alive, contrary to an apparent assumption of the writer. There was no ability either to determine, or to anticipate fully the accuracy and extent of the eventual medical capability to determine death by brain function measurement.

#### **DEATH AS A PROCESS**

The human body is made up of various organs, tissues, and cells. Injury and disease variously affect the organs, tissues, and cells, with the most serious effect being death. Death has been medically defined by various terms, with a primary contrast being between:

- (1) Somatic death, clinical death, medical death, and physiologic death, which generally are equated to the cessation of respiration, circulation, and innervation; and
- (2) Molecular death, cellular death, biologic death, cytological death, and necrosis, which generally are equated with complete degeneration of the tissues.<sup>6</sup>

Modern medical science has long recognized the separate and generally nonconcurrent occurrence of the two separate death categories mentioned above. These may be viewed as sequential occurrences, since category (1), or physiological death, always precedes category (2), or biological death.<sup>7</sup>

Biologic death is a gradual death process at the cellular level. The different body cells succumb to anoxia (lack of oxygen) at different times.<sup>8</sup> Certain cells cannot survive lack of oxygen which is supplied by the circulatory system, for more than a few minutes under normal conditions (without hypothermia, low body temperature, for example). The survival period varies greatly, for some brain cells die within a few minutes of blood circulation cessation, while other body cells such as cartilage cells, may survive independently for several days.<sup>9</sup>

Physiologic death, in contrast, is the final cessation of certain vital body functions including circulation, respiration, and brain activity. These three systems are the most important of all body functions because of their interdependence and relatively central roles in body functioning. Each system depends upon the others to remain viable, and because of the systemic interdependence, they have been referred to as the "portals of death".<sup>10</sup> In the event the brain's oxygen supply as delivered by the heart and lungs ceases, the brain will suffer irreversible damage in a very short time.<sup>11</sup> Generally, within four to six minutes after circulatory failure, brain cells start to die, with complete brain death following, approximately fifteen minutes after cardiac arrest.<sup>12</sup> Conversely, if the brain stops sending neurological impulses to the lungs and heart, they in turn will cease their function and the body's oxygen supply would terminate. Thus cessation of brain activity results in the failure of other body systems unless their function is stimulated by artificial means.

Physiologic death is generally that death defined by the traditional criteria of death. Biological death refers to the final extinction of the physical remainders of a human body which is considered dead. Final disintegration is not, obviously, a required prerequisite to the finding of death. Declaration of physiologic death--traditional death--precedes final disintegration of a human body but more pertinently, following the declaration of death signs of life may continue for a limited time, in that hair, skin, and nails grow, <sup>13</sup> heart electrical activity is capable of recordation, <sup>14</sup> and even after decapitation, skin flinches when cut, muscles contract, and if stimulated, the heart will beat.

Medical science thus views "death" as a process<sup>16</sup> as seen from the varying "functioning" of individual organs and tissues following the cessation of respiration and circulation.<sup>17</sup> "Death" in common understanding does not embrace the entire process perceived by medicine but has a meaning based on a selected point in the death process, traditionally measured by the cessation of respiration and circulation. The selection of a precise point responds to a societal, legal, as well as medical need to declare a person dead, marking the end of life, which has been described as "the point in the death process when function as a whole human being with spontaneous bodily activity has ceased without hope of recovery."<sup>18</sup> Society is thus able to take certain actions such as autopsy, burial and distribution of property, 19 prior to the physical distintegration of the body. This societal need is reflected in the law, and the isolation of a specific point in the death process to be known as "death" provides the kind of certainty as required by the case of Thomas v. Anderson, in which the court stated: "Death is not a continuing event and is an event that takes place at a precise time."<sup>20</sup>

#### THE TRADITIONAL DETERMINATION OF DEATH

Medicine and law have long co-existed despite basic ideological differences, and perhaps on personal levels, despite misconceptions and misunderstandings of one another. One area in which there has been relatively little dispute, and in fact in which there was general agreement was that the medical profession and the legal profession--and in addition, the general lay public--believed that the cessation of the integrated functioning of the human body, or death, occurred when there was "clinical" death. Everyone agreed that when there was irreparable cessation of spontaneous respiratory and circulatory activity, a person was for all purposes, dead.<sup>21</sup> Further, there was general agreement between the legal and medical professions as to how to measure, or how to recognize, the occurrence of death.

The medical recognition of clinical death was stated as:

[t]he apparent extinction of life, as manifested by the absence of heartbeat and respiration.<sup>22</sup>

and the legal recognition of death was stated as:

the cessation of life; the ceasing to exist; defined by physicians as a total stoppage of the circulation of the blood and cessation of the animal and vital functions of the body such as respiration and pulsation.<sup>23</sup>

The law thus recognized and applied the medical means of detection of death.

The traditional determination of death provides the physician various means of detecting death, generally to determine whether the heart stopped beating, if breathing stopped, and if circulation and vascular system responses to certain stimuli were irreversibly altered.<sup>24</sup>

The manner in which these conclusions are reached include the performance of apparently relatively simple medical tests, such as the use of a stethoscope over the heart to determine the cessation of heartbeat. Also, the feeling of the pulse through palpitation of the arteries (taking the patient's pulse) also indicated whether or not the heart stopped beating. On a more sophisticated level, the heartbeat may also be measured by fluoroscopic examination or by electrocardiogram.<sup>25</sup>

The determination of whether respiration (breathing) stopped requires equally simple tests which are readily

recognizable by the lay public. For example, what has been termed the oldest and best known means of determining stoppage of breathing is the simple placement of a mirror before the nose and the mouth of a patient for observation of fogging of the mirror. If fogging occurs, then breathing has not ceased. Feathers have also been used, as well as other light articles, to detect movement caused by breathing. Chest movements have also been observed.<sup>26</sup>

Death in general was regarded as a relatively simple medical diagnosis to make, for in short, death came when the heart stopped beating and the lungs stopped breathing.<sup>27</sup> Although the diagnosis was simple, occasional pronouncements of death have been proven incorrect, as newspaper headlines can testify.<sup>28</sup> However, there was apparently general satisfaction by all concerned as to the adequacy of the traditional criteria for determining death.

In more philosophical considerations, the vital functions measured in the traditional determination of death embody some relatively nonscientific presumptions which man has long held with regard to himself. The heart was considered the site of the emotions, and was identified, particularly, as the source of love.<sup>29</sup> The blood has been sometimes thought of as the life-giver.<sup>30</sup> The breath has been contemplated to carry the spirit of man.<sup>31</sup> The fact of death of the physical functions therefore could be thought of as the simultaneous extinction of the person, that is, the individual identified with the body.

Returning to the traditional medical criteria of death, medical literature includes various statements of the traditional criteria, such as the following:

Cardiopulmonary Criteria<sup>32</sup>

Specific tests for the traditional criteria are:

- a. pulse
- b. heartbeat
- c. blood pressure
- d. ECG
- e. examination of blood flow in retinal vessels

Cardiovascular respiratory death<sup>33</sup>

Absence of:

- a. blood pressure
- b. pulse
- c. heart sounds

d. respirations

- e. pupillary response to bright light
- f. EKG activity

for 15 to 20 minutes.

Medical literature, however, does not abound with articulations of the traditional criteria, and the need for more research in the area of determining death by traditional criteria has been noted.<sup>34</sup>

While the traditional criteria of death include the measurement of several variables, that is, circulatory and respiratory functions measurement, they pose no untoward problems in requiring the cessation of the various systems. The criteria are based on the medical fact that respiration, cardiovascular function, and brain function are closely interrelated and the cessation of any one of the systems will result in the cessation of the other systems shortly thereafter.<sup>35</sup>

The amiable acceptance of these criteria for determining death is strong justification for not tinkering with a definition of death different from the traditional criteria. The question thus arises, what is the reason for the interest and concern surrounding a statutory definition of death founded on different medical bases?

#### THE DECLINE OF THE TRADITIONAL CRITERIA PRE-EMPTION OF THE DETERMINATION OF DEATH

Startling advances in medical capabilities have marked the past few decades of mankind. The practice of medicine has undergone radical changes in concepts within relatively few years, and the orientation of medical practice in itself has been said to have changed from regarding death as a process which must be contended with, to regarding death as defeat.<sup>36</sup>

Historically, there was no alternative to the determination of death other than by the traditional means discussed above. However, increased sophistication and extension of medical knowledge created a possible measure which in fact does provide an alternative to the traditional criteria of death. It is not so much that increased sophistication of medicine has sought and accomplished the existence of another measure of the fact of death, but rather, it was the increased sophistication which required a different mode of measuring death because of the apparent unreliability of the traditional criteria under certain circumstances.

Three major areas of medical advances are particularly relevant to this discussion of the decline of the preemption of the determination of death by the traditional criteria of death. They are, resuscitation, artificial life support techniques, and organ transplantations. These advances, ironically, which prolong human life, served as catalysts in redetermining detection of human death.

#### **RESUSCITATION AND ARTIFICIAL LIFE SUPPORT SYSTEMS**

The traditional criteria of death experienced its first major challenge in 1942 when Claude Beck demonstrated that the human heart was capable of being revived with minimal damage to cardiac muscles, 37 thus questioning the historic equation of cardiac arrest with death. Medical science subsequently developed various artificial life-support systems, 38 including devices to regulate body temperature, and others such as the cardiac pacemaker to initiate and regulate cardiac function, the iron lung, and the respirator, all of which are capable of indefinitely sustaining cardiac and respiratory activity, the indicia traditionally relied upon to determine death.<sup>39</sup> Two of the three major organ systems of the body, heart and lungs (circulatory and respiratory systems) can now, therefore, be sustained artificially. Il basis for the traditional criteria of death, the close and The unconditional<sup>40</sup> interrelationship between the systems, therefore is no longer a controlling factor. If either circulatory or respiratory function ceases, there is now a possibility of mechanically restoring the function so that the previously inevitable failure of the other system would not necessarily result. In the event of the failure of both systems, it is now mechanically possible to revive and sustain both systems.

At present, therefore, the use of the respirator places a gulf between brain death and heart death, which previously did not exist. Similarly, where there is no permanent capacity to respirate, there can be no permanent, natural circulation, but by use of present medical technology, both respiration and circulation can be sustained by artificially sustaining the system which first failed.<sup>41</sup>

Medical science has been aware that the simple observation and detection of respiratory and cardiovascular activity is not an accurate representation of the vitality of body organs.<sup>42</sup> Various organs continue to live even after the

irreversible cessation of circulation and respiration though as seen historically this was not an observation of any particular significance. The traditional criteria of death, which in application does not therefore wait until every cell of the body ceases to function, was regarded as "adequate to determine a state from which no patient ever recovered."43 Clearly, however, through the development of the resuscitative and life support systems presently in use, the traditional criteria may now be incapable of providing an indication of when life ends, for the operation of machines have removed the ability of physicians to determine the fact of death under the traditional criteria, for while the machines function, the circulatory and respiratory systems of the body also continue to function. In the absence of the mechanical assistance, the natural body systems may not function. For example, the respirator and cardiac pacemaker can significantly prolong the function of hearts and lungs which otherwise would probably fail, rendering the detection of death a more difficult diagnosis to make, rather than the relatively simple diagnosis it constituted in the past.44

The third major organ system, the brain, now can be nonviable--dead--in medical measurement, while the traditional vital functions of the body, circulatory and respiratory functions, continue unabated while supported by artificial means.<sup>45</sup> The effect of this possibility in terms of everyday occurrence has given rise to feelings that artificial life supports are not prolonging life, but giving life signs to death. In some cases, this indeed may be fact.

The understanding of the effects of major life support machinery systems may be facilitated by short and simplified descriptions of their operation and use. Some major life support machinery are systems:<sup>46</sup>

- that perform the mechanical act of breathing when connected to the patient's respiratory system which may either draw or force air into the lungs;
- (2) that initiate the heartbeat by using artificial pacemakers, applying mild electrical current which may be used externally (on the chest wall) or internally (in the chambers of the heart);
- (3) cardiopulmonary bypass: a modification of process that allows complete bypass of the heart and lungs, with the functions of these organs being performed outside the body, thus allowing the heart to remain still for surgery.

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The inappropriateness of applying traditional criteria to determine death is apparent in consideration of the above functions, for a human body would be "alive" as long as vital signs were maintained by the supporting machinery. The presence of the machinery prevents physicians from making a determination as to whether spontaneous heart-lung function has ceased. For example, one commentator stated that the use of a cardiac pacemaker obscures the "significance of the traditional vital signs of pulse, heartbeat, and respiratory movements as indicators of continuing life,"<sup>47</sup> recognizing the fact that the traditionally regarded "vital signs" are now, in the presence of artificial support, subject to external intervention rendering their traditional reliability into questionable status.

As time passed and the artificial systems gained more support and acceptance within the medical profession, and more importantly, as the availability and accessibility of the new technology expanded, the use of the machinery increased. With increasing frequency and likelihood today, a person experiencing respiratory or cardiac failure reaching a wellequipped hospital or clinic will be subjected to attempted resuscitation.<sup>48</sup> Depending upon indicated need, resuscitative efforts may include mouth-to-mouth resuscitation, application of electrical current to stimulate or restart heart action, insertion of a plastic tube to force air into the lungs, intravenous fluid nourishment, and various drugs to maintain blood pressure. These resuscitative techniques and procedures are undertaken to enable patient recuperation to the point that the patient's organs can resume normal functioning to support the patient's life independently. However, it has been stated that if these resuscitative and support systems are "carried to the extreme of medical capability in a patient who will never be able to resume normal functioning, the result will be a complex tissue culture".<sup>49</sup>

This is not intended to negate the value of the use of medical technology and artificial life supports, for some people who have cognitive "life", such as victims of paralytic polio, rely on artificial supports for maintenance of vital functions. Polio victims may have extreme difficulty breathing, or may not be able to breathe, unless aided by artificial supports such as the iron lung.<sup>50</sup> Compare the case of a person who suffers a massive brain hemmorhage, who is apneic (unable to breathe) as is usually the case, and who must have the assistance of a respirator to breathe. If the extent of the damage to the patient is such that there has been irreversible destruction of the brain, the patient could not survive if taken off the respirator, just as in the case of a victim of polio. The difference lies in the

cognitive life of the polio victim, and the lack of brain function of the brain hemmorhage victim. Both will register life signs while under the assistance of artificial life support. Under the traditional criteria of death, new technology suggests, and present medical practice indicates, that there is a functional difference between the two individuals, one of whom is undoubtedly alive (the polio victim) and the other who may be dead, but whose vital signs are artificially created.

Thus, the value of the traditional criteria of death in certain circumstances involving the use of advances in medical technology is seriously diminished if not made wholly obsolete. The ability of medicine to attach a machine to a body and through the operation of complex artificial systems, to recreate life which satisfies the traditional criteria of life requires profound reconsideration of the pre-emption of death determination of the traditional criteria of death under the law. Medicine, as will be seen, has already altered its approaches and practices to reflect this necessary change.

One physician has observed that:

[a]ttempts to restore or resuscitate life are effected and maintained so long as resuscitation is considered possible. It follows, inescapably, that the determination of the fact of death and the time of its occurrence must be retrospective in such situations.<sup>51</sup>

This emphasis upon the difficulty in diagnosing permanent loss of function, and the incumbent inability of the body to resume that function reflects the uncertainty of medical knowledge, which while more extensive than ever, is not perfect. Therefore, decisions of whether to attempt resuscitation, particularly in the more highly pressure-provoking circumstances of medical emergency, are generally resolved in favor of attempting resuscitation where uncertainty Certainly, resuscitative efforts are sometimes made exists. where failure is inevitable because of irretrievable deterioration of patients' conditions. Similarly there are patients who would not have been put on artificial life-supports if medical science were able to make accurate assessments of their respective prognoses at the time the decisions to use life-supports were made.

A further question arises with regard to the loss of pre-emption of the traditional criteria in the determination of death. It centers about the continuation of the lifesigns producing apparatus and techniques.

At what stage, given the questionable reliability of the traditional criteria determination of death, can death be measured, or should death be measured? This question relates to the possibility of the occurrence of death while the traditionally measured vital signs are maintained by artificial life supports. Since it is recognized that the artificial life supports are capable of sustaining the respective systems indefinitely, is the duration of life then to be measured by the function of the machine? In the normal operation of the artificial life supports, the body will continue to give off measurable life signs which are the guideposts of the traditional criteria of death, that is, circulation and respiration. The natural result of the traditional measurement of death in instances of artificiallysupported life appears to be the gradual increase and eventual warehousing of bodies supported by mechanical means. Would death in such cases be measured in terms of when the machines malfunction, or when the power supply of the machinery is interrupted?

These questions reflect the need for consideration of possible alternative views of death and its detection, to determine if there are reliable alternative means of assessing death despite the use of artificial life support systems. This is a very practical consideration in one sense, yet medical practice and law require that death, when it in fact occurs, must be a recognizable event. The morass of legal difficulties which may ensue from the indefinite "twilife" of persons, <u>in</u> <u>the absence of life</u> is evident. The pragmatic fact of limited resouces, including both medical and personal financial resources, adds compelling motivation to the search for an alternative to the traditional death criteria in light of medical advances.

#### PHYSICIAN DILEMMAS; SOCIETAL DILEMMAS

The increased utilization of artificial maintenance results in the increasing occurrence of a new circumstance of patient condition, one in which the breathing and heartbeat of a comatose patient with no discernible brain activity are mechnically sustained. Generally, the patient remains in deep coma, and requires intravenous feeding. The patient's body temperature may eventually drop. Finally, despite the mechanical aids, the patient's heart stops beating. When an autopsy is conducted following this last physical failure, widespread necrosis of the brain tissue is found. This relatively new situation has resulted in multiple dilemmas for physicians:

First came the disheartening realization that, despite the provision of the best medical and nursing care, these patients did not awaken from their irreversible coma--brain death is a form of irreversible coma. Second, the physician had to allay the chronic anxiety of the patient's friends and relatives (physicians, friends, and relatives asking after a while, "When will the patient die?"). Third was the consideration of what to do with an irreversibly comatose brain death patient who was chronically occupying an expensive hospital bed while continuously dependent on respirators, intravenous alimentation, medications, nursing care, and the monitoring devices. Fourth, the hospital and the physicians had to decide who was to pay the high costs of maintaining the respirator brain death case-the patient's family, the hospital, or society. Fifth was the ethical question of whether the discontinuation of the respirator was an example of the physician "playing God".52

The discovery of widespread necrosis of brain tissue upon autopsy is proof that sometime prior to the cessation of heartbeat, while the patient was subject to artificial support of the traditional life-indicating functions, death had occurred. Normal function of vital body systems is impossible in the absence of brain activity, which the autopsy reveals had previously ceased functioning. In view of the above-mentioned physician dilemmas, and the apparent inability of the traditional criteria to detect the occurrence of death when it occurs, the supremacy of the traditional criteria became questionable as an all-purpose medical criteria for the determination of death.

These physician dilemmas translate themselves into societal dilemmas, for the adaptation by medical practice to meet the need for a new determination of death has left the law behind, in some instances laboring in direct opposition to medical practice and opinion. A graphic illustration of this dichotomy can be viewed in consideration of the case of Mr. Potter, which occurred in England a number of years ago, and which in view of the present state of the law, can occur in Hawaii. Mr. Potter's case is noteworthy because physicians considered Mr. Potter dead while the law viewed Mr. Potter as alive.

Mr. Potter<sup>53</sup> suffered extensive brain damage resulting from his involvement in a barroom brawl. Mr. Potter stopped breathing, and was apparently determined to be dead. For the purposes of subsequent use of his kidneys in organ transplantation surgery, his body was put on a mechanical respirator to maintain the viability of the organ. A day later, the transplant surgery took place, and after the kidney was removed, the respirator was turned off. There was no spontaneous respiration and Mr. Potter's heartbeat stopped shortly thereafter. The following medical opinions were offered with regard to the case of Mr. Potter:

- (1) The coroner stated that he consented to the organ removal and it was based on the premise that the organ removal surgery would be conducted after Mr. Potter was dead. The coroner also felt that though Mr. Potter was alive when the kidney removal took place, there was no criminal offense committed by the surgeons because there was no hope of saving Mr. Potter's life.
- (2) An attending physician thought that Mr. Potter was medically dead when he stopped breathing, and legally dead when his heart stopped beating. Thus, medical death preceded the surgery, but legal death came after surgery.
- (3) A government pathologist stated that the brain damage brought on Mr. Potter's death, and the fact of surgical removal of the kidney was not pertinent to that determination.
- (4) A consulting neurological surgeon stated that Mr. Potter was dead before the organ removal surgery.

A clearly opposite view was expressed by the Dean of the faculty of laws at Newcastle University, who believed the physicians causing the termination of the respirator use were guilty of homicide. The Dean also believed that the act of the physicians legally resulted in the extinction of the criminal homicide liability of the individual who inflicted the brain damage in the first instance. Legally, the Dean felt that the organ removal was unauthorized by law because Mr. Potter was alive, did not consent to the surgery, and the surgery was not performed in contemplation of Mr. Potter's benefit. Mrs. Potter's consent to the removal surgery, according to the Dean, made her a party to the unlawful act, and that she was thereby rendered civilly liable to Mr. Potter's estate.

The reaction of the law to the case followed the Dean's opinion for the murder charge against the person who inflicted the injury was reduced to a charge of assault. "[T]he intervening acts of the physicians apparently mitigated the original charge."<sup>54</sup>
Despite the law's lack of change, there clearly was evidence that medical practice had changed since the establishment of the death criteria espoused by the Dean. The reduction of the charge indicates the unwillingness, or perhaps, the inability of the law, to reflect what under law may be a radical change.

Not all similar cases have had similar results, however. A 1974 California case exhibited the acceptance of the brain death criteria of death. Andrew D. Lyons was accused of murder, but at trial, his lawyers contended that the death was the result of heart removal surgery which was performed on the alleged victim, and not the result of the shooting. Judge William J. Hayes decided that the determination of death was a "matter of law", and not a question of fact. Generally, the court decides matters of law while the jury decides questions of fact. The Judge charged the trial jury: "A person may be pronounced dead if, based on the usual and customary standards of medical practice, it is determined that the person has suffered irreversible cessation of brain function."55 A heart transplant surgeon testified that the irreversible cessation of brain activity is the best definition of death at present.<sup>56</sup> In contrast to the case of Mr. Potter, the court did not allow or require a reduction of the charge of murder because death was declared on the basis of cessation of brain function. The recognition by the court of the brain function standard of death was characterized as "tradition-shattering".<sup>57</sup>

Society's dilemma is now whether the legal determination of death should be statutorily required to follow medical practice. As implicit in cases such as the Alice Cameron case detailed elsewhere, statutory resolution of this dilemma is not the sole method of addressing this conflict between law and medicine, for the court in the Cameron case, as in the Lyons case mentioned above, acquiesced in the medical use of the brain function standard of death without statutes requiring that recognition.

Thus, the pre-eminent status of the traditional determination of death criteria has declined, both in medicine, and also in the law.

#### LACK OF MEDICAL UNANIMITY

The change, or evolution of medical practice contributing to the medical and legal decline of the traditional criteria of death does not appear to involve the practice of a majority of physicians. There are many circumstances which all physicians would agree constitute death.<sup>58</sup> However, there are other situations as to which physicians disagree on whether death has occurred.<sup>59</sup> The present consideration of a redefinition of death under the law may therefore involve more than divergence of opinion between medicine and the law, but may involve in addition some divergence of opinion among physicians.<sup>60</sup> The Alice Cameron case for example, reflects some divergence of opinion within the medical community although not to any significant extent.

Physicians apparently most concerned with revising the legal definition of death and those who are most competent to perform the sophisticated medical tests which a redefinition of death may require, are a relatively small group of specialists, primarily transplant surgeons and neurospecialists. Other physicians appear to either support, acquiesce in, or in a few cases, disagree with the use of the brain function standard of death. Redefinition of death under the law to recognize the use of the brain function standard of death legally may, it has been suggested, acknowledge the adoption of the standard by the general medical community. Undoubtedly affirmative legal recognition of the brain function standard would result in greater publicity for that standard.

## **BRAIN FUNCTION DETERMINATION OF DEATH**

Terminology in this section does not and is not intended to conform with strict medical usage, although some variation in terms was discovered in medical literature. Terms are used interchangeably herein which as terms of art may not be technically interchangeable. The purpose here, however, is to provide a general understanding of brain function measurement, without reaching very technical points or discussions. As Appendix J demonstrates, there is no clear acceptance of a single criteria for the determination of brain death, and the usage of various terminology is readily apparent in the criteria.

The brain is the remaining major organ system which can neither be artificially supported nor transplanted. Other major organ systems of the body, such as the heart, lungs and kidneys, for example, can be artificially maintained, and are capable of being transplanted.<sup>61</sup> Brain function is vital to life with respect to the universal understanding of physical life, for in its absence there can be no spontaneous body functions without artificial support or maintenance. The controlling function of the brain over the rest of the body is due to the fact that the brain is the most complex of the body's organs, and consequently, also the organ system most vulnerable to irreversible injury.<sup>62</sup> Unlike some other body tissues, brain cells are incapable of complete regeneration, and can repair themselves only to a certain point.

The human brain is located in the cranial cavity, and is a mass of nerve tissue surrounded by membrane, which is connected to the spinal cord. The brain is made up of several parts, each of which appears to be associated with particular body or emotional functions. The brain serves as a central communication system for the rest of the body, and through a complex relay system, collects, stores, and transmits sensations and information to other parts of the body.63 The brain controls such functions, and the body is otherwise unable to generate such independent function. Brain cells are regarded as the most highly organized cells in the body,<sup>64</sup> which cells vary in their ability to withstand lack of oxygen. The most sophisticated of the brain cells are the nerve cells of the cerebral cortex, which at normal temperature can survive no more than three to six minutes of complete circulatory cessation. On the other hand, cells of the midbrain and the brainstem are more resistant to anoxia (lack of oxygen), and can survive for a period of up to fifteen minutes in the absence of oxygen.<sup>65</sup> This is a vast over-simplification of the processes of brain function, but the intent here is merely to indicate the central and singular importance of the brain to the function of the human organism.

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The medulla, measuring about one-inch in length, is located at the lowest portion of the brain where it tapers off into the spinal cord.<sup>66</sup> Above the lower brainstem is the midbrain, which directs eye movements and a number of involuntary muscular reflexes.<sup>67</sup> The cerebellum is the second largest part of the brain, and is chiefly concerned with coordination of the muscles and equilibrium of the body.<sup>68</sup> The largest part of the brain is the cerebrum, which is composed of four lobes, each of which controls special functions such as hearing, speech, sight, taste, emotion, judgment, and similar sensory functions.<sup>69</sup>

Death implies a condition from which one cannot resume life as it was prior to the occurrence of death. On this basis, medical experts assert that when the brain dies the patient should be considered dead, although other organs such as the heart, lungs, or other part of the body, such as eyes, are still viable and would be fully operational except for the death of the brain.<sup>70</sup> This assertion is based on the perceived distinction between biological life and personal life,<sup>71</sup> and in fact focuses on the essence of the individual human being. Therefore, it is asserted that the "personal identifiable life of an individual human can be equated" with the irreversible loss of cerebral function that is manifested in part by activities such as "consciousness, awareness, memory, anticipation, recognition, and emotions."<sup>71</sup> There is as a result, some claim, a need to define death on the basis of brain function cessation (in the absence of spontaneous respiratory activity) for "humanitarian and scientific reasons".<sup>73</sup>

## **BRAIN DEATH**

Brain death occurs when a patient's brain activity fails\_to maintain vital life processes, as it normally does.<sup>74</sup> The entry of a patient into coma can be precipitated in various ways, for example, head wounds, shock, cardiac arrest, and others. Coma, in and of itself can be divided into two distinct divisions, reversible coma and irreversible coma.<sup>75</sup> As pointed out by a heart transplant surgeon in court testimony, coma itself does not mean death, for "people can remain in a coma and still live".<sup>76</sup> The the term "irreversible coma" appears to have been used to equate medical death, or is understood by some to be so equated. The Harvard criteria, for example, addressed itself to a phenomenon referred to as "irreversible coma" in its study of the medical parameters and definition of brain death. It is only those persons who are diagnosed as having suffered cerebral death who may be diagnosed as dead, for in other cases of reversible coma, there is an implication that the patient has the physical ability to regain consciousness and maintain life processes independently or with partial support. This condition has been variously labelled coma stage IV, coma dépassé, irreversible coma, irreversible coma with electrocerebral silence, cerebral death, disassociated brain death, permanent cessation of brain function, central nervous system death, and brain death.<sup>77</sup> The terminology varies, but appears to be descriptive of presently utilized conclusions of medical determination of death. As Appendix J demonstrates, the various criteria of brain death include some similar basic considerations, but through the passage of time, some more recently developed criteria are not only more precise than the earlier criteria, but also appear more streamlined, probably through the increase in experience and knowledge gained of the brain function standard of death.

It has been suggested<sup>78</sup> that irreversible coma can be subdivided into three separate categories, central nervous system inactivity (embraced by the Harvard criteria), brain inactivity (embraced by the human brain death criteria), and brain activity which presently requires more study. The brain activity death category requires further knowledge of the function of the brain, particularly of the assignments and

functions of the individual parts of the brain. Death is currently being diagnosed when the central nervous system ceases to function or when the brain has died, and either conclusion requires a careful and highly technical analysis. Therefore such a finding is generally made in places like hospitals, where special equipment, procedures, personnel, and related facilities are available.<sup>79</sup> The physician must determine that the cessation of brain function has not only occurred, but must further determine that the failure is irreversible and not reversible. Occurrences such as fainting, anesthesized states, and unconsciousness resulting from concussion may be said to temporarily arrest brain function, but are states from which a patient generally recovers.<sup>80</sup>

The determination of irreversible cessation of brain function is not a simple matter, either in detection and measurement, or in terms of having a concensus on the diagnosis itself. The brain, as with other body organs and cells, does not experience simultaneous death, but rather ceases to function in stages. Thus, death comes to the brain over a period of time. This fact has resulted in difficulties in the diagnosis of brain death. Some medical researchers rely wholly upon the irreversible cessation of the central nervous system, others on the irreversible cessation of brain function, and still others on the irreversible cessation of cortical function. This lack of medical concensus results, of course, in disagreement as to the occurrence of death among physicians who rely on nontraditional criteria of death. As demonstrated in the Karen Quinlan case, none of the physicians involved apparently were willing to testify or declare that she was dead under any medical criteria, but the disagreement<sup>81</sup> expressed by at least one commentator gives rise to the possibility of a further refinement of the brain function standard of death.

#### MEASUREMENT OF BRAIN ACTIVITY

Clinical observation of the activity of the brain has apparently long been a factor in medical determination of death.<sup>82</sup> The perception of cessation of spontaneous respiration is one factor in determining whether the neurological system of the patient is intact.<sup>83</sup> Brainstem function can be tested by such objective tests as the absence of pupillary response to light, the lack of ocular response to labyrithine stimulation by ice water or head movement, absence of oculocardiac reflex, and lack of spontaneous respiration.<sup>84</sup> Spinal cord function can be measured by testing muscle stretch reflexes and response to painful stimuli.<sup>85</sup> These tests have been utilized in the traditional determination of death, so the measurement of brain activity does not require the total abandonment of all tests previously used, nor does it require a total adoption of tests and measurements never before used. The measurement of brain activity does increase the variety of tests which can be performed to arrive at the diagnosis of death.

In the measurement or the evaluation of brain activity in its more detailed use today, more technical tests such as electroencephalography and the angiography, in addition to other measures are performed. There appears to be no single measure or test which can be used to determine brain death. The tests, moreover, are conducted to assure death of the cerebrum, since despite brainstem death, the cerebrum may nevertheless be alive.<sup>86</sup>

In the State of Hawaii, the bulk of the available sophisticated technology, machinery, facilities, and personnel capable of measuring brain activity are located in Honolulu. Most of the outlying rural areas of Oahu and the outer islands lack the capability in terms of facilities and equipment to measure brain activity by electroencephalography or angiography. This lack has not been a significant problem because of the relative accessibility of Honolulu, and of the existence of portable equipment and the travel undertaken by practicing physicians when needed.

#### ELECTROENCEPHALOGRAPHY (EEG), A PRIMARY METHOD OF MEASURING BRAIN ACTIVITY

Electroencephalography is perhaps the most frequently mentioned measurement technique in the brain function criteria of death. It is useful therefore to consider the basic function and use of the EEG.

The EEG test requires a skilled clinician, and properly calibrated and functioning EEG apparatus. The clinician places electrodes around the skull and scalp appropriately; the placement of the electrodes has received some comment by medical experts.<sup>87</sup>

The EEG measures activity of the cortex which is detectable through the skull and scalp, but does not reflect true subcortical activity. It is possible therefore, that even if the EEG confirms death, there may be some subcortical activity.<sup>88</sup> EEG results which show no detectable cortical activity have been labelled as flat, equipotential, linear trace, cerebrally silent, isoelectric, and isopotential.<sup>89</sup> The use of the term "flat" has led to some misunderstanding, and the Ad Hoc Committee of the American Encephalographic Society on EEG Criteria for Determination of Cerebral Death has recommended the use of the term "electrocerebral silence" to describe a linear EEG with no evidence of brain activity over 2uV between electrode pairs 10 cm or more apart.<sup>90</sup> Other similar refinements or attempts to achieve specificity in EEG readings to provide conclusive EEG data for use with other criteria in determining death are reflected in the various medical criteria which have been proposed. (See Appendix J.)

The EEG is regarded as highly useful by some research and medical personnel for accurate confirmation of brain death. A report compiled by the American Electroencephalographic Society<sup>91</sup> evidences the accuracy with which the EEG may be used in determining death. Of 1,665 patients reported by the members of that organization exhibiting isoelectric EEG results, only three survived. Of these three, more significally, all were reported in coma due to drugs, one due to phenobarbital intoxication, the second due to barbiturates, the the third, "massive" meprobamate intoxication.<sup>92</sup> Brain function criteria generally specify that cases of certain drug-induced comas should not be subjected to the brain death criteria, thus the three patients who survived would not generally be candidates for a finding of brain death. The report concluded that the EEG is accurate evidence of electrocerebral silence, but that it should not be the sole determinant of The conclusion of the American Electroencephalographic death. Society as to the accuracy of the EEG in determining death was supported by another study conducted by O. E. Jorgensen, which concluded that both the EEG and a neurological examination are indispensable for the evaluation of patients with presumed brain death.<sup>93</sup>

The use of the EEG in determining death is not without its critics. The criticism appears to stem from cases in which patients have registered reportedly isoelectric EEG tracings, but who fully recovered hours or days later. Generally, however, these patients were found to have had a drug overdose or who were otherwise hypothermic.<sup>94</sup> (It is conceded that it is not uncommon for patients who have ingested large quantities of drugs which depress the central nervous system to recover fully, as evidenced by the general exclusion of such persons from the criteria application. See Appendix J.) There is documentation, for example, of a case in which a five-year-old child who was submerged in a frozen river for twenty-two minutes and who showed no signs of life, recovered fully six months later. Physicians attributed the recovery from the long lack of oxygen to the child's young age and to hypothermia.<sup>95</sup> It has been known since as early as 1951 that low body temperature results in isoelectric EEG tracings.<sup>96</sup>

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There is in addition, some controversy surrounding the maximization of the utility and reliability of the EEG. One point of disagreement surrounds the duration of the period over which the EEG must register lack of brain activity before death is pronounced. Generally, prognosis is very poor unless some activity returns within a few hours.<sup>97</sup> The time periods utilized or recommended in criteria range from no mention of any time delay<sup>98</sup> to forty-eight hours (Rosoff and Schwab). There appears to be widespread acceptance of twenty-four hours as a basic delay period of time, recognized by some criteria.

Further, it has been suggested that electrodes utilized in EEG tests be placed on the cortex or inserted into the brain itself because scalp recordings do not detect brain activity of low potential.<sup>99</sup>

More recently, additional questions have arisen with respect to the need for an absolutely isoelectric EEG tracing. One commentator particularly challenged the need for an isoelectric tracing in cases where the brain has already been operated on and the observed extent of the damage to the brain is such that recovery is not expected.<sup>100</sup> That commentator also stated that the brain "may be incapable of recovery even when it does not meet all of the clinical and EEG limitations imposed by the new definition of brain death."<sup>101</sup> The relative value of the EEG, and the necessity for other life determinants must be emphasized, for EEG readings register life-like signs where independent life is presumed unlikely or impossible, including a fetus 40 days from conception,<sup>102</sup> and lime Jello.<sup>103</sup> Compare these results to the flat readings required for a finding of brain function The relative measure of "life" therefore, much less death. independent and cognitive life, of a body registering a flat EEG tracing is very persuasively negligible. This view is clearly one which may evoke much future discussion; however, for present purposes when there is apparently no uniform acceptance of the measurement of brain death and its role in the determination of death, such a view may be beyond the present scope of discussion.

## OTHER INDICES OF BRAIN DEATH MEASUREMENT

European investigators early stressed the measurement of brain activity through detecting the virtual absence of cerebral circulation, or by lack of oxygen consumption.

Absence of cerebral circulation, or the lack of blood flow through the brain, has been identified as one index of death. Cessation of cerebral circulation indicates that death can be demonstrated even in the presence of heart beat and systemic blood pressure.<sup>104</sup> Various methods can be used to detect cessation of cerebral circulation, including the use of radioisotopes, angiography, or sonic techniques.<sup>105</sup>

One test conducted in the Alice Cameron case to determine the validity of cerebral circulation required the use of radioactive material injected into the veins of the patient, with a monitor placed over the heart to test heart pull and another monitor placed over the skull to test circulation within the head. Normally such a test yields a heart response, and a brain response is recorded shortly thereafter. Cerebral angiography has been criticized as a method of diagnosing death because the findings may vary and, in addition, the test is traumatic for the patient.<sup>106</sup> Other tests which are of less trauma to the patient, such as the EEG, are recommended to be performed prior to angiography as a matter of safety.<sup>107</sup>

Cellular metabolism of the brain is another possible measure which is frequently mentioned in relation to determining death. Cellular metabolism may be tested in various ways, including measuring the brain's oxygen consumption and by determining the presence of metabolism products in the blood or in the cerebrospinal fluid.<sup>108</sup> The basis for this test is the brain's oxygen needs, and the fact that permanent cessation of the brain's oxygen consumption indicates death of the brain. A rather simple method of determining the brain's oxygen consumption is to determine the oxygen consumption of the arterial and venous blood at the jugular bulb.<sup>109</sup> Experimental studies indicate cerebral oxygen consumption at a level ten per cent of normal results in an isoelectric EEG tracing.<sup>110</sup>

Other methods of testing are being developed experimentally, and require further study or are not widely used, such as brain biopsy.<sup>111</sup> Problems have been cited with the use of brain biopsy, relating to deciding which portion of the brain to test; there is a possibility of performing a biopsy on the one brain portion which is dead.

## SUGGESTED MEDICAL CRITERIA OF DETERMINING BRAIN DEATH

As apparent from the previous discussion, there are a number of medical tests which can be performed in determining whether a patient has suffered brain death. Also apparent is the fact that there appears no general agreement as to the precise tests which should be made, and in view of rapid advances in this area in recent years, it is likely that many years will pass before there is general agreement of specific tests which should be used. The disagreement largely stems from the constant development of newer techniques as greater understanding and knowledge of the function of the brain is secured. The application of new techniques by those working to extend present knowledge, will of course as in the past, require continuing acceptance and adaptation by practitioners of new concepts, just as in recent years the concept of brain death as equating death in common understanding required practitioners to alter their practices.

As discussion elsewhere points out, the advisability of enacting specific medical tests or criteria into statute is highly questionable, and statutory material may more appropriately be addressed at general acceptance of the brain function criteria of death. This discussion is merely to indicate the various medical tests and criteria which, regarded as a whole, indicate the general direction medicine has taken in terms of determining death. The intent is also to indicate that in taking that general direction, there has not been and continues to be lack of unanimity both as to details utilized and in some instances, as to the philosophy of the direction itself.

The extent of medical acceptance of brain function criteria of death is substantial, and it can be said that there is general agreement as to the appropriateness of that standard. The basic medical definitions have been adjusted to include in the medical definition of death, the "cessation of cerebral function".<sup>112</sup> Thus medical acceptance of brain function death can probably be concluded.

In the event a statute is enacted in Hawaii, and in the event that the statute does not include precise medical criteria which must be satisfied before brain function death may be declared, the question of which criteria physicians would apply in implementing the statute would not be resolved. Clinical indicators change over time to reflect newer developments in medicine; yet at which point will lawful declaration of death again conflict with the medical criteria applied? That is, just as is currently being experienced at present in terms of the legal-medical dichotomy in determination of death under the traditional standard, criteria presently utilized under the brain death standard which are not specifically recognized under the law vary widely, perhaps as nearly as widely as the difference between utilizing the traditional standard of death and the brain function standard of death. There may be, of course, no manner in which a law can anticipate such changes, and physician discretion would be a controlling factor. It should be emphasized that in terms of medicine, physicians are the only specialists capable of modifying practice requiring renewed consideration of a long-accepted

definition under the law, and in fact also are the only specialists capable of keeping the law abreast of such modifications.

"Criteria" of death do not define death, but only provide the mode of detection of death.<sup>113</sup> Criteria thus may direct physician practice under the broader concept of brain function death. The need for standard or recommended criteria was apparently strongly felt within the medical community, both nationally and internationally. For example, in 1968, two major statements, now known as the "Delaration of Sydney"<sup>114</sup> and the "Harvard criteria"<sup>115</sup> were publicized with regard to clinical criteria of the determination of brain function death. The Declaration of Sydney was issued by the World Medical Assembly, and the Harvard criteria was issued by the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death specifically formed and convened for that purpose.

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The Harvard criteria committee was composed of distinguished physicians, attorneys, and theologians, and was viewed as bold and far-reaching, for the committee stated that death can be determined by central nervous system damage, and moreover, precisely specified the medical criteria which would establish the finding. The statement of the committee included a declaration that a permanently nonfunctioning brain was tantamount to death, despite the ability of other vital organs to function with artificial life supports.

Following the landmark Harvard criteria, many other American medical schools and individual physicians conducted, and today continue to conduct, studies to determine necessary refinements or other modifications of the Harvard criteria, to investigate further the function of the brain and the nature and causes of its death. They also seek to propose other criteria of brain function death, as Appendix J shows.

Examination of the criteria results in detection of several major differences between the criteria, which include:

- (1) The interval between initial patient testing and confirmatory retesting to determine whether any changes in condition have occurred.
- (2) The need for and the type of electroencephalographic tests to be conducted, and the precise measures which must be met. Criteria generally consider the EEG useful in confirming death, but the University of Minnesota has omitted the EEG from its criteria, because it does not believe in the adequacy of the EEG. Other questions regarding

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the use of the EEG in terms of testing technique also vary.

- (3) There is variance in the requirement of total absence of reflexes. Some of the criteria allow certain reflexes to be present in cases of brain death, but other criteria developed later in time tend to allow some spinal reflexes as well.
- (4) Some criteria require that the patient not be hypothermic or under central nervous system depressants (drug intoxication).

There is general opinion among those subscribing to the brain death concept that the Harvard criteria are presently conservative, as shown by research conducted by various medical schools and research hospitals and by court testimony in the Alice Cameron case.<sup>116</sup> Many of the later-developed criteria rule out the need, for example, of the absence of spinal cord reflexes in confirming death. The Harvard criteria in effect defines the death of the central nervous system (the brain and the spinal cord) while the newer criteria defines the death of only the brain, excluding residual spinal cord function.<sup>117</sup> Emphasis has been moved away from central nervous system death to brain death in medicine's efforts to precisely locate the juncture of human life and death.

A Hawaii physician has published criteria for the pronouncement of death, utilizing the trend towards brain death as opposed to central nervous system death.<sup>118</sup> Doctor Sims' work includes separate criteria for traditional cardiocirculopulmonary determination of death and for brain function determination of death. Many criteria proffered only provide for determination of death under the brain function statute. The existence of specific medical criteria for traditional death determination may be particularly pertinent in consideration of the inclusion of the traditional standard of death in some state statutes, regardless of whether or not a statute specifies medical criteria to be utilized in its implementation.

#### INTERNATIONAL CRITERIA

The criteria in Appendix J represent some but not all known medical criteria of brain death determination. There are other criteria but inclusion of certain criteria only is based on the intent of this report to demonstrate the existence of differences without delving into technological aspects of medicine on an exhaustive basis.

European physicians are the basic sources of international criteria. French standards appear to be similar to the Harvard criteria, and in addition, require the loss of spontaneous regulation of temperature and blood pressure.<sup>119</sup> Austro-German criteria require irreversible coma dépassé relying heavily upon bilateral serial angiography of the internal carotoid and vertebral arteries of the brain. A negative angiogram for more than fifteen minutes is considered to prove death.<sup>120</sup> Russians at the Organization of Medical Science adopted a standard that "death is a state of total and irreversible abolition of cerebral function".<sup>121</sup>

The primary difference between the European criteria and American criteria is that the European criteria include as a major point the falling of blood pressure upon the removal of artificial maintenance thereof.<sup>122</sup> The use of the angiography as a diagnostic tool by the Austro-German criteria is, again, significantly different from general American criteria.<sup>123</sup>

## SOME DIFFICULTIES WITH A DEFINITION OF BRAIN DEATH

It has been often mentioned that the determination of death is solely a medical question, and should be left to the discretion and sole determination of physicians. It is also true, however, that in terms of the diagnosis of brain death, "most physicians (to say nothing of the nurse of layman) cannot make the diagnosis of brain death with confidence."124 In addition, even a skilled electroencephalographer measuring brain activity, can only give opinion about brain waves, and not of the brain itself.125 Many persons, including physicians, therefore feel that clinicians skilled in neurology and neurosurgery are the only persons with sufficient competence to determine the occurrence of brain death.<sup>126</sup> As discussed elsewhere, some state statute proposals and at least one state statute require the consultation of a neurospecialist in declaring a patient dead under the brain function criteria. Such an option would of course force the determination of death to be made by only a few specialists.

Public confusion has also arisen in relation to the inadequacy of the traditional criteria of death. Brain death criteria requires removal from simple primarily observational techniques and procedures to "sophisticated intervention to elicit latent signs of life such as brain reflexes",<sup>127</sup> which the ordinary layman is apt not to grasp readily. The normal appearance of patients who are artificially supported, it has been suggested, is disturbing to

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the layman who must now accept the fact that a breathing human being is in fact, medically dead.<sup>128</sup> The layman however is gaining in understanding of the operation of the artificial life supports, and their ability to cause a dead body to appear as if it were a living body. The concern for lay acceptance hinges upon, in part, the needs of organ transplantation, and the need to further facilitate other medical and technological developments.<sup>129</sup>

A study conducted at a medical university queried lay persons, physicians, and freshman medical students as to whether brain death constitutes the true death of a patient, regardless of artificially supported cardiorespiratory function. The results indicated that the premise was not uniformly accepted by the lay persons or the medical profession: 60 per cent of the lay people, 46 per cent of the physicians, and 42 per cent of the students did not consider brain death as an adequate definition of the cessation of life.<sup>130</sup> A New York poll showed however that 65 per cent of the general public support the brain function standard, while only 15.7 per cent oppose it.<sup>131</sup>

## ORGAN TRANSPLANTATION AND THE DEFINITION OF DEATH

As earlier acknowledged, and has been commented upon by many writers, transplantation of organs played a major role in requiring a renewed consideration of death under the law. The development of organ transplantation opened up new possibilities in the extension of human life, and in the improvement or other rehabilitation of human life. At the same time, new areas of legal vulnerability were created for those physicans who performed organ transplant surgery. The early era of organ transplantation did not, however, engender critical difficulties in terms of the life and death of donors, but once organ transplantation grew increasingly sophisticated and entered the area of vital organ transplantation-organs without which a human body probably could not survive-profound difficulties surfaced.

The possible problems arising from this capability are clear, and the liability factors for transplant physicians drew much attention. The artificial life supports developed and used with greater frequency during the development of vital organ transplantation added to the difficulties in acceptance of medical determinations of death, because persons seemingly alive and breathing were declared dead, and their vital organs removed for transplantation to other persons.

Each year, thousands of Americans die from diseases and malfunctions of tissues and organs.<sup>132</sup> Some of the afflictions can be cured or relieved by transplantation of healthy organs and tissues to replace, or to assist or take over the function of, the diseased, damaged, or otherwise malfunctioning organs and tissues.<sup>133</sup> Presently, approximately twenty-five different types of organs and tissues can be successfully transplanted. These organs and tissues can be classified into three categories:<sup>134</sup> ÷

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- Major vital organs and tissues required by a human body to survive. (Examples: kidney, heart, liver, lung, skin, pancreas, spleen, bone marrow.)
- (2) Nonvital organs and tissues. (Examples: eye corneas, bones, cartilage, teeth, fascia.)
- (3) Secretions of the endocrine-forming organs. (Examples: hormones and secretions of endocrine tissue, such as thymus.)

The most dramatic of the transplants, and one of the later to be developed, is human heart transplant surgery, first conducted in 1967.<sup>135</sup> This medical milestone, which is perhaps symbolic of the seeming miracles of modern medicine, created much discussion in the public, medical and legal communities of the need to reassess the occurrence of death. In recalling the historic view of the heart as the focal point of human life and the symbolic "emotion" attached to the heart, it was perhaps inevitable that while the public was astounded by the medical feat, it was also slightly confused by the achievement. The pre-eminence of the traditional criteria of death did not allow for a heart to be alive after death, because death did not occur until the heart stopped beating. The basic question was repeatedly posed: "How could the donor whose heart was implanted into another person be dead when that donor had a viable, functioning heart?"<sup>136</sup> It is therefore very significant that major statements on the determination of death by brain function criteria were issued the following year.

Transplantation surgery requires the availability of healthy donor organs or tissues. In some cases, such as teeth and kidneys, the donor can be a living donor and not suffer significant physicial impairment by the removal of the organs. Yet, in cases like the heart, where there is only one organ fulfilling a critical body function, the donor must be dead, or if a live donor is used, the donor will necessarily die. The heart, as an unpaired organ (an organ without a duplicate in the human body), means a heart donor would not survive removal surgery. Specific medical experts had previously determined that heart function was not a predominant indicator of death in every instance, and that as a mechanical pump, its cessation was not necessarily appropriate to determining death in every case.<sup>137</sup>

Organs not integral parts of living bodies have limited spans of viability during which time the organs may be successfully transplanted.<sup>138</sup> Organ deterioration rates vary among the different organs, and generally the quicker the organ is transplanted following removal from the donor, the greater the likelihood of successful transplant. In view of this medical determination, it is relatively clear why macabre fears of transplantation and premature declarations of death for the purpose of organ transplantation arose.

There have been some instances of what may be questionable timing of organ removal survery. A 1965 writing reported a case involving the Karolinska Institute which subsequently received criticism based on legal, moral, and ethical grounds.<sup>139</sup> A forty-year-old dying woman was admitted to the neurosurgical clinic in a comatose condition resulting from a cerebral hemorrhage. Her condition was pronounced hopeless, and with her husband's consent, the woman's kidney was removed and transplanted to another person. The woman died in a respirator two days later. The international attention the Karolinska Institute received was primarily prompted by the reported fact that the woman's respiration and circulation had not ceased, and were not dependent upon artificial means of support prior to the organ removal. Professor Craaford of the Institute defended the action by stating that the Institute staff had previously agreed that in instances of irreparable central nervous system damage in which the prognosis was that the patient definitely would not survive, it would be permissible to remove organs despite the nonfulfillment of current definitions of death. The fact remains. nevertheless, that while the woman's brain may have suffered irreversible damage, neither her respiration nor circulation had failed. The distasteful connotations of resulting fears and distrust of physician scruples are reflected in present statutory provisions which prohibit the participation of a physician declaring a patient dead in subsequent transplantation surgery, or which require additional confirmation in the event the patient declared dead is to be an organ donor.

The short period of viability of certain organs following the donor's death has increased the interest of organ transplantation in seeking earlier determinations of death, and spurred development of new criteria for determining when donors are in fact dead. These criteria have gained wide

acceptance in the medical profession, particularly among the neurospecialists. It should be emphasized, however, that the fact of death is the focal point, and not the premature declaration of death.

The reasons for the rejection, however, in this report, of the needs and practices of transplant surgery as a controlling interest in redefining death under the law despite the probable relationship between transplantation pressures and the development of newer criteria of death, are:

- (1) that Hawaii physicians have expressed the opinion that organ transplantation is one of the rarest reasons for utilizing the brain function criteria of death;
- (2) that there cannot be separate death criteria applied to persons based on whether or not the person will be an organ donor; and
- (3) in order for death to be declared under any medical standard or criteria, there must be adequate proof that the person is in fact dead, and the fact of organ transplantation potential should not affect the length of life of donors who are medically only questionably dead.

The brain death standard is thus applied to many cases other than organ transplantation cases. The development of specialized intensive care units in hospitals, the increasing use of sophisticated medical treatments, and the increasing reliance upon artificial support of vital functions in resuscitative efforts have involved the treatment of many patients suffering from many different physical problems. The fact that life may be prolonged beyond natural limits must serve as the primary basis for examining the adequacy of legal definitions of death.

Legal enactments codifying the use of the brain function standard of death include various "protective" types of provisions, including the previously discussed requirement of additional physician consultation in determining death, and the prohibition against participation of a physician declaring death in any transplant surgery involving the patient declared dead. In addition, at least five states, including Kansas, Maryland, Michigan, New Mexico, and Oklahoma have enacted provisions requiring the pronouncement of death prior to the removal of any organ for transplantation purposes in their definition of death statutes. The majority of the states with such statutes are silent on the question, and merely provide for the determination of the fact of death. The rationale behind the silence appears to be that the major point of decision-making is the medical diagnosis of death, and that further prescription of action beyond that point with regard to transplantation is unnecessary. The existence of the requirement for the pronouncement of death prior to organ removal may provide a more orderly view of the process of organ transplantation, in terms of being assured that the donor is actually dead before the removal of the organs. However, there appears no significant reason to believe that the time of the pronouncement of death, once death has been medically determined, in the sequence of events, has any significant effect on either the donor or the donee.

An area in which possible detriment to a potential organ donee would result is if a statutory provision existed which requires the discontinuance of artificial maintenance prior to the removal of the organs. This, in view of the viability of the organs, and the likelihood for success of the transplantation, would appear to be detrimental to the donee, for as earlier discussed, certain organs have a relatively short period of viability following removal from a donor's body, or following cessation of vital functions of the donor, unless physicians chose to restart the artificial supports. There is however, at this time, no such provision enacted. In fact, the existence of statutes which allow and require the pronouncement of death to precede cessation of artificial supports, provides ample evidence that the laws enacted are attempting to balance the rights of both donors and donees, without jeopardizing organ transplantation.

Brain death determination virtually in some instances allows the timing of the "death" of the donor, for heart transplant surgery generally requires the removal of the heart from the donor and immediate placement into the donee. This procedure requires, therefore, that the donee be prepared for surgery in the event the declaration of death is made just prior to the removal of the heart. Since the viability of the organ is a critical factor in ensuring a successful transplant, it is unlikely that transplant surgery would be forestalled for any significant amount of time, for physiologically, the integrity of the heart to be transferred is apparently continuously deteriorating.

#### THE UNIFORM ANATOMICAL GIFTS ACT (UAGA)

The Uniform Anatomical Gifts Act was proposed for enactment by the states, and was in fact enacted in one form or another by all fifty states, <sup>140</sup> to provide uniform procedures

to be followed in the event of anatomical gifts, and to facilitate organ transplantation. The entire premise of the UAGA is that it sets forth pre- and post-death requirements which are intended to facilitate the process of organ donation, once the donor is dead. The UAGA does not regulate organ donations made by live donors, but only organ donations to be effectuated once the donor is dead.

It seems, therefore, that in view of the medical and legal difficulties involved with the determination of death, and the crucial time factors inherent to organ transplantation surgery, that the determination of the death of the donor is a most critical concern. Yet, the UAGA does not make any statement on the definition of death. Section 7(b) of the UAGA provides that "[t]he time of death shall be determined by a physician who tends the donor at his death, or if none, the physician who certifies death."<sup>141</sup> This is substantially the only reference to the death of the donor in the UAGA. The note of the Uniform Commissioners stipulates their specific intent that the section be left vague because: "No reasonable statutory definition is possible. The answer depends upon many variables, differing from case to case."<sup>1242</sup>

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The UAGA thus leaves the entire matter to the physician and while physician action is not circumscribed, the provision does not authorize the physician to use any or all of the medically acceptable determinations. The conflict between common law and medical practice therefore is not addressed, for by treating the determination of death as a purely medical question, the UAGA ignored past judicial pronouncements on the subject.<sup>143</sup>

There appears to be scant case law interpreting section 7(b) of the UAGA. The case of New York City Health and <u>Hospitals Corporation v. Sulsona<sup>144</sup></u> suggests that the vagueness creates undesirable uncertainty. In that case, a declaratory judgment was sought with respect to a brain-dead patient who was being maintained on a respirator and who was a potential donor. The hospital asked the court for a legal definition of death under the UAGA. The patient suffered, in the interim, cardiovascular failure and was pronounced dead under the common law standard, rendering the issue moot. However, the court subsequently rendered a decision in recognition of the pragmatic difficulty facing physicians and hospitals, and the "unsettled state of the law".

The court held that "currently accepted medical standards" were appropriate for determining death under the New York Act, and implied that the concept of brain death was consonant with those standards. The court, however, did not hold that brain death was to be the legal definition of death under the UAGA, although it did recognize the need for kidney donations, and the high rate of failure of transplants when organs are from donors satisfying the traditional criteria of death as against the success rate when organs are from brain dead donors. The court also pointed out the hospital's then recent experience in a case involving a brain dead patient, where potential legal problems with the definition of death had frustrated a transplant operation.

The Alice Cameron<sup>145</sup> case also resulted in the judicial construction of the UAGA provision<sup>146</sup> which fails to define death, and the judge there concluded that as a matter of law, "[t]he usual and customary standard of medical practice in the State of Hawaii is the standard to be used by the treating physician in determining when Alice Cameron died,"<sup>147</sup> a holding very similar to the holding of the Sulsona case.

# Chapter IV

# THE DEFINITION OF DEATH UNDER THE LAW

Law as developed by legislative bodies and the courts has long wrestled with matters relating to death. Before the advent of present medical advances, when the traditional criteria of determining death sufficed in both law and medicine, the nature of the law's concern with death involved the <u>effect</u> of death rather than the <u>method of determining</u> death. The issue of the time of death was sometimes considered, but in many respects in view of present medical knowledge, legal fiction may have been created for it is now apparent that the distinctions drawn in law were not based on scientific knowledge so much as the need of the law to place a precise time to the occurrence of death.

## **GENERAL BACKGROUND**

#### PROPERTY, INHERITANCE AND INSURANCE RIGHTS

The primary basis of earlier litigation was the settlement of property of persons who died. The courts in cases of apparently simultaneous deaths sometimes indulged in searching for distinguishing features between two deaths in order to assign priorities under the law. In the simultaneous death question, the primary issue revolved around the question of survivorship, for the property rights of survivors were often determined on the basis of which of the deceased persons (generally husband and wife) outlived the other, no matter how short a time period may have been involved. A number of cases have explicitly cited and relied upon the classic definition of death found in Black's Law Dictionary in resolving this question,  $^{1}$  but in other cases courts have relied upon the clinical definition of death implicitly, and have ruled that a person is alive as long as there is any evidence of heartbeat, circulation or respiration.<sup>2</sup>

Several survivorship cases have not only affirmed the clinical definition of death, but have also explicitly rejected cessation of brain function as a criterion of death.<sup>3</sup> In the case of Smith v. Smith,<sup>4</sup> a man was declared dead at the scene of the accident while his wife was taken unconscious to a hospital where she was maintained on a

respirator for seventeen days. In court, it was contended that the wife was in fact also dead at the scene of the accident because it was there that her brain ceased to function. The court refused to consider that the wife died except until the time she met the requirements of the clinical definition:

...it would be too much of a strain on credulity for us to believe any evidence offered to the effect that Mrs. Smith was dead, scientifically or otherwise, unless the conditions set out in the definition [of Black's Law Dictionary] existed.<sup>5</sup>

In <u>Gray v. Sawyer,<sup>6</sup></u> the court held that the deceased, though decapitated, was still alive because blood was seen spurting from her body. As recently as 1968, an appellate court insisted on the traditional definition while rejecting one based on "inability to resuscitate or an irreversible coma".<sup>7</sup> The extent of physician use of the brain function death determination in 1968 is not measurable, but the practice appears to have been existent at that time, as evidenced by the prior heart transplant surgery, and the issuance of the Declaration of Sydney and the Harvard criteria that year. Thus the concept though novel to law was not unknown or exceedingly rare in medicine.

Another type of case where timing bears crucially on inheritance rights involves insurance benefits. In <u>Douglas</u> <u>v. Southwestern Life Insurance Co.</u><sup>8</sup> the widow of the deceased was denied benefits under two insurance policies because he was kept alive by "extraordinary means" for more than ninety days following the accident, which the policies apparently set as a time limit for accidental death benefits. The court was not persuaded by the widow's argument that her husband had commenced the "act of dying" within the ninety day time limit.<sup>9</sup> Thus there are firm examples of instances in which courts could have elected to consider the changing complexion of medical practice but did not choose to do so, relying instead on previously accepted traditional determination of death criteria.

#### MISSING PERSONS

Missing persons, under the law, require presumptive determinations of death because there is no body and therefore no medical evidence of death, regardless of which criteria of death a court may otherwise choose. In the absence of evidence that a person is alive, a pro forma declaration of death is generally provided by law for the purpose of distributing the person's property or freeing a spouse to

remarry, among other necessary and practical matters. The Uniform Probate Code, newly enacted in modified form in Hawaii<sup>10</sup> provides that a person who has been "absent for a continuous period of five years" and who cannot be located after "diligent search or inquiry is presumed to be dead".<sup>11</sup> Similar provisions may be found in statutes of other states, generally differing only in the period of time which must elapse since the disappearance.

#### HOMICIDE AND WRONGFUL DEATH

The advent of transplant surgery caused the gap between the common-law heart and lung determination of death and the actual practice of physicians to become critical in certain instances. A physician who removed a brain-dead patient from artificial life support systems exposed himself to criminal liability for homicide, or civil liability for wrongful death, or both.

In the case of Tucker's Administrator v. Lower, 12 the brother of a transplant donor sued four surgeons for the wrongful death of the donor. The donor was declared dead after sustaining a head injury in a fall, on the basis of a twenty-five minute flat EEG tracing and the absence of spontaneous respiration for five minutes when the respirator was disconnected.<sup>13</sup> The trial court heard evidence that although Tucker's brain had ceased to function, he would have "lived" longer if the use of the respirator had not been terminated and if his heart and kidneys had not been removed. The court also received expert testimony supporting the brain death concept and asserting its general acceptance within the medical community. The judge achieved a compromise position between the legal and medical determinations of death by instructing the jury to consider the evidence offered in the case in light of several methods of determining death, including but not limited to brain death.14 The jury returned a verdict in favor of the physicians. This case, according to one writer, may have been the first damage suit brought against a heart transplantation surgeon which went to final judgment, and in which the primary issue was the determination of the time of death.15

The trial judge in the <u>Tucker</u> case has since written that a judge hearing such a case faces a perplexing problem because the judge is bound to prior legal doctrine while receiving evidence which clearly renders the prior legal position archaic, or at best, incomplete.<sup>16</sup> The judge believes that legislation is necessary to determine the time of death of a human being. It is noteworthy to mention that <u>following</u> the decision in the <u>Tucker</u> case, the State of Virginia enacted its statutory definition of death.

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Experience indicates that whenever a homicide victim is used as a transplant donor, the physician exposes himself to additional civil and criminal sanctions, while sometimes releasing the original assailant from responsibility. The question involves not only timing (was the patient dead before his organs were removed?) but also involves causation (did the physician in terminating the use of life-supports and removing the organs cause the death?). It appears irrelevant that the patient is already dying or on the verge of death, for the shortening of any life is nevertheless regarded as homicide.17 The question of timing of death in view of physician intervention also arose in the case of Regina v. Potter,  $^{18}$  where a manslaughter charge was reduced to assault because a physician terminated artificial life supports of a brain-dead patient.

Where a court accepts the brain function determination of death, the court will generally rule against the original assailant. In <u>People v. Lyons,<sup>19</sup></u> the judge ruled as a matter of law that a person is legally dead when his brain ceases to function. In People v. Saldona,<sup>20</sup> a second-degree murder conviction was affirmed; the victim was found to be brain-dead as a result of a gunshot wound inflicted prior to the time he was removed from the respirator. Similar results were reported in the 1971 case of State v. Brown, which is reportedly the first criminal case to rely upon the brain function standard of death,<sup>21</sup> and in a recent Massachusetts case.<sup>22</sup> These judicial decisions may be indicative of a contemporary judicial trend; however, the possibility of inconsistent results is one factor, among others, which has motivated the enactment of state statutes recognizing the brain function standard of death. This is true of states both with and without litigation.

It has been suggested, therefore, that homicide victims not be used as organ transplantation donors,<sup>23</sup> to avoid questions which have arisen and which can arise in the event of such use. Among these other considerations are questions relating to whether an autopsy of the victim satisfies the law in the absence of the removed organ, and whether physicians are unlawfully interfering with legally-required autopsies by organ removal surgery. A particularly pertinent point is whether the autopsy without the removed organ in any way affects the criminal murder prosecution and defense at trial.

Common law functions largely in recognition of a presumption called the "year and day" rule, which is still followed in some jurisdictions. Basically, this rule provides that a homicide is not murder if more than a year and a day elapses between the date of injury and date of the death of

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the victim.<sup>24</sup> There is, however, present and distinct possibility that a brain-dead homicide victim may be maintained artificially for more than a year and a day after the injury. The year and a day rule previously codified in Hawaii was repealed by action which enacted the Hawaii Penal Code in 1972.<sup>25</sup> The Penal Code does not however specifically proscribe reliance on the year and a day rule.

## STATUTORY DEFINITIONS OF DEATH

Since the initial enactment of a death-defining statute in Kansas in 1970, as of this writing fourteen other states have enacted differing statutory definitions of death. While the basic thrust and premises of the enactments are apparently based on similar intents, it is also readily apparent that there are significant differences between the different enactments. Appendices D and E present table analyses of some of the statutory provisions, for quick reference purposes, and Appendix F presents the actual statutory language.

There are two basic types of statutes defining death in existence. One type incorporates both the traditional medical criteria of death and brain death, while the other focuses on the brain function criteria of death. Thus, <u>all</u> statutes recognize the brain function standard of death.

#### **BRAIN FUNCTION PROVISIONS**

The fifteen definitions of death utilize nine different versions of the statement of brain function death. These nine variations are:

- (1) Total and irreversible cessation of brain function.<sup>26</sup>
- (2) Irreversible cessation of brain function.<sup>27</sup>
- (3) Irreversible cessation of total brain function.<sup>28</sup>
- (4) Irreversible cessation of spontaneous brain function.<sup>29</sup>
- (5) Absence of spontaneous brain function. 30
- (6) Total cessation of brain function.<sup>31</sup>
- (7) Absence of spontaneous brain function because of known disease or condition.<sup>32</sup>

- (8) Irreversible total cessation of brain function.<sup>33</sup>
- (9) Absence of spontaneous brain function and spontaneous respiratory functions.<sup>34</sup>

While these variations utilize many of the same words, the quantitative and qualitative aspects of the measures of brain function are conceivably different. In view of the increasing body of medical knowledge, it is likely that extreme precision in wording a measure of brain function will grow more important. While some amount of ambiguity in statute language may be sometimes desirable,<sup>35</sup> it is not difficult to begin to speculate on the possible ramifications of specific variations.

For example, what are the qualitative and quantitative aspects of the differences between irreversible cessation of brain function, total brain function, and <u>spontaneous</u> <u>brain function?</u> In light of the separate identification and relative life-value of different brain components, such as the cognitive as opposed to biologic controlling brain portions, and in view of the existence of a statute relating to total brain function, would a provision relating to brain function be viewed as limited to the higher brain functions which are apparently regarded as more closely related to cognitive life and the ability or inability of a patient to return to cognitive life? Or, will the use of "spontaneous" brain function be subject to immediate obsolescence upon the conceivable future development or interpretation of a particular medical procedure or technique to stimulate a minimal brain reaction?

Similarly, medical literature addresses both "cerebral" death and "brain" death. However, "cerebral" as a statutory term may be ambiguous because of the different usages the term has in general colloquial and medical applications.<sup>36</sup> The use of "brain", it has been suggested, avoids the issue of equating "the inability to think" with death.<sup>37</sup>

It is interesting to note that the variations utilizing "absence" as a measure of brain function (five states) do not vary in using "spontaneous brain function" as the factor to be measured, while the use of "irreversible" includes the varying factors to be measured, i.e., brain function, total brain function, etc. In light of the review of medical views and knowledge, it is difficult not to assume that it is likely that the variations do indeed differ not only in semantics but also in quantitative and qualitative senses. Therefore, the variations may be pointing towards different levels of acceptability of the brain death criteria, in terms of the potential minimum extents of brain death which would be required to satisfy the requirements of the statutes. Some of the variations appear to be interchangeable, such as

numbers 1 and 8 above stated. Others on their face appear to be very similar, but it remains unclear that medical or legal interpretation would result in the same meanings for the provisions.

Similarly, the use of "absence" and "irreversible cessation" may be nearly interchangeable, unless "spontaneous brain function" were interpreted to mean a stoppage of brain function, regardless of possible future development of medical capability to revive the independent operation and function of the brain, which perhaps could not otherwise revive itself.

The use of "total" cessation has been questioned, since medical experts have now stressed that the pertinent determinative point is irreversibility, not "total" cessation.<sup>38</sup>

# CONDITIONAL, ALTERNATIVE AND EXCLUSIVE USE OF THE BRAIN DEATH DEFINITION

The use of the brain function determination of death criterion is generally found in one of three applications: (1) alternative to a traditional respiratory and circulatory determination of death; (2) conditioned upon the use of artificial maintenance; or (3) without restriction or relation to other criteria for the determination of death.

Alternative usage of the brain function determination of death standard is prescribed by seven states (Kansas, Maryland, New Mexico, Oregon, Virginia, California, and Georgia). Specifically, the statutes provide what appears to be a choice of standards on which to base the determination of death, either based on brain function or traditional respiratory and circulatory criteria.<sup>39</sup> This type of provision would therefore seem to allow the physician to choose which criteria should be applied in determining whether a patient is dead or not, without any additional guidelines relating to the appropriateness of the selected criteria to the particular circumstances surrounding the individual patient's condition or treatment. Thus, the discretion of the physician is a paramount consideration in the application and interpretation of this type of provision. Physician discretion is not limited to this variation, however. The general nature of the statutes support broad physician discretion.

Alternative definitions of death inevitably give rise to the question of the possibility of a person being alive under one definition and yet dead under another definition, and what the proper action would be in that case. This

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difficulty in statutory construction of an alternative definition of death statute is dependent upon medical application of the possibility of a person satisfying only one of the alternative determination of death criteria in a mutually exclusive manner. In the event a court construes the statute to be truly alternative, then in all likelihood there would be no possibility of declaring anyone dead unless both alternatives were satisfied, thus defeating a major contention of the impetus for enacting a definition of death based on brain function. The problems caused by artificial maintenance would thus be unaddressed, and the statutory provision would have been enacted to no avail. In the event that a person can be found to be dead under one alternative, but not under the other criteria, then there may be even stronger argument for not declaring the person dead because there is statutory support for the contention that the person is alive. Alternative definitions have been said to be multi-vocal, and that "[t]aken literally, the statutes have several rather bizarre implications that their makers certainly could not have intended. 40" Yet the provisions on their face do not provide for other interpretation.

Five states (Alaska, Iowa, Louisiana, Michigan, West Virginia) have avoided the problems raised by alternative definitions by conditioning the use of the brain function determination on the fact of artificial support or maintenance of respiratory and cardiac functions. Alaska and Iowa provide that the brain function determination of death may be used if respiratory and cardiac functions are maintained by artificial means. In contrast, the other three states provide for the usage of the brain function determination of death only in the event artificial means of support preclude a determination that circulatory and respiratory functions have ceased. Therefore, the use of the brain function standard is drawn more narrowly, for there is no free choice or election of its use, but rather there is a specified use of the standard. It generally appears that the brain death standard is actually used primarily, if not only, in the presence of artificial means of support; otherwise the traditional means of determining death would be sufficient.

Medical practice itself must ultimately determine whether there is a pragmatic difference between the two types of conditioned use provisions, as to whether or not artificial means of support in all cases preclude determination of cessation of circulatory and respiratory functions, or, whether there is actual determination of such cessation regardless of the presence of the artificial life supports. It is possible that the difference is discernible only if the artificial means of support are temporarily discontinued to allow performance of appropriate tests and

observation in making a determination of the cessation of spontaneous circulation and respiration. In either event, the narrowing effect of the conditional use of the brain function determination of death may obviate some possible difficulties with alternative determination standards, by clearly setting forth the occasions upon which the brain function determination may be utilized. Implicitly, then, the traditional means of determining death is otherwise applicable in all other cases.<sup>41</sup> With five states providing alternate definitions of death and five states providing for conditional use of brain function determinations and respiratory/circulatory functions determinations in other cases, the states with definitions of death mentioning both the traditional measure of death detection and the brain function measure of death detection are evenly divided on this question.

Five remaining states, California, Georgia, Illinois, Oklahoma, and Tennessee, which have enacted statutory definitions of death do not mention the traditional criteria. Of the five, only Oklahoma utilizes a provision relating to resuscitative or artificial maintenance efforts. These statutes, while adopting the brain function concept of the determination of death, are primarily (except for California and Georgia) exclusive definitions. They do not recognize other criteria for the determination of death, such as the more traditional respiratory and circulatory cessation criteria, nor the possibility of use of the other criteria. Because of this, it is not clear whether the enactment of such statutes will in many instances create greater burden on the medical profession and greater medical expense for the patient's estate and family to bear, because of the possible interpretation of the statutes to require that brain function death must be a specific finding in each pronouncement of death. If that interpretation were made, then the medico-legal proof of death may require substantial medical verification of death, such as in the Alice Cameron case.

Use of the traditional criteria for the determination of death do not require special tests, because death under that criteria is an observable phenomenon, and capable of detection by using relatively simple means of measurement, as seen in other discussions herein. The historic reliance on the relative simplicity of the traditional determination of death has required little documentation. The brain function criteria as an observable phenomena is not capable of measurement, from all appearances, by such simple means, but generally requires the use of significantly more sophisticated equipment and testing, including measures such as electroencephalographic tracings. Such sophisticated capabilities are not universally available, so it may be possible that the exclusive definition statutes may be construed to be in addition to or alternative to other criteria of determining death. This unstated possibility, however, is not a foregone conclusion and the general requirement of special equipment and personnel to perform tests of brain function involves significantly greater cost than using the tests required for determination of death under the traditional criteria.

This additional financial burden, and the possible fact of requiring such mechanical testing of a body which all involved would probably agree is a corpse, certainly appears an untoward result of attempting to rectify the differences between the determination of death under the law and in medical science. Yet the statutes, on their face, do not attempt to avoid this type of result. However, the importance of settling in law basic recognition of the actual practice of physicians and the realities of medical science may supersede any consideration of cost in this regard, in avoidance of conflicting criteria of death. Thus, the relative cost must be balanced against the value of the end gained, in this case, achieving agreement between medical practice and the law.

It is not clear in any of the statutes that the use of specific tests would be required to prove the fact of death by measuring brain function, for the statutes are generally silent upon the precise tests which would be required to meet the brain function death standard. It is generally apparently conceded that the codification of medical procedures into statute would be unwise in view of the constant evolution of medical practice. Such action would bind physicians to what may be obsolete procedures until further legislative action could be undertaken to update the statute. The question of proof, in the absence of statutory specificity would be left to administrative, and in the event of litigation, judicial interpretation. Two states, Illinois and Tennessee, tie the conclusion of brain function death to usual and customary standards of medical practice, and thus provide a statutory guide for the measure of proof required by the state, in terms of acceptable tests. Oklahoma has enacted similar guideposts for interpretive purposes. It is most probable that the ordinary standards of medical practice would be applied to the determination of death on the basis of brain function, but that is not an assured result.

It is noteworthy to discuss California and Georgia statutes at this point. As previously noted, both states may generally be classified as having enacted alternative definitions of death. However, they vary from the other

five alternative definition states, for the only specific criteria mentioned is that relating to brain function. California speaks of "usual and customary procedures for determining death", while Georgia provides for "other medically recognized criteria for determining death". Hence, their statutes are exclusive in the sense of naming only one specific medical standard of death but are alternative in that they do not exclude the use of <u>any other</u> standard generally accepted for use. This characteristic assures a certain level of flexibility in meeting changes in accepted medical practice, for they are not alternative only to the more traditional criteria of measuring death, but are also capable of operating in anticipation of future developments as well. Brain function, then, is not the developmental limit of these statutes, for should any other criteria be developed and used consistently, the California and Georgia statutes will be able to accommodate their use without amendment. The problems of alternative definitions, however, will nevertheless persist.

## **RESUSCITATIVE ACTIONS AND THE DETERMINATION OF DEATH**

Several state statutes defining death include as a necessary prelude to the determination of death, specific medical conclusions involving resuscitative and artificial maintenance efforts. There are three general variations of such provisions, with the variations being different primarily on the basis of when the medical conclusion must be made, and in the particular medical conclusion which must be reached.

One variation enacted by three states (Kansas, Maryland, Oklahoma) provides that <u>during</u> resuscitative attempts or maintenance efforts in the absence of <u>brain function</u>, it appears that any such further efforts will not succeed.

A second variation enacted by one state (New Mexico) provides that <u>after</u> resuscitative attempts or maintenance efforts in the absence of <u>brain function</u>, it <u>appears</u> that further attempts have <u>no reasonable possibility of restoring</u> spontaneous brain function.

The third variation, promulgated by one state (Virginia), provides that attending and consulting physicians' opinions, considering the absence of <u>spontaneous brain</u> and respiratory functions and the <u>patient's medical record</u>, are that further attempts at resuscitation or continued supportive maintenance would not be successful.

## THE DEFINITION OF DEATH UNDER THE LAW

Timing factors of the variations vis a vis the medical determinations to be made provide a subtle but interesting contrast. The first variation provides that the medical conclusion be reached during resuscitative or maintenance efforts, while the second provides that the conclusion be reached <u>after</u> such <u>efforts</u>. (The third variation is silent on the point.) Thus, in the second variation, there may be a point at which during resuscitative or maintenance efforts the decision to stop the efforts is made, following which a second decision is made that there will be no resumption of such efforts, i.e., that further attempts have no reasonable possibility of restoring spontaneous brain function. The first variation, on the other hand, does not allow discontinuance of resuscitative or maintenance efforts until after a medical conclusion has been reached that further efforts will not succeed. This may or may not be a significant difference, for it may be similar to the question of whether, following a medical determination of death the legal pronouncement of death should precede or follow the surgical removal of organs for transplantation purposes, since the fact of death has at that point already been medically determined.

A further difference between the variations is the use of brain function as the measurable vital function forming the base of the operation of two of the variations, while the third variation refers to spontaneous brain and respiratory functions and the patient's medical record. The third variation thus incorporates brain death and traditional death measures into law and introduces the statutorily novel consideration of the medical record of the patient. This is an example of providing for individual factors by statutory mandate, eliminating the possibility of an across-the-board blind application of a statutory standard. This is not meant to imply, however, that physicians in practice do not consider the individual aspects of their cases, for the contrary is very much apparent in interviews with Hawaii physicians. Of significance, in addition, is the inclusion of the individuality factor as a necessary medical practice, for this increases the level of specificity of the statute. It is noteworthy to emphasize that the individuality factor is confined to the patient's medical record, and does not include consideration of any other party or record, whether it be the family, friends, religion, a potential organ transplant donee's need for a viable organ financial, or any other discernible factor. The mention in some statutes of exclusion of persons who have in some manner ingested drugs which produce brain-death type symptoms (discussed elsewhere) achieves parallel consideration of "other" factors in the application of a brain death criterion. Those provisions are generally restricted to the every specific issue

of drugs and are motivated by the fallibility of medical determination of brain death in the presence of drug-induced coma. A medical record can include a drug coma but also can include other factors. The common factor running through the three variations under discussion here is that the absence of some level of brain activity provides the basis for the formation of a medical conclusion regarding the utility or futility of further resuscitative or supportive maintenance efforts.

Another factor which may be distinguished between the three variations is the particular medical conclusion which must be reached in order to satisfy the statutory requirements in the determination of death. The first and third variations mentioned above require a finding that further resuscitative or maintenance efforts would not be successful (would not succeed). This provision gives rise to a particularly pertinent question, relating to the quality of the success which is contemplated by the statute. The measure "successful" does not stipulate the level of recovery which must be achieved in order to qualify for a medical conclusion which would not put the statute into operation. As discussions elsewhere indicate, since death may be a gradual and fragmented process, rather than a single and always identifiable event (in view of current medical knowledge) it may be possible that partial recovery can be secured without restoring the patient to full cognitive functioning. The ambiguity of the provision therefore, may create rather than inhibit, confusion and conflict. Assuming that the term "successful" implies and therefore means success in rendering full recovery, then the provision would be more palatable in terms of statutory construction. However, it is just as conceivable that a finding of the securing of recovery to a point of minimal functioning can be regarded as "successful" by a court, which without more specific guidelines for the measure of "success", may be reluctant to draw the success line very far from traditional death measures. The courts must rely upon the medical profession for its expertise in medical matters, which knowledge and information is translated into legal measures for judicial purposes. A statute which creates the specter of various medical measures and conclusions of "success" may detract from the utility of the statute.

The second variation addresses itself to reasonable possibility of restoring spontaneous brain function, which appears to be less ambiguous and a more likely conclusion to address, in consideration of the lack of perfect knowledge about the parameters of life and death of the human organism. This standard, which a physician would apply, similar to the first variation, relies upon significant levels of professional judgment and discretion, again factors which perhaps

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are not clearly statutorily enunciated. "Reasonable possibility of restoring spontaneous brain function" appears to be a more precisely legally as well as medically measurable achievement than mere "success", for it includes two variables, possibility and the physiological goal to be met. Argument may be made that spontaneous brain function is ambiguous in view of the fact that there are different levels of brain function, those controlling higher functions, and those controlling lower functions. Yet in terms of the specificity of the achieved level of functioning to be measured, it nevertheless does provide more specific guidelines than the first and third variations.

The third variation is the only variation which specifically mentions the continuance of artificial support or maintenance as a decision to be made by the physician, and which also classifies the decision as an opinion. Although unspecified, it is probably implicit in the nature of the decisions to be made in the first and second variations that it is a physician who is intended to make the required determination of futility of continuance or resumption of resuscitative or maintenance efforts.

Of the five states which tie the determination of brain death to resuscitative and maintenance efforts in the form of the three variations mentioned above, only one includes any limitation on the provision. Oklahoma's provision stipulates that ordinary standards of medical practice constitute the definitive parameter for an acceptable determination of the discontinuance of resuscitative and maintenance efforts. It is conceivable that a court would construe the other statutes to require adherence to similar standards of medical practice, but that is conjecture, for in the absence of statutory stipulation, a court may be free to select whichever standard of medical practice is to be followed, or, perhaps, may decide that no particular standard need be followed in physician decisions and actions under the statute. In this event, though perhaps unlikely, the sequence of required actions and decision-making may be more pertinent than not.

Whether or not medical science and practice have reached operational levels to cause the differences between the variations to be highly significant is not clear. It is clear, however, that in light of the continually growing body of knowledge of medicine, the variations may be regarded as substantially different from one another if not already so.

## STANDARDS OF MEDICAL PRACTICE

The interpretation of a brain function determination of death under the statutes could lead to a variety of conclusions, in terms of the precise medical procedures and tests which must be satisfied in reaching a medical conclusion. As evident in Appendix J, there are various criteria for determining death utilizing the brain function standard of death. These various criteria require different medical protocols. For example for electroencephalographic measures, details of the duration of the tests, and of the period of time required between tracings vary between the criteria. The question thus arises as to the particular tests which will suffice to support a determination of death under the brain function statutes. It would appear simpler to legislate the particular tests to be followed by physicians in applying the brain function concept of death, but such legislation is not generally regarded as a viable alternative. The legislation would create a constant need to update the statute. Moreover, there is no statute which has legislated with such specificity, preferring physician discretion.

The ambiguity of the brain function standard, in light of the various criteria developed for determining death under the brain function standard, must be legally interpretable so that adequate measures of compliance with acceptable medical standards can be asserted as a control on physician practice.

In responding to this difficulty, some states have required medical adherence to specific medical standards, so that interpretation of the statute can be balanced against the normal activity of the medical community. Nine states require that the determination of death under the brain function standard must be accomplished in a manner consistent with the ordinary standards of medical practice, or with the usual and customary standards of medical practice. This standard, albeit more specific than no standard at all, contains a measure of ambiguity, but it appears that the standard relates to the medical community as a whole, and is probably reflective of the practice of the respective state. Some factual investigation would be required to determine what constitutes ordinary standards at any particular point in time, but the time flexibility is a positive feature.

One state (Michigan) has applied the determination of death under the brain function criterion to the ordinary standards of medical practice in the <u>community</u>, thus apparently narrowing the applicable standard.

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Such provisions, in view of the variety of specific medical approaches espoused and medical requirements of determining death on the basis of brain function, may be desirable in terms of ensuring that the application of the standard of brain function death is made in the context of medical acceptance of appropriate medical protocols. Geography as seen can play a role in the nature of the required standard. The reliance of the public on accepted medical practices is similarly assured by such requirement. In this manner, the general practice of physicians is reflected in the law, without necessity of constant update of statutes, and moreover, is capable of ready proof, as apparent in the case of Alice Cameron.

The lack of a provision specifying the medical standard to be adhered to in applying the statute may not preclude the application of such a standard, again, as in the Alice Cameron case. Thus, the lack of such a provision does not necessarily mean that physicians will have unrestricted choice of standards. The lack, instead, allows the courts to determine the actual parameters of physician practice, thereby allowing the courts to have final determination of the appropriateness of any particular medical practice. Courts have this power and jurisdiction whether there is a statute or not. If there is a provision restricting medical practice to the ordinary standards of medical practice, the courts are limited to determining whether an action was within that standard or not, and the courts may not choose the applicable standard.

#### LEGAL OCCURRENCE OF DEATH; THE PRONOUNCEMENT OF DEATH

The statutory definitions of death specifying use of the brain function standard of death generally provide for the legal acceptability of brain function as a measure of death, either apparently exclusively, conditionally, or alternatively, as previously discussed. Regardless of the precise allowable use of the brain function statute variation selected by the states, the use of the brain function criteria of death does not in itself specify the particular moment at which death should, may, or must be pronounced, or when the fact of death under the law occurred. The use of the criteria is a measure of the fact of death, but does not necessarily relate to a determination of the moment of death.

Approximately one-half of the states with brain function criteria (eight states, Iowa, Kansas, Louisiana, Maryland, New Mexico, Oklahoma, Virginia, and West Virginia) provide statutory guidelines for determining the occurrence of the fact of death. The eight states are evenly divided between
two variations, the first being when relevant functions ceased, and the second, relating to the coinciding of certain medical events. To explore these further, for example, Iowa law provides for the conditional use of the brain function criteria (in the event artificial support mechanisms preclude determination of cessation of spontaneous respiration and circulation) and provides further that "Death will have occurred at the time when the relevant functions ceased". In contrast, the Kansas statute, for example, ties the occurrence of death to its brain function and resuscitative efforts provisions, by providing that death occurred when the conditions of absence of spontaneous brain function and the determination that resuscitative and maintenance efforts will not succeed, first coincide.

The thrust of these provisions is similar, and it is not clear that either approach can, or is intended to, provide a precise time of actual death, or that the precise time of death is determinable in retrospect in terms of the brain function criterion of death. Therefore, the practical effect of the provisions is a legally ascertainable point at which the fact of death is recognized.

The pronouncement of death is a related though separate issue, and some statutes address the question of when death should be pronounced, in relation to certain actions. For example, at least five states provide that death shall be pronounced before artificial life sustaining systems use is terminated. This type of provision has been called "bad drafting and bad law".<sup>42</sup> One state provides that death "may" be pronounced before the cessation of such extraordinary means of support.<sup>43</sup> Statutes without such provisions are not necessarily hindered by their omission, for the key point of the statutes is the determination of the fact of death through utilization of the brain function standard. The pronouncement of death is an event which either coincides with or follows the determination of the fact of death. The problems giving rise to the interest in or the need for a definition of death do not necessarily relate to the question of the pronouncement of death so much as they relate to the determination of the fact of death. Problems relating to the timing of the pronouncement of death do not extend to cases of traditionally measured death, and as can be expected, no traditional criteria provision includes a statement relating to the pronouncement of death, though the occurrence of death is sometimes addressed. This again reflects the peculiar legal problems created by the development of artificial life support systems.

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#### SPECIFIED DEATH DETERMINING PARTIES

The nature of determining death under the brain function standard of death clearly requires specialized medical expertise. The traditional pronouncement of death generally requires a finding or conclusion and consequent declaration of death by a physician. The enactment of a brain function standard of death definition does not alter and in fact emphasizes the need for the general requirement of a physician in any medical decision relating to the occurrence of death. Nine states (Alaska, California, Georgia, Kansas, Louisiana, Michigan, New Mexico, Oregon, and West Virginia) with enacted brain function statutes <u>specify</u> that the determination of death must be made by physicians.

The statutes, however, may be altering the quality of the medical decision to be made under the brain function criteria, by requiring confirmation of the fact of death through mandatory additional medical opinion. Two states, California and Georgia, require the confirmation of the determination of brain function death by another physician.

Iowa, on the other hand, requires that two physicians must be involved in the determination.

Virginia requires the participation of an additional consulting physician and goes further than the other states by also requiring that the consulting physician be a specialist in neurology, neurosurgery, or electroencephalography.

The remaining states are silent on the question of who must determine death, but it is reasonable to presume that the determination of death must be made by a physician, based on the fact that measurement of brain function in relation to a finding of life or death is generally within the sole expertise, discretion, and purview of a physician. Because brain function measurement is essentially a medical function and the finding of death on that basis is a medical conclusion, absence of a specific requirement that a physician make the determination of death does not render a statute unworkable or untenable.

A more pertinent question relates to the necessity of requiring the confirmation of death under the brain function criteria by a second physician, the outright requirement of two physicians in reaching the determination, or the requirement of a consultant specialist. These requirements may be indicative of a less than total commitment by the enacting states to the concept of brain function, even in those instances where physicians on the face of statutes may elect

to choose the use of other criteria for the determination of death. These requirements may also attest to the highly technical nature of brain function death determination and a desire to ensure its accurate use.

## LIABILITY OF PHYSICIAN PROVISIONS

Since the original interest in and need for the reconsideration of the traditional criteria of death under the law arose in large part from fears of physician liability in addition to fears of restricted medical progress, statutes were examined to identify provisions relating to physician liability.

The liability of physicians is a matter of growing public concern in that professional accountability has received increased attention in recent years, for all professions, and in many types of activities. In the recent past, medical malpractice questions have attracted, and continue to receive much public as well as legislative attention because of tremendous escalation of malpractice insurance rates, and the prospects of the inability of physicians to secure malpractice insurance coverage, at any cost. In this context, the pertinence of the liability of physicians as an issue in relation to any proposed legislation is clear.

Of the fifteen states which have statutorily recognized the medical profession's use of brain function measure in the determination of death, only one state, Georgia, has included any statement of physician liability in the use of the statute. This fact, that only one state has addressed the problem of physician liability within the framework of its definition of death statute may be indicative of several possibilities:

- That liability factors cannot be adequately provided for in a definition of death statute;
- (2) That there is no need for liability provisions in such statutes, since the effect of the statute is presumed to overcome difficulties in the area of physician liability;
- (3) That liability factors are addressed elsewhere in the law;
- (4) That liability should not be statutorily omitted, to ensure stable medical practice; or

(5) That the courts should be left with total decisionmaking regarding physician liability, free of legislative and hence statutory comment.

This list does not exhaust the possible reasons for the exclusion of such provisions, but may provide some insight into the general absence of liability provisions.

A further possibility is one which relates to the philosophical acceptance of the concept of brain function death, and the possible need for reassuring physicians of the legal safety of utilizing the brain function concept in determining death. Georgia's statute, it will be recalled, is an alternative, or more precisely, a cumulative statute, providing physicians with a choice of definitions. Perhaps a more persuasive point is found in consideration of the philosophical acceptance of the brain function criteria of death as it relates to apparently less than total acceptance of the brain death concept within the medical profession. The realistic need for application of the brain function standard of death would thus be further encouraged and supported by a specific provision relating to the liability of physicians, but it must be emphasized here that the statute does not provide any extra relief to physicians than courts are capable of giving. In addition, courts unlike statutes, can provide vindication.

### USE OF THE BRAIN FUNCTION DEFINITION AND RECORDS REQUIREMENTS

There are generally no special requirements regarding record keeping concerned with the use of the brain function standard of death, with the exception of one state, California. California law requires the keeping, maintaining, and preserving of complete patient records if a person is pronounced dead under the brain function standard of death. As will be recalled, California law allows the alternative use of either the brain function standard for the determination of death, or the use of other usual and customary procedures for determining death as the exclusive basis for pronouncing a person dead.

The isolation of the brain function criteria of death as requiring the maintenance of records may reflect some concern about the legal novelty of the definition, unless the requirement is intended simply to reiterate a state requirement of maintenance of records. However, the statute on its face merely relates to the brain function definition, and makes no mention of similar records maintenance requirements in the event of use of other death determination standards.

Assuming that a definition of death is enacted, it does not appear necessary to require the special maintenance of records for use of the brain function determination of death in the absence of similar requirements for the use of other criteria, if the statute were to provide for the possibility of use of other criteria. Such a requirement may tend to establish a special burden which, if the brain function standard is acceptable at all as a legal definition of death, may be unreasonable in terms of need and justifiability.

#### FRENCH LAW

The definition of death appears to have been an issue in Europe earlier than in the United States. French law, similar to some other European national laws, which have been in effect for years, does not allow transplantation from living donors. Therefore organ transplantation surgery utilized cadavers as the sole source of organs.<sup>44</sup> Pressures exerted by organ transplantation interests required the adoption of a definition of death to balance the competing interests. On April 24, 1968, the French government decreed a new definition of death which, inter alia, provides:

Clinical death is considered to have taken place when a person is affected by lesions incompatible with continued life, though maintained in a state of vegetable existence by various devices, and when an electroencephalogram has shown, for a period of time at least ten minutes, lack of function in the higher nervous centers, that is to say when the electro-encephalographic tracing is a straight line.<sup>45</sup>

The French law is extremely medically precise in its definition of death, unlike the statutes enacted in various American jurisdictions. There is also a qualitative difference between the specific medical criteria of the law in comparison to some of the American criteria which are included in Appendix J. Significantly, there is no requirement of confirmation over a period of time, in addition to other differences.

## TRADITIONAL CRITERIA PROVISIONS

As seen from the discussion of brain function provisions above, some statutes provide for use of traditional criteria of death as well as brain function standard for determining death. Ten states (Alaska, Iowa, Kansas, Louisiana, Maryland,

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Michigan, New Mexico, Oregon, Virginia, and West Virginia) mention the traditional criteria in their statutes for either alternative or conditional use in conjunction with the respective brain function determination of death provisions. This Part therefore should be read in consideration of the previous discussion of brain function provisions, as some comments therein are applicable or in contrast to this discussion.

Despite the general agreement in medicine and law relating to the past acceptability of the traditional standard of death determination, the statutes reflect similar though not identically worded criteria. Three basic variations are:

- No spontaneous respiratory or cardiac functions and no expectation of recovery of spontaneous respiratory or cardiac functions.<sup>46</sup>
- (2) Irreversible cessation of spontaneous respiratory and circulatory functions.<sup>47</sup>
- (3) Absence of spontaneous respiratory and cardiac functions.<sup>48</sup>

It is possible to speculate on the possible differences between these variations, but the more relevant considerations should be given to a basic similarity between them. Each is based upon <u>spontaneity</u> of the appropriate functions, but whether there is any meaningful distinction to be made between the spontaneous functions is not clear. Respiratory function is, again, universal to the variations, and the remaining functions, circulatory or cardiac function, are both reflections of heart function.

Remaining consideration of the differences between the variations are found in the precise measure of activity of the functions which must be met to fulfill the requirements of death. The first variation requires no spontaneous functions and no expectation of their recovery; the second requires the irreversible cessation of functions; and the third requires absence of functions. There is little semantic difference except for the third variation, in that absence in and of itself does not connote the possibility of reversibility or recovery of the appropriate functions, and it is not difficult to imagine a case in which a patient may experience the absence of spontaneous respiratory and cardiac functions and yet later be able to regain those functions.

This difference, however, is not meaningful in existing statutes, for the four states which enacted that variation

all have tied the absence of circulatory and respiratory functions into provisions dealing with resuscitative efforts, which the other states have not enacted. Kansas and Maryland, for example, provide also that resuscitation attempts are considered hopeless because of the disease or condition causing the cessation, or because of the time lapse since the cessation. New Mexico ties its absence of traditionally measured functions provision in with the statement that there is no reasonable possibility of restoring respiratory or cardiac functions because of the disease or condition causing the cessation, or the passage of time since the cessation. Similarly, Virginia's statute ties the absence of function provision to one providing that <u>attempts at</u> resuscitation would not in the physician's opinion be successful in restoring spontaneous life-sustaining functions, because of the disease or condition directly or indirectly causing the cessation or because of the time elapsed since the cessation.

### **RESUSCITATIVE ACTIONS AND THE DETERMINATION OF DEATH**

The resuscitative efforts clauses exhibit three different conclusions which must be reached in determining death: hopelessness, no reasonable possibility of restoring functions, and physician's opinion that the attempts would not be successful. These differing conclusions provide what may be different degrees of prognosis, from possible resuscitation to no possibility of success. Interviews with Honolulu physicians indicate that medically, there may be no practical difference between the use of such varying measures of possible recovery, but that the difference instead nevertheless relies upon a physician's individual conception of when resuscitative efforts would be to no avail. The reality of this varying choice of times appears inevitable in terms of the need to preserve physician discretion under the law. Legal interpretation will probably follow lines of physician practices, in keeping with traditional judicial treatment of medical questions and conclusions, in terms of measuring the amount of proof required by the law, or in terms of the adequacy of physician conclusions.

One of the present questions relating to the legally required performance of resuscitative efforts, then, is addressed by those four statutes, in terms of the precise medical conclusions which must be made by a physician about a patient, prior to reaching any decision as to the use of resuscitative efforts.

The variations have in common the recognition of the relationship between the cause (disease or condition) of the

cessation of spontaneous functions and the medical conclusion as to the probable futility of resuscitative efforts. The variations require the consideration of the precipitating factors of the cessation of functions in the decision regarding the utility of resuscitative efforts. Further, there is also uniform provision for recognition of the crucial factor of the amount of time which elapsed since the cessation of the functions, which as seen in discussions relating to the viability of organ systems, plays a distinct role in deciding whether or not a person will be able to recover from the cessation of circulatory and respiratory function. The combination of these considerations thus forms the basis for the medical decision to be made in terms of fulfilling the requirements of the statutes, i.e., whether attempts at resuscitation are considered hopeless, or otherwise meet the comparable requirements of the other statutes.

The variations, moreover, appear to reflect the problems engendered by modern resuscitation and artificial maintenance techniques, in that the resuscitative decisions under traditional criteria statutes appear to apply to prospective use only. In contrast to the provisions relating to the brain function determination of death, the traditional criteria provisions appear to relate to the decision of whether resuscitative (and hence, maintenance) efforts will be made with regard to any particular patient, and do not appear to relate to situations involving patients already maintained by some form of artificial life-support system. Presumably, the brain function portion of such enactments, then, would intervene and control these situations. The four states, however, are not the only states which have enacted provisions relating to resuscitation and the use of artificial maintenance, as discussion of the brain function provisions indicates. The states have, however, in addition recognized that there is a definite medical decision to be made with regard to the initiation of resuscitative efforts just as there is a medical decision to be made with regard to the continuance or termination of resuscitative efforts or artificial maintenance systems. In this sense, these statutes allow for a clearer analysis of the various steps involved in reaching the point of declaring a patient dead, by legally recognizing an additional crucial decision-making point. Other states have not statutorily recognized that decision-making juncture.

### LEGAL OCCURRENCE OF DEATH

Eight (Iowa, Kansas, Louisiana, Maryland, Michigan, New Mexico, Virginia and West Virginia) of the ten states mentioning traditional criteria in their statutes provide that

death occurs when the relevant functions cease, thus assigning an apparently measurable moment as the primary distinction between life and death under the traditional criteria of death determination. Statutory materials relating to the use of the traditional criteria of determining death do not include provisions enunciating the pronouncement of death unlike some of the brain function criteria provisions. The approach to the traditional criteria of death in statute need not encompass the pronouncement of death, but merely the occurrence of death, since under the use of the traditional criteria, once death is determined, generally all observable life signs have ceased, unlike cases involving brain function criteria when mechanical means simulate life signs. The two states not specifying the occurrence of the fact of death under the traditional criteria are not necessarily exhibiting inadequacy, for as previously mentioned, the thrust of any definition of death statutes is the legal recognition of the medical determination of the fact of death, and not the legal recordation of the fact.

### SPECIFIED DEATH DETERMINING PARTIES

Physicians are named specifically as the parties responsible for the determination of death by eight of the ten states with traditional criteria provisions. Only Maryland and New Mexico are silent upon the point. Both Maryland and New Mexico, however, in their brain function provisions, require the participation of a physician, leaving a possible question therefore as to whether a physician by omission is required for the pronouncement of death under the traditional criteria of death determination.

No statute requires the confirmation of the fact of death using the traditional criteria by an additional physician, or by two physicians, and no statute requires the consultation of any medical specialist to assist in or confirm the determination of death. Again, therefore, there is reflection of the ready acceptability of the traditional criteria, and the perhaps sometimes hesitating acceptance of the brain function criteria. Whether such justification in statute is warranted or not is questionable, since the basic reason for the existence of the statutes, presumably, is need.

#### STANDARDS OF MEDICAL PRACTICE

All but one of the ten states (Oregon) require that the determination of death under the traditional criteria of death be in accordance with specific standards of medical

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practice. Eight states (Alaska, Iowa, Kansas, Louisiana, Maryland, New Mexico, Virginia, and West Virginia) require the application of ordinary standards of medical practice. The remaining state, Michigan, as in its brain function provision, requires the application of ordinary community standards of medical practice. The high proportion of states requiring such adherence to specific medical practice standards is perhaps indicative of the legal concern with the uniformity of practice within the physician community. This legal concern is applicable not only to the legal recognition of a relatively new medical standard in terms of brain function measure of death, but is also made statutorily applicable to long-accepted standards such as the traditional criteria for the determination of death. Prior to the enactments, there was a general silence on the subject of standards of practice.

### RELATIVE EXCLUSIVITY OF THE TRADITIONAL CRITERIA OF DEATH

Previous discussion revealed the existence of alternative, conditional, and exclusive statutes relating to the brain function criteria of death. The traditional criteria formed the other alternative or general use definition of death under the conditional and alternative statutes.

There are no statutes which relate exclusively to the use of the traditional criteria of death, such usage and acceptability under the law having been developed and acquiesced in by case law. Thus no state has required the abandonment of the brain function standard of determining death.

The traditional criteria generally relates to respiratory and cardiac/circulatory functions, which are generally specified in the statutes. In most instances, then, the brain function concept and the respiratory and cardiac/circulatory functions concept pre-empt the definition of death in the states with statutory definitions of death. The exception to this general rule is Oregon, which provides that the brain function criteria or the respiratory and circulatory functions criteria can be used in addition to criteria customarily used by a person to determine death. This provision necessarily presumes the existence of other methods of determining death, and speculatively, perhaps in certain cases, such as decapitation, would obviate the need to note or record precisely the irreversible cessation of spontaneous respiratory and circulatory functions. Nevertheless, the possibility of use of other criteria is available in Oregon law, although the conformance with such other criteria with accepted legal and medical measures of death, even under

traditional criteria, may be questionable. Such determination would require consideration on a case-by-case basis.

### A QUASI-DEFINITION OF DEATH

A variation of statutory approach to the definition of death, the determination of the occurrence of death, or more specifically, the time of death, can be seen though further examination of anatomical gifts enactments.

Hawaii's Uniform Anatomical Gift Act provides that "[t]he 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", <sup>49</sup> which is the language drafted and recommended by the National Conference of Commissioners on Uniform State Laws.<sup>50</sup> In contrast, however, the State of Connecticut provides a statutory standard for the determination of death within its comparable anatomical gift statute section which states: "[t]he time of death shall be determined by two physicians who attend the donor at his death, shall be determined by two physicians who certify death, who shall use generally recognized and accepted scientific and clinical means to determine such time of death".<sup>52</sup> (Emphasis added.)

The Connecticut law therefore is distinctly different from the Hawaii law, which in essence leaves the matter of the determination of death for decision under the common law. The difference in the two approaches is made more evident in that under the common law, the determination of death may be weighed against prior judicial decisions, and under the Connecticut standard, the determination of death is weighed against the general practice of physicians. Thus, while the common law is a flexible and adaptive body of law which responds to needed change based on medical, legal, and hence societal needs, the Connecticut approach affirmatively follows medical rather than legal trends. It is, however, unclear that one is preferable to the other.

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# Chapter V

# **PROPOSED DEFINITIONS OF DEATH**

## **PROPOSED LEGISLATION IN OTHER STATES**

Legislation proposed but unenacted in other states reflect a broader range and variety of statute language than enacted provisions, although the discernible statutory patterns primarily follow those of enacted provisions discussed earlier. Variations do exist and some are of interest, but there is no radical departure from existing statutes except for increased specificity. Possible difficulties associated with particular statutory types are not avoided, and no major statutory form is abandoned. Excerpts of some legislation proposed in other states discussed in this chapter may be reviewed in Appendix G.

Greater levels of specificity are found in several of the proposed legislative measures reviewed, in terms of the attempts to codify particular medical procedures and techniques in determining death, unlike the statutes which have been enacted. Discussion of distinctive features of various introduced but unenacted measures follows.

House Bill No. 690, introduced into the 1976 South Dakota Legislature, specifies one medical means of measuring the absence of spontaneous brain function, by requiring the determination that "there is no spontaneous brain function" to be based on "electroencephalograph tracings and other possible means or tests". The electroencephalograph although specifically mentioned is not proposed as the sole method for measurement of brain function, but the persuasive weight of its mention and its mandatory use are notable. In the implementation of such a provision, the determination of death would probably require electroencephalographic tracings, whether or not the electroencephalograph retains its present prominent position in the measurement of brain function. The provision, if enacted, may as a matter of course be amended at any time to reflect changes in medical science. It is significant to recall that of the fifteen state statutes which have been enacted as definitions of death, none have mentioned the electroencephalograph despite the fact that the electroencephalograph and other precise medical techniques have created both the possibility and the need for the redefinition of death under the law, to which need the statutes respond.

Medical standards and measures are also reflected in specificity in Pennsylvania's 1975 House Bill No. 363, which

requires that there be "no spontaneous respiration, no spontaneous or elicitable reflex movement, and there is during 24 hours the absence of spontaneous electrical brain function". As seen in discussions of the medical measures of brain death, reflex movement is one of the criteria after applied in determining death. This proposed measure requires the testing of reflex movement, and in addition determines the medical standard which must be met in measuring reflex movement. It is apparent from accounts of death measurement that reflex action is one of several indicators of brain function, and this specific indicator is singled out for inclusion in this proposed measure. Moreover, the medical question of durational application and testing for electrical brain function is settled by the proposed bill, which specifies a twenty-four hour period in relation to the absence of spontaneous electrical brain function. What is not clear is whether "during 24 hours" means that tracings must be taken continuously for twenty-four hours, or whether tracings may be taken periodically during a twenty-four hour period.

New Jersey's proposed legislation included two bills, Senate Bill No. 992 and Senate Bill No. 1039, both introduced in 1976. Both bills are variations of other legislative measures, and introduce different terminology into the concept of determining death on the basis of brain function. Senate Bill No. 992 defines a person as "an integrated, whole, living human being" not including "parts" continuing to function following a determination "of an irreversible cessation of vital brain functions". Thus, the concept of "brain" function is modified to "vital brain functions", which is defined as "discernible central nervous system activity". Negative effects of drugs or depressants, hypothermia and similar conditions are excluded. The bill also utilizes the concept of "natural respiratory and circulatory functions" to indicate functioning without artificial support. "Artificial means of support" are defined to include chemotherapy; other legislation, both enacted and unenacted do not generally attempt definition of artificial means of support. The basic mechanics of the bill are similar to other bills, but the variation in terminology and the use of statutory definitions in achieving greater specificity are distinguishing characteristics warranting review.

Senate Bill No. 1039 of New Jersey utilizes the same approach in defining otherwise undefined terms, and utilizes similar conceptual framework of the definitions. Senate Bill No. 1039 also introduces the concept of "vital brain functions", but does not define vital bodily functions. Again, this bill as with Senate Bill No. 992 includes chemotherapy as an artificial means of support.

These varying approaches to seeking redefinition of death, reportedly unenacted, exhibit variations in thoughts and priorities in meeting medical and legal needs. The attention given to clinical matters, in terms of the medical tests to be used, particularly in the South Dakota and Pennsylvania bills, evidence an apparent concern or an apparent belief that greater specificity in determining medical practice must be taken in regard to determining death under the brain This premise must be weighed against function standard. generalized feelings expressed and reiterated elsewhere in this report regarding the utility of statutory provisions which attempt to prescribe particular medical procedures and techniques to be utilized in the implementation of the statute.

A further factor has been introduced by two New York bills which allow for the application of the brain function standard of death except where the physician receives notice that the use of the definitions is contrary to the religious beliefs of the individual patient. One of the bills (S.B. No. 10759) provides that the notice must be in writing and must be from a parent, spouse, or next of kin of the patient. The other bill (A.B. No. 12248) neither prescribes nor limits the relationship of the notifying party to the patient. The recognition of the possibility of religious conflict in the application of the brain function standard of death characterizes the decision to be made as less of a medical question, but one which must be made subject to other considerations. Religion, as discussed elsewhere may play a pertinent part in the legal definition of death, but statutory recognition of the role of religion may or may not be appropriate. The pertinence of the consideration should be, instead, whether the characterization of a redefinition of death is to be made on religious, as opposed to, medical grounds. Certain religious beliefs have been legally recognized by courts and in some instances by statutory law with regard to health issues, and it may be a rational extension of this recognition to allow or disallow the use of the brain function standard on that basis. For example, Hawaii's Prepaid Health Care Act<sup>1</sup> specifically does not apply to "any individual who pursuant to the teachings, faith, or belief of any group, depends for healing upon prayer or other spiritual means".<sup>2</sup> A problematic situation exists in regard to the use of a brain function standard of death in light of the apparent conflict of beliefs which may exist within some religious groups (see Chapter 6). In such a case, whose duty would it be to determine to which side of the conflict are irretrievable comatose patient may have adhered? The more traditional health care/religious conflict has involved the ability of an individual to refuse treatment more than it has involved the ability of physicians to discontinue

treatment, or similar situations. This potential reversal, particularly in view of the unclear standing of the question in some major religious groups, may provide fertile grounds for disagreement. The disagreement may transfer itself to difficulties in implementing any statutory definition of death, not merely those such as were proposed in New York providing for differences in religious beliefs.

A more proper perspective of redefining death may give primary concern to medical questions rather than to religious ones except in the case where a religious group asserts a unified and clear position. In the absence of clear positions, the matter should be left to individual determination, and the traditional sanctity of the doctor/ patient/family relationship. This occurrence may be neither unworkable nor otherwise untenable, for this represents the present practice of physician discretion.

Assuming there is a right in a third party to assert the religious beliefs of a comatose patient, and the right is enacted by statute such as the two New York bills propose, it is necessary to determine who should be empowered to assert the statutory right. While a convenient class of eligibles would be parents, spouses, and next-of-kin, as New York's Senate Bill No. 10759 proposes, the limitations of such a class of eligibles are readily apparent. First, a patient may have no such relations, or even if the patient has such relatives, the relatives may be unaware of the particular religious beliefs of the patient. It may be possible, moreover, that the next-of-kin may be so remote that they are not available, cannot be ascertained readily, or cannot be found. Adoption of broader classes, or no specification of eligible parties is similarly vulnerable. There is a clear policy decision to be made as to who may assert the patient's beliefs, or of the extent of discretion which should be allowed to a physician to determine the genuineness of the asserting party's knowledge of the patient's beliefs. The introduction of this additional factor requires additional clarity of intent, in terms of the ability of a physician-or of the law--to ascertain personal beliefs of an irretrievably comatose patient, absent any other evidence directly attributable to the patient.

New Hampshire's proposed legislation severs the traditional criteria by requiring "absence of spontaneous respiratory or cardiac function". This severing of the two systems normally measured together to determine death raises thoughtful possibilities of denying the benefits of extraordinary support to a person who requires support of only one of the vital systems. For example, in the case of polio victims requiring an "iron lung" in order to breathe, only one system is supported mechanically because the other system is

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viable. The cessation of breathing function would necessarily result in rapid cessation of the otherwise unimpaired system. Similarly, the use of pacemakers to stimulate heart action only addresses malfunction of one system. While it is extreme to imagine the interpretation of a statute to allow such results, it may be preferable to avoid the possibility of that issue altogether. There is significant certainty in the application of the traditional criteria, and it would not appear to be beneficial to intrude upon its accepted usage by either allowing or requiring a severance of the two basic measures of function which together have been regarded as indicative of death or life.

A New York bill and a Delaware bill have proposed that more than one physician determine death under traditional criteria use. The use of more than one physician to make a finding of death is a relatively common requirement among brain function standard of death provisions, but no enacted definition of death statute requires more than one physician for purposes of the traditional criteria. The Delaware bill requires a second physician only in the event the first physician making the determination is the patient's family physician. The rationale for the requirement is not clear, but the requirement of more than one physician to declare death by means of traditional criteria would impose a new requirement on existing medical practice. Under present practice and experience, there appears to be no need to regulate the use of the traditional criteria of death. The problem of redefining death under the law has arisen because • of a perceived shortcoming of the traditional criteria of death, not because of any physician misuse of that criteria.

A South Carolina proposal requires the consultation of a specialist in neurology or neurosurgery who completed a residency program in such specialties, approved by the American Medical Association, in determining death by brain function measure. This is not the first appearance of the idea of requiring the consultation of a specialist, but the distinguishing feature of the South Carolina statute proposal is its recognition of the limited availability of such specialists. The proposed statute provides, in addition, that concurring opinions of two other physicians may be utilized in the event the attending physician is unable to obtain the services of an appropriate consulting specialist. The medical reliability of such a possibility may be questionable however because of the specialized technical expertise required to determine brain function death. Such a provision may be particularly pertinent for Hawaii, since the neurospecialists of the state are concentrated on the island of Oahu. However, physicians state there have not been truly significant problems, since normal practice includes the transporting of critically

ill patient or patients otherwise in critical condition requiring unavailable services to Honolulu where facilities and personnel are available. In some instances it is reported that specialized medical personnel go to such areas, though it appears the converse is more generally practiced.

# PROPOSED LEGISLATION INTRODUCTED INTO THE HAWAII STATE LEGISLATURE, REGULAR SESSION OF 1976

Three measures proposing definitions of death were introduced during the Regular Session of 1976 of the Legislature of the State of Hawaii, Senate Bill No. 2518-76 and House Bill No. 2887-76, which were identical measures, and House Bill No. 2111-76. All measures were heard in committee hearings, but none were enacted. The full texts of the bills and their amended versions may be reviewed in Appendix H.

#### SENATE BILL NO. 2518-76 AND HOUSE BILL NO. 2887-76

Senate Bill No. 2518-76 and House Bill No. 2887-76 appear to be based on Virginia's definition of death statute.<sup>3</sup> The measures proposed alternative definitions of medical and legal death therefore incorporating both the traditional and brain function criteria of death. The bills basically proposed that an individual is dead if a licensed physician using ordinary medical practice has the opinion that spontaneous respiratory and cardiac functions are absent, and based on the cause of the absence or the passage of time since the cessation, that resuscitative attempts would not restore spontaneous life-sustaining functions. Death would be deemed to occur when the functions ceased. In the alternative, the bills proposed that an individual is dead if a licensed consulting neurospecialist using ordinary medical practice, has the opinion that spontaneous brain and respiratory functions are absent, and the consultant and the attending physician using ordinary medical practice, considering the absence of the functions and the patient's medical record, are of the opinion that further attempts at resuscitation or continued supportive maintenance would not restore the spontaneous functions. Death under this alternative would be deemed to occur when the conditions first coincide. The bills further proposed that the attending physician pronounce death, and that the consulting specialist record and attest the fact of death in the patient's medical record.

Testimony on these measures reflected both positive and negative reactions. Pertinent points are included in the following discussion.

As the Virginia legislation upon which these bills are based was enacted in response to a need which was perceived as a result of legal proceedings,<sup>4</sup> the provisions proposed by the bills utilize caution and precision in determining parties and specific findings which are required to be made. The problem of alternative definitions, as discussed elsewhere, does exist in the context of this type of legislation, but the sequential patterning implicit in the declaration of death removes some though not all of the difficulty with alternative statutory measures of death. Testimony indicated the lack of a statutory definition of death in Hawaii, and the fact that medical advances have rendered the previously relied upon criteria of death "unworkable".<sup>5</sup> The Attorney General's testimony cited three reasons for enacting legislation to recognize in law a standard of determination of death other than the traditional criteria which is recognized by the common law:

- (1) To reduce the suffering of the patient, his family and the burden on hospital facilities;
- (2) To make available organs of such patients for transplantation; and
- (3) To provide the medical profession with a more workable definition.<sup>6</sup>

Similarly, but not identically, other testimony suggested several new developments which "have given rise to the question of whether 'death' should be redefined":

- The development of medical knowledge to the extent that organs from one body may be successfully transplanted to another, at least where the parties are closely related;
- (2) The ability of medical science, by use of artificial or mechanical means, to keep a person in a vegetating state for long periods of time even though they can never think again, or can never be capable of life without such artificial or mechanical means; and
- (3) Public attention being called to the slow, painfully agonizing deaths of persons suffering from cancer for whom death is certain, and which causes physicians and relatives to want to alleviate such

person's suffering by terminating his life earlier tha[n] nature ordinarily would.<sup>7</sup>

The third point relating to the desires of physicians and relatives to terminate a cancer victim's life at an earlier than natural point in time is, a separate question, for it approaches the concept of euthanasia which is not under discussion here. Though it may be viewed as a related issue, similar to the death with dignity issue, it is not drawn closely enough as an issue to be considered an argument either for or against definition of death legislation. There is no determination of brain function death to be made in such a case. The testifier did conclude that he had no opposition to legislation to "permit the withdrawal of artificial or mechanical means which alone prevent death of a person who has already been declared dead under the 'brain death' definition",<sup>8</sup> but also expressed rejection of organ removal for transplantation purposes while the heart "is still beating".<sup>9</sup> That concern was reflected in other portions of that individual's testimony, which urged consideration of two questions prior to enacting a law defining death:

- (1) Who wants these bills enacted into law, and why? I suspect the real reason is to allow body organs to be removed between the period of "brain death" and the time of occurrence of natural death for transplant purposes, and also to authorize physicians and relatives to pull the plug of machines artificially supporting breathing and heart beat in patients whose brains have ceased to function[.]
- (2) Do you really wish to legalize by statute the removing of a heart or eyes from a person whose heart is still beating? That's what this bill does, and it's your decision.<sup>10</sup>

These questions should be dealt with, but must be addressed in the context of medical reality which presently in certain instances permits removal of organs from bodies whose hearts may still be beating because of artificial support mechanisms. The question of the legal redefinition of death revolves about the collision of this medical reality with those medical practices and determinants which have historically been assimilated into the law.

Further, distinction between the definition of death and the death with dignity question was brought out in other testimony: "...this Senate Bill 2518 is concerned with only the definition of death. At one time in our lives this bill would not indeed have been necessary...now because of the extraordinary means of keeping people like living vegetables, it is necessary to know when we speak of 'death' do we mean the action of the 'heart' or that of 'the brain'?"<sup>11</sup> Thus, testimony showed recognition of the fact that historically the heart was viewed as the central factor of life. The view, as the testimony implies, has been modified since medical science has learned that the brain is the primary organ in life.

Generally, physician views were presented in response to the measures by way of testimony of the Hawaii Medical Association, which expressed agreement "in principle"<sup>12</sup> with the legislation, but which proposed a substitute bill which proposed to:

- Require that death be determined on the basis of standards of medical practice which the Hawaii Medical Association would be required to develop and maintain;
- (2) Provide that standards of determining death not be confined only to either or both traditional or brain function criteria;
- (3) Require the pronouncement and recordation of death prior to termination of artificial support systems, and prior to any organ removal;
- (4) Limit physician liability only to cases where the physician violates the standards of professional care and judgment maintained by the Hawaii Medical Association; and
- (5) Prohibit the physician who determines death from participating in transplant surgery involving the patient declared dead.

The Hawaii Medical Association proposal introduces the concept of allowing the medical profession to establish the law governing the practice of physicians. This affirmative participation of the profession in response to the law would bring medical practice and the law closer together than is likely to be achieved by any single piece of legislation, because the medical profession would be setting law. The amendment of the present law to reflect medical practice accomplishes much the same result, except that most proposed legislation may require amendment to reflect additional changes which will occur in the future based on medical practice. A statute such as proposed by the Hawaii Medical Association would be a vehicle to provide continuing update outside of the legislature, but is nevertheless subject to serious question based on the ability of the Legislature to delegate legislative power.

The Department of Health proposed in its testimony that the bill be amended to provide that the Hawaii Medical Association be made responsible in law to annually review criteria for the establishment of standards of death determination, and to submit appropriate changes to the Legislature. This of course would provide for continuing input of the medical community, as well as ensure the Legislature that such input would be forthcoming. If such a provision were enacted, some of the present uneasiness felt regarding the lack of uniformity between law and medicine in the acceptable modes of determining death may be partially if not wholly avoided in the future, for legislation as appropriate could be enacted before crucial legal-medical conflicts occurred. The Department of Health also commented upon the need for such a provision in terms of the constantly changing standards of medical practice.

Testimony was further offered, which generally opposed legislative attempts to define death in statutes. The testimony appears to regard the definition of death issue as one which asks whether or not life has ceased to exist, and declares that "doubt as to the existence of life should be resolved in favor of life".<sup>13</sup> The testimony states unalterable opposition to determination of death on the basis of brain wave absence alone. In addition the testimony distinguishes the question of use of artificial maintenance from the question of when death occurs. Yet however opposed to the single concept of determining death by the measurement of brain waves, the testimony <u>also recognizes</u> that there is no total requirement of using all artificial support systems indefinitely with regard to any patient:

We reject the artificial distinction between biological life and human personhood. No such dichotomy can or should be drawn. Where life exists within a human being it is human life. Personhood is not a qualitative concept. The life that exists in a human being is the life of a human person. Implicit in the recognition of that life is a denial that death has occurred. To attempt to deny personhood is to beg the question of life or death. We believe that there is a moral and legal obligation to maintain and sustain human life with ordinary means. The use of extraordinary means presents a different question. While extraordinary means of life support can be maintained, they need not be maintained under all circumstances. The moral determination as to whether or not extraordinary means should be used or maintained can only be

made in relationship to the individual and his circumstances. The moral law has never required the absolute maintenance of extraordinary life support means under all circumstances.<sup>14</sup>

Thus opposition to the definition of death expressed in that testimony is based on the conviction that the measurement of brain function is not an acceptable means of detecting death, and that there are other considerations. The testimony did not stipulate what the circumstances are which must be considered in any appropriate determination of death, but did cite traditional criteria as measurable indicators of life.<sup>15</sup> The testimony also states:

The term irreversible coma is often used as a point in time when death should be declared. The concept itself suggests the continuation of life in a suspended state. Again implicit in this is the denial that death has occurred. The loss of consciousness is not the same as the loss of life. The decision to terminate that life should not rest on the determination of its "meaningfulness". The declaration of death should not be made as an excuse to terminate a life that some person may consider to be meaningless or qualitatively inferior.<sup>16</sup>

The thrust of the testimony appears to be generally, that criteria of life are more pertinent than criteria of death, but no life criteria are enumerated. The difficulties between medical and legal standards, it should be recalled, implicitly have resulted from measurements of life signs, the problem being that different life signs are measured under medicine than generally recognized under traditional common law.

Neither Senate Bill No. 2518-76 nor House Bill No. 2887-76 was reported out of committee.

#### HOUSE BILL NO. 2111-76

House Bill No. 2111-76 in its original form provided for the determination of death, requiring the opinions of three physicians (attending physician's opinion confirmed by two other physicians) using ordinary standards of medical practice, that there is absence of spontaneous respiratory and cardiac functions, and because of the cause of their absence, or the time elapsed lapse since their cessation, resuscitative attempts are considered hopeless. In the alternative, the same physicians using ordinary standards of medical practice must find that there is an absence of spontaneous brain

function, and if it appears to the physicians during reasonable attempts to maintain or restore spontaneous circulatory or respiratory function in the absence of brain function, that further attempts at resuscitation or supportive maintenance will not succeed. Death was proposed to be pronounced prior to termination of artificial support and prior to any organ removal. Physicians were proposed to have immunity from civil and criminal liability unless the physicians violated standards of professional care and judgment. The bill also proposed to amend the anatomical gifts law by requiring confirmation of death of donors by two additional physicians.

The testimony discussed with regard to House Bill No. 2887-76 and Senate Bill No. 2518-76 are largely applicable to House Bill No. 2111-76.

With specific regard to provisions of House Bill No. 2111-76, testimony of the Attorney General stated that the bill would "provide the medical community and the entire state with a more meaningful approach to cases, such as the Quinlan case in New Jersey and the Cameron case in Hilo".<sup>17</sup> The Attorney General offered possible amendments, one of which to substitute "spontaneous functioning" in place of the medical finding that resuscitative attempts are hopeless, because "'hopeless' is not precise enough to measure a condition and that the words 'spontaneous functioning', meaning that the organs cannot function independently of artificial assistance, would be a more workable description of the condition to which reference is being made".<sup>18</sup>

The Attorney General also recommended that at least one of the physicians required to make a finding of death under the proposed legislation using the brain function standard be a neurologist or neurosurgeon. This recommendation was based on the assertion that a special "expertise" is required "to perform complex neurological tests to deter-mine brain functioning",<sup>19</sup> and the fact that not all physicians have that special knowledge. The Attorney General further recommended that the phrase "further attempts at resuscitation or supportive maintenance will not succeed" be replaced by "further attempts at resuscitation would not restore spontaneous functions", to overcome the ambiguity which exists in attempting to determine the intent of such a provision. Finally, in testi-mony on Senate Bill No. 2518-76, in commenting upon House Bill No. 2111-76, the Attorney General indicated that House Bill No. 2111-76 does not clearly speak to its application to criminal cases, and stated that, "We cannot have one standard of death for civil cases and another standard for criminal cases."20

The House Committee on Health in reporting House Bill No. 2111-76 out of committee amended it to provide that a person is dead if a physician using ordinary standards of the then current medical practice has the opinion that respiratory, circulatory, and cardiac function are absent and that resuscitative attempts will not restore them. The brain death alternative proposed that a physician must find and a neurospecialist must confirm an absence of brain function and it must be determined that because of the amount of time since the cessation of brain function but no sooner than twenty-four hours, that attempts at resuscitation will not restore brain function. The amendments made therefore largely responded to testimony received.

The Hawaii Medical Association presented further testimony in view of the amendments made by the House Committee on Health. That Association's testimony to the House Committee on Judiciary on House Bill No. 2111-76, H.D. 1, expressed the opinion that the new draft was "quite superior" to the previous version and to House Bill No. 2887-76 (discussed above). There were two recommendations which were made by the Hawaii Medical Association testimony: first, that the bill be amended to require that the determination of death be made by a licensed physician (as opposed to the use of the term "physician") and second, that the bill be clarified to stipulate who would be responsible for the determination of what constitutes "ordinary standards of the then current medical practice."

The second recommendation from the Hawaii Medical Association reflects again the concern which the previous testimony from that organization expressed. There was no action on this particular recommendation. It should be noted that courts presently without statutory guides, determine what constitutes ordinary standards of medical practice based on actual medical practice.

The House Committee on Judiciary amended the bill and the resulting draft (H.D. 2) was reported out of committee and recommended for passage by the House of Representatives. It differed from the earlier draft in the following respects:

- "Human body" was substituted for "person", to reflect the belief that some religions have regarding the continuing existence of a "person" after death;
- (2) Attempts at resuscitation were directed towards restoration of <u>spontaneous</u> functioning as opposed to mere functioning, "to exclude the dependence of a patient on life-supporting equipment under the circumstances";

(3) The provision proposing to grant immunity to physicians in the use of the proposed definition of death except in the instance of violation of the standard of professional care and judgment was deleted, with the rationale that statutory physician immunity, in the interest of safeguarding against negligent medical decisions and ensuring highest standards of medical practice, should not be granted.<sup>21</sup>

The House of Representatives passed the bill in the form reported by the Committee on Judiciary, and the bill was sent to the Senate where it was referred to two committees from which the bill was never reported.

The Senate thereafter passed the Resolution which requested this report.

### DISTINCTIVE FEATURES OF HAWAII LEGISLATION

Several provisions included in House Bill No. 2111-76, H.D. 2, which was the single piece of definition of death legislation receiving the most attention and action by the Hawaii Legislature, are relatively unusual.

For example, the bill included within its traditional criteria alternative to determining death "respiratory, circulatory and cardiac functions" (emphasis added), whereas in general, other examples of legislation examined included respiratory and circulatory functions or respiratory and cardiac functions. The statutory patterns utilized with the two-function provisions seem to indicate that cardiac and circulatory functions may be regarded as the same or extremely similar, since an identical pattern is used with the varying combinations, and there appears not to have been significant difficulty in the use of either dual combination.

Another point of interest is that the brain function alternative includes a requirement that at least twenty-four hours must pass (after the cessation of brain function) before any determination that any attempts at resuscitation would not restore brain function. The proposed statute thus included a built-in minimum time period, perhaps reflective of the amount of time which would be medically adequate for the evaluation of brain function death, although the proposed legislation did not specify what, if anything, should be done within the twenty-four hour period.<sup>22</sup>

## PROPOSED DEFINITIONS OF DEATH

## **OTHER CONSIDERATIONS**

In addition to considerations and points discussed both in this and in other chapters, there are other factors regarding the definition of death which are appropriate to consider in conjunction with the definition of death under the law. These factors are not tangential considerations, and should be examined in light of the medical-legal conflict.

#### NEED FOR A STATUTORY DEFINITION; ALTERNATIVE TO LEGISLATION

The primary question regarding any consideration of legislation is the question of need. There appears a clear conflict between law and medicine in terms of the definition of death. If the conflict is conceded, the most appropriate mode of its resolution should be sought. There are two primary modes of resolving of the conflict: (1) by legislation; and (2) by case law.

Some disagreement exists as to whether or not the legal recognition of the medical determination of death under the brain function standard must be addressed by statute. Statutes provide significant and concrete parameters for medical practice, and define the limits of intrusion of law into the practice of medicine. For example, the enactment of a statute providing for an alternative usage of the brain function definition of death and the traditional circulatory and respiratory definition of death would prohibit, generally, judicial ability to accept the usage of any other definition of death, regardless of the extent of acceptance of the definition. At present, the lack of statutory definitions of death has allowed courts to decide cases utilizing common law principles, and also to depart from what appear to be well-established legal doctrine in recognition of a new societal need and of the recently instituted medical practice. It is questionable whether under a statute defining death under traditional criteria a court would have been able to depart from the traditional criteria, regardless of how persuasive the arguments and evidence in favor of such a departure may be. Therefore the judicial system has responded to the conflict between law and medicine without the benefit of statute.

Fifteen states, however, have seen fit to enact statutes, perhaps to ensure the integration of the brain function standard of death into the law. Particular outcomes of litigation regarding the definition of death without such statutes are not and cannot be assured. Similarly, however, the existence of statutes will not keep the matter out of the courts, for interpretation of statutes, philosophical intent of statutes, and the implementation of statutes are common reasons for seeking judicial relief. The statutes merely provide the floor of judicial consideration--in this instance, the floor would be the brain function standard of death.

Enactment of statutes in rapidly changing areas and fields, such as medicine, are often criticized as inhibiting development and progress by freezing into the statutes concepts, practices and other matters which all parties involved freely acknowledge will undergo constant evolution. In such an instance, statutes are enacted with the acknowledgment that they must later be amended to conform with newer developments. However, many critics of such legislation point out that the undue effort and time required to amend a law through the legislative process constitute an onerous burden, and that therefore, the legislatures should not legislate upon such matters. Again, the argument that judicial development of law through case law and the application of common law principles may completely proscribe any advancement in the law is raised, and the issue is joined.

Persons favoring litigation to legislation see case law as a more evolutionary and gradual approach to a controversial question, and as a more thorough method of assessing public opinion. If a statutory definition were prematurely considered by the legislature and the measure failed to pass, prospects of eventual legislation would be more fatally compromised than by an adverse decision.<sup>23</sup>

Person favoring legislation to litigation consider the legislative process as a superior gauge of public opinion, and also consider it to be less committed to common-law traditions. The Legislature possesses ready capability to make major policy changes, and does not necessarily rely upon a gradual evolutionary development of law. It can also be said that the Legislature, in terms of the allegedly lengthy and drawn-out procedure of effectuating statutory change, is often in a position of having to make major policy changes to bring the law up to date. However, statutory definition of death may lead to more consistent results in achieving policy change than a series of court cases.<sup>24</sup> The example of the Third Circuit's judicial construction of the Uniform Anatomical Gifts Act, in the absence of any other Hawaii state court interpretation of the statute, confirms such a theory, for there is no way to assure that any other circuit in the State will reach the same conclusion, even given facts identical to that of the Alice Cameron case.

#### QUESTION OF FACT, QUESTION OF LAW

There is further concern regarding the definition of death developed through case law, particularly with regard to whether the determination of death is more appropriately a question of fact or a question of law. Generally, questions of law are decided by the judge, and questions of fact are decided by the jury. Questions of law are appealable, while questions of fact are not appealable, in general understanding.<sup>25</sup> It is generally acceptable that the credibility and weight of expert (in the definition of death, of medical) testimony are left to the jury as triers of fact. Such testimony, however, is usually not conclusive even if uncontradicted.<sup>26</sup>

As seen in discussion of the <u>Tucker</u> case, the judge resolved the difference between law and medicine by instructing the jury to consider definitions under both law and medicine.<sup>27</sup> The precedential value of the case is limited because the jury did not have to explain its verdict, and we are thus without the basis of the jury's conclusion. The acquittal of the physicians probably, however, required reliance by the jury on the brain function standard of death. It is perhaps more significant therefore that the judge in charging the jury allowed consideration of <u>both</u> legal and medical standards of death, thereby redefining the allowable parameters of death determination under the law.

A different approach was taken in the Lyons case, in which the judge determined that as a matter of law, death was to be equated with the irreversible cessation of brain function. The jury there was thus bound to such a definition of death in reaching its decision. Because the Tucker case was a civil action, and the Lyons case a criminal action, the judge in the Lyons case may have felt more secure in relying on the brain death standard to assure that the accused would not be exonerated of the criminal act. The legal concept of proximate cause commonly allows the law to trace through various events to determine the culpability or responsibility in seeking out causative factors when death or other injury may be the result of more than one action.<sup>28</sup>

The <u>Tucker</u> and <u>Lyons</u> cases had similar outcomes in relieving physicians of liability for the deaths of the patients, but utilized opposite legal procedural theories in their respective classifications of the determination of death as a question of fact and as a question of law.

As seen, this question is one which primarily requires resolution by the courts. In determining a solution to the problems engendered by lack of concensus between law and

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medicine, it is appropriate to note that judicial discretion has a definite role, both with and without a statute.

#### LEVELS OF SPECIFICITY \*

A statutory definition of death may be framed at various levels of specificity. The common elements of the various statutory approaches in terms of specificity are the necessity for general medical concensus and the required physician implementation. Examples of specificity levels, from low to high specificity, follow:

- (1) Death shall be determined by the attending physician. This is essentially the position of the Uniform Anatomical Gifts Act, and appears to reflect present actual physician practice.
- (2) Death shall be determined by the attending physician according to customary standards of medical practice. This essentially represents the holdings of the Sulsona and Cameron cases.
- (3) Death occurs when there is total and irreversible cessation of brain function, determined by the attending physician in accordance with customary standards of medical practice. This generally can be equated to existing statutory provisions, as well as the provision recommended by the American Bar Association.<sup>29</sup>
- (4) Death can be said to have occurred when there is total and irreversible cessation of brain function, as indicated by an absence of brain waves.
- (5) Death can be said to have occurred when there is total and irreversible cessation of brain function, determined by the attending physician in accordance with customary standards of medical practice; however, an isoelectric EEG is a necessary indication of total and irreversible cessation of brain function.

All American statutes defining death are generally at the third level of specificity, but in contrast, the French law discussed elsewhere is far more specific and may be at the fifth or perhaps a higher level of specificity.

Consideration must be given to the amount of specificity which any intended statute would embrace, in cognizance of the relatively diminishing time value of the statute likely to accompany increasing levels of specificity. The assignment of a level of specificity to any proposed statute is based on the precision of the duties assigned to physicians in determining the existence or nonexistence of the state of death. The greater the duties placed on physicians, in terms of standards to be met, tests to be performed, and results to be achieved, the greater the level of specificity. The level of specificity as discussed elsewhere must be selected in recognition of competing interests, relative availability of personnel and other resources, medical consensus, and other pertinent considerations.

#### **RETAINING THE TRADITIONAL STANDARD**

There are some persuasive arguments for retaining the traditional standard of determination of death, despite the many medical and legal problems which have arisen from the introduction and use of the brain function standard of death. It is not an absolute necessity that the brain function definition of death be recognized by the law. History and the apparently agreeable practice of medicine and law for many years fulfilled basic needs of the human race under the traditional criteria for determining death, and no one generally was unnaturally prejudiced by that criteria of death. The brain function determination of death may in fact have initiated unnatural prejudice in the death process by simultaneously responding to needs of the dead and the dying while responding to needs of the marginally alive. The mechanical life support systems and organ transplantation are presently viewed as accomplishing both positive and negative results, all of which tinker with the heretofore "normal" and "natural" processes of life and death.

Moreover, there is firm evidence, exhibited by the <u>Cameron</u> case that there is a lack of physician acceptance of the brain death standard, apparently particularly among those physicians who are older or in general practice, and thus there may not be uniform application of any statutory provision recognizing the brain death concept.

A further argument stems from the estimate that only two per cent of all medical cases are decided on the basis of the brain function standard.<sup>30</sup> This fact in conjunction with the requirement of consulting specialists and sophisticated medical equipment not universally available in this State, further supports the assertion that there is no overwhelming reliance on the brain function standard of death. Quite to the contrary, in the vast majority of cases, a clinical examination and the use of the traditional criteria of death suffice.

Some commentators argue, however, that brain death has been better studied and that it is far easier to determine death conclusively under that standard than under the traditional criteria because there is no manner of determining how long to apply resuscitative efforts in cases of circulatoryrespiratory death. In one rare case, a patient was successfuly revived after three and one-half hours.<sup>31</sup> This uncertainty about the durational limits of resuscitative efforts is reflected in the subjective language of statutory provisions, such as those providing that "there is no reasonable possibility of restoring function", and other similar statements.

Similarly, the legal abandonment of the brain function criteria of death will result in severe hampering of certain types of organ transplantation and in addition, patients who are dead in medical opinion would be artificially maintained beyond the fact of medical death. Due to the many competing pressures and negative factors surrounding the artificial maintenance of brain-dead patients, physicians may hesitate to utilize extraordinary resuscitative efforts if brain death is suspected. Patients' lives may thus not receive the fullest benefits of medical capabilities.

Accordingly, while there is a conflict between law and medicine in the determination of death, the retaining of the previously pre-eminent standard may be regarded as a possible alternative solution, although grave problems may accompany such action.

#### LOCATION OF THE DEFINITION IN THE STATUTES; APPLICABILITY LIMITS

The existing statutory provisions defining death do not follow any consistent pattern of location within the law. Various locations are utilized, including laws relating to vital statistics, dead bodies, anatomical gifts, statutory construction, civil procedure, penal law, criminal procedure, and miscellaneous provisions. The restriction of some definition of death statutes to anatomical gifts only raises questions about the equal protection of the laws of organ donors as opposed to nondonors, in terms of the rationale for ascribing predominating superiority to organ transplantation interests. Potential donors in such circumstance would appear to be more vulnerable than other patients for purposes of death determinations.

The limitation of the definition to organ transplantation cases only gives rise to another basic issue, that of the applicability limits of a determination of death under the brain function standard of death. That is, it may be

desirable to stipulate the effect of a declaration of death under a legislated standard. Some states provide that a person will be considered dead for all legal purposes, some provide that a person will be medically and legally dead, and some extend the determination for all purposes. Some states particularly mention the applicability of the standard to civil, criminal, or both types of litigation. These issues are basic policy questions which surround but do not precisely involve the acceptablity or unacceptability of the brain function standard of death. There are no specific positive and negative aspects to these policy decisions in terms of the brain function standard, but these decisions may be guided by the general legal desirability of consistency. The legal consistency would extend to and may facilitate continued consistency in medical practice.

#### **DEFINITION UPDATING**

A major consideration to be made in formulating any statutory definition of death is the probable requirement for periodic updating of the definition to reflect continuing changes in medical practice. It is true that no mechanism existed to consider the adequacy of the definition of death in the law in the past, but the possible existence of statutory material may require a more vigilant approach to anticipating legal and medical conflict. A mandatory mechanism to update the definition is also highly desirable in responding to apprehensions that a statute is too inflexible and too difficult to amend in the event of its future obsolescence.

No existing statutory definition of death includes a built-in mechanism for revision, review, or other periodic or on-going reassessment, to provide for the rapid pace of medical progress.

Testimony on Hawaii legislation suggested that the Hawaii Medical Association be made responsible for defining standards to be followed by physicians; other possibilities would include entrusting this responsibility to the Board of Medical Examiners, the Department of Health, or the University of Hawaii's School of Medicine. There is some parallel statutory precedent for such an action, in that the states of Ohio and Oklahoma have delegated the responsibility for defining "stillbirth" to their respective health departments.

Personal interviews conducted in the course of this study yielded the suggestion that a committee be convened annually for the sole purpose of reviewing the adequacy of the statutory definition of death, should one be enacted. The various proposed configurations for such a committee include:

- (1) A committee of physicians, three to be recommended by the Hawaii Medical Association, two by the University of Hawaii School of Medicine, and one or two by the Department of Health.
- (2) An interdisciplinary committee to include the dean of the medical school, the dean of the law school, a representative of the Council of Churches, a designee of the Judicial Council, and appointees of the Board of Medical Examiners (including neurospecialists and specialists in obstetrics and gynecology).
- (3) An interdisciplinary committee including a physician engaged in transplantation surgery, a neurospecialist (who has had no connection with transplantation surgery), two clergymen (probably one Catholic and one Buddhist), a consumer respresentative, and a lawyer. The committee members would sit for limited terms of two years.

The multi-partisan approach to setting medical standards in the definition of death has been successful in the past. The Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death had thirteen members, including ten physicians, one theologian, one history of science professor, and one with legal training.<sup>32</sup> The Ad Hoc Committee on Human Tissue Transplantation formed under the aegis of the Institute of Forensic Sciences at Duquesne Law School had twenty members, fourteen medical specialists (surgeons, internists, psychiatrists, neurologists, a pathologist, an anesthesiologist, a county coroner, and the president of the county medical association), three theologians (one of whom was an attorney), a county judge, a law school dean, and a county bar association president.<sup>33</sup>

The usefulness of such a committee is clear, for the state would be assured of a reasonably current definition of death if the recommendations of the committee are followed. There is a further policy issue to be determined with regard to the establishment of such a committee, in addition to the question of its composition, that is, the powers and duties of the committee. For example, the committee may be wholly entrusted with development and maintenance of a definition of death, or its jurisdiction may be limited to recommending changes in existing laws for legislative or other administrative authority would then accept or reject in their respective discretions.

## PROPOSED DEFINITIONS OF DEATH

Other less formal mechanisms include requesting an executive branch agency to hold periodic public hearings to receive input on the subject of the adequacy of the definition of death in Hawaii. Similarly, the Legislature may itself hold periodic hearings and request the participation of appropriate agencies, individuals, organizations, and the general public. In the alternative, a recommendatory role could be given to an existing private organization or an agency of the State to provide guidelines or advice to the Legislature on a regular basis relating to the updating of the law relating to the definition of death.

There are a number of possibilities, therefore, for the generation of revision or updating of any definition of death which may be enacted.

Other states have not included such a mechanism in statutory material, and may have preferred to continue in their present systems of law modification. If there is a need, or an apparent need, the matter will generally gain the attention of appropriate persons and lawmakers, as the matter originally gained attention and acceptance.

It should be recalled further that to date no medical or health organization in Hawaii has publicly issued a definition of death or publicized a policy opinion on the subject of the definition of death, except in specific response to proposed legislation. It may be that only the Legislature or a committee established and mandated by the Legislature will assume responsibility in this subject matter, or may reflect a desire to have no statutory definition of death.

### THE DOCTORS, THE LAWYERS

Physicians interviewed in the course of this study generally expressed the conviction that the determination of death is a medical question. There was no serious disagreement noted with this precept in discussions with nonphysicians, and indeed the question addressed by this report does not conflict with or challenge that position. The enactment or other legal recognition of the brain function standard of death does not have to remove any right of physicians to practice medicine as they presently do. The laws enacted in other states arose from a desire to expand rather than limit the legal parameters of medical practice, as it was determined long ago by case law. Thus the laws did not seek to affect or limit specific medical practice, but rather sought the expansion of the law to encompass modern medical practice. Under all enacted statutes, the determination of death is very much a medical question.

The primary professional physician's organization, the American Medical Association, in 1968 issued guidelines which stated that "[d]eath shall be determined by the clinical judgment of the physician. In making this determination the physician will use all the available, currently accepted, scientific tests."<sup>34</sup>

Following enactment by several states of statutory definitions of death, the American Medical Association in December, 1973, adopted the following recommendations:

- (1) The Judicial Council recommends that the House of Delegates adopt the position that, at the present, statutory definition of death is neither desirable nor necessary.
- (2) The Council recommends that State Medical Associations urge their respective legislatures to postpone enactment of legislation defining death by statute, and
- (3) The Council further recommends that this House of Delegates affirm:

Death shall be determined by the clinical judgment of the physician using the necessary available and currently accepted criteria.<sup>35</sup>

In adopting the recommendations, the American Medical Association states that there was "no persuasive evidence... which indicates a need for such inflexible and even repressive definition of death by statute."<sup>36</sup>

The following year, the Council of the Insurance, Negligence and Compensation Law Section of the American Bar Association approved a definition of death prepared and presented by the Law and Medicine Committee which stated:

For all legal purposes, a human body with irreversible cessation of brain function, according to usual and customary standards of medical practice, shall be considered dead.<sup>37</sup>

The definition was said to have various advantages, including avoidance of euthanasia, dual application to both civil and criminal law, allowing judicial determination of the ultimate fact of death, and medical determination of the evidentiary fact of death, among others.<sup>38</sup> The American Bar Association in 1975 adopted a Resolution calling for the enactment of the definition. The American Medical Association thereafter requested the American Bar Association to reconsider its action in adopting the resolution, and urged its rejection. The American Medical Association stated:

There are no significant <u>legal</u> problems relating to the occurrence or the time of death which would justify any change in the law. Little difficulty has been encountered by courts in making decisions relating to the occurrence and time of death. Wherever problems have occurred, a specific rule of law or statute has disposed of any uncertainty. Furthermore, if there is a need for a change of the law to provide greater predictability or certainty, the adoption of a definition is not the appropriate way to make that change. The medical diagnosis of death and time of death is a matter calling for the professional judgment of the physician.<sup>38</sup>

The American Medical Association stated reaffirmation of its stand opposing the statutory enactment of definitions of death. In addition, the American Medical Association specifically rejected a resolution introduced at its June, 1975 meeting to adopt a current definition of death applicable to the irreversible cessation of brain function.

There have been many other recommended definitions of death proposed by individuals and other organizations, reflecting various positions on the question of the definition of death. The AMA and ABA positions are the only statements presented here owing to their being the broadestbased professional organizations issuing position statements on the subject. None of the other positions discovered propound positions or definitions at great variance with others discussed in this report, and thus their discussion is omitted.
# Chapter VI

### **RELIGIOUS PERSPECTIVE OF THE DEFINITION OF DEATH**

Religion is frequently discussed in considerations of life and death, and in view of the unusual circumstances created by recent medical advances discussed elsewhere, some consideration of the religious aspects of the definition of death should be made here. The difficult question of redefining death under the law arises out of a conflict between law and medicine, and has not arisen out of blatant religious conflict with either law or medicine. Nevertheless because human understanding and ethics have been apparently profoundly influenced, if not shaped, by religion, pertinent western religious views which have received widespread public attention are reported in this chapter.

The allocutio<sup>1</sup> (address) delivered by Pope Pius XII in 1957 to a congress of anesthesiologists, is perhaps the most frequently quoted and influential statement on the definition of death (and the matter of passive euthanasia) made by a religious leader.<sup>2</sup>

A physician had posed three questions to the Pope, concerning "reanimation",<sup>3</sup> or what may be referred to in common understanding as resuscitation or artificial maintenance of life processes:

- (1) Does a physician have the right or obligation in all cases of deep coma to support the patient's respiration artificially, even those cases in which a competent physician considers completely hopeless, and despite the wishes of the patient's family?
- (2) May a physician remove the artificial respiratory apparatus before there is definite cessation of the patient's circulation?
- (3) When the circulation and the life of a deeply comatose patient are maintained only through artificial respiration and no improvement is noted after a few days, when does the Catholic Church consider the patient "dead", or, when should the patient be declared "dead" according to natural law?

The Pope articulated and emphasized that man has a right and an obligation to preserve life and health in the

### RELIGIOUS PERSPECTIVE OF THE DEFINITION OF DEATH

event of serious illness. Towards that end, according to the Pope, man is only obligated to use "ordinary means" the measurement of which depends on the individuals involved, the place, the time, and the culture. "Ordinary means" are means which do not impose extraordinary burdens on one's self or onto others. Perhaps significantly, the Pope appears to have been less demanding in his expectations of medical science than is the secular law, perhaps because he does not believe that the physical and temporal existence of man to be of ultimate and supreme importance in comparison to the afterlife and the eternal salvation of man:

Life, health, all temporal activity, are in effect subordinated to spiritual ends.<sup>4</sup>

Compare this to Judge Muir's statement in refusing to allow the removal of Karen Ann Quinlan from the respirator:

The single most important temporal quality Karen Ann Quinlan has is life. This court will not authorize that life be taken from her.<sup>5</sup>

The <u>allocutio</u> stresses that it is the physician, not the theologian, who is responsible for a precise, scientific determination of death and for the detection of the moment of death.<sup>6</sup> The language of theology is not of substantial practical utility, for by its nature it is too vague and imprecise to be applied to individual determinations of death.

The Pope concludes, therefore, that a physician bears no obligation to utilize "extraordinary means" to artificially sustain the respiration of a hopelessly comatose patient, nor is the family of such an individual required to authorize a physician to utilize "extraordinary means".<sup>7</sup> Death of the patient is attributable to the original malady in an instance of nonuse or termination of extraordinary means, and the interruption of resuscitative efforts is viewed only as an indirectly related factor.<sup>8</sup>

Accordingly, the <u>allocutio</u> states that a physician may also remove the artificial supports before the patient's circulation ceases.<sup>9</sup>

As to the third question above, relating to the Catholic Church's view on when an artificially supported, hopelessly comatose patient is regarded as dead, Pope Pius XII did not believe that religious or moral principles hold the answer in terms of individual cases. Distinction is made however between the vegetative existence of organ life as opposed to the higher human life in the vital functions.<sup>10</sup>

### TOWARDS A DEFINITION OF DEATH

Pope Pius XII's <u>allocutio</u> has been often quoted, not solely because of his pre-eminent authority as the head of a large and prominent religious denomination. The Pope's respect for and deference to medical judgment, the flexibility of his distinctions between "ordinary" and "extraordinary means", and between vegetative and human life, demonstrated in the <u>allocutio</u>, make the <u>allocutio</u> a document of continuing relevance. Similar ideas have been expressed by other religious leaders.<sup>11</sup>

Orthodox Judaism is cited as defining death on the basis of the traditional criteria of death,<sup>12</sup> thus giving rise to the view that the legislative enactment of a brain function standard of death would "trespass" upon Jewish law.<sup>13</sup> The president of the Agudath Israel of America, a broadly based Orthodox Jewish organization reportedly maintains that death and its determination is a personal as opposed to legal concern, which should be addressed in the context of the patient, the physician, and the family.<sup>14</sup> There is, however, contrary Jewish view on record also, which has supported the enactment of the brain function criteria of death, because such an enactment would avoid "uncertainties" and "confusion" relating to patients who are artificially maintained. There is, according to the Rabbinical Assembly of Conservative Rabbi, "no conflict with traditional Jewish law".<sup>15</sup>

Protestants appear to have been cautious in the New York drive for enactment of the brain function determination of death, and while they did not outrightly oppose the enactment of the criteria, they did indicate a desire that the New York legislature not act on the bill in 1976. Some difficulties pointed out by the Protestants include the use of the EEG as an indication of death, because of the possibility of errors, and Protestants have been quoted as saying, "We don't believe machines are gods yet."<sup>16</sup>

Reflecting the position of the <u>allocutio</u> discussed above, Catholics in New York were in favor of proposed legislation which would include traditional and brain function criteria, the latter in the presence of life-support systems. The statute, apparently, was viewed as a protection against the possibility of the practice of euthanasia, and it was stated that it would also "provide a legal, acceptable end to life and a legal means of keeping pace with advances in medical technology."<sup>17</sup>

The New York discussion also raised the issue of unscrupulous premature declarations of death in the interest of organ transplantation in the event of enactment of a brain

### RELIGIOUS PERSPECTIVE OF THE DEFINITION OF DEATH

function standard of death. This argument, raised by both the Orthodox Jewry and the New York State Right to Life Organization, has been countered by the argument that the unscrupulous will nevertheless "bend the law" under any set of guidelines, and in addition, would nevertheless be subject to malpractice litigation.<sup>18</sup>

Local clergy interviewed by the news media in relation to the definition of death legislation introduced into the Hawaii Legislature in 1976 generally reflected agreement with a medical determination of brain death.<sup>19</sup> A Baptist Reverend was quoted as maintaining that, "To create a vegetable is as sinful as not saving a life," and concluded that if no brain activity is present, life-support systems should be removed. A Rabbi agreed with that position, as did other representatives of the clergy. A Buddhist Bishop indicated agreement with the consideration of legislation regarding the definition of death, and also expressed acceptance of the medical determination of death. The Buddhist tradition provides that "life never dies: 'Normally we say we die yet we are part of existence itself.'" Mormons were reported not to believe in euthanasia, but further stated that there are cases in which death has occurred but which are maintained by artificial life supports, and in relation to which "the family should consult with physicians and with priesthood leaders and 'with the Lord through prayer' before making a decision." No comment was reported from the Jehoyah's Witnesses, whose spokesman declined to comment because the Jehovah's Witnesses have not issued a statement on the subject. Thus, there appears to be general acceptance and support of the brain function criteria of death among those local representatives of organized religion.

In general, it must be emphasized that the clergy, regardless of denomination, has only advisory impact and function in the legislative process, and constitute only one of many competing interests which must be considered in addressing the problem of whether or not to define death under the law specifically to include brain function death. To the extent, for example, that a religious leader's beliefs deemphasizes the importance of temporal existence in favor of "eternal life", or some other form of "life" after death, those views should not be allowed to influence the secular law. Religion has sometimes placed greater, or priority, emphasis upon the life after death than in the life which we as human beings are able to perceive. The law and society regulate only what is capable of being consciously perceived. Further, owing to the constitutional guarantee of freedom of religion, legislative measures which infringe unduly upon the free exercise of religion are subject to careful scrutiny

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to ensure that no exercise of religion is unreasonably inhibited, and also that no religion is thrust upon the people. Therefore, while law may be persuaded by religion, it cannot be directed by religion. Religion does not direct the formal mechanisms of social control, such as the courts, which are charged with determining compliance with legislated provisions. In this particular discussion, religion would not have the responsibility of implementing a definition of death, as that responsibility generally lies with physicians.

This does not mean that the law does not take cognizance of religion, or that it should not take cognizance of religion on an individual basis. For example, in the Karen Ann Quinlan case, both the trial and reviewing courts addressed religious questions in determining various legal issues. (See discussion of the Karen Ann Quinlan case in Chapter II). The predominating rationale for deciding the cases did not rely upon the religious issue; however, this is not to imply that a religious issue cannot be the predominating factor in any particular instance. Religion is a consideration which can be asserted by an individual but is not a factor which can generally be constitutionally asserted by government against an individual.

## **Chapter VII**

# COST CONSIDERATIONS

Among the many factors and variables which must be considered in redefining death under the law is the factor of cost. The fact of financial burden in itself is not sufficient to justify redefining death, for if it were the question would not be based on existing medical practice, but would involve a change in medical practice to conform to financial capability. In its proper context, however, cost must inevitably be considered as pertinent to the need for a legal redefinition of death.

The apparent ability of medical science to sustain life artificially creates unusual demands upon families of such patients, both in terms of emotional stress and in terms of financial impact. The utilization of sophisticated artificial life-sustaining mechanisms requires a high degree of medical monitoring, and is generally associated with inpatient status within an acute care general hospital, and in addition, within the intensive care unit of such a hospital. This high level of care requires the commitment of substantial resources, in terms of money and medical personnel, and in addition, of medical facilities, supplies and equipment.<sup>1</sup> The unwarranted use of limited medical resources on one patient necessarily results in either deprivation of services necessary to another patient or in the requirement of additional investment in facilities and equipment. This last conclusion is an undeniable one, for the preeminent characteristic of the modern artificial life support systems is that the systems sustain vital life functions indefinitely. In view of the apparent ability of medicine to determine irreversible cessation of brain function (which occurs separate and apart from the fact of normal-appearing though mechanically-supported functioning of respiratory and circulatory systems) as constituting death, the fact of medical death is not tied to the continuation of body functions with the assistance of machinery.

The need for such maintenance, and the desirability of such artificial maintenance, then, must be balanced against the benefits which are achieved by the maintenance. Because the patient is medically dead, recovery will not occur, the "unconsciousness" of the patient will never abate, and the normal spontaneous functioning of the patient will not be resumed. The patient is past the point of being able to resume congnitive functioning or independent physical

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functioning. Accordingly, the benefits gained from such maintenance are highly questionable in a practical sense. Some may feel that there is emotional benefit to sustaining life, yet some individuals familiar with human relationships under such circumstances relate that often, the patient's family feels most strongly that the patient, if dead, should be declared dead.

There appears general recognition that the cost of health care is escalating at a rate greater than accounted for by general inflation.<sup>2</sup> The increased use of sophisticated techniques and equipment may in part be attributed to the increase, but ironically, particularly in those cases of continued artificial maintenance of brain-dead patients, those very techniques and equipment are the causes of overwhelming medical expenses. There is and there should be very strong argument for medical care where there is life, but where medical opinion is that there is no life, the continuation of medical "treatment" is merely a very costly and traumatic experience for survivors.

Survivors of course do not always bear the medical costs of a deceased person, but in many instances, the survivors, because of the execution of financial responsibility documents with hospitals, bear personal liability in addition to any liability of the estate of the deceased person. Prepaid health care plans do assist in bearing the burden of medical costs by spreading the costs over a wide group of insureds, but such plans do have limitations in specific types of coverage. Hawaii law requiring employers to pay for at least one-half of the premium cost for health insurance of their employees (the Hawaii Prepaid Health Care Act)<sup>3</sup> places a minimum floor on coverage which must be provided. Hospitalization coverage must be for a minimum of one hundred and twenty days of confinement in each calendar year,<sup>4</sup> or roughly four months. As an example of policy limits which may be applicable in any given case, the State Public Employee Health Fund, which covers employees of the State of Hawaii, under one insurer provides coverage for up to one hundred and fifty days of hospital confinement in any calendar year. Beyond these limits of coverage, the patient, his estate, or anyone who may be liable must bear the total hospitalization costs.

As an example of possible costs which may be borne by a patient and his family, four major hospitals in Honolulu have the following hospital rates:

### RELIGIOUS PERSPECTIVE OF THE DEFINITION OF DEATH

HOSPITAL	WARD	SEMI-PRIVATE	PRIVATE	INTENSIVE CARE
1		\$87	\$99	\$275
2	\$88.50 - 91.50	93 - 99	98 - 107	270
3		95	95	250
4	88	91 - 95	99 - 103	275
				e.

Source: December 23, 1976 telephone survey by the Legislative Reference Bureau

The above amounts are basic charges, and additional costs are added for medications, supplies, and in some instances, equipment rental and related fees. Physician fees are not included in the basic fees listed, and a wide range in such visit fees appears to exist. Normal hospitalization costs can readily amount to \$1,000 a week, and in the event of intensive care costs, generally far exceed \$2,000 a week. Nursing home costs, should it be possible to move a comatose, artificially supported patient to such a facility, exceed \$1,000 a month and in some instances are reported to be close to \$2,000 a month. Nursing homes are generally not equipped for such levels of care, however. Even if they were so equipped, medical insurance coverage for nonacute institutionalization costs varies widely and is often for a significantly shorter period of time than for hospitalization. For example, the State Employee Health Fund Plan under one insurer covers sixty days of such nonacute care per calendar year. It must be recalled that prepaid health care plans, even for the period of coverage, may not cover all costs, but often cover only a portion of such costs.

In late 1975, it was reported that the cost of maintaining a comatose patient on a respirator was \$500 per day at New York's Columbia Presbyterian's intensive care unit.<sup>5</sup> Similarly, costs for Karen Quinlan were reported at approximately \$450 per day.<sup>6</sup>

Long-term maintenance of a patient who is medically dead therefrom can amount to significant financial burden to the survivors of the patient, or in the event of indigency, to the State. The extraordinary costs associated with such care are normally not capable of being absorbed into average budgets, and this factor should be an additional consideration in requiring the law to recognize death in a manner consistent with the medical determination of death. It should be noted, however, that this consideration does not encompass

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the withholding of treatment, or the withdrawing of treatment from a patient who is not medically alive, but only those whom physicians in normal practice under the brain function standard of death, would declare to be dead, and who are in fact presently being declared dead in the normal course of the practice of medicine.

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# **Chapter VIII**

# DEFINING DEATH IN HAWAII FINDINGS AND RECOMMENDATIONS

The Bureau finds:

- (1) That the definition of death is founded on medical conclusion of the occurrence of death and is clearly a separate issue from the question of euthanasia or death with dignity. Chapter II discussed the Alice Cameron case and the Karen Ann Quinlan case, and based on that discussion, it appears that there is clear medical distinction between brain death determinations and determinations of any "persistent vegetative" states.
- (2) That there is significant scientific certainty in the determination of brain death. Chapter III discussed the various methods which may be utilized by physicians making a finding of brain death, as well as some of the reasons necessitating the use of a nontraditional standard. Increasing medical knowledge relating to the brain, widespread acceptance and substantial experience with the brain function standard of death indicate its reliability. The brain function criteria of death does not replace the traditional standard of death in most instances. Special equipment and personnel not uniformly available throughout the State are required to determine brain death.
- (3) That the law has not kept pace with medical developments, and that prior to the enactment of "brain death" statutes, there were no statutes defining death. Chapter III discussed some difficulties resulting from the divergence of law and medicine. Chapter IV discussed some types of death related laws, and explored the new definition of death statutes. There are several major variations of definition of death laws, but no uniform approach to the definition. Fifteen states have enacted definitions of death, the first of which was enacted in 1970. Chapter V discussed proposed laws to define death, which reflect a wider variety of concerns than the enacted statutes.

### TOWARDS A DEFINITION OF DEATH

(4) That there are various matters which must be considered in reaching any decision regarding the definition of death, among them relative value and efficacy of possible alternative solutions such as litigation. Litigation has resulted in uneven legal results, and the total abandonment of the brain function standard of death is not feasible. Chapter V discussed some proposed legislation, in Hawaii and elsewhere, and basic issues surrounding possible solutions. Chapters 6 and 7 discussed the collateral considerations and roles of cost and religion.

Based on the foregoing discussions and findings, the Bureau recommends:

That the Hawaii State Legislature enact a statutory definition of death. The need for laws of uniform application, a result which is not guaranteed by the courts, is the most persuasive consideration in view of the present need of medical practice to use the brain function standard of death.

That the legislation include, as set forth in Exhibit 1:

- (1) Use of the traditional standard of death;
- (2) Conditional use of the brain function standard of death;
- (3) Participation of licensed physicians, and in the case of the brain function standard, consultation of an appropriate licensed specialist;
- (4) Assurance that death pronouncement precede organ removal, and that in case of direct transplantation, physicians making determinations of brain death do not participate in any phase of the transplantation procedures or in the aftercare of the recipient;
- (5) Application to all purposes, including both civil and criminal actions except for presumptive deaths under the Uniform Probate Code; and
- (6) Mandatory convening of a committee to be composed of physicians, attorneys, and lay

persons to determine the continuing adequacy of the foregoing provisions.

The Bureau specifically recommends that legislation to define death not include:

- (1) Specific medical criteria such as discussed in Chapter III. Flexibility in medical practice and development must be recognized and preserved.
- (2) Reference to or provision for death with dignity or euthanasia, to clearly delineate the intent of the Legislature to define death and no more.

### **EXHIBIT** 1

A BILL FOR AN ACT

RELATING TO DEATH.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The Hawaii Revised Statutes is amended by adding a new section, to be appropriately designated, and to read as follows:

"Sec. - Determination of Death. (a) Except as provided in subsection (b) of this section, a human body shall be considered dead if in the announced opinion of a physician licensed under chapter 453, based on ordinary standards of current medical practice, the human body has experienced irreversible cessation of spontaneous respiratory and circulatory functions. Death will have occurred at the time when the irreversible cessation of the functions first coincided.

(b) In the event that artificial means of support preclude a determination that respiratory and circulatory functions have ceased, a human body shall be considered dead if, in the opinion of an attending physician licensed under chapter 453, and of a consulting physician, who shall be a specialist in neurology or neurosurgery and licensed under chapter 453, based on ordinary standards of current medical practice, the person has experienced irreversible cessation of brain function. The opinions of the physicians shall be evidenced by signed statements. Death will have occurred at the time when the irreversible cessation of brain function first occurred. Death shall be pronounced before artificial means of support are withdrawn and before any vital organ is removed for purposes of transplantation.

(c) When a part of a donor is used for direct organ transplantation under chapter 327, and the donor's death is established by determining that the donor experienced irreversible cessation of brain function, the determination shall only be made under subsection (b) of this section. Neither of the physicians making the determination of death shall participate in the procedures for removing or transplanting a part, or in the care of any recipient.

(d) All death determinations in the State shall be made pursuant to this section and shall apply to all purposes, including but not limited to civil and criminal actions, any laws to the contrary notwithstanding; provided that presumptive deaths under the Uniform Probate Code shall not be affected by this section.

(e) The director of health shall convene in every oddnumbered year, a committee which shall be composed of representatives of appropriate general and specialized medical professional organizations, licensed attorneys,

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and members of the public. The committee shall review medical practice, legal developments and other appropriate matters to determine the continuing viability of this section, and shall submit a report of its findings and recommendations to the legislature, prior to the convening of the regular session held in each even-numbered year."

SECTION 2. New statutory material is underscored. In printing this Act, the revisor of statutes need not include the underscoring.

SECTION 3. This Act shall take effect upon its approval.

INTRODUCED BY:

# FOOTNOTES

#### **Chapter II**

- 1. In the Matter of Karen Quinlan, An Alleged <u>Incompetent</u>, 137 N.J. Super. 227, 348 A.2d 801 (1975), modified and remanded, 70 N.J. 10, 355 A.2d 647 (1976). In addition the following court documents (filed under New Jersey Superior Court No. C-201-75) have been consulted: Brief on behalf of Guardian ad Litem, Daniel R. Coburn <u>Pro se</u>; Brief on behalf of the Prosecutor of Morris County; Brief on behalf of Dr. Arshad Javed and Dr. Robert J. Morse; Brief on behalf of St. Clare's Hospital; Brief and Appendix on behalf of the Attorney General of New Jersey. See also, "The Right to Live--or Die," <u>Time</u>, October 27, 1975, p. 40; "A Right to <u>Die?," Newsweek</u>, November 3, 1975, p. 58; "A Right to Die," <u>Newsweek</u>, April 12, 1976, p. 52; "Karen Lives On," <u>Newsweek</u>, June 7, 1976, p. 48; Hilda Regier, "Judge Rules for Respirator Use and Traditional Medical Standards," <u>The Journal of Legal Medicine</u>, November/ December, 1975, pp. 8-10.
- Michael E. Scala, M.D., "The Quinlan Quagmire," <u>Rhode Island Medical Journal</u>, December, 1975, pp. 58-59.
- 3. Ibid.
- 4. Ibid.
- 5. New York Times, November 2, 1975, p. IV-9.
- 6. 381 U.S. 479, 85 S.Ct. 1678, 19 L.Ed.2d 510 (1965).
- 7. 405 U.S. 438, 92 S.Ct. 1029, 31 L.Ed.2d 349 (1972).
- 8. 410 U.S. 113, 93 S.Ct. 705, 35 L.Ed.2d 147 (1972).
- 9. 394 U.S. 557, 89 S.Ct. 1243, 22 L.Ed.2d 542 (1969).
- 10. Scala, p. 58.
- 11. In the Matter of Karen Quinlan, 355 A.2d 647, 665 (1976).
- 12. Id., at 669.
- 13. An address by Pope Pius XII before a conference of anesthesiologists, November 27, 1957. Full text in French, <u>Ethics in Medical Progress</u>; with Special Reference to Transplantation, eds. Wolstenholme and O'Connor, Ciba Foundation Symposium, 1966, pp. 223-230.
- 14. Quoted by the Court in <u>In the Matter of Karen Quinlan</u>, 355 A.2d 647 (1976): "Medical science is not authorized to directly cause natural death; nor, however, is it expected to prevent it when it is inevitable and all hope of a return to an even partial exercise of human life is irreparably lost. Religion is

not expected to define biological death; nor, on its part, is it expected to relinquish its reponsibility to assist man in the formation and pursuit of a correct conscience as to the acceptance of natural death when science has confirmed its inevitability beyond any hope other than that of preserving biological life in a merely vegetative state."

- 15. <u>Id.</u>
- 16. <u>Id.</u>, at 664.
- 17. <u>Id.</u>
- 18. <u>Id.</u>
- 19. <u>Id.</u>
- 20. <u>Id.</u>
- 21. Honolulu Star-Bulletin, August 2, 1976, p. C-3.
- 22. The following documents have been consulted: Petition for Guardianship, Andrew P. Wilson, November 19, 1975; Affidavit of Andrew P. Wilson, November 20, 1975; Affidavit of Ben H. Gaddis, November 20; In the Matter of the Guardianship of Alice Cameron, Motion for Ex Parte Temporary Restraining Order and Memorandum in Support Thereof, Ben H. Gaddis, November 20; Notice of Hearing, November 20; Ex Parte Temporary Restraining Order, November 20; Motion to Vacate Temporary Restraining Order and Memorandum in Support Thereof, Valta A. Cook, November 21; Order Granting Motion to Vacate Temporary Res-training Order (FC-G No. 32), Judge Shunichi Kimura, Family Court of the Third Circuit, December 22. Use has also been made of taped recordings of the court hearing made available through the courtesy and cooperation of Judge Shunichi Kimura, and Cynthia Chi, court reporter, Third Circuit, Hawaii. See also, The Honolulu Advertiser, November 27, 1975, p. A-4; November 25, 1975, p. A-1; November 26, 1975, pp. A-1, A-5; November 26, 1975, p. A-10; November 29, 1975, p. C-3; December 23, 1975, pp. A-1, A-4; January 27, 1976, p. A-3; January 19, 1976, p. A-3; February 14, 1976, p. A-6. See also <u>Honolulu Star-Bulletin</u>, November 25, 1975, p. A-12; November 27, 1975, p. A-4; November 28, 1975, p. A-2; December 2, 1975, p. A-14; December 23, 1975, p. C-14; January 31, 1976, p. A-5.
- 23. "A Definition of Irreversible Coma: Report of the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death," <u>University of San Francisco Law Review</u>, 1970, p. 283; reprinted from <u>Journal of the American</u> <u>Medical Association</u>, 1968, p. 337. Medical <u>literature states that decerebrate movement</u> indicate brainstem function. The brainstem an integral portion of the brain, is partially responsible for decerebrate movements.

E. C. Crosby, et al, <u>Correlative Anatomy of</u> <u>the Nervous System</u>, (New York: MacMillan, <u>1962</u>) p. 260, 503.

- 24. Hawaii Rev. Stat., chapter 327.
- 25. Cocaine, an opiate-like substance in terms of its molecular structure, may be of stimulatory effect in initial pharmacological actions, but in the case of a large overdose, may not be of such effect. Therefore there is opinion that ruling out its presence would be pertinent in attempting to use any brain function standard of death.
- 26. <u>Id.</u>
- 27. Order Granting Motion to Vacate Temporary Restraining Order, <u>In the Matter of the Guardian-</u> <u>ship of Alice Cameron, An Incompetent Person,</u> Family Court of the Third Circuit, FC-G. No. 32, December 22, 1975, p. 7. (Reproduced in entirety at Appendix I.)
- 28. Hawaii Rev. Stat., chapter 327.
- 29. Scala, p. 508.
- 30. I.e., another case receiving national publicity was that of Randal Carmen of Elyria, Ohio, who was artificially supported by mechanical life support systems for three weeks after his brain had died. In that instance, the hospital refused to permit the termination of artificial life supports regardless of the finding of brain death. The hospital administrator said: "We do everything in our power to maintain life saving procedures regardless of the condition of the patient," <u>The Sunday Star-Bulletin and Advertiser</u>, October 12, 1975, p. A-16.
- Compare, for example, the Harvard Criteria with later enunciated criteria of brain function death, at Appendix J.

#### Chapter III

- James E. Hannah, "The Signs of Death: Historical Review," <u>North Carolina Medical Journal</u>, November, 1967, p. 457, 458.
- 2. Ibid.
- 3. <u>Ibid.</u>, p. 459, quoting from A. S. Taylor in J. J. Reece (ed.), <u>A Manual of Medical Juris-</u> <u>prudence</u> (ed. 8), (Philadelphia: H. C. Lea's <u>Son & Co.</u>, 1880).
- 4. "We might definitely choose some sign as a distinction between life and death and use it in a conventional way; but I am very much afraid that, however elastic this convention might be, whatever sign might be proposed to denote the moment of death, this sign and this convention will always remain useful in doubtful cases, and we are obliged to acknowledge that we have no sign or group of signs sufficient to determine the moment of death with scientific certainty in all cases." <u>Ibid.</u>, p. 459,

quoting P. Brouardel, <u>Death and Sudden Death</u>, translated by F. L. Benham, (New York: William Wood and Co., 1897), p. 29.

- 5. <u>Ibid.</u>, quoting T. A. Gonzales, M. Vance, and <u>M. Halpern, Legal Medicine and Toxicology</u> (New York: D. Appleton-Century Co., Inc., 1937), p. 49.
- M. Houts and I. H. Haut, <u>Courtroom Medicine</u>, Vol. 3, section 1.03(1), (1975).
- A. Winters, <u>The Moment of Death</u>, (Charles Thomas, 1969), p. 20.
- Carl E. Wasmuth, Jr., "The Concept of Death," Ohio Law Journal, 1969, p. 32, 34.
- Leon R. Kass, "Death as an Event: A Commentary on Robert Morrison," <u>Science</u>, August 20, 1971, p. 698, 699.
- 10. <u>Winters</u>, p. 21.
- Ohio Legislative Service Commission, "Human Organ Transplantation," Staff Research Report No. 109 (1973), p. 13.
- 12. Wasmuth, p. 36. The fact of brain cell death occurring within four to six minutes requires further study in the future, as there appears progressively less scientific evidence to support the statement.
- Taylor, "Letter to the Editor," Journal of the American Medical Association, 1975, p. 20.
- Manuel Rodstein and Alfred Bernstein, "Terminal ECG in the Aged," <u>Geriatrics</u>, December, 1970, p. 91.
- 15. <u>Hannah</u>, p. 459.
- Gavin Thurston, "The Point of Death," <u>Practitioner</u>, August, 1970, p. 187.
- 17. M. Martin Halley and William F. Harvey, "Definitions of Death," Journal of the Kansas Medical Society, June, 1968, p. 280.
- 18. Thurston, p. 87.
- 19. Alexander Morgan Capron and Leon R. Kass, "A Statutory Definition of the Standards for Determining Human Death: An Appraisal and A Proposal," <u>University of Pennsylvania Law Review</u>, 1972, p. 87, 102; P. Ramsey, <u>The Patient As A Person</u> (1970), p. 59; P. D. G. Skegg, "Irreversibly Comatose Individuals: 'Alive' or 'Dead'?," <u>Cambridge Law Journal</u>, April, 1974, p. 130, <u>133</u>.
- 20. 96 Cal. App. 2d 371, 376; 274 P. 451 (1950).
- 21. Ramsey, p. 59.
- 22. Dorland's Illustrated Medical Dictionary, 24th ed.
- D. Meyers, <u>The Human Body and the Law</u>, (1970), p. 139.

- 24. Carl E. Wasmuth and Bruce H. Stewart, "Medical and Legal Aspects of Human Organ Transplantation," <u>Cleveland State Law Review</u>, September, 1965, p. 42.
- 25. Ibid., p. 41.
- 26. Ibid., p. 42.
- 27. Lynn H. Banowsky, William E. Braun, and Magnua O. Magnusson, "The Medical and Legal Determination of Death--Its Effect on Cadaveric Organ Procurement," <u>Journal of Legal Medicine</u>, November/ December, 1974, p. 38, 40.
- "Determination of Death," <u>Lancet</u>, May 23, 1970, p. 1092.
- 29. Robert J. Luchi, "Diagnosis of Cerebral Death," <u>Journal of the Iowa Medical Society</u>, May, 1971, p. 281.
- 30. Hannah, p. 458.
- Comment, "The Tell-Tale Heart," <u>Baylor Law</u> <u>Review</u>, 1975, p. 157, 160.
- 32. Capron and Kass, p. 103.
- 33. J. K. Sims, "Criteria for Pronouncement of Death and the Human Brain Death Syndrome," <u>Hawaii Medical Journal</u>, January, 1976, p. 11, 12.
- 34. Ibid.
- 35. <u>Wasmuth</u>, p. 32.
- 36. This question of course, is difficult to prove or disprove, and is a matter bearing on individual physician beliefs and medical practice philosophy.
- 37. Corday, "Life-Death in Human Transplantation," <u>American Bar Association Journal</u>, 1969, p. 629, 630.
- 38. Banowsky, Braun, and Magnusson, p. 40.
- Walter C. Ward, "Human Organ Transplantation: Some Medico-Legal Pitfalls for Transplant Surgeons", University of Florida Law Review, 1970, p. 134.
- 40. <u>Wasmuth</u>, p. 32.
- Gunnar Biörck, "When is Death," <u>Wisconsin Law</u> <u>Review</u>, 1968, p. 484, 494; <u>Ramsey</u>, pp. 81-89.
- 42. Ward, p. 141.
- 43. Ibid.
- 44. Capron and Kass, p. 89.
- 45. P. Braunstein, J. Korein, I. Kricheff, K. Corey, and N. Chase, "A Simple Bedside Evaluation for Cerebral Blood Flow in the Study of Cerebral Death: A Prospective Study on Thirty-Four Deeply Comatose Patients," <u>American Journal of Roentology, Radium Therapy, and Nuclear Medicine</u>, August, 1973, p. 757.

- 46. <u>Ward</u>, p. 141.
- 47. Capron and Kass, p. 89.
- 48. Ward, p. 141.
- 49. Ibid., p. 142.
- 50. Wasmuth and Stewart, p. 465.
- 51. Sheff D. Olinger, "Medical Death," <u>Baylor Law</u> <u>Review</u>, 1975, p. 22. According to one study, emergency room physicians are more likely to try reviving a patient if he is young, exhibits "moral worth," or has a rare and interesting medical problem. See Sudnow, "Death, Uses of a Corpse, and Social Worth," <u>Death: Current</u> <u>Perspectives</u>, (Schneidman, ed., 1976) p. 189.
- 52. Sims, p. 11.
- 53. Ward.
- 54. Ibid., p. 134.
- "Judge Rules on Death," <u>The Honolulu Advertiser</u>, May 22, 1974.
- 56. The Honolulu Advertiser, May 15, 1974, p. B-9.
- 57. Supra, n. 55.
- 58. Task Force on Death and Dying of the Institute of Society, Ethics and Life Sciences, "Refinements in Criteria for the Determination of Death: An Appraisal," <u>Journal of the American</u> <u>Medical Association</u>, July 3, 1972, p. 48.
- 59. Van-Till-d'Aulnis de Bourourill, "How Dead Can You Be?," <u>Med. Sci. L.</u>, 1975, p. 136.
- 60. Halley and Harvey, p. 280.
- 61. Barrowsky, Braun, and Magnusson, p. 40.
- 62. Ibid.
- 63. <u>Winters</u>, pp. 9-10.
- 64. Ibid., p. 17.
- 65. <u>Wasmuth</u>, p. 36.
- 66. Scala, p. 508.
- 67. Ibid.
- 68. Ibid.
- Wasmuth, p. 36. The four lobes are the frontal, parietal, temporal, and occipital lobes.
- 70. Braunstein, Korein, Kricheff, Corey, and Chase.
- 71. Engelhardt, "Defining Death: A Philosophical Problem for Medicine and Law," <u>American Review</u> of Respiratory Diseases, 1975, p. 587, 588.
- 72. <u>Olinger</u>, p. 22.

- Joseph L. Fermaglich, "Determining Cerebral Death," <u>American Family Physician</u>, March, 1971, p. 85.
- 74. <u>Olinger</u>, p. 23.
- 75. <u>Sims</u>.
- 76. The Honolulu Advertiser, May 15, 1974, p. B-9.
- 77. Daniel Silverman, "Cerebral Death--the History of the Syndrome and Its Identification," <u>Annals of Internal Medicine</u>, June, 1971, p. 1003.
- 78. Sims.
- 79. Braunstein, Korein, Kricheff, Corey, and Chase.
- 80. <u>Olinger</u>, p. 23.
- 81. Scala, p. 508.
- 82. <u>Ward</u>, p. 141.
- 83. Ibid.
- Toole, "The Neurologist and the Concept of Brain Death," <u>Perspectives in Biology and</u> <u>Medicine</u>, Summer, 1971, p. 599, 601.
- 85. Ibid.
- 86. Ibid.
- Fermaglich; see also A. Mohandas and Shelley N. Chou, "Brain Death A Clinical and Pathological Study," <u>Journal of Neurosurgery</u>, August, 1971, p. 211.
- 88. Van-Till-d'Aulnis de Bourourill, at 43.
- 89. E. O. Jorgensen, "EEG Without Detectable Cortical Activity and Cranial Nerve Areflexia as Parameters of Brain Death," <u>Electroencephalogy</u> and <u>Clinical Neurophysiology</u>, 1974, p. 70; Daniel Silverman, Michael G. Saunders, Robert S. Schwab, and Richard L. Masland, "Cerebral Death and the Encephalogram," <u>Journal of the American Medical Association</u>, September 8, 1969, p. 1505, 1506.
- 90. <u>Silverman, Saunders, Schwab, and Masland,</u> p. 1505.
- <u>Ibid.</u> The American Encephalographic Society recommended the following technical requirements for EEG recordings:
  - (A) A minimum of ten scalp electrodes and ear reference electrodes;
  - (B) Interelectrode resistance less than 10,000 ohms;
  - (C) Deliberate creation of electrode artifact by manipulation to test the apparatus and check connections;

- (D) Recording with an EKG and other monitoring devices to detect extracerebral potentials if necessary;
- (E) Use of the longest time constant of the instrument during part of the recording;
- (F) Gains increased during part of the recordingfrom 7 uv/mm to 3.5 uv/mm and 2.5 uv/mm;
- (G) Tests for reactivity;
- (H) Inclusion of ear referential runs and long-distance scalp-to-scalp linkages;
- (I) A 30-minute recording time.

E.E.G. societies in France and Holland are reported to have similar EEG recording criteria. James R. Harp, "Criteria for the Determination of Death," <u>Anesthesiology</u>, April, 1974, p. 391.

- 92. <u>Silverman, Saunders, Schwab, and Masland</u>, p. 1505.
- 93. Jorgenson, p. 75.
- 94. <u>Hypothermia</u>, or low body temperature, reduces the oxygen needs of the tissue. The body therefore is able to tolerate prolonged hypoxia. <u>Thurston</u>, p. 188; see also <u>Harp</u>.
- 95. Thurston, p. 188.
- 96. <u>Silverman, Saunders, Schwab, and Masland</u>, p. 1506.
- 97. <u>Winters</u>, p. 11.
- 98. Alexandre of Belgium and Revilliard of France omit any twenty-four hour time delay. Craaford of Stockholm, Ewing of Melbourne, Hamburger of Paris, and Schuster of Mainz are reported to have formulated criteria similar to Alexandre and Revilliard. The exclusion of time delays are said to be due to the fact that some organ donors cannot be maintained for twenty-four hours. <u>Harp</u>. Most American criteria, as well as the American Encephalographic Society, recommend a twenty-four hour period as a reasonable, and some say, conservative period.
- 99. Toole, p. 601-2.
- 100. White, "The Scientific Limitation of Brain Death."
- 101. <u>Toole</u>, p. 602.
- 102. <u>Hannah</u>, p. 459.
- 103. A Canadian neurologist ran an EEG test on "a blob of lime Jello" which produced results which under other circumstances could be accepted as evidence of life. The life-like tracing was attributed to the proximity of electrical

signals given off by the surrounding environment, including other machines, intravenous feeders, and human activity. It was further asserted that similar stray electrical signals interfere with actual EEG testing, producing "life" results when actually the patient's brain is dead. "Jello Produces 'Life Signs' in Experiment," <u>Honolulu Star-Bulletin</u>, March 17, 1976.

- 104. Toole, p. 602.
- 105. <u>Ibid.</u> It has been shown angiographically that patients with brain death have lost cerebral circulation. This procedure requires a bilateral carotoid angiographically. Cerebral circulation cessation can also be verified by intracarotoid injection of radionuclide, or by sequential gamma camera flow imaging, following the intravenous injection of  $T_c^{99m04}$ , or by delayed brain scans. <u>Braunstein, Korein, Kricheff</u>, Corey, and Chase.
- 106. Silverman, p. 1004.
- 107. Van-Till-d'Aulnis de Bourourill, p. 140.
- 108. Toole, p. 602.
- 109. Winters, p. 12.
- 110. <u>Ibid.</u>
- 111. "Determination of Death," <u>Lancet</u>, May 23, 1970, p. 1092.
- 112. Dorland's Illustrated Medical Dictionary, 25th Edition, previous editions have not reflected or recognized the brain function standard of death.
- 113. "Harvard Criteria: An Appraisal," <u>Journal of</u> the American Medical Association, 1972.
- 114. Comment, "The Criteria for Determining Death in Vital Organ Transplants--A Medico-Legal Dilemma," <u>Missouri Law Review</u>, Winter, 1973, p. 220, 223.
- 115. Harvard Criteria, see Appendix J.
- 116. Engelhardt, p. 588.
- 117. Sims, p. 13.
- 118. Ibid.
- 119. Ibid., p. 12.
- 120. Van-Till-d'Aulnis de Bourourill, p. 139.
- 121. <u>Winters</u>, p. 16.
- 122. Van-Till-d'Aulnis de Bourourill, pp. 139-140.
- 123. Ibid.
- 124. Toole, p. 599.
- 125. Ibid.
- 126. İbid., p. 600.
- 127. Capron and Kass, p. 94.

- 128. Ibid.
- 129. Francis L. Delmonico and Judson G. Randolph, "Death: A Concept in Transition, "<u>Pediatrics</u>, February, 1973, p. 234.
- 130. Ibid.
- 131. Sharon Grasso, "Trying to Pinpoint the Moment of Death," <u>Empire State Report</u>, May, 1976, p. 140, 141.
- 132. Ohio Legislative Service Commission, p. 1.
- 133. Ibid., p. 2.
- 134. Ibid., p. 1.
- 135. December 4, 1967, performed by Dr. Christian Barnard.
- 136. <u>Wasmuth</u>, p. 32.
- 137. Winters, p. 8.
- 138. Lowrey, "Changing Concepts of Death," <u>Hawaii</u> <u>Medical Journal</u>, July/August, 1971, p. 251, 254.
- 139. Wasmuth and Stewart.
- 140. Uniform Laws Annotated, (St. Paul: West Publishing Co., 1972) Vol. 8, p. 15.
- 141. Hawaii Rev. Stat., section 327-7(b).
- 142. "Transcript of Proceedings in Committee of the Whole of the National Conference of Commissioners on Uniform State Laws," p. 101-102, quoted in Note, "Suggested Revisions to Clarify the Uncertain Impact of Section 7 of the Uniform Anatomical Gift Act on Determinations of Death," Arizona Law Review, 1969, p. 749, 752.
- 143. <u>Ibid.</u>, p. 761.
- 144. 81 N.Y. Misc. 2d 1002, 367 N.Y.S.2d 686 (Sup. Ct. 1975).
- 145. In the Matter of the Guardianship of Alice Cameron, An Incompetent Person, FC-G No. 32, Family Court of the Third Circuit, Hawaii.
- 146. Hawaii Rev. Stat., section 327-7(b).
- 147. Order Granting Motion to Vacate Temporary Restraining Order, <u>In the Matter of Alice</u> <u>Cameron</u>, FC-G No. 32, December 22, 1975.

#### Chapter IV

1. See, e.g., <u>Thomas v. Anderson</u>, 96 Cal. App. 2d 371, 215 P.2d 478 (1950); <u>Smith v. Smith</u>, 229 Ark. 622, 317 S.W. 2d 575 (1958); <u>Schmitt v.</u> <u>Pierce</u>, 344 S.W. 2d 120 (Mo. En Banc, 1961); <u>In</u> <u>re Estate of Schmidt</u>, 261 Cal. App. 2d 262, 67 Cal. Rptr. 847 (1968); <u>Sauers v. Stolz</u>, 121 Colo. 456, 218 P.2d 741 (1950); <u>United Trust v.</u> <u>Pyke</u>, 199 Kan. 1, 427 P.2d 67 (1967); <u>Gugel's</u> <u>Adm'r. v. Orth's Ex'r.</u>, 314 Ky. 591, 236 S.W. 2d 460 (1950); <u>Vaegemast v. Hess</u>, 203 Minn. 207, 280 N.W. 641 (1938); <u>Evans v. Halterman</u>, 31 Ohio App. 175, 165 N.E. 869 (1928); <u>White v.</u> <u>Taylor</u>, 155 Tex. 392, 286 S.W. 2d 925 (1956). See also, A. Christian Compton, "Telling the Time of Human Death by Statute: An Essential and Progressive Trend," <u>Washington and Lee Law</u> <u>Review</u>, 1974, p. 521; and C. Anthony Friloux, Jr., "Death, When Does It Occur?," <u>Baylor Law</u> <u>Review</u>, 1975, p. 10.

- Comment, "The Criteria for Determining Death in Vital Organ Transplants--A Medico-Legal Dilemma," <u>Missouri Law Review</u>, Winter, 1973, p. 220, 229. See also Comment, "Medical and Legal Views of Death: Confrontation and Reconciliation," <u>Saint Louis University Law Journal</u>, 1974, p. 172, 176; and <u>Friloux</u>, pp. 12-14.
- 3. "Criteria for Determining Death," pp. 229-230; "Medical and Legal Views," pp. 177-178; and <u>Compton</u>, p. 521.
- 4. 229 Ark. 579, 317 S.W. 2d 275 (1958).
- 5. Id., p. 582, 317 S.W. 2d at 279.
- 6. 247 S.W. 2d 496 (Ky. Ct. App., 1952).
- 7. <u>In re Estate of Schmidt</u>, 261 Cal. App. 2d 262, 67 Cal. Rptr. 847 (Ct. App. 1968).
- 8. 374 S.W. 2d 788 (Tex. Civ. App., 1964).
- 9. Id. at 793.
- 10. Act 200, Session Laws of Hawaii 1976.
- 11. Uniform Probate Code, section 1-107(3).
- 12. No. 2831, L. & Eq. Ct. of the City of Richmond, May 25, 1972. See <u>Compton</u>; Comment, "But <u>When</u> Did He Die?" <u>Tucker v. Lower</u> and the Brain-Death Concept," <u>San Diego Law Review</u>, 1975, p. 424.
- 13. "But When Did He Die?," p. 426.
- 14. Compton, pp. 526-528.
- 15. Ibid., p. 523.
- 16. Ibid., p. 527.

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- 17. G. Williams, <u>The Sanctity of Life and the Criminal Law</u> (1966), citing <u>Commonwealth v.</u> Bowen, 13 Mass. 356 (Sup. Jud. Ct. 1816); also, D. Meyers, <u>The Human Body and the Law</u> (1970) pp. 116-117; Comment, "The Law of Homicide: Does It Require A Definition of Death?," <u>Wake Forest Law Review</u>, 1975, p. 253.
- 18. Meyers, p. 116-L17; "The Law of Homicide," p. 256.
- 19. No. 56072, Cal. Sup. Ct., Oakland, Cal., May 21, 1974. The jury instruction stated, as quoted in "Medical and Legal Yiews of Death":

As jurors, it is your exclusive duty to decide all questions of fact submitted to you.

On the basis of the evidence introduced in the case, the question of the proximate cause of the death of the victim, SAMUEL MITCHELL ALLEN, JR. also known as Samuel Moore, is not an issue of fact, but is a matter of law.

Death is the cessation of life. A person may be pronounced dead, if based on usual standards of medical practice, it is determined that the person has suffered an irreversible cessation of brain function.

The usual and customary standards of medical practice involving determination of life or death, in the light of developments in the medical knowledge acquired by experiment, research, clinical practice and surgery in the past approximate 20 years, was the subject of preeminent medical experts in the field of cardiology, neurosurgery, cardiac surgery and electroencephalogr[a]phy. All of the experts were in agreement as to such standards.

The testimony of all experts was that the proximate cause of, and the time of the death of the victim, was determined as established under such usual and customary standards of medical practice; there was not a scintilla of evidence to the contrary. Thus as applied to the case before this Court, there remains no issue of fact.

You are instructed, as a matter of law, that at Eight O'Clock in the morning of September 12, 1973, the victim, SAMUEL MITCHELL ALLEN, JR. aka Samuel Moore, had an irreversible cessation of brain function, proximately caused by a gunshot wound; and that at that time death had occurred.

You are further instructed as a matter of law, the victim, SAMUEL MITCHELL ALLEN, JR. aka Samuel Moore, was legally dead, before the removal of the organs from his body.

- 20. 121 Cal. Rptr. 243 (Cal. Ct. of App. 1975).
- 21. "Medical and Legal Views of Death," pp. 182-183.
- 22. Time, June 7, 1976, p. 37.
- 23. Meyers, p. 117.
- 24. P. D. G. Skegg, "Irreversibly Comatose Individuals: 'Alive' or 'Dead'?," <u>Cambridge Law</u> <u>Journal</u>, April, 1974, p. 130, 139.
- 25. Act 9, Session Laws of Hawaii 1972.
- 26. California.
- 27. Georgia.
- 28. Illinois, Tennessee.
- 29. Iowa, Michigan, Oregon, West Virginia,
- 30. Alaska, Kansas.
- 31. Louisiana.
- 32. Maryland, New Mexico.

33. Oklahoma.

- 34. Virginia.
- 35. "Transcript of Proceedings in Committee of the Whole of the National Conference of Commissioners on Uniform State Laws," pp. 101-102, quoted in Note, "Suggested Revisions to Clarify the Uncertain Impact of Section 7 of the Uniform Anatomical Gift Act on Determination of Death," <u>Arizona Law Review</u>, 1969, p. 749, 752.
- Address by McCarthy DeMere, Honolulu, Hawaii, August, 1976.
- 37. Ibid.
- Sheff D. Olinger, "Medical Death," <u>Baylor Law</u> <u>Review</u>, 1975, p. 22, 23.
- 39. See Appendix E.
- 40. William C. Charron, "Death: A Philosophical Perspective on the Legal Definitions," <u>Washington</u> <u>University of Law Quarterly</u>, 1975, p. 979, 994.
- 41. See Appendix F.
- 42. The rationale for this criticism is stated: the committee which formulated the Harvard criteria mentions that type of requirement, probably due to concerns over liability and to "prevent physicians' turning off the machines to bring about death in order to remove the organs for transplants." However, while valid, there are more compelling reasons for not enacting such a requirement. Primarily, the issues of occurrence of death and termination or change of treatment "are separate issues." Daniel C. Goldfarb, "The Definition of Death in the Common Law and Jewish Traditions," presented at a forum of the Committee on Jewish Law and Standards in conjunction with the Committee on Bioethics at the Jewish Theological Seminary of America, December 3, 1975, pp. 18-19.
- 43. <u>Goldfarb</u>, p. 18, expressed preference for the permissive wording.
- 44. J. Hamburger, "Some General Considerations," in G. Wolstenholme and M. O'Connor, eds., Ciba Foundation Symposium: <u>Ethics in Medical Progress</u>: <u>With a Special Reference to Transplantation</u> (1966).
- 45. As quoted in Meyers, p. 113.
- 46. Alaska.
- 47. Iowa, Louisiana, Michigan, Oregon, West Virginia.
- 48. Kansas, Maryland, New Mexico, Virginia.
- 49. Hawaii Rev. Stat., section 327-7(b).
- Uniform Anatomical Gift Act, Uniform Laws annotated, (St. Paul: West Publishing Co., 1972), Vol. 8, p. 15.
- 51. Section 7(b), Uniform Anatomical Gifts Act.

#### Chapter V

- 1. Hawaii Rev. Stat., section 327-7(b).
- 2. <u>Hawaii Rev. Stat.</u>, section 393-22. There are other similar provisions, e.g., a further example is found at section 325-34, relating to exemptions from mandatory vaccination or immunization, which provides, inter alia: "No person shall be subjected to vaccination, revaccination or immunization, who shall in writing object thereto on the grounds that the requirements are not in accordance with the religious tenets of an established church of which he is a member of adherent.... "Such exceptions are, as seen, designed to allow for individual assertion of religious belief, and generally do not allow for the assertion to be made by another party. This factor is an impossibility in terms of an irretrievably comatose individual, unless by prior execution of a document stating a particular religious belief, or some similar statement.
- 3, Va. Code Ann., section 32-364.3:1.
- <u>Tucker's Administrator v. Lower</u>, No. 2831 (Ct. Law & Eq., Richmond, Virginia, May 25, 1972). Various discussions of the case and its implications have been published. Among them are: A. Christian Compton, "Telling the Time of Human Death by Statute: An Essential and Progressive Trend," <u>Washington and Lee Law</u> <u>Review</u>, 1974, p. 521; Comment, "The Criteria for Determining Death in Vital Organ Transplants--A Medico-Legal Dilemma," <u>Missouri Law</u> <u>Review</u>, Winter, 1973, p. 220; and Comment, "But <u>When Did</u> He Die?: <u>Tucker v. Lower</u> and the Brain-Death Concept," <u>San Diego Law Review</u>, March, 1975, p. 424.
- 5. Testimony of the Attorney General on Senate Bill No. 2518-76 and 2887-76, p. 1.
- 6. Ibid., p. 2.
- 7. Testimony of the Honorable John C. Lanham, Judge, First Circuit Court, Honolulu, Hawaii, on H.B. No. 2887-76, and S.B. No. 2518-76, March 5, 1976, pp. 2-3.
- 8. Ibid., p. 6.
- 9. Ibid.
- 10. Ibid., pp. 4-5.
- Testimony of Gerri Madden, on behalf of the League of Decency, on S.B. No. 2518-76, March 9, 1976.
- Testimony of J. K. Sims and William W. L. Dang, on behalf of the Hawaii Medical Association, on H.B. No. 2111-76 and 2887-76, March 12, 1976.
- 13. Testimony of T. J. Bosgra on S.B. No. 2518. (Based on a Legal and Medical Advisory Committee Report of the National Right-to-Life Organization.)

- 14. Ibid., p. 2.
- 15. <u>Ibid.</u>
- 16. <u>Ibid.</u>
- 17. The Attorney General's testimony also stated: "[t]he modern approach calls for a comprehensive definition of death which embraces the cardio pulmonary system and the central nervous system," p. 2.
- 18. Ibid., p. 3.
- 19. <u>Ibid.</u>, p. 3-4.
- 20. Cf. S.B. No. 2518-76.
- Hawaii State House of Representatives Standing Committee Report No. 575-76, March 17, 1976, Re: H.B. No. 2111-76, H.D. 2, from the Committee on Judiciary to the Speaker.
- 22. Hawaii Medical Association testimony indicated that "a relatively safe conservative period for evaluation of human brain death syndrome patients (according to the published protocol in Sims, J. K.: Criteria for Pronouncement of Death and the Human Brain Death Syndrome, Hawaii Medical Journal 35: 11-14, 1976, January) would be 24 hours." Shorter periods of time have been proposed by some, and in fact may be presently used by some French physician cerebralangiographers. Testimony of the Hawaii Medical Association, March 15, 1976, on H.B. No. 2111, 2887, and 2111, H.D. 1.
- 23. Remarks of Cyril C. Means, Jr., Esq., in <u>Dilemmas of Euthanasia</u> [Excerpts from Papers and Discussion at the Fourth Euthanasia Conference, New York Academy of Medicine] 1971, pp. 21-22. See also, Alexander Morgan Capron and Leon R. Kass, "A Statutory Definition of the Standards for Determining Human Death: An Appraisal and a Proposal," <u>University of Pennsylvania</u>, 1972, pp. 87, 96-100.
- 24. A. Christian Compton, "Telling the Time of Human Death by Statute: An Essential and Progressive Trend," <u>Washington and Lee Law</u> <u>Review</u>, 1974, p. 521, 528; Comment, "Medical Jurisprudence--Determining the time of Death of the Heart Transplant Donor," <u>North Carolina Law</u> <u>Review</u>, 1972, p. 172, 184; Comment, "Legislation; The Need for a Current and Effective Statutory Definition of Death," <u>Oklahoma Law Review</u>, 1974, pp. 729, 732, 735; Comment, "But <u>When</u> Did He Die?: <u>Tucker v. Lower</u> and the Brain-Death Concept," <u>San Diego Law Review</u>, 1975, p. 424, 431-432.
- 25. E.g. Comment, "The Tell-Tale Heart," <u>Baylor Law</u> <u>Review</u>, 1975, pp. 157, 164-167.
- 26. "The Tell-Tale Heart," p. 166.
- 27. Compton, p. 527.
- Interview with Hon. John C. Lanham, Judge, Sixth Division, First Circuit Court, Honolulu, Hawaii, July 16, 1976; see also, <u>Corpus Juris</u>

 $\underline{Secundum},$  Vol. 14, pp. 45-47, and Vol. 40, sec. 11.

- "House of Delegates Redefines Death, Urges Redefinition of Rape, and Undoes the Houston Amendments, <u>American Bar Association Journal</u>, 1975, p. 463.
- Wecht and Aranson, "Medical-Legal Ramifications of Human Tissue Transplantation," <u>DePaul Law</u> <u>Review</u>, 1969, p. 488, 493.
- J. K. Sims, "Criteria for Pronouncement of Death and the Human Brain Death Syndrome," <u>Hawaii Medical Journal</u>, January, 1976, p. 11.
- 32. "A Definition of Irreversible Coma Report of the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death," <u>University of San Francisco Law Review</u>, 1970, p. 283.
- 33. Wecht and Aranson, p. 492, n. 10.
- Guidelines for Organ Transplantation, American Medical Association, House of Delegates, June, 1968.
- 35. Report of the Judicial Council on Death, American Medical Association, adopted by the House of Delegates of the American Medical Association, December, 1973.
- 36. Ibid.
- Resolution approved August 12, 1974, at Honolulu, Hawaii.
- American Bar Association, Section of Insurance, Negligence, and Compensation Law, 1974.
- 39. Statement in Opposition to Statutory Definition of Death, Office of the General Counsel, American Medical Association.

#### Chapter VI

- Full text in French, <u>Ethics in Medical Progress:</u> <u>With Special Reference to Transplantation</u>, G. Wolstenholme and M. O'Connor, eds., Ciba Foundation Symposium, 1966, pp. 223-230. Reprinted from <u>Discorsi ai Medici</u> (Rome: Orizzonte Medico, 1959) pp. 608-618. (Hereinafter cited as <u>allocutio.</u>)
- Pope Pius XII's <u>allocutio</u> was relied upon heavily by Joseph Quinlan in the legal action to discontinue Karen Quinlan's artificial life supports, to provide religious basis to achieve the termination of the respirator usage.
- 3. Allocutio, p. 223.
- 4. In re Quinlan, 137 N.J. Super. 227, 348 A.2d 801 (1975), modified and remanded, 70 N.J. 10, 355 A.2d 647 (1976).
- 5. 348 A.2d 801, 820.

6. Ethics in Medical Progress, pp. 97-98.

7. Ibid., p. 228.

- 8. Ibid.
- 9. Ibid., p. 229.
- <u>Ibid.</u>, p. 230. Cf. "Discussion, Transplantation: Existing Legal Constraints," <u>Ethics in Medical</u> Progress, p. 97.
- 11. D. Meyers, The Human Body and The Law (1970), pp. 139-141, 148-149; M. Houts and I. H. Haut, Courtroom Medicine, Vol. 3, section 1.01(4); "Isle Clergy's Thoughts on Death," <u>Honolulu</u> <u>Star-Bulletin</u>, January 31, 1976. In <u>Meyers</u>, p. 218, the Right Reverend R. C. Mortimer, Lord Bishop of Exeter, is quoted on the subject of the distinction between ordinary and extraordinary as follows: "It is, in general, the Christian view that while there is moral obligation to maintain life by all ordinary means, there is no obligation to use extraordinary means. Ordinary means are such actions as do not cause grave hardship to the patient and which offer a reasonable hope of success. Extraordinary means are means which involve a great expense, inconvenience, or hardship and which at the same time offer no reasonable expectation either of success or of benefit."
- 12. Sharon Grasso, "Trying to Pinpoint the Moment of Death," <u>Empire State Report</u>, May, 1976, p. 140, 141; Daniel C. Goldfarb, "The Definition of Death in the Common Law and Jewish Tradition," presentation at a forum of the Committee on Jewish Law and Standards in conjunction with the Committee on Bioethics at the Jewish Theological Seminary of America, December 3, 1975.
- 13. <u>Grasso</u>, p. 141.
- 14. Ibid., p. 141. Goldfarb, p. 18 states:

... I believe that the determination of death on the basis of a measurement of the cessation of brain function, in situations where responsible medical opinion indicates its propriety, would be entirely consistent with Jewish law. I am aware that some Orthodox rabbis have not yet accepted the legitimacy of considering brain function, but other reputable Orthodox rabbis have. Rabbi Immanuel Jakobovits, Chief Rabbi of the British Commonwealth, points this out in the 1975 edition of Jewish Medical Ethics [Immanuel Jakobovits, Jewish Medical Ethics, (New York: Block, 1975), pp. 277-278]. I am confident that as even more miraculous techniques develop, those Orthodox rabbis who have not yet accepted brain function as a criterion in appropriate cases will do so.

- 15. <u>Grasso</u>, p. 141. This view was also expressed at the August, 1976 Emerging Concerns Conference held in Honolulu.
- 16. Grasso, p. 141.
- 17. Ibid.
- 18. Ibid.

 "Comments on a Legal Guideline: Isle Clergy's Thoughts on Death," <u>Honolulu Star-Bulletin</u>, January 31, 1976.

#### **Chapter VII**

- Sharon Grasso, "Trying to Pinpoint the Moment of Death," <u>Empire State Report</u>, May, 1976, p. 140 cites the fact that blood was one of the scarce commodities mentioned among other cost factors in New York consideration of definition of death legislation.
- John R. Virts, "Increased Health Care Spending-a Look at the Causes," presented before the American Enterprise Institute Seminar on Regulation, July 22, 1976. Adopted from the study U.S. Health Care Spending: An Alternative Analysis of Increases.
- 3. Hawaii Rev. Stat., chapter 393.
- 4. <u>Hawaii Rev. Stat.</u>, section 393-7(c) enumerates the minimum required prepaid health care coverage:

(c) Subject to the provisions of subsections (a) and (b) without limiting the development of medically more desirable combinations and the inclusion of new types of benefits, a prepaid health care plan qualifying under this chapter shall include at least the following benefit types:

- (1) Hospital benefits:
  - (A) In-patient care for a period of at least one hundred twenty days of confinement in each calendar year covering:
    - (i) Room accommodations;
    - (ii) Regular and special diets;
    - (iii) General nursing services;
    - (iv) Use of operating room, surgical supplies, anesthesia services, and supplies;
    - (v) Drugs, dressing, oxygen, antibiotics, and blood transfusion services.
  - (B) Out-patient care:
    - (i) Covering use of out-patient hospitals;
    - (ii) Facilities for surgical procedures or medical care of an emergency and urgent nature.
- (2) Surgical benefits:
  - (A) Surgical services performed by a licensed physician, as determined by plans meeting the standards of subsections (a) and (b);

- (B) After-care visits for a reasonable period;
- (C) Anesthesiologist services.
- (3) Medical benefits:
  - (A) Necessary home, office, and hospital visits by a licensed physician;
  - (B) Intensive medical care while hospitalized;
  - (C) Medical or surgical consultations while confined.
- (4) Diagnostic laboratory services, x-ray films, and radio-therapeutic services, necessary for diagnosis or treatment of injuries or diseases.
- (5) Maternity benefits, at least if the employee has been covered by the prepaid health care plan for nine months prior to the delivery.
- (6) Substance abuse benefits;
  - (A) Alcoholism and drug addiction are illnesses and shall receive benefits as such. In-patient and out-patient benefits for the diagnosis and treatment of substance abuse, including but not limited to alcoholism and drug addiction, shall be specifically stated and shall not be less than the benefits for any other illness, except as provided in this subsection. Medical treatment of substance abuse shall not be limited or reduced by restricting coverage to the mental health or psychiatric benefits of a plan. However, any psychiatric services received as a result of the treatment of substance abuse may be limited to the psychiatric benefits of the plan.
  - (B) Out-patient benefits provided by a physician, psychiatrist, or psychologist, without restriction as to place of service; provided that health plans of the type specified in section 393-12(a) shall retain for the contractor the option of:
    - (i) Providing the benefits in its own facility and utilizing its own staff, or
    - (ii) Contracting for the provision of these benefits, or
    - (iii) Authorizing the patient to utilize outside services and defraying or reimbursing the expenses at a rate not to exceed that for provision of services utilizing the

health contractor's own facilities and staff.

- (C) Detoxification and acute care benefits in a hospital or any other public or private treatment facility, or portion thereof, providing services especially for the detoxification of intoxicated persons or drug addicts, which is appropriately licensed, certified, or approved by the department of health in accordance with the standards prescribed by the Joint Commission on Accreditation of Hospitals. In-patient benefits for detoxification and acute care shall be limited in the case of alcohol abuse to three admissions per calendar year, not to exceed seven days per admission, and shall be limited in the case of other substance abuse to three admissions per calendar year, not to exceed twenty-one days per admission.
- (D) Prepaid health plans shall not be required to make reimbursements for care furnished by government agencies and available at no cost to a patient, or for which no charge would have been made if there were no health plan coverage.
- 5. <u>Honolulu Star-Bulletin</u>, November 12, 1971, p. D-1.
- 6. Costs for Karen Quinlan were reported in October, 1975 as in excess of \$100,000, <u>The Honolulu</u> <u>Advertiser</u>, October 21, 1975. Note, incidentally, that she was hospitalized for approximately six months at that point. Another seven months followed before the respirator was terminated. Although Karen Quinlan is <u>not</u> brain-dead, her hospital care was similar to that which would be required to maintain a brain-dead patient. Costs, therefore, appear to be comparable.

# APPENDIX A

# STATE CRITERIA OF DEATH, BY STATUTE TYPE

STATE	BRAIN FUNCTION	RESPIRATORY, CIRCULATORY/ CARDIAC, BRAIN FUNCTION
Alaska		X
California	х	
Georgia	х	
Illinois	X	
Iowa		х
Kansas		х
Louisiana		x
Maryland		Х
Michigan		х
New Mexico		Х
Oklahoma	X	
Oregon	-	х
Tennessee	x	
Virginia		х
West Virginia		x

For statutory sources, see Appendix F.

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# **APPENDIX B**

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# APPLICABILITY OF STATUTORY DEFINITIONS OF DEATH: STATES AND PROVISIONS

STATE	PROVISION
Alaska and Maryland	Medically and legally dead
Illinois and West Virginia	Anatomical gifts
Kansas, Maryland, and Michigan	Definitions are for all purposes, including civil and criminal cases
New Mexico	All medical, legal and statutory purposes, including civil and criminal actions
Tennessee	All legal purposes
Virginia	Medically and legally dead; may be used for all purposes, including ciyil and criminal trials

For statutory sources, see Appendix F.

# **APPENDIX C**

# STATUTORY PROVISIONS RELATING TO THE PRONOUNCEMENT OF DEATH, ARTIFICIAL MEANS OF SUPPORT, AND ORGAN REMOVAL

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STATE	PROVISION
Alaska	May be pronounced before artificial means of maintaining respiratory and cardiac functions are terminated
Kansas, Maryland, Michigan, New Mexico, Oklahoma	To be pronounced before artificial means of supporting respiratory and cir- culatory functions are terminated
Kansas, Maryland, New Mexico, Oklahoma	To be pronounced before organs are removed

For statutory sources, see Appendix F.

# **APPENDIX D**

# ANALYSIS OF STATE STATUTORY PROVISIONS RELYING ON RESPIRATORY AND CIRCULATORY/CARDIAC FUNCTIONS AND DEATH

A. Provisions stating medical criteria and medical opinion as to respiratory and circulatory/cardiac functions	TOWA	Louisas	Mairi	Macun	Hew -	Oreb	VILE	West	Virginite	
1. No spontaneous respiratory or cardiac functions	x			1						
2. Irreversible cessation of spontaneous respiratory and cir- culatory functions		x		x		x		x		x
3. Absence of spontaneous respiratory and cardiac functions			x		x		x		x	
<ol> <li>No expectation of recovery of spontaneous respiratory or cardiac functions</li> </ol>	x									
5. Attempts at resuscitation are considered hopeless because of the disease or condition which directly or indirectly caused the cessation, or because of the time elapsed since the cessation			x		x					
6. No reasonable possibility of restoring respiratory or cardiac functions because of the disease or condition which causes, indirectly or directly, the cessation of the functions, or because of the passage of time since the cessation							x			•
7. Attempts at resuscitation would not, in the physician's opinion, be successful in restoring spontaneous life-sustaining functions, because of the disease or condition directly or indirectly causing the cessation of spontaneous respiratory and cardiac functions, or because of the amount of time since the cessation									x	
B. Occurrence of death									Ň	
8. Death occurs when the relevant functions cease		x	x	х	x	x	<b>x</b> .		x	x
C. Specified determining party										
9. Physician	x	x	x	x		x		x	x	x

		Alaska	Kau	LUS	na siana	Maryland	Menniegan	OTCU MEXICO	UTTER BOIL	Werginia	That VILBING	
D.	Relative medical standard to be applied											
	10. Ordinary standards of medical practice		x	x	x	x	x		x		x	<u>x</u>
	11. Ordinary community standards of medical practice							x				
E.	Relative exclusivity of criteria											
	12. In addition to criteria customarily used by a person to determine death									x		

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For statutory sources, see Appendix F.

This analysis should not be construed to include interpretive construction of statutory provisions. Some interpretation is included, where precise language is not identical but appears the same in meaning. However, as to other provisions, such as those relating to specified determining parties (item C above), which may implicitly provide otherwise; in such instances, this analysis reflects the literal inclusion of a provision only.

# APPENDIX E

ANALYSIS OF STATE STATUTORY PROVISIONS RELYING ON BRAIN FUNCTIONS AND DEATH

			Alaska	california	Ceorgia	Tllinois	Iowa	Kansas	misiana	Maryland	Michigan	Now MEXICO	hit ahona	nregon	Tennessee	Virginia	West Virgins	inta
	A. Prov brai	isions stating medical criteria and medical opinion as to n function													-			
	1.	Total and irreversible cessation of brain function			х				L I									
	2.	Irreversible cessation of brain function				х												
	3.	Irreversible cessation of total brain function					x									x		
	4.	Irreversible cessation of spontaneous brain function						x				x			x			x
	5.	Absence of spontaneous brain function		х					x									
13	6.	Total cessation of brain function								х								
4	7.	Absence of spontaneous brain function because of known disease or condition									x		x					
	8.	Irreversible total cessation of brain function									· ·			x				
	9.	Absence of spontaneous brain functions and spontaneous respiratory functions															x	
	10.	During reasonable attempts to maintain or restore spontaneous circulatory or respiratory functions in the absence of brain function, it appears that further attempts at resuscitation or supportive maintenance will not succeed							x		x1			x <sup>2</sup>				
	11.	After reasonable attempts to either maintain or restore spontaneous circulatory or respiratory functions in the absence of spontaneous brain function, it appears further attempts at resuscitation and supportive maintenance have no reasonable possibility of restoring spontaneous brain function											x					

			Jaliforn.	Georgia	Illinois	Iowa	Kansas	ouisiana	Maryland	Michigan	New Mexico	w1ahona	hregon	Tennessee	w. virginia	Most Virgint	
_	12.	Attending and counsulting physicians' opinions, considering the absence of spontaneous brain and respiratory functions and the patient's medical record, are that further attempts at resuscitation or continued supportive maintenance would not be successful														x	
В	. Spe	cial conditions of use of definition															
<b></b>	13.	If respiratory and cardiac functions are maintained by artificial means	x				x										
м Л	14.	Medical records required to be kept if brain function basis of determination of death		x													
	15.	If artificial means of support preclude determination that circulatory and respiratory functions ceased							x		x						x
C	. Occ	urrence of death														-	_
	16.	When relevant functions ceased					x		x			x					x
	17.	Death when conditions first coincide						x		x			x			x	
D	. Spe	cified determining party															
	18.	Physician	x	x	x			x	x		x	x		x			x
	19.	Independent confirmation by another physician		x	x												
	20.	Two physicians					x										
	21.	Consulting physician specialist in neurology, neuro-surgery, electroencephlography														x	

	-	Alaska	California	Georgia	Illinois	Iowa	Louisian Kansas	Maryland	Michigan	New Mexico	ok lahoma	nregon	Tennessee	Virginia	West Virginia	
	Е.	Relative medical standard to be applied														
		22. Ordinary standards (also, usual and customary standards) of medical practice	x			x	x	x	x		x			x	x	<u>ĸ</u>
		23. Ordinary standards of medical practice in the community								x						
	F.	Relative exclusivity of criteria														
Ľ.		24. Does not preclude use of other usual and customary procedures for determining death		x	x								x			
36	G.	Liability under definition														
,		25. Good faith use of definition renders person not liable to civil damages nor subject to criminal prosecution			x											

### For statutory sources, see Appendix F.

This analysis should not be construed to include interpretive construction of statutory provisions. Some interpretation is included, where precise language is not identical but appears the same in meaning. However, as to other provisions, such as those relating to specified determining parties (item D above), which may implicitly provide otherwise; in such instances, this analysis reflects the literal inclusion of a provision only.

<sup>1</sup>Maryland uses "spontaneous brain function".

 $^{2}$ Okalahoma provision is based on ordinary standards of medical practice.

# APPENDIX F

### TEXTS OF STATE STATUTES DEFINING DEATH

### Alaska Statutes, Code of Civil Procedure

ALASKA Section 09.65.120 <u>Definition of death.</u> A person is considered medically and legally dead if, in the opinion of a medical doctor licensed or exempt from licensing under AS 08.64, based on ordinary standards of medical practice, there is no spontaneous respiratory or cardiac function and there is no expectation of recovery of spontaneous respiratory or cardiac function or, in the case when respiratory and cardiac functions are maintained by artificial means, a person is considered medically and legally dead, if, in the opinion of a medical doctor licensed or exempt from licensing under AS 08.64, based on ordinary standards of medical practice, there if no spontaneous brain function. Death may be pronounced in this circumstance before artificial means of maintaining respiratory and cardiac function are terminated.

#### California Health and Safety Code

CALIFORNIA Section 7180 <u>Pronouncement; procedures for determination</u>. A person shall be pronounced dead if it is determined by a physician that the person has suffered a total and irreversible cessation of brain function. There shall be independent confirmation of the death by another physician.

> Nothing in this chapter shall prohibit a physician from using other usual and customary procedures for determining death as the exclusive basis for pronouncing a person dead.

Section 7181 <u>Confirmation of death of donor for transplantation</u>. When a part of the donor is used for direct transplantation pursuant to the Uniform Anatomical Gift Act (Chapter 3.5 (commencing with Section 7150)) and the death of the donor is determined by determining that the person has suffered a total and irreversible cessation of brain function, there shall be an independent confirmation of the death by another physician. Neither the physician making the determination of death under Section 7155.5 nor the physician making the independent confirmation shall participate in the procedures for removing or transplanting a part.

Section 7182 <u>Medical records</u>. Complete patient medical records required of a health facility pursuant to regulations adopted by the department in accordance with Section 1275 shall be kept, maintained, and preserved with respect to the requirements of this chapter when a person is pronounced dead by determining that the person has suffered a total and irreversible cessation of brain function.

### Georgia Code Annotated

GEORGIA Section 88-1715.1 <u>Determination of Death.</u> (a) A person may be pronounced dead if it is determined that the person has suffered an irreversible cessation of brain function. There shall be independent confirmation of the death by another physician.

> (b) A person who acts in good faith in accordance with the provisions of subsection (a) shall not be liable for damages in any civil action or subject to prosecution in any criminal proceeding for such act.

(c) The criteria for determining death authorized in subsection (a) shall be cumulative to and shall not prohibit the use of other medically recognized criteria for determining death.

### Illinois Revised Statutes

ILLINOIS

Chapter 3, section 552, definitions.

(b) "Death" means for the purposes of the Act, the irreversible cessation of total brain function, according to usual and customary standards of medical practice.

### Iowa Criminal Code

IOWA

Section <u>Death.</u> "Death" means the condition determined by the following standard: A person will be considered dead if in the announced opinion of a physician, based on ordinary standards of medical practice, that person has experienced an irreversible cessation of spontaneous respiratory and circulatory functions. In the event that artificial means of support preclude a determination that these functions have ceased, a person will be considered dead if in the announced opinion of two physicians, based on ordinary standards of medical practice, that person has experienced an irreversible cessation of spontaneous brain functions. Death will have occurred at the time when the relevant functions ceased.

### Kansas Statutes Annotated

KANSAS Section 77-202 <u>Definition of death.</u> A person will be considered medically and legally dead if, in the opinion of a physician, based on ordinary standards of medical practice, there is the absence of spontaneous respiratory and cardiac function and, because of the disease or condition which caused, directly or indirectly, these functions to cease, or because of the passage of time since these functions ceased, attempts at resuscitation are considered hopeless; and, in this event, death will have occurred at the time these functions ceased; or A person will be considered medically and legally dead if, in the opinion of a physician, based on ordinary standards of medical practice, there is the absence of spontaneous brain function; and if based on ordinary standards of medical practice, during reasonable attempts to either maintain or restore spontaneous circulatory or respiratory function in the absence of aforesaid brain function, it appears that further attempts at resuscitation or supportive maintenance will not succeed, death will have occurred at the time when these conditions first coincide. Death is to be pronounced before artificial means of supporting respiratory and circulatory function are terminated and before any vital organ is removed for purposes of transplantation.

These alternative definitions of death are to be utilized for all purposes in this state, including the trials of civil and criminal cases, any laws to the contrary notwithstanding.

#### Louisiana Revised Statutes

LOUISIANA Section 9:111 Definition of death. A person will be considered dead if in the announced opinion of a physician, duly licensed in the state of Louisiana based on ordinary standards of approved medical practice, the person has experienced an irreversible cessation of spontaneous respiratory and circulatory functions. In the event that artificial means of support preclude a determination that these functions have ceased, a person will be considered dead if in the announced opinion of a physician, duly licensed in the state of Louisiana based upon ordinary standards of approved medical practice, the person has experienced an irreversible total cessation of brain function. Death will have occurred at the time when the relevant functions ceased. In any case when organs are to be used in a transplant, then an additional physician, duly licensed in the state of Louisiana not a member of the transplant team, must make the pronouncement of death.

### Maryland Annotated Code

MARYLAND

Article 43, section 54F. When person considered medically and legally dead.

(a) A person will be considered medically and legally dead if, based on ordinary standards of medical practice, there is the absence of spontaneous respiratory and cardiac function and, because of the disease or condition which caused, directly or indirectly, these functions to cease, or because of the passage of time since these functions ceased, attempts at resuscitation are considered hopeless; and, in this event, death will have occurred at the time these functions ceased; or
(b) A person will be considered medically and legally dead if, in the opinion of a physician, based on ordinary standards of medical practice and because of a known disease or condition, there is the absence of spontaneous brain function; and if based on ordinary standards of medical practice, during reasonable attempts to either maintain or restore spontaneous circulatory or respiratory function in the absence of spontaneous brain function, it appears that further attempts at resuscitation or supportive maintenance will not succeed, death will have occurred at the time when these conditions first coincide. Death is to be pronounced before artificial means of supporting respiratory and circulatory function are terminated and before any vital organ is removed for purposes of transplantation.

(c) These alternative definitions of death are to be utilized for all purposes in this State, including the trials of civil and criminal cases, any laws to the contrary notwithstanding.

#### Michigan Compiled Laws Annotated

MICHIGAN Section 326.8b Determination of death. (1) A person will be considered dead if in the announced opinion of a physician, based on ordinary standards of medical practice in the community, there is the irreversible cessation of spontaneous respiratory and circulatory functions. If artificial means of support preclude a determination that these functions have ceased, a person will be considered dead if in the announced opinion of a physician, based on ordinary standards of medical practice in the community, there is the irreversible cessation of spontaneous brain functions. Death will have occurred at the time when the relevant functions ceased.

> (2) Death is to be pronounced before artificial means of supporting respiratory and circulatory functions are terminated.

(3) The means of determining death in subsection (1) shall be used for all purposes in this state, including the trials of civil and criminal cases.

#### New Mexico Statutes Annotated

NEW MEXICO Section 1-2-2.2 <u>Death defined.--A.</u> For all medical, legal and statutory purposes, death of a human being occurs when, and "death," "dead body," "dead person" or any other reference to human death means that:

> (1) based on ordinary standards of medical practice, there is the absence of spontaneous respiratory and cardiac function and, because of the disease or condition which caused, directly or indirectly, these functions to cease, or because of the passage of time since these functions ceased, there is no reasonable possibility of restoring respiratory or cardiac

functions; in this event death occurs at the time respiratory - or cardiac functions ceased; or

(2) in the opinion of a physician, based on ordinary standards of medical practice:

(a) because of a known disease or condition there is the absence of spontaneous brain function; and

(b) after reasonable attempts to either maintain or restore spontaneous circulatory or respiratory functions in the absence of spontaneous brain function, it appears that further attempts at resuscitation and supportive maintenance have no reasonable possibility of restoring spontaneous brain function; in this event death will have occurred at the time when the absence of spontaneous brain function first occurred. Death is to be pronounced pursuant to this paragraph before artificial means of supporting respiratory or circulatory functions are terminated and before any vital organ is removed for purposes of transplantation in compliance with the Uniform Anatomical Gift Act [12-11-6 to 12-11-14].

B. The alternative definitions of death in paragraphs (1) and (2) of subsection A of this section are to be utilized for all purposes in this state, including but not limited to civil and criminal actions, notwithstanding any other law to the contrary.

#### Oklahoma Statutes Annotated

OKLAHOMA

Title 63, section 1-301, definitions.

(g) The term "dead body" means a human body in which there is irreversible total cessation of brain function; and if, based upon ordinary standards of medical practice, during reasonable attempts to either maintain or restore spontaneous circulatory or respiratory function in the absence of aforesaid brain function, it appears that further attempts at resuscitation or supportive maintenance will not succeed, death will have occurred at the time when these conditions first coincide. Death is to be pronounced before artificial means of supporting respiratory and circulatory function are terminated and before any vital organ is removed for purposes of transplantation.

#### Oregon Revised Statutes

OREGON

Section 146.087 <u>Criteria for determination of death.</u> In addition to criteria customarily used by a person to determine death, when a physician licensed to practice medicine under ORS chapter 677 acts to determine that a person is dead, he may make such a determination if irreversible cessation of spontaneous respiration and circulatory function or irreversible cessation of spontaneous brain function exists. TENNESSEE

Chapter 789, section

For all legal purposes, a human body, with irreversible cessation of total brain function, according to the usual and customary standards of medical practice, shall be considered dead.

#### Virginia Code Annotated

YIRGINIA

Section 32-364.3:1 When person deemed medically and legally dead. A person shall be medically and legally dead if, (a) in the opinion of a physician duly authorized to practice medicine in this State, based on the ordinary standards of medical practice, there is the absence of spontaneous respiratory and spontaneous cardiac functions and, because of the disease or condition which directly or indirectly caused these functions to cease, or because of the passage of time since these functions ceased, attempts at resuscitation would not, in the opinion of such physician, be successful in restoring spontaneous life-sustaining functions, and, in such event, death shall be deemed to have occurred at the time these functions ceased; or (b) in the opinion of a consulting physician, who shall be duly licensed and a specialist in the field of neurology, neurosurgery, or electroencephlography, when based on the ordinary standards of medical practice, there is the absence of spontaneous brain functions and spontaneous respiratory functions and, in the opinion of the attending physician and such consulting physician, based on the ordinary standards of medical practice and considering the absence of the aforesaid spontaneous brain functions and spontaneous respiratory functions and the patient's medical record, further attempts at resuscitation or continued supportive maintenance would not be successful in restoring such spontaneous functions, and, in such even, death shall be deemed to have occurred at the time when these conditions first coincide. Death, as defined in subsection (b) hereof, shall be pronounced by the attending physician and recorded in the patient's medical record and attested by the aforesaid consulting physician.

Notwithstanding any statutory or common law to the contrary, either of these alternative definitions of death may be utilized for all purposes in the Commonwealth, including the trial of civil and criminal cases.

#### West Virginia Code Annotated

#### WEST VIRGINIA Section 16-19-1, definitions.

(b) "Death" means that a person will be considered dead if in the announced opinion of the attending physician, based on ordinary standards of medical practice, the patient has experienced an irreversible cessation of spontaneous respiratory and circulatory functions; or, in the event that artificial means of support preclude a determination that these functions have ceased, a person will be considered dead if in the announced opinion of a physician, based on ordinary standards of medical practice, the patient has experienced an irreversible cessation of spontaneous brain functions.

Death will have occurred at the time when the relevant functions ceased.

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# APPENDIX G

### EXCERPTS OF DEFINITION OF DEATH LEGISLATION PROPOSED IN OTHER STATES

STATE	PROPOSED LANGUAGE
ARIZONA S.B. No. 1146 1976	Section 36-847.01 <u>Pronouncement of death.</u> A. A person shall be pronounced dead if it is determined by a physician with independent confirmation by a second physician that either of the following conditions exists: 1. The absence of spontaneous respiratory and cardiac function based on ordinary standards of medical
	<ul> <li>practice. In such event, death will have occurred at the time such function ceased.</li> <li>2. The absence of spontaneous brain function, based on ordinary standards of medical practice. In such event, death will have occurred at the time such function ceased.</li> <li>B. Nothing contained in this article shall prohibit a physician from using any other usual and customary procedures for determining death as the exclusive basis for pronouncing a person dead.</li> </ul>
CONNECTICUT Sub. H.B. No. 5638 1976	(b) The time of death shall be determined by two physicians who attend the donor at his death, or if none, two physicians who certify death, who shall use generally recognized and accepted scientific and clinical means to determine such time of death; provided, with special reference to brain function as only one of the determinants of the time of death, a donor may be considered dead when said physicians have determined that he or she has suffered a total and irreversible cessation of brain function, according to usual and customary standards of medical practice, but this proviso shall not prevent the determination of death in any other manner. The physicians who so certify shall not participate in the procedures for removing or transplanting a part.

#### STATE

#### PROPOSED LANGUAGE

DELAWARE H.B. No. 1133 1976 Section 1766 Definition of death.

(a) A person shall be considered medically and legally dead if, in the opinion of a physician, there is the absence of spontaneous respiratory and cardiac functions and either because of the disease or condition which caused cessation of these functions or because of the passage of time since cessation, attempts at resuscitation are considered hopeless by the physician; in this event, death will have occurred at the time these functions ceased; or

(b) A person shall be considered medically and legally dead if, in the opinion of the attending physician and the confirming opinion of a specialist in the field of neurology, neurosurgery, or electroencephalography, there is the absence of spontaneous brain function; and if based on ordinary standards of medical practice in the community, during reasonable attempts to either maintain or restore spontaneous circulatory or respiratory function in the absence of spontaneous brain function, it appears to both physicians that further attempts at resuscitation or supportive maintenance will not succeed, death will have occurred at the time when these conditions first coincide. The test for the absence of spontaneous brain function shall not be done in the presence of hypothermia or drug overdose, including alcoholic overdose.

(c) Death is to be pronounced before artificial means of supporting respiratory and circulatory function are terminated, and before any vital organ is removed for purposes of transplantation. Death shall not be deemed to have occurred until the attending physician pronounces the death of the patient, and the other physician attests to it. If, under subsection (a) the attending physician is also the family physician, then the confirming opinion of another physician shall be obtained prior to any announcement of death. Neither the attending physician nor the confirming physician may participate in removal or transplant procedures under Subchapter VI or Subchapter VII of this Chapter.

STATE	PROPOSED LANGUAGE
S.B. No. 691, Senate Substitute No. 1 1976	Section 1766 <u>Definition of death.</u> (a) A person shall be considered medically and legally dead if, in the opinion of a physician, there is the absence of spontaneous respiratory and cardiac functions and either because of the disease or condition which caused cessation of these functions or because of the passage of time since cessation, resuscitation is considered hopeless by the physician; in this event, death will have occurred at the time these functions ceased; or
	(b) A person whose respiratory or cardiac functions are being sustained by artificial life- supporting means, shall be considered medically and legally dead if, in the opinion of the attending physician and the confirming opinion of another physician there is the absence of spontaneous brain function; and if based on ordinary standards of medical practice in the community, during reasonable attempts to either maintain or restore spontaneous circulatory or respiratory function in the absence of spontaneous brain function, it appears to both physicians that further attempts at resuscitation or supportive maintenance will not succeed, death will have occurred at the time when these conditions first coincide.
MISSOURI H.B. No. 1083 1976	For all legal purposes a human body with irreversible cessation of total brain functions according to usual and customary standards of medical practice shall be considered dead.
NEW HAMPSHIRE H.B. No. 202 1975	Section 291-A:7-a <u>Standards for determining</u> <u>death.</u> I. For the purposes of this chapter, a persón shall be considered medically and legally dead if, in the opinion of a physician, based on ordinary standards of medical practice: (a) There is the absence of spontaneous res- piratory or cardiac function and, because of the disease

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or condition which caused, directly or indirectly, these functions to cease, or because of the passage of time since these functions ceased, attempts at resuscitation are considered hopeless and death will have occurred at the time these functions ceased; or

(b) There is the absence of spontaneous brain function and during reasonable attempts to either maintain or restore spontaneous circulatory or respiratory function in the absence of spontaneous brain function, it appears that further attempts at resuscitation or supportive maintenance will not succeed and death will have occurred at the time when these conditions first coincide.

NEW JERSEY S.B. No. 992 1976

1. As used in this act:

a. "Person" means an integrated, whole, living human being, and shall not include any part or parts of a human body which may continue to function following a determination, pursuant to this act, of an irreversible cessation of vital brain functions of such human being.

b. "Ordinary standards of medical practice" means such standards as require that, in the performance of professional acts, an individual possess and exercise the degree of skill, knowledge and care ordinarily possessed by members of the medical community at the time of such determination.

c. "Vital brain functions" means discernible central nervous system activity in the absence of negating effects produced by the presence in the body of any drug or depressant or by the existence by hypothermia or of a similar condition or conditions.

d. "Natural respiratory and circulatory functions" means these body functions which exist without artificial means of support.

STATE

e. "Artificial means of support" means any medical technique, including administration of chemotherapy, any therapeutic device, instrument or machine, or other medical process which is engaged or administered for the purpose of aiding, assisting or sustaining vital bodily functions.

2. A person shall be considered dead if in the opinion of a physician, based on ordinary standards of medical practice, he has undergone an irreversible cessation of vital brain functions if such cessation is accompanied or preceded by the cessation of natural respiratory and circulatory functions. Death will have occurred at the time when the vital brain functions ceased, but if said brain functions have ceased prior to the cessation of natural respiratory and circulatory functions, then death will have occurred when said natural respiratory and circulatory functions shall have ceased.

S.B. No. 1039 1976 1. As used in this act:

a. "Person" means an integrated, whole, living human being, and shall not include any part or parts of a human body which may continue to function following a determination, pursuant to this act, of an irreversible cessation of spontaneous or vital bodily functions of such human being.

b. "Ordinary standards of medical practice" means such standards as require that, in the performance of professional acts, an individual possess and exercise the degree of skill, knowledge and care ordinarily possessed by members of the medical community at the time of such determination.

c. "Spontaneous" means the absence of any artificial means of support.

d. "Artificial means of support" means any medical technique, including administration of chemotherapy, any therapeutic device, instrument or machine, or other medical process which is engaged or administered for the purpose of aiding, assisting or sustaining vital bodily functions, or any technique, device, instrument machine or process which may effect an accurate determination of whether such bodily functions are spontaneous.

e. "Vital brain functions" means discernible central nervous system activity in the absence of negating effects produced by the presence in the body of any drug or depressant or by the existence of hypothermia or of a similar condition or conditions.

2. A person shall be considered dead if in the announced opinion of a physician, based on ordinary standards of medical practice, he has undergone an irreversible cessation of spontaneous respiratory and circulatory functions. In the event that artificial means of support preclude a determination that these functions have ceased, a person shall be considered dead if in the announced opinion of a physician, based on ordinary standards of medical practice, he has undergone an irreversible cessation of vital brain functions. Death will have occurred at the time when the relevant functions ceased.

NEW YORK Section 4306-a For all purposes, both statutory S.B. No. 5199 and common law, a donor shall be considered dead if: 1975-76

> 1. Based on ordinary standards of medical practice it is certified to in writing by the physician who attends the donor at his death and another physician, neither of whom shall participate in the procedure for removing or transplanting an organ, as authorized in this article that:

(a) the donor has suffered an irreversible cessation of spontaneous brain function and spontaneous respiratory function, or

STATE

(b) the donor has suffered an irreversible cessation of spontaneous respiratory and spontaneous cardiac functions, and

(c) based upon their opinion and the donor's medical record, further attempts at resuscitation or continued supportive maintenance would not be successful in restoring such spontaneous functions.

Section 4140 Deaths; pronouncement and registration. 1. A person shall be pronounced medically and legally dead only (a) by a physician duly authorized to practice medicine in this state who determines that, based upon the usual and customary standards of medical practice, such person has suffered an irreversible cessation of spontaneous respiratory function and spontaneous cardiac function; or (b) by two physicians duly authorized to practice medicine in this state who determine that, based upon the usual and customary standards of medical practice, such person has suffered an irreversible cessation of brain function and spontaneous respiratory function. Death as determined in this subsection (b) shall be pronounced by both physicians and recorded in the deceased patient's medical record and signed by the aforesaid physicians.

2. Notwithstanding any other provision of law to the contrary, whether statutory or at common law, the determination of death in accordance with 1(a) or 1(b) above may be utilized for all purposes in this state. Following the pronouncement of death, the application of artificial means to sustain any bodily organ and/or the use of all or part of the body for the purposes of section 4302 of the public health law shall not be deemed nor constitute an intervening or contributing factor in the determination of the cause of death.

S.B. No. 10759 1976 Section 4140-a <u>Deaths; definition of death.</u> A person shall be pronounced dead if in the announced opinion of a duly licensed physician based on prevailing standards of medical practice such person has experienced an irreversible cessation of spontaneous respiratory and circulatory functions. If the use

S.B. No. 6243

1975-76

STATE

of artificial means of support precludes a determination that these functions have ceased, a person shall be pronounced dead if in the announced opinion of a duly licensed physician based on prevailing standards of medical practice such person has experienced a total and irreversible cessation of brain function, unless the physician receives written notice from a parent, spouse or next of kin of such person that such pronouncement conflicts with such person's beliefs. A.B. No. 12248 Section 4140-a Deaths; definition of death. 1976 A person shall be pronounced dead if in the announced opinion of a physician based on prevailing standards of medical practice such person has experienced an irreversible cessation of spontaneous respiratory and circulatory functions. If artificial means of support preclude a determination that these functions have ceased, a person shall be pronounced dead if in the announced opinion of a physician based on prevailing standards of medical practice such person has experienced a total and irreversible cessation of brain function, unless the physician receives written notice that such pronouncement conflicts with such person's religious beliefs. A.B. No. 7860-B Section 4140 Deaths; determination and regis-1976 tration. 1. A person may be pronounced dead if, in the opinion of a physician duly licensed to practice medicine in this state, according to standards of current medical practice, such person has experienced an irreversible cessation of spontaneous respiratory and circulatory functions or has experienced an irreversible cessation of brain function and either spontaneous respiratory or circulatory function. PENNSYLVANIA Section 1. (a) A person will be considered medically and legally dead if, in the opinion of a H.B. No. 363 physician, based on ordinary standards of medical 1975 practice, there is the absence of spontaneous respiratory and cardiac function and, because of the disease or condition which caused, directly or

indirectly, these functions to cease, or because of

the passage of time since these functions ceased, attempts at resuscitation are considered hopeless; and, in this event, death will have occurred at the time these functions ceased.

(b) A person will be considered medically and legally dead if, in the opinion of a physician, based on ordinary standards of medical practice, there is no spontaneous respiration, no spontaneous or elicitable reflex movement, and there is during 24 hours the absence of spontaneous electrical brain function and no evidence of hypothermia or the presence of center nervous system depressants; and if based on ordinary standards of medical practice, during reasonable attempts to either maintain or restore spontaneous circulatory or respiratory function in the absence of aforesaid brain function, it appears that further attempts at resuscitation or supportive maintenance will not succeed, death will have occurred at the time when these conditions first coincide. Death may be pronounced before artificial means of supporting respiratory and circulatory function are terminated.

(c) These alternative definitions of death are to be utilized for all purposes in this Commonwealth, including the trials of civil and criminal cases, any laws to the contrary notwithstanding.

SOUTH CAROLINA H.B. No. 3379 1976 (a) A person shall be considered dead if in the announced opinion of a physician, based on ordinary standards of medical practice, that person has experienced total and irreversible cessation of respiratory and circulatory functions.

(b) In the event that artificial means of support enable respiratory and circulatory functions to continue, a person shall be considered dead if, in the opinion of an attending physician as evidenced by a signed statement, and the opinion of a consulting physician, qualified as a specialist in neurology or neurosurgery by having completed an American Medical Association approved residency program in either of these specialties, also evidenced by a signed statement, such person has experienced an irreversible cessation of spontaneous brain function.

(c) When the attending physician is unable to obtain the services of a specialist in neurology or neurosurgery and artificial means of support enable respiratory and circulatory functions to continue, a person shall be considered dead if, in the opinions of an attending physician and two other licensed physicians serving as consultants, evidenced by signed statements, such person has experienced an irreversible cessation of spontaneous brain function.

The provisions of this act shall not be construed to prohibit other persons legally authorized to pronounce persons dead from using usual and customary procedures for determining death or pronouncing a person dead.

SOUTH DAKOTA H.B. No. 690 1976

Section 1. A person is medically and legally dead if, in the opinion of a physician licensed or exempt from licensing under chapter 36-4, based on ordinary standards of medical practice in the community, there is no spontaneous respiratory or cardiac function and there is no expectation of recovery of spontaneous respiratory or cardiac function or, if respiratory and cardiac functions are maintained by artificial means, a person is considered medically and legally dead, if, in the opinion of a physician licensed or exempt from licensing under chapter 36-4. based on ordinary standards of medical practice in the community and in consultation with at least one other qualified physician, there is no spontaneous brain function as determined by electroencephalograph tracings and other possible means or tests. Death shall be pronounced in this circumstance before artificial means of maintaining respiratory and cardiac functions are terminated and before any vital organ is removed for purposes of transplantation in compliance with the uniform anatomical gift

STATE

#### PROPOSED LANGUAGE

act. Death will have occurred at the time the relevant functions ceased.

Section 2. The means of determining death provided by section 1 of this Act shall be used for all trials of civil and criminal cases.

UTAH S.B. No. 289 1975

STATE

Section 26-26-9 For the purpose of this act death may be pronounced if it is determined, based on usual and customary standards of medical practice, that a person has suffered an irreversible cessation of spontaneous brain function.

Note: The excerpts above do not reflect the contents of the source bills in total, but are selected to indicate the portions of the bills which are most pertinent to this report. The bills used as sources were acquired through the courtesy of the legislative service agencies of the appropriate states, and do not necessarily include all measures which have been introduced into state legislative bodies on the subject. Moreover, only states which as of this writing have not enacted definitions of death are included.

## APPENDIX H

5 . B. NO. 2518-76

#### A BILL FOR AN ACT

RELATING TO DEATH.

BE IT ENACIED BY THE LEGISLATURE OF THE STATE OF HAMAII:

1	SECTION 1. The Nawaii Revised Statutes are amended by
2	adding a new section to read:
3	"Sec. Definition of death. A person shall be
4	medically and legally dead if:
5	(1) In the opinion of a physician duly authorized to
6	practice medicine in this State, based on the ordinary
7	and current standards of medical practice, spontaneous
8	respiratory and spontaneous cardiac functions are absent,
9	and, because of the disease or condition which directly
10	or indirectly caused these functions to cease, or because
11	of the passage of time since these functions ceased,
12	attempts at resuscitation would not, in the opinion of
13	such physician, restore spontaneous life-sustaining
14	functions, and, in such event, death shall be deemed to
15	have occurred at the time these functions ceased; or
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5. B. NO. 2518-76

1	(2)	In the opinion of a consulting physician, who	
2		shall be duly licensed and a specialist in the field	
3		of neurology, or neuro-surgery, based on the ordinary	
4		and current standards of medical practice, spontaneous	
5		brain functions and spontaneous respiratory functions	
6		are absent, and, in the opinion of the attending physician	
7		and such consulting physician, based on the ordinary and	
8		current standards of medical practice and considering	
9		the absence of the aforesaid spontaneous brain functions	
10		and spontaneous respiratory functions and the patient's	
11		medical record, further attempts at resuscitation or	
12		continued supportive maintenance would not restore such	
13		spontaneous functions, and, in such event, death shall	
14		be deemed to have occurred at the time when these	
15		conditions first coincide.	
16	Deat	n, as defined in paragraph (2) hereof, shall <u>be</u>	
17	pronounced by the attending physician and recorded in the		
18	patient's medical record and attested by the aforesaid		
19	consulting physician.		
20	Notwithstanding any statutory provision or common law to		
21	the contrary, either of these alternative definitions of death		
22	may be utilized for all purposes in this State, including the		
23	trial of civil and criminal cases."		
24	SECT	ON 2. New material is underscored. In printing this	
25	Act, the	evisor of statutes need not include the underscoring.	
-	SECI	ON 3. This Act shall take effect upon its approval.	
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#### A BILL FOR AN ACT

RELATING TO DEATH.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAMAII:

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1		SECT	ION 1. The Hawaii Revised Statutes are amended by
2	addin	ng a	new section to read:
3		"Sec	Definition of death. A person shall be
4	medic	ally	and legally dead if:
5		(1)	In the opinion of a physician duly authorized to
G			practice medicine in this State, based on the ordinary
7			and current standards of medical practice, spontaneous
8			respiratory and spontaneous cardiac functions are absent,
9			and, because of the disease or condition which directly
10			or indirectly caused these functions to cease, or because
11			of the passage of time since these functions ceased,
12			attempts at resuscitation would not, in the opinion of
13			such physician, restore spontaneous life-sustaining
14			functions, and, in such event, death shall be deemed to
15			have occurred at the time these functions ceased; or
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<b>"</b> 8			
	λG	297	282 E-9(76)

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1		(2)	In the opinion of a consulting physician, who
2			shall be duly licensed and a specialist in the field
3			of neurology, or neuro-surgery; based on the ordinary
4			and current standards of medical practice, spontaneous
5			brain functions and spontaneous respiratory functions
6			are absent, and, in the opinion of the attending physician
7			and such consulting physician, based on the ordinary and
8			current standards of medical practice and considering
9			the absence of the aforesaid spontaneous brain functions
10		×	and spontaneous respiratory functions and the patient's
11			medical record, further attempts at resuscitation or
12			continued supportive maintenance would not restore such
13			spontaneous functions, and, in such event, death shall
14			be deemed to have occurred at the time when these
15			conditions first coincide.
16		Deat	h, as defined in paragraph (2) hereof, shall be
17	pron	ounce	d by the attending physician and recorded in the
18	pati	ent's	medical record and attested by the aforesaid
19	cons	ultin	g physician.
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1	_	NOTWITIST	anding any	y statutor	y provision	i or common la	<u>w to</u>
2	the	contrary,	either of	these alto	ernative de	finitions of	death
3	may	be utilize	d for al <u>l</u>	purposes :	in this Sta	te, including	the
4	tria	al of civil	and crimi	inal cases.	•"		
5		SECTION 2	. New mat	terial is u	underscored	l. In printin	g this
б	Act	the revis	or of stat	tutes need	not includ	le the underso	oring.
7		SECTION 3	. This Ac	ct shall ta	ake effect	upon its appr	oval.
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HOUSE OF REPRESENTATIVES EIGHTH LEGISLATURE, 19.76 STATE OF HAWAII H.B. M. 2111-76

A BILL FOR AN ACT

RELATING TO DEATH.

#### BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The Hawaii Revised Statutes is amended by adding.
 two new sections to be appropriately designated and to read as
 follows:

"Sec. - Definition of death. A person shall be considered medically and legally dead if, in the opinion of the attending or treating physician, or if none, the physician who certifies death, and confirmed by two other physicians, based on ordinary standards of medical practice:

9	<u>(</u> 1)	There is the absence of spontaneous respiratory and
10		cardiac function and, because of the disease or condi-
11		tion which caused, directly or indirectly, these func-
12		tions to cease, or because of the passage of time since
15		these functions ceased, attempts at resuscitation are
14		considered hopeless. In this event, death shall have
15		occurred at the time these functions ceased; or
16	(2)	There is the absence of spontaneous brain function; and

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LRB 034-748

# H.B. NO. 2111-76

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1	if based on ordinary standards of medical practice,
2	during reasonable attempts to either maintain or
3	restore spontaneous circulatory or respiratory func-
4	tion in the absence of aforesaid brain function, it
5	appears that further attempts at resuscitation or
6	supportive maintenance will not succeed, death shall
7	have occurred at the time when these conditions first
8	coincide.
9	Death shall be pronounced under this section before artifi-
10	cial means of supporting respiratory and circulatory function
11	are terminated and before any vital organ is removed for pur-
12	poses of transplantation.
13	Sec Liability of physicians. A physician making
14	a determination of death under section - shall be immune
15	from civil or criminal liability unless it is alleged and proved
16	that his actions violated the standard of professional care
17	and judgment under the circumstances."
18	SECTION 2. Section 327-7, Hawaii Revised Statutes, is
19	amended by amending subsection (b) to read as follows:
20	"(b) The time of death shall be determined by a physician
21	who tends or treats the donor at his death, or, if none, the
22	physician who certifies the death[.], and confirmed by two other
23	physicians. The physicians who determined or confirmed the
24	
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	LRB 034-769

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H.B. NO. 2111-76

1	death shall not participate in the procedures for removing or
2	transplanting a part:"
3	SECTION 3. Statutory material to be repealed is bracketed.
4	New material is underscored. In printing this Act, the revisor
5	of statutes need not include the brackets, the bracketed material,
6	or the underscoring.
7	SECTION 4. This Act shall take effect upon its approval.
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HOUSE OF REPRESENTATIVES EIGHTH LEGISLATURE, 19.76 STATE OF HAWAII H.B. No. 2111-76

A BILL FOR AN ACT

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RELATING TO DEATH.

#### BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

1	SECTION 1. The Hawaii Revised Statutes is amended by adding
2	two new sections to be appropriately designated and to read as
3	follows:
1	"Sec Definition of death. A person is dead if, in
5	the opinion of the attending or treating physician, or if none,
3	the physician who certifies death, based on ordinary standards
7	of the then current medical practice:
8	(1) There is an absence of respiratory, circulatory and
9	cardiac function and attempts at resuscitation would
16	not restore functioning. In this event, death occurs
11	at the time these functions cease; or
12	(2) There is an absence of brain function, which
13	opinion of an absence of brain function, is confirmed
1:	by a neurologist or neurosurgeon, and because of passage
1.	of time since the brain function ceased, but no sooner
••	then twenty-four hours after the brain function ceased,

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# H.B. No. 2111-75 H.D. 1

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1	attempts at resuscitation would not restore brain
2	function. In this event, death occurs at the time
5	brain function ceases.
-1	Death shall be pronounced under this section before artificial
5	means of supporting respiratory, circulatory, cardiac and brain
6	functions are terminated and before any vital organ is removed
7	for purposes of transplantation.
8	Sec Liability of physicians. A physician making a
Q	determination of death under section - shall be immune from
10	civil or criminal liability unless it is alleged and proved that
11	his actions violated the standard of professional care and judg-
12	ment under the circumstances."
15	SECTION 2. Section 327-7, Nawaii Revised Statutes, is
1-1	amended by amending subsection (b) to read as follows:
15	"(b) The time of death shall be determined by a physician
16	who tends or treats the donor at his death, or, if none, the
17	physician who certifies the death. The physicians who determined
18	or confirmed the death shall not participate in the procedures
19	for removing or transplanting a part."
20	SECTION 3. Statutory material to be repealed is bracketed.
21	New material is underscored. In printing this Act, the revisor
22	of statutes need not include the brackets, the bracketed material,
•	or the underscoring.
';	SECTION 4. This Act shall take effect upon its approval.
: <b>.</b>	

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HOUSE OF REPRESENTATIVES EIGHTH LEGISLATURE, 19.76 STATE OF HAWAII

A BILL FOR AN ACT

RELATING TO DEATH.

#### BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

1	SECT	ION 1. The Hawaii Revised Statutes is amended by adding
2	two new s	ections to be appropriately designated and to read as
3	follows:	
4	" <u>Sec</u>	Definition of death. A human body is dead if, in
5	the opini	on of the attending or treating physician, or if none,
6	the physic	cian who certifies death, based on ordinary standards
7	of the the	en current medical practice:
8	<u>(</u> 1)	There is an absence of respiratory, circulatory and
9		cardiac function and attempts at resuscitation would
10		not restore spontaneous functioning. In this event, death
11		occurs at the time these functions cease; or
12	(2)	There is an absence of brain function, which
13		opinion of an absence of brain function, is confirmed
14		by a neurologist or neurosurgeon, and because of passage
15		of time since the brain function ceased, but no sooner
16		than twenty-four hours after the brain function ceased,
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Page 2

1	attempts at resuscitation would not restore brain
2	function. In this event, death occurs at the time
3	brain function ceases.
4	Death shall be pronounced under this section before artificial
5	means of supporting respiratory, circulatory, cardiac and brain
6	functions are terminated and before any vital organ is removed
7	for purposes of transplantation.
8	SECTION 2. Section 327-7, Rawaii Revised Statutes, is
9	amended by amending subsection (b) to read as follows:
10	"(b) The time of death shall be determined by a physician
11	who tends or treats the donor at his death, or, if none, the
12	physician who certifies the death. The physicians who determined
13	or confirmed the death shall not participate in the procedures
14	for removing or transplanting a part."
15	SECTION 3. Statutory material to be repealed is bracketed.
16	New material is underscored. In printing this Act, the revisor
17	of statutes need not include the brackets, the bracketed material,
18	or the underscoring.
19	SECTION 4. This Act shall take effect upon its approval.
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**APPENDIX I** 

HAD MACCOL SCALE STATE OF HAVAN HILO, HAVAN

1975 DEC 22 11 9 CO

Ann Eguchi

**CI.ERK** 

IN THE FAMILY COURT OF THE THIRD CIRCUIT

STATE OF HAWAII

In the Matter of the Guardianship )

of

FC-G No. 32

ORDER GRANTING MOTION TO VACATE TEMPORARY RESTRAINING ORDER

ALICE CAMERON,

An Incompetent Person.

# ORDER GRANTING MOTION TO VACATE

The Temporary Restraining Order entered herein on November 20, 1975, which "ORDERED that DR. MURRAY WALKER, DR. LIVINGSTON WONG and LARRY TANIMCTO, Consultant, Hilo Hospital, be temporarily restrained and enjoined from operating on ALICE CAMERON to remove her eyes, kidneys or other organs necessary to life and/or from removing any artificial means of supporting life including, but not limited to, a respirator unless, under ordinary standards of medical practice, said ALICE CAMERON's animal and vital functions such as respiration and pulsation cease" is dissolved nunc pro tune to November 23, 1975, at 11:30 a.m., the time of the Court's oral decision.

The State of Hawaii by Andrew P. Wilson, Deputy Prosecuting Attorney, County of Hawaii, petitioned this Court on November 20, 1975, to have the Legal Aid Society of Hawaii appointed guardian of Alice Cameron, an alleged incompetent

1 do hereby certily that the foregoing is a full, true and correct copy of the original on file in this office. Therefore M. Hat Glerk, Third Circuit Court, State of Horald

I hereby certify that this is a full, true and correct copy of the original on file in this office. ache lan Class third King Court Sin's of Hownil

person, alleging that "there are serious legal and moral questions as to the propriety of the impending operation on the Incompetent Person".

The Court appointed Ben H. Gaddis of the Legal Aid Society of Hawaii, Guardian ad Litem of Alice Cameron, an incompetent person, on November 20, 1975. On the same day, the Guardian ad Litem filed a Motion for an Ex Parte Temporary Restraining Order to enjoin the doctors and the hospital from proceeding with the operations and removal of the respirator. This Court granted the motion on November 20, 1975, and issued the Temporary Restraining Order.

Alice Cameron's treating physician, Dr. Murray Walker, by his Attorney, Valta A. Cook, filed herein a Motion to Vacate Temporary Restraining Order on November 21, 1975. A hearing on the motion commenced on the same day after all parties stipulated to waive the two days' notice provision of Rule 65(b), Hawaii Family Court Rules. Present in Court for the hearing were the Guardian ad Litem for Alice Cameron, Ben Gaddis; Deputy Attorney General, State of Hawaii, Gay Conklin, for Hilo Hospital; Murray Walker, M.D., with his attorneys Valta A. Cook and Sylvester V. Quitiquit.

The findings of fact are hereinafter set forth:

1. All parties stipulated that this Court had jurisdiction to hear the matter.

2. Parties stipulated that Murray Walker, M.D., had complied (up to the conclusion of the testimony on Saturday, November 22, 1975, at 7:00 p.m.) with the provisions of Chapter 327, Hawaii Revised Statutes, Part 1, Uniform Anatomical Gift Act, and that the said Act is applicable

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to this case.

3. Maurice Nicholson, M.D., Neuro-surgeon; Richard Lundborg, M.D., Anesthesiologist; Kenneth Ching, M.D., Anesthesiologist; DeWitt H. Smith, M.D., Internal Medicine; George Bracher, M.D., Radiologist; James A. Mitchell, M.D., Surgeon; R. P. Wipperman, M.D., Medical Director, Hilo Hospital, agreed that the generally accepted medical practice in this state is that the decision as to when a patient is dead is to be made by the treating or attending physician.

4. Dr. Walker, Alice Cameron's treating physician, declared her dead at 3:15 p.m. on November 21, 1975.

 5. Alice Cameron, a 26-year old woman, was admitted to the Hilo Hospital emergency room on November
 12, 1975. She was brought from her home by the Hawaii County
 Fire Department rescue squad.

There was a suspected overdose of cocaine, allegedly ingested by swallowing the substance encased in five condoms.

Dr. Kenneth Ching was the first doctor to see Alice Cameron in the emergency room. He testified that the patient had a cardiac arrest when she arrived at the emergency room and he attempted resuscitation by cardiopulmonary resuscitation.

Dr. Walker, her treating physician, saw her in the emergency room shortly thereafter and assumed active treatment of the patient. She appeared cyanotic when seen by Dr. Walker in the emergency room. Alice Cameron was not responding and was not breathing but did have a heart beat.

She was maintained on positive pressure breathing apparatus during her entire hospital stay. Initially, a pressure apparatus, the Bennet, was used with room air.

-3-

On about the fourth day, she declined and required the use of the more powerful volume ventilation unit, the MA-I. At no time did Alice Cameron breathe on her own.

Dr. Walker's physical examination on admission showed that the patient was flaccid, and had the pathologic doll's eye sign. There were no eye responses. There was bilateral papillodema. There were no reflexes, no respiration and no response to pain. From the moment Dr. Walker saw Alice Cameron in the emergency room at Hilo Hospital until he pronounced her dead, he saw no significant signs of brain life. This condition continued throughout Alice Cameron's course of hospitalization with the exception of random decerebrate movements. Dr. Walker, Dr. Nicholson and other doctors who testified stated that such movements were not controlled by the brain and did not indicate any life in the brain.

6. Dr. Walker made a clinical diagnosis of brain death. To confirm that diagnosis, and before pronouncing it, he consulted with the following physicians: Dr. Kenneth Ching, Dr. Richard Lundborg, Dr. James A. Mitchell, Dr. Thomas Chen, Dr. DeWitt Hendee Smith, Dr. George Bracher, and Dr. Michael Okihiro, Neurologist.

 Dr. Walker performed or caused to have performed the following tests:

(a) Serial Electroencephalogram (EEG). Two EEG's were done under the direction of Dr. Okihiro, over twenty four hours apart. The first was done on November 20th and the second on November 21st. Dr. Okihiro interpreted both EEG's as flat. Dr. Walker was advised by Dr. Okihiro that based on his observation, his clinical tests done on

-4-

Alice Cameron and the results of the EEG tests, his opinion was that her brain was dead, that is, Alice Cameron had a diagnosis of brain death;

(b) Serial clinical examination. The examination showed no neurological signs of brain life;

(c) Isotopic study. Dr. Bracher conducted an isotopic study to examine blood flow to the brain. He interpreted the result as negative. Dr. Bracher concluded that Alice Cameron's brain was dead and that she was dead;

(d) Apnea test. In this test Alice Cameron was observed over three minutes for any signs of breath without support or oxygen. Arterial blood gas parameters were met to rule out alkalosis. The patient did not breathe.

After the tests described above and after consultation with the doctors referred to above, Dr. Walker pronounced Alice Cameron dead.

8. All the consulting doctors, except Dr. Ching, agreed with Dr. Walker's diagnosis of brain death. Dr. Ching testified that one of the reasons more time was appropriate before a decision was made was that the results of the toxological tests were not received.

9. Toxological tests were done at an early stage of Alice Cameron's hospitalization. Her urine sample was sent for analysis for presence of drugs to the Bio-Science Laboratories, 7600 Tyrone Avenue, Van Nuys, California 91405. The test reports were received verbally by Dr. Walker in the presence of Dr. Nicholson on November 22, 1975. The results were negative for barbiturates. This test was conducted to determine whether there existed the remote possibility of a long sedating barbiturate overdose.

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Doctors Walker, Nicholson and Lundborg did not consider it necessary to have the toxological test results before pronouncing Alice Cameron dead.

10. Subsequent to Dr. Walker's decision, the life support systems were continued with the intention of donating her kidneys and eyes.

11. Dr. Maurice Nicholson, the Neurologist from Honolulu, examined Alice Cameron on November 22, 1975, and reviewed her charts and made an independent clinical examination. He also conducted an atropine test. Two milligrams of atropine was injected intravenously into the right arm. No increase in heart rate was noted. Dr. Nicholson testified that this indicated loss of a most basic brain function, that is, para-sympathetic control of the heart beat. He stated that this is further supportive of a dead medulla.

Dr. Nicholson testified that Alice Cameron's brain was dead and that she was medically dead according to the usual and customary standards of medical practice in this state. In arriving at this conclusion, he testified that he has personal knowledge of the practice of other neurosurgeons and neurologists in this state (all neuro-surgeons and neurologists in the state live in the City and County of Honolulu, however, Dr. Nicholson and others, consult periodically on the neighbor islands, including Hawaii).

12. Dr. Lundborg, Dr. Bracher and Dr. Smith testified that Alice Cameron was dead and that she had been pronounced dead according to the usual and customary standards of medical practice.

The conclusions of law are:

1. The jurisdictional requirements have been met.

2. The treating physician, Dr. Murray Walker, complied with all the provisions of Chapter 327, Hawaii Revised Statutes, Part 1, Uniform Anatomical Gift Act.

3. In this case, the treating physician is the piper person to determine when Alice Cameron died.

4. The usual and customary standard of medical practice in the State of Hawaii is the standard to be used by the treating physician in determining when Alice Cameron died.

5. The standard of proof required in this case is that of clear and convincing evidence.

6. The treating physician did meet the usual and customary statewide standard of medical practice in determining that Alice Cameron was dead.

The Temporary Restraining Order entered herein on November 20, 1975, is dissolved nunc pro tunc to November 23, 1975, at 11:30 a.m., the time of this Court's oral decision.

Dated at Hilo, Hawaii, \_\_\_\_ DEC 22 1975

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## APPENDIX J

MEDICAL CRITERIA: DEATH, IRREVERSIBLE COMA, CEREBRAL DEATH, BRAIN DEATH

PROPONENT	CRITERIA
Alexandre (1966)	(1) Complete bilateral mydriasis, (2) complete absence of reflexes, both natural and in response to pain, (3) complete absence of spontaneous respiration five minutes after mechanical respiration has been stopped, (4) falling blood pressure, necessitating increasing amounts of vasopressive drugs

(either adrenaline or phenylephrine), (5) a flat electroencephalogram.<sup>2</sup>

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RECOVERY AND DYING SCORE IN COMATOSE PATIENT				
Sign	2 Normal	] Abnormal	0 Absent	
Cerebral	Normal	Depressed	Absent	
Function EEG Stimulus Light Temp	Alpha	Spikes Evoked Response	lsoelectric No Evoked Response	
Reflex Action Eyes Laryngeal Tendon Reflexes	Present Constricted Pupils Pharyngeal Reflex	Diminished Pupillary Response Laryngeal-Carinal	Absent Dilated	
Nerve Stimulus		An Evoked Response	No Evoked Response	
Respiration	Normal Spontaneous Adequate	Abnormal Assisted	Absent <sup>®</sup> Controlled	
Doxapram Test	Present	Evoked Response	No Response	
Circulation	Normal Pulse Pressure	Depressed No Pulse No Pressure Artificial Support	Absent	
Vasopressor Test	Not Needed	Evoked Response	No Evoked Response	
Cardiac Action	Normal Heart Sounds	Ineffective Assisted	Absent	
ECG	Normal	Abnormal	Isoelectric	
Pacemaker	Not needed	Evoked Response	No Evoked Response	

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 Initial evaluation as soon as artificial resuscitation procedures have been instituted.
 Serial determinations at least every 15 minutes.
 A score of 5 or more indicates potential life. A score of under 5 indicates impending or presumptive death.

4. A score of 0 is conclusive death.

5. An increasing score over a period of 1 hour represents effective therapy and patient recovery.

6. A decreasing score over a period of 1 hour represents failing therapy and patient deterioration.<sup>2</sup>

Duquesne School of Law Institute of Forensic Science, Ad Hoc Committee on Human Tissue Transplantation (1968)

Protocol for the Definition of Death

1. Documentation of death:

a. Lack of responsiveness to internal and external environment.

- b. Absence of spontaneous breathing movements for three minutes, in absence of hypocarbia and breathing room air.
- c. No muscular movements, with generalized flacidity, and no evidence of postural activity or shivering.
- d. Reflexes and responses: (1) pupils fixed and dilated, nonreactive to strong light stimuli; (2) corneal reflexes absent; (3) supraorbital or other pressure response absent (both pain response and decerebrate posturing); (4) absence of snouting and sucking responses; (5) no reflex response to upper airway stimulation; (6) no reflex response to lower airway stimulation; (7) no ocular response to ice water stimulation of inner ear (caloric test); (8) no deep tendon reflexes; (9) no superficial reflexes; (10) no plantar responses.

PROPONENT

e. Falling arterial pressure without support by drugs or other means.

- f. Isoelectric electroencephalogram (in absence of hypothermia, anesthetic agents, and drug intoxication), recorded spontaneously and during auditory and tactile stimulation. (Multiple recordings totaling at least 30 minutes, using a standard number of diagnostic electrodes with maximum allowable interelectrode distances. Part of recording at full gain. External artifacts and EKG excluded by use of right-hand electrode.)
- g. A note detailing these observations should be made in chart at time of first determination of irreversible coma.
- 2. Certification of death:
  - a. Criteria  $\boldsymbol{a}$  through  $\boldsymbol{f}$  should be present for at least two hours before death is certified.
  - b. Death should be certified and recorded in the patient's chart by two physicians other than the physicians of a potential organ recipient.  $^{3}$

#### DIAGNOSTIC CRITERIA

Before any other criterion is considered, a careful history must be obtained to exclude the possibility of recent intake of medication, particularly barbiturates and meprobamate, which may simulate cerebral death clinically and electrographically. Although not essential, the serum barbiturate level should be determined.

#### CLINICAL CRITERIA

Total unawareness of externally applied stimuli and inner need should be documented. Even the most intensely painful stimulus must evoke no response.

Observation by physicians for at least one hour should support the findings of no spontaneous muscular movements, respiration or response to stimuli, such as pain, touch, sound or light. If the patient is being maintained by a mechanical respirator, the total absence of independent breathing may be established by turning off the respirator for not longer than three minutes and then observing the patient for any signs of an effort to breathe. Before the respirator is turned off, the machine should have been exchanging room air for at least 10 minutes and the patient's carbon dioxide tension should be within normal range.

Inability to elicit reflexes is an essential criterion. The pupils should be fixed and dilated and should not respond to a direct source of bright light. Ocular movement resulting from head turning (oculocephalic reflex) and ice-water irrigation of the ear should not be present. Blinking should be absent. There should be no evidence of postural activity, decerebrate or otherwise. Swallowing, yawning and vocalization should all be absent. Corneal and pharyngeal reflexes, as well as the streatch or tendon reflexes, should not be elicitable. Plantar stimulation should evoke no response.

Although not essential, an agonal arteriogram provides support for the diagnosis of cerebral death. Inability to visualize cerebral vasculature by isotope angiography may contribute further evidence but is not absolutely necessary.

#### ELECTROGRAPHIC CRITERIA

An isoelectric electroencephalogram (EEG) indicating electrocerebral silence is vitally important to the documentation of cerebral death. The apparatus should be calibrated and demonstrated to be functioning satisfactorily. Personnel in charge should have been adequately informed of this necessity. The technical features recommended are as follows:

- One channel should be used for an electrocardiogram (ECG). This channel monitors the ECG so that if it appears in the electroencephalographic leads, it can be readily identified. It also establishes the presence of the active heart in the absence of cerebral electrical activity.
- 2. Another channel should be used for a noncephalic lead. This serves to pick up and identify space-borne or vibration-borne artifacts. In the simplest form of such a monitoring noncephalic lead, two electrodes are placed over the dorsum of the hand preferably the right hand. One of the requirements for establishing cerebral death is that there be no muscular activity; therefore, in cerebral death, the two dorsal hand electrodes should not be affected by muscle artifact. The noncephalic electrodes will also monitor for electrical noise.

Fermaglich (1971)
PROPONENT	CRITERIA
	3. The machine should be standardized to 2-1/2 microvolts per mm., or 25 microvolts per 10 mm. If the machine is capable of greater amplification than 2-1/2 microvolts per mm., it should be calibrated for the maximum amplification. At some point during the record, the gains should be opened fully for at least two minutes.
	<ol> <li>The electrodes should be manipulated periodically. Interelectrode distance should be greater than 10 cm. Electrode resistance should be less than 10,000 ohms.</li> </ol>
	5. During most of the tracing, the electroencephalograph may be operated at its ordinary time constant, i.e., 30 mm. per second. For at least two minutes, however, the longest time constant of which the machine is capable should be utilized.
	6. At least 10 scalp electrodes should be used. This will result in a five-channel tracing. A greater number of electrodes, of course, is desirable. However, the limitations of placing the electrodes at distances greater than 10 cm. may restrict the number of leads.
	<ol> <li>A 30-minute recording is considered satisfactory. A longer recording is not necessary if the previously listed criteria have been met.</li> </ol>
	8. The EEG should be repeated 24 hours later.
	REPEAT EXAMINATION
	After 24 hours, all the criteriaanamnestic, clinical, laboratory and electrographic should be re-established. ${}^{4}$
Hamlin	1. No spontaneous respiration for a minimum of 60 minutes.
(1964)	<ol> <li>No reflex response (superficial, deep, organic, etc.). No change in heart rate on ocular or carotid sinus pressure.</li> </ol>
х.	<ol> <li>EEG: Flat lines with no rhythms in any leads for at least 60 minutes of continuous recording. No EEG response to auditory or somatic stimuli or to electrical stimula- tion. Two longer periods of total flat recording some hours apart may be preferred by some.</li> </ol>
	4. Normal basic laboratory data including electrolyte pattern.
	5. Share responsibility for pronouncement of death with other colleagues. $^{5}$
Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death (1968)	<ol> <li>Unreceptivity and Unresponsivity. There is a total unawareness to externally applied stimuli and inner need and complete unresponsivenessour definition of irreversible coma. Even the most intensely painful stimuli evoke no vocal or other response, not even a groan, withdrawal of a limb, or quickening of res- piration.</li> </ol>
	2. <u>No Movements or Breathing</u> . Observations covering a period of at least one hour by physicians is adequate to satisfy the criteria of no spontaneous muscular movements or spontaneous respiration or response to stimuli such as pain, touch, sound, or light. After the patient is on a mechanical respirator, the total absence of spontaneous breathing may be established by turning off the respirator for three minutes and observing whether there is any effort on the part of the subject to breathe spontaneously. (The respirator may be turned off for this time provided that at the start of the trial period the patient's carbon dioxide tension is within the normal range, and provided also that the patient had been breathing room air for at least 10 minutes prior to the trial.)
	3. No Reflexes. Irreversible coma with abolition of central nervous system activity is evidenced in part by the absence of elicitable reflexes. The pupil will be fixed and dilated and will not respond to a direct source of bright light. Since the establishment of a fixed, dilated pupil is clear-cut in clinical practice, there should be no uncertainty as to its presence. Ocular movement (to head turning and to irrigation of the ears with ice water) and blinking are absent. There is no evidence of postural activity (decerebrate or other). Swallowing, yawning, vocalization are in abeyance. Corneal and pharyngeal reflexes are absent.

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PROPONENT	CRITERIA
	As a rule the stretch of tendon reflexes cannot be elicited; i.e., tapping the tendons of the biceps, triceps, and pronator muscles, quadriceps and gastrocnemius muscles with the reflex hammer elicits no contraction of the receptive muscles. Plantar or noxious stimulation gives no response.
	4. Flat Electroencephalogram. Of great confirmatory value is the flat or isoelectric EEG. We must assume that the electrodes have been properly applied, that the apparatus is functioning normally, and that the personnel in charge is competent. We consider it prudent to have one channel of the apparatus used for an electrocardiogram. This channel will monitor the ECG so that, if it appears in the electroencephalographic leads because of high resistance, it can be readily identified. It also establishes the presence of the active heart in the absence of the EEG. We recommend that another channel be used for a noncephalic lead. This will pick up space-borne or vibration-borne artifacts and identify them. The simplest form of such a monitoring noncephalic electrode has two leads over the dorsum of the hand, preferably the right hand, so the ECG will be minimal or absent. Since one of the requirements of this state is that there be no muscle activity, these two dorsal hand electrodes will not be bothered by muscle artifact. The apparatus should be run at standard gain $10 \ \mu v/mm$ or $25 \ \mu v/5 mm$ . Also it should be isoelectric at double this standard gain which is $5 \ \mu v/mm$ or $25 \ \mu v/5 mm$ . At least 10 full minutes of recording are desirable, but twice that would be better.
	It is also suggested that the gains at some point be opened to their full amplitude for a brief period (5 to 100 seconds) to see what is going on. Usually in an intensive care unit artifacts will dominate the picture, but these are readily identifiable. There shall be no electroencephalographic response to noise or to pinch.
	All of the above tests shall be repeated at least 24 hours later with no change.
	The validity of such data as indications of irreversible cerebral damage depends on the exclusion of two conditions: hypothermia (temperature below 90° F [32.2°C]) or center nervous system depressants, such as barbiturates. <sup>6</sup>
University of Iowa Ad Hoc Committee for the Evaluation of Death (1970)	The Committee recommended that cerebral death should be established by both neurologic and electroencephalographic findings. The neurologic criteria consists of the following: (a) coma with complete unresponsiveness; (b) cessation of spontaneous respirations; (c) no muscle tone and a flaccid paralysis; and (d) absence of all reflexes (including fixed dilated pupils and absence of reflexes mediated through the cranial nerves).
	The essence of the electroencephalographic findings is "electrocerebral silence." "Electrocerebral silence" may be present if CNS depressant drugs are present in the brain in anesthetic levels or if severe hypothermia (body temperature 17°C or 62°F) is present. These two conditions must be excluded in the diagnosis of cerebral death. The EEG criteria include: (a) no spontaneous electrical activity at maximum amplifications of the electroencephalograph (2 microvolts/mm); and (b) repeat EEG in 24 hours again demonstrating no spontaneous electrical activity.
	The technical criteria for an acceptable EEG recording include that a minimum of 10 scalp electrodes be used in addition to ear reference electrodes. Electrode resistance must be under 10,000 ohms. The operator should deliberately create electrode artifacts to test the apparatus and to check connections. The EEG should be recorded along with an EKG or other monitoring devices so that voltage changes produced by other organs and recorded by the EEG may be identified. For at least part of the recordings, the longest time constant of the electro-encephalograph should be used. Tests of reactivity must be performed and montages to include ear referrential runs and long distance scalp to scalp linkages are required. There must be a minimum of 30 minutes total recording time, both initially and at the time of the second EEG 24 hours later.
	The neurologic examination and EEG are deliberately precise and detailed. They can be objectively evaluated and quantitated. Sociologic factors (i.e., the man's worth to the community) have not been included and subjective criteria have been eliminated to the extent possible. <sup>7</sup>
Ivan (1970)	VITAL SIGNS
	<i>Respiration.</i> The patient has been in a state of respiratory arrest for several hours, unable to breathe spontaneously on repeated testings for at least two minutes at each testing. A minimum of twelve hours' treatment with the respirator is required.

PROPONENT	CRITERIA
	<i>Circulation</i> . The blood pressure is falling and the patient is unable to maintain normal blood pressure without drugs.
	<i>Temperature</i> . The temperature shows a tendency to drop below 98°F if the body is uncovered.
	NEUROLOGICAL SIGNS
	1. The pupils are fixed and dilated.
	2. The corneal reflexes are completely absent.
	3. All other brain-stem reflexes (cough reflex, swallowing) and cranial nerve functions are absent.
	4. All the limbs are completely flaccid, without any spontaneous movements.
	ELECTROENCEPHALOGRAPHIC SIGNS
	<ol> <li>At least two EEG records, taken six or more hours apart, show no evidence of cortical activity during twenty to thirty minutes of running time.</li> </ol>
	2. With normal amplification the EEG shows a complete iso-electric line. Apart from ECG artefacts, no other electrical activity is present and this is continued with higher amplifications (20 $\mu$ v/cm).
	3. The EEG includes at least five electrodes on each side of the skull.
	4. No EEG potentials are evoked by light, sound or painful stimuli. <sup><math>\theta</math></sup>
University of Minnesota Health Sciences Center (1971)	1. No spontaneous moyement.
	2. No spontaneous respiration when tested for a period of 4 minutes at a time.
	3. Absence of brain-stem reflexes:
	a. dilated and fixed pupils b. absent corneal reflexes c. absent ciliospinal reflexes d. absent Doll's head phenomena e. absent gag reflex f. absent vestibular response to caloric stimulation g. absent tonic neck reflex
~	4. A status in which all of the findings above remain unchanged for at least 12 hours.
	<ol><li>Brain death can be pronounced only if the pathological processes responsible for States 1 through 4 above are deemed irreparable with presently available means.</li></ol>
	We do not believe that an EEG is mandatory. Neither do we believe spinal reflexes when present have any bearing on the question of brain death. $^9$
University of Pennsylvania (1974)	1. Consciousness
	The patient is totally unresponsive to painful stimulation. In exceptional cases one or more limbs may withdraw in response to painful stimulation, or deep tendon reflexes may be present in the extremities as manifestations of an intact spinal cord. The decision whether such movements represent voluntary or reflex activity is made by the neurologist or neurosurgeon examining the patient. The patient does not have postural movements (decerebration, decortication) in response to stimulation.
	2. Respirations
	Cessation of all respiratory movements is demonstrated by removing the respirator for a minimum of 3 minutes. Arterial blood-gas measurements are made prior to removing the respirator to be certain that the patient is not hypocapnic. The patient who is subsequently determined to be an organ donor is maintained on the respirator until the organ is removed.

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PROPONENT	CRITERIA
	3. Brain-stem Reflexes
	The pupils are dilated and unresponsive to light stimulation, and the following reflexes are absent: corneal and lid reflexes, oculocephalic reflexes to head movement and caloric stimulation, and the pharyngeal reflex.
	4. The Electroencephalogram
	The EEG is recorded on two occasions, during a 24-hour period. Minimal techniques for recording include the following:
	a. A minimum of 16 scalp electrodes and ear reference electrodes.
	b. Interelectrode resistance between 100 and 10,000 ohms.
	C. Deliberate creation of electrode artifact by manipulation to test the apparatus and to check connections.
	d. Two electrodes on the dorsum of the hand or a similar location on an extremity to detect extracerebral potentials due to muscular activity.
	e. The use of the longest time constant of the instrument during part of the recording.
	f. Gains increased progressively to a maximum gain which must be equal to or greater than 2.5 yv/mm.
	g. Sound or pain stimulation to determine whether there is any effect on the EEG or heart rate.
	h. [Electrode mountings] to include ear referential runs and long-distance scalp-to- scalp linkages.
	i. A 30-minute total recording time per session. <sup>10</sup>
Rosoff and Schwab	<ol> <li>No reflexes, spontaneous breathing, or muscle activity.</li> </ol>
	2. No clinical or EEG response to noise or a pinch.
	3. Repetition of the above twenty-four or forty-eight hours later.
	These determinations were not to be made under conditions of hypothermia or anesthetic levels. $^{\mathcal{I}\mathcal{I}}$
Şims	Minimal Neurological Evaluation for the Human Brain Death Syndrome
1975)	1. No blood or urine sedative/anesthetic/hypnotic/neuromuscular blocker drug levels.
	2. No body temperature recorded below 90°F,
	3. Absent spontaneous respirations with no concurrent respiratory alkalosis (pH should be in the range 7.38 to 7.42 and the pCO <sub>2</sub> should be in the range 35 to 45 mm Hg).
	<ol> <li>Absence Cranial Nerve Functions: (a) no pupillary response to bright light, (b) no oculovestibular reflexnorotic ice-water caloric induced eye movements, (c) no corneal reflexes, (d) no gag response to tracheal suctioning, (e) no head movements to noxious stimulation of face.</li> </ol>
	5. No decerebration/decortication/opisthotonus (spontaneous or inducible).
	<ol> <li>EEG electrocerebral silence (i.e., EEG isoelectricity) as strictly defined (with 30 min. recording per session).</li> </ol>
	7. 1 through 6 above for 24 hours or more.
	No longer considered necessary are:
	a. Pupillary dilation (i.e., mydriasis).

PROPONENT	CRITERIA
	c. Absence of superficial reflexes.
	d. Absence of response to noxious stimuli applied below the head (i.e., applied to the trunk or in the extremities).
	Evaluation for Cardiovasculorespiratory Death or "Traditional Death"
	Absence of:
	1. Blood pressure.
	2. Pulse.
	3. Heart Sounds.
	4. Respirations.
	5. Pupillary response to bright light.
	6. Electrocardiograph (EKG) activity.
	(1) to (6) above for 15-210 minutes. <sup>12</sup>
World Medical Association (1968)	<ol> <li>Total lack of response to external stimuli, even the most painful that can be ethically applied.</li> </ol>
	2. Absence of all spontaneous muscular movements, notably breathing. If the patient is on a mechanical respirator, this may be turned off for three minutes in order to establish that he is capable of breathing himself.
	3. Absence of reflexes. The dilated pupils must not contract when a bright light is shone directly into them. There must be no eye movements in response to pouring ice water into the ears, no muscular contraction of the biceps, triceps, or quad- riceps.
	4. Flat encephalogram or absence of brain waves. <sup>23</sup>
THÉ FOLLOWING CRITERIA INDIVIDUALS HAVE SUGGESTED	A ARE NOT COMPLETE, BUT ARE EXAMPLES OF ADDITIONAL TYPES OF MEDICAL DATA WHICH SOME TO BE INCLUDED IN MEDICAL DETERMINATION OF DEATH.
PROPONENT	ITEM
Revilliard	1. Interruption of blood flow to the brain as determined by angiography.
	2. Absence of tachycardia in response to atropine. <sup>24</sup>
Shalit	Measure of oxygen consumption of the brain. <sup>25</sup>
John Hopkins University	Measure of oxygen consumption of the brain below 10 percent of normal is an essential criterion. $^{26}$

The above listing of medical criteria proposed by various individuals and institutions is meant to present some of the various viewpoints which have been publicly presented. The list should not be construed as exhaustive. In recognition of the constant progression of medical technology, it should further be recognized that criteria suggested several years ago, if developed by the same individuals or institutions today, may be quite different. Therefore the dates of the criteria may or may not be pertinent to any consideration of the criteria.

There are other known criteria, which have been reported, and the criteria developed in other countries have largely been omitted.<sup>27</sup> Proposed definitions of death, and medical discussions and statements not outlining, specifically, criteria for the determination of death, have similarly been excluded from the list, and are discussed elsewhere in the text.

lGavin Thurston, "The Point of Death," The Practitioner, August 1970, p. 187, 189.

<sup>2</sup>Vincent J. Collins, "Considerations in Prolonging Life--A Dying and Recovery Score, Part II," <u>Illinois Medical Journal</u>, July 1975, p. 42, 43.

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<sup>3</sup>Cyril H. Wecht, "Attorney Describes Current Efforts to Establish Uniform Guidelines," Hospitals, July-December 1969, p. 54, 55-56.

<sup>4</sup>Joseph L. Fermaglich, "Determining Cerebral Death," <u>American Family Physician</u>, March 1971, p. 85, 85-87.

<sup>5</sup>Hannibal Hamlin, "Life or Death by EEG," Journal of the American Medical Association, October 12, 1964, p. 120, 122.

<sup>6</sup>Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Death, "A Definition of Irreversible Coma," <u>Journal of the</u> <u>American Medical Association</u>, August 5, 1968, p. 85.

<sup>7</sup>Robert J. Luchi, "Diagnosis of Cerebral Death," <u>Journal of Iowa Medical Society</u>, May 1971, p. 281, 282-283.

<sup>8</sup>L.P. Ivan, "Irreversible Brain Damage and Related Problems: Pronouncement of Death," Journal of the American Geriatrics Society, October 1970, p. 816, 818.

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<sup>9</sup>A. Mohandas and Shelley N. Chou, "Brain Death A Clinical and Pathological Study," Journal of Neurosurgery, August 1971, p. 211, 212.

<sup>10</sup>James R. Harp, "Criteria for the Determination of Death," <u>Anesthesiology</u>, April 1974, p. 391, 395-396.

<sup>11</sup>Comment, The Criteria for Determining Death in Vital Organ Transplants--A Medico-Legal Dilemma, 38 Mo. L. Rev. 220 (1973), at 225-226, hereinafter cited as "Comment".

12<sub>J. K.</sub> Sims, "Criteria for Pronouncement of Death and the Human Brain Death Syndrome," <u>Hawaii Medical Journal</u>, January 1976, p. 11, 12.
<u>13Comment</u>, p. 226.

<sup>14</sup>Harp, p. 392.

15<sub>Comment, p. 228.</sub>

<sup>16</sup>Ibid., p. 228.

<sup>17</sup>Harp, Comment.