A Consideration of the Ethics of Brain Death
—What are the Ethical Guidelines for Physician, Family and Society in Dealing with Brain Death? —

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Abstract: There is at present considerable confusion with respect to ethical guidelines that should govern the behavior of society and the physician confronted by problems resulting from recent attainments of medicine and science. The use of life supporting devices raises the problem of determining when death has occurred and what is proper ethical procedure in dealing with the deficient half life caused by "Brain Death." Some guidance is obtained from a consideration of the nature of life, the nature of death, the nature of man and the essence lost in death of man. A parallel consideration of the nature of ethics, the bases of ethics and of ethical decision can be helpful. An individual may have ideals which control behavior, even elevate ethical standards; others entertain concepts that destroy social ethics. Ethics control and direct social interactions; ethics determine the quality of social behavior—ethics are established by societies not by individuals. Numerous commissions have endeavored to define the requirements of physicians for diagnosing brain death and for appropriate subsequent actions. The rationales presented, however, are not invariably accepted by lay society. The problem is created by numerous trends. Among them are the "rightest" movement which, though possessing many virtues, has its excesses such as expressed in the "right to life movement." These have not been beneficial and have necessitated "right to death movements." Opposition is also due to the fact that society's concepts of the medical profession have changed. The practice of organ transplantation has created problems. Finally, the concept of death as other than evil is no longer generally accepted. As more biological manipulations are possible ever more difficult ethical problems will arise. It is a certainty, however, that when brain death has occurred life of man and that of the individual has ended. Although others might not agree, our ethic requires us to use life assist techniques to preserve the vegetative man, the individual who can still breathe spontaneously though lacking consciousness and behavioral ability. All the codes of medical ethics state that a physician shall not kill—this does not mean he cannot permit the terminal phases of death when the essence of human life is lost. A major question is the ethical responsibility of one society toward another. Can an affluent society squander its resources in the preservation of ineffectual life in the body after "brain death" when others are without the medical assistance which would permit total living?

Key words: Medical ethics, Death and dying, Brain death.

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Preface

One of the most impressive features of this University and its leadership has been the
constant concern for society and the fundamentals that determine its quality. The consideration of the bases for ethical decision is an example of this interest and admirable dedication to the improvement of the welfare of man.

The problem I have been asked to address may not exist in primitive societies but it certainly does in all nations where technical advances have permitted the development of elaborate life-supportive devices. The question: “When does death occur in man” is now a very real socio-ethical-medical question. Is death of the brain death of the individual? What are the Ethics of Brain Death?

I assume my commission is chiefly that of discussing the ethical requirements that must be met by physicians and their associates in dealing with brain death in patients under their care and in the subsequent actions relative to the deceased.

By way of introduction I wish to make three statements:

First: The physician is traditionally the authority on human life, how to preserve it, and the only official authority for identifying death. This authority, however, is being challenged today and that is why a discussion of the nature of life and death is pertinent.

Secondly: Ethical concepts are in flux. The ethic of a people is determined by their culture—individuals may have a better ethic than their society but the people not the individual determine the ethic. This is challenged too.

A third point I make is: that what is ethical for us today is or would be considered unethical by many other peoples. I am mentioning this because I will speak only of the ethics of the medicine and culture of the West—that of Greco-Hebrew-Roman-Germanic-European-North American medicine and society—the Sino-Japanese medical ethic is similar but probably not identical.

The Ethics of Brain Death

This problem will not be resolved by anything I say but I can at least outline an approach that could lead to a solution. I therefore will discuss,

2. The nature of ethics, the bases of ethics, of ethical decision.
3. Identifying death of the brain, its phases and their significance.
4. Codes of ethics and appropriate guidelines for decision and action.
5. The bases of the problem—present and future.
6. Conclusions

But why do we discuss the ethics of brain death? It is because science and the devotion of physicians to their duty to prolong life and abolish suffering have created progress and the ability to do what a few decades ago would have been considered impossible. Any such advances, however, create horrendous problems for which our ancient codes of ethics provide little guidance. How does one adapt the old to the
new? Concepts must change but it is a biological law, inherent in nature, that the essential must be preserved in any adaptation.

For example: Since the dawn of ancient and modern high cultures and the profession of physician, it has been a principle that The Physician Does Not Kill, especially the individual who has entrusted life to him. This should not be lost but it does not mean he cannot permit a patient to die in peace, comfort and dignity.

Some might wish to argue about this—later I will discuss this and other problems but now I should like to point out that one needs to know what life is in order to recognize and define death.

The Nature of Life, the Nature of Death, the Nature of Man and the Death of Man

A. The Nature of Life
   Life is best defined by its physiological or functional characteristics.
   1. Irritability—ability to perceive and react to stimuli—excitability and responsiveness.
   2. Metabolic activity—consumption, transformation of energy largely by oxidative processes that produce heat and byproducts—the acquiring of sources of energy (food) and oxygen and eliminating CO₂, metabolites, and unusable material—all of this is metabolism.
   4. Adaptability—to change and to maintain a constancy.
   5. Organization—Integration of activity, even in a single cell is essential. It is essential to initiate and direct behavior.

   Life is a flow of processes organized to effect a purpose; it is immortal in essence but even a single-celled-organism ceases to exist as an entity as it subdivides to form new living units. Life is immortal but not for the individual, for the species or for the races of men. Loss of individuality and of self sustaining integrative powers is death.

   In brief, the nature of life or the secret of life, is not found in any single structure, place, or process—it is in integrative powers. All the characteristics that define life are organized intergraded states and reactions.

B. The Nature of Death
   The nature of life establishes or reveals the nature of death. Death simply is the loss of powers of integration that link processes to effect living states and reactions of local or total involvement. Total involvement requires participation in behavior and this is organized by the master integrator—the nervous system and the brain.

   Behavior is more than reaction—it involves the total organism. Loss of ability to organize appropriate total individual independent behavior is the major, initial and determinative loss in death.

C. The Nature of Man and the Death of Man
   The unique feature of man is his brain—his unique brain. His brain directs all his
performances, endeavors, his anticipatory and immediate reactions to circumstance. The brain is the master integrator, not only is it master of our existence it is essential to our existence as independent self-maintaining individuals.

It should be pointed out that man is two creatures: the vegetative or animal man and human intellectual man. In fact man has two brains: the animal or vegetative brain that organizes and integrates the biological man, the animal man, the robot man. The vegetative brain consists of the subthalamic forebrain, midbrain and medulla.

Superimposed on the vegetative brain are other hierarchical levels of the brain, these being definable as the humanistic, intellectual brain that confers man's unique characteristics and his most sophisticated abilities. The cerebral cortex, thalamus and cerebellum are the higher integrative centers.

This higher brain organizes the integrated processes that give total consciousness and self sufficiencies. The components and contributions of Total Consciousness are,

1. Social consciousness—sympathy, appreciation
2. Intelligence—power of reasoning
3. Power of transposition or projection: This permits planning, prediction, anticipation, preparation.
4. Memory which combined with reasoning and recognition of needs develops power of speech, reading, writing, tool making, extension of sensory and physical ability.

Finally the supreme contribution of this higher, super, intelligent brain is the ability to recognize good and evil, the ability to organize an ethic that protects and permits attainment of an excellence in life states for individuals and society.

D. The Nature of the Death of Man

There obviously are two deaths:

Death in parts or in the totality of the intellectual brain. This inevitably leads even if not initially accompanied by death of the vegetative brain, to complete biological disintegration.

All of this can be progressive or episodic: Local lesions can create deficiencies—inabilities to speak, inability to write, inability to read, inability to remember, etc. Physicians are familiar with all these isolated or combined functional failures of the human, intellectual brain: The brain that controls behavior as distinct from that which can still organize reactions as performed by an automation.

When only the intellectual brain is dead the vegetative brain can still sustain respiration and many reaction patterns. It cannot, however, capture food or continue vegetative life unless other brains (people) substitute their abilities for those lost and feed and clothe and otherwise supply the needed care. If this be life it is a non productive life but one, it is generally felt in our society, that must be sustained — that is our ethic. Other societies might admire but not be able to afford or deliver such care. They are not unethical but we would be by our ethic if we abandoned the individual who can still breathe spon-
Ethics of Brain Death

Since the 1950 life supporting devices have enabled us to substitute even for the vegetative brain—and sustain what one might call the biological entities. Organs and tissues of individuals can be kept alive in the body by perfusion devices—much as are isolated tissues in biological laboratories. But this involves major costs.

When the master integrator is completely lost, the body may possess living parts but as an individual the man is dead. It is only his or her past performance which, in the memory of others, confers his individuality—it is a remembered humanity—a remembered life. Maintenance of personal individuality is an essential characteristic of human life and this does not continue after total brain death.

Even the best efforts now known cannot preserve life, individualized life, indefinitely. Biological death, that of all body parts progress inevitably toward dissolution when the brain is dead.

Brain death is total death of man as an entity. The essential integrative power of life is lost when the brain is lost. Recognizing and proof of brain death does not provide freedom for subsequent action; the cause of death must be established.

Brain death of course is usually secondary to failure of some other organ system. Death can begin due to gradual failure of the pacemaker of the heart. A few cells die, cooperative action within that tissue fails, there is not enough integrated mass to give an action potential strong enough to trigger a conducted impulse: asystole results.

Death of cells in the conducting system or myocardium may break pacemaker dominance and the society disintegrates in fibrillation: It is not a lack of activity but an asocial, disorganized activity and loss of the factors that integrate heart action that eventuates in brain death.

The point I make is that the physician must be able not only to identify death but also the cause of death if possible.

It is easy enough to say that brain death is death but is it ethical then to turn off the pumps that will maintain body parts if adequate supplemental care is given? Society is not certain. We must consider why.

The Nature of Ethics, the Bases of Ethics and of Ethical Decisions

A. The Nature of Ethics

Ethics are the principles of conduct governing the behavior of individuals and groups. They deal with moral duty and obligation. They set the pattern and standard of human interrelationships: How men should treat each other.

They are most clearly defined with respect to individuals but somewhat the same principles hold with respect to groups: The ethics of nations, societies, professions. Our concern is with the special ethics of the medical profession but they are superimposed on the ethics of a culture and modified by the culture.
B. The Bases of Ethics

In brief I believe ethics are based on four human characteristics or experiences:

1) Sympathy: This is a quality essential to the social state. Man is a social animal, sympathy is concern for and interest in others and recognition of the importance of their well being. It can be cultivated, developed, refined and attain qualities of compassion, love, etc. or the instinct can be destroyed.

2) Fear: The instinctive learning of danger and that it must be avoided. This instinct and experience give origin to primitive taboos and finally to attainment of a sophisticated sense of right (safety) and wrong (danger).

3) Reason and logic are applied to these two opposites (sympathy and fear) and ethics result.

4) Finally ethics have been evolved from the experiences of individuals and societies. Ethics have roots in history, in religion, in the culture of man.

Ethics evolve from necessity and their evolution tends to rise from conflict. Ethics eventually are codified into laws.

Ethics are ethics of groups as stated previously. A teacher, a great statesman, a religious leader can change ethics for better—the teaching of Christ changed the ethic from justice as the major virtue to love as the major virtue. Others have destroyed the ethics of a people—we see that now in the modern world in certain nations.

A basic principle of ethics is concern for others—not only the individual but society.

C. The Bases for Ethical Decision—by the Physician

1) In my former days as a teacher of medical students I used to tell them that their obligation was:

Never to harm any patient; to be able to perform as any other physician so that it would never be a misfortune for a patient to come to them.

Since as physicians they will be entrusted with the task of dealing with life and death and the most secret problems of men they should deport themselves with a dignity and correctness appropriate to that trust.

2) Many codes for physicians have been written throughout the ages. That of Hippocrates has been the standard. A more cruel and primitive code of Hammurabi preceded that great cultural attainment. Codes have been written in all nations and rewritten in special cases: Nuremberg Declaration, etc. (12).

Of recent years the code of Hippocrates has been rewritten, much requirement has been deleted. The present code of the physician decided upon by the American Medical Association—is so permissive it is no ethical guide and the medical profession has and will consequently suffer mistrust.

3) In simplest terms the physician is rather safe from legal attack if he can prove that treatment given, or diagnosis conformed with the standard of the profession—this is the minimum ethic society demands of the physician—it is not enough in the present day.
This brings up the literature of the attempts to standardize the diagnosis and the action approved (the ethic) in case of brain death.

**Identifying Death of the Brain, its Phases and their significance**

Usually inexperienced peoples and retired professors are the ones to talk most about ethics and brain death but it has been such a problem since, in the 1950's, organ transplantation began and "life sustaining" devices came into use, that many commissions have met and laid down the essentials of diagnostic and behavior procedures required in declaring subjects dead. I shall merely mention some of them and try to give a summary of what has periodically been agreed upon.

One of the first was a Harvard Medical School Commission to, Examine the Definition of Brain Death 1968. Practically every year since then the problems have been reexamined and statement made with intent of ending controversy and providing security for physicians (Table. 1).

Possibly the simplest way to report the essentials is by:

1. Citing the statement made to medical students in a U.S. Medical School in 1984 (Table. 2).
2. Presenting the statement of the President's U.S.A. Commission which is also rather brief (Table. 3).

The physician must be sure that he is not deceived by drug or other reversible comas in declaring brain death.

He must be sure that vital signs are not induced or maintained solely by life supporting devices.

The means of testing brain death are well outlined by the Commissions: Pupillary dilatation, no blood flow in eye grounds, no spontaneous respiration, a flat EEG, no reactions to stimuli, etc. These Commissions have not ended the discussion however and problems of a complex nature are responsible.

<p>| Table 1. Statements of Commissions relative to Brain Death |</p>
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<th>Reports of Commissions and Committees</th>
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<tr>
<td>1968</td>
<td>Statement of 22nd World Medical Assembly in Sydney, Australia</td>
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<td>1968</td>
<td>The Harvard Medical School Commission</td>
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<td>1971</td>
<td>The Minnesota Criteria</td>
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<td>1976 and 79</td>
<td>The United Kingdom (UK) Code</td>
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<td>1981</td>
<td>President's Commission Report (U. S. A.)</td>
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<td>1984</td>
<td>New York Academy of Medicine</td>
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C. M. Brooks

Table 2. A statement made in teaching medical students in the U.S.A.

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<td>Medical School Teaching 1984 - in New York, U.S.A.</td>
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Death is essentially due to irreversible cessation of brain function. Prior to the 1950s, death was traditionally diagnosed by the peripheral effects of brain failure (namely cardio-respiratory arrest). The introduction of lung bypass machines (respirators) resulted in the anomalous situation whereby dead people were apparently breathing. Thus new methods of defining death independent of its peripheral effects had to be formulated.

Death as determined by neurological criteria (brain death) is diagnosed as follows:

1. A cause for death must be established.
2. No reversible factors depressing the CNS (such as hypothermia, continual anoxia or depressant drugs) must be present.
3. No evidence of brain function can be found:
   a) No spontaneous movement.
   b) Absent brainstem reflexes (pupillary, corneal and no respiratory effort if the ventilator is disconnected).
   c) Spinal monosynaptic and polysynaptic reflexes may be present.
4. Flat (isoelectric) EEG

Table 3. Summary of a report by the President’s Commission concerning Brain Death and Death of the Individual

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An individual who has sustained either (1) irreversible cessation of circulatory and respiratory functions, or (2) irreversible cessation of all functions of the entire brain stem, is dead. A determination of death must be made in accordance with accepted medical standards.

The Commission recommends the adoption of this statute in all jurisdictions in the United States.

President’s Commission 1978.

The Bases of Problems—Present and Future

There is not going to be an end to ethical problems and the physician is going to be at hazard as he endeavors to apply the attainments of research and as he follows the trends in his profession. His ability to deal with death will not increase for several reasons.

1) In most advanced cultures death is no longer acceptable. Religions or at least Christianity can no longer convince people that death is a victory, that something better than life awaits one after death. We do not know how to die in peace.

2) The “rights” (human individual rights) movement though admirable in concept is destructive in its excesses. It places the individual above society, individual rights as supreme with no justifications or reciprocal assumption of obligation required.

A “rights to life” adjunct movement challenges the physician and the family right to permit death.
We have a counter movement called "the right to die movement" and the "living will" discussion. Some states in the United States recognize the right of an individual to indicate in his will and to his physician that he or she wishes to die quietly, with dignity and to not be maintained by "life sustaining pumps" exposing their bodies to the indignities of fruitless "heroic" endeavors to sustain life.

The Pope has said, governments have said that only the physician can judge and pronounce death. Yet certain elements in society have sought to take that responsibility away from family and physician. They demand a general discussion or a public meeting and court decisions before an essentially dead person can be declared dead and society relieved of the extraordinary cost of maintaining organ functions in a body after essential death has occurred.

3) The questioning of procedures made possible by some of our miraculous medical attainments has caused doubts. Practically any individual who needs one will accept a kidney implant or other substitute living tissue, obtained from a living or dead body, that will enable his or her life to continue in greater comfort. Fewer wish the ordeal of a heart transplant.

Two ethical problems arise from the organ transplant procedure.

a) Do patient have a right to receive and physician have a right to recommend and give implants that cannot be paid for by the recipient? Possibly, we would all say "yes" but can society manage this in an equitable fashion? What are the limits to what a physician and a patient can demand of society when there are needy people even in affluent societies? Are many medical practices justifiable, such as maintaining individuals after brain death, etc. or implanting of artificial hearts at huge expense while 20% or now higher percentages of all African children die before the age of five due to preventable poor nutrition and/or contaminated water? This is a problem of social responsibility and sensibility but physicians are involved.

b) More taxing to the physician is the problem of diagnosing death soon enough so that a patient's organs are usable for transplants. It is obvious from reading some of these papers on "brain death" that the physicians want a means of early diagnosis of death so that organs can be used. In many but not all states of the United States brain death is accepted as death. New York papers of October 31, 1984 announced the decision of the state supreme court that brain death is legal death of the individual. The case requiring decision was this: A man shot another in the head; the victim was placed on life supporting systems but brain death was diagnosed and vital organs were removed for aid to other patients. The defense lawyer in opposing homicide conviction claimed that the victim lived until the doctor killed him by removing vital organs still alive. Many would argue that as long as an individual has living parts he lives. Court decision was against that defense.

People recognize this need for quick diagnosis of death and the use of body parts with mixed feelings. Some individuals wish to will their organs for use but it is a different
matter when one has to write a will to prevent it. Should not the individual be able to decide the fate of his body even when he cannot or when he has no relatives who can protect it? Who decides that body parts can be "sold," to use a harsh word, for medical services?

4) I feel physicians deserve admiration and should neither be treated with disrespect or attacked. However, I believe it can be correctly said that the medical profession is no longer a philanthropic enterprise. It is big business. I am not condemning I am just stating what I consider evident.

A patient going into a hospital acquires a second disease—one attacking his economy and not the body biological. The physicians may be considerate but the patient is treated impersonally and with little sympathy by the bureaucracy they create. Possibly that is not true here but in many places medical and hospital costs are much inflated.

The patient does not trust—he frequently sues. All doctors have to carry heavy liability insurance—most are constantly experiencing suits and they too, can suffer economically—from this new adversarial stance.

5) People have begun to sense that "progress" is introducing new ethical problems that may be worse than those mentioned: Genetic engineering, cortical grafts—if the latter proves feasible it will involve the use of fetus brain to replace injured cortex of the adult. Where will this embryonic tissue come from?

These are among the reasons the logical and official solutions of the problem of Ethics of Brain Death are not easily accepted.

**Conclusions** (my own)

1. Only physicians should be involved in diagnosing or deciding that death has occurred.
2. Brain death, if known to be irreversible by adequate standard tests, is full death of the individual.
3. Partial brain death that destroys the intellect and consciousness should not in our time be considered death if the individual can still breathe spontaneously.
4. The body after brain death should be treated with respect as when living. This is an ethical requirement now often neglected.
5. Men should be permitted by physicians and society to die in comfort, in peace and with dignity.
6. There should be no abuse, for selfish purposes, of the individual or society by the application of new organ implant or other technologies.
7. Self interest or one's own concept of what is ethically permissible is of secondary importance to the needs and concepts of society and the culture one's ancestors have built. However, it is the individual who must by his own behavior preserve the ethic. The physician and the medical profession has the same responsibility.
involvement of politics and governments is not beneficial.

One must constantly preserve the higher ethic as progress in science is attained and the pursuit of greater affluence is successful. It is a continuing struggle of the intellect and the human spirit to adapt and maintain man’s high ethical standards. With respect to sickness and death the physician is chiefly responsible for decisions. He should be able and he should be permitted to meet this high and crucial responsibility.

References

These are samples that will provide a lead to more complete coverage.


脳死の倫理に関する一考察
—医師、家族、社会のための倫理的指針を求めて—

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要旨：医学の進歩によって過去にはなかった倫理的諸問題が生じて来た。生命維持装置の発達は、
死の判定と脳死患者の処置についての論争をまきおこしている。この問題について米国内
の多くの委員会が見解を発表しているが、一般世論を等しく納得させるには至っていない。脳、
臓器移植の普及はこの論争に新たな火種を投じた。大衆の意見の両極端として「生きる権利」を守る
運動と「死ぬ権利」を守る運動とが対立しており、いずれにも一利一害がある。著者の見解では、脳死においては個人の生の本質的部分がすでに失われており、その臨終
を妨げないことは倫理に反しない。一方、自発呼吸を有する植物状態の生はあくまで援助
すべきである。地球上で基本的生存する者の半分以上がいるというのに、豊
かな国々で脳死体の維持に莫大な浪費を行っているのは如何なものだろうか。

(1984年11月14日 産業医科大学教員研究会における講演内容にもとづく。)

J. UOEH (産業医大誌), 7 (2): 139-150 (1985)