

Historically, death was not particularly difficult to define from either a legal or halachic standpoint. Generally, all vital systems of the body-respiratory, neurological, and circulatory-would fail at the same time and none of these functions could be prolonged without the maintenance of the others. Today, with major technological advances in life support, particularly the development of respirators and heart-lung machines, it is entirely possible to keep some bodily systems "functioning" long after others have ceased. Since we no longer face the inevitable simultaneity of systemic failures, it has become necessary to define with greater precision and specificity which physiological systems are indicators of life and which (if any) are not, especially in light of the scarcity of medical resources and the pressing need for organs for transplantation purposes. Over the past 20 or so years, the concept of "neurological death" commonly called "brain death," "whole brain death" or "brain-stem death" (and, sometimes, inaccurately-termed "cerebral death") has gained increasing acceptance within the medical profession and among the vast majority of state legislatures and courts in the United States. Whether this standard comports with halakhah is a matter of great controversy among rabbinic authorities. The purpose of this article is not to take sides nor in any way resolve the halachic debate. Its purpose is more modest. This article will attempt to explain to the general reader: (1) what is "brain death" and how is it clinically determined; (2) some (not all) of the major sources on whether it is an acceptable criterion of death from the standpoint of halacha; (3) a "scorecard" on how contemporary authorities line up; and (4) the halachic and legal ramifications of one view or the other.

I. WHAT IS "BRAIN DEATH" AND HOW IS IT DIAGNOSED?

The concept of total "brain death" as an alternative to the older definition of irreversible circulatory-respiratory failure was first introduced in a 1968 report authored by a special committee of the Harvard Medical School² and was later adopted, with some modifications, by the President's Commission for the Study of Ethical Problems in Medicine and Biomedical Research, as a recommendation for state legislatures and courts.³ The "brain death" standard was also employed in the model legislation known as the Uniform Determination of Death Act which has been enacted by a large number of jurisdictions and the standard has been endorsed by the influential American Bar Association. While New York is one of the few jurisdictions that does not have a "brain death" statute, it has adopted the identical rule through the binding decisions of its highest court.⁴

The rapid, and near universal, acceptance of neurological criteria of death is probably attributable to three factors. First, moving the time of death to an earlier point facilitates organ transplants, and indeed makes such transplants possible. Organs, especially hearts and livers, are suitable for transplantation only if they are removed at a time when blood is still circulating. Once cardiac arrest stops circulation, rapid tissue degeneration makes the organ unsuitable for such use. Given the increasing success of these operations and the relative uselessness (from a secular standpoint!) of sustaining "brain dead" patients on respirators, there is a natural temptation to redefine death so that organs become available to serve higher ends. It is no coincidence that the movement

towards acceptance of "brain death" coincided with the development of cyclosporine and other anti-rejection drugs.

Additional considerations involve triage and allocation of scarce medical resource. It is extraordinarily expensive (in terms of equipment and labor) to maintain patients on respirators and other life support and using these resources for "brain dead" patients prevents their deployment for those who stand a better chance of recovery. Yet a third impetus towards redefinition is an understandable desire to spare families the agony and anguish of watching a loved one experience a protracted death.

For whatever the reason, the current definition of "death" is now a composite one: death is deemed to occur when there is either irreversible cessation of circulatory and respiratory functions (the "old" definition) or irreversible cessation of all functions of the entire brain including the brain stem.⁵ The principal utility of this second standard permits declaring as dead a comatose, ventilator-dependent patient incapable of spontaneous respiration but whose heart is still beating due to the provision of oxygen via an artificial breathing apparatus.

At the outset, two points must be made absolutely clear. First, contrary to the misperceptions of many lay people, "brain death" is not synonymous with merely being comatose or unresponsive to stimuli. Indeed, even a flat EEG (electro-encephalogram) does not indicate brain stem destruction.⁶ The

human brain consists of three basic anatomic regions: (1) the cerebrum; (2) the cerebellum; and (3) the brain stem consisting of the midbrain, the pons, and the medulla, which extends downwards to become the spinal chord. The cerebrum controls memory, consciousness, and higher mental functioning. The cerebellum controls various muscle functions while the brain stem controls respiration and various reflexes (e.g., swallow and gag). A patient may be in a deep coma and nonresponsive to most external stimuli but still very much alive. At most, such patients may have a dysfunctional cerebrum but, by virtue of the brain stem remaining intact, are capable of spontaneous respiration and heartbeat. Indeed, the most famous of these cases, Karen Ann Quinlan, was able to live off a respirator for almost a decade. While such persons may be popularly referred to as brain dead, they are more accurately described as being in persistent vegetative state [PVS] and are very much alive under both secular and Jewish law. Removal of organs such a donor would indisputably be homicide. This is even more true for the phenomenon known as being "locked-in" where the patient is fully conscious but unable to respond.

A second point to keep in mind is the relationship among respiration, circulation, and the brain. The heart, like any organ, or indeed cell, needs oxygen to survive and without oxygen will simply stop beating. Respiration, in turn, is controlled by the vagus nerve whose nucleus is located in the medulla of the brain-stem. The primary stimulant for the operation of the nerve is the presence of excess carbon dioxide in the blood. When stimulated, the nerve causes the diaphragm and chest muscles expand, allowing the lungs to fill with air. Spontaneous respiratory activity can therefore not continue once there is

brain stem destruction or dysfunction. The heart, on the other hand, is not controlled by the brain but it is autonomous. It is obvious, of course, that the brain-stem will inevitably lead to cardiac cessation not because of any direct control the brain stem exercises over the heart but simply because the heart muscle is deprived of oxygen. Where, however, the patient's intake of oxygen is being artificially maintained, the heart may continue to beat blood and circulate for a considerable amount of time after the total brain-stem destruction. The time lag between brain death and circulatory death is on the average only two to ten days, though there is at least one case on record where a woman's heart continued to beat for 63 days after a diagnosis of brain death.⁷ (Indeed, she delivered a live baby through Caesarean section.) It is this crucial gap between cessation of spontaneous respiration and cessation of the heart beat that defines the parameters of the phenomenon called "brain-stem death."

The steps taken in a clinical diagnosis of "brain-death" vary from medical center to medical center and those differences may have significant halachic repercussions but will typically involve the following:⁸ (1) a determination that the patient is in a deep coma and is profoundly unresponsive to external stimuli; (2) absences of elicitable brain-stem reflexes such as swallowing, gag, cough, sigh, hiccup, corneal, and vestibulo-ocular (ear); (3) absence of spontaneous respiration as determined by an apnea test;⁹ and (4) performance of tests for evoked potentials testing the brain-stem's responsiveness to a variety of external stimuli. These tests are to be repeated between 6-24 hours later to insure irreversibility - with life support supplied

for the interim - and a specific cause for brain dysfunction must be identified before the patient will be declared dead.¹⁰

An additional test that is sometimes employed (when other clinical tests are deemed inconclusive) is radionuclide cerebral angiography [nuclide or radioisotope scanning]. A harmless radioactive dye is injected into the patient's blood-stem, typically through the intravenous tubing already in place. In brain-dead patients, scanning will reveal an abrupt cutoff of circulation below the base of the brain with no visible fluid draining away. While many observers have described this test as nearly 100% accurate, others have claimed the brain-stem circulation, especially in the medulla, is not well visualized and absolute absence of blood flow to this region cannot be diagnosed with certainty.¹¹

Note that a patient who is brain dead may theoretically continue to have muscle spasms or twitchings or even sit up. Whether this so-called Lazarus Reflex is an indicator of life will be discussed in due course; what is undisputed is that such movements are coordinated not from the brain, but solely from the spinal cord. It should also be noted that there are several instances of clinically brain dead patients carrying live babies to term.¹² Again, this may or may not be significant.

II. IS BRAIN DEATH AN ACCEPTABLE HALACHIC CRITERION OF DEATH?

The question breaks down into distinct issues. First, is irreversible dysfunction of the entire brain a valid criterion of death? Second, even if the answer is yes, are the medical tests currently utilized in establishing such a condition halachically valid indicators of its presence? One could easily subscribe to "whole brain" death as a concept and yet reject the particular diagnostic tools employed.

There are a number of halachic sources that are relevant to the question of "brain death", the most important being the Mishnah in Oholot 1:6, the Talmud in Yoma 85a, passages in Teshuvot Chatam Sofer and Teshuvot Chacham Tzvi, and various pronouncements of R. Moshe Feinstein in his Igrot Moshe.¹³ This is not the forum for a detailed examination of these sources other than to note that a number of them are equivocal and subject to a variety of interpretations.

Briefly stated, the Mishnah in Oholot establishes the dual propositions that, first, physical decapitation of an animal is a conclusive indicator of death and second, some degree of subsequent movement is not incompatible with a finding of death provided that such movement qualifies as spastic in nature (pirchis be'alma) like the twitching of the "severed tail of a lizard." The Talmud in Yoma 85a, dealing with a person trapped under a building, rules that a determination of respiratory failure establishes death without the need to continue to uncover the debris to check heartbeat. Proponents of "brain

death" argue that a dysfunctional brain-stem is equivalent to a decapitated one (physiological decapitation), that destruction of the brain-stem inevitably means inability to spontaneously respire (meeting the criterion in Yoma) and that subsequent "movement," whether the Lazarus Reflex or the heartbeat, falls into category of *pirchus* since such movement is not coordinated from a "central root and point of origin,"¹⁴ i.e., the brain.

The counter-arguments are: first, physiological dysfunction is not the equivalent of anatomical decapitation. The only phenomenon short of actual decapitation that might similarly qualify is total liquefaction (*lysis*) of the brain, something that probably does not occur until well after cardiac arrest. Second, according to Rashi in Yoma, cessation of respiration is a conclusive indicator of death only when the person is "comparable to a dead man who does not move his limbs." While certain forms of postmortem movement may be characterized as merely spastic and would not qualify as "movement," the rhythmic coordinated beating of the heart and the maintenance of a circulatory system can hardly be characterized as *pirchus* since such a heartbeat is life-sustaining and identical to that in a normally functioning individual. Reference is also made to the *teshuvot* of Chatam Sofer and Chacham Tzvi who both write that it is only the cessation of respiration and pulse (heartbeat) that allows for a determination of death and the Gemara in Yoma merely creates a presumption that upon cessation of respiration and an appropriate waiting time, one is permitted to assume that heartbeat has stopped as well. Since this assumption is obviously not true in the case of

"brain dead" patients hooked up to respirators whose heartbeats are monitored, such patients may not be declared as dead.

The position of R. Moshe Feinstein, whose psak could well have been definitive at least in the United States, is unfortunately a matter of some controversy. His son-in-law, Rabbi Dr. Moshe Tendler, a Rosh Yeshiva in RIETS and Professor of Biology, Yeshiva College, has vigorously argued the concept of decapitation in Mishnah Oholot.¹⁵ His position finds strong support in Igrot Moshe, Yoreh Deah III no. 132 which seems to validate nuclide scanning as a valid determinant of death. This is also the understanding of the Israeli Chief Rabbinate, R. David Feinstein (who admits, however, to having no inside information on the topic), and R. Shabtai Rappaport, the editor of R. Moshe responsa.¹⁶

Others, however, have interpreted his teshuvot very differently, pointing out that R. Moshe reiterated twice (indeed, in one instance two years after the "nuclide scanning" reference) that removal of an organ for a transplantation was murder of the donor.¹⁷ (R. Tendler's response: Both of those teshuvot refer to comatose patients in a persistent vegetative state who are capable of spontaneous respiration and are very much alive and not to those who are respirator-dependent.) They also cite R. Moshe's express opposition to proposed "brain death" legislation in New York unless it contained a "religious exemption."¹⁸ (R. Tendler's response: Although R. Moshe accepted the concept of "brain death," his support of an exemption was simply to accommodate the view of other religious Jews who disagree.) Finally, they

note that in the very teshuvah upholding the use of angiographic scanning, R. Moshe approvingly cites Teshuvot Chatam Sofer, Y.D. no. 338, who insists on absence of dofeik to breathe, and no other sign of life is recognizable with them (Vegam lo nikarim behem inynei chiyut achairim). Their conclusion: R. Moshe merely validated nuclide scanning as a criterion to verify one determination of death, i.e., absence of respiration, but did not maintain that it alone was sufficient.¹⁹ This author certainly lacks both the competence and the authority to resolve this dispute but presents it to the reader so that he may see why this area has been so fraught with unresolved controversy.

III. CONTEMPORARY VIEWS

The following is a cataloging of the major schools of thought among contemporary poskim and rabanim on the brain death issue and some of the recent events connected with this question.

1. As noted, Rabbi Dr. Moshe Tendler has been the most vigorous advocate for the halachic acceptability of brain death criteria. In his capacity as chairman of the RCA's Biomedical Ethics Committee, Rabbi Tendler spearheaded the preparation of a health-care proxy form that, among other innovations, would authorize the removal of vital organs from a respirator dependent, brain death patient for transplantation purposes. Although the form was approved by the RCA's central administration, its provisions on brain death were opposed by a majority of the RCA's own Vaad halakhah (Rabbis Rivkin, Schachter, Wagner and Willig).²⁰

2. The Israeli Chief Rabbinate Council, in an order dated Cheshvan 5747, has also approved the utilization of "brain death" criteria in authorizing Hadassah Hospital to perform heart transplants but on a somewhat different theory than Rabbi Tendler. Positing that cessation of independent respiration was the only criterion of death (based on Yoma 85 but somewhat inexplicably also citing Chatam Sofer, Y.D. no. 338), the Rabbinate ruled that brain death was confirmatory of irreversible cessation of respiration. Theoretically, this would allow for a standard far less exacting than clinical brain death, perhaps nothing more than a failure of an apnea test. Indeed, Dr. Steinberg, the principal medical consultant to the Rabbinate, dismissed any requirement of nuclide scanning since destruction of the brain's respiratory center may be conclusively verified without such a test.²¹ Since defining "death" exclusively in terms of inability to spontaneously respire would lead to the absurdity that even a fully conscious, functioning polio patient in an iron lung is dead, a subsequent communication from R. Shaul Yisraeli, a member of the Chief Rabbinate Council, qualified the Rabbinate's ruling by imposing, as an additional requirement, that the "patient be like a stone without movement"²² (but apparently maintaining that heartbeat does not qualify as such movement). It is probable, though not certain, that R. Tendler's test of "physiological decapitation" and the Rabbinate's newly formulated test of "respiratory failure coupled with profound nonresponsiveness" amount to the same thing though the Rabbinate has not retracted from its non-insistence on nuclide scanning.

3. Rabbi J. David Bleich, Rosh Kollel at Yeshiva University and author of many papers and a recently published book on the subject, has stated that anything short of total liquefaction (lysis) of the brain cannot constitute the equivalent of decapitation. He further maintains, relying on Rashi in Yoma, the Chatam Sofer, and the Chacham Tzvi, that even total lysis would be insufficient in the presence of cardiac activity but dismissed the matter as being only of theoretical importance since cessation of heartbeat inevitably occurs prior to total lysis. He also asserts that his position is not based on stringency in case of doubt but rather on the certainty that the brain death patient is still alive, a certainty that could be relied upon even to be lenient, e.g., a Cohen may enter a "brain dead" patient's room without violating the prohibition of tumat meit.

4. Rabbi Aaron Soloveitchik, Rosh Yeshiva of Brisk and RIETS, has done slightly further than Rabbi Bleich. Even if the heart has stopped and the patient is no longer breathing, the patient is alive if there is some detectable electrical activity in the brain.²³ It has been noted, however, that there is no recorded instance of this phenomenon occurring.

5. Rabbi Hershel Schachter, Rosh Yeshiva and Rosh Kollel of RIETS, has taken a more cautious view. Conceding that the concept of "brain death" may find support in the decisions of R. Moshe, he concludes that such a patient should be in the category of safeik chai, safeik met (doubtful life). While removal of organs would be prohibited as possible murder, one would also have to be stringent in treating the patients as met, e.g., a Cohen would not be allowed to enter the patient's room.²⁴

6. Most contemporary poskim in Eretz Yisroel (other than the Chief Rabbinate) have unequivocally repudiated the concept of death based on neurological or respiratory criteria.²⁵ Of special significance are letters²⁶ signed by R. Shlomo Zalman Auerbach and R. Yosef Elyashiv, widely acknowledged as the leading poskim in Eretz Yisroel (if not the world), stating that removal of organs from a donor whose heart is beating and whose entire brain including the brain-stem is not functioning at all is prohibited and involves the taking of life.

Unfortunately, these very brief communications do not indicate if the psak is based on vadei (certainty) or safeik (doubt) nor do they address what the decision would be in case of total lysis.

IV. HALACHIC AND LEGAL RAMIFICATIONS

Obviously, in a matter so fraught with controversy, every family confronted with the tragic situation of a brain death patient must follow the ruling of its posek. To the extent the patient is halachically alive, removal of an organ even for pikuach nefesh would be tantamount to murder. The principle of ain dochin nefesh mipnei nefesh- that one life may not set aside to ensure another life - applies with full force even where the life to be terminated is of short duration and seems to lack the meaning or purpose and even where the potential recipient has excellent chances for full recovery and long life. If, on the other hand, the donor is dead, the harvesting of organs to save another life becomes a mitzvah of the highest order. In light of the overwhelming opposition to the "brain death" concept, caution and a stance of shev v'al taaseh (passivity) appears to be the most prudent course. How the "brain death" problem will

play out in other areas such as inheritance, capacity of a wife to contract a new marriage, or the need for chalitzah if a man dies leaving a brain dead child will have to await further clarification.

There are, however, two other points that need to be considered. The argument is occasionally made if the halakhah rejects the concept of "brain" or "respiratory" death, Orthodox Jews would be unable to receive harvested organs on the ground that the recipient would be an accessory to a murder. As others have noted,²⁷ this conclusion does not follow. To the extent the organ in question would have been removed for transplantation whether or not this specific recipient consents, i.e., there is a waiting list of several people, the Orthodox recipient is not considered to be a causative factor (gorem) in the termination of a life. There is no general principle in halakhah that prohibits the use of objects obtained through sinful means. It is true that if, because of tissue typing and the like the organ is suitable for only one recipient and if that recipient declines the transplant, the organ will not be harvested, an Orthodox recipient may indeed be compelled to decline. But this is rarely, if ever, the case.²⁸

A second point: as noted, "brain death" is the legal definition of death in the vast majority of the United States. New York is the only state that requires medical personnel to make a reasonable effort to notify family members before a determination of brain death and to make "reasonable accommodations" for the patient's religious beliefs.²⁹ In all other jurisdictions, doctors would be empowered unilaterally to disconnect a patient from life-support mechanism

once that patient meets legal definition of death.³⁰ Hospital personnel may or may not defer to the wishes of the family but there is no duty on their part to do so or even to ascertain what those wishes are.³¹

Perhaps one point of consensus that may emerge in an area otherwise fraught with acrimonious controversy would be the desirability of enacting "religious accommodations" exceptions nationwide. After all, even the proponents of a "brain dead" standard understand that others, in all honesty and conscience, may hold a different halachic view, one which they should not be compelled to violate. Hopefully, our community will be responsive to such an effort.

V. CONCLUSION

"You preserve the soul within me and You will in the future take it from me " (Daily Prayers). Only God, Who is the source of all life, can take life away. We are enjoined to cherish and nurture life as long as it is present, no matter how fleeting or ephemeral. Yet it is precisely because each moment of life is so precious that God has imposed on man the awesome responsibility of defining the moment of death, the point after which the needs of the dead may, and indeed must, be subordinated to those of the currently living. No one has ever seen a neshamah leave a body and it is the unenviable task of our gedolim and poskim to tell us when this occurs. May Hakodesh Baruch Hu grant them the insight to truly make out Torah Torat Chayim.