

Medical Ethics: Updating the Determination of the Moment of Death

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Our agenda

For decades, medical researchers and legal experts have worked to define a reliable moment of death, for purposes including enhancing patient care and protecting medical resources. This past year has seen new efforts in this regard, in both Canada and the United States. How does Judaism define the moment of death, as it relates to contemporary medical care? And in particular, how does Judaism relate to the phenomenon of “partial resurrection” and its use in organ transplantation?

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Questions

- 1> How is the definition of death used in Canada and the US evolving?
- 2> Canada has now adopted brain death as the standard. What is the definition of death in Halachah?
- 3> A key point of conflict based on the revision: What is the status of patients whose organs have stopped functioning, if we are capable of reversing that stoppage?
- 4> A practical ethical question: May a Jewish anesthesiologist aid in thoracoabdominal normothermic regional perfusion to enable a heart transplant?

Approaches to Defining Life

1. Vaad Halacha of the RCA, Halachic Issues in the Determination of Death and in Organ Transplantation (2010)

https://www.rabbis.org/pdfs/Halachi_%20Issues_the_Determination.pdf

2. Max Koslov, *What does 'brain dead' really mean?*, Nature 7/11/23

Current legal definitions around the world generally allow for two types of death: when heart and respiratory function stop irreversibly, or when crucial functions of the brain are lost. Historically, these two have been closely entwined: stop the heart, and the brain is dead in minutes. Stop the entire brain functioning, and the heart stops beating. But medical advances in the 1950s, [such as modern ventilators](#), meant that the two types of death could be separated.

Such technologies, along with improved methods of measuring brain function, prompted the formation of a committee at Harvard University in Cambridge, Massachusetts, in 1968. The members [developed a definition of irreversible coma or brain death](#) that was controversial at the time.

3. *Rationale for revisions to the definition of death and criteria for its determination in Canada*, C. J. of Anesthesia 5/23

By the 1980s, the term “brain death” to describe the total loss of brain function had gained currency, and criteria for DNC were increasingly accepted by medical professionals. Yet, stimulated by the need for greater certainty in the face of variable practices and legislation governing death’s definition and determination, commissions in both the USA and Canada convened to determine whether a brain-based definition of death ought to be enshrined in law.

The 1981 US President’s Commission recommended that states adopt its proposed Uniform Determination of Death Act (UDDA), a statute describing legal death, to avert the uncertainty and inconsistency that would result if none were adopted. The commission did not recommend a unified brain-based definition of death, but instead confined its recommendations to the level of general physiologic standards for death determination.

The commission proposed that alternative circulatory/respiratory and neurologic standards ought to feature in the UDDA for two reasons. First, the projected incidence of neurologic death was low, meaning that the circulatory/respiratory

standard would remain adequate in the overwhelming majority of cases. Second, supplementing rather than supplanting the traditional cardiorespiratory approach to death determination was thought to be more acceptable from a societal perspective. Nonetheless, the authors of the report warned that “the use of two standards in a statute should not be permitted to obscure the fact that death is a unitary phenomenon.”

In contrast to the US President’s Commission, in 1981 the Law Reform Commission of Canada (LRCC) recommended that a single, unified, brain-based definition of death be enshrined in legislation. The commission averred that “a person is dead when an irreversible cessation of all that person’s brain function has occurred,” but allowed that this could be inferred based on either circulatory/respiratory criteria or, when organ-supporting technologies are in place, by neurologic criteria.

Despite strong endorsement by the Canadian Medical Association and a host of other medical professional organizations, Parliament did not follow the LRCC’s 1981 recommendation (although the Manitoba legislature did). This resulted in a patchwork of legal approaches in the common law and legislation governing death’s definition in the Canadian provinces and territories...

Currently, Manitoba, Newfoundland and Labrador, and Nova Scotia have legislated brain-based definitions of death. Manitoba’s Vital Statistics Act, for instance, states that “...the death of a person takes place at the time at which irreversible cessation of all that person’s brain function occurs.” In New Brunswick, the Northwest Territories, and Prince Edward Island, death is legally defined in terms of both brain-based and circulatory/respiratory criteria. In New Brunswick, for example, “the fact of death is determined in accordance with neurologic criteria, or ... by other criteria.” In all other provinces and territories, there is no legislated definition of death. In these jurisdictions, the legal definition of death has been developed through the courts, which have accepted both brain-based and circulatory/respiratory definitions. In most provinces and territories, organ and tissue donation legislation specifies that, for the purposes of organ donation, death must be determined “in accordance with accepted medical practice.”

The 1981 LRCC report noted that “criteria for the determination of death represent a very real and practical problem for many practicing physicians and hospital personnel,” and added that the issue was of concern to several other stakeholders, including medical institutions, professional medical and legal organizations, and the public. Indeed, pervasive confusion, ambiguity, and uncertainty concerning death’s definition and determination were the primary reasons for the report’s inception. Urging the federal government to ensure uniformity in legislation across provinces and territories, the report argued that a unified brain-based definition of death would provide the clarity sought by stakeholders.

The LRCC’s position concerning the benefits of uniformity is no less valid today than it was 40 years ago. Indeed, it is reinforced by continuing advances in medical technologies and increasing consensus on the centrality of brain function in law and medicine. The death of a person is an event with significant social and legal implications. It is confusing and inexpedient to have apparent variation on a fundamental point so central to societal and medical practices. As seen in the USA, variability may undermine public trust in the legitimacy of practices for death determination, particularly with regard to DNC in the context of organ donation. Setting aside the question of whether a brain-based definition of death ought to be uniformly enshrined in legislation, a unified brain-based definition within a nationally endorsed medical guideline will help to allay confusion by clarifying that, for the purposes of medical practice, all death is defined in terms of brain functions, and strengthen public confidence by promoting consistency across provinces and territories.

4. *A brain-based definition of death and criteria for its determination after arrest of circulation or neurologic function in Canada: a 2023 clinical practice guideline, Can. J. of Anesthesia May '23*

Death is defined as the permanent cessation of brain function (i.e., brain function is lost, will not resume spontaneously, and will not be restored through intervention) and is characterized by the complete absence of any form of consciousness (wakefulness and awareness) and the absence of brainstem reflexes, including the ability to breathe independently. This can result from cessation of blood circulation to the brain after circulatory arrest and/or from devastating brain injury. Residual brain cell activity that is not associated with the presence of consciousness or brainstem function does not preclude death determination (e.g., posterior pituitary antidiuretic hormone release, temperature control, or cellular-level neuronal activity). Death cannot be declared if there is any level of consciousness remaining and/or residual brainstem function regardless of how diminished.

5. Talmud, Yoma 85a, with Rashi

תנו רבנן: "עד היכן הוא בודק? עד חוטמו. ויש אומרים עד לבו..." אמר רב פפא מחלוקת ממטה למעלה [אם צריך לבדוק עד החוטם], אבל ממעלה למטה כיון דבדק ליה עד חוטמו שוב אינו צריך.

רש"י: עד היכן הוא בודק - אם דומה למת שאינו מזיז איבריו, עד היכן הוא מפקח לדעת האמת?

רש"י: מחלוקת דהנך תנאי, דמר אמר עד לבו, ומר אמר עד חוטמו, מלמטה למעלה שמוצאו דרך מרגלותיו תחלה, ובודק והולך כלפי ראשו, דמר אמר בלבו יש להבחין אם יש בו חיות, שנשמתו דופקת שם, ומר אמר עד חוטמו דזימנין דאין חיות ניכר בלבו, וניכר בחוטמו.

Our sages taught: How far does he check? To his nose. And some say to his heart... Rav Pappa said: There is debate when checking from the bottom up [as to whether one must check to the nose], but when starting from the top down, then once one has checked the nose, there is no further checking required.

Rashi: "How far does he check" – If the person appears dead, not moving, how far does one check to know the truth?

Rashi: The debate of these mishnaic authors, one saying until his heart, one saying until his nose, is from bottom to top, when one finds his feet first and one checks toward the head. One says we can determine life at his heart, for his soul beats there, and one says until his nose, as sometimes one cannot detect life at his heart, but it is detected at his nose.

6. Rabbi J. David Bleich, *Artificial Heart Implantation*, Tradition 22:2 (Summer '86)

The necessity for examination of the nostrils is based upon the assumption that it is possible for life to exist even though such life may be undetectable by means of examination of the chest for the presence of a heartbeat. Rashi succinctly comments that the first opinion maintains that examination of the chest is insufficient to determine whether or not life is present "for at times life is not evident at the heart but is evident at the nose."

7. Rabbi Moshe Feinstein (20th century USA), *Igrot Moshe Yoreh Deah* 2:146

...ברור ופשוט שאין החוטם האבר שהוא נותן החיות בהאדם, וגם אינו מאברים שהנשמה תלויה בו כלל, אלא דהמוח והלב הם אלו הנותנים חיות להאדם וגם שיהיה לו שייך לנשום ע"י חוטמו, ורק הוא האבר שדרך שם נעשה מעשה הנשימה שבאין ע"י המוח והלב, ואית לנו הסימן חיות רק ע"י החוטם אף שלא הוא הנותן ענין הנשימה, משום שאין אנו מכירים היטב בלב ובטבור וכ"ש שאין מכירין במוח

It is clear and obvious that the nose is not the body part that gives a person life, and it is not at all one of the body parts on which life depends. Rather, the brain and heart give life to a person, including [providing] the ability to breathe through one's nose. [The nose] is only the body part through which breathing happens, via the brain and heart, and we lack a sign of life other than via the nose – even though it is not the enabler of breath – because we cannot determine well via the heart or navel, and we certainly cannot determine the brain's function.

8. Mishnah, Oholot 1:6

אדם... וכן בהמה וחיה אינן מטמאין עד שתצא נפשם הותזו ראשיהם אף על פי שמפרכסים טמאין כגון זנב של לטאה שהיא מפרכסת:

Humans... as well as domestic and wild animals do not communicate *tumah* until their lives depart. If their heads are cut off, then they communicate *tumah* even if they still spasm, as in the case of a spasmodic [*mefarkesei*] tail of a lizard.

9. Rabbi Moses Maimonides (Rambam, 12th century Egypt), *Commentary to Oholot* 1:6

ויארע זה למקצת מיני בעלי החיים אם לא היה הכח המניע מתפשט בכל האברים מיסוד ומוצא אחד אלא יהיה מפולג בכל הגוף.

This occurs in some types of creatures, when the mobilizing force is not spread through all of the organs from a single foundation and source, but is scattered through the body.

10. Rabbi Dr. Edward Reichman, *The Halakhic Definition of Death in Light of Medical History*, Torah U'Madda Journal 4 (1993)

Although the Rambam refers to a central origin of movement, he does not reveal whether this origin is the brain, or the heart, or perhaps some other organ. From the Rambam's medical writings, however, it is clear what he believed to be the source of movement.

We have mentioned above the debate between Aristotle and Galen regarding whether the heart or the brain is the controlling center of sensation and movement. The Rambam explicitly addresses this controversy and supports the position of Aristotle:

I have prefaced [my remarks] with this introduction in order to stimulate you to [critically appraise even] a statement of the great sage Galen. You already know that his opinion is that there are three major organs, the heart, the brain, and

the liver, and that not one of these can receive its power from another organ under any circumstances. The opinion of Aristotle and his followers is, as you know, that there is a single main organ, namely, the heart, and the heart sends powers to each of the other organs and, with this power, the other organs perform their specific functions. Therefore, according to the view of Aristotle, the heart sends powers to the brain and with this power the brain performs its function, and it [in turn] gives sensation and movement to other organs. So too the powers of imagination, thought, and memory are powers that are brought into existence in the brain through the principle that the brain receives from the heart. Similarly, all other organs in the body contain the powers with which they perform their special functions. This [thesis of Aristotle] is correct and logical because the brain performs its functions, and likewise every organ performs its functions, and all [together] they constitute the total life situation of an individual. However, the heart sends the specific power of life to each organ.

11. Rabbi Dr. Moshe Tendler and Dr. Fred Rosner, *Definition of Death in Judaism*, JHCS #17 (1989)

Based on the position of Rav Moshe Feinstein cited above, Rabbi M. Tendler, one of the authors of the present essay, has introduced the concept of physiologic decapitation as an acceptable definition of death in Judaism even if cardiac function has not ceased. The thesis is: that absent heartbeat or pulse was not considered a significant factor in ascertaining death in any early religious source. Furthermore, the scientific fact that cellular death does not occur at the same time as the death of the human being is well recognized in the earliest biblical sources. The twitching of a lizard's amputated tail or the death throes of a decapitated man were never considered residual life but simply manifestations of cellular life that continued after death of the entire organism has occurred. In the situation of the decapitated state, death can be defined or determined by the decapitated state itself as recognized in the Talmud and the Code of Laws. Complete destruction of the brain, which includes loss of all integrative, regulatory, and other functions of the brain, can be considered physiological decapitation and thus a determinant per se of death of the person.

12. Talmud, Chullin 21a

נשברה מפרקת ורוב בשר עמה מטמא באהל.

If the neck and most of its flesh are broken, the body communicates *tumah* under the same roof.

13. Rabbi Moses Maimonides (Rambam, 12th century Egypt), *Laws of Shechitah* 3:19

נשברה מפרקת ורוב בשר עמה, או שנקרעה מגבה כדג, או שנפסק רוב הקנה או שניקב הושט בכל שהוא במקום הראוי לשחיטה, הרי זו נבלה מחיים...

If the neck and most of its flesh are broken, or its back is torn open as is done to fish, or most of its trachea is severed, or its esophagus is punctured in the spot that would be suitable for *shechitah*, this animal is considered to be a living corpse...

14. Vaad Halacha of the RCA, *Halachic Issues in the Determination of Death and in Organ Transplantation* (2010)

Given the fact that (Chullin 21a) does not bring up the question of whether respiration can be detected, it would seem that the most logical explanation would be that respiration was not checked for. It is for this reason that the (gemara) needs to stress that the person who has had these various injuries is considered dead, otherwise why look at the nature of the wound if he had clearly ceased breathing. This would seem to be consistent with the context of the סוגיא which is not speaking of a rescue mission or of a person who is otherwise actively involved with the body, but deals with a person who has encountered a possibly dead body by standing under the same roof (or perhaps by some other means of contact) and this person now needs to clarify his status for (the laws of ritual impurity). It would appear that the most logical explanation is that the examination has taken place from a distance where respiration could not be detected (even were it present), and the (gemara) still rules that if (the neck and most of its flesh are broken) has taken place it is safe to say the he is dead without any further examination.

15. Vaad Halacha of the RCA, *Halachic Issues in the Determination of Death and in Organ Transplantation* (2010)

Rav Mayer Twersky reports that he had conversations with his grandfather regarding "brain death". He says that the Rov insisted that it was a great ספק that he believed could not be resolved. He was not even sure if the גאון could be בעיניו were he alive today...

Rav Yitzchok Lichtenstein also had a number of conversations with his grandfather regarding "brain death" and transplantation, both before and after the date mentioned by Rav Twersky above. He, too, reports that the Rov viewed the matter as a great ספק, one that he was not even sure that the גאון could resolve. He mentioned that on more than one occasion, the Rov commented that he did not understand how anyone could think they could be מצריע this question and permit it.

16. Vaad Halacha of the RCA, Halachic Issues in the Determination of Death and in Organ Transplantation (2010)
While the Rabbanut did not take Rav Shlomo Zalman Auerbach's position into account in its deliberations, nevertheless, during the interview we discussed his view with Dr. Steinberg. Dr. Steinberg recognized that Rav Shlomo Zalman's opinion regarded the issue of "brain death" as one of ספק, thus not allowing for its use in the removal of organs for transplant. He was present at the "sheep experiment" which was done in order to answer questions that Rav Auerbach had raised. Dr. Steinberg did say that the results caused Rav Shlomo Zalman to reconsider these matters, but even after reconsidering, he left the matter a ספק and did not permit relying on "brain death." As Dr. Steinberg understands it, Rav Shlomo Zalman's reasoning is comprised of two points. Firstly, given that the patient is a גוסס and the tests are clearly not for his benefit, there is no permission to administer any such tests. Secondly, he insisted that if "brain death" were to be the criterion, it would have to entail the complete shutting down of the entire brain, meaning the death of each and every cell. Dr. Steinberg made it clear that in the standard medical definition of "brain death," even after "brain death" has taken place this does not mean that 100% of the brain has shut down, and even were that to be so, it is not possible to verify it.

Dr. Steinberg stated that he is troubled by the approach followed by Rav Shlomo Zalman requiring the death of each and every cell of the brain, since after all, even following the traditional standard of cardiac death there are certainly cells in the heart that remain alive.

Revision #2: From Irreversible to Permanent

17. Dr. Robert Veatch, *Donating Hearts After Cardiac Death – Reversing the Irreversible*, NE J of Medicine 359:7 (Aug '08)

Cardiac death also requires irreversibility. Since procurers of organs cannot legally remove them before the donor's death, they strive to minimize the time between asystole and pronouncement of death. The Pittsburgh protocol for the procurement of organs from adults after cardiac death, published in 1993, specified that asystole last 120 seconds, on the basis of the claim that auto resuscitation had never occurred after that...

The practice of donation after cardiac death has gained some acceptance, but only for organs other than hearts. There are controversial implications, however, if the goal is to transplant a heart after cardiac death. It is impossible to transplant a heart successfully after a reversible stoppage; if a heart is restarted, the person from whom it was taken cannot have been dead according to cardiac criteria. Removing organs from a patient whose heart not only can be restarted, but also has been or will be restarted in another body, is ending a life by organ removal. Of course, it would still be possible to pronounce such patients dead if they met the criteria for brain death, but according to this logic, it would simply not be possible to perform successful heart transplantation in a manner consistent with the dead donor rule after death pronounced on the basis of cardiac criteria.

18. *POINT: Does Normothermic Regional Perfusion Violate the Ethical Principles Underlying Organ Procurement? Yes*, Chest 162:2 (Aug '22)

In considering NRP, one must keep in mind that a declaration of death does not mean an individual is dead if the declaration is invalidated by subsequent action...

The Uniform Determination of Death Act (UDDA) defines standards for determining death as the irreversible cessation of circulatory and respiratory functions or of all brain functions, including the brainstem. Restarting circulation reverses what was just declared to be the irreversible cessation of circulatory and respiratory function. It is no defense to suggest the patient was already dead when the action negates the conditions upon which that determination was made. Although there has been debate about whether permanence is a better description than irreversible, resuscitation was intentional, and circulation is restored; the loss of circulation was neither irreversible nor permanent.

19. *COUNTERPOINT: Does Normothermic Regional Perfusion Violate the Ethical Principles Underlying Organ Procurement? No*, Chest 162:2 (Aug '22)

Irreversibility as defined by the Uniform Determination of Death Act specifically relates to the function of the organ within the person: "After an organ has lost the ability to function within the organism, electrical and metabolic activity at the level of individual cells or even groups of cells may continue for a period of time." During NRP-cDCD (normothermic regional perfusion with controlled donation after circulatory death), the organs' inability to function within the organism was confirmed with the determination of death. The ACP statement mistakenly applies a rigid and impractical conception of irreversibility to NRP-cDCD, without recognizing that the same conception would undermine most determinations of death. If we support determinations of death in accordance with accepted medical standards, then we should accept that NRP-cDCD respects nonmaleficence, because it causes no harm to individuals. NRP-cDCD can also best respect donor wishes by optimizing donor potential. To deny this opportunity by prohibiting NRP-cDCD would be harmful to the legacy of the donor.

20. *Thoracoabdominal normothermic regional perfusion in donation after circulatory death does not restore brain blood flow*, J. of Heart and Lung Transplantation 42:9 (Sept '23)

Use of thoracoabdominal normothermic regional perfusion (TA-NRP) during donation after circulatory death (DCD) is an important advance in organ donation. Prior to establishing TA-NRP, the brachiocephalic, left carotid, and left subclavian arteries are ligated, thereby eliminating anterograde brain blood flow via the carotid and vertebral arteries.

21. Joseph Goldstein, *When Does Life Stop? A New Way of Harvesting Organs Divides Doctors.*, NYT 11/22/23

The first problem, some ethicists and surgeons say, stems from the way death has traditionally been defined: The heart has stopped and circulation of blood has irreversibly ceased. Because the new procedure involves restarting blood flow, critics say it essentially invalidates the earlier declaration of death.

But that may be a minor problem compared to an additional step surgeons take: They use metal clamps to cut blood flow from the revived heart to the donor's head, to limit blood flow to the brain to prevent the possibility that any brain activity is restored. Some physicians and ethicists say that is a tacit admission that the donor might not be legally dead. "It's kind of a creepy thing to be doing," a longtime heart surgeon and transplant specialist, Dr. V. Eric Thompson, said at a recent panel discussion about the procedure at the Yale School of Medicine.

22. Henry Greely, *OrganEx: What Will It Mean?*, Amer J of Bioethics 22:11 (Nov '22)

In April 2019 Yale Professor Nenad Sestan's "BrainEx" experiments startled the world (Vrselja 2019). Four hours after pigs were decapitated, researchers perfused the pigs' brains using what they called "BrainEx," a machine that circulated a fluid made up mainly of a synthetic hemoglobin. Astoundingly, many of the cells in the pig brains "came back to life" even though conventional wisdom had been that brain cells die, irrevocably, after about ten minutes without oxygen. The researchers found no signs of organized neuronal firings, no pattern on an electroencephalogram ("EEG"), and concluded "This is not a living brain, but it is a cellularly active brain ... " (Thompson 2019)...

BrainEx was a sensation but Sestan's team has published nothing more about it and, after a few commentaries (Farahany, Greely, and Giattino 2019; Youngner and Hyun 2019), it quietly receded. In early August 2022, though, Sestan's team caused another big gasp with the publication of the results of its experiments with "OrganEx", using a similar device and fluid to BrainEx, but for the entire body, not just the brain (Andrijevic et al. 2022). In this experiment, pigs were anesthetized and then killed with induced cardiac arrest. After about an hour near body temperature, the dead pigs' blood vessels were filled with a perfusate similar to BrainEx's. And, like BrainEx, OrganEx worked, at least somewhat, attracting media attention and raising hopes, fears, and issues...

If OrganEx can revive many or most organs, but does not revive a dead brain, it cannot "bring people back to life." It can only, at most, turn cadavers into "life supported bodies," legally dead because of "irreversible cessation of all functions of the entire brain." That may help organ transplantation, but not resuscitation. But if it did lead to a recovery of some brain functions, it would bring the cadaver back to at least "legal" life. That would raise some questions about using OrganEx to sustain organs for transplant but intentionally preventing the OrganEx perfusate from reaching the brain. This may add to already existing questions about RNP (Parent 2022).

But then we would need to know “how much function”? To return complete, undamaged brain function would, of course, be (literally) wonderful. But taking a body dead of a heart attack or stroke for an hour and transforming it into a (living) person in a persistent vegetative state is not a clearly good thing. Family members and physicians will want to know how much, if any, return of what brain functions OrganEx would provide, or, at least, the probabilities of those outcomes...

If OrganEx became available for use for possible resuscitation, it might affect the definition of death, or, at least, the declaration of death. A body could have spent some time without circulatory, respiratory, or brain function and thus appear to be legally “dead”, in both traditional and neurological ways. But the law requires that such cessations be irreversible. Are they? If evidence from trials showed that OrganEx substantially increased the chance of circulatory or respiratory revival, but offered no hope any revived brain function, any “resuscitated” patients would still legally dead and the legal and policy questions are easier. But what if trial show that some of the bodies get back some brain functions? If so, could such bodies be declared dead without trying OrganEx on them (or, at least a clear decision not to try OrganEx)? Apart from the law, will families of recently deceased, and their doctors, feel compelled to try OrganEx for resuscitation?

23. *Rationale for revisions to the definition of death and criteria for its determination in Canada*, Can J of Anesthesia 5/23

Particularly with respect to death determination in the context of controlled organ donation after circulatory determination of death (cDCD), the meaning of the term “irreversible” in the formulation “irreversible cessation of cardiorespiratory function” has long been a source of controversy. This terminology features in the UDDA as well as previous Canadian guidelines for DCD. For normative reasons, there is a general willingness to accept that loss of circulatory function is irreversible when a legally and ethically valid decision has been made not to restore what is, in many instances, a biologically reversible function. Nevertheless, uneasiness remains in some quarters. In the context of DCD, clarifying that all death is defined in terms of brain function will merely shift the focus of concern from the technically reversible loss of circulatory function to the technically reversible loss of brain function. The proliferation of resuscitative techniques suggests that this will be a perpetual source of discomfort unless this controversy is addressed.

Accordingly, the language in the updated death determination guideline seeks to align with established practice. By replacing the term “irreversible” with “permanent,” the operational, brain-based definition of death acknowledges that death can be determined when functions could conceivably be restored in some circumstances. While “irreversible” means *cannot be reversed under any circumstances*, “permanent” means *will not resume spontaneously and will not be reversed through intervention for normative reasons*. In short, the updated definition of death explicitly clarifies that death can be determined when a legally and ethically valid decision has been made not to restore function even when this is technically feasible.

24. Rabbi Chaim Yosef David Azulai (18th century Israel, Italy), Birkei Yosef Even haEzer 17:1

ויש להסתפק אשת ר' זירא כי נשחט בעלה ומת, ודאי פקעי קדושיה והותרה לשוק, וכי חיה למחר ר' זירא היה צריך לקדש לאשתו קדושין חדשים, דפנויה היא... או דילמא הא דהאשה קונה עצמה במיתת הבעל, היינו דוקא כאשר מת ונשאר מת...

There is room for doubt: The wife of Rabbi Zeira, when her husband was slaughtered and he died, certainly her marriage ended and she was permitted to marry anyone. When Rabbi Zeira was revived the next day, he needed to perform a new kiddushin, for his wife was single... Or perhaps, the fact that a woman acquires freedom when her husband dies is only when he dies and remains dead...

25. Talmud Yerushalmi, Gittin 7:3

מהו שתהא מותרת לינשא? ר' חגי אמר מותרת לינשא, רבי יוסי אמר אסורה לינשא - אני אומר נעשו לו ניסים וחיה.

May she marry? Rabbi Chaggai said she may marry. Rabbi Yosi said she may not marry – I say perhaps miracles were performed for him, and he lived.

26. Rabbi Chaim Yosef David Azulai (18th century Israel, Italy), Birkei Yosef Even haEzer 17:1

נראה דהגם דבשמעו שמת לא חיישינן כלל למעשה נסים שיחיה, דזה לא שכיחא כלל... מ"מ למדנו מהירושלמי, דאם אחר שמת נעשו נסים וחי, אכתי אגידא ביה אשתו זאת, ולא מהניא לה מה שמת ודאי כיון דלבסוף חי...

Where we hear someone has died, we do not worry at all about a miraculous revival, for this never happens... But we learn from this Yerushalmi that if, after dying, miracles happen and he lives, his wife is still married to him, and his certain death does not matter, since in the end he is alive.

27. Rabbi J. David Bleich, *Artificial Heart Implantation*, Tradition 22:2 (Summer '86)

Similarly, when the halakhically posited criteria of death, including cessation of cardiac activity, are manifest but the patient is subsequently resuscitated it must be assumed that the patient was not dead during the intervening interval. See R. Moshe Sternbuch, *Kuntres Ba'ayot ha-Zman be-Hashkafat ha-Torah* (Jerusalem, 5729), chapter i, p. 9, and R. Shlomoh Zalman Auerbach, cited by R. Gavriel Kraus, *Ha-Ma'ayan*, Tishri 5729, p. 20. Thus, it is only irreversible criteria of death which establish that death has indeed occurred.

28. Melachim I 17:17-22

And after this, it happened that the son of the woman of the house fell ill, and his illness was very strong, to the point that no *neshamah* remained in him. And she said to Eliyahu, "What is between me and you, Man of Gd? You came to me to highlight my guilt and to kill my son!" And Eliyah said to her, "Give me your son." And he took him from her and he brought him up to the upper floor here he lived, and he lay him down on the bed. And he called out to Hashem, and he said, "Hashem, my Gd, have You also harmed the widow with whom I am staying, to kill her son?" And *vayitmodeid* upon the boy three times, and he called out to Hashem, and he said, "Hashem, my Gd, return now the *nefesh* of this child into him." And Hashem listened to the voice of Eliyahu and He returned the *nefesh* of the child into him, and he lived.

29. Rabbi David ibn Avi Zimra (16th century Spain/Egypt/Israel), *Radbaz* 6:2203

יש אומרים שלא מת ממש, והכי משמע מדכתיב "עד שלא נותרה בו נשמה." וכן נראה ממה שתרגם יונתן בן עוזיאל "לא יתבאש לה ולא ימות ברה," משמע שעדיין לא מת. והכי משמע נמי בסוף גדה דאיבעיא להו "בן השונמית מהו שיטמא," ומדלא איבעיא להו בבן הצרפית דקדים משמע דס"ל דלא מת. ואין דרך זה נכון כלל דכתיב "להמית את בני"...

Some say he did not actually die. So is implied by the text, "to the point that no *neshamah* remained in him." And it also appears so from the translation of Yonatan ben Uziel, "Do not harm her, and her son should not die," implying that he was not dead yet. And so is implied by Niddah 70b, where they ask, "Does the [revived] son of the Shunamitess communicate *tumah*." They did not ask this about the son of the Tzorfit, who was earlier, implying that they thought he did not die. But this is not at all correct, for she said, "to kill my son"...

30. Rabbeinu Yitzchak (11th-12th century France), *Tosafot* to Bava Metzia 114b

תימה לר"י היאך החיה בנה של האלמנה כיון שכהן היה דכתיב (מלכים א' יז) ויתמודד על הילד וגו' ויש לומר שהיה ברור לו שיחיהו לכך היה מותר משום פיקוח נפש.

The Ri is shocked; how did he resurrect the son of the widow, since he was a kohen? As it says, "And *vayitmodeid* upon the boy, etc.!" And one could say that it was clear to him that he would resurrect him, and therefore it was permitted as a life-saving action.