
International Guidelines for the Determination of Death

MAY 2012 MEETING
DEFINITION OF DEATH LITERATURE REVIEW

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1. INTRODUCTION

The shortage of transplantable organs is a global problem that is in urgent need of a coordinated, international response. The World Health Organization has charged nations to begin to address this serious medical health issue by, among other objectives, improving their national systems for both living and deceased donation. The ethical foundation for deceased donation is the dead donor rule, which states that “vital organs should only be taken from dead patients and, correlatively, living patients must not be killed by organ retrieval.”¹ Adhering to this rule necessitates establishing clear evidence and consensus-based medical criteria for determining death.

An enormous body of work has been completed over the last several decades to develop such criteria as well as the respective clinical tests required for their fulfillment. However, controversy and variability remain. The criteria and clinical tests are not standardized across countries or even across regions within countries. This situation has led to much debate in the medical literature as to whether patients who become organ donors after being declared dead in one country would not be declared dead in other countries or even in other regions of the same country. In response, meetings are being planned to bring together world experts in the fields of critical care medicine and organ donation research, with the primary goal of establishing an international consensus on the medical criteria and clinical tests required to determine death.

“Death is a rough marker for a complex biological event. Death is also an important marker in the social/ legal/political realm. And death indicates distinctions in the moral realm.”² Defining death is not a simple task, yet it is imperative that a uniform, medically and ethically acceptable definition of death be agreed upon prior to proceeding to the work required for consensus on the clinical criteria and medical tests to determine death. Consensus on an operational, medical definition of death will be one of the deliverables from the first stage of the project for a global consensus for the determination of death. In preparation, a review of the literature for the definition of death is required.

2. PURPOSE

To provide a comprehensive review of existing definitions of death contained in the position statements from various professional organizations in addition to the proposed definitions from peer-reviewed medical literature. This review will aid in the formulation of a proposed operational *definition of death* to be presented to the participants of the global conference, to be held in May 2012.

3. SCOPE

Peer-reviewed published literature and position statements of professional organizations (ICU, procurement, transplant, neurosciences, etc.) containing definitions of death. While focusing on death as a biological event, this review may also include ethics and law definitions as they also may be scientific in a nature. The review may include the criteria for death (however, this is NOT the focus of the review) that follow from the respective definitions of death but will not include the clinical tests for satisfying such criteria.

4. METHODS

- a. PubMed was used to perform a structured search of the medical literature for articles published up to January 2012. Relevant articles were retrieved and their reference lists scanned for other pertinent articles
- b. Google Scholar was also used to perform an unstructured search (environmental scan) of the internet for unrestricted, readily available, non-journal sources regarding policies, guidelines or positions statements that include definitions of death.
- c. In order to capture a wide scope of practice, searches targeted countries and professional organizations that are known globally for their involvement in organ donation. Though exhaustive, the above searches will be limited to English or French documents.

5. FINDINGS

The results of the literature search can be found in **Table 1**. It contains information from the documents that were retrieved upon completing the searches outlined in the METHOD section. Upon reviewing the definitions of death that have been proposed in the collected documents, it becomes clear that the definition of death should address the following question:

"What quality is so essentially significant to a living entity that its loss constitutes the death of that entity?"³

Also, according to Machado⁴, **"a definition of human death should include the function that provides the key human attributes and the highest level of control in the hierarchy of integrating functions within the human organism."**

The definitions contained in Table 1 have attempted to respond to this question. Generally, these responses fall into one of four categories:

1. Irreversible loss of functioning of the organism as a whole (NOT the whole organism) (also referred to as “whole brain” definitions). Examples of this type of definition are as follows:

“irreversible cessation of the integrated functioning of an organism as a whole”

“the permanent cessation of the *critical* functions of the organism as a whole”

2. Irreversible loss of the capacity for consciousness (also referred to as “higher brain” definitions”). Examples of this type of definition are as follows:

“loss of that which is considered to be essentially significant to the nature of man”

Consciousness is the essential characteristic of human beings.

“..as the irreversible loss of embodied capacity for social interaction.”

“total and irreversible extinction of consciousness and sensation, including discontinuation of actual survival of the individual personality”

“irreversible loss of awareness alone represents the loss of the person and signals human death”

3. A combination of 1 and 2. Examples of this type of definition are as follows:

“a person is dead when he/she has suffered an irreversible loss of all capacity of integrating and of coordinating the physical and mental functions of the body”

“irreversible loss of the capacity for consciousness, combined with the irreversible loss of the capacity to breathe”

“irreversible loss of the capacity for integrating the main human attributes with an integrative functioning of the body”

4. It is not possible to provide a definition of death. Examples include:

“...should rest on the currently applied criterion of irreversible (however defined) asystole, with the open admission that it does not define “death” but only a moment in the process of dying where organ retrieval can be allowed”

“...abandon the search for a definition of death and to focus on a pragmatic definition of “explantability window” which allows us to discuss when explanations can be realized without committing ourselves with strong metaphysical and/or religious beliefs”

“The protocol has chosen not to define death but to request that death should be properly established.”

Another important concept that needs to be addressed, and has been thoroughly discussed in the literature is whether death is a **process or an event**. While this topic is still debated, consensus appears to be that we should consider *dying* as a process and *death* as an event.

TABLE 1: DEFINITIONS

Medical/Professional Society/Organization	Year	Definition of Death	Notes
Bichat X. Recherches physiologiques sur la vie et la mort. ⁵	1880	The first attempts to define death as a phenomenon lasting a certain period of time were made by Xavier Marie Bichat in 1880, who defined life as persistent resistance to death. This definition is therefore based on the preservation of all physiological functions which are crucial for the existence of life. - “ex negativo,” definition	
Black's Law Dictionary (fourth edition, 1951) ⁶	1951	defines death as “ The cessation of life; the ceasing to exist; defined by physicians as a total stoppage of the circulation of the blood, and a cessation of the animal and vital functions consequent thereupon, such as respiration, pulsation, etc.”	Quoted in Havard doc
Anonymous. A definition of irreversible coma. Report of the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death ⁷	1968	“An organ, brain or other that no longer functions and has no possibility of functioning again is for all practical purposes dead. Our first problem is to determine the characteristics of a permanently nonfunctioning brain. death has occurred when the brain is “permanently nonfunctioning” ”	known as “whole brain death”

Medical/Professional Society/Organization	Year	Definition of Death	Notes
Declaration of Sydney, made at the 22 nd World Medical Congress, Gilder SSB. Twenty-second World Medical Assembly ⁸	1968	“A complication is that death is a gradual process at the cellular level, with tissues varying in their ability to withstand deprivation of oxygen. But clinical interest lies not in the state of preservation of isolated cells but in the fate of a person. Here the point of death of the different cells and organs is not so important as the certainty that the process has become irreversible by whatever techniques of resuscitation that may be employed. ”	This declaration effectively recognized death as a process ranging from individual cellular death through tissue and organ death and then death of the organism as a whole. After a threshold of irreversibility has been crossed, an observer does not need to wait to observe death of the entirety of an organism in order for the inevitable nature of death to be recognized. In other words, if key functions and systems were compromised, the organism would invariably die.
The Canadian Medical Association The Canadian Medical Association Statement on Death ⁹	1968	“The definition of death used in this statement is given in terms of cerebral function. ”	Statement is adapted from WMA (Sydney, 1968) “A complication is that death is a gradual process at the cellular level with tissues varying in their ability to withstand deprivation of oxygen. But clinical interest lies not in the state of preservation of isolated cells but in the fate of a person. Here the point of death of the different cells and organs is not so important as the certainty that the process has become irreversible by whatever techniques of resuscitation that may be employed.”

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<p>Capron and Kass A Statutory Definition of the Standards for Determining Human Death: An Appraisal and a Proposal University of Pennsylvania Law Review¹⁰</p>	<p>1972</p>	<p>“A person will be considered dead if in the announced opinion of a physician, based on ordinary standards of medical practice, he 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, based on ordinary standards of medical practice, he has experienced an irreversible cessation of spontaneous brain functions. Death will have occurred at the time when the relevant functions ceased.”</p>	<p>More like the criteria rather than a definition</p> <p>Recognizes death as a process: “Death of all parts of the body is a ‘continuum’, that is to say, a continuing process which goes on for some time after a human being is dead, and regarded as dead by any standards.”</p>
<p>Fletcher J. Indicators of humanhood. A tentative profile of man¹¹</p>	<p>1972</p>	<p>“determining the death phenomenon by the philosophy of negation, according to which the actual human life is determined by: consciousness and the ability of perception, ability of thinking, ability of justified action, ability to communicate, having a set of concepts, ability of self-control, understanding the past and the future, and the ability to make contacts. Therefore, the existence of a human person depends on the presence of the act of consciousness and the prevailing role of active cerebral cortex”</p>	

Medical/Professional Society/Organization	Year	Definition of Death	Notes
Veatch RM. Death, dying and the biological revolution: our last quest for responsibility ¹²	1976	“ loss of that which is considered to be essentially significant to the nature of man ”. Consciousness is the essential characteristic of human beings.	This definition has thus become known as the “ higher-brain formulation of death ”. Referenced by Laureys S. Science and society: death, unconsciousness and the brain ¹³
Australian Law Reform Commission Australian Law Reform Commission, ALRC 7. Report of the Law Reform Commission on Human Tissue Transplants ¹⁴	1977	A person has died when there has occurred: (a) irreversible cessation of all function of the brain of the person; or (b) irreversible cessation of circulation of blood in the body of the person.	Criteria more than a definition Recognizes death as a process
Korein J. The problem of brain death: development and history ¹⁵	1978	“ death occurs when the human body loses its ability to resist its entropy . This means that the thermodynamic system (human body) goes from one state of balance to another, without the interference of external factors, and its entropy always increases, which clearly defines the occurrence of death”	
Canadian Law Reform Commission Criteria for the Determination of Death - Protection of life Series ¹⁶	1979	"a person is dead when an irreversible cessation of all that person's brain functions has occurred" (p.58).	"Death is considered to be both the permanent and irreversible cessation of conscious and relational life of which the medical term is 'irreversible coma'." (p.57; cp. 5)

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Veatch RM. Defining death: the role of brain function ¹⁷	1979	<p>argued to include in the definition either of “capacity for consciousness or social interaction”, and presented a detailed discussion about “the functions considered to be ultimately significant to human life”: rationality, consciousness, personal identity, and social interaction.</p> <p>He concluded that death should be appropriately defined “as the irreversible loss of embodied capacity for social interaction”.</p>	Some authors have also advocated this definition as the “ loss of personhood ” ^{18, 19}
Walton, D On Defining Death. An Analytical Study of the Concept of Death in Philosophy and Medical Ethics ²⁰	1979	death in the secular sense alludes to “ total and irreversible extinction of consciousness and sensation, including discontinuation of actual survival of the individual personality, ”	Religious idea “postulates actual survival of the individual personality and continuation of post mortem consciousness and sensation”
Green MB, Wikler D. Brain death and personal identity ¹⁹	1980	<p>“irreversible loss of awareness alone represents the loss of the person and signals human death”.</p> <p>Loss of personal identity</p>	
B.C. Civil Liberties Association (view of the recommendations of the Canadian Law Reform Commission Criteria for the Determination of Death) ²¹	1981	<p>“death should not be redefined at all.”</p> <p>Disagree with def proposed by Canadian Law Reform</p>	State that for the time being should stick with Black’s Dictionary definition: The cessation of life; the ceasing to exist; defined by physicians as a total stoppage of the circulation of the blood, and a cessation of the animal and vital functions consequent thereupon, such as respiration, pulsation, etc.”

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J. L. Bernat, et al On the Definition and Criterion of Death ²²	1981	<p>“death [is] the permanent cessation of the functioning of the organism as a whole. We do not mean the whole organism....but rather the highly complex interaction of its organ systems.”</p> <p>“The functioning of the organism as a whole means the spontaneous and innate activities carried out by the integration of all or most subsystems....and at least limited response to the environment....”</p> <p>"that moment when the body's physiological system ceases to constitute an integrated whole."</p>	<p>Death is an event that separates the process of dying from disintegration</p> <p>they further specify the task of such a philosophical exposition by requiring that a definition of death (a) reflect what people ordinarily mean by the term, and be biologically based; (b) apply to all biological organisms, not just humans; and (c) be grounded in a properly scientific understanding of what it means for an organism to function as a whole</p>
President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research Defining death: A report on the medical, legal and ethical issues in the determination of death ²³	1981	<p>“irreversible cessation of the integrated functioning of an organism as a whole” –</p> <p>“when an individual’s breathing and circulation lack neurologic integration, he or she is dead”</p> <p>biological definition – Death is a process</p> <p>Also say: “...the collapse of psycho-physical integrity” – metaphysical concept - Death is an event</p>	Refer to Uniform declaration of death act: (1) Irreversible cessation of circulatory and respiratory functions, or (2) irreversible cessation of all functions of the entire brain, including the brain stem

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The Papal Academy of Sciences “Declaration about the artificial extension of the life and the determination of the moment of the death” ²⁴	1985	“a person is dead when he/she has suffered an irreversible loss of all capacity of integrating and of coordinating the physical and mental functions of the body.”	
Bartlett E, Youngner SJ Human death and the Destruction of the Neocortex, Death: Beyond the Whole-Brain Criteria ²⁵	1988	“..consciousness and cognition being the defining hallmarks of a human being...” Irreversible loss of consciousness critical loss is personhood	Because they answer the question, “What does it mean for a human being to die?” definitions of death are conceptual – i.e., primarily abstract and philosophical. Criteria set the general physiologic standards for determining whether death, as defined conceptually, has occurred.
Pallis C. Brainstem death. In: Braakman R, ed. Handbook of Clinical Neurology: Head Injury ²⁶	1989	“There is only one kind of human death: the irreversible loss of the capacity for consciousness, combined with the irreversible loss of the capacity to breathe (and hence to sustain a spontaneous heart beat)”	
Veatch RM Death, Dying, and the Biological Revolution. Our Last Quest for Responsibility (revised) ²⁷	1989	argued that human life ceases with a loss of autonomy as a person, death should be defined as “ the irreversible loss of embodied capacity for social interaction ”	“higher brain death”
Truog and Fackler Rethinking brain death ²⁸	1992	“death be re-conceptualized as the permanent and irreversible loss of consciousness,	“higher brain death”

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DeVita, M.A. and J.V. Snyder Development of the University of Pittsburgh Medical Center policy for the care of terminally ill patients who may become organ donors after death following the removal of life support. ²⁹	1993	No definition	
Koostra International Advisory Committee of the First International Workshop on Non- Heart- Beating Donors (NHBD) ³⁰	1995	No definition	
Spanish Consensus Document. Non-Heart-Beating Organ Donation ³¹	1996	No definition	<p>Refers to Uniform declaration of death act (UDDA)</p> <p>The death can be secondary to processes that lead primarily to complete and irreversible brain damage (brain death) or to processes that lead to cardiocirculatory arrest.</p> <p>The death diagnosis according to the cardiac criteria will be done according with the good medicine practice at the precise moment and fulfill the legal obligations</p>

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Bernat JL A defense of the whole-brain concept of death. ³²	1998	“the permanent cessation of the <i>critical functions of the organism as a whole</i>” Critical functions, according to Bernat, are functions that are “necessary for the maintenance of life, health, and unity of the organism.	
Machado C. Consciousness as a definition of death: its appeal and complexity ⁴	1999	“Irreversible loss of the capacity for integrating the main human attributes with an integrative functioning of the body”	States that “a definition of human death should include the function that provides the key human attributes and the highest level of control in the hierarchy of integrating functions within the human organism.” Defines each term of definition in article “consciousness does not bear a simple one-to-one relationship with higher or lower brain structures, and therefore, the higher brain formulation is wrong, because the definition (consciousness) does not correspond directly to the criterion (neocortex).” “term arousal when referring to those subcortical arousal-energizing systems, and awareness, to denote the sum of those complex brain functions, related to limbic and cerebrum levels” “there is no single anatomical place of the brain necessary and sufficient for consciousness”

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Institute of Medicine Non-Heart-Beating Organ Transplantation: Practice and Protocols ³³	2000		Refers to Uniform declaration of death act (UDDA)
John Paul II at the World Congress of Transplantologists in Rome ³⁴	2000	“death is a phenomenon consisting in complete dissociation of a closely connected whole, that is, a human person ”.	
Organ and tissue donation and transplantation (Update 2000) Canadian Medical Association ³⁵	2000	No definition	Made according to widely accepted guidelines established by expert medical groups.
Recommendations for nonheartbeating organ donation. A position paper by the Ethics Committee, American College of Critical Care Medicine, Society of Critical Care Medicine ³⁶	2001	No definition Accept use of “weaker” def of irreversibility	Two separate, complementary sets of criteria, one based on irreversible absence of circulation and respiration, and the other based on irreversible absence of whole brain function. Either is satisfactory for the determination of death before organ donation.
The Interpretation Act (2002 revision), Part 1, 2A. Criteria for determining death ³⁷	2002	Give criteria not definition of death	Criteria for determining death 2A. —(1) For all purposes, a person has died when there has occurred either — (a) irreversible cessation of circulation of blood and respiration in the body of the person; or (b) total and irreversible cessation of all functions of the brain of the person.
Health Council of the Netherlands New Options for Organ Donation ³⁸	2003	No definition	Irreversible circulatory arrest has been existing during at least five minutes. After this period all cerebral functions are irretrievably lost as well.

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Rhodes R Death and Dying ²	2003		“Death” is a rough marker for a complex biological event. “Death” is also an important marker in the social/ legal/political realm. And “death” indicates distinctions in the moral realm.
Zamperetti N et al Defining death in non-heart beating organ donors ³⁹	2003	Our proposal is that, for the time being, it should rest on the currently applied criterion of irreversible (however defined) asystole, with the open admission that it does not define “death” but only a moment in the process of dying where organ retrieval can be allowed.	
British Transplant Society BTS Guidelines relating to Solid Organ Transplants from Non-Heart Beating Donors ⁴⁰	2004	The Department of Health revised code of practice published in 1998 defined death as " the irreversible loss of the capacity for consciousness combined with irreversible loss of the capacity to breathe "clinician certifying death to be confident that an interval has elapsed without cardiac output that is long enough to ensure that hypoxic injury to the cerebral cortex and brain stem has occurred.
Park GR. Death and its diagnosis by doctors. ⁴¹	2004	“There is no legal definition of death in the UK; the law accepts the opinion of a suitably experienced, registered medical practitioner to say when a person is dead.”	“Death, often regarded as an event, is not one but rather a process. Loss of consciousness from cerebral hypoxia after cardiac arrest occurs in seconds. Other functions of the brain may take minutes to stop. Some organs may take hours to stop functioning while connective tissues can take days to die.”
American Medical Association Organ Procurement Following Cardiac Death, Amendment ⁴²	2005	Irreversible cessation of neurological or cardiopulmonary function.	

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Bagheri A Organ Transplantation Laws in Asian Countries: A Comparative Study ⁴³	2005	Definition of Death (not really a definition but criteria for determination) “All surveyed countries define cessation of the entire brain function, including brain stem, as human death except India, where the definition of death is based on the cessation of brain stem function. Japanese law introduces two alternative definitions for human death, giving the individuals the opportunity to choose a definition of death, either the traditional or the brain-based one based on their own views”	Countries surveyed were: Japan, Korea, India, Iran, Philippines, Saudi Arabia, Singapore, and Turkey. In July 2010 a revised version of the organ transplant law was enacted: “Japan legally, but not clinically, discarded its unique double standard definition of brain death, in which brain death constitutes death only when the patient has given prior written consent to be an organ donor and the family does not oppose the donation.” (Aita, 2011 ⁴⁴)
Swiss Academy of Medical Sciences Diagnostic de la mort dans le contexte de la transplantation d'organes ⁴⁵	2005	Par arrêt cardio-circulatoire persistant, on désigne une situation dans laquelle l'irrigation du cerveau est interrompue – ou compromise en cas de mesures de réanimation – pendant un intervalle assez long pour provoquer la défaillance irréversible du cerveau et du tronc cérébral et par là même la mort.	

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UK Intensive Care Society Guidelines for Adult Organ and Tissue Donation ⁴⁶	2005Death can be certified as usual by a registered medical practitioner following cessation of heart and respiratory activity. The doctor has to be certain that, in a normothermic patient, there has been inadequate circulation to the brain for long enough to ensure that there has been irreversible damage to the vital centres in the brain stem	
Shemie et al National recommendations for donation after cardiocirculatory death in Canada: Donation after cardiocirculatory death in Canada ⁴⁷	2006	No definition	...Cardiopulmonary criterion to prove the absence of circulation... Requires the determination of both cessation of functions and irreversibility
World Medical Association World Medical Association Declaration of Sydney on the Determination of Death and the Recovery of Organs Adopted by the 22nd World Medical Assembly, Sydney, Australia, August 1968, and amended by the 35th World Medical Assembly, Venice, Italy, October 1983, and the WMA General Assembly, Pilanesberg, South Africa, October 2006 ⁴⁸	2006	No Definition, just criteria	Determination of death can be made on the basis of the irreversible cessation of all functions of the entire brain, including the brain stem, or the irreversible cessation of circulatory and respiratory functions

Medical/Professional Society/Organization	Year	Definition of Death	Notes
Bacigalupo F et al The debate about death: an imperishable discussion? ⁴⁹	2007	“the cessation of the functioning of the organism as a whole.”	
Boniolo G Death and transplantation: let’s try to get things methodologically straight ⁵⁰	2007	<p>Proposes to “abandon the search for a definition of death and to focus on a pragmatic definition of “explantability window” which allows us to discuss when transplantations can be realized without committing ourselves with strong metaphysical and/or religious beliefs”</p> <p>“Explantability window refers to a given period of the human being after which the necrosis of the explantable organs begins. That is, one of the extremes of the explantability window has to do with the end of the so-called ‘resuscitation period’, that is, the period up to the point after which the ability to recover human bodies (and to utilise human organs) expires and the damage is irreversible. Instead the other extreme should concern the moment at which we are allowed to begin the explantation.”</p> <p>“Given a human being, if its particular state positively instantiates the empirical conditions C1, . . . , Cn, then it is in the so-called ‘explantability window’.”</p>	

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Cabrol C Prélèvements d'organes sur donneurs à coeur arrêté. Rapport: Académie Nationale de Médecin ⁵¹	2007		Refers to Protocol from Agence de la Biomédecine: «décret sur la mort par arrêt cardiaque et respiratoire persistant » ⁵²
Commission d'éthique de la SRLF Position de la Société de réanimation de langue française (SRLF) concernant les prélèvements d'organes chez les donneurs à coeur arrêté ⁵³	2007		Interruption de la perfusion sanguine cérébrale secondaire à l'arrêt cardiorespiratoire persistant... l'abstention de toute manoeuvre de réanimation pendant un temps suffisamment long pour interrompre la circulation sanguine cérébrale permet de s'assurer d'une destruction irréversible de l'encéphale et du tronc cérébral et la déclaration du décès.
Endorsement of the recommendations from the Canadian Council for Donation and Transplantation forum entitled, "Donation after Cardiocirculatory Death: A Canadian Forum (DCD)" Canadian Critical Care Society ⁵⁴	2007	No definition	Endorsed recommendations from Canadian forum: "Donation after Cardiocirculatory Death", 2006
Whetstine LM: Bench-to-bedside review: when is dead really dead—On the legitimacy of using neurologic criteria to determine death ⁵⁵	2007	Proposes an ontological definition based on loss of higher functions of consciousness, consistent with a loss of "personhood."	Consciousness may be regarded as the "state of awareness of self and the environment," and viewed as a combination of awareness and arousal.

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Academy of Medical Royal Colleges. A Code of Practice for the Diagnosis and Confirmation of Death. London ⁵⁶	2008	“Death entails the irreversible loss of those essential characteristics which are necessary to the existence of a living human person and, thus, the definition of death should be regarded as the irreversible loss of the capacity for consciousness, combined with irreversible loss of the capacity to breathe. ”	Death can be diagnosed when a registered medical practitioner, or other appropriately trained and qualified individual, confirms the irreversible cessation of neurological (pupillary), cardiac and respiratory activity. Diagnosing death in this situation requires confirmation that there has been irreversible damage to the vital centres in the brain-stem, due to the length of time in which the circulation to the brain has been absent.
Australian and New Zealand Intensive Care Society (ANZICS) The Anzics Statement on Death and Organ Donation ⁵⁷	2008	“Dying is a process rather than an event. The determination and certification of death indicate that an irrevocable point in the dying process has been reached, not that the process has ended”. death is defined in law – see Australian Law reform.	Criteria given: Irreversible cessation of all function of the brain of the person; or b) irreversible cessation of circulation of blood in the body of the person

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<p>The President’s Council on Bioethics. Controversies in the Determination of Death: A White Paper by the President’s Council on Bioethics⁵⁸</p>	<p>2008</p>	<p>Do not agree with wholeness being defined as an organism’s integrative capacity but rather describe “a more compelling account of wholeness”</p> <p>“Determining whether an organism remains a whole depends on recognizing the persistence or cessation of the fundamental vital work of a living organism—the work of self-preservation, achieved through the organism’s need driven commerce with the surrounding world. When there is good reason to believe that an injury has irreversibly destroyed an organism’s ability to perform its fundamental vital work, then the conclusion that the organism as a whole has died is warranted.”</p>	<p>‘fundamental vital work of a living organism – the work of self-preservation, achieved through the organism’s need-driven commerce with the surrounding world’ [page 60]</p> <p>They further explain that "the work of the organism, expressed in its commerce with the surrounding world, depends on three fundamental capacities."</p> <p>Three fundamental capacities are: (1) "openness to the world, that is receptivity to stimuli and signals from the surrounding environment," (2) "the ability to act upon the world to obtain selectively what it needs," and (3) "the basic felt need that drives the organism to act . . . to obtain what it needs."</p> <p>The Council focuses on breathing and consciousness as the two critical ways in which an organism conducts commerce with the environment.</p> <p>Refers to Uniform declaration of death act (UDDA)</p>
<p>World Health Organization⁵⁹</p>	<p>2008</p>	<p>None given</p>	<p>National authorities will set out the legal standards for determining that death has occurred and specify how the criteria and process for determining death will be formulated and applied</p>

Medical/Professional Society/Organization	Year	Definition of Death	Notes
C. Byk The European Protocol on Organ Transplant: Key Issues ⁶⁰	2009	The protocol has chosen not to define death but to request that death should be properly established. By focusing on the certification procedure, considering it is possible to certify death as it is possible to certify the safety of a biological product, European protocol is considering death on a technical issue and minimizes its socio-cultural approach.	“it is the responsibility of the State to legally define the specific procedure for the declaration of death while the essential functions are still artificially maintained”.
Downie J et al. Eligibility for organ donation: a medico-legal perspective on defining and determining death ⁶¹	2009	“the statutory definition of death should be the irreversible cessation of the functioning of the organism as a whole. ”	The key question is, “What makes this particular set of cells a singular organism as opposed to a mass of cells that happen to more or less adhere to one another?” “We would argue that, fundamentally, the answer to this question is the characteristic of control and coordination as it applies to an organism’s critical functions. The critical functions of human beings have been described as respiration and circulation, endocrine and homeostatic regulation, and consciousness. The irreversible loss of the control and coordination of all critical functions is therefore the necessary and sufficient condition for the conclusion that there is no longer an “organism as a whole””

Medical/Professional Society/Organization	Year	Definition of Death	Notes
Asai A et al Arguments Against Promoting Organ Transplants From Brain-Dead Donors, and Views of Contemporary Japanese on Life and Death ⁶²	2010	<p>“Kagawa states that the point we consider death is based not only on biological and scientific facts, but that the perceptions and views of human society also play an important role. He asserts that considering the arbitrariness of determining death, the assertion that the problem of death can be determined solely by science is itself unscientific.”</p> <p>“No matter what arguments we used or presented, we could not consider a person who has spontaneous circulation, maintains body temperature, and has digestive/excretory functions as deceased. Death and ‘being equivalent to death’ differ greatly in meaning. Therefore, with regard to the determination of death, self-determination by each individual should be respected, and brain death should be regarded as death only in exceptional cases for purposes of organ donation, as was the case with the old law.”</p>	This statement references another article in Japanese: C. Kagawa. 2009. Whose life is it? Tokyo: Keisho: 176–201

Medical/Professional Society/Organization	Year	Definition of Death	Notes
Nair-Collins M Death, Brain Death, and the Limits of Science: Why the Whole-Brain Concept of Death Is a Flawed Public Policy ⁶³	2010	Can't be defined	<p>“The biological concept of death involves the cessation of biological functioning; it is a technical scientific concept”</p> <p>“we can define “death” (the word), but not death (the event or phenomenon). Death, the biological event, can be explained, described, prevented, or caused, but it cannot be defined because it is not the sort of thing that has a meaning in the way that words do. Thus the phrases “the definition of death” and “defining death” are senseless.</p> <p>“By confusing “death,” the word to be defined, with death, the phenomenon to be explained, we bring properties of definitions to bear in our attempts to explain the mind-independent phenomenon.”</p> <p>“But, with respect to biological death, it is not primarily a (mind-dependent) definition that we are after; it is a description and explanation of the mind-independent biological phenomenon.”</p>

Medical/Professional Society/Organization	Year	Definition of Death	Notes
Shah et al Legal fictions on death determination ⁶⁴	2010	Should not attempt to define beyond stating criteria	<p>“The fact that we have been struggling with defining death since at least 1968 and have been unable to square all of the facts about life with our definition of death suggests that the goal of defining death beyond the traditional circulatory and respiratory criteria is doomed to fail.</p> <p>Treat definitions as transparent legal fictions</p> <p>Instead of describing a person as dead, they would note that once a person has been diagnosed with total brain failure, the law will treat that person as if he were dead.</p> <p>"total brain failure" is not actually death, but that it counts as being legally dead and makes vital organ donation appropriate because it is a state in which there is no chance of recovery of consciousness and the ability to interact with others</p>

Medical/Professional Society/Organization	Year	Definition of Death	Notes
Souter and Van Norman Ethical controversies at end of life after traumatic brain injury: defining death and organ donation ⁶⁵	2010		<p>“As simple as the concept of death as an opposite of life might seem, death has proved surprisingly elusive for anyone to truly define. Is human life simply a biological state? Some describe death as a process or continuum of cellular death, which progresses in complex organisms from the death of a few cells to the increasing death and disintegration of many, until all of the organism’s cells have ceased to function. Some have defined death as the point at which a complex organism is no longer integrated as a whole.”</p> <p>“Followers of religions like Zen Buddhism and Shintoism, for example, believe that the mind and body are integrated and that death must include both.”</p> <p>“Some Native Americans and certain Orthodox Jews, Muslims, and Christians believe that, as long as a heart is beating even artificially a person is still alive.”</p>

Medical/Professional Society/Organization	Year	Definition of Death	Notes
Bedir A, Aksoy S. Brain death revisited: it is not 'complete death' according to Islamic sources ⁶⁶	2011	“Accordingly, death etymologically means separation of the soul from the body ”	They quote: Qayy^im al-Jawziyyah Ibn, Muhammad B, ed. Ab^u Bakr Shif^a’ al-’Alil lby Muhammad Bedruddin. Beirut: Da^r al-Fikr, 1398 AH: 92. [in Arabic]. Nawawı ^A, Abu^ Zakariya Muhyiddin Yahya B. Sharaf al-Majmu^’ Sharh al-Muhazzab, Vol. 5. Beirut: Da^r al-Fikr, 1996:94. [in Arabic].
Dubois JM Dead tired of repetitious debates about death criteria ⁶⁷	2011	“We observe, for example, that death is a state of a once-living organism in which the central vital functions are absent ; when the absence is permanent, someone is ready to be pronounced dead. (Before it is permanent, we call them “clinically dead.”)	
Kusza et al The Issue of Death and End of Life ⁶⁸	2011	According to the classical definition of death, it occurs at the time of confirming definitive termination of respiration and cardiac arrest, resulting in death of a human as a whole. The classical definition of death does not mean death of all cells of the body, when death of the whole human could be concluded.	From the biological and medical point of view, we are sure that death is a process occurring in time, and it results from primary disintegration of vital processes; on the other hand, however, this disintegration accelerates and intensifies the dying process, secondarily to the primary event. The individual physiological functions of the organs are first disrupted in the form of partial failure, progressing to complete loss of function of a given organ. (From refs 15, 16, 19-21)

Medical/Professional Society/Organization	Year	Definition of Death	Notes
Gardiner D et al. International perspective on the diagnosis of death ⁶⁹	2012	“Death can be considered in terms of medical, legal, ethical, philosophical, societal, cultural, and religious rationales. The medical definition of death is primarily a scientific issue based on the best available evidence. There is growing consensus that there is a unifying medical concept of death; all human death is anatomically located to the brain. That is, human death involves the irreversible loss of the capacity for consciousness, combined with the irreversible loss of the capacity to breathe. These two essential capacities are found in the brain, particularly the brainstem, and represent the most basic manner in which the human organism can sense and interact with its environment.”	
Randhawa G. Death and organ donation: meeting the needs of multiethnic and multifaith populations ⁷⁰	2012	“All main UK faiths, with Christian–Jewish routes, and those from the Indian subcontinent consider the human heart beat, or lack of, as clear signs of life and death. While some faiths will accept additional definitions used to define a person has died, others are uncertain. Therefore, defining death with a definition of brain-stem death has, in some faith groups, led to considerable debate and remains contested by faith leaders.”	Focused on criteria rather than definition
Oxford DictionaryOnline ⁷¹	2012	“the end of the life of a person or organism”	

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