

# Harvard Brain Death Criteria and Organ Transplantation: A Historical Revisit

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## Introduction

It has been over forty years since the Harvard Medical School issued their landmark article proposing the criteria for brain death. These criteria were quickly accepted in the United States and rest of the world as a valid means by which to determine the death of patients on ventilators with mechanically sustained cardiac and pulmonary functions<sup>1</sup>. However, criticism and objections in scientific, bioethical and religious communities were not lacking. In recent years, the debate has generated numerous discussions, studies and publications<sup>2</sup>.

On the one hand, some authors maintain that the Harvard committee was primarily, if not exclusively, interested in defining death in such a way to avail organs for transplantation. In other words, perhaps the committee members were not truly interested in determining if these patients were truly dead, but “invented” the new criteria of brain death so that organs could be obtained without legal consequences or public outcry. This objection has often been raised by bioethicists, neurologists and pro-life groups as an intuition.

On the other hand, a majority of the scientific community defends the legitimacy of the neurological criteria of death: «From a clinical point of view, almost the whole of the medical community agrees that the concept of brain death as death should not serve an ulterior purpose (specifically: organ transplantation). Indeed, the ascertainment of brain death, which in historical terms was the result of the independent study of the brain, preceded the first transplantation pro-

cedures and thus was (and therefore is) unconnected with the related subject of transplants»<sup>3</sup>.

This article will examine the claims offered by both sides by looking at historical studies on the relationship between brain death definition and organ transplantation, either establishing such a link or rejecting it. In the last section, the role of Henry Beecher as the Committee chairman will be highlighted to put this debate in a proper perspective. Beecher is widely known for his role as a whistleblower of unethical experimentations on human subjects in the 1960s. His concerns for ethical behavior for scientists and physicians had an important impact on the Harvard committee, a role which has often been ignored.

## *Struggles with the Irreversibly Comatose*

At the beginning of the last century, there were reports of cases of increased intracranial pressure provoking respiratory arrest in patients whose heart function was nonetheless preserved. With the discovery of the electroencephalogram (EEG) in the 1930s, it was possible to postulate the cessation of brain functions in some comatose patients with a beating heart<sup>4</sup>. The advance of intensive therapy and the ventilator in the 1950s produced a new class of patients who continued to maintain respiratory and cardiac functions but had very little or no detectable neurological activities. Physicians were wondering whether these patients were dead, and if so, would it be legitimate to discontinue the ventilators.

These thorny questions were eventually posed to Pope Pius XII by a group of anesthesiologists in 1957. They raised the following questions:

- 1) Is there an obligation to apply artificial respiration in all cases, even if the doctor considers it useless?
- 2) Is there a right to discontinue the respirator when profound unconsciousness persists after a few days and the patient would enter cardiac arrest when this is done?
- 3) Is a patient in a state of unconsciousness due to central paralysis for several days without getting better, whose life is maintained by artificial respiration, considered dead “de facto” or “de iure”? Or must one wait until the circulation ceases to consider the patient dead in spite of artificial respiration?

To the first two questions, Pius XII reiterated the traditional distinction between ordinary and extraordinary care. While ordinary care is always obligatory, it is licit to discontinue extraordinary care, such as artificial respiration, when the burden is considered onerous on the patient and the family. Discontinuation of treatment in these instances is not the same as direct attempt on the life of the patient or euthanasia. In these cases, one can apply the principle of double effect since interruption of treatment indirectly causes death. As to the third question, Pius XII left the question open, stating that the determination of the moment of death lies within the competence of medicine, not of the Church. He provided a principle, however, that in general life continues until one’s vital functions, and not one’s life organs, ceases<sup>5</sup>.

Meanwhile, in 1959, two French physicians Mollaret and Gouion were the first to describe the brain death syndrome which they called *le coma dépassé* or “beyond coma”<sup>6</sup>. In the same year, another group of researchers headed by Wertheimer characterized the “death of the nervous system”<sup>7</sup>. In spite of these descriptions, there was little consensus on how to define this peculiar condition. The 1960s were plagued by intense debates regarding the neurological definition of death. The Ciba Foundation organized a

symposium in 1966 involving a multidisciplinary group of experts from Europe and the United States to discuss the issue. Two years later, the Medical Ethics Committee of the World Medical Association met in Sydney, Australia, and also came up with a declaration of brain death around the time of the Harvard Report<sup>8</sup>.

As organ transplantation became increasingly successful, it was associated with the question of brain death<sup>9</sup>. The first renal transplant from a cadaveric donor took place in 1933, but it ended in failure. In 1954, Joseph Murray and John Merrill performed the first successful kidney transplant between identical twins<sup>10</sup>. Eight years later, they successfully transplanted a kidney obtained from a subject considered dead with characteristics similar to the future Harvard definition<sup>11</sup>. South African surgeon Christiaan Barnard performed the first successful heart transplant in 1967, using the heart of a donor considered dead according to traditional cardiopulmonary criteria.

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#### *The Harvard Ad Hoc Committee*

As the controversies continued to mount, Henry Beecher wrote a letter to Harvard’s Medical School Dean Robert Ebert in 1967 with a proposal to study the issue of “irreversible coma” and provide guidelines. Ebert agreed and formed the ad hoc committee which consisted of the following thirteen members: Henry Beecher (anesthesiologist and chairman of the committee), Joseph Murray (plastic surgeon involved in transplantation), Robert Schwab (neurologist), Raymond Adams (neurologist), Clifford Barger (physiologist), William Curran (law professor), Derek E. Denny Brown (neurologist), Dana Farnsworth (professor in public health), Jodi Folch Pi (biochemist), Everett Mendelson (historian), John Merrill (transplant nephrologist), William Sweet (neurosurgeon) and Ralph Potter (social ethics

professor of Harvard Divinity School). Many of the members were staff either at the Harvard University or the Massachusetts General Hospital (MGH).

The committee took less than six months to finalize the Report, after working through six drafts. The principle authors were neurologists Adams and Schwab. Among the members of the committee were two transplant surgeons – Murray and Merrill who were pioneers in the field and performed the first successful kidney transplants. All members were able to comment on the drafts, and a majority of these communications was preserved as the *Beechers papers*<sup>12</sup>. The three-page article entitled “A Definition of Irreversible Coma: Report of the Ad

Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death”, was published on August 5, 1968<sup>13</sup>.

The two reasons given for the need for a definition of brain death were:

1) Improvements in resuscitative and supportive measures have led to increased efforts to save those who are desperately injured. Sometimes these efforts have only partial success so that the result is an individual whose heart continues to beat but whose brain is irreversibly damaged. The burden is great on patients who suffer permanent loss of intellect, on their families, on the hospitals, and on those in need of hospital beds already occupied by these comatose patients.

2) Obsolete criteria for the definition of death can lead to controversy in obtaining organs for transplantation<sup>14</sup>.

The next section provides the relatively simple guidelines to characterize the syndrome. They require the presence of: 1) unreceptivity and unresponsivity, further qualified as “total unawareness of externally applied stimuli”; 2) no movements or breathing with possible confirmation with the apnea test; 3) no [brainstem] reflexes; and 4) flat electroencephalogram as an optional confirmatory test. In addition, the Report stipulates that

all the aforementioned tests are to be repeated in 24 hrs and without change. In addition, the presence of hypothermia or central nervous system depressants must be excluded. These criteria were by no means original, as other groups or authors have proposed something akin to them in the past<sup>15</sup>. A section on the legal aspects of brain death follows, mostly penned by the law professor William Curran of the group. It reiterates the common practice in the United States where determination of death has always been the exclusive competence of the physicians, citing two court cases to bolster the claim. Since this prerogative remained with the medical profession, the new criteria of brain death should not cause major legal problems. It also recommends that physicians who pronounce death should be distinct from those in the transplantation team. A final comment cites the aforementioned message of Pius XII in 1957. Since the determination of the moment of death is not “within the competence of the Church,” the Report infers that the medical community rightly has this responsibility. It also paraphrases the papal allocution, stating that “extraordinary means are not obligatory in hopeless cases” to justify withdrawal of respiratory assistance in brain dead individuals<sup>16</sup>.

#### *Criticisms of the Brain Death Criteria*

Even though the Harvard Report received wide international acceptance at the practical level since its publication, there are a good number unconvinced by its reasoning, including bioethicists the like of Hans Jonas, Paul Ramsey, Peter Singer and Robert Veatch<sup>17</sup>. We will now analyze some of the most common complaints to explore the relationship between brain death and facilitation of organs for transplantation.

#### *Utilitarian goals*

The first and most serious of the accusations is that the Harvard committee had purely utilitarian goals in mind when they defined

*The determination of the moment of death lies within the competence of medicine, not of the Church*

brain death. It was done out of expediency to preempt possible negative legal challenges of “killing” those who were not really dead, and secondly, to procure organs from them<sup>18</sup>. These authors find no real urgency in rushing into this definition. They did not find evidence of countless brain dead individuals occupying valuable bed-space and draining available resources<sup>19</sup>. However, Gary Belken demonstrated that at MGH where Beecher worked, there was a real concern of bed shortage due to a six-fold increase in the number of “hopelessly comatose” patients within a decade<sup>20</sup>.

There are certain correspondences found in the *Beecher’s papers* that seem to validate this accusation of a hidden agenda. Here are some examples:

1) In a letter dated October 30, 1967 by Beecher to Harvard Medical Dean Ebert proposing the formation of the group, he wrote, «The time has come for a further consideration of the definition of death. Every major hospital has patients stacked up waiting for suitable donor[s]»<sup>21</sup>.

2) In the letter of Ebert to Murray on January 4, 1968 convoking the ad hoc committee, a reason given for the need of brain death definition was transplantation: «Dr. Beecher’s presentation re-emphasized to me the necessity of giving further consideration to the definition of brain death. As you are well aware, many of the ethical problems associated with transplantation and other developing areas of medicine hinges on appropriate definition. With its pioneering interest in organ transplantation, I believe the faculty of the Harvard Medical School is better equipped to elucidate this area than any other single group»<sup>22</sup>.

3) In an earlier draft of the Report dated April 11, 1968, the conclusion mentioned a link with organ donation: «The question before this committee cannot be simply to define brain death. This would not advance the cause of organ transplantation since it would not cope with the essential issue of when the surgical team is authorized – legally, morally, and medically – in removing vital organ...»<sup>23</sup>.

4) In the draft of June 3, 1968, a similar statement can be found: «With increased experience and knowledge and development in the field of transplantation, there is great need for the tissues and organs of the hopelessly comatose in order to restore to health those who are still salvageable»<sup>24</sup>.

5) Ebert found the final draft’s reference to organ transplantation too explicit and asked for rewording. This has been seen as a manoeuvre to disassociate the two issues out of political savvy: «The connotation of this statement is unfortunate, for it suggests that you wish to redefine death in order to make organs more readily available to persons requiring transplants. Immediately the reader thinks how this principle might be abused... Would it not be

better to state the problem, and indicate that obsolete criteria for the definition of death can lead to controversy in obtaining organs for transplantation?»<sup>25</sup>.

6) Transplant surgeon Murray suggested replacing the words “irreversible coma” and “brain death” with just plain old “death” in the drafts. Even though this did not make it to the final draft, his effort has been interpreted as an attempt to facilitate organ for transplants»<sup>26</sup>.

7) The Report gave as one of the two reasons for brain death criteria as avoiding “controversy in obtaining organs for transplantation”. In spite of scarce reference to transplantation in the Report, this is seen as evidence to intentionally downplay its link with brain death.

To be fair, there are also important passages in the *Beecher papers* and personal interviews that show the contrary position:

1) Beecher initial letter inviting Ebert to form the group contained these words: «As I am sure you are aware, the developments in resuscitative and supportive therapy have led to many desperate efforts to save the dying patient. Sometimes all that is rescued is a decerebrated individual. These individuals are increasing in numbers over the land

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and there are a number of problems which should be faced up to»<sup>27</sup>.

2) Murray's response to Beecher on the invitation revealed organ transplantation as a secondary concern: «The subject has been thoroughly worked over in the past several years, and by now areas for action are crystallized into two categories. First is the dying patient, and the second, distinct and unrelated, is the need for organ for transplantation. The first problem requires merely a definition of death... When to declare death is a problem to be solved whether or not organ transplantation follows. The second question regarding organs for donation is really simple. Once the patient is dead, the legal mechanism then applies»<sup>28</sup>.

*The most serious of the accusations is that the Harvard committee had purely utilitarian goals in mind when they defined brain death*

3) Murray, recalling the dilemma facing transplant surgeons, wanted to protect the profession with some sort of criteria. He stated in a personal communication that the definition of brain death “would take the burden

off him and others,” and that “we did not want to do anything wrong.”<sup>29</sup>

4) Wijdicks concludes that the roles played by the transplant physicians on the committee were marginal. Their commentaries made no significant changes on the substance of the Report. Even Murray's doubts on the choice of terminology of “death” over those of “brain death” and “irreversible coma” were «enlightening but suggest no link between the committee's work and transplantation»<sup>30</sup>.

5) The comment of Adams to the final draft Beecher sent him revealed the two concerns as separate: «I object to using the need of donor organs as a valid argument for redefining cerebral death. This is another problem though one which is influenced by our definition»<sup>31</sup>.

6) Wijdicks interviewed committee members Adams, Potter and Murray and they all denied that «transplantation was implicit in their deliberations»<sup>32</sup>.

7) Likewise, Belkin interviewed committee

members Adams, Sweet, Mendelsohn, Murray and Robert Young (who sat in for Schwab while he was recovering from a heart attack). All denied facilitating organs was a concern of the committee, except for Sweet<sup>33</sup>.

8) Former MGH Medicine Chair Leaf recalled of Beecher: «He would have been the last person to have felt that one was doing this [defining brain death] to go in and get organs»<sup>34</sup>.

Thus, there is equally strong evidence to show that formulation of brain death criteria was not motivated by organs availability, except as a secondary concern. As Belkin argues, the implication that there was a utilitarian agenda «would be a very superficial picture drawn from relatively scant clues when seen in the larger context and the actual writing of the Report»<sup>35</sup>. A clearer picture will emerge when we analyze Beecher's thinking in light of his ethics of human experimentation.

#### *Lack of scientific rigor*

Other writers find the brain death formulation arbitrary, predetermined by the agenda to maximize organ availability. They deem the Report insufficiently rigorous as a scientific paper because of the lack of supporting references (there were no scientific citations; only the address of Pius XII was cited). In fact, the rush to finish the Report in less than six months is a proof of sloppiness and opportunism.<sup>36</sup> They complain that the committee presented the criteria as if they were totally original, when in fact they have already been conjectured and applied in the past. Their decision to make EEG optional was also seen as an ulterior motive to facilitate organs retrieval since many hospitals at the time did not have access to this technology. In the words of Giacomini, «A redefinition of death based purely on the interests of the irreversibly comatose and their families, or on the diagnostic capacities of the EEG, or on the need to conserve life support resources, may have produced a somewhat different syndrome

than the brain death criteria defined by Harvard in 1968. The Committee's concern for organ procurement led it to make several specific modifications in its work and its statement. The criteria were deliberated within a very short time frame... Clinical criteria themselves were modified... [It] excluded special administrative procedures that could suggest that diagnosis was uncertain... Even the decision to call the syndrome "death" rather than merely "irreversible coma" was swayed by the requirements of transplantation»<sup>37</sup>.

In response to these formidable critiques, Belkin and others note that committee members who drafted and commented on the Report were in fact renowned experts in the field. Adams, Merrill and Murray were aware of the French paper on "coma dépassé," even though they did not use it as a template of their drafts<sup>38</sup>. Neurologists Schwab and Adams who penned the manuscripts were extremely knowledgeable on neurophysiology, consciousness, and the interpretative values of the EEG. They had previously published their findings in reputable scientific journals. It is certainly true that others have applied similar criteria to pronounce death of patients on ventilators before 1968.

However, the committee faced difficulties in translating this theoretical knowledge to bedside determination with a formulation that is both simple and accurate. Even though there was initial enthusiasm on the role of EEG in diagnosing brain death, it was eventually abandoned because of difficulties at the practical level of interpretation<sup>39</sup>. The novelty of Harvard criteria lies precisely in combining the theories of neuroscience with applicability at the bedside<sup>40</sup>.

Wijdicks concludes that despite the brief time it took to finish the draft, it is unlikely that more deliberations would have made additional contribution<sup>41</sup>. The lack of footnotes in the Report indicates more the consensus statement of a working group seeking to provide guidelines rather than deliberate scientific sloppiness.

A number of writers have criticized the Report for its lack of philosophical analysis to justify equating irreversible coma with death<sup>42</sup>. Despite the fact that there were previous discussions on the conceptual problem of brain death, such as the Ciba conferences, the committee did not take them into account. Martin Pernick writes: «Henry K. Beecher favored brain-based criteria for diagnosing death, not primarily to resolve conceptual uncertainties about the meaning of death, but to solve several practical problems he attributed to new technologies, particularly organ transplantation and respirators»<sup>43</sup>.

This is not totally fair criticism because Murray, one of the committee members, was an active participant in the Ciba conferences<sup>44</sup>. Perhaps, there is more to the story than the committee's apparent "pragmatic" approach and lack of attention to the philosophical underpinnings of brain death. Beecher was present in the 1957 meeting of anesthesiologists when the question of ventilator withdrawal was posed to Pope Pius XII<sup>45</sup>. The responses of the pontiff must have made an impact on him, and it is no small coincidence that it became the only citation in the 1968 *JAMA* article. Drawing from this source, the Report insisted that determination of the moment of death was the prerogative of the physicians. The same point was emphasized from a legal point of view. This may explain why the committee did not feel compelled to address the difficult philosophical question of when life ends – it is after all, primarily a medical and scientific question. Upon closer inspection, this methodological choice is by no means ethical naiveté. Rather, it arose from the need to address a concrete and pressing problem – what to do with the irreversibly comatose. Belkin masterfully defends this point: «In Schwab's and the Committee's

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hands, brain death was a mix of prognosis and inference about consciousness. It was a characterization of hopeless coma and an indication of the nonsurvival of consciousness *and* a predictor of survival... In the context of the then medically possible, [it provided] a reliable point that predicted the end of both physiologies, defined intrusive excess... The Report did not provide a worked-out, consistent notion of death, or life, itself. Rather, it outlined the permissions granted by an irreversible coma, with apnea and nonresponsiveness due to diffuse and irreversible disease... Death itself appeared coherent in the context of the medically possible as the medically possible was in turn framed by the possibilities of functioning consciousness»<sup>46</sup>.

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*Brain Death is a Social Construct*

Lastly, some authors approached the issue from a sociological point of view. Instead of seeing brain

death as a necessity that arose from the progress in resuscitation technology, they consider it as a social construct. In other words, socio-cultural and political forces of the time posed a new dilemma for the medical profession because of these and other new technologies. In order to protect the professional image and advance the interests of different medical specialties, "brain death" became the creative response to the challenges generated by transplantation and resuscitative technologies.

Historian of bioethics David Rothman sees the creation of the brain death criteria as a net loss of physician's power because they had to give up their traditional monopoly of medical ethics decision making by inviting other players such as lawyers, politicians, and bioethicists into the field<sup>47</sup>. Another historian Tina Stevens posits it within the context of public ambivalence towards new technology, and defining brain death was deemed a necessarily to allay possible backlash from public fear<sup>48</sup>. Mita Giacomini,

however, argues that physician's interests were consolidated by the brain death definition. She claims that physicians held on to the *status quo* as the only specialized profession to define death because even though other groups were invited into the debate, all of them concurred with this exclusivity. The interests of the transplant surgeons were also protected with the new criteria of death which were tailor-made to enhance provisions of organs.<sup>49</sup> Giacomini further claims that the committee was not at all concerned if irreversible coma was an appropriate delineation of death, but had a vested interest in drawing the new line: «Brain-dead bodies had to be created, recognized, described, and defined in the development of brain death criteria: brain death was socially as well as clinically constructed. The 1968 definition did not produce a more "accurate" description of death so much as mark new delineations between the living and the dead»<sup>50</sup>. It should be remembered, the idea that death is merely the product of legal or social agreement can have dangerous consequences. Instead of sincerely seeking and determining the biological reality of death, making it a social construct can open up all sorts of abuses such as making the ends justify the means or abandoning the "dead donor rule"<sup>51</sup>.

At the same time, while sociological analysis can provide helpful insights, it is notorious in presenting inconsistent conclusions due to different biases or emphases. As the above indicates, Rothman and Giacomini started with similar premises but arrived at opposite conclusions. Sociologists Abbot and Evans have amply described the theory of professional groups vying for jurisdictional control over new technologies and the rise of bioethics<sup>52</sup>. While there is much truth about this thesis, it is tenuous to conclude that individual players were mainly interested in protecting professional image at the expense of ethical standards. Evans himself stresses the importance of the roles played by individuals as agents of change and is wary of an overly deterministic and theoretical reading of history<sup>53</sup>.

Hence, to better understand these rather complicated forces, we need to examine the role of Henry Beecher who chaired the ad hoc committee in a wider perspective of his other accomplishments.

### *Beecher's role from Human experimentation to Brain Death*

Henry Knowles Beecher (1904–1976) graduated from Harvard Medical School and later became the Anesthetist-in-chief at Massachusetts General Hospital and Professor of Anesthesia at Harvard. He was the founder of academic anesthesiology and did research in the physiology of coma. His most noteworthy achievement was the 1966 publication of “Ethics and Clinical Research” in *New England Journal of Medicine*<sup>54</sup>. This landmark paper drew attention to twenty-two cases of unethical clinical experimentations on human subjects that risked their lives and their health. It caused immediate furor in the medical community and public outcry. After two congressional hearings, the National Research Act was promulgated and the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research was formed. Beecher's work was therefore instrumental in laying the foundation of the current guidelines on informed consent and human experimentation<sup>55</sup>. According to Rothman, «Without his courage, the movement to set new rules for human experimentation would have proceeded on a much slower track. Few others had the scientific knowledge and ethical sensibilities to call into question researchers' ethics»<sup>56</sup>.

Beecher soon became a legendary figure in the ethics of human experimentation. He was invited to be an expert witness in congressional hearings, speaker at major bioethics conferences, and board member of the first bioethics think-tank, the Hastings Center. Even though he had no philosophical training, Beecher played an important part in the nascent field of bioethics. The achievements of Beecher in these disciplines

– ethics of human experimentation, anesthesiology, physiology of coma, and physician in charge of ventilator care and withdrawal – made him the ideal candidate to confront the issue of brain death. Historical analyses that link organ transplantation with brain death without considering Beecher's related contribution to the ethics of human experimentation are therefore incomplete.

The work of Gary Belkin already quoted in this paper is one that does justice to Beecher on this point. According to him, Beecher's thinking on brain death is an extension on his ethics of protecting individuals from experimentation by society. The subject in question – the irreversibly comatose – must be protected against any infringement against his dignity. Beecher believed that aggressively prolonging an artificial existence of these individuals when they are in fact dead is as unethical as experimentations on humans without informed consent<sup>57</sup>. As Belkin comments on Beecher, «He sought resolution of ethical dilemmas in medicine through a contingent balance of the fundamental need for medicine on the one hand to respect and protect individuals from the encroachment of societal interests, while also developing the tools and knowledge needed to reduce suffering, and treat illness»<sup>58</sup>.

Beecher was sincerely concerned with balancing the benefits, risks, and outcomes in establishing the brain death criteria. Perhaps it can be said that he shunned the finer philosophical squabbles on when life ends and death begins. He wanted to draw the line that would both satisfy the ethical demands of not withdrawing someone from the ventilator when he is not dead, and not prolonging treatment when the person is no longer living. Beecher realized that his task was not to lay down the philosophical foundation of death, which might come about later, but to fulfill the very real need of providing clear guidelines to determine death

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with moral certainty. Belkin recounts this, «Beecher described how this connection between his ethics of how to protect the individual and the need to set limits in uses of medical technology could be guided via a definition of brain death. He suggested that criteria developed by Schwab was the place to begin setting such limitations. Treatment of no value was ethically suspect as a waste of resources and an intrusion into the rights of the individual to the degree that it strayed from a compelling balance. At the core of his experimentation ethics was therapeutic purpose and appropriate means as judged within the context of the given situation, in this case, that of the irreversibly comatose»<sup>59</sup>.

*The committee did not feel compelled to address the difficult philosophical question of when life ends*

How does the question of organ transplantation fit into Beecher's thinking? For him, transplants were experimental in nature, and acceptable only in the framework of clinical trials. The ethics of human experimentations, limiting treatment in the irreversibly comatose, and concerns about transplantation were all related to the questions about balancing the benefits of medical technology and a deep respect of human dignity. Beecher was worried about potential abuse due to the disparity of organ procurement practices in certain places at the time. Just as he advocated the need to establish standards in human experimentation, and just as he found the need to define brain death to protect the irreversibly comatose from unnecessary treatment, he believed the brain death criteria can supply uniform standards of organ procurement. In this light, the criteria allowed and justified the continual sustenance of the irreversible comatose bodies because of the ulterior merit of providing organs for transplantation<sup>60</sup>.

### *Conclusion*

After exploring the different opinions and facts on this controversy, it seems that the ar-

gument heavily favors the position that the Harvard ad hoc committee headed by Beecher did not craft brain death in order to facilitate the availability of organs for transplantation purposes. Granted, organ transplantation was an issue that was not totally irrelevant to brain death. It was, however, a secondary issue about how the body parts of the brain dead individual could benefit those in need. The unfavorable remarks and evidence linking brain death with organ transplantation can be understood from this angle.

Above all, this debate is settled on the strength of the testimony of Beecher, especially in his actions against his medical peers in denouncing unethical experimentations. It would be totally uncharacteristic for him to blow the whistle on unethical behavior of his peers, and then turn around in a couple of years to advocate brain death unscrupulously out of utilitarian or professional interests.

Today, the situation has changed. The brain death criteria have been refined to include other tests. The first reason given by the Harvard criteria to withdraw care in 1968 is much less of a concern today, and brain death is primarily diagnosed in view of potential organ donors. Unfortunately, there have been reported cases of sloppiness when applying the brain death criteria in a haste to get organs for transplant. Recently, the validity of these criteria to truly ascertain death of the individual has been challenged. What we have learnt from this debate is still relevant. Physicians must maintain the high standard of ethics over any other concerns – personal prestige, professional image, societal pressures, or utilitarian gains. This is necessary more than ever in today's world where often monetary interests or the technological imperative can sometimes take precedence over the respect of human dignity. In the unlikely event that one day, we can no longer safely confirm death using the brain death criteria, then we need to abandon it even if this implies the loss of a potential source of organs. I am sure that Beecher and the committee would have acted this way.

NOTE

<sup>1</sup> Eelco F. M. WIJDICKS, «Brain death worldwide: accepted fact but no global consensus in diagnostic criteria» in *Neurology*, 58 (2002), 20-5.

<sup>2</sup> See for instance, President's Council on Bioethics, *Controversies in the Determination of Death*, (Washington DC: U.S. Government Printing Office. President's Council, 2008); M. SÁNCHEZ SORONDO, (ed.), *The Signs of Death, Proceedings of the Working Group of 11-12 September 2006*, Scripta Varia, 110, (Vatican City: Pontificia Academia Scientiarum, 2007); R. DE MATTEI, (ed.), *Finis Vitae, Is Brain Death Still Life?*, Rubbettino, Soveria Mannelli 2006.

<sup>3</sup> The Pontifical Academy of Sciences convoked a group of experts to study the question. The majority opinion upheld the validity of the current criteria. A. BATTRO ET AL., «Why the Concept of Brain Death is Valid as a Definition of Death», in *The Signs of Death*, 9. [www.vatican.va/roman\\_curia/pontifical\\_academies/acdsdien/2009/excerpt\\_signs\\_of\\_death\\_51.pdf](http://www.vatican.va/roman_curia/pontifical_academies/acdsdien/2009/excerpt_signs_of_death_51.pdf)

<sup>4</sup> For a historical account of this development, see C. MACHADO - J. KEREIN - Y. FERRER - L. PORTELA - M. de la C. GARCÍA and J. M. MANERO, «The concept of brain death did not evolve to benefit organ transplants», in *Journal of Medical Ethics* 33, 4 (2007), 197-200.

<sup>5</sup> See POPE PIUS XII, «Answer to questions on Reanimation addressed to 'Gregory Mendel' Institute of Genetics, 24-11-1957», *Acta Apostolicae Sedis*, 49 (1957), 1027-33.

<sup>6</sup> See P. MOLLARET - M. GONION, «Le coma dépassé», *Revue Neurologique*, 101 (1959), 3-15.

<sup>7</sup> See P. WERTHEIMER - M. JOUVET - J. DESCOTES, «A propos du diagnostic de la mort du système nerveux dans les comas avec arrêt respiratoire traités par respiration artificielle», in *La Presse Médicale* 67, 3 (1959), 87-88; M. JOUVET, «Diagnostic électro-sous-cortico-graphique de la mort du système nerveux central au cours de certains comas», in *Electroencephalography and Clinical Neurophysiology*, 11 (1959), 805-8.

<sup>8</sup> See C. MACHADO - J. KEREIN - Y. FERRER - L. PORTELA - M. de la C. GARCÍA - M. CHINCHILLA, Y. MACHADO - J. M. MANERO, «The Declaration of Sydney on human death» In *Journal of Medical Ethics* 33, 12 (2007), 699-703.

<sup>9</sup> See M. GIACOMINI, «A change of heart and a change of mind? Technology and the redefinition of death in 1968» in *Social Science and Medicine* 44, 10 (1997), 1467-73.

<sup>10</sup> See J. P. MERRILL, J. E. MURRAY and J. HARTWELL HARRISON et AL., «Successful homotransplantation of the human kidney between identical twins», in *Journal of the American Medical Association* 160, 4 (1956), 277-282.

<sup>11</sup> See J. P. MERRILL, J. E. MURRAY, F. J. TAKACS et AL., «Successful transplantation of kidney from a human cadaver», in *Journal of the American Medical Association* 185, 5 (1963), 347-53.

<sup>12</sup> *Henry K. Beechers papers 1848-1976 H MS c64*. Rare Books and Special Collections. Boston: Francis Countway Library of Medicine. [http://oasis.lib.harvard.edu/oasis/deliver/deepLink?\\_collection=oasis&uniqueId=med00072](http://oasis.lib.harvard.edu/oasis/deliver/deepLink?_collection=oasis&uniqueId=med00072)

<sup>13</sup> «A Definition of Irreversible Coma: Report of the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death», in *Journal of the American Medical Association* 205, 6 (1968), 337-340.

<sup>14</sup> *Ibid.*, 337.

<sup>15</sup> For a brief history of its development, also see Robert J. JOYNT, «A New Look at Death» in *Journal of the American Medical Association* 252, 5 (1984), 680-683.

<sup>16</sup> Here, the quote was cited from PIUS XII, «The Prolongation of Life; an address of Pope Pius XII to an international congress of anesthesiologists», in *The Pope Speaks* 4, 4 (1958), 393-398.

<sup>17</sup> See H. JONAS, «Reflections on human experimentation» in *Daedalus* 98 (1969), 243-245; P. RAMSEY, «On updating procedures for stating that a man has died», in *The Patient as Person*, Yale University Press, New Haven 1970, 112; P. SINGER, *Rethinking Life and Death*, St. Martin's Press, New York, 1994, 25; R. M. VEATCH, «Brain Death: Welcome Definition or Dangerous Judgment?», in *Hastings Center Report* 2, 5 (November 1972), 10-13, at 10-11. See also Gary S. BELKIN, «Brain Death and the Historical Understanding of Bioethics», in *Journal of the History of Medicine and Allied Sciences*, 58, 3 (2003), 325-361, at 326-327.

<sup>18</sup> S.J. YOUNGNER, R.M. ARNOLD, «Philosophical debates about the definition of death: who cares?», in *Journal of Medicine and Philosophy* 26, 5 (2001), 527-537; M. L. TINA STEVENS, «Redefining Death in America, 1968», in *Caduceus* 11, 3 (1995), 207-219, at 217; D.A. SHEWMON, «Brain Death. Can it Be Resuscitated?» in *Hastings Center Report* 39, 2 (2009), 18-24.

<sup>19</sup> See GIACOMINI, «A change of heart and a change of mind», 1479.

<sup>20</sup> In 1954, there were 66 patients that fit the description. This number rose to 398 in 1964. See BELKIN, «Brain Death», 346, 348.

<sup>21</sup> Martin S. PERNICK, «Brain death in a cultural context. The reconstruction of death 1967-1981», in S.J. YOUNGNER, R.M. ARNOLD, R. SCHAPIRO (edd.), *The definition of death: contemporary controversies*, Johns Hopkins University Press, Baltimore, MD 1999, 3-33, at 9.

<sup>22</sup> E. F.M. WIJDICKS, «The neurologist and Harvard criteria for brain death», in *Neurology* 61, 7 (2003), 970-976, at 972.

<sup>23</sup> GIACOMINI, «A change of heart», 1474.

<sup>24</sup> *Idem*, 1475.

<sup>25</sup> *Idem*, 1475.

<sup>26</sup> *Idem*, 1476-1477.

<sup>27</sup> WIJDICKS, «The neurologist», 971.

<sup>28</sup> *Idem*, 971-972.

- <sup>29</sup> *Idem*, 971.
- <sup>30</sup> *Idem*, 974.
- <sup>31</sup> *Idem*, 975.
- <sup>32</sup> *Idem*, 975.
- <sup>33</sup> Sweet's wish to limit the criteria only to brain stem signs was rejected by Schwab and Adams. See BELKIN, «Brain Death» 357.
- <sup>34</sup> *Ibidem*.
- <sup>35</sup> *Idem*, 329, footnote 13.
- <sup>36</sup> See GIACOMINI, «A change of heart», 1475, 1477; P.A. BYRNE, «Death: The Absence of Life», in R. De Mattei (ed.), *Finis Vitae*, 63–84; P.A. BRYNE, W. F. WEAVER, «Brain Death is not Death?», in C. MACHADO, A. SHEWMON (ed.), *Brain Death and Disorders of Consciousness*, Kluwer - Plenum, New York 2004, 43–49; P.A. BYRNE, G.M. RINKOWSKI, «Brain death is false», in *Linacre Quarterly* 66, 1 (1999), 42–48.
- <sup>37</sup> GIACOMINI, «A change of heart», 1478.
- <sup>38</sup> See WIJDICKS, «The neurologist», 975.
- <sup>39</sup> See Wijdicks, «The neurologist», 974; MACHADO et AL, «The concept of brain death», 197–199.
- <sup>40</sup> See BELKIN, «Brain Death», 332–351.
- <sup>41</sup> WIJDICKS, «The neurologist», 975.
- <sup>42</sup> See D.A. SHEWMON, «Brain Death. Can it Be Resuscitated?», in *Hastings Center Report* 39, 2 (2009), 18–24; GIACOMINI, «A change of heart», 1677–1678; R.M. VEATCH, «The definition of death: ethical, philosophical and policy confusion», in J. KOREIN (ed.), *Brain Death*, The New York Academy of Sciences, New York 1978, 307–318.
- <sup>43</sup> PERNICK, «Brain death in a cultural context», 9.
- <sup>44</sup> GIACOMINI, «A change of heart and a change of mind», 1467–1472.
- <sup>45</sup> See PIUS XII, *Discorsi ai Medici*, Fiorenzo Angelini (ed.), Orizzonte, Roma 1959, 608.
- <sup>46</sup> BELKIN, «Brain Death», 349, (emphasis in original).
- <sup>47</sup> See D.J. ROTHMAN, *Strangers at the Bedside: A History of How Law and Bioethics Transformed Medical Decision Making*, Basic Books, New York 1991.
- <sup>48</sup> PERNICK, «Brain death in a cultural context», 13–16; M. L. TINA STEVENS, *Bioethics in America: Origins and Cultural Politics*, Johns Hopkins University Press, Baltimore 2000.
- <sup>49</sup> See GIACOMINI, «A change of heart», 1466.
- <sup>50</sup> *Idem*, 1478.
- <sup>51</sup> See N. FOST, «Reconsidering the Dead Donor Rule: Is it Important that Organ Donors Be Dead?», in *Kennedy Institute of Ethics Journal* 14, 3 (2004), 249–260.
- <sup>52</sup> A. ABBOT, *The System of Professions: An Essay on the Division of Expert Labor*, University of Chicago Press, Chicago, 1988; J.H. EVANS, «After the Fall: Attempts to Establish an Explicitly Theological Voice in Debates over Science and Medicine after 1960», in C. Smith (ed.), *The Secular Revolution: Power, Interests, and Conflict in the Secularization of American Public Life*, University of California Press, Berkeley (CA) 2003, 434–461.
- <sup>53</sup> J.H. EVANS, *Playing God? Human Genetic Engineering and the Rationalization of Public Bioethical Debate*, University of Chicago Press, Chicago 2002.
- <sup>54</sup> See H. K. BEECHER, «Ethics and clinical research», in *New England Journal of Medicine* 274, 24 (1966), 1354–1360.
- <sup>55</sup> See A. JONSEN, *The Birth of Bioethics*, Oxford University Press, New York 1998, 142–153; V.J. KOPP, *Henry K. Beecher, M.D.: Contrarian (1904–1976)*. *American Society of Anesthesiologists Newsletter* 63 (September 1999). [http://www.asahq.org/Newsletters/1999/09\\_99/beecher0999.html](http://www.asahq.org/Newsletters/1999/09_99/beecher0999.html)
- <sup>56</sup> ROTHMAN, *Strangers at the Bedside*, 84.
- <sup>57</sup> See BELKIN, «Brain Death», 351–358.
- <sup>58</sup> *Idem*, 351.
- <sup>59</sup> *Idem*, 355.
- <sup>60</sup> See *Idem*, 356–358.