Essay - At a meeting of the Pontifical Academy of Sciences in early February 2005

"Brain Death" is Not Death !

In medicine we protect, preserve, and prolong life and postpone death. Our goal is to keep body and soul united. When a vital organ ceases to function, death can result. On the other hand, medical intervention can sometimes restore the function of the damaged organ, or medical devices (such as pacemakers and heart-lung machines) can preserve life. The observation of a cessation of functioning of the brain or some other organ of the body does not in itself indicate destruction of even that organ, much less death of the person

Dr Paul Byrne

By Paul A. Byrne, Cicero G. Coimbra, Robert Spaemann, and Mercedes Arzú Wilson

On February 3-4, the Pontifical Academy of Sciences, in cooperation with World Organization for the Family, hosted a meeting at the Vatican entitled “The Signs of Death.” This essay is based on the papers that were submitted to the Pontifical Academy as well as the discussions that took place during those two days.

The meeting was convened at the request of Pope John Paul II to re-assess the signs of death and verify, at a purely scientific level, the validity of brain-related criteria for death, entering into the contemporary debate of the scientific community on this issue.

In a message to the Pontifical Academy of Sciences, made public at the February meeting, the Holy Father said that the Church has consistently supported "the practice of transplanting organs from deceased persons." However, he cautioned that transplants are acceptable only when they are conducted in a manner "so as to guarantee respect for life and for the human person."

The Pope cited his predecessor, Pope Pius XII, who said that "it is for the doctor to give a clear and precise definition of death and of the moment of death." He encouraged the Pontifical Academy to pursue that task, promising that scientists could count on the support of Vatican officials, "especially the Congregation for the Doctrine of the Faith."

Background

In 1968 the “Harvard criteria” for determining brain death were published in the Journal of the American Medical Association, under the title of “A Definition of Irreversible Coma.” This article was published without substantiating data, either from scientific research or from case studies of individual patients. For this reason, a majority of the presenters at the conference in Rome stated that the “Harvard criteria” were scientifically invalid.

In 2002 the results of a worldwide survey were published in Neurology, concluding that the use of the term “brain death” worldwide is “an accepted fact but there was no global consensus on the diagnostic criteria” and there are still “unresolved issues worldwide.” In fact between 1968 and 1978 at least 30 disparate sets of criteria were published, and

there have been many more since then. Every new set of criteria tends to be less rigid than earlier sets and none of them is based on the scientific method of observation and hypothesis followed by verification).

Attempts to compare the newer criteria with the time proven, generally accepted criteria for death--the cessation of circulation, respiration, and reflexes--show that these criteria are distinctly different. This has resulted in an unhappy situation for the medical profession. Many physicians, who feel that the Hippocratic Oath is being violated by acceptance of such disparate sets of criteria, feel the need to expose the fallacy of “brain death,” because the noble reputation of the medical profession is at stake.

Philosophical considerations

In his presentation to the Pontifical Academy, Robert Spaemann--a noted former professor of philosophy from the University of Munich--cited the words of Pope Pius XII, who declared that "human life continues when its vital functions manifest themselves, even with the help of artificial processes.”

Professor Spaemann observed: "The cessation of breathing and heartbeat, the ‘dimming of the eyes,’ rigor mortis, etc. are the criteria by which since time immemorial humans have seen and felt that a fellow human being is dead." But the Harvard criteria "fundamentally changed this correlation between medical science and normal interpersonal perception." As he put it:

Scrutinizing the existence of the symptoms of death as perceived by common sense, science no longer presupposes the “normal” understanding of life and death. It in fact invalidates normal human perception by declaring human beings dead who are still perceived as living.

The new approach to defining death, the German scholar continued, reflected a different set of priorities:

It was no longer the interest of the dying to avoid being declared dead prematurely, but other people’s interest in declaring a dying person dead as soon as possible. Two reasons are given for this third party interest:

1) guaranteeing legal immunity for discontinuing life-prolonging measures that would constitute a financial and personal burden for family members and society alike,

and

2) collecting vital organs for the purpose of saving the lives of other human beings through transplantation. These two interests are not the patient’s interests, since they aim at eliminating him as a subject of his own interests as soon as possible.

The arguments against the use of "brain death" as a determination of death are being made, Spaemann noted, "not only by philosophers, and, especially in my country, by leading jurists, but also by medical scientists." He quoted the words of a German anesthesiologist who wrote, "Brain-dead people are not dead, but dying."

Medical evidence

Dr. Paul Byrne, a neonatologist from Toledo, Ohio, offered a medical perspective - he testified:

When organs are removed from a "brain dead" donor, all the vital signs of the “donors” are still present prior to the harvesting of organs, such as: normal body temperature and blood pressure; the heart is beating; vital organs, like the liver and kidneys, are functioning; and the donor is breathing with the help of a ventilator.

Furthermore, Bryne told the Academy, that approach is required for most transplant surgery, because vital organs deteriorate very quickly after a patient dies. "After true death," he said, "unpaired vital organs (specifically the heart and whole liver) cannot be transplanted.”

Transplantation of unpaired vital organs is legal in most Western countries, including the United States, and in some developing nations like Brazil, but the important question for anyone is: “is it morally permissible to terminate a life to save another?" Pope John Paul II has repeatedly said as recently as February 4, 2003 message to the World Day of the Sick: “It is never licit to kill one human being in order to save another." The Catechism of the Catholic Church clearly states (2296): “It is morally inadmissible directly to bring about the disabling mutilation or death of a human being, even in order to delay the death of other persons.”

"In medicine we protect, preserve, and prolong life and postpone death," Byrne said. "Our goal is to keep body and soul united." When a vital organ ceases to function, he argued, death can result. On the other hand, medical intervention can sometimes restore the function of the damaged organ, or medical devices (such as pacemakers and heart-lung machines) can preserve life. He said: "The observation of a cessation of functioning of the brain or some other organ of the body does not in itself indicate destruction of even that organ, much less death of the person."

Defending the criteria

Some participants in the February meeting defended the use of the "brain death" criteria. Dr. Stewart Youngner of Case Western University in Ohio admitted that “brain dead” donors are alive, but argued that this should not prove an impediment to the harvesting of their organs. His reasoning was that there is such poor “quality of life” in the “brain dead” patient that it would be more beneficial to harvest their organs to extend the life of another than to continue the life of the organ donor.

Dr. Conrado Estol, a neurologist from Buenos Aires, explained the steps that should be followed in determining the "brain death" of a prospective organ donor. Dr. Estol, who is strongly in favor of harvesting human organs to extend the life of other patients, presented a dramatic video of a person diagnosed as “brain dead” who attempted to sit up and cross his arms, although Dr. Estol assured the audience that the donor was a cadaver. This produced an unsettling response among many participants at the conference.

A French transplant surgeon, Dr. Didier Houssin, acknowledged the difficulties that arise because of the discrepancies between the different criteria for brain death. He observed

that "death is a medical fact, a biological process, and a philosophical question, but it is also a social fact. It would be difficult for a society to admit that a man could be said alive in one place and dead in another place. However, as a proponent of transplants, he said that it is important for society to trust doctors.

Another French physician, Dr. Jean-Didier Vincent of the Institut Universitaire, emphasized that a “brain dead” person has suffered complete and irreversible destruction of the brain. Dr. Vincent was questioned closely about the case of a pregnant women, diagnosed as brain-dead, who continues her pregnancy while on life-support system, even producing breast milk for her unborn child. He admitted that the mother produces milk, but regards that production as an inhibited mechanical reflex rather than a sign of enduring human life. When reminded that the production of breast milk results from the signal sent from the anterior lobe of the pituitary that stimulates the secretion of milk, and possibly breast growth, thus requiring a functioning brain, he replied that there could be some minimal hormonal production in the brain.

The apnea test

In his presentation at the conference, Dr. Cicero Coimbra, a clinical neurologist from the Federal University of Sao Paolo, Brazil denounced the cruelty of the apnea test, in which mechanical respiratory support is withdrawn from the patient for up to 10 minutes, to determine whether he will begin breathing independently. This is part of the procedure before declaring a brain-injured patient “brain dead.” Dr. Coimbra explained that this test significantly impairs the possible recovery of a brain-injured patient, and can even cause the death of the patients. He argued:

. A large number of brain-injured patients, even in deep coma, can recover to lead a normal daily life; their nervous tissue may be only silent, not irreversibly damaged, as a consequence of a partial reduction of the blood supply to the brain. (This phenomenon, called “ischemic penumbra,” was not known when the first neurological criteria for brain death were established 37 years ago.) However, the apnea test (considered the most important step for the diagnosis of “brain death” or brain-stem death) may induce irreversible intra-cranial circulatory collapse or even cardiac arrest, thereby preventing neurological recovery.

· During the apnea test, the patients are prevented from expelling carbon dioxide (CO_2), which becomes a poison to the heart as the blood CO_2 concentration rises.

· As a consequence of this procedure, the blood pressure drops, and the blood supply to the brain irreversibly ceases, thereby causing rather than diagnosing irreversible brain damage; by reducing the blood pressure, the “test” further reduces the blood supply to the respiratory centers in the brain, thereby preventing the patient from breathing during this procedure. (By breathing, the patient would demonstrate that he is alive.)

· Irreversible cardiac arrest (death), cardiac arrhythmias, myocardial infarction, and other life-threatening detrimental effects may also occur during the apnea test. Therefore, irreversible brain damage may occur during and before the end of the diagnostic procedures for “brain death.”

Dr. Coimbra concluded by saying that the apnea test should be considered unethical

and declared illegal as an inhumane medical procedure. If family members were informed of the brutality and risk of the procedure, he stated, most of them would deny permission.

He pointed out that when a heart attack patient is admitted to the emergency room he is never subjected to a stress test in order to verify that he is suffering from heart failure. Instead the patient is given special care and protection from further stress to the heart.

In contrast when a brain-injured patient is subjected to the apnea test, further stress is placed on the organ that has already been injured, and additional damage can endanger the patient's life. Dr. Yoshio Watanabe a cardiologist from Nagoya, Japan, concurred, saying that if patients were not subjected to the apnea test, they could have a 60 percent chance of recovery to normal life if treated with timely therapeutic hypothermia.

The question of a brain-injured patient's possible recovery also concerned Dr. David Hill, a British anesthetist and lecturer at Cambridge. He observed: "It should be emphasized first that it was widely admitted, that some functions, or at least some activity, in the brain may still persist; and second that the only purpose served by declaring a patient to be dead rather than dying, is to obtain viable organs for transplantation." The use of these criteria, he concluded, "could in no way be interpreted as a benefit to the dying patient, but only (contrary to Hippocratic principles) a potential benefit to the recipient of that patient's organs."

"The deception"

Dr. Hill recalled that the earliest attempts at transplanting vital organs often failed because the organs, taken from cadavers, did not recover from the period of ischemia following the donor's death. The adoption of brain-death criteria solved that problem, he reported, "by allowing the removal of vital organs before life support was turned off--without the legal consequences that might otherwise have attended the practice."

While it is remarkable that the public has accepted these new criteria, Dr. Hill remarked, he attributed that acceptance in large part to the favorable publicity for organ transplants, and in part to public ignorance about the procedures.

"It is not generally realized," he said, that life support is not withdrawn before organs are taken; nor that some form of anaesthesia is needed to control the donor whilst the operation is performed." As knowledge of the procedure increases, he observed, it is not surprising that--as reported in a 2004 British study--"the refusal rate by relatives for organ removal has risen from 30 percent in 1992 to 44 percent." Dr. Hill also suggested that when relatives see with their own eyes the evidence that a potential organ donor is still alive, they harbor enough doubts so that they are not ready to consent to the organ removal.

In the United Kingdom, Dr. Hill reported, there is mounting pressure for individuals to sign, and always carry with them, donor cards authorizing doctors to use their vital organs. Today only about 19 percent of the country's people have registered as organ donors, but vehicle-registration forms, driver's-license applications, and other public documents provide "tick boxes" allowing citizens to give this advance directive; even children are encouraged to sign. All such documents specify that organs may be

harvested only "after my death," but there is no definition of what constitutes "death." Again, Dr. Hill remarked, the acceptance of transplants hangs on the public's lack of understanding about the procedure. And yet, he pointed out, "For any other procedure, informed consent is required, but for this most final of operations no explanation nor counter-signature is required, nor is the opportunity given to discuss the question of anaesthesia."

Bishop Fabian Bruskewitz of Lincoln, Nebraska, addressed the issue of the donor's consent. “As far as I know," he told the Pontifical Academy, "no respectable, learned and accepted moral Catholic theologian has said that the words of Jesus regarding laying down one’s life for one’s friends (John 15:13) is a command or even a license for suicidal consent for the benefit of another’s continuation of earthly life.”

The bishop went on to observe that current technology enables doctors only to monitor brain activity "in the outer 1 or 2 centimeters of the brain." He asks: "Do we have then, moral certitude in any way that can be called apodictic regarding even the existence, much less the cessation of brain activity?” From the perspective of Catholic moral teaching the bishop said:

The dignity and autonomy of a human being--whether zygote, blastocyst, embryo, fetus, newborn, infant, adolescent, adult, disabled or handicapped adult, aged adult, adult in a comatose or (so-called) persistent vegetative state, etc--are viewed, as they have been viewed throughout the history of the Catholic Church, as worthy of respect and entitled to protection from untoward human intervention effecting the termination of human life at any of those stages.

In light of the serious questions about the validity of the "brain death" criteria, Professor Josef Seifert from the International Academy of Philosophy in Liechtenstein argued that medical ethicists should invoke the true and evident ethical principle (emphasized by the whole Church tradition of moral teachings), that "even if a small reasonable doubt exists that our acts kill a living human person, we must abstain from them.”

The Signs of Death

Conclusions reached after examination of Brain-Related Criteria for death, at the Pontifical Academy of Sciences meeting

1. On the one hand the Church recognizes, consistent with her tradition, that the sanctity of all human life from conception to natural end must absolutely be respected and upheld. On the other hand, a secular society tends to place greater emphasis on the quality of living.

2. The Catholic Church has always opposed the destruction of human life before being born through abortion and she equally condemns the premature ending of the life of an innocent donor in order to extend the life of another through unpaired vital organ transplantation. "It is morally inadmissible directly to bring about the disabling mutilation or death of a human being, even in order to delay the death of other persons." “It is never licit to kill one human being in order to save another."

3. "Nor can we remain silent in the face of other more furtive, but no less serious and real forms of euthanasia. These could occur for example when, in order to increase the

availability of organs for transplants, organs are removed without respecting objective and adequate criteria which verify the death of the donor."

4. "The death of the person is a single event, consisting in the total disintegration of that unitary and integrated whole that is the personal self. It results from the separation of the life-principle (or soul) from the corporal reality of the person." Pope Pius XII declared this same truth when he stated that human life continues when its vital functions manifest themselves even with the help of artificial processes.

5. "Acknowledgement of the unique dignity of the human person has a further underlying consequence: vital organs which occur singly in the body can be removed only after death--that is, from the body of someone who is certainly dead. This requirement is self-evident, since to act otherwise would mean intentionally to cause the death of the donor in disposing of his organs." Natural moral law precludes removal for transplantation of unpaired vital organs from a person who is not certainly dead. The declaration of "brain death" is not sufficient to arrive at the conclusion that the patient is certainly dead. It is not even sufficient to arrive at moral certitude.

6. Many in the medical and scientific community maintain that brain-related criteria for death are sufficient to generate moral certitude of death itself. Ongoing medical and scientific evidence contradicts this assumption. Neurological criteria alone are not sufficient to generate moral certitude of death itself, and are absolutely incapable of generating physical certainty that death has occurred.

7. It is now patently evident that there is no single so-called neurological criterion commonly held by the international scientific community to determine certain death. Rather, many different sets of neurological criteria are used without global consensus.

8. Neurological criteria are not sufficient for declaration of death when an intact cardio-respiratory system is functioning. These neurological criteria test for the absence of some specific brain reflexes. Functions of the brain not considered are temperature control, blood pressure, cardiac rate and salt and water balance. When a patient on a ventilation machine is declared "brain dead," these functions not only are present but also are frequently active.

9. The apnea test--the removal of respiratory support--is mandated as a part of the neurological diagnosis and it is paradoxically applied to ensure irreversibility. This significantly impairs outcome, or even causes death, in patients with severe brain injury.

10. There is overwhelming medical and scientific evidence that the complete and irreversible cessation of all brain activity (in the cerebrum, cerebellum and brain stem) is not proof of death. The complete cessation of brain activity cannot be adequately assessed. Irreversibility is a prognosis, not a medically observable fact. We now successfully treat many patients who in the recent past were considered hopeless.

11. A diagnosis of death by neurological criteria alone is theory, not scientific fact. It is not sufficient to overcome the presumption of life.

12. No law whatsoever ought to attempt to make licit an act that is intrinsically evil. "I repeat once more that a law which violates an innocent person's natural right to life is unjust and, as such, is not valid as a law. For this reason I urgently appeal once more to

all political leaders not to pass laws which, by disregarding the dignity of the person, undermine the very fabric of society."

13. The termination of one innocent life in pursuit of saving another, as in the case of the transplantation of unpaired vital organs, does not mitigate the evil of taking an innocent human life. Evil may not be done that good might come of it.

Signatories:

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