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## Procuring Organs from a Non-Heart-Beating Cadaver: A Case Report

**ABSTRACT.** Organ transplantation is an accepted therapy for major organ failure, but it depends on the availability of viable organs. Most organs transplanted in the U.S. come from either "brain-dead" or living related donors. Recently organ procurement from patients pronounced dead using cardiopulmonary criteria, so-called "non-heart-beating cadaver donors" (NHBCDs), has been reconsidered. In May 1992, the University of Pittsburgh Medical Center (UPMC) enacted a new, complicated policy for procuring organs from NHBCDs after the elective removal of life support. Seventeen months later only one patient has become a NHBCD. This article describes her case and the results of interviews with the health care team and the patient's family. The case and interviews are discussed in relation to several of the ethical concerns previously raised about the policy, including potential conflicts of interest, the definition of cardiopulmonary death, and a possible net decrease in organ donation. The conclusion is reached that organ procurement from non-heart-beating cadavers is feasible and may be desirable both for the patient's family and the health care providers.

**O**RGAN TRANSPLANTATION—a successful and well-accepted treatment for organ failure—is necessarily dependent upon the availability of viable organs for implantation. In the past 25 years virtually all transplanted organs in the United States have come from living donors (in the case of paired organs such as kidneys) or from individuals pronounced dead by neurologic criteria—"heart-beating cadavers." These sources have not satisfied the demand for organs, however, and waiting lists continue to grow. Because of this unmet need for organs and the requests of patients or their families to be donors, individuals pronounced dead by traditional cardiac criteria—"non-heart-beating cadavers"—recently have been reconsidered and reinstated as a potential source of organs.

In May 1992, the University of Pittsburgh Medical Center (UPMC) enacted a policy governing the practice of organ procurement from patients after elective withdrawal of life support when continued support was not wanted (UPMC Policy 1993). The technical, historical, and ethical concerns surrounding this practice were extensively reviewed in the June 1993 issue of the *Kennedy Institute of Ethics Journal* (KIEJ 1993). However, it was not until April 1993, when the issue was already in press, that the first donation under the UPMC Policy occurred. This paper describes the case, summarizes subsequent interviews with the patient's family and all members of the health care team, and discusses the case relative to some of the issues raised by the working group on non-heart-beating organ donation (Youngner and Arnold 1993).<sup>1</sup>

CASE REPORT

*ICU Course*

A 38-year-old woman was admitted to UPMC following a self-inflicted gunshot wound to the head. She was comatose on arrival and was seen by a neurosurgeon, a traumatologist, and a critical care medicine (CCM) physician. In their opinion the patient had suffered a lethal injury and was expected to die shortly according to brain-based criteria. The family was notified of this opinion, and the Center for Organ Recovery and Education (CORE), the local organ procurement organization, was contacted. A CORE representative approached the family regarding the possibility of organ donation following the pronouncement of death, and the family indicated their interest in donating the patient's organs.

On the third hospital day, the CCM physician and the neurosurgeon felt that the patient's neurologic deficit had stabilized, and "brain death" no longer appeared to be the likely outcome. Rather, the patient would be left with a devastating neurologic injury and no likelihood of "regain-  
ing consciousness." Discussion of this prognosis with the family resulted in a consensus to withdraw life support. The family requested that organ donation still occur, citing experience with a relative who was an organ recipient. The CCM physician contacted CORE, the hospital counsel, the ethics consultation service (ECS), and the chair of the UPMC Ethics Committee suggesting that the patient be considered for non-heart-beating cadaver donor (NHBCD) status. The patient was evaluated, and the family was interviewed by ECS and CORE that day.

After these discussions, the family asked that they be allowed to think overnight about giving consent. That night, a televised program about organ donation ("Rescue 911"), which had been taped in Pittsburgh, was aired. The next morning, the family reported that they had seen the program, had been impressed by its content, and had decided to consent to donation following the patient's withdrawal from life support.

The supervising CCM physician, the trauma surgeon, the neurosurgeon, CORE, and the transplant surgeons were notified of the family's decision. In accordance with the UPMC Policy (1993), the intensive care unit (ICU) team placed a femoral arterial catheter to enable highly sensitive blood pressure monitoring, and an order for the patient to receive "comfort measures only" was written. "Comfort measures only" refers to those measures that result in added patient comfort—e.g., sedation, pain medications, and personal hygiene—and excludes all other therapy, including life-sustaining. The CCM attending physician then withdrew from the care of the patient. The family said "good-bye" to the patient and left the hospital at 1:30 PM. The patient was transported to the operating room (OR) at 2:00 PM.

#### *Operating Room Course*

After arrival in the OR the patient was transferred to the operating table; mechanical ventilation was maintained at the settings used in the ICU—intermittent mandatory ventilation (IMV) with 4 ventilator breaths per minute and 50 percent oxygen. The patient was attached to a continuous cardiac monitor and a pulse oximeter (to measure oxygen in the blood), and her blood pressure was continuously monitored using a femoral arterial catheter. Personnel present in the OR included the Chief of Anesthesiology, the OR head nurse and her assistant, the Chief of Transplant Surgery, the Associate Director of CORE and a CORE assistant, the ICU supervising physician, the Chief of CCM, the patient's ICU nurse, the Nurse Manager of the ICU, several OR scrub nurses, and a respiratory therapist.

Premedication of 5 mg. of morphine and 5 mg. of diazepam was given to remove the remote possibility of any anxiety, pain, or awareness in the OR.<sup>2</sup> Because no distress was evident, no further sedation was required or given. The patient had stable respirations at 13 per minute, a stable blood pressure of 120/56, and a pulse of 88 beats per minute, all normal measurements. At 2:30 PM the oxygen concentration was decreased to 21 percent (room air), still with an IMV of 4. The abdomen and chest

were prepared for organ retrieval and draped by the OR team, who then left the OR and waited, gowned and gloved, in an adjacent room. (The scrub nurse remained to complete setting up the necessary equipment.) The supervising CCM physician, who was attending the patient in the OR, had no further contact with the OR team until after the patient was pronounced dead.

The patient's arterial oxygenation decreased over a period of five minutes. Her endotracheal tube was removed at 2:42 PM, and her respirations immediately decreased from six to zero. The CCM physician noted that the patient made no respiratory effort, and he positioned her to prevent airway obstruction. She never breathed again.

A junctional rhythm (slow, abnormal cardiac function) began at 2:46 PM, with the rate slowly decreasing from 40 to 20 per minute and frequently interrupted by 10 to 15 second episodes of electrical asystole. The patient's blood pressure fell, and a pulse was not palpable by the CCM physician. At 2:51 PM the CCM physician could not hear heart sounds with an esophageal stethoscope, and the digital read out of the arterial line registered no pulse pressure although the observer could visually discriminate a pulse pressure on the video screen. At 2:52 PM no pulse pressure was visible, the CCM physician determined that the patient was unresponsive, and her heart was determined to have stopped beating. At 2:54 PM, following two minutes of pulselessness, the CCM physician pronounced the patient dead. Fifteen seconds later, he called the transplant team to enter the OR.

One minute after the surgeons entered the OR, the abdomen and chest were open and the peritoneal cavity was filled with ice slush. The aorta was cannulated within five minutes, and the kidneys and liver were removed within 20 minutes. Liver biopsy showed 40 percent steatosis (fatty infiltration), related to ischemic injury and the patient's body weight; despite this, all three organs appeared to be in good condition at the time of recovery.

#### FATE OF THE TRANSPLANTED ORGANS

The kidneys and liver were transplanted into three patients later that day. Both kidneys functioned immediately after implantation and remained functional three months post-transplant. The liver had early failure, and by the second post-operative day the patient had been relisted for another transplant; however, four days after transplant liver function improved. The patient recovered and was doing well three months

after transplant. The recipients were not informed of the source of the organs since the viability of organs from non-heart-beating cadavers is similar to that of organs from heart-beating cadavers.

#### REFLECTIONS ON THE PROCEDURE

This was the first non-heart-beating cadaver organ procurement following passage of the UPMC policy on the procedure. In an ongoing effort to assess and improve the UPMC protocol, all members of the health care team were interviewed by one of the authors, who was also the supervising CCM physician for the weaning procedure. Following IRB approval, the family was interviewed by a representative from the Center for Medical Ethics at UPMC. Most interviews lasted 20-30 minutes, and a predetermined series of open-ended questions was asked about the participants' perceptions of the experience, including their feelings and the logistical and social issues raised for them by various aspects of the procedure. In addition, suggestions for improving the protocol were sought, and the interviewees were asked whether they would participate again.

#### *Logistics*

All members of the health care team felt that the other team members were extremely cordial and cooperative and that the team was prepared and efficient. The intricacy of the UPMC Policy did not present obvious problems and was followed closely without difficulty. Its checklist format simplified the implementation process; appropriate consults, responsibility for completing tasks, patient transport to the operating room, and her subsequent weaning from mechanical ventilatory support were accomplished smoothly despite the one-year hiatus between the writing of the policy and its application. In fact, the patient's ICU attending had completed most of the preparatory steps before the protocol forms and the checklist were made available to him, perhaps due either to the logical approach of the policy or to his familiarity with it. The ICU physician's thoroughness meant that the supervising CCM physician had only a minor role in the preparatory phase and never met the family.

The ICU attending made all the initial contacts and participated in the initial discussions with the family once they raised the issue of organ donation. However, because he has extensive involvement with transplant surgery, the protocol disqualified him from attending the patient in the ICU and the OR once organ donation became a consideration. He

strongly regretted that the policy prevented him from completing the patient care continuum. The ICU attending had initiated therapy, cared for the patient for days, had a good rapport with the family, and felt that he should have been able to continue to provide care to the patient. Nevertheless, he understood the policy and its rationale and did not question the validity of the concerns about conflict of interest. Consequently he helped as much as he felt he could under the restrictions of the policy before withdrawing from the case. Conversely the supervising CCM physician was uncomfortable with his own lack of contact with the family and would have preferred an opportunity to develop a relationship with them. He had the sense of being the "withdrawal technician," rather than the patient's doctor.

#### *Social Issues*

*Aesthetics.* The atmosphere in the OR was described as reverential, expectant, somber, and quiet, with no speaking except the communication of vital signs. After the patient's death, the room remained quiet, although a new sense of urgency prevailed. The ICU nurses and CCM physicians felt a strong need to remain with the cadaver out of respect for the deceased and shared a sense that leaving would constitute abandonment of the patient. Remaining with the cadaver is not a routine practice in the management either of donors certified dead by neurologic criteria or of patients withdrawn from life support in the ICU, but it seemed necessary and appropriate to them after this rapid transition from living patient to cadaver/organ source.

All members of the team withdrawing support felt a need to acknowledge or to commemorate the passing of life by more than the pronouncement of death by the supervising CCM physician. The ICU nurses reported that when a patient dies in the ICU, the bedside nurse often participates directly in post-mortem care. It may be that this physical task allows the care giver an opportunity to accept death and come to psychological closure. Some suggested the observance of an analogous ritual in the OR, such as a brief prayer, eulogy by clergy, or a "moment of silence" for all present.

All health care team members agreed that it would have been very difficult and stressful to have had the family present in the OR at any time during the process because (1) the OR is an unfamiliar, cold, and antiseptic environment for the family; (2) the short time between death pronouncement and organ procurement would not have allowed the family

sufficient time to grieve; and (3) the juxtaposition of the transplant team in the next room and the family in the OR with the patient would have been uncomfortable for at least some members of the team. Most agreed that the situation probably would have been uncomfortable for the family as well. As it was, the family had virtually unlimited time to say good-bye and sufficient privacy and support to grieve in the ICU. A number of health professionals had developed relationships with the family and were available to them in the ICU to provide support. The family left the patient at a time they felt appropriate, and most observers felt that the family had achieved closure in the ICU.

The Nurse Manager of the ICU reported that the ICU nursing staff, both those involved and those not involved, were comfortable with their individual roles and their unit's role in the family's support, the patient's care, and the termination of life support. The nursing staff accepted the family's decision to withdraw medical support concurrent with their request for organ donation. The nurses involved wished to be and were included in all the discussions with the family.

*The Family.* The patient's family felt that they were well-informed about the procedure and that all their questions were answered. They were content with their decision to donate and stated, "It's made us more aware of the importance and quality of life to each and everyone of us." They were gratified to hear that the recipients were very grateful for their new lease on life and were doing well. They reported that if they were in the same situation again, they would make the same decision.

Subsequently, however, one member of the donor's family expressed a change in sentiment. He had read a news report about organ transplantation that he felt indicated that only individuals with financial resources would be put on the waiting list for organ transplantation. He concluded that only rich and powerful individuals would become recipients, and it angered him that average folks, such as himself, were being used to keep the rich alive. He stated that he regretted agreeing to donate the organs and was now attempting to talk others out of maintaining their organ donor cards. These comments reinforce the observation of Arthur Caplan (1993) that societal *perceptions* of transplantation medicine may affect organ availability far more than the identification of new donor categories. Renée Fox (1993) points out the anger and horror the NHBCD procedure might elicit among individuals. Interestingly it was neither the NHBCD policy, nor the family's experience that caused him to change his opinion, but rather a distant, unrelated event.

*Public Relations Concerns.* The medical director of CORE reviewed the UPMC Policy, and the Director of CORE and CORE's legal counsel conferred prior to the donation. They were cautious about accepting this particular patient because they wanted an absolutely trouble-free transplant process. There was concern that the patient would not expire following withdrawal and would develop organ ischemia and become unsuitable for donation. They reasoned that any procedural difficulty, technical problem, or indiscretion could be perceived as an overall failure and raise doubts both for physicians and society about the use of NHBCDs.

#### COMPARISON WITH UPMC CASES THAT ANTEDATED THE POLICY

This case differed from the four cases, described elsewhere (DeVita and Snyder 1993), that arose at UPMC prior to the NHBCD policy's implementation, primarily in the degree of its acceptance by health care team members. In the earlier cases, team members expressed concern about the propriety of the procedure, the lack of cooperation among the team members, and the adequacy of supervision of the procedure. Institutional review and approval of the practice and the protocol implementing it removed these concerns.

An educational process for all members of the health care team gave them an opportunity to ask questions about the procedure and to understand its rationale. Nurses, intensivists, and surgeons had a mutual understanding of each other's concerns and a carefully planned procedure to follow, which allowed for better cooperation and trust. The logistics of the protocol, which are admittedly intricate and had been a problem previously, were not a problem, and there was no confusion about as to the procedure to be followed.

#### ISSUES RAISED BY THE CASE

##### *Initiating the Discussion of Organ Donation*

The patient's family was closely involved in her care from the start, and they spoke with her physicians and nurses many times each day. It was during such discussions that the topic of organ donation was raised originally by medical professionals when they believed that the patient would die soon according to brain-based criteria. When "brain death" was no longer felt to be imminent or likely, no further discussion of organ donation occurred until the family raised the issue again in the context of treatment withdrawal. Because the issue of organ donation

originally had been raised by the medical team, this patient could have been disqualified as a potential donor; however, the team members and the Ethics Committee, which is required by policy to review these cases, felt that this case adhered to the intent of the policy—i.e., withdrawal of life support must be considered separately from organ donation. Once discussions of treatment withdrawal have begun, however, the possibility of organ donation should not be raised again by the health care team. This approach seems a bit contrived, but it is useful to separate two such complex decisions and it minimizes the influence of the donation option as a factor in the decision to forgo life support. Giving control over initiation of the discussion of organ donation to the family will help to assure society that physicians will not diminish ICU care on the chance that organs may be procured. Nevertheless, the requirement that it be the patient or family who initiates discussion of organ donation following the decision to terminate life support remains an area of controversy at our institution. One particular concern is that many opportunities for donation are missed because patients and families are not aware of the option to donate. Further experience and feedback will help shape the discussion of continuing this requirement.

#### *Code Status*

When patients with a “Do Not Resuscitate” (DNR) status who are being evaluated for death using neurologic criteria are considered for organ donation, they are often changed to full medical support in order to preserve perfusion of the organs and thus increase the likelihood of organ viability. The families of these patients are notified of the intent to change the DNR order. In the event of cardiac arrest in a “brain dead” patient who is to become an organ source, cardiopulmonary resuscitation (CPR) is initiated—i.e., perfusion is restored with chest compressions—and the cadaver is transferred immediately to the operating room while perfusion is maintained by the resuscitation procedure. The organs are rapidly recovered, and the CPR is discontinued.

The UPMC Policy requires that patients be “comfort measures only” prior to discussions of organ donation. The issue of the appropriate action if cardiac arrest should occur in such a patient was discussed at an Ethics Committee review of this case. In the case of the “neurologically dead” patient, the patient has already been pronounced dead prior to the initiation of the “resuscitative” procedure; however, patients awaiting the withdrawal of life support are not yet dead, and thus resus-

citative efforts may carry different burdens. A consensus evolved that since the family had requested organ donation and had consented to any appropriate measures necessary for procurement to occur, it is ethically acceptable, with family consent, for the patient to be put on "full code" status during the decision-making process and the ensuing period prior to procurement.

*Other Interventions without Patient Benefit*

The issue of code status raises questions about the propriety of other interventions that are of no benefit to the patient. For example, a trial of decreasing ventilatory support can help predict the likelihood that a patient will die quickly following life support withdrawal. Those patients who do not die within an hour of withdrawal will, in general, have had too much ischemic damage to their organs for them to be viable for transplant. It was not clear that the patient in this case would expire at all, let alone rapidly, following withdrawal of the respirator. This uncertainty contributed to a reluctance on the part of CORE and the transplant surgeons to mobilize so many resources when it was not clear that viable organs could be obtained. Consequently, one of the physicians briefly dropped the ventilator rate in the ICU to observe the patient's response and to gain a better idea of what would happen when support was withdrawn. This practice was not considered in writing the policy, and the issue will require further discussion and a possible policy change.

Other "nonbeneficial" procedures also were performed. Prior to death the patient was heparinized and prepped and draped for the subsequent organ procurement. Neither procedure harmed the patient, but clearly neither provided benefit to or was indicated for that patient. The latter is explicitly permitted by the policy, but the former is not addressed.

The physicians considered the administration of heparin to be similar to the prepping of the patient in that neither procedure benefited or harmed the patient, yet both clearly did benefit the recipient. The family desired donation and understood that some interventions necessary for successful organ retrieval would provide no benefit to the patient. The primary example of such an intervention is the need to withdraw life support in the OR. The Ethics Committee reviewed the use of heparin and agreed that it is allowable because it is not harmful and it makes the procurement of usable organs more likely.

Ironically, concern also was expressed about an intervention designed specifically for patient benefit. The supervising CCM physician provided premedication for the weaning of life support as is his routine (and so did not alter ICU patient care for the purposes of organ donation). One participant noted that the UPMC Policy permits the use of sedation when necessary to relieve perceived distress even if the distress is slight. However, he interpreted the Policy as explicitly excluding the use of "prophylactic sedation" from the care of these patients. He felt both that the administration of such medication could be interpreted by an objective observer as potentially hastening death and that its use was not indicated in this case because the patient had not demonstrated any distress or cognition.

#### *Pronunciation of Death*

Joanne Lynn (1993) has criticized the UPMC Policy on the basis that the requisite two minutes of asystole, ventricular fibrillation, or electro-mechanical dissociation is not known to be sufficient for determining that the cessation of circulatory and respiratory functions is *irreversible*. While the patient might well be dead following two minutes of one of those arrhythmias, she or he is not *known* to be dead at the time of procurement. The Ethics Committee agrees that data do not exist for determining the exact point at which auto-resuscitation will not occur in humans. In establishing the protocol the Committee chose to apply data on auto-resuscitation in animals and the clinical observations of critical care physicians in selecting the time.

This criticism—that the person is not *known* to be dead—is similar to those levelled against the neurologic criteria for determining death some 25 years ago. It begs the question of what defines death. The only thing that classified those patients as dead was that we (society) all agreed to the then newly-accepted criteria. The day before the neurologic criteria were written the same patient would not have been dead. In fact their hearts beat and their blood circulates: facts that, until that time, would have excluded the diagnosis of death for any patient since the primal beginnings of medicine.

By the cardiopulmonary criteria applicable to most patients, the patient in this case would have been declared dead at the time her heart sounds stopped even though her pulse pressure had not decreased to zero. At that point she was pulseless, without heart sounds, apneic, and unresponsive by physical exam. However, waiting for true pulselessness

(by central arterial catheter) assured further that her heart was, in fact, not beating and that the patient was dead by cardiopulmonary criteria. Cardiac depolarizations continued at a rate less than 20 when the patient was pronounced dead. (Cardiac depolarizations, which indicate electrical activity in the heart, not muscular activity, may occur for many minutes, even hours, after the heart stops beating and the patient is dead.) The heart was observed to not beat, and as expected, the patient did not bleed at the time of procurement.

Lynn also voices concern about the role of treatment plan in the determination of death. Under the protocol, and in ICU practice, because no attempt will be made to resuscitate patients who have forgone treatment, death—the irreversible cessation of cardiac function—is declared when it is determined that auto-resuscitation will not occur. Lynn (1993, p. 173) maintains that while an argument for including treatment plan in the criteria for determining death may be made and sustained, the paucity of professional literature addressing “the interaction of the possibility of treatment and the finding of irreversibility” makes it “... premature for the Pittsburgh protocol to rely upon one resolution of this issue—that treatment possibilities can be considered to be foreclosed by choice....” The authors of the policy attempted to isolate “the role of the treatment plan” by writing treatment options for NHBCD patients that are virtually identical to those for similar patients in the ICU who are not NHBCD candidates.

David Cole (1993) also questions the concept of irreversibility employed in the UPMC Policy. He believes that the protocol “... involves a totally implausibly weak construal of what it is for a loss of function to be irreversible” because “the criteria for determining whether or not a condition is irreversible cannot depend on whether others choose to intervene” (Cole 1993, p. 149). Despite this objection, Cole concludes that the patients declared dead under the protocol are really dead; he argues that the statutory requirement of irreversibility is too rigorous and does not coincide with the “ordinary concept of death.”

The question of resuscitability—“reversibility” in the statutory definition—is of moral concern only if the patient or physician chooses resuscitation. Although technically possible, resuscitation is, in practice, not available to the patient because of prior decisions, thus the possibility of resuscitation is morally irrelevant, and the patient is irreversibly dead when auto-resuscitation will not occur. Some of the concern about resuscitability (technically) and reversibility is philosophic: If a “dead”

patient is resuscitated successfully, was he in fact dead? On the one hand, the patient may never really have been dead, on the other, the physician may have restored life from death—something generally not credited to humankind. Some of the concern is legal: death statutes require irreversibility, yet do not define irreversibility. In writing the NHBCD policy, the Ethics Committee chose to accept a patient's "comfort measures only" status and not to alter the criteria for death because he or she was a potential organ donor. They reasoned that if a patient would be declared dead in the ICU, she or he also would be dead in the OR. The definition of irreversibility employed by the Ethics Committee hinges on the premise that no attempt at resuscitation will occur.

### *Social Implications*

Arthur Caplan (1993) has warned that the practice of procuring organs from non-heart-beating cadavers may result in a loss of trust and a resultant net decrease in organ donation. If the family involved in this case is any indication, that is not likely. They were more interested in the possibility of something good arising from a needless death than they were in the specifics of medical and philosophical debate. Their responses were typical of those expressed by the families of "brain dead" patients. While Caplan's concerns still may be true, early indications are that those involved in NHBCD are not put off by the procedure.

Renée Fox (1993) has strongly criticized the practice of organ donation in general, and non-heart-beating organ donation in particular, because of the cannibalistic quality that one person must die and be dismembered for another to benefit and, in the case of the UPMC protocol, the policy's insensitivity in removing the patient from the family and withdrawing support in the cold, impersonal environment of the OR. The weight of evidence suggests the opposite, however. Most persons in the U.S. approve of organ donation, and most families, including this one, who have donated organs describe a strongly positive experience. In this case the family chose to leave the hospital at the time of the patient's transport to the OR and were satisfied with their closure with the patient. They did not feel that insensitivity was exhibited.

### CONCLUSION

NHBCDs are a newly revisited source of organs in the United States, and their use raises many ethical and medical questions. The policy enacted by UPMC addresses many of these concerns in a way that allows

non-heart-beating organ donation in certain cases when life support is to be withdrawn. The medical professionals and the patient's family involved in the case reported in this article were largely supportive of the procedure and would participate again without changes to the policy. However, most of the medical personnel did suggest areas in which the policy could be improved. Physicians were uncomfortable with the arbitrary roles of the ICU attending and supervising physicians. They felt that a less restrictive policy would permit better continuity of care for the family. Allowing this, however, may reintroduce the conflict of interest concerns that prompted the rules. Another concern involves the use of procedures to benefit the organ recipients rather than the donor, including the administration of CPR and heparin. Such procedures have been identified and will be discussed with families as part of the informed consent for organ donation. Finally, the emotional responses of care givers to their patients' deaths, especially the need to ritually acknowledge a patient's death prior to organ retrieval, is important and warrants further study.

## NOTES

1. The working group consisted of a number of scholars who participated in a conference on the "Ethical, Psychosocial, and Public Policy Implications of Procuring Organs from Non-Heart-Beating Cadaver Donors" (October 9-11, 1992, Pittsburgh) and generated the articles that appeared in the June 1993 issue of the *Kennedy Institute of Ethics Journal*.
2. This type of premedication is administered routinely by most physicians withdrawing life support in the ICU. According to the UPMC Policy (1993, p. A-9), "There will be conscious patients who clearly can sense discomfort (e.g. patients with amyotrophic lateral sclerosis) and those who clearly cannot (e.g. cortical death). Clearly all patients who express discomfort should be treated. However, there is a continuous spectrum between those patients who clearly cannot sense discomfort and those who can. Therefore, in order that no patient will suffer discomfort, all patients in whom cortical death has not been confirmed must be treated for objective evidence of discomfort." Some physicians also suggest that some awareness may possibly exist even in the absence of "objective evidence of discomfort" and that it should be presumptively treated.

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