

Organ donation after neurologically unsurvivable injury: a case study with ethical implications for physicians

MARISA VALDES, RN, BSN, GAY JOHNSON, BA, AND JAMES A. CUTLER, CPTC

CME

ETHICS CME, Part 1 of 3

Target audience: All physicians

Learning objectives:

1. List the key points in the organ donation process in which the physician's efforts can facilitate a successful donation.
2. Explain decoupled request.
3. List the criteria for determining brain death.
4. Explain the physician's role in preserving organ viability in patients with unsurvivable neurological injuries.

Faculty credentials/disclosure:

Marisa Valdes, RN, BSN, and Gay Johnson, BA, are client services coordinators for Southwest Transplant Alliance. James A. Cutler, CPTC, is chief executive officer/president of Southwest Transplant Alliance. They have no significant financial relationships to disclose other than their employment. No unapproved/off-label uses of any product are addressed in the article.

Before beginning this activity, please read the instructions for CME on p. 241. This page also provides important information on the method of physician participation, estimated time to complete the educational activity, medium used for instruction, and dates of release and expiration. The quiz, evaluation form, and certification appear on pp. 241–243.

Today almost 80,000 patients are waiting for a vascularized organ for transplant in the USA, and >6500 patients each year die while waiting because an organ did not become available (1). With almost 18 patients a day experiencing preventable death, we are facing a national crisis in transplantation.

Physicians are recognized as the central figures in the delivery of health care, not only by other health care providers but also, most importantly, by their patients and their patients' families. As such, physicians play the first and frequently the most crucial role in whether a patient who has sustained a lethal neurological injury becomes an organ donor.

We present a case study of a patient who sustained a neurologically unsurvivable injury and the sequence of events involved in the care of this patient up to and including organ donation. We identify and discuss the ethical implications involved at each critical stage in the care of this type of patient and the steps needed to support the family of the patient and to facilitate an optimal organ donation process.

CASE STUDY

A 31-year-old man was admitted to the hospital via emergency medical services after suffering a severe closed-head injury resulting from a car-vs-pedestrian collision. On arrival at the emergency department, the patient was decerebrate to noxious stimuli, and his pupils were unequal and sluggish. The patient had been intubated in the field; he was given ventilatory assistance, and hyperventilation was initiated to reduce intracerebral swelling. Hemodynamic support was begun for low blood pressure and tachycardia on admission. A computed tomography (CT) scan of the head revealed a subdural hematoma with right-to-left shift and effacement of the right ventricle.

Neurosurgery services were consulted, and a neurosurgeon was present during the CT scan. After evaluating the patient and the CT scan, the neurosurgeon determined that the patient would not benefit from surgery and that the injury may have been unsurvivable. The trauma surgeon and neurosurgeon recommended that medical care, including hyperventilation to reduce cerebral edema, be continued until a period of observation could allow determination of the extent and irreversibility of the injury.

The patient was admitted to the trauma service intensive care unit. Next of kin were notified and were en route to the hospital.

Three hours after admission, the patient's injuries, condition, and grim prognosis were discussed at length with the family. Findings of the patient's neurological examination remained unchanged. The trauma team's plan was to provide respiratory support and observe the patient for further changes.

Twenty-four hours after admission, the patient exhibited a sudden and short hypertensive and tachycardic episode followed by moderate hypotension. Subsequent neurological examination revealed no purposeful movements to noxious stimuli, a Glasgow Coma Scale score of 3, fixed and dilated pupils, absent gag and cough reflex, and no spontaneous respirations. Neurology was consulted for brain death evaluation (Table 1), and the neurologist ordered a brain blood flow study.

At that point, the patient required high doses of norepinephrine and dopamine to maintain a marginal blood pressure of 90/40 mm Hg. The patient was also tachycardic, with a central

From Southwest Transplant Alliance, Dallas, Texas.

Corresponding author: Gay Johnson, BA, Southwest Transplant Alliance, 3710 Rawlins, Suite 1100, Dallas, Texas 75219 (e-mail: gjohnson@organ.org).

Table 1. Brain death criteria*

Brain death is the absence of clinical cortical and brain stem function when the proximate cause is known and demonstrably irreversible. Severe electrolyte, acid-base, or endocrine disturbances need to be absent.

Brain stem reflexes must be absent:

- Pupillary response to bright light
- Oculocephalic reflex (doll's eyes)
- Deviation of eyes to irrigation
- Corneal reflex
- Cough, gag, and respiratory effort (tested by apnea test)

Confirmatory tests are not mandatory but are desirable in patients in whom specific components of clinical testing cannot be reliably performed or evaluated. Confirmatory tests include the following and are listed in order of most sensitive test first: angiography, electroencephalography, transcranial Doppler ultrasonography, technetium Tc 99m brain scan, somatosensory evoked potentials.

*From reference 2.

venous pressure of 1, and presented with diabetes insipidus. The urine output had averaged >500 mL/hr for the past 5 hours. Blood urea nitrogen and creatinine levels were elevated (Table 2).

Two hours later, a radiologist reported that the flow study showed no blood flow to the brain. The nurse made a referral to the local organ procurement organization (OPO) because the patient's physical examination and brain blood flow study results were consistent with brain death.

An organ recovery coordinator arrived on site, evaluated the patient, and determined that the patient was a suitable candidate for organ donation. However, the coordinator was concerned that the patient's low blood pressure, hypernatremia, and rising levels on kidney and liver function tests might compromise organ viability. The coordinator offered some management guidelines to the attending physician, who then ordered more intravenous fluid and desmopressin to control the diabetes insipidus.

Ten hours after the blood flow study, the attending physician saw the patient and pronounced him brain dead. The attending physician informed the family about the patient's death. During this conversation, the physician "planted the seed" that organ donation may be an option for this patient. The patient's family was very upset upon hearing that the patient had died and immediately expressed negative feelings about donation. Following this conversation, the coordinator asked the physician for the opportunity to provide the family more information about organ donation. The physician agreed, and an OPO staff member trained in grief counseling and requesting organ donation (i.e., a family services coordinator) spoke with the family.

The family services coordinator spent time with the family and recognized that they did not have a clear understanding about brain death and were in denial about the patient's death. After spending some time with the family, the coordinator reinforced what the physicians had told them and helped them through their grief process to the point at which they began to express an understanding of brain death. Then, the coordinator began the process of explaining donation options to the family.

Table 2. Progression of laboratory values

Serum component (units)	Friday 11 PM*	Saturday 7 AM	Saturday 7 PM	Sunday 7 AM	Sunday 7 PM
Sodium (mEq/L)	139	150	152	160	151
Creatinine (mg/dL)	0.8	1.5	2.3	1.9	1.7
BUN (mg/dL)	11	24	29	26	25
AST (U/L)	26	30	28	31	25
ALT (U/L)	48	51	57	62	48

*Admission.

BUN indicates blood urea nitrogen; AST, aspartate aminotransferase; ALT, alanine aminotransferase.

Table 3. Organ disposition

- The liver was successfully transplanted into a 48-year-old woman with chronic liver failure from hepatitis C.
- The kidneys were not transplanted due to the irreversibility of the existing prerenal failure.
- The cardiologic evaluation revealed a low ejection fraction and therefore the heart was unsuitable for transplant.
- The lungs were not transplanted due to the Gram's stain results and large amounts of purulent secretions found during the bronchoscopy.
- The pancreas was not transplanted due to abnormally high glucose levels created by the need for extensive rehydration to correct significantly elevated sodium levels.

After a long discussion, the family agreed to donate all organs and tissues. The liver was successfully transplanted (Table 3).

DISCUSSION

The physician's efforts can facilitate a successful organ donation at several key points in the process: early identification of potential donors, treatment of the patient, effective communication with the family, referral to the OPO, and collaboration with OPO staff to inform the family about the patient's demise and to offer the option of organ donation. These are all integral components of a successful organ donation process.

Treatment of the patient prior to brain death pronouncement

From the OPO perspective, management of the patient with a neurologically unsurvivable injury (i.e., a potential organ donor) includes maintaining optimal perfusion and oxygenation. This means keeping systolic blood pressure at >100 mm Hg and arterial oxygen saturation at >90%, correcting acid-base and electrolyte abnormalities, and making any other intervention that will prevent hypoperfusion and hypoxemia of the internal organs.

The patient's systolic blood pressure 24 hours after admission was low despite high doses of norepinephrine and dopamine. The patient's central venous pressure was low, and fluids were not being replaced after prolonged and excessive loss. At this point, laboratory values indicated incipient prerenal failure.

Where does the physician's responsibility lie in providing optimal management of a patient whose prognosis is dismal and

who in all likelihood is only a potential organ donor? Is physician concern about organ viability prior to brain death a conflict of interest?

Providing optimal hemodynamic management prior to brain death will eventually lead to the recovery of more and better-quality organs. This kind of hemodynamic management should not alter the patient's treatment and deserves serious consideration. Some physicians state that their time is better spent caring for their live patients, but we would like to offer a challenging thought—the patient that a physician deems lower priority can potentially help save the lives of 7 or more people who will die for want of an organ (3).

If physicians are unsure of the proper medical interventions for maintaining a potential organ donor, an early consult with the OPO will provide them with a trained organ recovery coordinator who will assist in caring for the potential organ donor by providing suggestions for balancing the needs of a neurologically injured patient and other organ perfusion considerations. Indeed, this type of consultation is encouraged as a matter of public policy through federal regulation in the Medicare Conditions for Participation of Hospitals (4).

Concerns about conflict of interest are alleviated by the fact that optimal cardiovascular resuscitation will not have an impact on treatment of the neurologically devastated patient, but it will dramatically affect the lives that will be saved through organ donation. If we are to prevent the nearly 18 deaths that occur daily of patients waiting for a transplant, it is imperative that attending physicians recognize their role in preventing those deaths by maximizing organ viability (3).

Communication with the family and the impact on obtaining consent

Providing clear, consistent, and timely information to the family about the patient's demise is essential in order to establish trust. In the case described here, the family waited 10 hours to hear from the physician the results of the blood flow study and the news of the patient's death. For the anxious family, is this an appropriate length of time? Can this create undue anxiety and feelings of mistrust among family members? Could this information have been provided to the family much earlier? What impact does caring for the family have on the organ donation process?

It is generally understood that if a family perceives lack of attention from the health care team, they can get the impression that the team doesn't care about them or their loved one. The organ donation process cannot begin until the family knows and accepts that their loved one is dead. If the conversation with the family about the patient's death is delayed, it can complicate the organ donation process and place organ viability at risk. Ideally, the family needs to be given consistent and timely information by all members of the health care team.

Research suggests a number of ways in which the hospital experiences of families may strongly influence their decisions. Families who chose not to donate stated more often that hospital staff provided inadequate or insensitive care and that the organ donation request had been handled poorly. Findings also suggest that, in many instances, a bond of trust between the fam-

ily and health care providers was never established, leading the family not to donate (5).

Offering the option of organ donation

The timing of the donation discussion has been proven time and again to be highly significant in obtaining a positive outcome (6). Decoupled request is a term that describes separating the 2 conversations—the brain death discussion and the organ donation discussion. Studies indicate that if this approach is used, consent rates are higher. Giving families time to understand and accept that their loved one is dead must occur prior to the organ donation request. When families hear devastating news they are likely to be in shock and denial, which can lead to the inability to absorb and comprehend further options. Therefore, many families react negatively when death and donation are discussed at the same time. Decoupled request is a crucial factor in increasing consent rates for organ donation (7).

In this case, the physician told the family that their loved one was brain dead and also “planted the seed” about organ donation in the same conversation. Is this the right time to talk about organ donation? The family's initial reaction was negative, though after speaking to the family services coordinator they eventually consented. Who is the best person to talk to families about donation? Why is the government involved, and why is it telling hospitals how to practice medicine?

Approaching a family about donation is not as simple as asking a question; it is an intricate and sometimes complicated process. Everyone on the health care team has a role and must collaborate to provide optimal care for the family. As the central figure, the physician must establish trust by providing frequent, consistent, and candid information to the family. Other members of the team (nurses, chaplains, social workers, OPO staff) must reinforce this information by using consistent terminology. The physician's key role in the donation discussion process is ensuring that the family understands that the patient has died.

Giving families time to understand and accept that brain death has occurred is crucial before approaching them about donation. Once the family begins to express an understanding that death has occurred, the family services coordinator can provide information about organ donation. These coordinators have received extensive training in the mechanics of talking to grieving families about donation. Studies indicate that when a trained individual offers the option of donation, consent rates are significantly higher (5). The Center for Medicaid/Medicare Services (CMS, formerly the Health Care Financing Administration) recognizes the validity of these studies and in 1998 made modifications to the *Code of Federal Regulations* based on their findings. CMS states that an individual who talks to families must be a trained designated requestor. This is defined as “an individual who has completed a course offered or approved by the OPO and designed in conjunction with the tissue and eye bank community in the methodology for approaching potential donor families and requesting organ or tissue donation” (4).

Studies indicate that the more time spent discussing donation and the more information provided, the more likely the family will be to donate, even when their initial reaction to the request was less than favorable (8). The family services coordi-

nator spends an average of 4 to 6 hours with each family providing emotional support and information about donation.

CONCLUSION

Many factors influence the success of the organ donation process. In this article, we have briefly highlighted some of the most important ones.

Studies have shown that the 3 leading reasons why patients with lethal head injuries do not become organ donors relate to the care of the patient, hospital staff interaction with and support of the patient's family, and the effectiveness of the physician interaction with the OPO staff to support the patient's family by offering the option of organ donation in a caring and sensitive manner (5, 8). It is of utmost importance that everyone involved in the process diligently try to relate to family members on a human level and meet their informational and emotional needs.

As physicians and health care teams caring for potential organ donors change their mindsets to promoting organ viability, the hope of recovering more and higher-quality organs will become real. It is reasonable to believe that providing optimal perfusion and oxygenation prior to brain death will increase the number of organs recovered, which means that more patients will receive lifesaving organ transplants.

One fear the public has regarding organ donation is that the medical team will fail to care for the patient because they are more interested in the organs than the individual. Having the primary physician ask for consent for donation may compound this fear. Many physicians feel that, since they took care of the patient before brain death and have a personal rapport with the family, no one understands the family like they do, and therefore they should request consent (3).

We believe this commitment to the family is misplaced. Instead of making the family more comfortable with their decision, it generates unnecessary concerns regarding the physician's priorities. Not surprisingly, requests for donation are more likely to be honored if the physician and the OPO work together as a team. The physician is critical in assisting families in their understanding of brain death prior to the discussion of donation. It is then that the OPO representatives help the families work through their grief and make the request for donation (3).

The organ donation process can be a complex one and involves the efforts of many individuals. If nurses, physicians, chaplains, and OPO staff work collaboratively to care for the patient and the family, better outcomes can be achieved. Every time we fail with one donor, we are potentially unable to help save the lives of as many as 7 people.

1. United Network for Organ Sharing. Waiting list. Available at http://www.unos.org/frame_Default.asp?Category=Newsdata. Accessed December 2001.
2. The Quality Standards Subcommittee of the American Academy of Neurology. Practice parameters for determining brain death in adults (summary statement). *Neurology* 1995;45:1012-1014.
3. Edwards N. How the medical community can help increase organ donation. *UNOS Update* 2001(August):25.
4. *Code of Federal Regulations*, Title 42—Public Health, Section 482.5.
5. DeJong W, Franz HG, Wolfe SM, Nathan H, Payne D, Reitsma W, Beasley C. Requesting organ donation: an interview study of donor and nondonor families. *Am J Crit Care* 1998;7:13-23.
6. Niles PA, Mattice BJ. The timing factor in the consent process. *J Transpl Coord* 1996;6:84-87.
7. Garrison RN, Bentley FR, Raque GH, Polk HC Jr, Sladek LC, Evanisko MJ, Lucas BA. There is an answer to the shortage of organ donors. *Surg Gynecol Obstet* 1991;173:391-396.
8. Siminoff LA, Gordon N, Hewlett J, Arnold RM. Factors influencing families' consent for donation of solid organs for transplantation. *JAMA* 2001;286:71-77.