

Diagnosing Death: What's Trust Got to Do with It?

LANCE K. STELL, Ph.D.

Abstract

Physicians licensed to practice medicine have enjoyed socially endorsed, legally underwritten status-trust to a remarkable degree. However, such trust is not endorsed equally by all segments of American society, most notably, by African Americans. Because physicians underappreciate this fact, they fail to understand how routine medical behavior can disproportionately exacerbate African Americans' pre-existing suspicions. On the other hand, overinterpretation of this fact needlessly risks despair. A theory of trust provides guidance in resolving clinical conflicts. **Key Words:** Brain death, diagnosing death, minorities, trust, organ donation.

WHAT HAS TRUST got to do with diagnosing death?

Quite a lot! Especially in a setting where: death is unexpected; its cause is a neurological catastrophe, the worst damage from which is largely unapparent; the full range of ICU resources have been deployed to support the patient's respiration and blood pressure, to maintain appropriate fluid volume and electrolyte balance; neurological criteria have been used to diagnose death; the family interprets "routine request" (albeit, ineptly made) for organ donation as evidencing insufficient regard for the patient; unit personnel use clinical language which the family takes as sending a "mixed message" about the fact of death; the physician(s) are unchosen strangers; and the deceased's family is African American, whose perceptions of the health care system deprive "Trust me, I'm a doctor" of reassurance or persuasion.

Case

Early on a Friday evening, a formerly healthy African American male in his early fifties is found unconscious in his apartment by a friend. The patient is unarousable and seems not to be breathing. Resuscitative measures are administered successfully in the field. The patient is admitted to the neurosurgical intensive care unit and is placed on mechanical ventilation. The on-call neurosurgeon's initial exam yields a preliminary diagnosis of a major cerebrovascular accident. A CT scan of the patient's head confirms the diagnosis, revealing a massive intracranial hemorrhage involving virtually the entire left hemisphere, a probably unsurvivable injury. Initial attempts to contact next-of-kin (who live out of town) prove unsuccessful. The neurosurgeon orders maximum supportive measures over the weekend, pending a comprehensive review by the unit attending on Monday morning.

By Monday morning, the patient's neurological status has deteriorated markedly. He is now totally unresponsive, pupils fixed in mid-position, blood pressure unstable. The attending neurosurgeon increases pressor support, verifies that the patient is not hypothermic and that his blood gases are within appropriate ranges, and then performs an "apnea test." The patient is observed for

Address correspondence to Lance K. Stell, Ph.D., Department of Internal Medicine, Carolinas Medical Center, P.O. Box 32861, Charlotte, NC 28232-2861

10 minutes and displays no respiratory drive. The attending documents probable "brain death." In mid-afternoon, the attending repeats the protocol with the same results. He documents the diagnosis of "brain death" and orders the patient to be removed from "life-support" and to be transported to the morgue when asystole occurs. It is six in the evening. The attending is about to leave the hospital for the day. He asks the unit charge-nurse to attempt to contact the patient's family again. This time, she succeeds in contacting a family friend and leaves word that a family representative should call the hospital as soon as possible.

Just as the attending is about to leave the unit, the patient's mother calls. The neurosurgeon takes the phone, summarizes how the patient was found, reiterates the clinical course, and concludes by telling her that her son is "brain-dead." He tells her that "life-support" was in the process of being withdrawn.

The patient's mother reacts emotionally. She says it is impossible for this to be true. He was "just fine" when she had seen him on Friday morning. She says that surely there has been some mistake. She implores the physician not to do anything until she gets there. The neurosurgeon agrees reluctantly to delay implementation of his orders. He concludes the conversation by mentioning to the mother that representatives from Life-Share may want to meet with her in light of the decision to delay removal of "life-support." He adds that whether this conversation occurs or not, is entirely up to her, and she doesn't have to talk to a Life-Share representative.

Even though the family lives 30 miles away, within an hour the patient's mother and 10 family members (including several from New Jersey and New York who had just arrived to visit the patient's mother) have assembled in the unit. The mother approaches her son and comments that he is warm, looks like he's sleeping, and adds, skeptically, that he "looks too good to be dead." Another family member notices that the monitor is not "flat line" but instead displays values for heart rate and blood-pressure.

The family members huddle briefly and then, through the patient's older brother, announce that they do not accept what the physician has told them, that they want a second opinion, and that they intend to make all medical decisions on the patient's behalf, specifically any decision to withdraw "life-support." Another family member comments that the doctors seem more interested in getting the patient's organs than in taking care of him. To family members, it seems apparent

that the equipment which the doctor himself calls "life support" is working. It "supports" the patient's vital signs, as they can see for themselves on the monitor. The family regards the doctor's order to withdraw support as revealing a plan to let the patient die to get his organs.

The physician is emphatic that he has not made a mistake. The patient is "brain dead." The "signs of life" the family notices are present only because of the drugs and the machines. He repeats his intention to withdraw "life-support" immediately. He claims a legal responsibility to determine whether death has occurred and to pronounce it. Once he has done so, he maintains, it is unethical to treat the dead as if they were alive. He insists there is no conspiracy to get the patient's organs. On the contrary, the law requires that he explore family willingness to donate. The family circles around the bed and refuses to move aside. The physician asks the charge-nurse to call hospital security.

"Trust Me, I'm a Doctor": A Theory of Status-Trust

Continuously monitoring others, out of fear of the harm they may do, is burdensome (1). Trusting them not to cause harm lightens the burden, but presents a risk—trusting the untrustworthy. The risk increases in cases where one relies on another to act on one's behalf, to use his expertise to carry out one's will or to promote/protect one's interests. The grant of liberty necessary for effective agency creates an opportunity for the agent to betray trust for personal advantage (2–4).

The reliance problem compounds when the agent serves in multiple capacities simultaneously, e.g., not only as one's physician, but as physician-advocate for other patients, as a public health officer, as deputy law-enforcement officer, duty-bound to report to authorities certain suspected violations, as required-requester for organ donation, as resource economizer, etc. Awareness of multiple agency creates reasonable fear about how one's physician ranks conflicting obligations (5). The reliance problem further compounds in relations with minorities who suspect the trustworthiness of institutional officials generally, and surmise that white-coated strangers tend to rank lowest the obligations owed to members of their minority group (5). The resulting mix of anxiety and suspicion readily transforms routine clinical behavior into confirmatory evidence for worst fears, especially when the agent is an unchosen stranger. Choosing the agent mitigates fear to a

degree. We tend to trust more the agents we have chosen or with whom we otherwise identify, whatever the wisdom of such choices.

Trustworthiness is like credit-worthiness. Each implies desert. But desert cannot be determined directly, so everyone must use surrogate measures instead. Selection of surrogate measures involves a trade-off between accuracy and ease of use. Rough and ready measures (e.g., those based on socially endorsed stereotypes) promise ease of use, but guarantee comparatively inaccurate estimates of a person's ability and determination to repay debt or fulfill professional obligation. More finely crafted surrogate measures promise greater accuracy but are harder to master, require gathering harder-to-get information, and take longer to apply. However accurate or mistake-prone, surrogate measures only provide indirect estimates of one's underlying credit-worthiness or trustworthiness.

In general, therefore, the amount of trust anyone actually enjoys depends on the perceptions and estimations of others, rather than on one's genuine "desert." In addition, one's confidence that one deserves trust can influence (not always favorably) the amount of trust others will accord. The display which conveys self-assurance to some, intimates arrogance to others. And finally, positive or negative perceptions by others of one's profession and professional colleagues are also a major factor in the amount of trust one will receive.

Historically, the medical profession in the U.S. has enjoyed legally underwritten, socially endorsed "status-trust" to a remarkable degree (2, 4). Unlike other licensed professionals (e.g., lawyers, engineers), who have been subordinated to fiduciary law to regulate foreseeable conflicts of interest with those they serve, the medical profession is trusted to regulate itself (4, 6).

The medical profession exercises near-absolute control over the number of medical schools that exist in the U.S., as well as their admissions criteria and curricula. Licensed physicians establish, review and occasionally discipline graduate medical education programs and residencies. Licensed physicians dominate state medical licensing boards. They have near-exclusive control over professional peer review, over continuing education requirements, and over member discipline. They are trusted to determine legally when a person dies. They do so using tests they devise and validate. They evaluate, determine and certify disability for insurance purposes. The prescription system secures to them exclusive authority over access to many drugs and medical devices,

enabling manufacturers to charge higher prices than would otherwise be possible.

Such extraordinary professional autonomy cannot be explained by reference to expertise alone (2). Individuals who have acquired medical knowledge, even to a high degree, have no right to practice medicine, no right to social privilege or to enhanced economic opportunity (7). Yet a licensed physician does. By law, he obtains his privileges from other licensed physicians charged with the responsibility to evaluate his skills and character on society's behalf. By and large, only other licensed physicians can restrict or abolish the right to practice. All this serves to reinforce a perception that a licensed physician owes his professional life to other licensed physicians.

How might the medical profession's extraordinary, legally created autonomy be justified? Perhaps like this. In theory, the license to practice medicine signifies that its holder is party to an "understanding" between the medical profession and society (2). In exchange for a legally protected monopoly over defined services which the license to practice gives them, medical professionals as a group incur obligations to promote the public's health care interests, to define and uphold standards of care, to pursue excellence, to exercise stringent peer review, and to abide by an altruistic ethic of service. This service-ethic imposes on the practitioner duties to advocate vigorously for his or her patients' health interests, to use learning, skill and judgment for the individual patient's benefit, and to resolve conflicts of interest in the patient's favor.

The "understanding" between society and the medical profession establishes, gives content to and (supposedly) justifies the public's trust in it (2, 8). The public's trust in the medical profession has two aspects, one cognitive, involving widely shared beliefs about the profession's knowledge, skill and character, the other motivational (9), involving dispositions to take seriously what the profession as a whole thinks about health and illness, to think well of, to speak well of and to rely on licensed physicians more or less exclusively for health care. These cognitive and motivational elements constitute the medical profession's status-trust with the public.

How much status-trust the medical profession enjoys varies with time, between social and ethnic groups, and between individuals. Anything that influences social perceptions of doctors—breakthroughs in medical science, Medicare fraud, dramatic television shows, exposés on *60 Minutes*—can affect the profession's status-trust, determining how much or how little it devolves to

individual practitioners. In short, status-trust helps determine the degree of trust which a randomly selected patient tends to place in a randomly chosen, licensed physician.

Status-trust contrasts with “merit-trust.” Merit-trust, which has analogous cognitive and motivational elements, is based on perceptions of an individual practitioner’s trustworthiness. These perceptions are to some degree independent of those grounded in professional status. Such perceptions may be accurate or fanciful. They may derive from mismeasures, e.g., the physician’s apparent empathy, rather than his or her dutiful pursuit of a rigorous continuing education program. Merit-trust in one’s own physician is commonly associated with affection and loyalty. It may be shallowly based, because of mere familiarity or because of the fact that one has chosen her, or it may be based more deeply, because of significant health crises she has skillfully seen one through.

Status-trust benefits physicians generally, by motivating patients to accept inconveniences they would not tolerate otherwise—long waits for service, very brief face-to-face visits, health care information poorly explained, etc. Indeed, status-trust motivates patients not only to tolerate, but even to defend objectionable conduct widely characteristic of the profession. For example, physicians’ chronic lateness or preoccupation tends to be rationalized by invoking unforeseeable but presumed weighty responsibilities, rather than criticized as evidence of poor time management (9). It motivates interpreting the professions’ restrictions on physician supply as evidence of its high standards, rather than as shrewd income protection. Status-trust motivates patients to accept medical pronouncements which deny appearances or seem contrary to common sense, e.g., that someone who looks well has cancer and is dying, that it is necessary to continue taking medicine even after one feels better. Status-trust enables physicians to substitute assertions and commands for lengthy accounts and explanations.

Status-trust in the medical profession is valuable to society. It economizes on “knowledge costs” for the layperson. Rather than *caveat emptor*, which recommends arms-length caution when dealing with non-licensed professionals, legally underwritten status-trust permits patients to assume that it is not risky to disrobe at the request of a white-coated stranger (8). Status-trust entitles patients to believe that they will be examined, not fondled, and that information disclosed in the clinical encounter will be kept in confidence.

Status-trust has enforceable content for patients. It vests in them a legal right to expect

that any licensed physician possesses the degree of learning and skill ordinarily possessed by his professional peers who do similar work, that he will use his best judgment and exercise reasonable care in the exercise of his skill for the patient’s benefit. In short, status-trust entitles patients to believe that the holder of a medical license will perform within “the professional standard of care.” Should the physician harmfully betray status-trust, he is liable in damages for malpractice (6, 10).

The medical profession’s obligation to promote the public’s health care interests (part of the “understanding” referred to earlier) is vague, but not totally lacking in content. Equality of opportunity and fair competition are important social values in the United States. Our society ought not to create privilege-to-practice monopolies unless the health care interests of all citizens are promoted equally as a result. Just as public service monopolies are granted with the understanding that service must be provided to all citizens within a geographical area, so, it might be argued, medical monopolies must do the same. The medical profession’s acceptance of its legally protected monopoly implies a duty to take equal citizenship seriously. Arguably, the idea of respect for equal citizenship imposes on the medical profession ethical duties to make its services equally available and to require members to practice medicine without discrimination.

My sketch of the rationale for medical autonomy based on social “understanding” should not be taken as proof that state-licensing of medical professionals is a good idea, all things considered. Much can be, and has been, said against it. It has been argued that the profession’s most powerful voice has repeatedly frustrated attempts to implement any aspect of the “understanding” which threatens physicians’ incomes, that it has refused to demand pro bono service to the poor as a professional responsibility, that licensed physicians behave more like a fraternity than a profession when it comes to weeding out incompetent or unethical practitioners, that continuing medical education is a euphemism for tax-deductible vacations in pleasant places (2–4). All of these claimed defaults are predictable from the premises of an economic theory of politics (rent-seeking theory) (11).

“I’m a Doctor (Don’t Trust Me)”: Status-Distrust

The contrary of status-trust is status-distrust. It too has cognitive and motivational elements.

Status-distrust is not merely the absence of status-trust. On the contrary, status-distrust involves skepticism that the medical profession takes seriously the responsibilities which derive from its “understanding” with society, for example, the responsibility to treat all citizens equally and without discrimination (5).

Status-distrust of the medical profession may manifest in many ways. It might combine skepticism regarding the profession’s altruism with a selective focus on aspects of the American Medical Association’s lobbying efforts which seem self-serving, rather than on those which might seem more public-spirited. It may include the tendency to pay more attention to stories about physicians’ errors and ethical lapses than to those about their sacrifices and successes. And it may generalize these shortcomings to all or most members of the profession.

Status-distrust motivates one to expect bad treatment from white-coated strangers, to challenge or disobey them rather than to be compliant. Motivated skepticism of doctors explains how routine clinical inconveniences such as misplaced charts, short visits, failures to listen attentively, and physician assertiveness would tend to be interpreted as disrespectful, contemptuous, or evidence of bad faith.

Status-distrust of physicians is more widespread among African Americans than among whites (12–14). Studies show that African Americans are twice as likely as whites to rate their health care services as fair or poor. Indeed, one study showed that 8 of 10 African Americans perceive U.S. society as unfair, especially with regard to its economic and legal institutions. Another recent study found that 57% of African Americans vs. 31% of whites think that the U.S. economic and political system is unfair (5).

These findings have obvious relevance for efforts to improve the treatment African Americans receive socially and politically, including improvement in the quality of health care services delivered. But their implications are even more striking in the context of the theory of status-distrust. That African Americans disproportionately regard social institutions as unfair implies that they will tend not to identify with those institutions, not feel a sense of “ownership” of them, not regard their operations as “valid” (on the assumption that one tends not to identify with what one regards as bad or unfair). Tending not to identify with an institution because one believes it is unfair will motivate one to place reduced status-trust in its officers.

African Americans’ disproportional status-distrust of the medical profession will tend to have negative consequences for physician-patient relations even when there is no “objective” disparity in service. Since African Americans’ motivated skepticism regarding physicians is comparatively strong, doctors simply do not have as much trust to “bank on” with this minority as they do with others (13, 14). This means that merit-trust must be won on an individual basis, to compensate for the marked deficits the profession as a whole has in the eyes of African Americans. Physicians who are African American may enjoy a marginal gain in status-trust with African American patients based on ethnic identification, but the magnitude of the gain varies, may be obliterated at the first utterance, and not infrequently is swamped by status-distrust of white-coated strangers.

The Trust-Inventory: Building Merit-Trust

The likelihood of a successful clinical encounter is reduced when a physician attempts to bank on trust he does not have. If the patient or other decision maker distrusts the profession as a whole, not to mention all powerful institutions, and if the clinician himself has built up little or no merit-trust with the individuals involved, he will not enjoy the luxury extended by the happy assumptions that doctors are not only highly skilled, but mean well and should be believed (and obeyed). If so, determining how much trust one has to work with and how much one may need in the circumstances is the first step in forestalling disaster.

What might such an inventory have taught the physicians involved in the case presented earlier? Status-trust = low. Merit-trust = zero. Amount of trust needed? More! In addition to the disproportionately high status-distrust of physicians among African Americans, and the fact that the physicians in this case were not chosen by the patient or family, there were several compounding factors. Studies in the medical literature reveal that many citizens doubt the validity of “brain death” (15, 16). One state (New Jersey) recognizes a right of families to veto the use of neurological criteria to determine death. Another (New York) urges physicians to “accommodate” family concerns about the validity of brain death (17). Recall that some of the family members involved in this case were residents of New Jersey, a fact neither appreciated nor explored.

Fear of incorrect diagnoses of death has a long social history (18). News accounts of recent

medical errors in diagnosing death have lodged firmly in the popular mind. High status-distrust will tend to highlight such accounts. Robin Cook's *Chromosome 6* and the film *Coma* exacerbate public fear of organ transplantation and the motives of medical professionals who do it. African Americans' suspicions of organ transplantation are well-documented, even in living-related donor circumstances (12).

Also, the physicians in this case were asking family members to deny the validity of what their senses seemed to tell them about the patient's condition (he didn't have a mark on him, he looked too good to be dead, he felt warm to the touch, his monitor displayed "vital signs"). The clinical language used with the family, although not at all unusual in an intensive care unit, exacerbated suspicion (19). "Brain dead" when conjoined with "life-support" invited the family to think that the patient was not really dead, and that removing "life-support" would kill him for sure.

What trust-building efforts actually helped in this case? All displays of authority were halted. Hospital security forces were asked to leave the unit and told not to return. Representatives from Life-Share were asked not to approach this family for organ donation. The family was asked to ratify this request, which it did.

The family was invited to a conference room, with an assurance that no equipment would be removed from the patient in their absence. Only one representative from the ethics committee accompanied them. Despite having been briefed beforehand by the attending physician and unit nurses, the ethics consultant asked the family to educate him about what happened. Listening carefully to the family's account took 45 minutes, during which the ethics consultant said virtually nothing, neither by way of explanation nor defense. An interesting fact emerged. The patient's fiancée was suspicious that the "friend" who found the patient unconscious might have tricked or otherwise induced the patient to ingest cocaine. (All family members present said that the patient had been "clean" for three years.) The fiancée, supported by other family members, suspected that foul play had caused the patient's sudden illness. They worried that if the patient was removed from "life-support" the suspected criminal role played by the "friend" would be clouded. They were unanimous that, if the patient died, an autopsy should be performed and the police notified.

When the family seemed satisfied that their account and concerns had been fully laid out, the ethics consultant asked whether family members would permit him to invite two physicians to dis-

cuss the case—a radiologist who would review with them the CT scans of the patient's brain and a neurologist who would explain how it was possible to diagnose death using neurological criteria. The family agreed.

The radiologist showed the family a CT scan of a normal brain. He oriented them regarding right/left and explained how the films showed brain structures. Then he showed the patient's CT scans. The visual evidence of the patient's stroke made a notable impression. Family members asked many questions, especially whether cocaine could cause such damage to the brain.

The neurologist explained to the family what is involved in diagnosing death by neurological tests (17, 20). He clarified that these do not amount to a "new" definition of death, by relating these to traditional bedside findings (general unresponsiveness, pupillary non-reactivity, apnea and absence of heartbeat). He explained that all the traditional tests implicated the absence of brain functions directly or indirectly (21). General unresponsiveness, pupillary nonreactivity and apnea implicated the absence of brain functions directly. The absence of heartbeat, because of its dependence on breathing, implicated brain functions indirectly. The neurologist explained that the tests used to determine death in this case revealed unrecoverable, irreversible damage to the patient's whole brain. He assured the family of the certainty of the diagnosis—that the patient was dead and had been pronounced dead. Nevertheless, since second opinions have a customary place in medicine, he offered to help secure one if the family wished. They didn't. Displays of grief replaced incredulity.

The neurologist then invited the family to accompany him to the bedside for removal of all interventions. They accepted. The ethics consultant offered to call a representative from Pastoral Care. The family accepted this too. When all were ready, the neurologist took the family to the bedside and began removal of all equipment attached to the patient.

Suspicions flared again when the patient's body reacted to the removal of the interventions. This possibility had not been explained in advance. There were more accusations, but not so vehemently expressed this time. The neurologist's explanation seemed to be accepted. Displays of grief eventually eclipsed residual skepticism. Not a happy ending, not even the best that one could have hoped for in the circumstances, but less bad than seemed likely only an hour earlier.

Ethical Diagnostics

Medical diagnosis is hard. Many disease-states (not to mention the absence of disease) may be “consistent with” the presenting complaints and symptoms. Multiple rule-outs may be necessary before a diagnosis can be fixed. Ethical diagnosis is hard too. There are multiple ethical wrongs which present in a clinical setting: disordered values, damaged relationships, complex histories, confusing accounts, changing stories, twisted causal chains, bad luck and surprises. In ethics, as in medicine, performing a differential diagnosis with systematic “rule-outs” helps to avoid mistakes.

The ethicist disregarded the rule in this case. He quickly settled on status-distrust as a primary working diagnosis and ignored other plausible, even tempting possibilities (e.g., that unexpected death tends to trigger psychological “denial” more strongly than expected death). In place of a meticulous ethics work-up, he substituted a rule of thumb consistent with the theory of status-distrust.

References

- Hobbes T. *Leviathan*. In: Oakshott M, editor. New York: Collier Books; 1962.
- Buchanan AE. Is there a medical professional in the house? In: Spece RG, Shimm DS, Buchanan AE, editors. *Conflicts of interest in clinical practice and research*. New York: Oxford University Press; 1996. pp. 105–136.
- Morreim EH. *Balancing act: The new medical ethics of medicine's new economics*. Dordrecht: Kluwer Publishers; 1991. ch.5.
- Rodwin MA. *Medicine, money and morals: Physicians' conflicts of interest*. New York: Oxford University Press; 1993.
- Blendon RJ, Scheck AC, Donelan K, et al. How whites and African Americans view their health and social problems. Different experiences, different expectations. *JAMA* 1995; 273:341–346.
- Epstein R. *Mortal peril*. New York: Addison-Wesley Publishing Co., Inc.; 1997. p. 401.
- Bayles Michael, *Professional ethics*. Belmont (CA): Wadsworth; 1981. p. 27.
- Canterbury v. Spence*, 464 F.2d 722 (U.S. Ct. App. D.C. Cir. 1972). (“The patient’s reliance upon the physician is a trust of the kind which traditionally has exacted obligations beyond those associated with arm’s-length transactions.”)
- Mele AR. Real self-deception. *Behav Brain Sci* 1997; 20(1):91–136.
- Keeton WP, Dobbs DB, Keeton RE, Owen DG. *Prosser and Keeton on the law of torts*. St. Paul (MN): West Publishing Co.; 1984. sec. 32.
- McChesney FS. Rent extraction and interest-group organization in a Cosean model of regulation.” *J Legal Stud* 1991; 20:73–125.
- Callender CO, Bayton JA, Yeager C, Clark JE. Attitudes among blacks toward donating kidneys for transplantation: A pilot project. *J Natl Med Assoc* 1982; 74(8):807–809.
- Kahn KL, Perason ML, Harrison ER, et al. Health care for black and poor hospitalized Medicare patients. *JAMA* 1994; 271:1169–1174.
- Gornick ME, Eggers PW, Reilly TW, et al. Effects of race and income on mortality and use of services among Medicare beneficiaries. *N Engl J Med* 1996; 335:791–799.
- Arnold JD, Zimmerman TF, Martin DC. Public attitudes and the diagnosis of death. *JAMA* 1968; 206:1949–1954.
- Joynt RJ. Landmark perspective: A new look at death. *JAMA* 1984; 252:680–682.
- Wijdicks FM. Determining brain death in adults. *Neurology* 1995; 45:1003–1011.
- Alexander M. The rigid embrace of the narrow house: Premature burial and the signs of death. *Hastings Ctr Rpt* 1980; 10:25–30.
- Molinari GF. Brain death, irreversible coma, and words doctors use. *Neurology* 1982; 32:400–402.
- A definition of irreversible coma. Report of the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death. *JAMA* 1968; 205:337–340.
- Report of the Medical Consultants on the Diagnosis of Death to the President’s Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research: Guidelines for the determination of death. *JAMA* 1981; 246:2184–2186.