

4

GUEST EDITORIAL

The Ethics of TA-NRP: A Response to Adam Omelanchuk

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Editor's Note: This article extends the conversation started in Adam Omelanchuk's guest editorial, "Reviving Organs, Redefining Death? The Ethical Controversy Over Normothermic Regional Perfusion and the Way Around It," *Dignitas* 32, no. 1-2 (2025): www.cbhd.org/dignitas-articles/reviving-organs-redefining-death-the-ethical-controversy-over-normothermic-regional-perfusion-and-the-way-around-it.

I attended Dr. Adam Omelanchuk's 2024 Clemson University lecture that presented philosophical, legal, and scientific quandaries of brain death determinations and challenged whether brain-death criteria provided a sufficient proxy for biologic death or effectively reduced complex physical and metaphysical phenomenon to a clinical checklist. His more recent *Dignitas* article "Reviving Organs, Redefining Death, The Ethical Controversy of Normothermic Regional Perfusion and the Way Around It" (Spring/Summer 2025) analyzed thoraco-abdominal normothermic regional perfusion (TA-NRP) organ procurement through a similar lens.¹ Dr. Omelanchuk identified the dangers of zealously adopting this new technology when ethical questions

remain unanswered and morally acceptable alternatives exist.² This commentary extends that discussion and focuses on uncertainties unique to TA-NRP and the resulting conflict with legal and ethical standards such as the Universal Declaration of Death Act (UDDA) and the Dead Donor Rule (DDR).

For centuries, the cessation of breathing and heart function proved a reliable proxy for biologic death because the failure of remaining body systems and brain function invariably followed. The loss of spontaneous heartbeat provided a timestamp from which necessary legal and civic actions could be taken, such as funeral arrangements and the distribution of the decedent's assets.³ The development of advanced life support measures disrupted this paradigm. The variable

sensitivity of tissues to circulatory loss and their potential for recovery with mechanical restoration of lung and circulatory functions demonstrated that death was a process rather than a discrete moment. Circulatory collapse disproportionately impacts sensitive brain tissue. Neurologic functions fail rapidly and often irreversibly.⁴ In contrast, heart, lung, kidney, and liver functions can recover function with the assistance of mechanical and pharmacologic life support measures.⁵ Technology allowed more patients to survive a cardiac arrest, but some suffer such severe neurologic damage that they are left without consciousness, spontaneous respirations, sensory functions, cognition, and integration of bodily functions. The result pivoted focus from the cardiorespiratory standard of death to include a whole-brain standard.

Whole-brain death as a proxy to biologic

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death developed in the late 1960's.⁶ The combined deficits assessed by brain death criteria imply whole brain loss and complete dependence on life-support measures.⁷ The cognitive losses of rational thought, memory, self-awareness, spirituality, language, apprehension of time, appreciation of beauty, and human agency represent *life* lost at a much higher, less mechanical, and uniquely human dimension. Materially, brain death became a second proxy for biologic death and conceptually solved immediate health-care logistical and ethical dilemmas.

Uncertainty in Brain Death Determinations

Brain death criteria require sub-specialty level medical expertise to measure and interpret.⁸ The setting is a deeply comatose patient with brain injury of known cause; the reversible causes of unresponsiveness must be resolved such as sedating medications, electrolyte derangements, or hypothermia.⁹ Consequently, the brain-death determination process begins with a warm, stabilized, well perfused, and ventilator-supported patient. If whole-brain death is confirmed, then the process terminates with purposeful removal of life support measures. Cardio-respiratory collapse rapidly follows. Only then does the patient's physical appearance resolve to the still, pulseless, and pallid state universally recognized as a death. Understandably, family members, the public, and some professionals remain dubious of brain death's validity and equivalency to a biologic death.¹⁰

A donation post brain death (DBD) presents the ideal physiologic setting for organ procurement. Support measures remain in place after confirming a brain death. The donor enters the operating theatre with ventilator-supported breaths and stable heart function.¹¹ However, there are devastatingly neurologically damaged patients that do not fulfill brain-death criteria, and the DBD pathway cannot be pursued. The patient's request for a natural death and desire to donate is relayed by advance care planning documents or family members. In response to their wishes, life support measures are compassionately withdrawn and a cardiac death observed. A donation following a circulatory death (DCD) maintains compliance with the legal definitions of death and the DDR but at the cost of becoming a race against time and tissue decay.¹²

TA-NRP techniques were developed to rescue this situation and replicate the stable hemodynamic profile of a DBD after a circulatory death. Extra-corporeal membrane oxygenation (ECMO) techniques artificially reestablish circulation of warmed and oxygenated blood. The goal is recovery of donor heart function before procurement (which violates the irreversibility standard) and the preservation of other vital organs.¹³ To add complexity, reestablishment of systemic circulation by ECMO theoretically supports residual brain function even with targeted intervention.

Standards for the Determination of Death and the Dead Donor Rule

The current ethical and legal controversies surrounding TA-NRP center on the Universal Determination of Death Act (UDDA) and compliance with the Dead Donor Rule (DDR). The UDDA defines death as either the *irreversible* cessation of circulatory functions or the *irreversible* cessation of whole-brain function, including the brain stem.¹⁴ TA-NRP objectives include the procurement of transplant-worthy hearts post a death by circulatory criteria (DCD), defined by irreversible cessation of heart function. The DDR requires certainty of the donor's death prior to organ retrieval.¹⁵ Said more directly, organ procurement should never be the mechanism of a donor's death. The linguistic gymnastics begin here. The donor's do-not-resuscitate status is honored, but heart function is resuscitated in place. Death is declared by an irreversible loss of circulation standard, but circulation and heart function are restored. The risk of residual neurologic activity revived through restoration of circulation is recognized and addressed by carotid artery occlusion.

The counter argument claims that "permanent" loss of heart and brain function invariably follow spontaneous loss of circulatory functions. The intent to restore donor heart function prior to procurement is immaterial because autoresuscitation of heart function did not occur during the prescribed observation period. Consequently, the donor's trajectory to a biologic death would remain unchanged without intervention. Others opine that carotid occlusion exchanges one mechanism of death for another in compliance with the DDR.¹⁶

On their face, both assumptions prove

inadequate precisely because of intervention. The *irreversible* loss of circulatory function becomes a fallacy if the donor's heart function is revived in place prior to procurement, and the procurement setting does not allow for brain-death testing. Furthermore, limited brain perfusion remains possible through alternate pathways.¹⁷ Given that, TA-NRP introduces uncertainty of compliance with both legal definitions of death and introduces potential harms to the donor. TA-NRP advocates "solve" the conundrum by leveraging intent as the differentiating factor.

What do I mean by intent? The Universal Law Commission has been challenged to revise UDDA definitions and exchange *irreversible* cessation for *permanent* cessation of the heart or whole brain function. The words *irreversible* and *permanent* are synonyms. Semantically, there is little difference. Pragmatically, a quantitative assessment is exchanged for a qualitative assessment that interpositions intent. Classically understood, death's defining characteristic is irreversibility or absolute finality. There is no return. The intent argument introduces relativity. Death becomes what the speaker desires or needs it to be.

Consider two identical clinical scenarios. Each begins with a ventilated patient in the ICU. Each patient suffers a prolonged cardiac arrest followed by the introduction of extra-corporeal membrane oxygenation (ECMO) support with recovery of stable hemodynamic parameters, oxygenation, and heartbeat. The physiological statuses are equal. Yet intent directs two very different outcomes. Resuscitation efforts were *intended* for patient 1 despite impossible odds. Resuscitation was not the intent for patient 2; however, ECMO successfully resuscitated heart function in-situ and restored systemic circulation for both patients. After successful resuscitations, both remain in the ICU to monitor and balance their physiology. Despite physiological equivalency, patient 1 has been resuscitated but remains critically ill. Treatment focus remains fixed upon the patient's best interests. Patient 2 becomes a corpse without the rights and respect afforded to patient 1 and their organs represent a commodity that others seek.

Uncertainty of Life's Boundaries

Humanity's response to uncertainty at life's boundaries has been to act first and dismiss

the consequences through the morality of good intentions. Examples include the viability construct found in *Roe v. Wade* and *Planned Parenthood v. Casey*.¹⁸ In essence, the Casey decision deconstructs embryology to claim *that life cannot be forfeited if a life is not present*. Yet the exact moment when life begins remains a mystery, and viability evolved as an arbitrary legal construct to answer an unanswerable question. Similar to *Roe* and *Casey*, the proposed UDDA changes provide a legal safe harbor that shields participants from prosecution and professional sanctions in the pursuit of perceived public good.

Death determinations use proxies (loss of circulation or brain functions) to infer death from non-ideal physical metrics designed to demonstrate the absence of life. At the conceptual level, scientifically proving an absence is a complex logic problem reflected in Carl Sagan's observation that absence of evidence does not equate to evidence of absence.¹⁹ The exclusion of irreversibility removes a differentiating quality of death from the equation. As evidenced by ventilators and ECMO, future technological advances may further confound death determinations. The key question may not be whether definitions are adequate but

whether proxies are sufficiently precise to bear the moral risk of potentially taking a life.

The DDR has long provided an ethical safeguard. Some claim that the DDR should be eliminated, yet certitude in the donor's death is vitally important for compassionate reasons, for ethical and legal reasons, and for maintenance of public trust. The DDR provides a legal and moral safe harbor that benefits the transplant community. Without certitude in a donor's death, the logistics of organ procurement would risk professional sanctions or prosecution. The demise of the DDR seems unlikely.

Despite technological advances, the precise moments of death and life's dawning remain unsolvable mysteries. In more reflective moments, I apprehend the deep metaphysical nature of such questions and realize that scientific training and clinical reasoning fail. Properly considered, life and death are complex metaphysical and physiological processes that map poorly onto discrete moments. However, organ procurement procedures require precise time stamps and certitude in the donor's death to comply with the DDR. The TA-NRP technique amplifies uncertainty, yet the physician's

role demands an uncompromising respect for life's boundaries. Physicians are stewards of life and cannot assume the role of life-giver or life-taker. Medicine retraces a morally regrettable path when truth falls victim to the pursuit of a desired commodity. The intent argument invites ambiguity and diverts attention away from the donor as a person to the donor's organs as a commodity. This highlights the importance of honest debate with broad input from medical, legal, philosophical, and theological sources.

Challenges to the UDDA have failed. Irreversibility remains the definitional legal standard at present. Germane to this discussion, identical phraseology debuted in the revised 2023 American Academy of Neurology (AAN) Brain Death Guidelines.²⁰ The AAN response deserves further analysis and moral interpretation.

As demonstrated above, a single-minded approach falls desperately short and returns the discussion to Dr. Omelianchuk's point. Medicine *should* be reticent to champion this new technology when the ethical questions appear unsortable and morally acceptable options exist.

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