Unresponsiveness, Brain Death, and Organ Donation

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Unresponsiveness ≠ Death

- **Coma**
  - lack of arousal (wakefulness)
  - lack of responsiveness
- **Unresponsive Wakefulness Syndrome** (aka, VS or PVS)
  - arousal (wakefulness) – sleep cycles, eye movements / open, etc.
  - lack of responsiveness
- **Minimally conscious state**
  - arousal
  - responsiveness (minimal)

Definition v. Determination

- DEATH:
  - **What is it?**
    - Definition

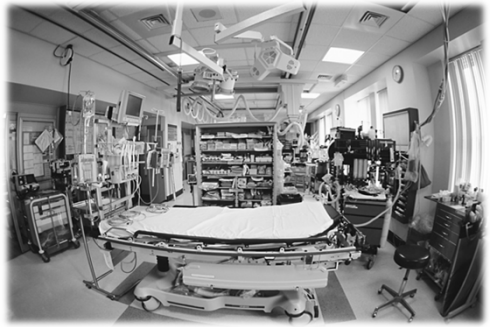
  - **How do we recognize it?**
    - Determination

Definition of Death

Metaphysical Death & the Person

- "separation of the soul from the body"
  - CCC, n. 997

- "a single event, consisting in the ***total disintegration of*** that unitary and integrated whole that is ***the personal self***"
  - Loss of integration (body-soul unity)
  - JPII, Address to Transplantation Society, August 29, 2000, n. 4, emphasis added



Determination of Death

Detecting Metaphysical Death

- Precise moment?
  - Impossible to detect!

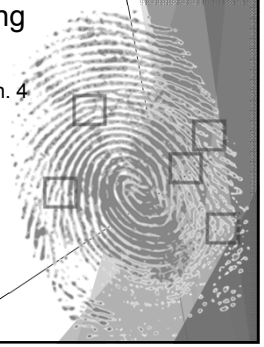
- "The death of the person . . . is ***an event which no scientific technique or empirical method can identify directly***."
  - JPII, Address to Transplantation Society, n. 4, emphasis in original

Detecting Metaphysical Death

- Sooner or later, death is acknowledged.
- "a moment always comes ***when death can be considered as having taken place***, and ***when reanimation measures can be stopped without committing either a professional or a moral error***"
  - Pontifical Council "Cor Unum", *Questions of Ethics regarding the Fatally Ill and Dying*, June 27, 1981, 5.4, emphasis added.

Signs & Certainty

- "Human experience shows that once death occurs certain ***biological signs inevitably follow***, which medicine has learnt to recognize with increasing precision."
  - JPII, Address to Transplantation Society, n. 4
- **Certain proof**: "signs"
  - If not certain, err on the side of life



Signs & Certainty

- Moral (prudential) certitude
  - "the exclusion of well-founded or reasonable doubt," which "does admit the absolute possibility of the contrary"
    - Pius XII, Allocution to the Rota, October 1, 1942, n. 1.
  - "the necessary and sufficient basis for an ethically correct course of action"
    - JPII, Address to Transplantation Society, n. 5

Signs: Church Competence?

"The answer cannot be deduced from any religious and moral principle and . . . does not fall within the competence of the Church."

Pius XII, Address to Anesthesiologists, November 24, 1957, underscore added.

"The Church does not make technical decisions."

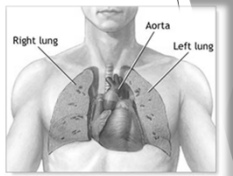
JPII, Address to Transplantation Society, n. 5.

Signs: Medical Competence

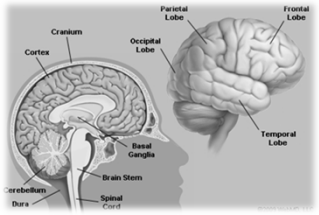
- "The determination of death should be made by the physician or competent medical authority in accordance with responsible and commonly accepted scientific criteria."
  - ERD 62; see also Pius XII, Address, November 24, 1957

Which Signs of Death?

Cardiopulmonary/Circulatory



Neurological



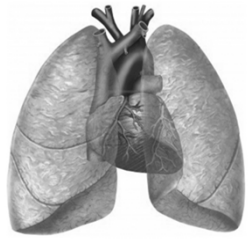
Other traditional signs?

Other Signs: Stages of Death

- Pallor mortis – paleness; 15-25 minutes
- Algor mortis – coldness; minutes to hours
- Livor mortis – blood pooling; starts 20 min to 3 hrs; max 6-12 hrs
- Rigor mortis – stiffness; 3 to 24 hrs
- Decay
  - Putrefaction (anoxia → autolysis → putrefaction)
    - Protein/tissue breakdown
    - May start within hours; visible signs in 24-36 hrs
  - Skeletonization – organic decomposition exposes bones; 3 wks to years

Cardiopulmonary (Circulatory)

- a.k.a. circulatory-respiratory standard
- "the irreversible cessation of cardiopulmonary function"
  - DeGrazia, "The Definition of Death," *Stanford Encyclopedia of Philosophy*

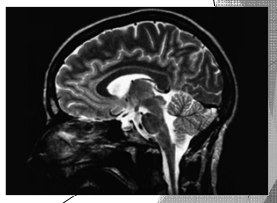


Cardiac arrest
heart stops →
loss of brain / respiratory function

Asphyxia
breathing stops → loss of heart / brain function

Whole-Brain Standard

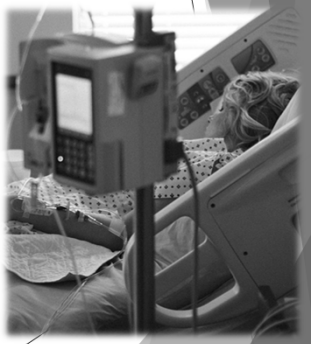
- "the irreversible cessation of functioning of the entire brain, including the brainstem"
  - DeGrazia, "The Definition of Death," *Stanford Encyclopedia of Philosophy*
- Brain (including brainstem) death → lungs and heart stop
- a.k.a. brain death
- a.k.a. neurological criterion
  - "integrative unity" approach



Harvard Ad Hoc Committee, 1968

"A Definition of Irreversible Coma: Report of the Ad Hoc Committee of the Harvard Medical School to Examine the Definition of Brain Death," *Journal of the American Medical Association* 205.6 (1968): 337-340.

- First proposal for brain-based determination of death ("irreversible coma")
- Needed because:
  - Burdens of persons alive artificially (ventilators)
  - Organ transplantation – harvesting



Harvard: Essential CLINICAL Signs

- **Deep coma**
  - Unreceptive, unresponsive to painful stimuli
  - "unarousable unresponsiveness"
- **Areflexia** (cranial/brainstem)
  - No pupil response; gag or cough; eye movement
- **Apnea**
  - No spontaneous respiratory effort; 3 min.

Harvard: ADDITIONAL CRITERIA

- **Flat EEG**
- **Exclusion of hypothermia and drugs**
- **Repeat after 24 hours**

AAN – 2010 Guidelines

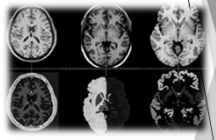
- American Academy of Neurology Guidelines for Determining Brain Death in Adults
- **Clinical evaluation I – Prerequisites**
  - Establish irreversible coma and proximate cause
    - Rule out confounding diagnoses: CNS depressants, hypothermia, PVS (Unresponsive Wakefulness Syndrome), Locked-In Syndrome, etc.
  - Achieve normal core temperature
  - Achieve normal systolic blood pressure
  - Perform neurological examination (1 sufficient in most states)

AAN – 2010 Guidelines

- **Clinical evaluation II – Neurological exam**
  - **Deep coma** – unresponsive
  - **Areflexia** – absence of brainstem reflexes
  - **Apnea** – absence of breathing drive

AAN – 2010 Guidelines

- Ancillary tests (choose one only if full clinical exam was not possible) – cannot replace clinical examination
  - Nuclear scan
  - Cerebral angiography
  - Computed tomography angiography (CTA)
  - Electroencephalography (EEG)
  - Transcrancial Doppler ultrasonography (TCD)
  - MRI/MRA



John Paul II: Neurological Criterion

- What is it?
  - "the complete and irreversible cessation of all brain activity"
  - "the sign that the individual organism has lost its integrative capacity."
- Is it compatible with Catholic teaching?
  - ***"if rigorously applied***, [the neurological criterion] does not seem to conflict with the essential elements of a sound anthropology."

JPII, Address to Transplantation Society, 2000, n. 5, emphasis added

John Paul II: Neurological Criterion

- Is it morally legitimate to use?
  - "***a health-worker*** professionally responsible for ascertaining death ***can use these criteria*** in each individual case as the basis for arriving at that degree of assurance in ethical judgment which moral teaching describes as 'moral certainty'."

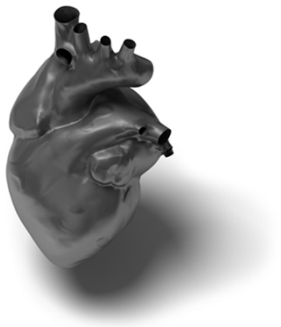
JPII, Address to Transplantation Society, 2000, n. 5, emphasis added

Challenges: Experiential

- Residual "life" after death
  - Respiration / breathing with ventilator
  - Circulation / heartbeat with ventilator / cardiac assistive devices
  - Assimilation of nutrients
  - Growth
  - Hormonal function
  - Gestation
- "Vital functions" v. "simple life of organs"
  - Pius XII, Address, November 24, 1957

Challenges: Practical

- Rigorous application?
  - Inconsistency & inadequacy of standards
    - Variety of laws, policies, guidelines
  - Lack of clinical thoroughness
    - Not meeting existing standards/guidelines
  - Abuses pushing organ availability and quality



Vital Organ Donation

Organ Donation: A Loving Gift

- a noble gesture and "genuine act of love"
  - JPII, Address to Transplantation Society, n. 1
- "gestures . . . which build up an authentic culture of life"
  - JPII, *Evangelium vitae*, n. 8
- An "act of love which . . . remains a genuine testimony of charity that is able to look beyond death so that life always wins."
  - Benedict XVI, Address to International Congress Organized by the Pontifical Academy for Life, November 7. 2008

Organ Donation: A Loving Gift

- ERD 63: "Catholic health care institutions should encourage and provide the means whereby those who wish to do so may arrange for the donation of their organs and bodily tissue, for ethically legitimate purposes, so that they may be used for donation and research after death."

  (underscore added)

Dead Donor Rule

- Established medical ethics standard in the U.S.; not strict legal requirement in all states
  - Application in practice may vary
- National Academy of Sciences Institute of Medicine
- "vital organs which occur singly in the body can be removed only after death"
  - JPII, Address to Transplantation Society, n. 4; see also ERD 64

Dead Donor Rule & Proportionate Care

- Obligation to provide care and ordinary and proportionate treatments ***until death occurs***
  - ERDs 56-58
  - Proportionate treatments, DNRs, ANH
- Pharmacological or other interventions to evaluate/prepare for donation? - CONSENT
  - Testing (HIV, other diseases, risks of transplant)
  - Heparinization? – harms to patient?

Uniform Determ. of Death Act

1981

- "An individual who has sustained either (1) irreversible cessation of circulatory and respiratory functions, or (2) irreversible cessation of all functions of the entire brain, including the brain stem, is dead. A determination of death must be made in accordance with accepted medical standards." (UDDA, §1)
- Adopted by all states; some have additional regulations or exceptions

Donation after Brain Death (DBD)

- Important: *whole brain death*, not brain stem
- Heart-Beating Donor (HBD)
- "When total cerebral death is verified with certainty, that is, after the required tests, it is licit to remove organs and also to surrogate organic functions artificially in order to keep the organs alive with a view to transplant."
  - Pontifical Council for Pastoral Assistance to Health Care Workers, *Charter for Health Care Workers* (Boston: Pauline, 1995), n. 87, underscore added

Donation after Cardiac Death (DCD) & "Irreversibility": Concerns

- Non-heart-beating donors (NHBD)
  - Does not mean heart is "dead"
  - Loss of function technically not "irreversible"
- Variability in time lapse for declaration of death
  - 1.5 - 5 minutes, up to 20 minutes or more
  - Resuscitation intervention: up to 10-15 minutes
  - IOM: no autoresuscitation → 5 minutes
- Brain death criteria need not be met
  - May be *caused* by donation process: ECMO/EISOR

Ethical Concerns

- Dead donor rule; DCD timing (OPTN: not 5 min)
- Limited resource: organ shortages
- Policy making: OPTN/UNOS
  - Massive push and primary goal to increase supply
  - Standards and public comment
- Conflicts of interest: Transplant team v. attending
- Incentives and commodification: organ "purchase"
- Organ trafficking – International
  - Wealthy pay for organs; "helping" poor?
  - Quality of care for donors

Alternatives?

- "I express the hope that . . . scientific and technological research . . . will continue to progress, and extend to ***experimentation with new therapies which can replace organ transplants***."
  - JPII, Address to Transplantation Society, n. 8, emphasis original
- "The right road to follow, ***until science is able to discover other new forms and more advanced therapies***, must be the formation and the spreading of a culture of solidarity"
  - Benedict XVI, Address, November 7, 2008, emphasis added