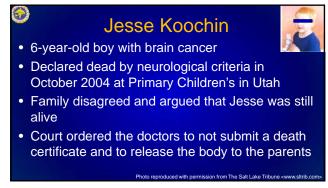


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#### Outcome

- Jesse's body remained on a ventilator at the family's home for about a month, at which point his heart failed
- Parents called 911, and ambulance brought Jesse to St. Mark's Hospital
- Attempts at cardiac resuscitation in the Emergency Department were unsuccessful, and Jesse was declared dead by circulatory criteria

## **Key Lessons**



- Doctors were not forced to care for patient
- Family was allowed to take patient home
- Death has become a legal construct, and courts may overrule doctors in determining who is actually dead



#### Jahi McMath



- 13-year-old girl
- December 9, 2013 admitted to CHORI for T&A and uvulectomy for OSA
- Post-operative complications
- Declared dead by neurological criteria Dec 12
- Death certificate completed and submitted
- Court ordered body released to family and transferred to Saint Peter's University Hospital in New Brunswick, NJ

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## **(9)**

#### **Current Events**



- Family seeking to overturn death certificate
- Videos of movement
- Examination by two individuals
- Reviewed by court-appointed expert

#### **Key Lessons**



- Some facilities will accept patients even after they have been declared dead
- Only qualified experts should determine death by neurological criteria
- Dead patients don't have healthcare insurance
- Where the patient presents can have major implications



# Exceptions to Death by Neuro Criteria

- New Jersey statute forbids declaration of death by neurological criteria if it would violate the patients "personal religious beliefs"
- New York also allows religious or moral exceptions
- Cooper University Hospital (in New Jersey) is only 6 miles from CHOP (in Pennsylvania)
- Child declared dead at CHOP might still be alive at Cooper

#### Marlise Munoz



- 14 weeks pregnant
- November 26, 2013 found unconscious on kitchen floor (possible pulmonary embolism)
- Admitted to hospital in Fort Worth, TX
- Death by neurological criteria determined on November 28
- Hospital unwilling to remove mechanical ventilation without a court order

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#### **Texas Law**

- Texas law forbids removal of life-sustaining treatment from any pregnant patient regardless of a request for DNAR status
- Hospital unwilling to place itself at risk
- Family argued that patient was not on life support because she was already dead
- Court agreed with family and ordered discontinuation of mechanical ventilation

#### Confusion in the News

On January 26, 2014 NBC news reported:
 "A pregnant woman who lapsed into a braindead state late last year was removed from life support on Sunday after a Texas hospital complied with a judge's order to disconnect her from the machines keeping her alive."

<a href="http://www.nbcnews.com/#/news/us-news/brain-dead-pregnant-woman-taken-life-support-n16761">http://www.nbcnews.com/#/news/us-news/brain-dead-pregnant-woman-taken-life-support-n16761></a>

## **Key Lessons**

- Tremendous confusion broadly
  - Lay public
  - News
  - Doctors and hospital staff
- Words matter
  - A dead person cannot be on "life support"
  - A dead person cannot be "kept alive"



## Zack Dunlap



- 21-year-old man in Oklahoma
- ATV accident November 2007
- Admitted to hospital in Wichita Falls, TX
- Declared dead by neurological criteria by local surgeon

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#### Zack's "Recovery"

- As he was being wheeled to the OR to donate organs, family member ran pocket knife over Zack's foot and saw him move
- Eventually made near-complete recovery
- Talk show appearances: I was dead, but I feel much better now
- · Multiple media stories (Dateline, Today Show, etc.) of "miracle"



## **Key Lessons**



- Only highly qualified specialists should perform neurological examinations and interpret studies
- Even one mistake is too many
- This case has lead many families to not believe doctors when death by neuro criteria is declared
  - Doctors make mistakes
  - "Miracles really do happen"



#### Pediatric Guidelines 2011

• AAP, Society of Critical Care Medicine, and Child Neurology Society

Nakagawa et al. Clinical report—Guidelines for the determination of brain death in infants and children: an update of the 1987 task force recommendations.

- Pediatrics. 2011 128(3):e720-40. PMID:21873704
- Crit Care Med. 2011 39(9):2139-55. PMID:21849823
- Ann Neurol. 2012 71(4):573-85. PMID:22522447



#### **Timing**

- Delay 24 to 48 hours post CPR or other severe acute brain injuries if any concerns or inconsistencies
- 2 neurological examinations, each including an apnea test
  - -<30 days post-term: 24 hours apart
  - ->30 days post-term: 12 hours apart



## **Ancillary Studies**

- Not required
- Ancillary studies may eliminate need for delay in second exam
  - Cerebral angiography
  - EEG
  - Radionuclide cerebral blood flow



#### **Examiners**



- Both with specific training in neurocritical care
- Both familiar with infants and children
  - Pediatric Critical Care
  - Neonatology
  - Child Neurology
- Pediatric Neurosurgery
- Pediatric Trauma Surgery
- Pediatric Anesthesiology with Critical Care Training





# What is Death by Neuro Criteria?

- Uniform Determination of Death Act
  - Irreversible cessation of all functions of the entire brain, including the brain stem
- Distinct from cortical "death" (PVS)
- but...Can a patient be dead without having DI?
- Some discussion of irreversible cessation of the brain as a whole (integrated functions)

# Death vs Biological Death

- Similar to blindness
  - My be legally blind but not completely blind
- Is it okay for someone to be legally dead but not completely dead?

# Abandon Death by Neuro Criteria?

- · Some have argued that brain death is fallacy
- · Brain death manufactured to get organs
- Abandon dead donor rule and allow alive individuals to donate their organs based on the principles of respect for persons and nonmaleficence
  - Patients who are imminently dying
  - Patients who are permanently unconscious
- Former nomenclature "irreversible coma"

# Summary

- Death by neurological criteria remains confusing and controversial
- Many members of the lay public and the media have major misunderstandings
- · Many clinicians do not fully understand
- Even seemingly minor misstatements can lead to significant confusion
- Only pediatric neurocritical care specialists are qualified to determine death by neuro criteria

