VANDERBILT UNIVERSITY MEDICAL CENTER

DIVISION OF TRAUMA & SURGICAL CRITICAL CARE

DETERMINING BRAIN DEATH

Notify Tennessee Donor Services (TDS): 1-800-969-4438

Prerequisites (ALL must be checked)

- ☐ Coma, irreversible and cause known
- ☐ Neuroimaging explains coma
- ☐ CNS depressant drug effect absent (if indicated toxicology screen; if barbiturates given, serum level<10μg/mL)
- ☐ No evidence of residual paralytics (electrical stimulation if paralytics used)
- ☐ Absence of severe acid-base, electrolyte, endocrineabnormality
- ☐ pH is below 7.45
- ☐ Normothermia or mild hypothermia (core temperature >36°C)
- ☐ Systolic blood pressure ≥100mmHg
- ☐ No spontaneous respirations
- ☐ Absence of cervical spinal cord injury

Examination (ALL must be checked)

- ☐ Pupils non-reactive to bright light
- ☐ Corneal reflex absent
- ☐ Oculocephalic reflex absent (tested only if C-spine integrityensured)
- ☐ Oculovestibular reflex absent
- ☐ No facial movement to noxious stimuli at supraorbital nerve, temporomandibular joint
- ☐ Gag reflex absent
- ☐ Cough reflex absent to tracheal suctioning

If patient is under 18 years of age, two brain death tests must be performed. If brain death is determined by clinical exam (e.g. apnea test), 12 hours apart by two different ICU attending physicians. If radiographic study consistent with brain death should be accompanied by a clinical exam but doesn't require a second exam.

Attending MUST BE PRESENT thru Apnea Testing

- ☐ Patient is hemodynamically stable
- ☐ Ventilator is adjusted to provide normocarbia (PaCO2 34- 45mmHg)
- ☐ Patient pre-oxygenated with 100% FiO2 for >10 minutes to PaO2 > 200 mmHg
- ☐ Patient well oxygenated with a PEEP of 5cmH2O
- ☐ Provide oxygen via a suction catheter to the level of the carina at 6 L/min or attach T-piece with CPAP at 5cm mmHg
- ☐ Disconnect ventilator
- ☐ Spontaneous respirations absent
- ☐ Arterial blood gas drawn at 10 minutes
- ☐ Patient reconnected to ventilator

(Hemodynamic instability or Oxygen Desaturation)

Apnea Test Aborted

- ☐ **Cerebral angiogram**
- ☐ **Nuclear Scintigraphy Cerebral Brain Flow Study**

pCO_2 ≥ 60mmHg, or 20 mmHg rise from normal baseline value

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Complete Brain Death Note in eStar:

Declaration of Brain Death

Patient Demographics
Name:
MRN:
DOB:

Brain death inclusion criteria
- Diagnosis:
- Inclusion criteria:

Examination criteria consistent with brain death?
- Glascow Coma Scale:
- Absence of spontaneous movements?
- Absence of movement to pain?
- Absence of pupillary reflexes?
- Absence of corneal reflexes? Yes
- Absence of eye movement by lateral neck rotation?
- Absence of cough and gag?

Apnea Testing:
- Pre-Apnea Blood Gas: PH:, pCO_2:, pO_2:
- Absence of respiratory effort with PCO_2>60:
- Absence of respiratory effort with PCO2 rise>20:
- Post-Apnea Blood Gas: pH:, PCO_2:, pO_2:

Ancillary Testing:

Declaration of death by neurologic criteria:
- Date of death by neurologic criteria:
- Time of death by neurologic criteria:

TRAUMA TEAM DUTIES:

1. Notify attending on call
2. Tennessee Donor Services (TDS): 1-800-969-4438 TDS is to be called on all deaths and all pending deaths
3. Complete Brain Death Note in eStar
4. Medical Examiner Office: 615-743-1800
   Medical Examiner office is to be called on trauma service deaths
5. Decedent Affairs: 615-835-1497 (pager)

6. Complete eStar Report of Death and Death Summary

ANCILLARY TESTS:

- Cerebral Angiogram: Formal arteriography gold-standard, CTA and/or MRA are not valid alternatives
- Nuclear Scintigraphy Cerebral Brain Flow Study: Tc99m Hexametazime Nuclear medicine scan

REFERENCES:

- Wijdicks et al. Evidence-based guideline update: determining brain death in adults: report of the Quality Standards Subcommittee of the American Academy of Neurology. Neurology (2010) vol. 74 (23) pp. 1911-8
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- Hills. Determining brain death: a review of evidence-based guidelines. Nursing (2010) vol. 40 (12) pp. 34-40; quiz 40-1
- Nakagawa et al. Clinical Report – Guidelines for the Determination of Brain Death in Infants and Children: An updated of the 1987 task force recommendations. American Academy of Pediatrics (2011)

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