DETERMINING BRAIN DEATH
Notify Tennessee Donor Services (TDS): 615-322-2247

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 <10 μg/mL)
☐ No evidence of residual paralytics (electrical stimulation if paralytics used)
☐ Absence of severe acid-base, electrolyte, endocrine abnormality
☐ pH is below 7.45
☐ Normothermia or mild hypothermia (core temperature >36° C)
☐ Systolic blood pressure ≥ 100mmHg
☐ No spontaneous respirations

Examination (ALL must be checked)

☐ Pupils non-reactive to bright light
☐ Corneal reflex absent
☐ Oculocephalic reflex absent (tested only if C-spine integrity ensured)
☐ Oculovestibular reflex absent
☐ No facial movement to noxious stimuli at supraorbital nerve, temporomandibular joint
☐ Gag reflex absent
☐ Cough reflex absent to tracheal suctioning
☐ Absence of motor response to noxious stimuli in all 4 limbs (spinally mediated reflexes are permissible)

*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
☐ HMPAO SPECT
☐ EEG
☐ TCD (times two)

pCO2 ≥ 60mmHg, or 20 mmHg rise from normal baseline value

BRAIN DEATH

***If patient is under 18 years of age, two brain death tests must be preformed 12 hours apart by two different ICU attending physicians***
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Complete Brain Death Note in StarForm:

**PREREQUISITES: (Do Not proceed to exam if answer is YES):**

- Diagnosis compatible with brain death: [ ]
- Is the core temperature less than or equal to 34.3 degrees C (94 degrees F)? [ ] Yes [ ] No
- Is the systolic blood pressure less than or equal to 90 torr (or age appropriate blood pressure in pediatric patients)? [ ] Yes [ ] No
- Is the PaO2 less than 50 torr? [ ] Yes [ ] No
- Presence of significant sedative or neuromuscular blocking drugs? [ ] Yes [ ] No
- Are confounding conditions present? (e.g., C-spine trauma, facial trauma, locked instate, severe obesity, severe COPD, severe metabolic or endocrine derangement)? [ ] Yes [ ] No

**EXAMINATION CRITERIA: (Do Not proceed to apnea test if any answer is YES):**

- Is the patient GCS greater than 3? [ ] Yes [ ] No
  - Verbal: [ ] /5  Motor: [ ] /6  Eye: [ ] /4
- Spontaneous movement present? [ ] Yes [ ] No
- Any response to painful stimulation, nail bed pressure - bilaterally? [ ] Yes [ ] No
- Any response to painful stimulation, supraorbital pressure? [ ] Yes [ ] No
- Any pupil reflexes present? [ ] Yes [ ] No
- Any corneal reflexes present? [ ] Yes [ ] No
- Cold caloric-induced eye movements (5 minutes between sides) present (or lateral neck rotations-induced eye movements)? [ ] Yes [ ] No
- Cough present? [ ] Yes [ ] No

- Apnea test (begin with PCO2 40 +/- 5torr):
  - ABG pre-test: pH: [ ] PCO2: [ ] P02: [ ]
  - ABG at end of test: pH: [ ] PCO2: [ ] P02: [ ]
- Was there spontaneous respiratory effort with PCO2 rise > 20 torr, OR [ ] Yes [ ] No
- Was there spontaneous respiratory effort with PCO2 > 60 torr? [ ] Yes [ ] No

- If apnea test is indeterminate, or there are other clinical circumstances that prompt confirmatory testing, (such as trancranial Doppler, nuclear medicine scan) indicate reason and tests ordered
  - Confirmatory testing WAS NOT ordered
  - Confirmatory testing WAS ordered

**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 StarPanel (StarForm)
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)
ANCILLARY TESTS:

- Cerebral Angiogram: Formal arteriography gold-standard, CTA and MRA with less data (WIZ Order)
- HMPAO SPECT: Tc 99mHexametazime Nuclear medicine scan (Synergy)
- EEG: Electroencephalogram, Requires neurology consult
- TCD: Transcranial Doppler (x2); Contact Vanderbilt Neurosonologist Nina N. Mitsky, RDMS (Mon-Fri 8am-5pm)

REFERENCES: