Penn Medicine | Penn Presbyterian Medical Center

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CERTIFICATION OF DEATH BY NEUROLOGIC CRITERIA (CRITERIA FORM)
Neonates or Patients Less Than 18 Years of Age

For patient less than 18 years of age, two in-hospital clinical examinations must be performed by two different physicians. **(See Table 2 on page 4, "Physicians Eligible to Perform Clinical Examinations")**. When the cause of coma is known, the interval between examinations is determined by the age of the patient. For infants less than or equal to 30 days of age both a physical examination showing no brain function and an isoelectric EEG must occur at the beginning of the evaluation and then must be repeated again 48 hours later. In infants greater than 30 days of age the evaluation should occur over a 12-hour period of observation, with physical examinations at the beginning and end of the period. The observation period can be shortened if an ancillary test (typically a cerebral blood flow study) is performed and is consistent with death by neurologic criteria (See Policy "Policy Regarding Determination of Death by Neurologic Criteria" #11.123). In all cases, both examinations must demonstrate no evidence of function of the entire brain. A confirmatory test should be performed only when clinically indicated according to PPMC policy (#11.123). The results of both clinical examinations and the results of any confirmatory tests performed must be documented.

A. 1. What is the corrected gestational age of the patient?_____

Neonates with an estimated gestational age of less than 37 weeks cannot be adequately assessed on physical examination due to the normally occurring absence of certain brain-mediated reflexes in earlier stages of development. The assessment of irreversible cessation of all brain function can occur in these infants only when the estimated gestational age and the post-natal life span in total exceeds 37 weeks.

	Yes	No
B. 1. **Is the cause of the coma known and sufficient to account for irreversible loss of brain function?**	_____	_____

2. **If the answer to #1 above is yes, please specify diagnosis:**

_____

3. **If the answer to #1 above is no, has a diligent search for the cause been conducted?**	_____	_____

Give specific information as requested below and answer "Yes" or "No."

C. Confounding Factors Were Excluded

	Yes	No
1. Hypothermia (core body temperature less than 35°C) is not present.	_____	_____
2. Sedation of the patient due to sedation medications or anticonvulsant medications that are above the usually therapeutic range (and specifically a serum level of pentobarbital greater than 5 mcg/mL or a serum level of phenobarbital of greater than 50 mcg/mL).	_____	_____
3. Pharmacologic neuromuscular blockade within 24 hours.	_____	_____

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C. Confounding Factors Were Excluded *(continued)*

	Yes	No
4. Injuries to the patient's face or eyes that preclude elements of the physical examination as outlined below.	_____	_____
_____		
5. Significant hypotension in the patient as judged by the attending physician (reference values for blood pressure vary by patient age and clinical circumstances).	_____	_____
6. Significant electrolyte, acid-base, or endocrine disturbances as judged by the attending physician.	_____	_____

D. Unresponsiveness Documented

	Yes	No
1. Coma (Complete unconsciousness, no vocalization or volitional activity).	_____	_____
2. No spontaneous or induced (oculocephalic, oculovestivular) eye movement.	_____	_____
3. No bulbar (facial or oral pharyngeal) muscle movement.	_____	_____
4. Flaccidity, with no spontaneous movements, excluding reflex withdrawal or spinal myoclonus.	_____	_____

Note: Deep tendon reflexes, including stereotypical triple flexor responses in the legs, are compatible with brain death. Purposeful movement or posturing preclude the diagnosis of brain death.

E. Loss of Brain Stem Function Documented

	Yes	No
1. Pupils unreactive to light in the absence of drug influencing pupillary activity.	_____	_____
2. Absence of the following reflexes		
a. Corneal	_____	_____
b. Gag	_____	_____
c. Cough	_____	_____
d. Sucking (in neonates and infants)	_____	_____
e. Rooting (in neonates and infants)	_____	_____

Signature of Examiner_____ Date_____ Time_____ Phone _____

First Examiner ☐ Second Examiner ☐

Date_____

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F. The Apnea Test

Date_____ Time_____ Physician Examiner (Print) _____

a. Initial $PaCO_2$ _____

b. Final $PaCO_2$ _____

c. For patients with chronic CO_2 retention, pre-test and final pH _____ _____

Comments:

1. Apnea test showed no respiratory movements with the necessary CO_2 rise and pH fall?_____

Signature_____ Date_____ Time_____ Phone _____

First Examiner ☐ Second Examiner ☐

Ancillary test performed for patients less than or equal to 30 days of age or for patients greater than 30 days of age in the presence of confounding factors. (See Policy "Policy Regarding Determination of Death by Neurologic Criteria" #11.123).

1. **Electro-encephalogram (EEG)**
   Electro cerebral silence on EEG in a patient with rectal temperature above 32.2°C (90°F) and anticonvulsant or sedative medication serum values not above the usual therapeutic range.
   Results of Study:

   _____

   Date_____ Time_____

   Interpreted by: _____

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2. **Cerebral blood flow study**
   A cerebral blood flow study demonstrating no flow through the cerebral arteries.
   Results of Study:

   _____

   Date_____ Time_____

   Interpreted by: _____

***This record must be signed by the physician who has conducted the second clinical examination of the patient and certifies him/her to be dead.**

Note: If organ donation is contemplated, the physician who certifies brain death cannot participate in the procedure for removing or transplanting the organ.

Table 1: TIME INTERVALS BETWEEN CLINICAL EXAMINATIONS

Patient Age, Etiology of Coma	Minimum Time Interval Between Examinations
Full term infant-30 days old, known cause of coma	48 hours
31 days old-17 years old, known cause of coma	12 hours

Table 2: PHYSICIANS ELIGIBLE TO PERFORM CLINICAL EXAMINATIONS

Patient	First Examination	Second Examination	Notes
31 days to 17 years	Attending physician with privileges to determine brain death	Attending physician with privileges to determine brain death	First and Second Examiner must be two DIFFERENT INDIVIDUALS
Full term infant-30 days old	Attending Neonatologist and Pediatric Neurologists with privileges to determine brain death	Attending Neonatologist with privileges to determine brain death	First and Second Examiner must be two DIFFERENT INDIVIDUALS