Title: Determination of Death by Brain Criteria	Policy No:
Department: **PATIENT CARE**	
Revised: April 2009 Previous revisions: 9/96, 7/99, 7/07 Reviewed: August 2010	Originated: May 1992

I. POLICY:

Section 7180 of the California Health and Safety Code states: "A person shall be pronounced dead if it is determined by a physician that a person has suffered a total and irreversible cessation of all functions of the entire brain including the brain stem." This statute also requires that a second physician independently confirms the death. A related provision states that neither physician be involved in decisions regarding transplantation of organs (California Health and Safety Code Section 7181).

II. PURPOSE:

To provide guidelines for the determination of brain death.

II. PROCEDURE:

A. Determination of Death by Brain Criteria

A physician may determine that brain death has occurred when the patient has suffered an irreversible cessation of all functions of the entire brain including the brain stem.

1. The signs enumerated below must be present in a patient in whom history or laboratory investigation has determined the absence of toxins and hypnotic or sedative drugs, including barbiturates, meprobamate or any drugs that are capable of central nervous system depression or drugs that block the myoneural junctions. The patient's temperature must be above 33°C.
2. "Cessation" is recognized when evaluation discloses findings of all of the following:
   a. Cerebral functions are absent. The patient does not move spontaneously; does not respond to externally applied visual, auditory, cutaneous or painful stimuli; obeys no commands.

b. Brain stem functions are absent:
   1) absent pupillary light reflex – the pupils are unreactive to bright, diffuse light. They are not necessarily dilated, but they are fixed to stimulation.
   2) absent corneal reflex.
   3) Absent oculocephalic (doll's eyes).
   4) Absent oculovestibular – this reflex is tested with ice water irrigation of each ear separately, which should provoke no eye movement. The patient's head should be elevated 30 degrees during the testing, and the external auditory canals should be clear.
   5) Absent oropharyngeal – there should be no gag or cough response to oropharyngeal or tracheal stimulation.
   6) Respiratory – the proper determination of absent brain stem requires an apnea test. The principle of this test is that the CO2 is allowed to accumulate in the blood stream in order to stimulate respiration. The test is carried out over a time period estimated to bring the arterial PaCO2 of above 55 mm Hg. Usually this can be accomplished in five (5) minutes. Oxygenation is continued during the period of apnea to prevent hypoxia.

      The apnea test should be performed in the following manner:
      a) Prior to the test, the rate and tidal volume of the ventilator must be adjusted to have PaCO2 in the normal range. In patients with chronic CO2 retention, the PaCO2 value should be adjusted upward to that the patient is not alkalotic.
      b) The patient must not be hypothermic or on sedative or paralyzing drugs.
      c) Patient is placed on an F102 100% for five (5) minutes before withdrawal of ventilation. The ventilator is disconnected and the patient is placed on a T-piece with 100% oxygen and observed for any respiratory effort for three (3) to ten (10) minutes. This will allow PaC02 to rise while avoiding hypoxia. Patients receiving PEEP while being ventilated may be maintained on CPAP during the period of apnea.
      d) If the patient is unable to tolerate the apnea test, it may be omitted and the patient's instability documented.
      e) If a PaC02 of greater than or equal to 55 mm Hg (10 mm Hg above the baseline in patients with preexisting C02 retention) is obtained, and no regular spontaneous respirations are noted, the requirements for the apnea test have been fulfilled.

f) It may be necessary to omit this test if patient is not stable enough to continue. Patient may be declared brain dead if other clinical exam and diagnostic test confirm brain death.

c. Exceptions:
   1) Muscle strength reflexes are frequently present when all of the other criteria for brain death have been satisfied.
   2) Spinal reflex activity may remain. The emphasis is on absent cephalic reflexes which require an intact brain stem.

B. Confirmation of Brain Death
1. The responsible physician must seek a second physician who must independently confirm the document the patient's death through a clinical evaluation (California Health and Safety Code, Section 7181).
2. Confirmatory Tests – The diagnosis of brain death requires only the presence of the above clinical criteria. Confirmatory tests may be used at the discretion of the physician(s) in the event documentation is needed to substantiate the clinical findings. Confirmatory tests are as follows:
   a. Tests demonstrating absence of cerebral blood flow (i.e., cerebral radioisotope or arteriography flow).
   b. One isoelectric EEG recorded in part at full gain or if the electroencephalogram shows no evidence of cerebral electrical activity of greater than two (2) microvolts in magnitude, the consulting neurologist shall state that the clinical state of the patient is consistent with the syndrome of brain death.
3. If the patient is a potential organ donor, no member of the transplant team may participate in establishing or confirming the diagnosis of brain death (California Health and Safety Code, Section 7181).

C. Documentation
1. The physicians who determine and independently confirm that brain death has occurred must complete the appropriate sections of the "Checklist for Determination and Declaration of Brain Death." This document is to be placed in the patient's medical record.

D. Time of Death
1. The hour and date of death are to be the date and hour that the second (confirming) physician pronounces the patient brain dead. **NOTE**: The time of death is **not** the date and hour that a patient is disconnected from all medical interventions. (California Health and Safety Code, Section 7182)

E. Guidelines for Informing the Patient's Family and Legal Representative

1. The patient's responsible physician should explain to the patient's family or legal representative, if any, that the patient has sustained an irreversible cessation of all functions of the entire brain, including the brain stem; that this fact has been independently verified by a second qualified physician; and that, therefore, death has been pronounced and all forms of medical intervention may be discontinued. In addition, the responsible physician should explain to the patient's family and legal representative that the patient's cardiac activity might not immediately cease when the mechanical devices are removed from the patient's body.
2. Upon request, patient's legally recognized health care decision maker, if any, or family or next of kin will receive written description of this Family Notification letter (See Attachment A), no later than shortly after treating physician has determined that the potential for death by neurological criteria is imminent.
3. If the patient's legally recognized health care decision maker, family, or next of kin voice any religious or cultural practices or concerns, the hospital shall make reasonable efforts to accommodate them.
4. The family or next of kin will be given a reasonable brief period of accommodation when patients are declared brain dead. In determining "reasonable" amount of time, the hospital will balance the needs of the family with the demands of other patients and prospective patients on a case by case basis.

   NOTE: In those instances when a patient is a possible candidate for organ donation, refer to the policy and procedure "Organ/Tissue donation Protocol" to ensure that all policies are followed regarding approaching the family and the "decoupling" process.

F. Disconnecting Medical Intervention

1. Except in those cases in which medical intervention should be continued in order to preserve the viability of organs to be transplanted, or for unusual humanitarian reasons, the physician should coordinate the discontinuance of all forms of medical intervention (e.g., disconnect IVs, ventilators and so forth) after the family and significant others have been informed of the determination of brain death and the physician has pronounced the patient dead.
2. Family members will be encouraged to say good-bye to the patient. Spiritual Services and/or Social Services will be available to offer support while the patient is being disconnected from medical intervention.

IV. AUTHOR/CONTRIBUTORS:

V. REFERENCES:

Health and Safety Code, Section 7180, Chapter 3.7
CAHHS Manual, 22nd Edition, Chapter 10, P. 1 & 2
, Ethics and Justice Education

VI. APPROVALS:

Ethics Committee, May 1992
Executive Committee, June 1992
Multidisciplinary Policy and procedure Committee, June 1995

ATTACHMENT A

FAMILY NOTIFICATION LETTER

Your family member has been diagnosed with a devastating brain injury and the prognosis is now considered grave. We regret the severity of the prognosis and offer our sincere support to you and your family. At this time we wish to share important information that will assist you as you go through this most difficult time. As the attending physician, I encourage you to gather appropriate family members you may wish to have present at the bedside.

As you are gathering your family, the nurses and physicians will continue to provide the best possible care for your loved one. Two physicians will shortly begin testing to determine the level of brain injury. These tests will include vital signs, laboratory and neurological testing. The findings of the tests will be discussed with you.

Please fell free to advise us of any religious or cultural practices which are important to you at this time.

If these tests confirm brain death, you will then be permitted a reasonable period of time to have family members visit your loved one or to have requested religious or cultural practices addressed to the best of our abilities prior to the withdrawal of intensive support therapies. If brain death should occur someone will be providing you with information regarding saving and enhancing lives through organ/tissue donation.

Should you have requests for special religious or cultural practices for your loved one or concerns about family members being able to have adequate time to arrive at the hospital, these issues should be immediately discussed with the Clinical Social Worker or Hospital Chaplain.

_____
Attending Name (or licensed physician designee)

_____
Attending Signature (or licensed physician designee)

Date _____Time _____
All documentation must indicate the specific date and time of entry and a signature complete with identify credential, title or classification.