PROVIDENCE HOLY CROSS MEDICAL CENTER
CRITICAL CARE PAVILION MANUAL

Subject:	Death by Neurological Criteria		
Effective Date:	07/21/11	Category:	Patient Care Provider
Supersedes:	07/10/06	Number:	PHC-CCP-D01

POLICY
It is the policy at Providence Holy Cross Medical Center that accepted medical and legal procedures regarding the clinical determination of death by neurological criteria is followed which includes the timely notification of Organ Procurement Organization (OPO) in accordance with Health Care Financing Administration (HCFA) regulations, providing support of the family and the appropriate removal of ventilatory and other clinical support systems.

PURPOSE
The purpose of this policy is to standardize clinical examination guidelines and parameters for the diagnosis of death by neurological criteria and to provide support to the family while complying with all medical and legal procedures as directed by law and community standard in the event of death by neurological criteria.

DEFINITIONS
Uniform Determination of Death Act:
In 1980, the National Conference of Commissioners on Uniform State Laws adopted the Uniform Determination of Death Act, which incorporates the brain death standard, as well as the traditional circulatory and respiratory standards. The Act states:

1. An individual who has sustained either of the following is dead:
   1) Irreversible cessation of circulatory and respiratory functions
   2) Irreversible cessation of all functions of the entire brain including the brain stem.
2. A determination of death must be made in accordance with acceptable medical standards.
3. EEG and Brain Flow studies are not required by law or by the Medical Center policy Except for children 2 years or less.
4. Notify One Legacy Organ Procurement Organization (OPO) in accordance with the HealthCare Financing Administration (HCFA) regulations.
5. This regulation requires hospitals to notify the OPO within one hour of the patient meeting the following Clinical Triggers. (Refer to Trigger Card)
   A. Ventilated Patient with severe neurologic illness / injury and the loss of one or more brainstem reflexes
   B. Ventilated Patient with severe neurologic illness / injury for whom a physician is discussing DNR and / or withdrawal of life sustaining measures (Prior to family discussion of withdrawal of ventilatory support if possible)

PROCEDURE / GENERAL INSTRUCTIONS
1. The Providence Core Values support giving the family hope that the patient will survive only if hope honestly exists.
2. Provide effective support to families beginning at the time of admission.

2. Establish a positive and effective approach to sensitively present the option of donation to all potential organ donor families. Work as collaborative team (OPO and hospital staff) (Team Huddle Process) to:
   A. Understand family dynamic, establish next-of-kin, and identify key decision maker(s).
   B. Establish family communication plan.
   C. Match appropriate requesters to family for effective requesting.

3. Integrate the donation process into end of life care. How a family is treated from the moment their loved one enters the hospital can be critical factor in their decision to donate.

4. Provide ongoing information to the family that including grief counseling/support.

5. Educate the family regarding brain death using appropriate tools and language. Make the family part of the patient care process, including allowing them to observe the clinical exam.

6. Contact Clinical Social Work and Spiritual Care Services to provide support to the family as soon death by neurological criteria is considered.

7. Contact Organ Procurement Organization within one hour of patient meeting clinical triggers. Refer to Clinical Procedure PHC-PCP 006 Organ and Tissue Donation (Death by Neurologic Criteria) and/or Clinical Procedure PHC-PCP D-11 Donation After Cardiac Death (DCD).

8. Prepare for multi-disciplinary Huddle and initiate Organ Donation Work Sheet.

9. Document the referral on Organ Notification Sticker and place in the Physician Progress notes.

10. When brain death is diagnosed by a physician, Sec. 7181 of the California Health and Safety Code requires that a second physician independently confirms the diagnosis with both physicians making entries including time and date in the medical record. It is desirable, but not required, that a Neurologist/Neurosurgeon be one of the physicians.

11. The patient is pronounced dead at the time of the second physician's confirmation of brain death. That entry is made in the medical record, dated and timed.

12. The family is brought into the Quiet room and in the presence of Nurse, Pastoral Care and Clinical Social Worker; the Physician tells the family their loved one is dead. No mention of Organ Donation is made at this time.

13. If the patient is not a viable candidate for organ donation, ventilator and drug support is discontinued and cardiac death is allowed to occur. The family is allowed appropriate time to say goodbye. The nurse notifies the OPO within one hour of patient death.

14. If the patient is a potential organ donor, mechanical ventilation and drug support is continued to maintain organ viability. Do not decelerate care.

15. OPO and the health care team again huddle to determine the most appropriate time to approach the family. Refer to Special Considerations.

GUIDELINES FOR DETERMINATION OF DEATH BY NEUROLOGICAL CRITERIA:

The following are guidelines for determination of death by Neurological Criteria.

Cardinal findings in Brain Death are all of the following:

1. Coma/unresponsiveness,
2. Absence of brain stem reflexes, and
3. Apnea
4. Absence of motor response to pain

Prior to neurological exam the cause of coma should be established and confounding factors should be eliminated, such as core body temperature below 35.5 C /97.7F and evidence of exogenous or endogenous intoxication.

Criteria for Clinical Determination of Brain Death:

1. **Coma:** The patient is completely unresponsive to external visual, auditory, and tactile stimuli
   and is incapable of communication in any manner.

2. **Absence of cerebral and brain stem reflexes:**
   A. Absence of pupillary response to light and pupils at mid position. Absence of Corneal reflex
   B. Absent of Occulocephalic reflex (doll's eyes response)
   C. Absence of Oculovestibular reflex (caloric stimulation) (irrigation of the ears with cold water)
   D. Absence of Oral pharyngeal reflex (gag reflex).

3. **Absence of motor response to central pain stimulation:** Absence off motor responses after painful stimulation. However, motor responses may occur spontaneously during apnea testing in the presence hypoxia or hypotension and are considered due to spinal cord reflexes. Respiratory acidosis and brisk neck flexing may also generate spinal cord reflexes. Spinal reflex include rapid spontaneous flexion and muscle stretch reflexes in arms and legs, resulting in movements that resemble grasping or walking.

4. **Apnea Challenge Test:** An essential component in clinical determination of brain death is detecting apnea. Loss of brain stem function definitely results in loss of centrally controlled breathing with resultant apnea. The apnea test is performed to ascertain that no respiration occurs at a PCO_2 level of at least 60 mmHg. This test is performed only with a physician at the bedside throughout the procedure.

   A. Pre-oxygenate with 100% oxygen for 10 min.
   B. Draw ABG's. P_aCO_2 should be $\geq$ 36 mmHg, and arterial pH of 7.35-7.45. The ABG must be drawn within 3 hours prior to initiation of apnea test with no ventilator setting changes and stable pulmonary status between ABG and time of initiation of apnea test.
   C. Remove the patient from ventilator. Administer oxygen via tracheal cannula or collar at 8-12L per min. for 10 min. (There will be enough diffusion of oxygen for an apneic patient to be adequately oxygenated during this period).
   D. Monitor patient for spontaneous respirations, hypotension, and arrhythmias. Maintain hemodynamic stability.
   E. After 10 min. of no respirations, draw ABG's. If PCO2 is >60 or increases more than 20 mmHg over pre-ventilation baseline, O2 saturation $\geq$90%, test is consistent with clinical criteria for brain based determination of death.

   F. The apnea test is terminated early and the patient is placed back on ventilator support at any time during the testing process if spontaneous respiration is noted, the oxygen saturation is < 90%, and/or the patient becomes hemodynamically unstable.

Confirmatory tests:

1. **Absence of Cerebral Circulation:** Cerebral blood flow studies are utilized to determine the presence or absence of circulation to the brain and brain stem. The cerebral blood flow studies are indicated in those individuals who are hypothermic or drug intoxicated.
2. **Electroencephalograph.** EEG with no physiologic brain activity for a period of 30 minutes.

Appendix

California Health and Safety Code:

7180 **Determination of Death.** An individual, who has sustained either (1) irreversible cessation of circulatory and respiratory functions, or (2) irreversible cessation of all functions of the entire brain, including the brain stem, is dead.

7181 **Independent confirmation.** When an individual is pronounced dead by determining the individual has sustained an irreversible cessation of all functions of the entire brain, including the brain stem, there shall be an independent conformation by another physician.

7182 **Independent Conformation when Transplant Donation.** When a part of the donor is used for direct transplantation pursuant to the Uniform Anatomical gift Act, and the death of the donor is determined by determining that the individual has suffered an irreversible cessation of all functions of the entire brain, including the brain stem, there shall be an independent confirmation of the death by another physician. Neither the physician making the determination under section 7155.5 nor the physician making the independent confirmation shall participate in the procedure for removing or transplanting a part.

REFERENCE:

1. Wijdick, EFM. Current concepts: The Diagnosis of Brain Death. New England Journal of Medicine 2001; 344: 1215-1221.
2. Brain Death, Eelco F.M. Wijdicks, M.D. Lippencott Williams and Williams 2001
3. Critical Care Nurse, American Association of Critical Care Nurses, April 2006
4. PHCMC Clinical procedure, Organ and Tissue Donation, PHC-PCP 006
5. California Health & Safety Code, section 7180, 7150-7151.40
6. The Community of Practice, see "healthdisparities.net" 2009.
7. Health Care at The Cross Road: Strategies for narrowing the Organ Donation Gap and Protecting Patients. JCAHO publication 2004
8. Additional pertinent Legislation,HCFA-3005, RIN 0938-A195
9. Medicare Conditions of Participation, Section 42 CFR 482

APPROVAL:

Clinical Practice Council:	05/25/2011
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