1.0 **Philosophy/Purpose:** Donation after cardiac death (DCD) is an option that can be considered in cases where a patient has a non-recoverable and irreversible neurological illness and is ventilator dependent, and the decision is made by the patient or more often the patient's surrogate decision maker to remove respiratory support. Many times a patient will have a catastrophic intracerebral event with no hope of recovery but with some minimal neurological function. Other times a patient will have a severe underlying illness (musculoskeletal, pulmonary disease, high spinal cord injury), that has caused ventilator dependence and precludes any meaningful quality of life. This policy covers the circumstances in which DCD is appropriate, outlines steps in approaching the family with this important choice, and establishes guidelines and practices for its implementation.

2.0 **Scope:** Henry Ford Hospital – Detroit Campus

3.0 **Responsibility:** The design and effective implementation of the DCD policy is the responsibility of the Organ Donation Committee, with consideration and input from the Departments of Emergency Medicine and Anesthesia, as well as from the various specialties involved in managing patients in the Intensive Care Unit setting.

4.0 **Policy:** The implementation of DCD requires a careful attention to protocol in order to provide an effective, compassionate, and timely outcome for organ donation.

The process involves the following steps:
- determination of the appropriateness of removing the patient from ventilator support
- decision by the patient or patient's surrogate decision maker to proceed with DCD
- determination of the patient's suitability for organ donation
- determination of the location and process where withdrawal of support will take place
- medical care during the withdrawal of support
- pronouncement of death
- organ procurement

5.0 **Practice/Procedure/Requirements for Compliance**

5.1 **Determination of the Appropriateness of Removing the Patient from Ventilator Support**

5.1.1 The decision is made to remove a patient who is dependent on ventilator support due to an irreversible underlying illness from mechanical ventilation. This decision is made by the hospital's patient care team and the patient himself or the legal next of kin, and should be documented in the patient chart.

5.1.2 The designated Medical Staff member will be the primary Medical Staff involved in prescribing comfort measures for the patient and for pronouncement of death after withdrawal of ventilator support.

5.1.3 The designated Medical Staff member may in turn designate another Medical Staff, fellow or resident as a surrogate, if he or she cannot be present at the time of withdrawal of ventilator support. Members of the
Organ Procurement Team are specifically excluded from fulfilling this role.

5.2 Decision by the Patient or Patient's Surrogate Decision Maker to Proceed with DCD

5.2.1 The option of DCD cannot be initiated until after a decision is made by the patient or patient's surrogate decision maker to stop ventilatory support. This requirement is waived only if DCD is brought up spontaneously by the patient or patient’s surrogate decision maker before the decision is made.

5.2.2 Early involvement of the local organ procurement organization Gift of Life Michigan is mandatory. The entire discussion of DCD is left up to Gift of Life Michigan at the discretion of the designated Medical Staff. Its expertise in working with donor families under emotionally stressful situations is a valuable asset.

5.2.3 Members of the Organ Procurement Team should not be involved in any part of the consent process for DCD, the guidance or administration of palliative care or the declaration of death.

5.3 Determination of the Patient's Suitability for Organ Donation

5.3.1 Gift of Life Michigan, if not involved already, will be informed of the decision to donate after cardiac death. It will apply its established screening criteria to determine if the patient is a suitable candidate for donation.

5.3.1.1 If the patient is determined to be a candidate, Gift of Life Michigan will coordinate the donation process. This includes interaction with the patient and family, as well as obtaining consent for donation.

5.3.1.2 If the patient is not a candidate for donation, the reasons will be discussed with the patient’s surrogate decision maker. Withdrawal of support will continue without further involvement of Gift of Life Michigan.

5.3.2 The designated Medical Staff, in collaboration with the Gift of Life of Michigan must determine the probability of cardiopulmonary arrest to occur within ninety (90) minutes of removal of ventilator support.

5.3.2.1 If the time is expected to be more than ninety minutes, the patient could still be a candidate for DCD, but the family should be notified about the lower chances for success.

5.3.2.2 If the designated Medical Staff cannot readily make this determination, evocative tests such as a limited T-tube trial off ventilator support can be used to provide objective information.

5.4 Obtaining Consent for DCD

5.4.1 Consent for organ donation will be obtained by Gift of Life Michigan. This will include consent for specific procedures (eg. femoral cannulas) or drug administration (eg. Heparin or regitine) for the purpose of organ donation.

5.4.2 Once consent is obtained, the Charge nurse of the Unit where the patient
5.5 Determination of the Location and Process Where Withdrawal of Support Will Take Place

5.5.1 Once consent and ability to donate is known, patient will be transferred to one of the following areas in this order of availability:
- PACU 45 or 46
- Pre-op 9
- If EISOR (Extracorporeal Interval Support for Organ Retrieval) is used, the patient will remain in the ICU. (See Standard of Practice: Extracorporeal Interval Support for Organ Retrieval (EISOR) for Donation after Cardiac Death (DCD)).

The patient’s family will be given the opportunity to be present at the time of withdrawal of life support.

5.5.1.1 If there is no family present at the time of withdrawal of treatment, the patient may be taken directly to the operating room for withdrawal.

5.5.2 Before transferring, a call will be made by Gift of Life Michigan to the pre-op/PACU charge nurse supervisor at 161277 or 160782 for pre-op/PACU room availability and coordination of the process with the OR. Gift of Life of Michigan will also contact the OR Charge Nurse with OR time and specific organ recovering. Therefore, Gift of Life Michigan will be coordinating the location of withdrawal of care, the OR room and the Transplant team readiness in that OR room.

5.5.3 The ICU nurse will stay with the patient during the ≤ 90 minute waiting period for the patient to expire in order to provide care. If EISOR is used, the ICU nurse will stay with the patient until transfer to the operating room. A Perfusionist will be present in the ICU room to operate and maintain the ECMO equipment and patient.

5.5.3.1 Placement of cannulas will be done prior to withdrawal of treatment.

5.5.3.2 A separate consent form will be obtained from the family for cannula placement procedure. (See Standard of Practice: Extracorporeal Interval Support for Organ Retrieval (EISOR) for Donation after Cardiac Death (DCD)).

5.5.4 The respiratory supervisor is called at least ½ hour before extubation so they can set up coverage.

5.5.5 The physician managing withdrawal of support (see 5.1.3, above) will write the order to disconnect and extubate the patient to room air. Respiratory will extubate the patient in the identified room and the time of extubation will be documented.

5.5.6 Pronouncement of death will occur in this area by the physician managing the withdrawal of support. Once the patient expires, the nurse will have the physician
managing withdrawal of support pronounce death.

5.5.7 The patient will then be moved immediately to the OR for recovery of organs.

5.5.8 The charge nurse in pre-op/PACU will notify ATMO that patient has expired.

5.6 Medical Care During Withdrawal of Support under orders of medical staff

5.6.1 Analgesics and anxiolytics are encouraged after discontinuation of ventilator support to reduce any patient discomfort during the process. This should be done under the guidelines of HFHS Policy 430.90, Henry Ford Hospital Guidelines for Withdrawal of Mechanical Ventilation, which emphasizes patient comfort during withdrawal of mechanical ventilation. This is done at the discretion and direction of the designated Medical Staff.

5.6.2 No drugs with significant hemodynamic or neuromuscular adverse affects should be given.

5.6.3 Heparin, which prevents intravascular coagulation in the absence of blood flow, has no appreciable side effects. It should be administered in the dose of 300 units/kg IVP (or in a higher dose, if specifically requested, and agreed upon by the Medical Staff) before initiating withdrawal of support. In the very rare situation that the patient is actively hemorrhaging at the time of withdrawal of support, heparin will not be administered until after death is pronounced.

5.6.4 The Medical Staff involved in the process should wait for 15 minutes at the bedside after the patient is extubated to assess the initial comfort care measures. If the patient does not expire during this period of time and if the oxygen saturation is > 40%, the Medical Staff or his/hers surrogate can leave the room after making clear to the ICU nurse how and where he/she will be contacted (beeper, Unit phone where he/she will go or personal phone he/she is carrying). The Medical Staff or surrogate should be immediately available to respond to the ICU nurse’s questions regarding adjusting comfort care measures as per 5.6.1. If the patient’s oxygen saturation drops < 40% or bradycardia below 30 beats/minute develops, the ICU nurse should immediately contact the Medical Staff or surrogate to return to the room within 5 (five) minutes. If the oxygen saturation remains < 40%, the Medical Staff or surrogate should stay in the room for the rest of the remaining 90 minute period and until the patient is pronounced dead.

5.7 Pronouncement of Death

5.7.1 The patient is pronounced dead if he/she has irreversible cessation of circulatory and respiratory function. Irreversibility is recognized by persistent cessation of circulatory and respiratory function during an appropriate period of observation. The following hemodynamic or cardiac events will be used by the attending Medical Staff (or surrogate) to
Subject: Organ Donation after Cardiac Death (DCD)

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Approved by: Hospital Medical Executive Committee

5.7 Determine the patient’s time of death following withdrawal of mechanical ventilation:

5.7.1.1 Five minutes of asystole or
5.7.1.2 Five minutes of ventricular fibrillation, or
5.7.1.3 Five minutes of pulseless electrical activity, or
5.7.1.4 Five minutes of absence of audible heart sounds, which were present before withdrawal, or
5.7.1.5 Five minutes of absence of blood pressure as measured by an arterial line or Doppler.

5.7.2 A period of five (5) minutes is observed, as described above. If the above criteria are met during this time, the patient is pronounced dead by the designated Medical Staff or his or her surrogate.

5.7.3 If during this five minute observation period there is recurrence of pulse or blood pressure, even for a brief period of time, an additional observation period of 1 minute beyond the five minutes should be allowed (total of six minutes). If during this additional one-minute period the patient meets the hemodynamic or cardiac criteria defined in 5.7.1.1 – 5.7.1.5, the patient is pronounced dead by the designated Medical Staff or his or her surrogate. If the criteria are not met (patient continues to have pulse or blood pressure during this additional 1 minute period), then a new process of five (5) minutes observation period, as described under 5.7.1, will be initiated.

5.7.4 If EISOR is being used, the oxygenator-pump circuit cannot be turned on until a period of five (5) minutes is observed, as described above, and the patient has been pronounced dead.

5.7.4.1 Immediately following initiation of EISOR, an aortic occlusion balloon will be inflated in the descending thoracic aorta to prevent cardiac and cerebral reanimation. (See Standard of Practice: Extracorporeal Interval Support for Organ Retrieval (EISOR) for Donation after Cardiac Death (DCD)) click here to view EISOR

5.8 Organ Procurement

5.8.1 At the time death is pronounced, the Organ Procurement Team intervenes in an appropriate fashion to remove donor organs.

5.8.1.1 If patient does not expire and patient is no longer deemed an organ donor, patient will go back to previously assigned ICU bed where the dying process can continue and the patient's comfort needs can be met. The patient could be then transferred out of the ICU to a Ward bed.

5.9 Disposition of Remains

5.9.1 Disposition of the body after organ procurement shall follow established procedures following death in the Hospital. The Medical Staff or surrogate has the responsibility of filling the appropriate death forms or certificates. Gift of Life of Michigan will assist the Medical Staff with contacting the Medical Examiner’s Office.

5.9.2 If family wants to view patient Gift of Life team will support immediately
after. Otherwise, existing hospital protocol will be followed.

6.0 **Recommended Compliance Monitors and Audits:** Monitoring and auditing will be done externally by Gift of Life Michigan as part of their Quality Improvement process. Internal monitoring and evaluation will be done by organ donation committee in conjunction with the Henry Ford Transplant Institute.

7.0 **References/Sources:**

- Kootstra G. The asystolic, or non-heart beating donor. Transplantation 1997; 63(7): 917-921.
- UNOS guidelines for DCD

  Attachment III TO APPENDIX B OF THE OPTN BYLAWS Model Elements for Controlled DCD Recovery Protocols, 03/32/2007
- **Henry Ford Hospital and Health Network Informed Consent for Medical and Surgical Treatment Policy # 430.40**

8.0 **HFHS Business Unit Application:**

- At Henry Ford Health Network, this policy is carried out as described above without additional policies and/or procedures.

**Keywords:** DCD, Donation After Cardiac Death, Donation, Eisor