

FAST FACTS AND CONCEPTS #242
ORGAN DONATION AFTER CARDIAC DEATH

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Background Organ donation after cardiac death (DCD) refers to organ donation from a deceased donor who has been declared dead on the basis of cardio-pulmonary criteria (permanent cessation of circulatory and respiratory function) rather than on neurological “brain death” criteria (permanent cessation of brain function – see *Fast Fact #115*). This *Fast Fact* reviews key elements of the DCD process.

Two Types of Organ Donation

1. **Donation after death by neurologic criteria** occurs when a comatose patient meets brain death criteria. After obtaining consent from the family, the donor is brought to the operating room on the ventilator. Organ procurement occurs in the operating room while the patient remains intubated with a beating heart.
2. **Donation after cardiac death** occurs when a decision is made to discontinue mechanical ventilation/other life-sustaining treatments in a comatose or gravely ill patient who is expected to die quickly after cessation of life-support. Depending on hospital policy, the patient may be extubated in the operating room (OR) to minimize the time between death and organ procurement and thereby optimize donor organ viability for transplantation. Most organ procurement organizations (OPO) have guidelines governing the amount of time between extubation and death during which the organs are considered viable for transplantation. This is generally 60 minutes. If the patient survives longer than that, excessive organ ischemia occurs rendering the patient an unsuitable donor. The patient is then returned to the ICU or other appropriate location for end-of-life care.

Selecting Patients for DCD Appropriate patients are generally comatose patients for whom a decision has been made to discontinue life-sustaining treatments with the expectation of imminent death. The decision to discontinue life-sustaining treatments is made prior to any discussions of organ donation. Most institutions have policies and procedures which alert the OPO of potential donors. After discussion with their medical director and recipient transplant centers, the OPO determines donor suitability. Trained professionals – usually OPO representatives – approach the family about organ donation, and consent the family/patient decision makers for organ donation. Potential donors are generally between 0 and 60 years of age. Patients should not meet the criteria for death by neurologic criteria (they are candidates for organ donation via brain death protocols). The OPO staff prognosticate whether the patient is sufficiently likely to die within the 60 minute window after cessation of life-prolonging treatments. This estimate is based on physiologic parameters including spontaneous respiratory rate, negative inspiratory force, age, oxygen saturation, level of hemodynamic instability, and body mass index (BMI).

Procedure

1. Families are counseled about what to expect during the discontinuation of life-sustaining treatments and what to expect as the patient receives comfort care. Hospitals may have policies requiring the patient to have a DNR order while awaiting the DCD procedure; in others the decision to resuscitate a patient or not in order to attempt to maintain the patient as a viable organ donor is a negotiated decision. Families should be prepared for the possibility that the patient may not die quickly after the ventilator is withdrawn and that the patient may become an unsuitable donor. This occurs in about 20-30% of DCD cases nationally. This can cause added emotional trauma to grieving families who may want both a swift and comfortable death for their loved one as well as the opportunity to help others through organ donation. Families should be reassured that the patient will continue to receive careful symptom management until she or he die no matter how long that takes.
2. In order to prevent conflicts of interest, members of the OPO and organ recovery teams should not be involved in the decision to discontinue life-support, or in directing the medical care of the patient prior to the declaration of death. Because of this, intensivists, palliative care physicians, or other clinicians may be asked to direct the care of the dying donor after extubation.

3. Once consent is obtained from a legal surrogate and appropriate teams are ready, discontinuation of life-sustaining treatments begins. Extubation generally occurs in the operating room but may occur in a nearby ICU or recovery area based upon local hospital practice. Many hospital policies allow family members to be present in the operating room until the patient dies.
4. The patient may be given pre-extubation medications to relieve anticipated distress. These medications, as well as symptom medications given after cessation of life-support, should be given in the exact same way as in non-DCD situations to alleviate signs of pain, labored breathing, and other symptoms (see *Fast Facts* 33-35).
5. The patient is extubated to room air. Other lines and tubes are discontinued as deemed appropriate to maximize patient comfort.
6. All non-comfort medications are discontinued including vasoactive agents.
7. Declaration of death is based on hospital policy. Usually policies require apnea and 2 to 5 minutes of asystole or pulseless electrical activity. The hospital's DCD policy will outline the exact criteria for declaring cardiac death.
8. Following death pronouncement the patient is taken to the OR, or the organ recovery team enters the OR where the patient died and procurement begins. The organ recovery team never encounters the patient's family during the DCD process.
9. If the patient does not die in a reasonable amount of time as determined by the organ procurement organization, the patient is returned to a location in the hospital for ongoing symptomatic treatment until death occurs. Ongoing emotional and bereavement support should occur for family members throughout the process.

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