Organ Donation After Cardiac Death

Saving More Lives
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Organ donation offers comfort to grieving families and hope to patients in need. Over the past 30 years, organ transplantation evolved from an experimental procedure to the treatment of choice for patients suffering from end-stage organ failure. The dramatic improvement in quality of life after transplantation has significantly increased the demand for solid organ transplants. Thousands of patients wait for a transplant because of the organ shortage.

The numbers tell the story:

- More than 93,000 people are waiting for an organ transplant in the U.S.
- Every 12 minutes, another person is added to the waiting list
- Every day, 18 people die awaiting an organ transplant

The Lifesaving Need

The Walker family, whose son and brother Chance was a life-saving donor after cardiac death

Isaac Bayon, kidney/pancreas transplant recipient, with wife Edna
Donation After Cardiac Death and Some Organ Donation History

Only a small percentage of hospital deaths are brain deaths. Reliance on donation after brain death severely limits organ availability.

Formerly called Non-Heart-Beating Donation (NHBD), Donation after Cardiac Death (DCD) has been an end-of-life option for patients and families for more than 30 years. Prior to the introduction of brain death laws, DCD was the way in which all organs were recovered.

Early on, DCD had limitations, such as poor organ function for recipients. Initially, only kidneys could be recovered from DCD donors. Donation after brain death offered better outcomes and the ability to recover and transplant the heart, lungs, liver, pancreas, kidneys, and intestines. As a result, donation after brain death became the preferred method of organ recovery, and nearly all organ procurement organizations (OPOs) stopped pursuing DCD donors.

However, the shortage of organs available for transplantation created renewed interest in DCD. Improved medications and surgical techniques dramatically improved the outcomes of transplants from DCD donors. All these advances—coupled with the increasing organ shortage—make DCD an option for patients and families interested in organ donation.

DCD

A Short Description
DCD is an option for families of patients with severe brain damage but who do not meet the criteria for brain death. After the decision has been made that the patient has no chance of survival and the family has decided to withdraw life-sustaining therapies, the family is offered the option of DCD. If the family agrees, the patient is moved to an operating room where the patient’s physician withdraws life-sustaining therapies. In some situations, therapies may be withdrawn in the intensive care unit (ICU). Once the patient’s heart stops beating, the physician declares death. Following an additional five minutes of waiting to ensure the heart does not start beating again, organ recovery begins. Lungs, liver, pancreas and kidneys can be recovered.

Donation After Brain Death vs. Donation After Cardiac Death

<table>
<thead>
<tr>
<th>Injury</th>
<th>Donation After Brain Death (DBD)</th>
<th>Donation After Cardiac Death (DCD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severity</td>
<td>Severe brain injury from trauma, cerebral vascular accident, acute event or other</td>
<td>Severe brain injury from trauma, cerebral vascular accident, acute event or other injury, resulting in dependence on life-sustaining therapies</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Meets Criteria for Brain Death</th>
<th>DBD</th>
<th>DCD</th>
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<tbody>
<tr>
<td>Yes</td>
<td></td>
<td></td>
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<tr>
<td>Confirmatory testing</td>
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<table>
<thead>
<tr>
<th>Prognosis</th>
<th>DBD</th>
<th>DCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain death</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Action</th>
<th>DBD</th>
<th>DCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral to OPO</td>
<td></td>
<td></td>
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<tr>
<td>Brain death declaration by physician</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient on ventilator until organ recovered</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transplant team spends 3-4 hours recovering organs</td>
<td></td>
<td></td>
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<tr>
<td>Heart, lungs, liver, pancreas, kidneys and intestines can be recovered</td>
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<th>Action</th>
<th>DBD</th>
<th>DCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral to OPO</td>
<td></td>
<td></td>
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<tr>
<td>Family and physician elect to withdraw life-sustaining therapies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawal of life-sustaining therapy in OR or ICU</td>
<td></td>
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<tr>
<td>Cardiac death</td>
<td></td>
<td></td>
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<tr>
<td>Unconscious</td>
<td></td>
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<tr>
<td>No pulse</td>
<td></td>
<td></td>
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<tr>
<td>No blood pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No cardiac sounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transplant team begins organ recovery 5 minutes after declaration of cardiac death</td>
<td></td>
<td></td>
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<tr>
<td>Transplant team spends 1-2 hours recovering organs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lungs, liver, pancreas and kidneys can be recovered</td>
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Staff responsibilities vary depending on hospital DCD protocols, the individuals involved and the needs of the family. Here are some general guidelines:

**Physician**
- Makes the major decisions about patient care
- Works to preserve life before judgment made to withdraw life-sustaining therapies
- Serves as an advocate for the family and ensures families are offered the option of DCD by the OPO
- Assists the OPO in determining suitability for donation
- Declares patient death in the operating room or ICU

**Nurse**
- Provides ongoing care to families throughout the patient’s hospitalization
- Coordinates the clinical management of the patient and support for the family
- Makes the referral call to OPO about the potential DCD donor

**Pastoral Care and Social Services**
- Meets spiritual, religious and other needs of the patient and family
- Serves as family advocate in collaboration with medical and nursing staff

The DCD process is no more difficult or complex than donation after brain death. The feelings of the patient’s family are always kept in focus by the medical team, by OPO staff members and by social workers and clergy. The donation decision is made in the midst of enormous personal loss. Sensitivity, the willingness to listen and the ability to explain procedures in common terms can make donation an easier decision for families to make. It is a compassionate team effort.

An end-of-life decision
For a patient with a severe brain injury, the medical team meets with the family to explain the nature of their loved one’s injury, prognosis and end-of-life considerations. The hospital also makes a patient referral to the OPO. After exhausting all medical options, the medical team consults with the family regarding their decision to withdraw life-sustaining therapies. The decision to withdraw life-sustaining therapies is made by the family and medical team. Discussion participants may include the attending physician, nurse, clergy and social worker.

Offering the option
After the decision has been made to withdraw life-sustaining therapies, the OPO determines the patient’s medical suitability for organ donation. After the OPO determines the patient may be a DCD donor, the OPO and medical team consult to determine the best way to introduce the DCD conversation to the family. An OPO representative then speaks with the family about the opportunity for donation.

Consent
If the family is agreeable to organ donation, the next of kin completes the consent form. The OPO obtains written consent for the following actions:
- Organ Donation After Cardiac Death
- Administration of medications to reduce clotting and improve organ function
How the DCD Process Works (continued)

It is important to have the discussion about donation in a quiet, private setting where the family feels most comfortable. The family is assured that organ donation still allows for an autopsy, open-casket funeral or memorial service, and that the donation will occur at no cost to them. Most importantly, the family is told that their loved one’s donation will save lives. The OPO coordinates the organ donation process. This will not delay any funeral arrangements.

Evaluation

The OPO coordinator and the healthcare professionals at the hospital coordinate the donation process, including a respiratory drive assessment, organ function assessment and review of medical/social history. The OPO schedules an operating room (OR) time and arranges for the surgical team to arrive.

Additionally, the OPO coordinator, staff and family discuss the possibility that the patient will not expire within the time frame needed for donation. Typically this means the patient is transferred to the unit for care and comfort measures. This does not mean the patient will get better but that organ donation is not possible.

Coordination and decision-making

The OPO staff and medical staff, in consultation with the family, decide where life-sustaining therapies will be removed. This process typically occurs in an OR. In some situations, it may take place in the ICU.

This decision is made prior to arrival of the OPO surgical team.

Withdrawal of life-sustaining therapies is usually done by the physician in charge of the patient’s care. Depending on specific hospital policies and procedures, this can also be performed by an anesthesiologist, intensivist, on-call physician or resident.

Robbie Casten, with her husband and daughter, awaiting a lung transplant

Preparing for surgery

When the OPO surgical team arrives, they consult with the hospital staff and family. They answer any questions and get an update on the status of the patient. They review the patient’s chart, including the consent forms and blood type.

Final farewell

The family is given as much time as they need to say goodbye to their loved one. When the patient, hospital staff and family are ready, the hospital staff transfers the patient to the OR or prepares the ICU room for the withdrawal of life-sustaining therapies.

Withdrawal of life-sustaining therapies

When life-sustaining therapies are withdrawn in the ICU, the patient’s physician declares cardiac death and the team transfers the patient to the OR. If therapies are withdrawn in the OR, during transfer, the patient is supported on a ventilator and monitored by the surgical team and hospital staff.

The hospital staff member designated to withdraw life-sustaining therapies administers medications such as Heparin. This medication prevents blood clotting and ensures good organ function.

When the team is ready, the patient is extubated by the attending physician or his/her designee. The OPO surgical team cannot administer medications, withdraw life-sustaining therapies or declare cardiac death. As in all settings where therapies are withdrawn, comfort measures for the patient are of the utmost importance.

The attending physician may administer an analgesic based on his/her clinical judgment. The same end-of-life care is given to the patient regardless of whether life-sustaining therapies are withdrawn in the ICU or OR. In some situations, the family may be present in the OR for the withdrawal of life-sustaining therapies.
Organ donation can raise a variety of questions. Most major religions support organ donation and view it as an act of charity.

Research has shown that DCD raises some specific questions, such as:

**Will the family be with their loved one at the end of life?**

For DCD to occur, the family is generally separated from their loved one at the end of life. The family is allowed as much time as needed to say their last good-byes and spend valuable time with their loved one. Those families that wish to be in the OR or ICU at the end of life may do so.

**When the organs are removed, is the patient really dead?**

Organs are never recovered from a patient until he or she is declared dead by a physician who is not a part of the organ procurement team. With DCD, the patient is declared dead by cardiac death criteria (absence of spontaneous respirations and monitored arterial pulse) prior to the start of the recovery procedure. The OPO waits an additional five minutes after declaration of cardiac death to ensure the heart does not start beating again.

**Does the patient suffer pain during organ recovery?**

After a patient dies, he or she no longer feels pain. Organ recovery occurs only after a patient is declared dead.

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**Organ recovery**

A hospital staff member declares cardiac death. The OPO surgical team waits an additional five minutes to ensure the patient’s heart does not start beating again. Research has shown that a patient’s heart will not start beating beyond two minutes after the declaration of cardiac death. After five minutes, organ recovery begins.

If the patient does not expire within the time frame needed for organ donation (usually within 90 minutes), the medical staff moves the patient to a location as outlined in step four and continues to administer palliative care.

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Are medical professionals hastening the death of the patient?
Patients considered for DCD have suffered an irreversible, catastrophic brain injury. DCD is not offered to a family until they have made the decision, in consultation with the physician, to withdraw life-sustaining therapies. Only these two parties have the ability to decide that a patient’s life-sustaining therapies can be withdrawn. The decision to withdraw life-sustaining therapies and the decision to donate organs are independent of each other.

Is there a conflict of interest for the OPO?
The OPO becomes actively involved only when death is imminent or after the determination to withdraw life-sustaining therapies has been made by the family and physician. The role of the OPO is to educate hospital staff, ensure every family is offered the option of donation and honor the wishes of patients and their families.

“All organ procurement organizations (OPOs) should explore the option of non-heart-beating organ transplantation, in cooperation with local hospitals, healthcare professionals, and communities.”
Institute of Medicine (IOM), Non-Heart-Beating Organ Transplantation, 2000

Questions About DCD (continued)

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The Benefits of DCD

• DCD gives the family of the patient an additional option for organ donation. If a patient wishes to be a donor, DCD is one more way to honor the individual’s final wishes.
• Recipients are not the only people who benefit. Because of the recipient’s renewed chance at life, his or her family is able to enjoy more quality time together.
• Organs transplanted from DCD donors are proven to have similar outcomes to those from donations after brain death. Studies demonstrate that new techniques have made the results virtually equal.
• Implementation of DCD policies in U.S. hospitals, transplant programs, and OPOs could lead to life-saving outcomes for 10,000 patients each year.
• DCD is not experimental. It is supported by the Institute of Medicine (IOM), the Society for Critical Care Medicine and the Association of Organ Procurement Organizations (AOPO).

Micaela Prunty, liver transplant recipient

“If, in the process of delivering high-quality end-of-life care, organ donation is possible, then critical care professionals should help enable that outcome.”
Society for Critical Care Medicine, Recommendations for Non-Heart-Beating Organ Donation, 2002
Commit to honor every family’s wishes for organ donation after death—whether after brain death or cardiac death.

Educate yourself on DCD procedures. Gift of Hope conducts regular training sessions at hospitals in our donation service area.

About Gift of Hope Organ & Tissue Donor Network

Gift of Hope Organ & Tissue Donor Network is proud to serve as the federally designated not-for-profit organ procurement organization (OPO) that coordinates organ and tissue donation and services to families of donors in the northern three-quarters of Illinois and northwest Indiana. Since its inception in 1986, Gift of Hope has coordinated donations that have saved the lives of more than 10,000 organ transplant recipients, and improved the lives of hundreds of thousands of tissue transplant recipients. As one of 58 organ procurement organizations that make up the nation’s organ donation system, Gift of Hope works with 183 hospitals and serves 11.7 million residents in its donation service area.

Our mission

To save and enhance the lives of as many people as possible through organ and tissue donation.

Our accreditations

Gift of Hope is accredited by the Association of Organ Procurement Organizations, the American Association of Tissue Banks and the American Society for Histocompatibility & Immunogenetics.

How You Can Facilitate DCD in Your Hospital

If you have any questions about DCD or would like to request a training session, contact your hospital’s Gift of Hope Hospital Development liaison at (630) 758-2600. Or visit the Hospital Professionals section of www.giftofhope.org.
24/7 Donor Referral Hotline
(Illinois, northwest Indiana only)
800/545-GIFT (4438)

Main phone: 630/758-2600
Fax: 630/758-2601
Web site: www.giftofhope.org