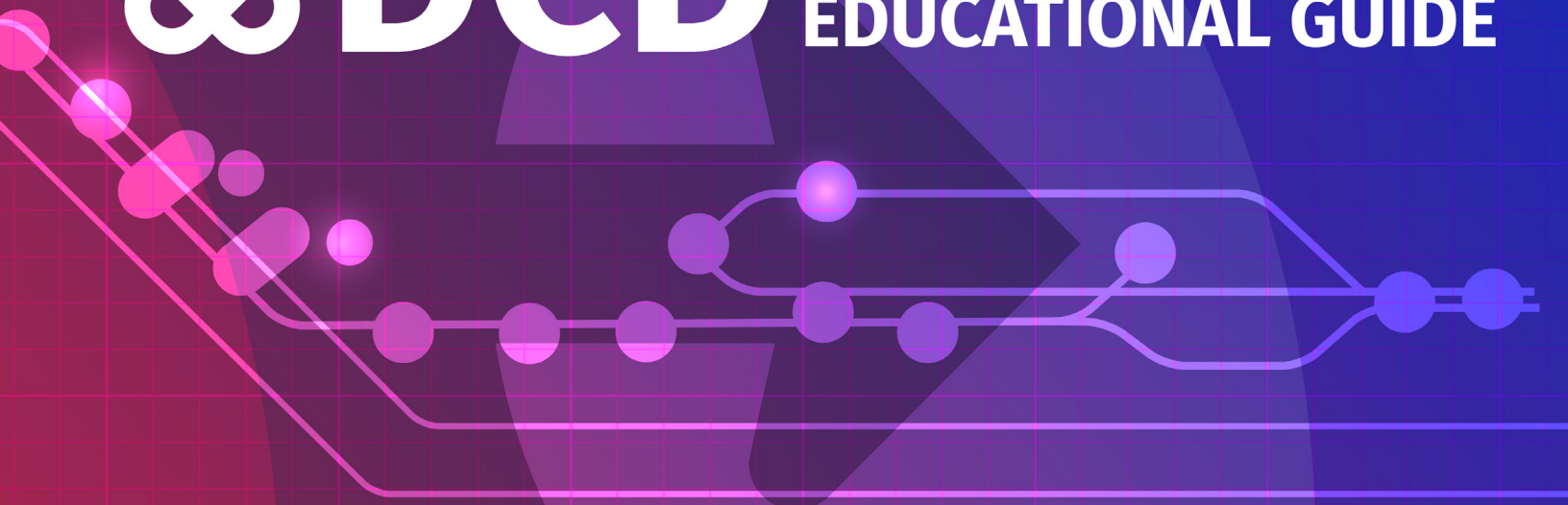
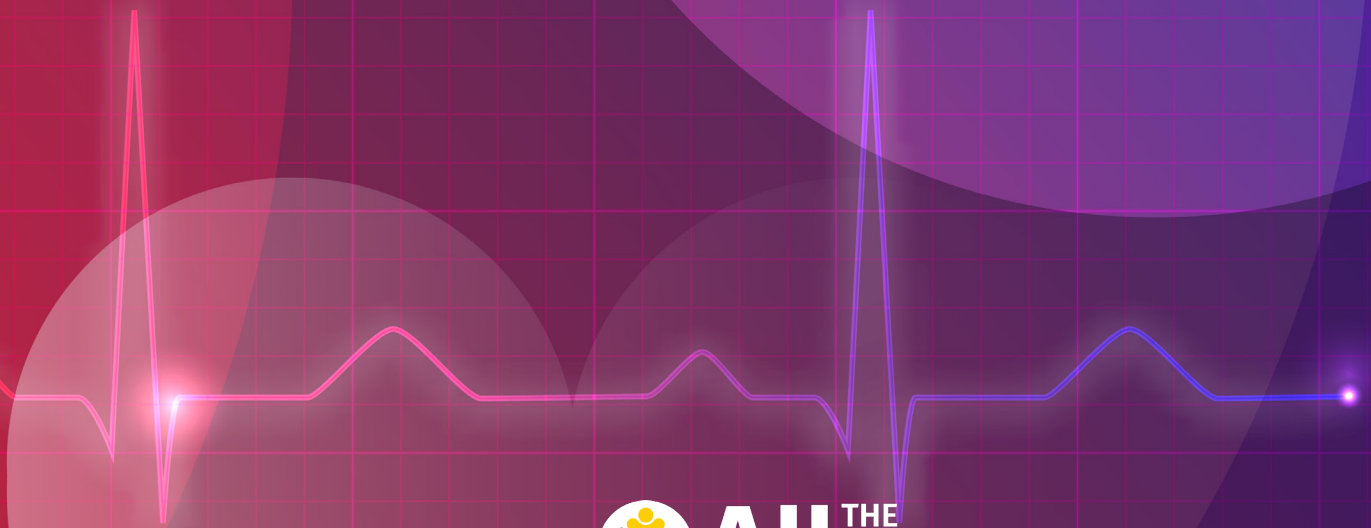
DCD

DONATION AFTER CIRCULATORY DEATH
EDUCATIONAL GUIDE





THE Alliance

Equipping a Modern Profession of Lifesavers in Organ Donation & Transplantation

The Alliance
DCD Educational Guide

A COMPREHENSIVE RESOURCE FOR OPOS & HOSPITAL PATIENT CARE TEAMS FOR BUILDING AND SUPPORTING EFFECTIVE PRACTICES SURROUNDING ORGAN DONATION AFTER CIRCULATORY DEATH

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Letter from The Alliance Board Chair & Executive Director

Dear Colleagues,

The Organ Donation and Transplantation Alliance is pleased to present the first national DCD Educational Guide, an interdisciplinary resource designed to outline effective practices for building a robust organ donation after circulatory death (DCD) program within hospital settings. This guide represents a significant milestone in our community's efforts to enhance the organ donation and transplantation process, ensuring that more lives can be saved through the gift of organ donation.

The development of this guide was driven by a shared commitment to advancing the field of organ donation and transplantation. By bringing together experts from diverse disciplines, including the American Society of Transplantation (AST), the Association of Organ Procurement Organizations (AOPO), American Society of Anesthesiologists (ASA), the American Association for the Surgery of Trauma (AAST), Donate Life America (DLA), the Neurocritical Care Society (NCS), the American Academy of Pediatrics (AAP), the Society for the Advancement of Transplant Anesthesia (ASATA), and several organ procurement organizations, we have created a comprehensive resource that addresses the complexities and challenges of DCD programs. The insights and strategies presented in this guide are rooted in the effective practices from programs across the country, offering practical solutions to improve outcomes for donors and recipients alike.

We recognize the critical impact that healthcare professionals have on organ donation. In fact, the increase in the identification of DCD potentials at hospitals across the country has led to more families having the opportunity to find healing through donation, as well as a significant growth in the number of available organs for transplant over the past decade. This guide is designed to support you in your efforts, providing valuable information on key areas such as donor identification and evaluation, family communication, clinical management and ethical considerations. By fostering a collaborative approach and emphasizing the importance of interdisciplinary teamwork, we aim to empower hospitals to develop and sustain effective DCD programs in partnership with your organ procurement organization.

Our hope is that this guide will serve as a valuable tool for healthcare teams across the country, helping more families to find comfort through donation, as well as increasing the availability of organs for transplantation and ultimately saving more lives. We are deeply grateful to the many contributors who have shared their expertise and experience to make this guide possible. Your dedication and commitment to advancing the field of organ donation and transplantation are truly inspiring.

As we continue to strive for excellence in the field of organ donation and transplantation, we invite you to join us in this important endeavor. Together, we can make a profound impact on the lives of patients and their families, offering hope and healing through the gift of life.

JOHN MAGEE, MD

Board Chair, The Alliance (2024)

Jeremiah & Claire Turcotte Professor of Transplant Surgery, University of Michigan Transplant Center

KARRI HOBSON-PAPE

Executive Director, The Alliance

Letter from Senior Editor and Workgroup Chair

Dear Colleagues,

On behalf of the DCD Educational Guide Workgroup, I wish to express our immense pride and enthusiasm for the achievement of such a significant inaugural resource for the healthcare community.

The creation of this guide has been a true interdisciplinary effort, and I would like to extend my deepest gratitude to the workgroup members who contributed their time, knowledge and experience. Their significant contributions have been instrumental in developing a resource that addresses the full spectrum of DCD practices—from caring for patients in the ICU to engaging with the patient's family about donation potential, obtaining consent, identifying transplantable organs, evaluating necessary labs, coordinating with transplant centers, preparing the OR staff, and managing OR occurrences as well as contingency plans. We have endeavored to cover every aspect, ensuring that this guide serves as a comprehensive tool for healthcare professionals as you seek to develop or enhance the DCD processes for your facility.

This guide represents the culmination of years of collaborative work, embodying the collective wisdom and best practices of our field. It is a testament to the power of teamwork and shared commitment to improving patient outcomes and saving lives through organ donation.

On a personal note, I would also like to acknowledge the invaluable contributions of Glenn Matsuki, a 27-year heart recipient and long-time member of the donation and transplantation community of practice. Glenn was a passionate advocate for this initiative, championing the development of this guide until his passing in 2023. His dedication, insight and unwavering support have left an indelible mark on this project, and we are deeply grateful for his contributions. Glenn's legacy will continue to inspire and guide us as we strive to enhance DCD programs nationwide.

With this, I am filled with hope and confidence that it will make a meaningful difference in our collective efforts to increase the availability of organs for transplantation. Together, we can build robust DCD programs that honor the wishes of donors and provide lifesaving transplants to those in need.

Thank you for your ongoing commitment to this vital cause.

Sincerely,

DANIEL J. LEBOVITZ, MD

Pediatric Intensivist, Akron Children's Hospital

Senior Editor and Workgroup Chair, The Alliance DCD Educational Guide

The Alliance

About the Organ Donation and Transplantation Alliance (The Alliance)

The Organ Donation and Transplantation Alliance (The Alliance) is a non-profit organization that activates the "All Teach, All Learn" approach by exchanging collective expertise across the healthcare continuum, and by developing relevant, targeted and scalable learning solutions for the organ donation and transplantation community of practice – including organ procurement organizations (OPOs), transplant centers and hospitals where donations occur. By convening members across the community of practice, it serves as a platform to identify emerging concepts and innovative practices, and cascade resources and educational programs of transformational quality and value. The Alliance is not a membership organization, but partners with leading organizations across the continuum to advance a shared mission to save and heal lives through organ donation and transplantation.

To learn more, please visit our website at ***https://organdonationalliance.org/***.

The Alliance Board of Directors (2024)

The Alliance Board of Directors is comprised of expert leaders from several key national organizations from across the organ donation, transplantation and healthcare community. They are the driving force behind The Alliance's successful programs and activities. These valued partners work closely with The Alliance team to achieve optimal results on key issues that impact the field of donation and transplantation.

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About The Alliance National Donation Leadership Council

The National Donation Leadership Council is one of three national leadership councils of The Alliance, comprised of volunteer representatives from diverse disciplines and levels of leadership across the donation and transplantation continuum. This council works to develop and provide resources and education to improve and advance the organ donation process. It supports hospital and donation professionals' efforts in the sharing of knowledge, data, and successful practices as it relates to identification of potential donors, family support and communication, and optimizing the availability of organs for transplantation. Through the course of their work, members of the council identified a need for a comprehensive Donation after Circulatory Death (DCD) resource, which would share successful practices in DCD with the goal to increase the availability of organs for transplantation from DCD donors.

The Alliance expresses its sincere gratitude to the members of this council, past and present, for their insight and contributions toward making this important resource a reality.

Learn more at ***https://www.organdonationalliance.org/about/workgroups-faculty-councils/***.

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If you are interested in learning more about becoming a council, committee, faculty or workgroup member, please ***visit our website,*** email ***The Alliance*** or call 786-866-8730.

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The following workgroup of volunteers representing various roles and expertise across the donation and transplantation continuum spent many hours over the course of several years to amalgamate the content of this guide. We would like to extend our sincere appreciation for their time, commitment and passion for this project:

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Acknowledgements

The Alliance DCD Educational Guide would not be possible without the impassioned work and dedication of Glenn Matsuki, a 27-year heart recipient and long-time member of the donation and transplantation community of practice, who championed this initiative until his passing in 2023. We remember his contributions with deep gratitude and respect. Through this important work, his legacy lives on.

We extend our heartfelt gratitude to Dr. Dan Lebovitz, Kristina Wheeler, Hedi Aguiar and Meghan Stephenson, who leveraged their wealth of career experience and content knowledge to meticulously refine and enhance this guide, transforming it into a polished and valuable resource for readers.

Additionally, The Alliance team wishes to thank the following individuals for their time and contributions to select sections of this guide:

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About this Guide

The Donation after Circulatory Death (DCD) workgroup under the guidance of The Alliance National Donation Leadership Council developed this DCD Educational Guide to enhance collaboration between organ procurement organizations (OPOs), transplant centers, and hospitals as a means to increase the availability of organs for transplantation.

This comprehensive resource is designed to:

- Provide regulatory and legal considerations and historical information about organ donation practices, including DCD, and its impact on the donation and transplantation crisis in the United States.
- Increase awareness of national DCD performance data as well as to define how to measure donation-related performance at the local level.
- Describe successful processes for potential donor identification, timely OPO notification, and DCD donor management.
- Identify the importance of collaborative donation conversations.
- Discuss withdrawal of life sustaining measures in alternative settings to the intensive care setting to facilitate DCD cases.
- Outline operating room recovery processes.
- Describe model practices, such as interdisciplinary donation councils and donor case reviews, to increase collaboration between OPOs, transplant centers, and hospitals.
- Provide additional resources for implementing effective DCD donation processes.

This guide includes 10 essential areas of focus (including regulatory and accreditation compliance) that enhance a successful hospital DCD program. Utilizing the principles outlined in this guide, your designated OPO will be able to guide you and be an excellent partner in helping you develop a well-organized organ donation program that includes a robust DCD process.

We invite hospital senior leaders to critically evaluate their DCD processes in relation to the Essentials and to partner and collaborate with their local OPO for process improvement opportunities to facilitate and optimize every donation opportunity.

How to Use this Guide

This educational guide has been developed to provide a comprehensive resource of key concepts and effective practices to build a successful DCD process in the hospital. Each Essential includes:

- Fact-finding Questions to learn about current processes within the hospital.
- Key Points hospital leadership should remember.
- Model Elements to describe concepts and processes of each Essential.

To best utilize the information provided, organizational leaders should:

- Examine their DCD process including key roles and responsibilities for:
  - ☐ Notifying the OPO of potential donors.
  - ☐ Coordinate the timing of the withdrawal of life sustaining treatment (WLST) conversations and decisions as it pertains to a DCD potential.
  - ☐ Conducting the donation conversation and obtaining donation authorization.
  - ☐ Medically managing the DCD donor patient.
  - ☐ Allocating organs for transplant.
  - ☐ Coordinating WLST measures to facilitate a safe DCD process.
  - ☐ Declaring the death of the DCD potential.
  - ☐ Recovering the organs of a DCD donor.
- Identify opportunities for improvement that exist such as missing processes or processes with workarounds, variations, unnecessary steps, points where breakdowns exist, or processes with unsatisfactory outcomes. (The ***CMS PDSA Cycle Template*** could be a beneficial tool for these next few steps.)
- Identify key participants to plan and run simulations to identify areas of improvement, necessary resources, duration, data collection, and necessary education for staff.
- Study and analyze the results to adapt or adopt the changes.
- Implement new or improved processes and track outcomes to:
  - ☐ Ensure all DCD donor potential is identified and the OPO is notified.
  - ☐ Honor every registered donor's decision or where no decision exists, offer the opportunity to make a decision about donation to the legal next of kin / legal authorizing party.
  - ☐ Standardize processes to support donor management, organ allocation, withdrawal of life sustaining treatments, declaration of death, and organ recovery.

Terminology Standardized throughout this Guide

Attempts have been made to standardize terminology in this guide, and as part of this effort, the following frequently used terms have been defined.

TERM	DEFINITION
Brain Death / Death by Neurologic Criteria (BD/DNC)	Death by neurologic criteria (DNC) is often referred to as "brain death (BD)", hence both terms and acronyms are utilized throughout this guide. BD/DNC is defined by the ***American Academy of Neurology (2023)*** as the "loss of function of the brain as a whole, including the brainstem, resulting in coma, brainstem areflexia and apnea in the setting of an adequate stimulus." Furthermore, it defines the severity of the brain injury as permanent.
Cold Ischemic Time (CIT)	It is important to note that there is no standardized definition of cold ischemic time (CIT). In this guide, the ***Organ Procurement and Transplantation***'s definition of CIT will be utilized, "the amount of time an organ spends being preserved after recovery from the donor." The organs are typically held in cold storage, which is why this time is classified as CIT.
Donation after Circulatory Death (DCD)	The recovery of organs from patients who are declared dead following the irreversible cessation of circulatory and respiratory function and who do not meet criteria for BD/DNC. Donation after Circulatory Death (DCD) is the same as Donation after Circulatory Determination of Death (DCDD). Antiquated terminology includes Donation after Cardiac Death (DCD), Non-Heart Beating Donation (NHBD), and asystolic donation.

TERM	DEFINITION
Hospital patient care team	The hospital patient care team includes the entire team caring for the patient, which at minimum would include physicians, nurses, respiratory therapists, and if involved with the patient, would also include social workers, case managers, and chaplains. If the patient goes to the operating room for organ recovery, an anesthesia provider may also be needed.
Legal Next of Kin / Legal Authorizing Party (LNOK/LAP)	A legal next of kin (LNOK) refers to someone a patient designated to make decisions on their behalf. If the patient did not determine someone to make decision, it is usually the closest living blood relative who could make a decision on behalf of the patient if they are unable to make their own decisions. Most states have a list identifying the order of the LNOK for healthcare decisions. In donation, there is a specific hierarchy of decision-makers determined by the state's Uniform Anatomical Gift Act. This hierarchy does not always match the other state's LNOK list and also includes non-relatives. Hence, the term Legal Authorizing Party (LAP) is a better description of decision-makers for donation. As LAP may still be new to some, both acronyms LNOK/LAP will be utilized together throughout this guide.
OPO recovery team	A team of staff from the organ procurement organization (OPO) that plays various roles in the organ recovery process. The team typically involves: ■ a clinical coordinator - responsible for the clinical management of the donation process and contributes to the organ allocation process ■ a surgical coordinator - responsible for facilitating all aspects of the surgical recovery and packaging of organs in the operating room ■ a preservation coordinator - responsible for facilitating any preservation devices that might be utilized during an organ recovery (not all OPOs have this role) ■ a family care coordinator - responsible for the donation conversation and supports the donor family throughout the process ■ a hospital development coordinator (not all OPOs require the hospital development coordinator to be present during the DCD process) - responsible overall for refining the donation process within the hospital by working closely with the hospital and the hospital patient care team on developing good processes It's important to note that every OPO will have their own titles for each of these roles. Additionally, there are OPOs that may have staff who serve in hybrid roles.
Transplant recovery team	A team of staff who come to the hospital from the transplant programs that will be receiving organs. This team is typically made up of one or two transplant surgeons and possibly an organ preservation technician.
Warm Ischemic Time (WIT)	It is important to note that there is no standardized definition of warm ischemic time (WIT). In this guide, the ***Organ Procurement and Transplantation Network***'s definition of WIT will be utilized: "the time of agonal phase onset to the time when core cooling is initiated" or "the calculated time using the serial data to be collected beginning with the agonal phase and ending with the initiation of core cooling." In other words, it is the length of time there is a lack of blood supply and oxygen to the organs at normal body temperature which occurs during the dying process and until the body can be cooled down with ice.
Withdrawal of life sustaining treatment (WLST)	To actively cease or discontinue interventions that are currently contributing to sustaining life.

Table 1. The Alliance Terminology and Data References Resource

INTRODUCTION

The Organ Donation and Transplantation Process

The organ donation and transplantation process involves surgically removing viable organs from one person (the organ donor) and surgically implanting them into another person (the recipient). The recipient receives the donated organ to replace the recipient's diseased organ that is no longer adequately functioning. Replacement of diseased organs in the human body with a healthier organ from a human donor provides the recipient with a greater quality of life and increases patient survival over alternative options.[1]

Organs can be donated by a living (living donation) or deceased (deceased donation) person. About 6,500 living donations occur each year, the majority of which are kidneys.[2] A portion of one's liver or lung, and the uterus can also be donated from a living donor. Very rarely, a segment of a pancreas or the small intestine may be donated through living donation. Most living donations occur between family members or friends, while some people donate altruistically to someone they do not know. While living donation is an invaluable gift of life, the number of organs that can be recovered falls short of saving the lives of patients on the wait list.

The vast majority of organs available for transplant come from deceased donors.[2] Deceased donors may be able to donate their two kidneys, liver, heart, two lungs, pancreas, small intestines, and vascularized composite allografts (VCAs). The most frequently donated and transplanted organ from a deceased donor is the kidney, followed by the liver. VCA involves the transplant of multiple types of tissue (bone, muscle, nerve, skin, and blood vessels) from one individual to another as a functional unit. Most notable examples are the hands, arms, uterus, penile, and face transplants.[3]

While there has been a steady increase in deceased donor organs available for transplant over the last several years, there has been only a marginal increase in living donor organs *(see Figure 1)*. The increase in Donation after Circulatory Death (DCD) donors is the most significant contributing factor to the increase in available organs. A total of 16,336 people became deceased organ donors nationwide in 2023, representing the 13th consecutive year with the highest number of deceased donors of any prior year, and an increase of 9.6% over 2022.[2] Yet, the need of the waitlist for transplants far outweighs the available organs, and sadly deaths among those waiting for transplants continue to occur *(see Figure 2)*.

It is important to note that donation does not merely benefit those in need of transplant. A point that is often not sufficiently emphasized is that donation does not hinder or worsen the grief process of a family.[4] For many families, donation is considered an important contribution to the healing process of their grief, bringing hope and purpose in their tragic loss.[5,6]

Figure 1. Comparison Of Deceased Donor To Living Donor Transplants Through 2023[2]

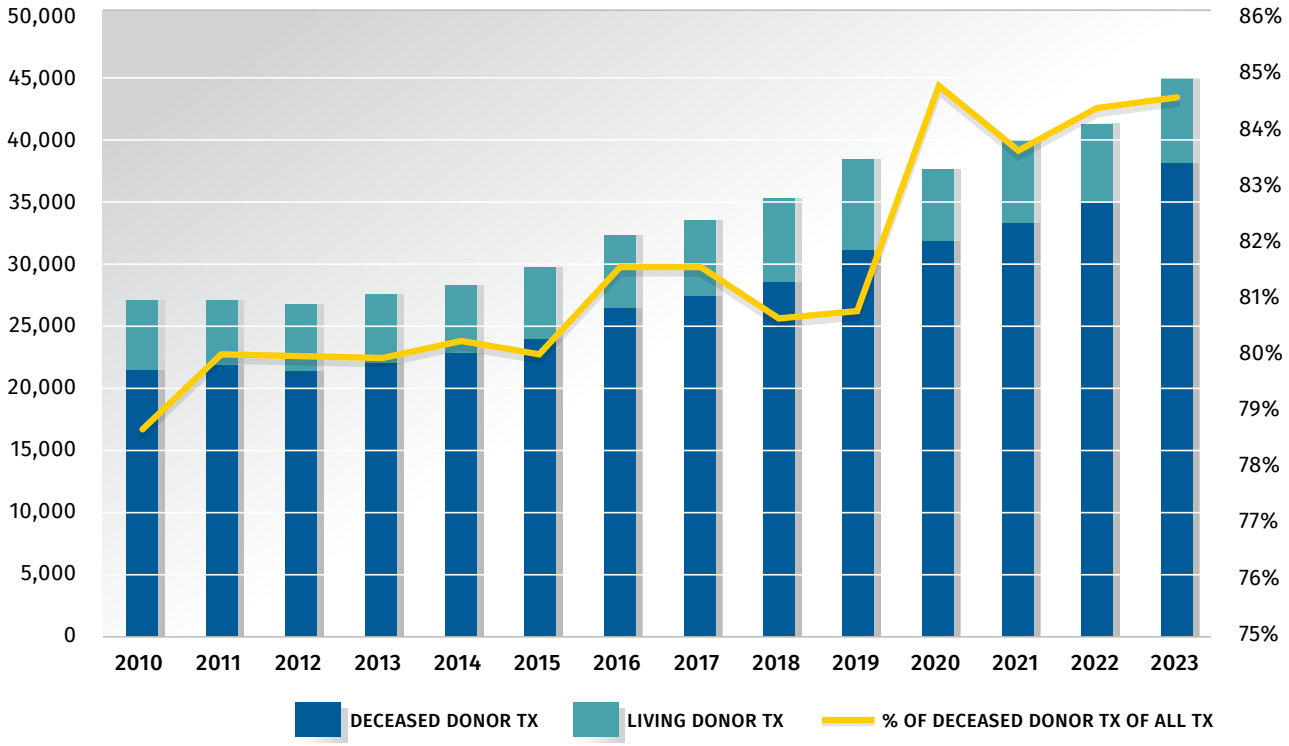
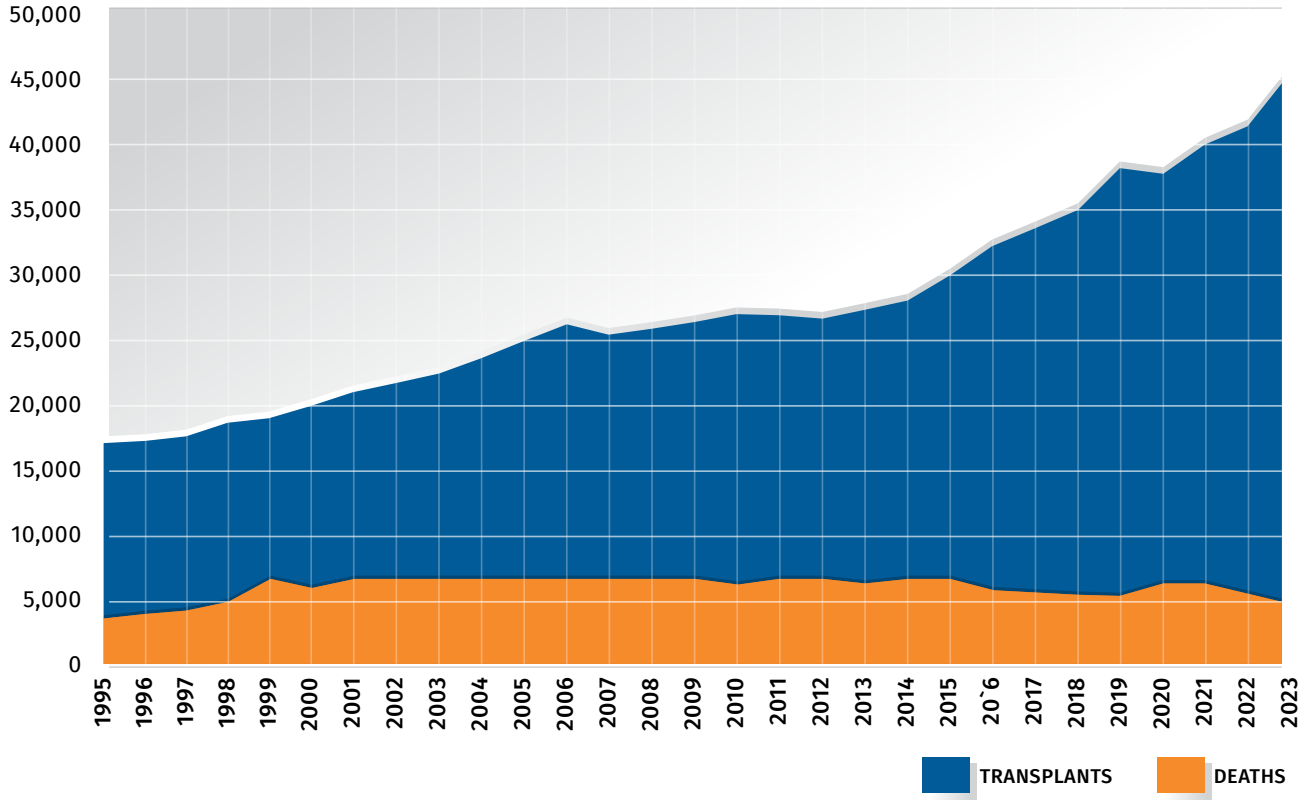


Figure 2. Transplants vs. Deaths on the National Waitlist by Year[2]



BACKGROUND

History of Deceased Donation

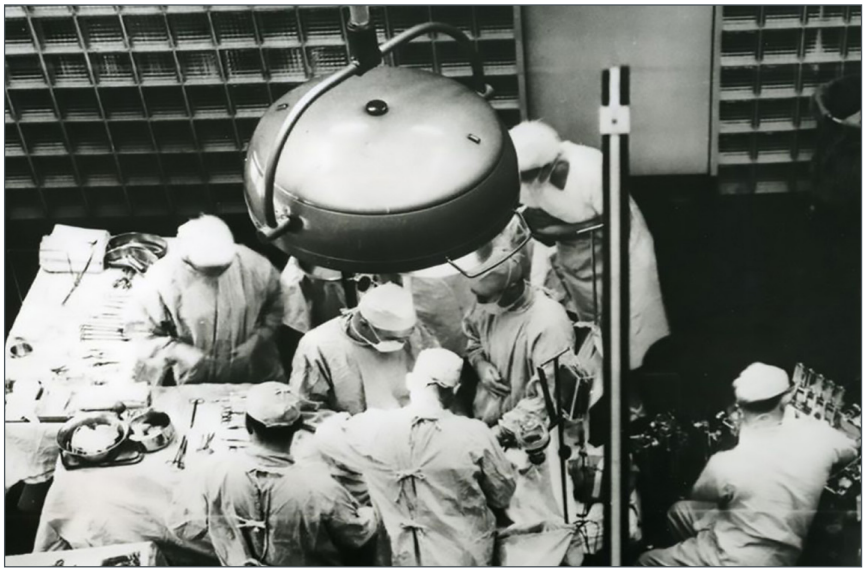
The first human-to-human organ transplants occurred after circulatory determination of death. At that time, the term "Donation after Circulatory Death (DCD)" was not yet used; it was initially referred to as "non-heart beating organ donation." This was prior to the Uniform Determination of Death Act of 1981,[7] which recognized brain death or death by neurologic criteria (BD/DNC) as a form of death.

The first documented attempt of a human-to-human kidney transplant was in 1933 by Dr. Yurii Voronoy. While the kidney briefly produced urine, unfortunately, the recpient died because the donor kidney had a very long warm ischemic time (WIT) and was transplanted across a major blood group mismatch.[8]

In 1950 Dr. Richard Lawler performed a deceased kidney transplant on Ruth Tucker, a 49-year old with polycystic kidney disease (PKD). This patient was not in terminal renal failure at the time of receipt of the transplanted kidney and had some native kidney function present. The transplanted kidney functioned for 10 months but was then removed for rejection, and she was able to live for 5 more years despite the kidney failing. The kidney only produced urine briefly and the transplant was not considered of scientific significance and of no benefit to the patient,[9] and is therefore often not recognized as a "successful transplant."

Credit for the first successful deceased kidney transplant was given to Dr. Joseph Murray and Dr. David Hume of Brigham Hospital in Boston, who in 1962 used a kidney from a patient following circulatory death.[10] This was followed in 1963 with the first successful lung transplant, done by Dr. James Hardy at the University of Mississippi Medical Center.[11] In 1966 came the first pancreas transplant (by Dr. Richard Lillehei and Dr. William Kelly at the University of Minnesota), followed a year later by the first liver transplant performed by Dr. Thomas Starzl at the University of Colorado in Denver.[13] Dr. Christiaan Bernard of the Groote Schuur Hospital in South Africa performed the first successful heart transplant in 1967.[14]

What these "firsts" had in common was that all the transplanted organs were from donors who had died following cessation of circulation, now known as Donation after Circulatory Death (DCD). Original recipient survival rates were poor due to organ rejection and poor organ quality caused by WIT.



Brigham And Women's Hospital

Associated Press

In 1954, Joseph Murray was lead surgeon in the first successful organ transplant in which Ron Herrick donated a kidney to Richard Herrick. Right: Richard, front left, and his twin brother Ron, front right, pose with doctors, from top left, Murray, John Merrill and J. Hartwell Harrison

THE HISTORY OF
Organ Donation and Transplantation

2020	2022 - U.S. milestone of 1 million organ transplants 2022 - NASEM Report on how to improve the donation and transplantation system 2020 - Revisions to Outcome Measures for OPOs Final Rule 2011 - First uterus transplant
2010	2019 - Executive Order on Advancing American Kidney Health 2016 - First HIV to HIV transplant in the U.S. 2015 - First pediatric hand transplant 2013 - HIV Organ Policy Equity (HOPE) Act is passed 2010 - First full-face successful transplant
2000	2019 - Executive Order on Advancing American Kidney Health 2016 - First HIV to HIV transplant in the U.S. 2006 - First penile transplant 2005 - First partial face transplant
1990	1998 - Federal Regulations mandate hospitals to notify OPOs of every death and imminent death 1998 - First small intestine transplant
1980	1986 - UNOS awarded Organ Procurement and Transplantation Network (OPTN) contract 1984 - First liver-heart transplant done 1981 - "Uniform Determination of Death Act" (UDDA)
1970	1978 - Cyclosporine first utilized for immune suppression and revolutionized the field of organ transplantation 1972 - Medicare extended coverage for dialysis and kidney transplants
1960	1968 - First organ donor programs established Uniform Anatomical Gift Act established Definition of brain death diagnosis published eventually paving the way for new organ recovery process 1967 - First liver transplant First heart transplant 1966 - First kidney-pancreas transplant 1963 - First lung transplant 1961 - Azathioprine became the first successful immunosuppressive drug
1950	1954 - First living kidney transplant

In 1968, the Harvard Ad Hoc Committee refined the concept of "coma depasse" (state beyond death), which was first described in French literature[15] as "le coma passe." The Committee called this finding: "Brain Death (BD)" or "Death by Neurological Criteria (DNC)." It was not until 1981 – after BD/DNC was recognized as an acceptable form of death and was signed into United States law through the Uniform Determination of Death Act (UDDA)[7] to achieve uniformity across state lines – that BD/DNC donors began to replace DCD as the predominant pathway for organ donation for transplantation due to improved recipient outcomes. From that time forward, BD/DNC donation became the primary mechanism through which deceased organ donation has occurred, but an ongoing small percentage of deceased donations continued to occur by the DCD mechanism of organ donation in some areas of the United States.

Organ Donation Pathways

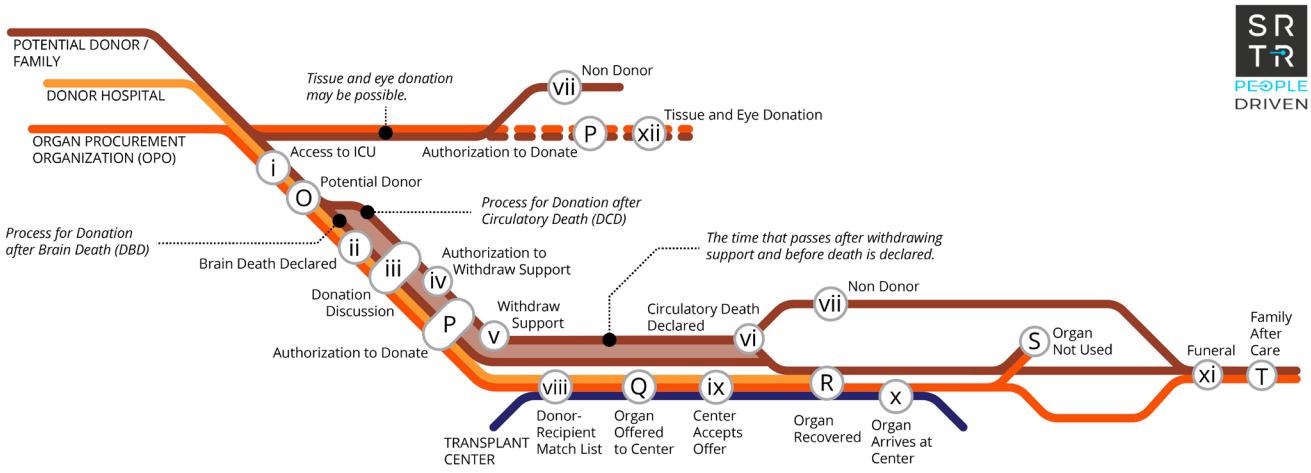
Donation after Brain Death/Death by Neurologic Criteria or Donation after Circulatory Death

Deceased organ donation follows one of two pathways: BD/DNC or DCD. Figure 3 depicts the alignment between the potential donor and family, the hospital, and the OPO during the deceased organ donation process and can be viewed as the deceased donation portion of the complete transplant system.

The majority of BD/DNC organ donations occur at a relatively small number of hospitals in the United States, primarily trauma centers and tertiary/quaternary hospitals. The increase in DCD organ donation has led to more community hospitals and non-trauma centers participating in deceased organ donation. Whether BD/DNC or DCD, the organ donation process is initiated when the hospital patient care team recognizes clinical triggers for notification to the OPO to evaluate for the potential of donation. The donation process relies on mechanical ventilation to allow sufficient time for donor potential evaluation and donor management. Access to critical care *(point "i" in Figure 3)* is therefore essential; tissue and eye donation may still be possible when access to an ICU is not possible.

In the BD/DNC donation pathway, death is declared after the determination of irreversible cessation of function of the entire brain including the brainstem. Following the declaration of death (point "ii"), the donation conversation is initiated with the legal next of kin / legal authorizing party (LNOK/LAP, point "iii") through collaboration with the OPO and the hospital patient care team. Authorization for donation may be provided by the donor prior to their death (first-person authorization [FPA]), or may be provided by a LNOK/LAP listed in a predetermined order of decision-makers according to each state's Uniform Anatomical Gift Act (UAGA). For minors, including those who may have registered their intent or assent to donate, the donation conversation will include a decision by the parents whether or not to authorize donation.

Figure 3. Organ procurement process for brain death and circulatory death



Cory Schaffhausen, PhD, Hennepin Healthcare Research Institute

(In a few states, guardians may also be able to make this decision.) Once authorization is obtained ("P" on the chart) the OPO continues medical management of the donor in the ICU setting with the support of the hospital patient care team. Organs are allocated to transplant centers via the donor-recipient match list (Point "Q"). Once organs have been accepted by transplant centers, the donor is taken to the operating room for organ recovery ("R").

For patients who are not BD/DNC, but the LNOK/LAP, along with the hospital patient care team, have determined a plan to withdraw life-sustaining therapies (WLST) ("iv"), the opportunity for organ donation can be presented. It is important to acknowledge that the practice of DCD is an integral part of the continuum of quality end-of-life care for patients and their families, when life sustaining therapies are no longer beneficial to the patient or may extend suffering.[16] Once the patient is declared dead by cessation of circulation, organ donation may then proceed by the DCD pathway ("vi"). The OPO coordinates with the hospital patient care team to continue medical management while organs are allocated to and accepted by transplant centers ("viii, Q, and ix"). WLST is coordinated between the OPO, the hospital patient care team, and the donor's family ("v"). Following WLST, circulatory death (point "vi") must be declared prior to proceeding with organ recovery ("R"). The length of time that passes between WLST and declaration of death is a primary factor in whether viable organs can be recovered ("R") or the donation would not proceed ("vii"). New technologies and techniques are positively impacting this process through lengthening this time and increasing donation potential. Essential 7 outlines more details.

National Initiatives to Increase Recovery of Deceased Donor Organs

The expanding role for life-saving organ transplantation in the treatment of end-stage organ failure has become well accepted by the medical community. Recipient and graft survivial rates have significantly increased due to innovations in organ recovery, transplantation techniques and advancements in immunosuppresive agents. With this success, the donation and transplantation community began to explore opportunities to increase the number of organs available for transplant. The number of people declared dead by neurologic criteria is rare in comparison to circulatory criteria. Therefore, the pool of potential BD/DNC donors alone would never be able to meet the actual need for organ transplants. Another donation potential had to be identified.

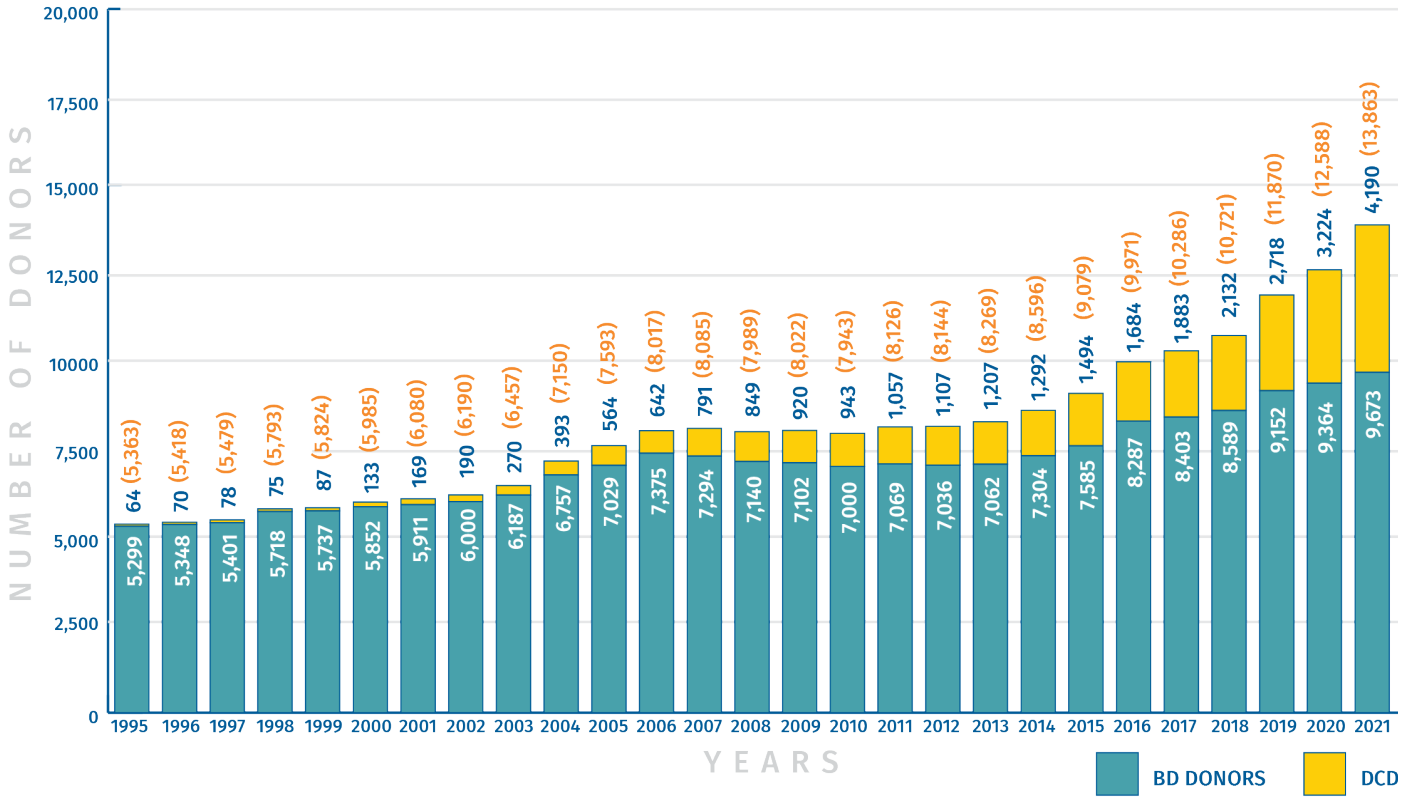
Between 2003 – 2006, the Health Resources and Services Administration (HRSA) funded and led a national Organ Donation Breakthrough Collaborative.[17] At these series of national meetings, which included members of the donation and transplantation community, various methods for increasing donation and transplantation were discussed. Ideas included increasing the number of brain dead donors, improving deceased donor management through "Best Practice Sharing" of successful OPO donor management processes, use of expanded criteria donors (those with "less-than-ideal" organs for donation), and the reevaluation and expansion of the DCD process.

Attributable to the initiatives of the Organ Donation Breakthrough Collaborative, there was a 22.5% expansion in the aggregate number of organ donors in the United States. This represents a fourfold increase from the 5.5% growth recorded during an identical duration immediately before the Collaborative's inception.[17]

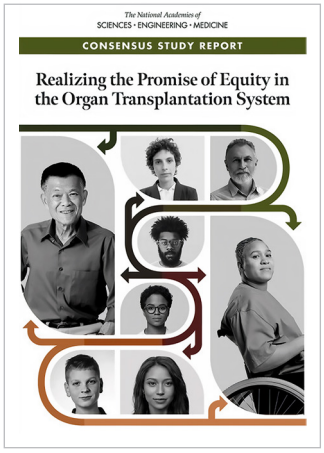
Since the Collaborative, the medical criteria for deceased organ donation continue to broaden based on favorable clinical experience, increasing proportions of donors and organs come from less traditional categories of eligibility. In 2023, the total number of deceased organ donors was 16,336; of that, there were 5,894 people who donated organs after circulatory death (DCD donors) representing an increase of nearly 23% over the 2022 total.[2] *(See Figure 4.)*

In 2021, the Organ Procurement Transplantation Network (OPTN) launched a DCD Procurement Collaborative project. The primary aim of the project was to further increase the number of DCD donors recovered by OPOs. It was an "all teach, all share, all learn" engagement effort to align with OPTN strategic goals, recognize the community needs and desire to improve, identify gaps in practice, and share effective practices. Three key drivers for change were identified: (1) optimizing clinical practices and staffing structures; (2) strengthening relationships between OPOs, hospitals, and transplant programs; and (3) enhancing the process for obtaining authorizations.[18]

Figure 4. Year-over-year comparison of number of brain dead vs. DCD donors in the U.S.[2]



In February 2022, the National Academy of Science, Engineering and Medicine (NASEM) issued a report[19] outlining recommendations to improve fairness and equity, reduce nonuse of donated organs, and improve the United State's Organ Transplant System's overall performance.



Specific recommendations for DCD included:[20]

- Significant variations in DCD procurement rates across the nation among OPOs, hospitals, and transplant centers need to be reduced or eliminated in order to decrease life-threatening consequences for patients;
- The capabilities of the highest performing OPOs, hospitals, and transplant centers should be utilized to establish bold national goals and drive national progress toward greater equity and higher rates of donation, procurement, and transplantation from DCD donors;
- A goal of increasing DCD to at least 45% of all deceased donors with no reductions in the number of organs from donors with neurologic determination of death; and
- Increasing acceptance by transplant centers in an effort to match the top 5-10% highest performing centers.

Classifications of Donation after Circulatory Death

The waitlist and the need for more organs for transplant grew as medical criteria for deceased organ donation continued to broaden based on more favorable clinical experiences. Both trends spurred greater efforts to identify DCD potentials, resulting in an increased number of DCD donors. As indicated in Figure 4, the number of DCD donors have significantly increased over the years.

The ongoing advances in technology and recovery procedures have created the ability to transplant more DCD organs than ever; they have also required hospitals and OPOs to improve their potential DCD donor identification and management processes.

BD/DNC occurs most often in the ICU setting and there is a well-defined hospital-specific policy for this determination. Quite different from BD/DNC, circulatory death may occur in or outside of the hospital, e.g., in an ambulance, the emergency room, the ICU, the general floor of a hospital, nursing home, etc. This growing experience in the potential for DCD donors led to the need to distinguish several categories of DCD for these different end-of-life situations.

These categories, known as the Maastricht Classification of DCD,[21] have been used worldwide over the last 20 years and facilitate the characterization of the different types of DCD potentials, which may impact technical and medical aspects (organ viability, preservation modalities, graft survival) and ethical considerations. An advantage to this classification system is its simplicity and usefulness. Attempts to improve the Maastricht classification have focused on adding more categories, with the objective of distinguishing the different ischemic insults to the organ and consequently different outcomes *(see Figure 5)*.

The practice of DCD has been extensively reviewed by physicians, ethicists, and scientists. The authoritative National Academy of Medicine (previously called the Institute of Medicine [IOM]), held two national consensus conferences on the topic of DCD, one in 1997 and another in 2000.[22,23] They concluded that DCD adhered to the principle of "causing no harm" to the donor and acknowledged that DCD saves lives and has benefited donor families who reported that DCD gave meaning to a family member's death. The practice of DCD has also been carefully reviewed by the Department of Health and Human Services (DHHS), the World Health Organization (WHO), and multiple international medical organizations. All came to a similar conclusion and support this practice pathway to organ donation. There has been an intense effort by all involved organizations to ensure that potential conflicts of interest that could complicate organ donation are eliminated and to optimize the recovery and preservation of organs for transplantation.

Currently, in the United States, controlled DCD *(Figure 5, Maastricht category III)* is most commonly practiced. In many parts of the world, uncontrolled DCD (category I, II, IV) is a more common path to organ donation. In the United States, uncontrolled DCD is just beginning to be practiced and may become more common in the near future. Therefore this guide, at this time, primarily describes details of controlled DCD or category III DCD donation.

MAASTRICHT CATEGORIES OF DCD		
CONTROLLED		
CATEGORY III	Withdrawal of life-sustaining therapy	Planned withdrawal of life sustaining therapy; expected cardiac arrest
UNCONTROLLED		
CATEGORY I	Found dead IA — Out-of-hospital IB — In-hospital	Sudden unexpected cardiac arrest without any attempt of resuscitation by a medical team; warm ischemic time – time between the circulatory arrest and the start of the cooling, to be considered according to National recommendations in place; reference to in- or out-of-hospital life setting
CATEGORY II	Witnessed cardiac arrest IIA — Out-of-hospital IIB — In-hospital	Sudden unexpected irreversible cardiac arrest with unsuccessful resuscitation by a medical team; reference to in- or out-of-hospital life-setting
CATEGORY IV (Uncontrolled/ Controlled)	Cardiac arrest while brain dead	Sudden cardiac arrest after brain death diagnosis during donor management but prior to planned organ recovery.

Figure 5. Maastricht classification of DCD

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1 Essential

Regulatory Compliance & Legal Considerations

Requirements for a hospital's compliance with donation-related laws, regulations and accreditation standards

FACT-FINDING QUESTIONS

Hospital leadership should ask:

1. Is our hospital in compliance with the Centers for Medicare and Medicaid Services (CMS) Hospital Conditions of Participation (CoPs) for organ, eye, and tissue donation?
2. Is our Affiliation Agreement or Memorandum of Understanding or Agreement (MOU/MOA) with our designated Organ Procurement Organization (OPO) up to date and congruent with regulatory and accreditation requirements?
3. Do our policies align with our state's Uniform Anatomical Gift Act (UAGA), Uniform Determination of Death Act (UDDA), CMS CoPs, Trauma Certification criteria (if applicable), and hospital accreditation standards (i.e., The Joint Commission, DNV-National Integrated Accreditation for Healthcare Organizations, or Healthcare Facilities Accreditation Program)?
4. Is our donation policy a separate policy to our death determination policies, such as circulatory death (formerly cardiac death) pronouncement policy and the brain death/death by neurologic criteria (BD/DNC) policy?
5. What is our relationship with our designated OPO? Who is our OPO hospital development coordinator?
6. Do we have a navigation protocol in cases when the patient is a registered donor and the family objects to the donation process?
7. Do we have a Donation after Circulatory Death (DCD) process, pathway, or guidance document?
8. Are hospital patient care team members familiar with hospital policies related to donation and declaration of death?

KEY POINTS

Hospital leadership should remember:

1. CMS Conditions of Participation (CoPs) require hospitals to implement written protocols and to enter into an agreement with their designated OPO, as well as with at least one tissue and at least one eye bank, to optimize donation.

2. All accrediting organizations align with CMS CoPs and require hospitals to meet standards on organ, tissue and eye donation.

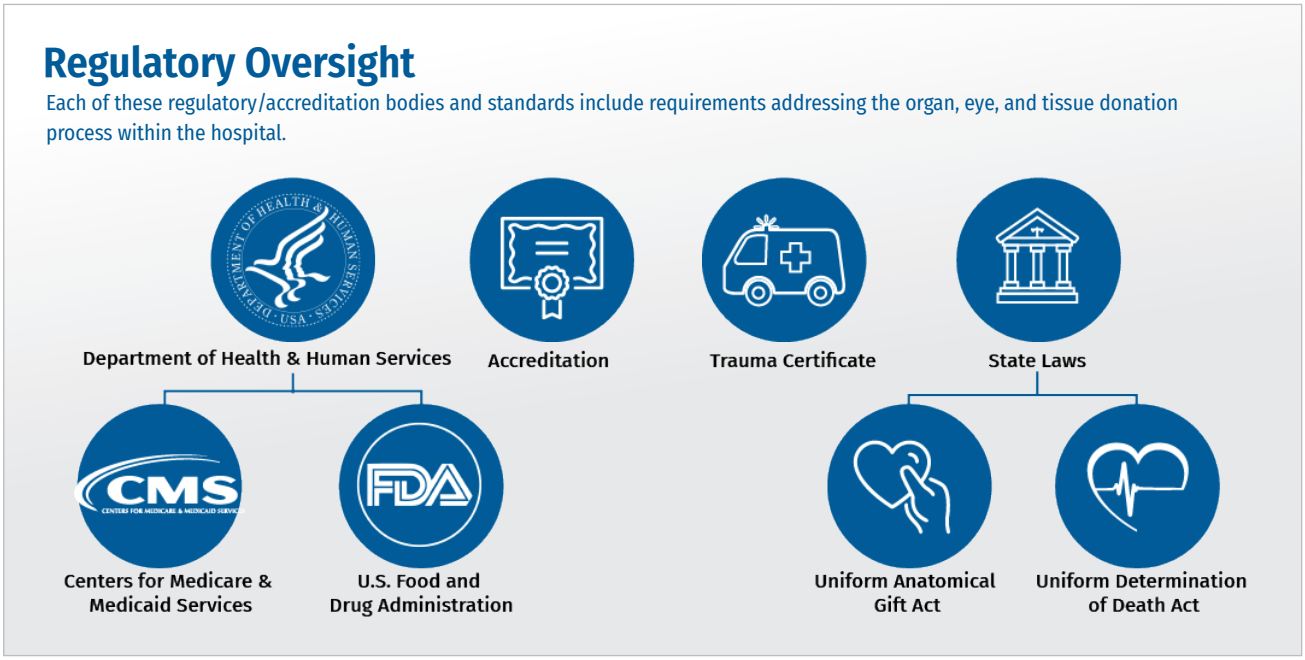
3. The Uniform Anatomical Gift Act (UAGA) is model legislation governing gift law for deceased organ, tissue, and eye donation and has been adopted by all 50 states and the District of Columbia.

4. The UAGA allows individuals to legally designate themselves as an organ, eye, and / or tissue donor, which would take effect upon their death and is irrevocable by another individual. If a family objects to the donation registration of the patient, in most circumstances, the OPO staff will help the family to navigate their questions and concerns, while honoring the patient's decision. Consistent communication from the hospital patient care team that aligns with the OPO's communication will help the family gain clarity and avoid misleading or confusing messages.

5. In instances in which a donation decision has not been made by the patient, the UAGA outlines the hierarchy of Legal Next of Kin / Legal Authorizing Party (LNOK/LAP) who could make a decision for the patient.

6. The Uniform Death Determination Act (UDDA) is a model statue for defining death and has been adopted by most states.

7. CMS CoPs regulatory requirements provide hospitals, as Covered Entities under the Health Insurance Portability and Accountability Act (HIPAA), with the permission to disclose protected health information to OPOs or other entities engaged in the organ, eye, or tissue donation and transplantation process.



Regulatory Compliance & Legal Considerations in DCD

Centers for Medicare and Medicaid Services (CMS Conditions of Participation [CoPs])

(42 Code of Federal Regulations (CFR) Part 482.45 for hospitals and 42 CFR 485.643 for critical access hospitals)[1,2]

CMS CoPs apply to hospitals that participate in the Medicare program and/or administer Medicaid and the Children's Health Insurance Program. The CoPs require hospitals to have and implement written protocols *(Sample Content of a Hospital-OPO Agreement, Appendix A)* with a designated OPO and at least one tissue bank and one eye bank to optimize donation processes outcomes. The regulations are:[1,2]

- "Incorporate an agreement with an OPO, under which it must notify, in a timely manner, the OPO or a third party designated by the OPO of individuals whose death is imminent or who have died in the hospital. The OPO determines medical suitability for organ donation and, in the absence of alternative arrangements by the hospital, the OPO determines medical suitability for tissue and eye donation, using the definition of potential tissue and eye donor and the notification protocol developed in consultation with the tissue and eye banks identified by the hospital for this purpose;"
- "Incorporate an agreement with at least one tissue bank and at least one eye bank to cooperate in the retrieval, processing, preservation, storage and distribution of tissues and eyes, as may be appropriate to assure that all usable tissues and eyes are obtained from potential donors, insofar as such an agreement does not interfere with organ procurement;"
- "Ensure, in collaboration with the designated OPO, that the family of each potential donor is informed of its options to donate organs, tissues, or eyes or to decline to donate. The individual designated by the hospital to initiate the request to the family must be an organ procurement representative or a designated requestor. A designated requestor is an individual who has completed a course offered or approved by the OPO and designed in conjunction with the tissue and eye bank community in the methodology for approaching potential donor families and requesting organ or tissue donation;"
- "Encourage discretion and sensitivity with respect to the circumstances, views, and beliefs of the families of potential donors;"
- "Ensure that the hospital works cooperatively with the designated OPO, tissue bank and eye bank in educating staff on donation issues, reviewing death records to improve identification of potential donors, and maintaining potential donors while necessary testing and placement of potential donated organs, tissues, and eyes take place."

In developing a DCD policy, ethical principles to be considered include:

- **Respect** for autonomy, individual's decision for self.
- **Non-maleficence:** DCD involves a living person for whom withdrawal of supportive measures has been deemed to be appropriate. Prior to the death of the patient, while procedures that are intended to maximize organ viability are appropriate, they should not cause physical pain to the patient.[7]
- **Beneficence:** Maximize benefits and minimize harm in the donor-recipient dyad.
- **Dead Donor Rule:** The patient must be dead before organ recovery begins and organ recovery cannot cause the death of the patient.[8]

Sample Content of a Hospital-OPO Agreement

Some of these agreements are also called Affiliation Agreements, Memorandum of Understanding (MOU), or Memorandum of Agreement (MOA).

At a minimum, the written agreement must address the following:

- *Criteria for obligatory timely notification to the OPO (or designated third party) of all individuals whose death is imminent or who have died in the hospital.*

- *Definitions of "imminent death" and "timely notification."*
- *The responsibility of the OPO to determine medical suitability for organ and tissue/eye donation (unless there is a separate tissue and eye bank).*
- *The hospital will undertake interventions to maintain potential organ donors so that the organs remain viable, i.e. measures necessary to sustain a part will not be withdrawn prior to the OPOs conclusion of assessment.*
- *The required notification of the potential donor families of their options to donate or to decline to donate. This must be done in collaboration with the OPO.*
- *The identification of who will be the person to lead the donation conversation with the family, which must either be an OPO representative or a trained designated requestor.*
- *Permitting the OPO, tissue bank, and eye bank access to the hospital's records to evaluate for donation suitability and to perform death record reviews (also known as medical record reviews) to evaluate the process and identify any missed opportunities for donation.*
- *Providing an Operating Room (OR) space for organ recovery and an acceptable location for tissue and eye recoveries.*
- *Stipulates the hospital does not credential or privilege members of transplant recovery teams, and that the OPO sends only "qualified, trained individuals" to perform organ recovery.*

Sample Content of a Hospital Policy as it Pertains to DCD

Hospital accreditations stipulate there should be an organ, eye, and tissue donation policy mirroring regulatory and accreditation requirements. The donation policy should detail donation after BD/DNC, as well as DCD processes and protocols.3,4,5 Hospitals should review and update their donation policy as well as their death determination policy annually to ensure they are current. Of note, it is important to highlight that the hospital's BD/DNC determination policy should never be incorporated or combined with the donation policy. Declaring the death of a patient should be based on signs of death and not be driven by donation potential[CS1] .

Recommended DCD policy inclusion:

- *The timing of the donation conversation must occur before death and in most circumstances after the decision to withdraw life- sustaining treatments (WLST) has occurred. When a family has questions concerning the timing, location or other logistic aspects of WLST of withdrawal, care should be taken not to provide information or options that contradict potential donation processes. Especially if the donor is first-person authorized. In certain circumstances (family readiness or family inquiring about donation) information about donation may be provided prior to withdrawal decision, with planning and coordination between designated requestor and the treatment team. (see Essential 4).* [CS2]
- *Minimally invasive testing for the suitability determination may be undertaken by the OPO upon referral of the potential donor.*
- *The patient's physician shall document consent for the following pre-mortem interventions when undertaken solely for the purpose of medical management and organ evaluation (e.g., cardiac catheterization, central line placement, bronchoscopies, femoral cannulation, etc.).*
- *The patient must remain under the care of a licensed physician who cannot be part of the OPO recovery team nor the transplant recovery team.*
- *The hospital patient care team must provide comfort care as for all end-of-life care patients.*
- *There must be a designated pronouncing provider (per hospital policy and the state's UDDA, such as a physician or other provider) available to declare and document circulatory time of death.*
- *The location of WLST must be identified which could be the ICU, PACU, Operating Room (OR), or any other location that is logistically close to the OR.*

- *There must be an observation or "hands-off" time period of at least 2 - 5 minutes from time of cessation of circulation to the time death is declared to verify that the time period for possible auto-resuscitation has elapsed.[6] If autoresuscitation occurs, the hospital patient care team must again wait for cessation of circulation and the "hands-off" observation period restarts (see Essential 7).*
- *The total OR time is dependent on the transplant recovery team's assessment of the viability of the organs based on warm ischemic time (WIT)and overall organ function. Time may be required for organ preservation strategies deemed necessary by the transplant recovery team.*
- *The patient may be prepared and draped for surgery prior to WLST. The transplant recovery team is allowed to verify the set-up of the OR suite prior to WLST,. The transplant recovery team must exit the OR prior to WLST and may re-enter the OR suite after the pronouncement of death has occurred. The OPO recovery team may remain present during WLST to document vital signs but may not participate in nor direct WLST (see Essential 7).*

In developing a DCD policy, ethical principles to be considered include:

- *Respect for autonomy, individual's decision for self.*
- *Non-maleficence: DCD involves a living person, therefore the hospital patient care team must avoid harm to the potential donor. Prior to the death of the patient, only procedures that are intended to maximize and preserve organ function are deemed ethically appropriate, despite the potential risk they may pose to the patient.[7][CS4]*
- *Beneficence: maximize benefits and minimize harm in the donor-recipient dyad.*

Uniform Determination of Death Act (UDDA)

The 1981 UDDA is a model statute for defining death. Versions of it have been adopted in most states[9] as well as the District of Columbia, and the remaining states have adopted substantially similar rules judicially or legislatively. The UDDA establishes that an individual who has sustained either (a) irreversible cessation of circulatory or respiratory functions or (b) irreversible cessation of all functions of the entire brain, including the brainstem, is dead. A determination of death must be made in accordance with accepted medical standards.[10]

Each state has adopted similar language to the originally proposed UDDA, however, there can be significant differences between individual state's UDDAs. It is vital to follow the state law where the death is occurring.

Uniform Anatomical Gift Act (UAGA)

The UAGA is model legislation that was first issued in 1968 and adopted in all states and the District of Columbia and addresses how to and who can authorize deceased donation.[11] In 2006, the Revised Uniform Anatomical Gift Act (RUAGA) was issued to address the ongoing critical organ shortage by maximizing the likelihood of organ donation. It facilitated increased opportunities for donation through incorporating DCD and affirmed the rights and the legally-binding nature of the individual's anatomical gift.[12] The act has been adopted in some form in every state.[11,12] Both the UAGA and RUAGA outline rules around the gift giving of one's anatomy and hospital, coroner and medical examiner, and OPO obligations and responsibilities. Although there is some variation among state laws, the general principles are consistent across states. It is highly advised that hospitals review their state's entire UAGA. The following is a generalized high-level overview of the provisions of the UAGA:[11]

1. Allows an individual to designate a legally binding anatomical gift to take effect upon their death. An individual may register their decision through a donor registry (e.g., a state's DMV registry and/or Donate Life America's national registry - ***registerme.org***) or through an alternative document of gift such as an organ donor card/form or advance directive.
2. An individual may decide not to donate his or her organs by signing a refusal, or by communicating their intent during a terminal illness to two individuals, one of whom is a disinterested witness. (***Review each state's UAGA for the definition of a disinterested witness.***)

The clickable map on the Alliance website allows you to review the UAGA and UDDA legislation in each state. These state laws underpin and provide guidance for the organ, eye and tissue donation process.

3. If an individual has made an anatomical gift no other individual may amend or revoke that gift.
4. If an individual has not made a gift or refusal, a third-party specified in the Act may authorize donation. The UAGA lists the hierarchy of individuals who may authorize donation. This is a hierarchy and the order must be followed, with the person(s) at the top of the hierarchy, who is reasonably available making the donation decision. The OPO is responsible for the organ donation authorization process, including determining who to obtain authorization from and whether a legal authorizing party is available. (***Review each state's UAGA for the definition of 'reasonably available.'***)
5. The hierarchy of authorizing parties may differ by state. It is recommended that the hospital familiarize themselves with their state's UAGA.
6. If there is more than one member in a given category in the hierarchy to whom the decision is falling, and an objection to donation is noted, the decision must be made by a majority of the members who are reasonably available.
7. The hospital administration and/or other public servants and officers such as coroners and medical examiners are part of the hierarchy of decision-makers. Unless separately listed, they commonly fall under the last category in the hierarchy, absent the availability of others above.
8. Most UAGAs include an immunity clause protecting anyone involved in the donation process, including the hospital from civil, criminal and administrative proceedings, if the UAGA was followed in good faith.
9. When there is a document of gift signed by the donor, but the donor's advance directive contains terms which may conflict with the gift, the UAGA stipulates that the conflict must be resolved, and until it has been resolved, measures necessary to preserve the opportunity for donation must not be withdrawn.
10. The UAGA permits the OPO to conduct assessments to determine the potential donor's medical suitability for donation. The hospital must allow the OPO the time to make a determination of medical suitability for donation and to obtain authorization for donation from the legal authorizing party or to confirm the patient's First Person Authorization designation.

It is worth highlighting a couple of important points on how DCD is treated under the UAGA:

- The UAGA was drafted with the knowledge that death may be declared in more than one way. The law is agnostic with regard to how death is declared. How death is determined is spelled out in other state law, including the UDDA. A legally

valid document of gift is binding regardless of how death is declared. This means that donor registration is applicable in both BD/DNC and DCD circumstances.

- The UAGA in every state bars any person, other than the donor, "from making, amending, or revoking an anatomical gift of a donor's body or part..." (***Refer to each state's UAGA for their requirements.***)

An anatomical gift is binding regardless of how death is declared.
An anatomical gift takes effect upon the donor's death.
A person other than the donor is barred from making, amending, or revoking an anatomical gift.

To facilitate DCD cases, there are actions that need to be taken prior to the patient's death that allow the organs to be preserved. Some of these activities include the administration of medications and possible procedures (e.g. line-insertions, lab tests, radiologic tests, biopsies, etc.). Given that these interventions occur prior to death, some hospitals may require additional informed consent from the patient's decision-maker for certain pre-mortem interventions. However, additional authorization for DCD is not necessary if the patient is a registered donor, because a legally valid gift has been made by the patient.

The OPO and hospital are required to follow state law; as with any other will that becomes legally-binding upon death, the individual's decision to donate must also be acted upon after death, even over the objection of the registered donor's family.

First Person Authorization (FPA)

'First Person Authorization (FPA)', 'donor designation', or a 'registered donor', are all interchangeable terms. They describe an individual who has legally determined and documented their donation decision.[13] (***Visit each state's UAGA for more details.***)

Health Insurance Portability and Accountability Act (HIPAA)

As Covered Entities, hospitals are subject to HIPAA regulations that address the use and disclosure of protected health information with the patient's authorization or when the disclosure fits within a regulatory exception to the authorization requirement (45 CFR 164.512).[14] There are two regulatory exceptions that permit hospitals to disclose information to the OPO without authorization:

1. A healthcare provider may use or disclose information if and as required by law. This exemption allows OPOs and hospitals to comply with CMS CoPs, 42 CFR 482.45, which specifically require notification of imminent deaths to an OPO and require hospitals to allow OPOs to conduct audits of death records.[1]
2. Section 45 CFR 164.512(h) allows information to be released to OPOs or other entities involved in the procurement, banking or transplantation of cadaveric organs, eyes, or tissue for the purposes of facilitating organ, eye or tissue donation and transplantation. This permits the release of information by and to hospitals, transplant hospitals, the Organ Procurement Transplantation Network (OPTN) contractor, tissue banks and laboratories.

OPOs are not vendors, business associates, or contracted service providers of hospitals; therefore standard credentialing programs do not apply to OPOs. Instead, OPOs operate independently and are directly designated by the federal government under the conditions for coverage to perform their duties related to organ, eye, and tissue donation coordination.[15,16] OPOs are also not considered healthcare providers. Per CMS regulations, OPOs must be allowed access to hospitals to perform their duties.[1,2]

The Joint Commission (TJC) and Other Accrediting Bodies

TJC maintains standards for organ and tissue donation consistent with the CMS regulations, i.e. all donation related CoPs are included in TJC's transplant standards. Standards LD.3.110 (for critical access hospitals) and TS.01.01.01 (for hospitals) require that hospitals develop and implement written policies and procedures for the donation and procurement of organs and tissues.

The standards include:[3]

1. Criteria for identifying potential organ and tissue donors, and directly notifying the OPO or tissue bank of those potential donors (while maintaining records of notification).
2. Mechanisms for notifying the family of potential organ and tissue donors of their option to donate or to decline to donate any organs or tissues, as well as a method of recording the decision, for subsequent review. This should be performed by an OPO trained/approved designated requestor.
3. Staff education in the use of discretion and sensitivity towards the circumstances, wishes, and beliefs of the families of potential donors.
4. Recognition that the OPO determines medical suitability of organs for donation, while the OPO or tissue/eye bank determines medical suitability for donation of tissues or eyes.
5. Medically maintaining the opportunity for donation, and ensuring staff education for donation is occurring.

The Joint Commission has clarified that OPOs are not considered contracted services and therefore, hospitals are not required to perform credentials review.[16]

The Healthcare Facilities Accreditation Program (HFAP) – now a brand within Accreditation Commission for Health Care (ACHC) – and the Det Norske Veritas National Integrated Accreditation for Healthcare Organizations® (DNV NIAHO®, formerly DNV GL NIAHO®) are two additional organizations with requirements consistent with The Joint Commission standards and CMS regulations. Hospitals utilizing either of these accrediting bodies should familiarize themselves with their respective donation-related standards.

An additional standard unique to The Joint Commission is one that mandates hospitals to address DCD (referred to in the standards as 'asystolic donation'). If a hospital does not support DCD, according to TJC, they must have a policy justifying their decision not to support DCD recoveries.[3] While patients and families must still be informed about their donation options, if a family wishes to pursue DCD, their family member would need to be transferred to another hospital for organ recovery. It's essential to recognize that this practice can be challenging for families who want to donate but prefer not to go through the transfer process. In 2022, the National Academies of Sciences, Engineering, and Medicine proposed that CMS should require all hospitals to institute a DCD policy.[17]

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2 *Essential*

Identification of a Potential DCD Donor

Identification and notification requirements of a potential DCD donor to the OPO.

FACT-FINDING QUESTIONS

Hospital leadership should ask:

1. What is the hospital's compliance with identification and timely notification of potential organ donors to the OPO?
2. What is our hospital's policy and process for identification and notification of potential organ donors?
3. Does our hospital patient care team have access to identification and notification resources and tools?
4. Do we have a process in place that ensures the staff in the Emergency Department (ED) are identifying potential donors and notifying the OPO?
5. Has our hospital investigated automated OPO-notifications of potential donors from our electronic health record (EHR) system?
6. Do we have any concerns with deceleration of medical management of potential organ donors that could cause the loss of the donation potential?
7. What is our process for reviewing missed identification and notification opportunities and developing an after-action plan to remediate future misses.
8. What is our process for evaluating ventilated patients for donor potential before they are assessed and moved to inpatient hospice?

KEY POINTS

Hospital leadership should remember:

1. Hospitals must have a written agreement with the OPO that includes mutually agreed upon definitions for imminent death and timely notification of potential organ donors to the OPO.
2. The definition of imminent death should be broad enough to ensure timely notification of potential donors after circulatory death.
3. Life-sustaining therapies should not be withdrawn until the OPO confirms organ donation suitability and the donation conversation has occurred.
4. Processes for identifying potential donors and maintaining life-sustaining therapies should be in place in the ED to avoid missed donation opportunities.
5. Patients should be evaluated for donation potential prior to discharge to inpatient hospice for withdrawal of life-sustaining treatment (WLST).
6. Automated OPO notifications from hospital EHR systems have the advantage of expediting the notification process, reducing staff time in manual transfer of information, and eliminating the potential for human error.

Model Elements for Identification of DCD Potential

According to Centers for Medicare & Medicaid Services (CMS) Conditions of Participation (CoP), hospitals must notify OPOs in a timely manner of all patients who have died or whose death is imminent *(see Essential 1 for further details)*.[1,2,3]

A DCD potential is a patient who has suffered devastating and irreversible illness or brain injury and may be near death or death is expected but the patient does not meet brain death or death by neurologic criteria (BD/DNC). In these cases, the family has decided to pursue WLST, allowing death to occur. In some rare instances, the patient may make their own decision to refuse continued medical treatment.

Common types of injury or illness observed in DCD potentials:

- Severe brain injury/trauma (gunshot wounds, motor vehicle collisions, etc.)
- Cerebrovascular insult
- Infection (overwhelming sepsis)
- Severe anoxic injury (drowning, post-cardiac or respiratory arrest, hanging, etc.)
- Assist device dependant (ECMO)
- Amyotrophic lateral sclerosis (ALS), High spinal cord injuries

The hospital patient care team is responsible for the identification of patients who meet the definition of imminent death and notifying the OPO in a timely manner. Every hospital should have an established written agreement with the designated OPO for the definition of imminent death and timely notification *(see Essential 1)*.[1,2,3] These definitions should also be clearly outlined in the hospital's donation policy for easy reference by the hospital patient care team. OPOs establish clinical triggers for the hospital patient care team to serve as reference points for identifying potential donors and determining when and how to initiate contact with the OPO.

The process of identifying potential donors and notifying the OPO should be a hardwired process for the hospital patient care team.[4] Early notifications are important to allow the OPO adequate time to determine donation potential before any deceleration of treatment or WLST occurs. It also allows the hospital patient care team and the OPO coordinators to work collaboratively together to support the family during the donation conversation. To eliminate the potential for human error and reduce the burden on hospital patient care team members, some hospitals have implemented automated notification processes between the hospital electronic health record (EHR) and OPO's electronic donor medical record interfaces.

Areas where donor potential is often missed and can be lost are in the ED[5,6] and to inpatient hospice.[7] It is important for hospitals to evaluate their practices to ensure patients who meet the clinical triggers in the ED are identified and the OPO is notified prior to any implementation of WLST. If considerations are being made to transfer any ventilated inpatient to inpatient hospice for comfort care and possible WLST, the OPO should be notified for a donation evaluation and to ensure families are aware of all of their end of life (EOL) care options.

Clinical Triggers ("Clinical Cues")

Clinical triggers (or "clinical cues") is a reference tool that aids the hospital patient care team in the identification of a potential donor who meets the definition of "imminent death" as agreed upon by the hospital and the OPO. These clinical triggers could be provided as badge buddies, reference cards, mouse pads, screensavers, etc.

Examples of clinical triggers include, but are not limited, to any of the following:

- "Imminent Death" might include a patient with severe, acute brain injury or pulmonary/neuromuscular disease process who:[3]
- Requires mechanical ventilation; AND
  - Exhibits clinical findings consistent with a Glasgow Coma Score8 that is less than or equal to a mutually-agreed-upon threshold; or
  - Loss of a mutually-agreed-upon number of brainstem reflexes; or
  - MD/DOs are evaluating a diagnosis of BD/DNC; or
  - An MD/DO has ordered that life-sustaining therapies be withdrawn, pursuant to the family's decision; or
  - A family who is beginning discussions of withdrawal of life-sustaining treatments (WLST); or
  - A family who initiates a conversation about donation.
- All cardiac deaths (for tissue and eye donation evaluation)

Patients who are potential DCD donors may not exhibit traditional clinical triggers such as a loss of brainstem reflexes or a minimal Glasgow Coma Score. In many situations, the only indication may be the decision by the family for WLST with the expectation of the patient's death following WLST. This presents a challenge for the hospital patient care team and OPO coordinators to manage, as most families want WLST to occur within minutes to hours of their decision.

Incorporating "family readiness cues" that a family may be thinking about WLST into the clinical trigger tool can help hospital patient care teams notify the OPO earlier. Examples of cues to incorporate into a clinical trigger tool may be the family talking about the patient in the past tense, gathering friends and family at the bedside, or having conversations centering on funeral arrangements or after the death.

Timely Notification of A Potential DCD Donor

The intent of timely notification to the OPO is to allow the deployment of necessary resources to support the hospital patient care team and family. It allows the OPO time to conduct a donation suitability evaluation and plan the donation

pathway. The more time the OPO has to gather all of the details and to be well prepared prior to initiating a donation conversation, the better the family is served.

A "timely" notification is as soon as possible once the clinical triggers are identified and prior to any deceleration of treatment or WLST.[1,2,3] The hospital and OPO must mutually agree upon the definition of timeliness and incorporate it into their written agreement.[1,2,3]

Automated Notification Process

One method to facilitate timely notifications to the OPO is to institute an automated OPO-notification process through the hospital EHR. It increases cost-effectiveness by reducing hospital staff time in telephone notification and call backs by the OPO, it reduces potential human errors in missing patients that meet clinical triggers, it can reduce length of donation cases and the use of an intensive care bed, while increasing staff satisfaction and freeing their time to allow them to focus on their patients.[9]

Advantages of Timely Notifications

A successful deceased donation program has a fundamental reliance on the identification and notification of all potential donors.

The benefits of timely notifications of potential donors include:[10]

- Adequate time for the OPO to evaluate medical suitability of the potential donor prior to initiating any donation conversation with the family.
- Adequate time for the OPO to collaborate with the hospital patient care team on the timing of the donation conversation, including assessment of family dynamics and grief support.
- Early collaboration between the hospital patient care team and the OPO coordinators in identifying the next steps in the donation process.
- Resource identification for the determination of BD/DNC, should it become necessary.
- Prompt initiation of the donor management protocols following donation authorization.

Too often, families decline DCD donation because they were not aware of the opportunity for organ donation until well after they had made the decision for WLST, by which point the idea of waiting additional hours to days for WLST seems insurmountable. "Had we known earlier" is a phrase too often heard by the OPO and the hospital patient care team. By establishing a hard-wired process for potential donor identification and notification, hospitals can ensure that all eligible potential donors and their families are afforded donation opportunities.

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3 Essential

Evaluation of the DCD Potential

The OPO's evaluation of the potential DCD donor for organ donation suitability once they receive notification from the hospital

FACT-FINDING QUESTIONS

Hospital leadership should ask:

1. Are we complying with the agreed-upon timeliness of the notification of a potential donor to the OPO?
2. Do we have protocols in place to follow the Brain Trauma Foundation's Guidelines for Traumatic Brain Injury? These protocols aim to give patients the greatest chance of survival while also maintaining the opportunity for donation.
3. Do we address in policy and in practice that no treatment or clinical support is withdrawn from a ventilated patient until the OPO has evaluated the donation potential and offered the family the opportunity of donation?
4. Do we allow the OPO to evaluate for donation medical suitability and not pre-determine suitability on our own?
5. Do we routinely involve patient care specialists (e.g., Palliative Care, Pastoral Care, Social Services) in end-of-life care discussions and medical management?
6. Is Palliative Care integrated with the donation process in partnership with the OPO – particularly with regard to family care and comfort care of the patient during the dying process – and potentially available for the pronouncement of death in DCD cases?

KEY POINTS

Hospital leadership should remember:

1. The OPO is responsible for determining medical suitability of potential organ donors.
2. Providing remote access to the patient's electronic health record (EHR) assists the OPO in efficiently and expediently evaluating donation potential.
3. The hospital maintains potential donors while the necessary testing and placement of potential organs takes place in order to maximize the viability of donor organs for transplant.
4. Palliative Care can be a valuable partner for the OPO in facilitating a smooth DCD process.

Model Elements for Evaluation for DCD Potential

After being notified of the potential DCD donor, the OPO is responsible for determining medical suitability for organ donation.[2,3,4,5,6] The hospital patient care team must maintain potential DCD donors "in a manner that maintains the viability of their organs" [2,3,4,5,6,7] by continuing to ventilate and medically support the patient during this time frame. The evaluation by the OPO may include some or all of the following elements:

- Complete medical history
- Acute injury leading to hospitalization
- Initial, peak, and current organ function tests (e.g. basic metabolic panel, liver enzymes)
- Any additional testing such as chest x-rays, computed tomography scans, echocardiograms, etc.
- Required ventilatory support (ventilator settings)
- Required vasopressor support
- Neurological examination (brainstem reflexes)
- Evaluation of likelihood of death following withdrawal of life-sustaining treatment (WLST)

Most transplant surgeons in the United States will not transplant organs from a patient who took longer than 60-120 minutes to die after extubation. The concern is the damaging warm ischemic time (WIT) will affect the organs' viability for transplant. As it would be unethical to hasten the death of the patient for donation purposes,[8,9] efforts have been made since the early 2000s to predict the likelihood of the patient's death occurring within a time-frame that would allow for donation to follow. Tools such as the University of Wisconsin Donation after Cardiac Death Evaluation Tool,[10] the DCD-N Score[11] and others were developed to aid the prediction of whether the patient would likely die within 60-120 minutes from time of extubation. This was part of the OPO's evaluation process to determine donation potential. Unfortunately, the predictability of the likelihood of the death of the patient occurring within a couple of hours of WLST continues to be a challenging step in the evaluation of the DCD potential; by utilizing the existing tools, some donation potential has been lost.[12] Scoring systems at this time hold minimal value due to their unreliability in predicting patients who will die within the anticipated time frame.[12] Studies are continuing to seek a reliable predictive tool; the use of machine learning models is an example.[13] In the meantime, given the scarcity of organs, less value is given to death predictability scores, and every patient facing WLST is evaluated on their own merit.

Evaluation by the OPO may be conducted over the phone, by remote review of the patient's EHR, and/or on-site at the hospital. Unless the potential DCD donor is determined to be medically ineligible based on non-changing elements of the medical history, evaluation is an ongoing process. In most instances, a combination of phone screening, EHR review and on-site evaluation will be utilized by the OPO. Thereafter, OPO coordinators will regularly check-in with members of the hospital patient care team via phone and in person, typically twice daily. The hospital patient care team is responsible for updating the OPO of significant changes during this time frame. These include (but are not limited to) declining status (neurological or circulatory), circulatory arrest, family gatherings in anticipation of death or discussions of funeral arrangements, or communication of plans for WLST.

It is important to recognize that donation eligibility may change during the course of the patient's treatment and should not be based solely on any one point in time. The OPO will continue to evaluate the potential organ donor for suitability until the time for the donation conversation. If the OPO has determined the patient is a potential DCD candidate, the donation conversation is held once the family has made a decision to pursue WLST.

Role of Palliative Care

Palliative Care can be helpful before, during, and after WLST.[14] Palliative Care consultations can explore prognosis, establish goals including code status, assist with communication and collaboration between medical teams, plan symptom management, identify and address psychosocial and spiritual needs, and provide family support. Palliative Care skills and principles applicable to the DCD process include communication, coordination of care, and management of the WLST process. If death occurs after WLST, organs may be successfully recovered for transplantation *(see Essential 7)*. In cases where potential donor patients do not die within the time frame needed for organs to remain viable and donation to occur *(see Essential 8)*, Palliative Care is valuable in providing continued comfort care to the patient. Palliative Care can contribute to standardizing quality end-of-life care practices in the DCD process and provide education for involved personnel and families, including:

- Nursing and healthcare team education
  - Order sets to allow for continuity before, during and after withdrawal
  - Signs and symptoms of imminent death versus actual distress
  - Palliative pharmacologic and non-pharmacologic algorithms to manage symptoms
  - Addressing distress prior to the procedure
- Interdisciplinary family education and support
  - Educating on the process of WLST
  - Family grief support

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4 *Essential*

The Donation Conversation

Regulatory requirements and national best practices for the donation conversation with the legal next of kin / legal authorizing person (LNOK/LAP)

MARK LAMBIE/EL PASO TIMES

FACT-FINDING QUESTIONS

Hospital leadership should ask:

1. How closely do we collaborate and partner with our organ procurement organization (OPO) for and during the donation conversation?
2. Are we practicing team huddles with OPO and hospital patient care team members, including physicians, to make a plan for each family to serve and communicate with them the best way possible?
3. Are our hospital patient care team members skilled at transitioning the conversations with the family over to the OPO for the donation conversation?
4. Are we and the OPO conducting timely, collaborative After Action Reviews to evaluate the donation conversation process, including instances of missed donation conversation opportunities?
5. Do we provide our hospital patient care team with education to ensure that all grieving families receive culturally congruent care, as well as language support in their preferred language for these critical conversations?
6. Does our donation policy address the process for navigating the times when families object to the patient's donor registry status?
7. Do we have an administrative authorization process policy for the instances when the donation decision could fall to hospital administration?
8. Do we have a diligent search policy to identify "Doe" patients? Do we have a robust documentation process to document the efforts made in a diligent search?
9. Beyond the donation of organs for transplantation, does our hospital staff appreciate the benefits of organ donation to the donor family?

KEY POINTS

Hospital leadership should remember:

1. Donation may be a possibility after the death of the patient; as such, it should always be considered as end-of-life (EOL) conversations occur.

2. Donation is not only of benefit to the patients in need of transplant. It provides the family with a sense of purpose, comfort, and hope in the loss. Most families express that it contributed to their healing process.

3. The Uniform Anatomical Gift Act, CMS Conditions of Participation, and accrediting bodies (The Joint Commission, Healthcare Facilities Accreditation Program, Det Norske Veritas) outline expectations with regard to the donation conversation that must be followed.

4. The donation conversation is a delicate and nuanced conversation with lasting impact for both the family and the potential recipients. Hospital and OPO collaboration and proactive planning is therefore integral to providing a timely and well-presented donation conversation.

5. Hospital and OPO staff must consider multiple factors as they plan for the donation conversation. These factors include which individuals from the hospital and OPO will be involved, the location for this sensitive conversation, preparation of verbiage to be used, how to best meet the family's religious, cultural and language needs, and each person's role in the conversation with the family. All participants in the conversation must demonstrate compassion, active listening, and empathy.

6. In the DCD potential, it is important to assess the family's understanding of the patient's medical condition and grave prognosis, confirm that the family has made the decision to withdraw life-sustaining treatment (WLST), and provide the family with the opportunity to ask questions.

7. Providing OPO and hospital support for the family throughout the donation decision is important. If the patient is a registered donor, that includes facilitating the family's understanding of the finality of the patient's decision and empowering the family to make decisions about things they can control.

8. Respect the family's decision about donation in the cases where it is their decision to make.

9. The hospital administration or medical examiner / coroner could authorize donation if a patient cannot be identified or no-one in the hierarchy of decision-makers is reasonably available.

10. The OPO provides ongoing support for donor families, regardless of success of the donation or transplantation occurring. This support involves regular check-ins with the families, hosting events with opportunities to honor the legacy of their family members, and providing information and resources. In the rare instances in which both a recipient and donor family want to meet, the OPO will facilitate that occurrence.

11. Hospitals can honor donors through various activities, such as conducting Donate Life Rose Ceremonies, creating a Tree of Life, dedicating a Wall of Heroes, and many other ideas.

Model Elements for the Donation Conversation for DCD Potentials

The conversation that presents the family with the opportunity for donation is a crucial step in the process. The foundation for that conversation is set by the hospital patient care team as soon as the patient is admitted to the hospital. That team's clear and active communication with the family throughout the patient's care is instrumental in demonstrating all of the efforts that are being made to provide care. The goal is to leave the family with no doubts that their family member has received the best care possible when they are presented with the inevitable or likely futility of continued life-sustaining treatment and likely death. Once the family has accepted the death of their family member, they will be able to engage in the next steps about EOL care, which may include the possibility of donation.

It is imperative that the timing of the donation conversation is carefully planned and coordinated between the hospital patient care team and OPO staff – and that the mention of donation outside of the plan is avoided. The rationale for the need to carefully and collaboratively plan this conversation is to avoid conflicting information being given and to ensure all of the family's questions regarding donation can be addressed. Conflicting information sometimes occurs when a patient is already a registered donor, in which case, an early mention of donation outside of the donation conversation may mislead the family into believing the decision is theirs to make when the patient has already made the decision to donate. During a time of tremendous loss for the family, this can lead to an increased sense of loss of control and anger.

Even if the patient is not a registered donor, mentioning the donation possibility too early in the grief process may lead the family to question the intention and the care that was provided to their family member. Additionally, the Uniform Anatomical Gift Act (*UAGA, state-law, see Essential 1*), outlines a hierarchy of decision-makers for donation in cases where the patient is not a registered donor. This hierarchy must be followed.

Families facing the loss of a family member are in a stressful and traumatic situation. Presenting the opportunity for donation must be done with respect and sensitivity to the family's unique needs.[1] Factors such as timely notification *(see Essential 2)*, huddles between the hospital patient care team and OPO coordinator(s), and execution of a planned donation conversation (also known as the effective request process) influence a family's decision to donate or decline to donate.[2,1,3] In response to the national critical shortage of organs available for transplant, regulatory and accreditation requirements, and recommended best practices specify elements for the donation conversation.[2,1,4,3]

Regulatory and Legal Considerations

Presenting the Donation Opportunity Regulatory & Accreditation Requirements

Hospitals must work collaboratively with the OPO to ensure that every family is informed of their options to donate or to decline to donate.[5,6] Centers for Medicare and Medicaid Services (CMS) Conditions of Participation (CoPs)[5,6] as well as accreditation bodies[7,8,9] specify that the person who initiates the donation conversation with the family be the OPO representative or a trained designated requestor. Designated requestors are selected individuals from the hospital to lead the donation conversation; as such, they must receive formal training provided by or approved by the OPO. A study published in 2022 by the National Academies of Sciences, Engineering and Medicines (NASEM)[10] made a recommendation to CMS to eliminate the designated requestor role. According to the CMS Interpretive Guidelines,[11] the hospital patient care team and the OPO coordinator or designated requestor responsible for initiating the donation conversation will collaborate together on when and how to hold the donation conversation with the family. CMS and accrediting bodies also specify that the hospital patient care team and OPO coordinator use "discretion and sensitivity with respect to the circumstances, views, and beliefs of the families of potential donors."[5,6,7,8,9] Assumptions about a family's decision to decline to donate should never be made with regards to a potential donor or "family's grief, race, ethnicity, religion or socioeconomic background."[11] *Please refer to Essential 1: Regulatory Compliance & Legal Considerations for further regulatory details.*

State Law Requirements Regarding First Person Authorization (FPA)

When an individual registers to be a donor, they are making a donation decision to take effect upon their death. This is a legally-binding decision according to the UAGA *(see Essential 1)*. This decision is distinctly separate from a potential future event in which a LNOK/LAP may decide to pursue WLST; as such, it meets the ethical requirements of not making a WLST decision based on donation potential. One may wonder how the patient's donation decision can supersede the family's decision to donate when CMS specifies that families must be informed of their options to donate or to decline to donate.[5,6] If the patient has provided FPA for donation, gift law stipulates this decision to be legally-binding. The family in this situation no longer has an option to donate or to decline to donate. *(See each State's UAGA.)*

Donation Conversation Process (Effective Request Process)

Establishing processes for donation conversations with families is a vital part of ensuring they feel well cared for and supported, which in turn increases the potential for authorization for donation. Three main factors impact authorization outcomes: the timing of the donation conversation, the location of the conversation, and who leads the conversation.[4,3]

Best Practices for the Planned Donation Conversation (Effective Request Process)

1. **Timely Notification**[1,2]

   Timely notifications to the OPO about a patient meeting clinical triggers allow adequate time for the OPO to collaborate with the hospital patient care team on timing the donation conversation. Late notifications often result in rushed and unplanned donation conversations, and can adversely impact the family's decision to donate – especially in situations where DCD might be a potential opportunity and the OPO is only notified just prior to planned WLST. In a 2022 retrospective observational study, 22.6% of family declines were correlated to late notifications to the OPO.[2] A timely notification also allows for a well-timed donation conversation, which is less likely to lead to decision regret by the family.[1] *(See Essential 2: Identification of a Potential DCD Donor for further details on timely notifications.)*

2. **Team Huddles**[1,2]

   Description: A team huddle prior to the donation conversation is a multi-disciplinary meeting between the OPO representatives and key members of the hospital patient care team to establish the plan for holding the donation conversation with the family.

   Goal: The main goal of the team huddle, which involves the OPO and the hospital patient care team, is to establish a collaborative plan for an effective and well-timed donation conversation, seamlessly transitioning from patient care to EOL care. The donation conversation must be delivered with utmost compassion, guiding the family toward a decision that aligns with the patient's values. The delivery significantly impacts the family's perception of the care their family member received and establishes a foundation of trust.

   Participants: At a minimum, the OPO coordinator (usually a family care coordinator), primary bedside nurse, and primary care physician (or the patient's main attending) should be included in the team huddle. Depending on the situation, other appropriate representatives may include spiritual care providers, social workers, respiratory therapists, cultural representatives and/or language interpreters.

   Huddle Discussion Points: Members of the team huddle should discuss and determine the following prior to engaging in the donation conversation:[1,2]

   - Review of the patient's medical status and eligibility for organ donation.
   - Identification of family members, any issues that may impact decisions, and LNOK/LAP.
   - The family's understanding and acceptance of poor prognosis.

- The family's decision for WLST.
- The patient's donor registry status or expressed intent to donate (if known).
- Location and time for initiating the donation conversation.
- The OPO representatives and hospital patient care team that will be present for the conversation.
- Bridging statements to transition the donation conversation to the OPO representative or (if utilized) the designated requestor.

(See Example of An Team Effective Huddle Process in Appendix)

3. **Declaration of Death[2]**

   Patients are declared dead if they meet the criteria for death by neurologic criteria (DNC) or if they meet the criteria for death by respiratory and circulatory criteria *(see Essential 1 - Uniform Determination of Death Act.)*

   Unlike in DNC, in DCD cases the donation conversation for authorization for donation occurs prior to the death of the patient. It is only held, however, with the family after they, along with the hospital patient care team, have reached a mutual agreement to discontinue life-sustaining treatment.[1,2,12]

4. **The Donation Conversation in DCD Potential[2]**

   Once the hospital patient care team has determined that the patient is unlikely to survive or have any meaningful improvement, even with ongoing care and ventilatory support, a family or LNOK/LAP may elect to discontinue or forgo further life-sustaining medical interventions. Subsequently, the OPO - in partnership with the hospital patient care team - will guide the donation conversation. This process will adhere to all previously mentioned steps, ensuring compliance with regulatory and legal mandates as well as best practices.

   It is important to distinguish that authorizing donation does not equate to authorization of WLST. From an ethical perspective, the decision to WLST must be made prior to and independently of the donation decision.[12,13]

   In recent years, to establish family readiness for the donation conversation, some OPOs have introduced a newer practice known as early or timely integration with the family.[14] This practice is in response to the frequent feedback OPOs receive from families who expressed a wish to have known about the donation opportunity earlier in their decision making for WLST. The intention with this practice is to ask the hospital patient care team to assess for family readiness cues that indicate that the family is beginning to consider WLST. At this time, the OPO is presented to the family to introduce donation as a possibility and to answer questions, but not to lead the family to make a decision about donation or WLST. The formal donation conversation for authorization will only occur once the family has made a decision to pursue WLST.

   According to the UAGA, conflicts must be resolved prior to WLST, such as in circumstances where the patient's advanced healthcare directive states that in the event of no meaningful chance of recovery they do not wish to be kept on life-sustaining measures, but they have the potential to be a donor or are a registered donor. ***(See each state's UAGA.)***

Donation following Authorization for DCD

Assuming the DCD donation conversation proceeds to allow for donation, the donor family will often want the process to be expedited and not prolonged. This will require collaboration and teamwork between the OPO and the hospital patient care team to identify how best to accommodate the family's desired time frames for withdrawal while honoring and maximizing the donation gift.

Even when a patient has authorized their own donation, their family is experiencing a tremendous loss and grief. It is important to recognize their needs by:

1. Giving the family the time to process their grief, and
2. Finding ways to meet their desired timelines for withdrawal, while still
3. Focusing on the patient's own goal for donation.

Practical Steps for Supporting Families in DCD FPA Cases

After the donation conversation has occurred and while the case details are being coordinated, it is important that the patient's decision to donate remains clear while the communication with the family continues to provide emotional support without any conflicting messages. The following should be goals of communication with the family while honoring FPA:

Navigating Family Objections to the Patient's FPA

GOALS OF COMMUNICATION	RATIONALE
The timing of the donation conversation must be carefully planned and coordinated between the hospital patient care team and the OPO staff. The mention of donation outside of the plan avoided.	A mention of donation outside of the planned donation conversation may mislead the family into believing that the decision is theirs to make, even though the patient has already made the decision. This could compound their grief and lead to anger.
The hospital patient care team and the OPO staff should collaboratively plan the details of the donation conversation.	It helps to minimize confusion and inconsistent communication if the hospital patient care team and the OPO staff utilize a unified and collaborative approach to the donation conversation.
The legalities of upholding the patient's donation decision must be clearly communicated by the hospital patient care team and the OPO staff during the donation conversation and throughout the rest of the donation process.	Inconsistencies in communication may lead the family to believe that they can overrule the patient's decision, which is against the legalities of the UAGA and can lead to deeper pain, confusion, and anger for the family. Continued consistent messaging throughout the process will help the family understand the strength of the donor designation.
It is important to match the pace of the process to the family's grief while still honoring the DCD FPA decision of the patient. This will require collaboration between the OPO and hospital patient care team.	The patient's FPA decision does not change the fact that the family is experiencing tremendous grief. It is important not to rush or ignore the family's needs and to ensure that 1) they are given the time they need to process their grief, and 2) efforts are made to meet their desired timelines for withdrawal.
Provide the family with opportunities to make decisions, where possible, that do not conflict with the patient's donor designation.	Having decision-making power wherever possible will allow the families to gain a sense of control. An example would be to give the family the opportunity to decide on whether they would like to honor the gift the patient is making (e.g., asking them if they would like to have an honor walk, flag raising event, write a note for the moment of silence, or any other activities to honor their family member's decision).
It is important for the hospital patient care team and OPO staff to collaboratively make a plan and be unified in their communication with the family if they continue to object to the donation decision the patient has made.	Clear and consistent communication with the family remains a priority; donation requires a team-approach.

Special Circumstances

There are circumstances that could pose challenges for the hospital patient care team and the OPO. Most of the time, when families object to the patient's FPA, it is for one of three reasons: 1) Concern about the length of the donation process; 2) Grief, which may impact their understanding or acceptance of the imminent death; 3) Their lack of support of donation and desire to revoke the patient's decision, or an unwillingness to accept the patient had made the decision.

If the family is objecting to donation in general, the OPO coordinator leading the donation conversation with the family will work to identify the family's concerns and will help to address their questions. If the family is objecting to donation for timing reasons, it is crucial that the OPO and hospital patient care team work collaboratively to make every effort to meet the family's desired timelines while still honoring the patient's autonomous decision.[15]

The act of self-designation as a donor is authorization for donation, which becomes active upon death, irrespective of whether death is declared based on neurological or circulatory criteria. WLST and honoring of the donor designation do not have to be mutually exclusive. It is a matter of coordinating the timing of the withdrawal in order for the donor designation to be honored upon death.

Hospital Administration and Medical Examiner / Coroner (ME/C) Donation Authorization

The UAGA provides provisions for individuals to make an anatomical gift on behalf of the deceased.

If a patient's identity and/or donation status are unknown, the provision in the UAGA stipulates conducting a diligent search for a LNOK/LAP who has the ability to authorize donation. Under several circumstances – when the LNOK/LAP of a critically ill patient cannot be located, they are not willing to act within a reasonable time frame conducive for the preservation of the gift, or if the patient's identity is unknown and the patient dies – disposition of the body falls under the jurisdiction of the ME/C and/or hospital administrator. ME/Cs and/or hospital administration are in the final class in the hierarchy of decision-makers according to the UAGA.

The UAGA typically includes a good faith immunity clause, protecting all who act in good faith from civil or criminal prosecution, in accordance with their UAGA. *(Refer to Essential 1 or navigate to each state's UAGA.)*

Developing an Administrative Authorization Policy

It is advisable that hospitals prepare for the possibility that the donation decision could fall to them and establish policies and procedures to help navigate such cases. Hospital policies should incorporate a comprehensive diligent search and documentation process, as well as an administrative authorization process to authorize donation.[16]

Honoring Donors and their Families

OPO Activities

Every OPO has an aftercare program for the donor families. Aftercare programs provide support to the families of donors, even if the donor became a donor "in spirit," (i.e. when donation could not proceed or the organs could not be utilized for transplantation). The aftercare programs include special events for donor families where the legacy of their family member is honored. The aftercare programs are further described in Essential 8.

Hospital Activities

Many hospitals explore activities to honor donors and donors "in spirit." Such activities may include conducting Donate Life Rose Ceremonies, creating a Tree of Life, dedicating a Wall of Heroes, etc. Ideas for hospitals wishing to honor donors can be found on The Alliance website in the ***Community Resource Toolbox***.

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5 *Essential*

Donor Management of the DCD Donor

Medical management requirements and organ evaluation tests required in the DCD donor

FACT-FINDING QUESTIONS

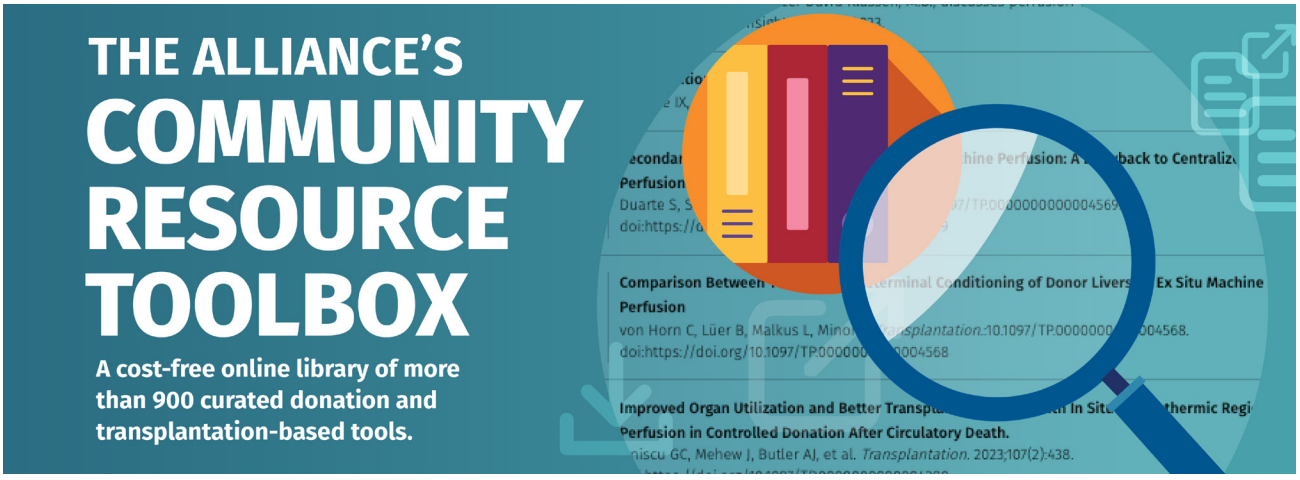
Hospital leadership should ask:

1. Does our hospital have a DCD order set programmed into our Health Information System (HIS), which can be activated when we have a DCD donor? If not, what is the current process, and who is responsible for entering all needed orders for the DCD donor?
2. Is the hospital patient care team supporting the timely fulfillment of the orders for the DCD donor management?
3. Do our healthcare team members receive education and training on care for DCD patients related to donor management goals (DMGs)?
4. What is our hospital's performance in meeting donor management goals (DMGs)?

KEY POINTS

Hospital leadership should remember:

1. A DCD order set within the EHR streamlines the entry and execution of DCD orders by the hospital patient care team and the organ procurement organization (OPO) clinical coordinator.
2. Achieving DMGs during critical care management of the patient is associated with improved stewardship of the gift the family may make if the patient deteriorates and becomes a donor. Meeting DMGs also results in more organs being available for transplant and improved post-transplant graft survival.
3. The Organ Procurement and Transplant Network (OPTN) and the Centers for Medicare and Medicaid Services (CMS) regulate requirements of donor management, including laboratory testing and organ evaluation tests.
4. Timely turnaround of required laboratory and organ evaluation tests (e.g. chest x-rays, echocardiograms, computerized tomography scans) help expedite critical care management to optimize organ function and organ allocation.
5. Unlike in brain death/death by neurologic criteria (BD/DNC) donors, after donation authorization, the physician or physician designee is responsible for the medical management of the potential DCD donor in collaboration with the OPO clinical coordinator.



Model Elements for DCD Practice Within the Hospital

The hospital has the responsibility to "maintain potential donors while the necessary testing and placement of potential donated organs takes place in order to maximize the viability of donor organs for transplant".[1,2] The OPTN and CMS outline the OPO requirements for clinical management of the organ donor, including required testing.[1,3]

Donor Management and Organ Function Evaluation

The OPO clinical coordinator will collaborate with the hospital patient care team for interventions to maximize organ viability and to evaluate organ function.[3] Since death has not yet occurred, the physician or designee continues to be responsible for overall medical care of the potential DCD donor. Interventions such as circulatory and ventilatory support, along with required testing, are fairly standard. It is recommended that the hospital have a DCD organ donor order set, provided by the OPO, that is embedded into the HIS for activation in the patient's EHR – thereby driving efficient implementation of DCD orders.

Active critical care medical management of the potential organ donor can lead to an increase in the number of organs available for transplant.[4] along with improved post-transplant graft survival.[5] Routinely measured critical care end points[4] have been utilized by OPOs in the establishment of DMGs as mutual goals between the OPO and the hospital patient care team for potential organ donor management. DMGs (as defined by the DMG Registry[5]) include:

ADULT DONOR MANAGEMENT GOALS	
BENCHMARK	**PARAMETER**
Mean Arterial Pressure (MAP)	60 - 110 mmHg
Central Venous Pressure (CVP)	4 - 12 mmHg
Ejection Fraction / Shortening Fraction	EF ≥ 50 % or SF ≥ 30 %
Arterial Blood Gas (ABG)	pH 7.3 - 7.5
P:F Ratio (PO_2/[FiO_2/100])	≥ 300
Sodium	≤ 155 mEq/L
Glucose	≤ 180 mg/dL
Urine Output	≥ 0.5 mL/kg/hr
Low-dose Vasopressors	≤ 1 pressor used and low-dose: Dopamine ≤ 10 mcg/kg/min, Neosynephrine ≤ 1 mcg/kg/min, or Norepinephrine ≤ 0.2 mcg/kg/min

As part of the complete assessment of the potential DCD organ donor, the OPO must perform and report all of the following to all receiving transplant centers:[3]

- Obtain a medical and behavioral health history.
- Review the potential DCD donors' complete medical record.
- Conduct a thorough physical examination and assessment of the potential organ donor, including vital signs.

The OPO is required to obtain and report the following donor testing:[3]

- Blood type determination:
  - Blood for testing is most likely sent by the OPO to an OPO-based or contracted laboratory. Blood may be sent by the OPO to an OPO-based or contracted laboratory. If testing is performed in the hospital, two blood type determinations must be made on two separate specimens and must include subtyping for blood type A, if performed by the hospital.
  - The OPO clinical coordinator will work with the blood bank to determine all blood products administered to the patient.
- Infectious Disease Testing:
  - Blood for testing is most likely sent by the OPO to an OPO-based or contracted laboratory.
  - Tests include antibody, antigen, and/or nucleic acid testing for HIV, Hepatitis B, Hepatitis C, Cytomegalovirus, Epstein-Barr Virus, Syphilis, and Toxoplasma Immunoglobulin G.
  - Positive results – including those for HIV – do not rule out organ donation.
- Arterial Blood Gas results (ABGs)
- Electrolytes and serum glucose
- Complete Blood Count (CBC)
- Urinalysis
- Blood and urine cultures
- Chest X-ray

Additional OPO requested testing may include:[3]

- Hepatic function tests
- International normalized ratio (INR), Prothrombin (PT), Partial thromboplastin time (PTT)
- Computed tomography (CT) scan for chest and/or abdomen
- 12-lead electrocardiogram interpretation
- Echocardiogram
- Cardiac labs – Troponin and creatine phosphokinase / creatine kinase-myocardial band (CPK / CKMB)
- Cardiac catheterization
- Sputum gram stain
- Lower respiratory sample for SARS-CoV-2 by nucleic acid test (NAT) if lung transplant is planned
- Bronchoscopy
- ABGs and ventilator settings on 5 cm/H_20/PEEP including PO_2/FiO_2 ratio and preferably 100% FiO_2
- Hemoglobin A1C
- Serum amylase and lipase

Additional therapies and medications may be requested to support or improve organ function such as:

- Central and/or Arterial line insertion

- Antibiotics, either surgical prophylaxis or treatment of infection
- Corticosteroids
- Pulmonary hygiene techniques
- Alveolar recruitment maneuvers
- Intravenous Heparin administration prior to WLST to prevent micro-emboli/thrombi formation in small vessels of transplanted organs
- Renal replacement therapy such as hemodialysis or continuous renal replacement therapy to manage abnormal electrolytes or ultrafiltration only for fluid overload

The first several hours after authorization for donation is obtained are often the busiest for the hospital patient care team and the OPO clinical coordinator implementing the new order set and obtaining all the required tests. Laboratory tests are ordered at the initiation of donor management and serial (typically every 4-6 hours) after that. OPTN regulates the frequency of certain tests,[3] and it is therefore important to assist the OPO clinical coordinator in obtaining tests as ordered and reporting results as soon as possible.

How long a DCD donation case will take is driven by multiple factors, many of which are outside of the control of the OPO. These factors include families setting timeline expectations, OR availability, the number of organs viable for transplant, transplant team availability and timelines, and the stability of the donor, among other considerations.

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RESOURCES:

- Example Order Sets: *https://www.organdonationalliance.org/?s=order+set&id=22526&post_type=toolbox* (It is advisable for the hospital to work with their OPO Hospital Development Coordinator to develop the order set to ensure the most current OPTN policies are followed.)
- Donor Management Goals (DMG) Registry. *https://dmginfo.nationaldmg.org*

6 Essential

Allocation of DCD Organs

The process for organ allocation, federal policies stipulating the rules, and how the timing of organ allocation may be modified if a DCD case has to be expedited.

FACT-FINDING QUESTIONS

Hospital leadership should ask:

1. What is the turnaround time for completing and reporting laboratory tests, radiology tests, and consults (e.g., echocardiogram, bronchoscopies?) Does this meet the needs of the organ procurement organization (OPO) for timely allocation?
2. Does the OPO have access to information, including the radiographic images (e.g., computed tomography [CT] scans, chest x-rays [CXRs], echocardiograms [ECHOs]) necessary for organ allocation?
3. What limitations (if any) do we have for timing of consultations (e.g., echocardiograms) outside of routine business hours that may impact the OPO's timing for allocation?
4. Does the critical care management provided to potential DCD donors result in the OPO being able to allocate the organs expected to be transplanted?

KEY POINTS

Hospital leadership should remember:

1. Organ allocation is the responsibility of the OPO[1] and ideally begins once donor testing, management, and organ optimization are completed.
2. The Organ Procurement and Transplant Network (OPTN) establishes policies for what information must be obtained and shared by the OPO for the purposes of organ allocation.
3. The OPTN establishes policies on how organs are allocated.
4. Donor family members may directly donate their family member's organs to a potential recipient, provided that the recipient is actively listed for transplant and is determined to be a match by the transplant center.
5. If a case must be expedited due to family-imposed time constraints or potential donor medical instability, organs (e.g., kidneys) may sometimes be allocated after being recovered for transplant.

Model Elements for DCD Practice Within the Hospital

Organ allocation is a complex process, both in principle and practically. In 1984, the National Organ Transplant Act (NOTA) required the establishment of the OPTN to address the nation's critical organ donation shortage; it created a national system for organ matching and organ allocation or placement.[2] The OPTN is a public-private partnership connecting all professionals working within donation and transplantation.[3] Ethical principles guide the OPTN in the development of allocation policies. Policies are developed by committees within the OPTN and public comment is sought on the drafted policies, which are then reviewed by the committees. The finalized policy is sent to the OPTN Board of Directors for a vote, after which – if the policy is approved – the community is notified of the new policy.[4] These federal policies are then put into practice. The policies specifically related to organ matching and placement are programmed into a database where the donor organs are matched with potential recipients.

OPOs initiate the organ allocation process, notifying transplant programs of potential organ matches for their recipients. Transplant programs are responsible for reviewing all information about the offered organ and making an acceptance or denial of the organ. Once all organs intended for transplant are provisionally accepted, the OPO collaborates with the transplant programs and the hospital on timing for the withdrawal of life-sustaining treatment (WLST) and Operating Room (OR) availability. Logistical considerations such as travel time between the transplant hospital and donor hospital and timing of the transplant surgery are factors that must be considered.

Although the OPO is responsible for the allocation of organs to transplant centers, OPO coordinators rely heavily on the collaboration of the hospital patient care team to optimize organ viability through good critical care management *(see Essential 5)* and timely completion and reporting of required testing. Ideally, organ allocation begins once organ function has been maximized and required testing has been completed. In instances in which there are logistical time restraints (e.g., family-imposed time restrictions for WLST) or medical instability of the DCD donor, some organs (e.g. kidneys) can be recovered prior to allocation. In these situations, the organ is often put on an organ pump, extending the time when the organ must be transplanted, while all relevant donor data is collected.

Allocation Considerations

Organ allocation in DCD donation involves many ethical, medical, and logistical considerations:

Ethical Considerations[5]

Principles adopted by the OPTN include those of utility, justice, and respect for persons. Utility refers to increasing the number of transplants performed and the length of time the grafts and patients survive following transplant. Justice "refers to fairness in the pattern of distribution of the benefits and burdens of an organ procurement and allocation program."[5] Meeting both the utility and justice principles would be considered an "equitable" allocation system according to NOTA. The OPTN strives for allocation policies that are guided by principles of fairness, avoiding discrimination based on factors such as age, biological sex, race, or socioeconomic status. Potential recipients are prioritized based on objective medical criteria and urgency of need. Respect for persons "embraces the concept of respect for autonomy"[5] and adheres to the belief that humans should be treated as "ends in themselves" and not merely a means.

Medical Considerations[6]

Factors such as blood type match, height and/or weight, and medical factors specific to each organ type (such as histocompatibility matching) are utilized to match donor organs to potential recipients. Factors such as biological sex, race, socioeconomic status, or social standing are never used in the matching process. Additional medical factors that transplant centers must consider when accepting an organ for a particular recipient include the overall function of that organ and how it is expected to function for the intended recipient.

Logistical Considerations

Historically, organs had to be transplanted within a short amount of time once removed from the donor, thus requiring organs to be allocated to transplant centers within a close geographic range. Organ pumps that support functionality outside the human body and allow more time between recovery and transplantation are emerging,[7] but geographic and transportation limitations remain realities. For several decades now, kidney pumps have been available to diagnose and support the function of kidneys outside a human body, allowing longer amounts of time to pass before they must be transplanted.[7] Pumps for non-renal organs such as the liver, heart, and lung are newer innovations. These innovations facilitate the assessment and at times restoration of organs, and allow for longer recovery to transplantation times, thus overcoming geographical distances impacting allocation. Despite of the advantages of organ pumps, transportation logistics, costs and their associated limitations remain a reality.

Allocation Process

The organ allocation process requires the OPO to disclose the following information over a secure, Health Insurance Portability and Accountability Act (HIPAA)-compliant platform managed by the OPTN contractor for transplant programs:

Once the minimal required information is uploaded from the OPO's electronic donor medical record to the OPTN contractor's secure, HIPAA-compliant platform, organ allocation lists are generated by the system for each organ intended for transplant. Organ allocation lists - or match runs - are a dynamic list of potential transplant recipients who could be matched acceptably with the donor.

Utilizing the secure platform, the OPO follows the order of the match run to notify transplant programs of an organ offer for the potential transplant recipients. Each transplant program in turn utilizes the secure platform to review all donor information and communicate its interest, acceptance, or declination of the organ offered within a specified timeframe. Directed donation – in which the donor family knows of a potential transplant recipient and wants to direct the donation of their family member's organ to that individual – is also a possibility, as long as that individual is actively listed and is compatible.

The time frame for allocation is extremely variable and depends on the organ being allocated. Factors such as the specific organ, the response time of transplant programs, the number of programs involved, and any additional donor testing requested (such as repeat CT scans, bronchoscopies, or ECHOs) can impact the length of the process.

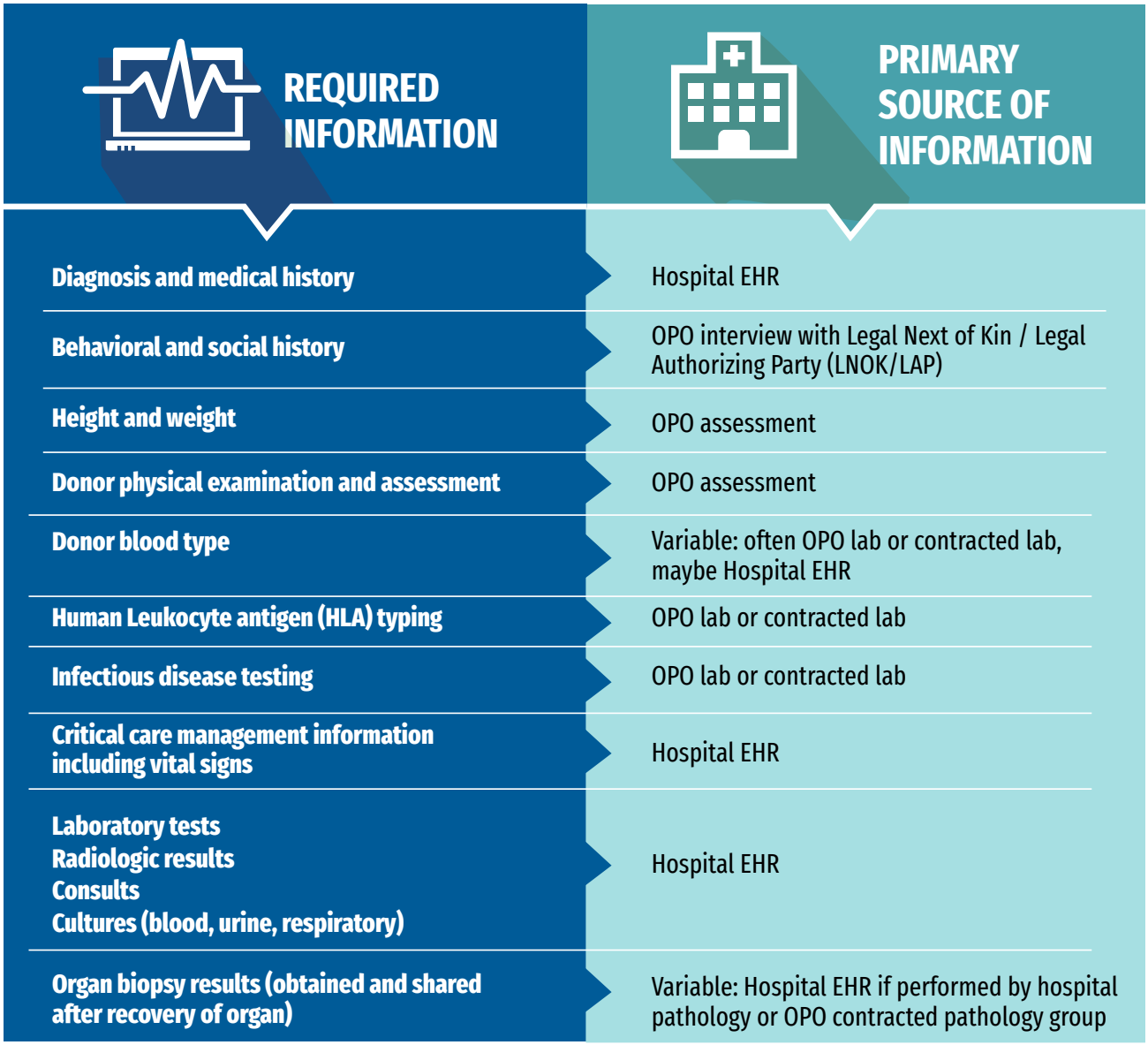
Specific to DCD cases, transplant programs may take into account the anticipated timeframe from WLST until the time of death of the potential donor, which will impact organ viability. This accounting is due to concerns for warm ischemic time (WIT) on the organs. WIT is defined by the OPTN as "the time of agonal phase onset to the time when core cooling is initiated" or "the calculated time using the serial data to be collected beginning with the agonal phase and ending with the initiation of core cooling."[8] In other words, it is the length of time that there is a lack of blood supply and oxygen to the organs at normal body temperature, which occurs during the dying process and until the body can be cooled down with ice. Long WITs can negatively impact function of the organ once transplanted.

Organ allocation is completed once each of the donor organs has been accepted or when all transplant programs with potential transplant recipients on the match run have declined the organ. Final acceptance of the organ occurs after the recovery of the organ in the operating room (OR). The OPO also has the option to discontinue offering donor organs if there has been no transplant program interest in that organ or there are family-imposed time constraints, potential donor instability issues, or other factors that necessitate moving more quickly to the recovery phase of donation.

Expedited DCD Process

Family-imposed time restrictions and potential donor medical instability may necessitate an expedited donation process. In these situations, the OPO recovery team and hospital patient care team work together to obtain the minimum required

Figure 6-1. Required information about the donor and the source of the information



testing and information prior to organ recovery. Simultaneously and/or after recovery of the organs, the OPO assimilates all the required information and proceeds with organ allocation. These situations are fast-paced and can be stressful. It is highly recommended that the OPO recovery team and hospital patient care team develop and utilize a protocol for these cases to ensure that all requirements are met. It is also helpful to clearly define roles of each member involved during these situations and conduct training, table-top drills, or mock cases to better prepare teams for expedited cases.

Preparing for WLST and Organ Recovery

During the allocation process, the OPO recovery team and hospital patient care team should communicate frequently and start planning for the WLST, death pronouncement, and organ recovery. Determining the location where WLST will occur and identifying a declaring physician or physician designee are vital preparation steps *(see Essential 7)*. In addition, the OPO coordinators should conduct team huddles with the OR to prepare OR team members for what to expect and how to prepare for a DCD recovery.

Once intended organs for transplant are provisionally accepted, the OPO, in collaboration with the hospital patient care team, coordinates a time for WLST, death pronouncement and organ recovery. Selection of a specific time can be challenging when trying to meet the needs of many key stakeholders. If the donor family has presented the OPO with a time constraint or a specific time in which WLST is to begin, the OPO will attempt to honor that request. Ultimately, however, this timing must also be acceptable to the declaring physician or physician designee, the hospital OR teams, the hospital patient care team members that will be involved in WLST, the OPO recovery team, and the transplant recovery teams.

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7 Essential

Withdrawal of Life-Sustaining Treatment & Organ Recovery

Considerations for the withdrawal of life-sustaining treatment (WLST), declaration of circulatory death, organ recovery, and advanced organ procurement technologies

FACT-FINDING QUESTIONS

Hospital leadership should ask:

1. What is our process for WLST and comfort care for the potential Donation after Circulatory Death (DCD) donor?
2. What is our comfort care medication administration protocol for all critical care patients facing end-of-life (EOL) care?
3. Does our policy contain a detailed plan for where and how WLST occurs in DCD cases?
4. How do we determine who the declaring physician or physician designee will be? Do we have any limitations with declaring physician/designee availability? How often do restrictions on physician availability for pronouncement impact DCD cases?
5. What is our cardiac death declaration policy?
6. How does our Operating Room (OR) prioritize organ donation recoveries?
7. Do our ICU and OR teams understand their role and responsibilities for WLST and organ recoveries?
8. What practices do we have in place to honor the donation decision (e.g., Honor Walks, Moment of Silence)?
9. Does our policy allow for the donor family to be in the OR during WLST and comfort care?
10. What questions do our ICU and OR teams have about DCD organ recoveries?
11. What is our process if a patient does not die in the timeframe necessary to donate organs?

KEY POINTS

Hospital leadership should remember:

1. The declaring physician or physician designee cannot be part of the OPO or transplant recovery team.
2. The declaring physician or physician designee must remain at the bedside for the duration of WLST to provide ongoing appropriate comfort care, as well as to determine time of death.
3. The hospital must have a DCD policy that addresses the use of a validated test to determine circulatory cessation. It should also include a required 'observation period' or 'hands-off period' (typically between 2-5 minutes) to monitor for and verify an absence of auto-resuscitation. The verification timeframe should be identified in the policy.
4. Family needs, including presence at end of life and during WLST in the OR, should be honored and addressed in policy.
5. The OPO and transplant recovery teams may not participate in, nor give advice regarding WLST, comfort care, or declaration of death.
6. The transplant recovery team must exit the room prior to WLST and may not reenter the room until death is declared.
7. The acceptable time frame for organ viability from WLST to death declaration is dependent on several factors and should be determined by the OPO and/or transplant recovery team on a case-by-case basis.

Model Elements for DCD Practice Within the Hospital

Preparation for WLST and Organ Recovery

The OR should be notified of the potential DCD as soon as authorization is obtained. Together, the OPO recovery team and OR team will collaborate on the timing of the recovery with input from the transplant recovery teams and declaring physician or physician designee. In addition, any family requests for timing should be honored, if possible. Another consideration for the hospital is identifying the priority status for the organ recovery to ensure that the timing is not bumped for cases other than possible emergencies. "Bumping" organ recovery times can negatively impact the family who is emotionally prepared for the set OR time, and/or the transplant recovery teams already in transport to the hospital, as well as scheduled surgeries at the transplant hospital for the intended transplant recipient.

The hospital should have a protocol in place to hold the ICU bed until death is declared. Alternatively, they can identify another room where the patient will be transported for continued comfort care if they do not die within a timeframe for organ viability, and the recovery of organs is aborted.

Withdrawal of Life-Sustaining Treatment (WLST)

The WLST process for a potential DCD donor should closely follow the same WLST process as for any other hospital patient. This includes the administration of comfort care medications.1 The hospital should identify in policy the preferred location for WLST. Locations for consideration include the OR room where the organ recovery will occur, an adjacent OR room, the Post Anesthesia Care Unit (PACU), and/or the ICU room. If WLST occurs in a location other than the OR room where the organ recovery will occur, careful consideration must be given to its proximity to the OR room. Any transportation time between locations must occur during the 2-5 minute hands-off period *(see Essential 1)*. There is the risk of increased warm ischemic time (WIT) with any transportation to the recovery location, thus decreasing organ viability. The patient will not be transported to the location of WLST (if other than the ICU), and WLST will not begin until it is confirmed that the transplant recovery teams have arrived at the hospital. During transport to the location of WLST, the potential DCD donor should be monitored and mechanically ventilated.

When WLST occurs in the OR, the potential donor is transferred to the surgical table. The OR room should already be set up for the recovery, with all required tables and instrumentations in place. The OR team may complete the surgical scrub and apply sterile drapes prior to WLST. Completing these steps prior to WLST reduces WIT of the organs. The transplant recovery team is allowed to verify the set-up of the room prior to WLST.

A surgical time-out confirming the correct patient and procedure should be performed with the OR team, the ICU nurse, declaring physician or physician designee, OPO recovery team, and transplant recovery team prior to WLST. Once the surgical time-out is completed, the transplant recovery team must leave the OR before the WLST process begins.1,2

As with any EOL situation, the Institute of Medicine (IOM) recommends following the patient's and family's wishes as closely as possible, which includes allowing the family to be present at the time of WLST.3 If WLST occurs in the OR, this can be accomplished by designating an OPO family support person to escort the family to and from the OR, adequately preparing them for what they may experience, and ensuring that they wear appropriate attire within clean areas of the OR. The family should be brought into the room and seated around the patient's head after the transplant recovery team exits the room. The family should also be prepared to say their final goodbyes and exit the OR upon declaration of death. Whether the family is present at WLST or is brought into the room after terminal extubation is dependent on the hospital and family decisions.

Prior to WLST, intravenous Heparin administration is typically administered to prevent microemboli/thrombi formation in the organs. Comfort care medications to alleviate pain and discomfort should be given to the potential DCD donor, as for any patient going through EOL care.[1] A consideration that should be addressed by the hospital is how the comfort care medications will be released to the ICU nurse for administration, especially if WLST does not occur in the ICU. Once terminal extubation has occurred, the ICU nurse and declaring physician or physician designee remain with the patient and follow hospital policy for WLST until death occurs.

The OPO and transplant recovery teams may not participate in WLST or make any recommendations toward comfort care medication administration. During WLST, at least one OPO coordinator will usually remain in the room to document vital signs for reporting to the OPTN contractor and transplant programs.

Additional considerations prior to WLST in the OR include dimming the lights, warming the room, and draping the patient and surgical tables in such a manner as to replicate the atmosphere the family and patient would experience in the ICU. Setting up screens to shield the family from seeing the surgical tables and instruments may be another option.

The ICU nurse, declaring physician or physician designee, and respiratory therapist have important responsibilities during transportation of the potential donor to the location of WLST and during WLST:

- ***ICU Nurse: Assists potential donor to location of WLST, administers comfort care medications during WLST, documents interventions per hospital policy.***
- ***Declaring physician or physician designee: Present for WLST, directs comfort care medication administration, identifies start time of cessation of circulation, monitors for autoresuscitation during "hands-off" time, declares time of circulatory death, documents the death note in the electronic health record (EHR).***
- ***Respiratory Therapist: Assists potential donor to location of WLST (with portable ventilator if requested by OPO) and upon physician order, extubates potential donor at time of WLST.***

Declaration of Circulatory Death

Death determination for DCD donors is based on the permanent cessation of circulation[4] and is completed according to state law and hospital policy. Death must be determined promptly to limit WIT and preserve organ viability;[4] therefore, the declaring physician or their designee should be present throughout the dying process. In order to declare death, the declaring physician or their designee must verify that circulatory cessation has occurred and that the period for possible auto-resuscitation has elapsed. (This is also known as the "observation period" or "hands off period.")

Requisites to determine death after WLST in DCD protocol[5]

1. ***Verify that circulatory cessation has occurred using validated test:***
   - ***Absence of arterial pulsations observed by an indwelling arterial line or absence of continuous flow generated by a ventricular assist device or extracorporeal circuit;***
   - ***Absence of opening of the aortic valve by echocardiography;***
   - ***Absence of circulation by arterial Doppler studies; or***
   - ***Absence of electrical activity on an electrocardiogram;***

   Preference should be given to non-pulsatile arterial line monitoring[4,5]
2. ***Verify that the time for possible auto-resuscitation has elapsed***
   - ***In a 2021 international prospective study, 4 minutes 20 seconds was the "longest duration of pulselessness before resumption of cardiac electrical and pulsatile activity."[6]***
   - ***While most organizations practice a 5-minute observation period, practice varies between 2 minutes[3] and 5 minutes.[5,6]***

Once the declaring physician or physician designee (independent of the OPO and transplant recovery teams) verifies that circulatory cessation has occurred and that the minimal observation period has elapsed, death may be declared based on the permanent absence of circulation.[5] The family should be notified and (if present) allowed to say final goodbyes, and escorted from the OR or the location of WLST. The transplant recovery team may then enter the room and organ recovery

can begin.[7] The declaring physician or their designee must write the death note immediately upon death declaration and make it available to the OPO recovery team.

In the event that, during comfort care, it is determined that the time for organ viability for transplant has passed, as determined by the OPO and transplant recovery teams, the patient is moved to the predetermined location (return to ICU room or another room) and comfort measures will continue to be provided by the hospital patient care team. The patient may still be a potential tissue and eye donor once death has occurred.

Checklist for WLST and Declaration of Circulatory Death

The following checklist outlines considerations for the hospital to include in policy and procedure. Note that items in **bold and blue** are ethical and/or federal policy requirements that must be adhered to.

- ☐ Clearly defined roles and responsibilities of hospital patient care team members involved in WLST and organ recovery
- ☐ Location for WLST (e.g., OR, PACU, ICU) and process for transportation during the "observation period" or "hands-off period" to the OR, if WLST does not occur in the OR
- ☐ Identification of physician or physician designee responsible for death determination (e.g., mid-level provider or registered nurse if allowed by state law and hospital policy)
- ☐ **Statement that the declaring physician or physician designee cannot be part of the OPO or transplant recovery team[1,2]**
- ☐ Clarification that the declaring physician or physician designee must remain at the bedside for the duration of WLST to provide ongoing appropriate comfort care as well as to determine the time of death
- ☐ Transplant recovery team is onsite prior to WLST and may verify room set-up
- ☐ A surgical time-out is performed prior to WLST
- ☐ **Transplant recovery team must exit the OR prior to WLST and may not reenter until after the death declaration[1,2]**
- ☐ Considerations for family presence for WLST in the OR, with a member of the OPO team assigned to support the family
- ☐ OR room set up (e.g., draping, dimming of lights, temperature of the room)
- ☐ Comfort care medication administration per hospital policy, with the stipulation that **the OPO and transplant recovery teams may not participate in or make recommendations for WLST and comfort care medication administration**
- ☐ Heparin administration as per organ recovery protocol
- ☐ Process for releasing comfort care medication to ICU nurse if comfort care is performed in the OR
- ☐ Determination for how circulatory cessation will be determined (what validated test and electrical rhythm if monitored)
- ☐ Timeframe for determining that auto-resuscitation has elapsed (also referred to as "observation period" or "hands-off period")
- ☐ The acceptable wait time (time from extubation to death declaration) for organ recovery is determined by the OPO and/or transplant recovery teams
- ☐ Location (e.g., ICU room or other predetermined room) for continued comfort care, should death not occur in a timeframe that maintains organ viability for transplant

The OR Process

The practice for a DCD process in the OR is hospital-specific. Each hospital in collaboration with their OPO should work through the anticipated needs to establish guidelines tailored to their facility and (when necessary) to each specific patient care area for DCD recovery. These guidelines will require dynamic updates, as practices in DCD recovery continue to evolve in the United States.

The OR room is typically set up with all of the anticipated equipment and instrumentation prior to WLST. Generally, there is a transplant recovery team assigned to each organ type procured. Often kidneys are recovered by the same transplant recovery team procuring the liver or a transplant recovery surgeon/OPO recovery surgeon local to the area. The transplant recovery team (consisting of surgeons and organ preservation technicians) are assisted by the OPO recovery team and the hospital OR team assigned to the case. At minimum, the hospital is responsible for providing a scrub nurse or technician and a circulating nurse. If the lungs are to be recovered for transplant, after the death of the patient and after the main aorta has been cross-clamped, an anesthesiologist may be required to assist with re-intubation and re-inflation of the lungs to facilitate lung recovery.

The transplant recovery team arrives prior to WLST, participates in the surgical time-out, and verifies room set-up prior to exiting the OR for WLST. The transplant recovery team should be provided an area adjacent to the OR to wait for death declaration. Depending on the organs allocated for transplant, the wait time for death to occur could range from 30 to 120 minutes or longer. However, this timeframe is specific to the donor, the organs to be recovered, and transplant team. It is also subject to change as advances in organ preservation are made. Therefore, hospitals should collaborate with their OPO to establish policies related to current wait times.

Once death is declared, the transplant recovery team may enter the room. The surgical technician should be prepared to assist with gowning and gloving so as to minimize WIT. A transplant surgeon typically performs a median sternotomy and midline abdominal incision. The surgeon will quickly dissect to the aorta, insert a cannula (provided by the OPO recovery team) distal to the renal arteries and clamp the aorta. This is "cross-clamp" time and is documented by the hospital and the OPO and transplant recovery teams. This is the end of WIT and the start of cold ischemic time (CIT). The cannula is connected to cold preservation solution provided by the OPO or transplant recovery team, which is then rapidly infused into the aorta to flush the organs clear of blood. Large suction canisters (e.g., Neptune or Dornoch) with multiple suction cannulas should be ready for cross-clamp. The abdominal and thoracic (if thoracic organs are to be recovered) cavity will be filled with slush (ice) to rapidly begin the cooling process.[7] Slush machines, or large basins for hospitals without slush machines, should be set up prior to WLST. The OPO and/or transplant recovery team typically provides some (if not all) of the slush used for cooling and packaging organs.

Once the preservation solution has cleared as much of the blood out of the organs as possible, the surgeon(s) continues to dissect the organ and associated vessels free of the body. The organs are then removed from the body to the back table where they will be assessed and measured for anatomy. In addition, pictures are typically taken by the OPO recovery team for potential reference at a later time. The OPO or transplant recovery team will carefully package each organ in slush and sterile containers and transfer the packaged organs to an approved transport carrier (corrugated, waxed box, cooler, or

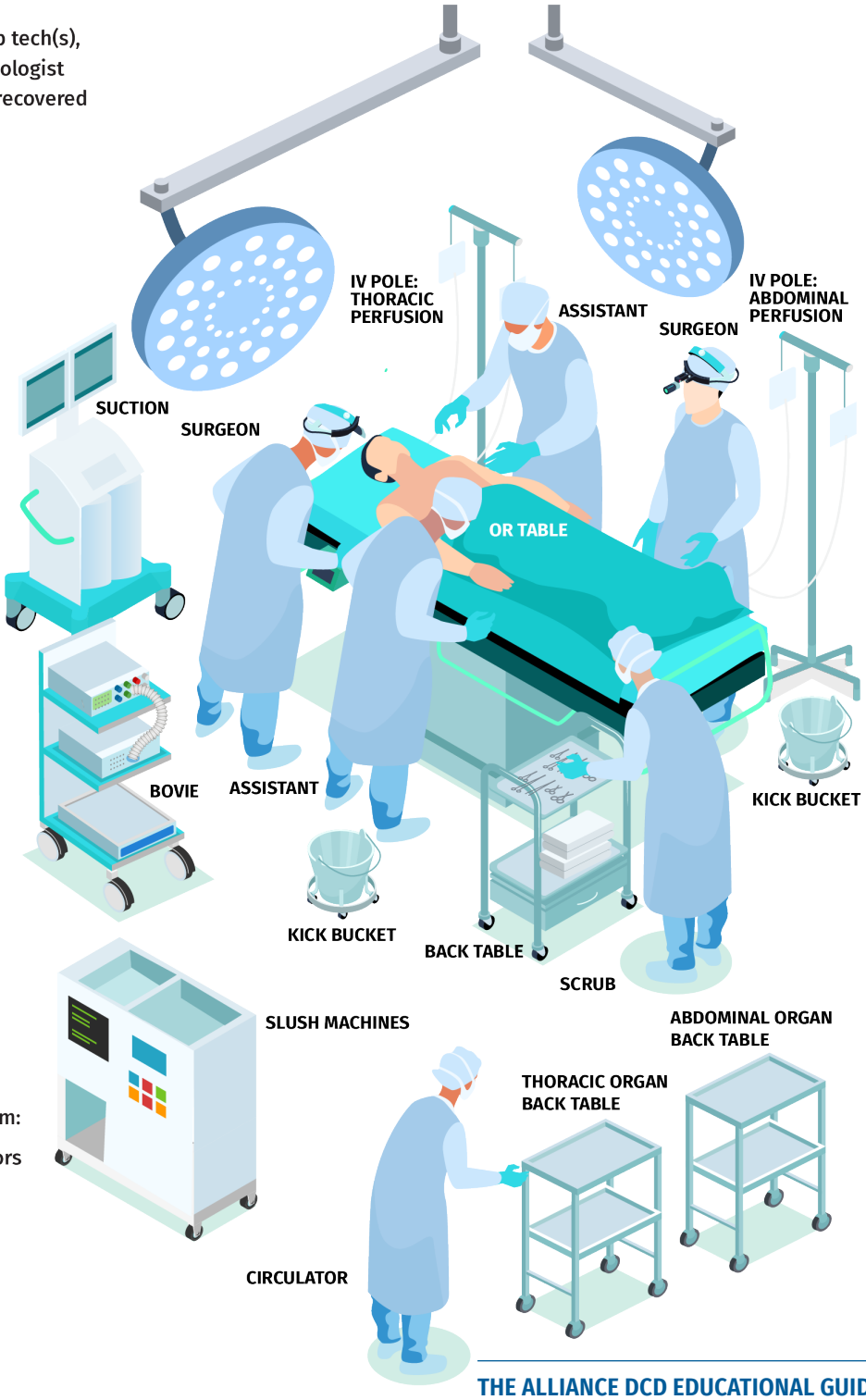
According to UNOS,[8] hearts and lungs can tolerate, on average, four to six hours of CIT; livers, intestines, and pancreata can last approximately 12 - 18 hours, and kidneys 24-36 hours.

organ pump). The OPO recovery team is responsible for ensuring that each organ is properly labeled prior to the organ leaving the OR. The organs are then transported to the intended recipient at the transplant hospital as quickly as possible. The OPO recovery team and/or hospital should have team members available to assist the transplant recovery team to/ from changing lockers to the location of their transportation vehicle to decrease time navigating to the hospital.

OR Preparation Checklist & OR Set Up

The following checklist and set up outlines considerations for OR preparation. This is not an exhaustive list. Collaborate with your partnering OPO for specific needs:

- OR personnel required: 1 - 2 Scrub tech(s), a circulating nurse, and anesthesiologist when DCD donor lungs are being recovered
- OR room set up prior to WLST
- Required equipment:
  - ☐ Slush machine (or basins) x 2
  - ☐ Eternal saw with blade
  - ☐ Extra back tables for organ viewing and packaging
  - ☐ Cautery machine x 2
  - ☐ Long vascular clamp; large long curved aortic clamps
  - ☐ 2 - 3 Metz scissors
  - ☐ 2 - 3 Debakey Pickups
  - ☐ 2 - 3 IV poles
  - ☐ Large suction machines (Neptune/Dornoch)
  - ☐ Yankauer and tubing
  - ☐ 1 Laparotomy/Major set
  - ☐ Sterile basins
- Typical additional items needed:
  - ☐ Umbilical tape
  - ☐ Vessel loops
  - ☐ Silk ties (2-0, 3-0, 4-0)
  - ☐ Lap sponges
  - ☐ Glove ranges (7 - 8)
  - ☐ Extra blue towels
  - ☐ Skin prep
- Provided by the OPO recovery team:
  - ☐ Chest and abdominal retractors
  - ☐ Preservation solution
  - ☐ Aortic cannula
  - ☐ Organ packaging materials



Honor Practices

Many organizations honor donation decisions through Honor Walks and Moment of Silence readings prior to WLST. Collaborate with your partnering OPO to develop protocols for Honor Walks and Moment of Silence, or any other practice that honors the generosity of the donor and the legacy that is being created.

Honor Walk: A practice that provides families, friends and medical teams an opportunity to honor the generosity of the potential donor by lining the transportation route from the ICU room to the location of WLST when the donor is transported.

Moment of Silence/Moment of Silence reading: A practice that honors the person donating organs through reading a statement from the family and taking a few minutes in silence with the hospital, OPO and transplant recovery team prior to WLST.

The Grand Island Independent

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Advanced Organ Procurement Technologies

FACT-FINDING QUESTIONS

Hospital leadership should ask:

1. How should our hospital care team and hospital OR team prepare for the use of normothermic regional perfusion (NRP)?
2. Is NRP addressed in our hospital DCD policy and what do we need to do to ensure it is current and up-to-date?
3. What are the different types of machine perfusion techniques that we may see at our hospital?
4. What should our hospital OR team know about perfusion technology?
5. What are some of the ethical considerations in utilizing NRP?

KEY POINTS

Hospital leadership should remember:

1. NRP is a recovery practice utilized for an increasing number of DCD cases to increase organ utilization and improve post-transplant outcomes, contributing to the stewardship of the gift the donor family is making.
2. NRP complements ex-vivo perfusion devices as novel and transformative changes in the donation and transplantation environment.
3. NRP presents an opportunity for donors and families to maximize their gift in situations that would have otherwise not been considered a possibility for donation.

Model Elements for Advanced Organ Procurement Technologies

Ongoing developments in technology and procedures aim to maximize organ utilization and preservation. These new technologies and procedures can modify processes and affect case durations. It is crucial that all stakeholders involved in the donation process remain informed about these changes.

Machine Perfusion Techniques

Over the last decade, there has been an increased focus on utilizing machine perfusion as an alternative to static cold storage for organ preservation. Machine perfusion involves dynamically reconditioning and repairing donor organs by restoring nutritional/oxygen delivery and allowing the potential for therapeutic agents through a connection to a pump, both at the time of recovery (in-vivo) and throughout transport to the recipient facility (ex-vivo). Beyond its potential to enhance organ quality through repair, machine perfusion offers the prospect of salvaging organs that previously would not have been able to be transplanted. Additionally, it allows for pre-transplant viability assessment of the donor organ 'while on the pump,' preventing unnecessary transplantation of organs that may not function properly in the recipient. Lastly, machine perfusion extends the time the organs remain viable for transplantation, facilitating daytime surgeries and ensuring smooth transfer of the donor organ to the recipient hospital.[9]

Organs recovered from DCD donors are exposed to warm ischemia during the process of circulatory death. Warm ischemia creates organ injury at the cellular level as oxygen and nutrient delivery slows and stops during the dying process.[10]

Warm ischemic injury can result in varying degrees of short- and long-term organ dysfunction after DCD organs are transplanted. Organs recovered from brain dead / death by neurologic criteria (BD/DNC) donors do not experience warm ischemia, and thus warm ischemia is the reason why transplants using DCD organs have historically had worse outcomes compared to those using organs from BD/DNC donors.[11]

Restoring oxygen and nutrient delivery to DCD organs affected by warm ischemia before transplanting them has the potential to repair cellular injury and improve organ quality. This is the concept behind machine perfusion, an important breakthrough that may narrow the quality gap between DCD and BD/DNC donor organs. Machine perfusion can be performed in two different ways:

1. Ex-Vivo (Outside the Body) – With ex-vivo perfusion, DCD organs are recovered following standard protocols. After recovery, organs are placed on an organ-specific perfusion device. Oxygenated fluid is pumped through the organ to reverse warm ischemic injury and improve organ quality prior to transplantation. To further assess function of the organ, organs can often be maintained on the ex-vivo perfusion device during transportation up to the time of transplant.[12]
2. In-Situ (Inside the Body) – With in-situ perfusion, commonly known as Normothermic Regional Perfusion (NRP), oxygenated blood is perfused through the organs with the help of a closed circuit connected to an extracorporeal membrane oxygenation (ECMO) machine, while the organs are still in the donor's body. This restores oxygen to the warm ischemic organs as early as possible after declaration of death, minimizing the effect of the warm ischemic injury. After a period of NRP to improve organ quality, the organs are flushed, cooled, and recovered normally.[13]

   The use of NRP on a donor case may increase standard DCD case time in the OR.

As the field of machine perfusion matures within the United States' donation and transplantation system, hospitals should expect to see several different perfusion strategies employed in the coming years.

Ex-Vivo Machine Perfusion

The use of ex-vivo perfusion has minimal impact on organ recovery operations at the hospital. There are two strategies for ex-vivo perfusion:

1. "On-Site" Perfusion (also known as on-site normothermic machine perfusion "NMP") – With this strategy, a portable perfusion device is taken to the hospital with the transplant recovery team. After a DCD procurement, the organ is prepared on the back table and connected to the portable perfusion device.[15] Sometimes the transplant recovery team may request that the hospital provide several units of packed red blood cells to prime the perfusion machine; other than that, there is minimal impact on the procedure from the hospital's perspective.
1. "Back-to-Base" Perfusion – With this strategy, organs are packaged on ice at the hospital in the usual manner and are transported back to the recipient hospital. At the recipient hospital, the organ is placed on the perfusion device and maintained until the time of transplantation.[14]

These two ex-vivo perfusion strategies have been increasingly implemented in North America and Europe. The use of ex-vivo perfusion for kidneys has been commonplace for decades. Recent advances have led to the ability to perfuse non-kidney organs such as livers, hearts, and lungs. DCD organs particularly benefit from ex-vivo perfusion to reverse the warm ischemia injury inherent in the DCD process, improving post-transplant outcomes compared to conventional ice storage.[15] Ex-vivo perfusion is an important example of how technological and clinical advances maximize the donor's gift by improving the quality and number of transplantable organs recovered from DCD donors.

In-Situ Normothermic Regional Perfusion (NRP)

NRP is an organ recovery technique designed to minimize the impact of warm ischemia on DCD organs. The United Kingdom and several European countries have been utilizing NRP for several years; since 2020, NRP has gained traction in the United States and has been increasingly offered throughout the country. Proponents contend that NRP is the most

effective method for improving the quality and number of organs recovered from DCD donors, as it both increases the organ pool for transplant recipients and maximizes the gift of the DCD donor. Indeed, NRP has been repeatedly shown to improve post-transplant liver and kidney outcomes, increase the utilization of livers from DCD donors, and has directly contributed to increases in United States DCD heart utilization.[16,17,18,19,21]

NRP utilizes the deceased donor's vasculature as conduits to deliver blood and oxygen to the transplantable organs in the post-mortem state.[16] Arterial and venous cannulas are placed within major blood vessels within the donor's body, and these cannulas are connected to a portable circuit containing a pump to propel perfusion, heater, oxygenator, and fluid reservoir. Blood vessels leading to the newly deceased donor's brain may be either, clamped, occluded with a balloon device, and/or vented to ensure that oxygenated blood does not perfuse the brain. Warm, oxygenated blood is then circulated through the organs intended for transplantation while the organs are still in the donor's body, minimizing the time from warm ischemic injury to organ perfusion. Perfusion is maintained for typically one to two hours to allow recovery of organ injury as well as organ assessment, and then the organs are flushed with cold preservation solution, recovered, and packaged as in a typical donor operation.

Types of NRP

Abdominal NRP

Abdominal NRP targets (A-NRP) perfusion of the liver, kidneys, and pancreas and can be used in DCD donors when thoracic organs are not intended for transplantation. A-NRP is accomplished by canulating either the femoral artery/vein (peripheral cannulation) or the aorta/vena cava (central cannulation) for connection to an extracorporeal mechanical organ support.[20] The descending thoracic aorta is occluded either by a balloon device or a vascular clamp, limiting perfusion to the abdominal organs alone for resuscitation and assessment. Oxygenated blood flow is reinitiated with the aid of extracorporeal mechanical organ support. A-NRP is typically performed by abdominal surgeons supported by a trained perfusionist who operates the extracorporeal device.

Thoracoabdominal NRP

Thoracoabdominal NRP (TA-NRP) targets perfusion of the heart and lungs in addition to the liver, kidneys, and pancreas, increasing the number of potentially transplantable organs recovered from a DCD donor. As with A-NRP, an extracorporeal mechanical device is utilized. TA-NRP is usually performed by placing cannulas in the heart and ascending aorta, with the aortic arch vessels clamped or divided to prevent cerebral perfusion.[22] TA-NRP is typically initiated by thoracic surgeons supported by a trained perfusionist. Abdominal surgeons are on-site to recover the abdominal organs, and an anesthesia provider might be requested to re-intubate the donor after NRP is established. During TA-NRP the heart resumes beating, and the NRP flow can be weaned to allow the heart and lungs to support perfusion and oxygenation.

Central versus Peripheral Cannulation Strategies

Interventions intended to facilitate successful donation are sometimes performed on a potential DCD donor prior to determination of death. The scope of pre-mortem interventions that may be allowed vary according to hospital policy and OPO practice. Pre-mortem interventions require informed consent. The most common example of pre-mortem intervention is administration of heparin, which is permitted in most hospitals in the United States. Premortem interventions generally require consent from the LNOK/LAP.

NRP can be performed without the need for pre-mortem intervention, evidenced by the experience in the United Kingdom where pre-mortem interventions including heparin are not performed.[23] Under these restrictions central cannulation by rapid post-mortem surgical access to the abdominal or thoracic great vessels is performed, similar to organ recovery from DCD donors when NRP is not utilized.

When more extensive pre-mortem interventions are possible and consent is obtained, surgeons may place the cannulas to be used for NRP through a small bedside procedure prior to initiation of the DCD process. Sheath access for a balloon occlusion device may also be placed at the bedside. This pre-mortem peripheral cannulation technique can facilitate the post-mortem initiation of NRP simply by connecting the cannulas to the device and inflating the occlusion balloon, simplifying the early NRP process. At this time there are no data available to directly compare the post-transplant outcomes of organs recovered via central post-mortem and peripheral pre-mortem NRP.

Hospital Considerations

The goal of NRP is to increase the number of donors and maximize each donor's gift (both in the number of organs and the quality of each organ). NRP may increase the length of the OR time due to a possible longer wait period for the patient to die, as well as added perfusion time. As in all organ donation cases, communication between the hospital patient care team, hospital OR personnel, transplant recovery teams, and OPO recovery team is critical for a smooth, successful NRP recovery process. There are a few NRP-specific considerations that require attention before and during an NRP recovery.

Review of Hospital Policy for Pre-Mortem Intervention

The emergence of NRP is a reminder that hospitals need an up-to-date review of their DCD-specific policies. Clear communication of policies specific to pre-mortem interventions are necessary so that transplant recovery teams can plan their cannulation strategy (i.e. central vs. peripheral).

OR Selection

NRP cases may require additional transplant recovery team members to be present. Large ORs that can accommodate larger teams are preferred. The perfusionists setting up the NRP device will need access to electrical power as well as wall oxygen. A room should be selected to allow the device to be placed close to these resources without obstructing personnel flow in the room. Teams may request table space to set up and operate small point-of-care testing devices for blood monitoring during NRP. Surgical instrument selection is the same as for other organ donor operations; all NRP-specific equipment including tubing, cannulas, and the device itself will be provided by the transplant recovery teams. The team may request basic supplies such as IV fluids. Of note, an electrocautery device (Bovie) will be needed to obtain hemostasis after initiation of NRP.

Hospital Staff Needed

NRP should not require any additional hospital staff than a standard DCD case. It should be noted that NRP cases may take longer to set up and perform compared to standard DCD cases, with expected case length similar to a donation after BD/DNC of a multiorgan donor. As in all DCD cases with thoracic organ recovery, an anesthesia provider may be asked to be on standby to intubate the donor post-mortem for TA-NRP cases.

Blood Products

Maintaining volume in the NRP circuit is critical for successful perfusion. Teams may request that several units of typed-and-crossed packed red blood cells are available for transfusion into the NRP circuit in case they are needed.

Ethics

The ethical aspects of NRP have been well-established in many western nations, including Spain, France, Italy, and the United Kingdom. In France, NRP is now mandatory for DCD donors due to the improvements in organ utilization and post-transplant outcomes.[24]

At the time of the authoring of this guide, NRP is still rather new to the United States' donation and transplantation system, and the discussion of NRP ethics is ongoing and dynamic.[25,26] The Alliance provides resources for comprehensive information about different ethical considerations and will be updating these as changes occur. *(See resource section below.)*

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8 Essential

Post-DCD Recovery or Non-Recovery

Recommended practices for both the post-DCD recovery and non-recovery processes

FACT-FINDING QUESTIONS

Hospital leadership should ask:

1. Does our DCD policy include guidance for cases in which the DCD process must be aborted and a back-up bed is needed for ongoing comfort care?
2. Is our Operating Room (OR) staff familiar with the process concerning DCD donors who do not die within the time frame for DCD recovery?
3. Is our OR staff and hospital patient care team familiar with post-mortem care processes and documentation for patients that are DCD donors?
4. What real-time in-person grief support and routine updates on the donation process are provided to the family by the OPO?
5. Does the OPO conduct After Action reviews with our OR and hospital patient care team involved in the DCD case? How is the information gained during these After Action reviews shared and acted upon?
6. What are the collaboration and protocols between our hospital, the OPO, and the Medical Examiner or Coroner (ME/C) for release for organ, tissue, and eye donation, especially as it pertains to the potential DCD donor?

KEY POINTS

Hospital leadership should remember:

1. The ICU bed or an alternative bed should be reserved in the event the potential DCD donor does not die in the timeframe needed for organ recovery to occur, and a non-monitored bed for continued comfort care is needed.
2. Organ, tissue, and eye donation can occur for patients whose death falls under the ME/C jurisdiction.
3. Donor families should be provided with acute grief support and regular updates throughout the donation process.

Model Elements for DCD Practice Within the Hospital

Post-Recovery Procedures for the DCD Donor

In the context of organ donation, "recovery" refers to "the surgical procedure of removing an organ from a donor"[1] for the purpose of transplantation. "Non-recovery" indicates situations where organs cannot be recovered for transplant for various reasons, such as a result or finding revealing that organs are not medically suitable for transplantation, a matching recipient cannot be identified, or the dying process takes longer than anticipated resulting in the organs no longer being suitable for donation.

After the recovery of transplantable organs, those unsuitable for transplantation may also be recovered by an OPO or transplant recovery team member for research purposes and packaged accordingly *(see Essential 7)*.

Specific roles and responsibilities following the recovery of organs are tailored to each hospital and OPO. Generally, additional tasks to complete for post-recovery procedures include:

OPO responsibilities:

- Closing the donor body
- Providing hospital OR team with signed operative note for patient electronic health record (EHR)
- Assisting hospital OR team with removal of medical equipment (e.g. urinary catheter, arterial line, peripheral IVs) unless ME/C case
- Assisting hospital OR team with hospital protocols for draping donor for transportation to the hospital morgue
- Assisting with transportation of donor to the hospital morgue, if donor will have an autopsy, the ME/C may require placement of donor in locked body bag
- Communication with ME/C and seeking to meet their requests
- Notification to donor family of outcome of organ recovery

Hospital responsibilities:

- Post operative OR responsibilities (e.g., counts, etc.)
- If provided by OPO and requested, flashing chest and/or abdominal retractors
- Hospital post-mortem documentation
- Assisting OPO recovery team with removal of medical equipment (e.g. urinary catheter, arterial line, peripheral IVs) unless ME/C case
- Assisting OPO recovery team with draping donor for transportation to the hospital morgue. If the donor will have an autopsy, the ME/C may require placement of donor in locked body bag.

Ongoing Care if the Patient Can Not Become a Donor (Non-Recovery)

In cases where the plan is to withdraw life-sustaining treatment (WLST) and provide comfort care in the OR, the plan for continued comfort care if the donation process is aborted should be included and discussed during the huddles between the hospital patient care team and the OPO recovery team, as well as communicated to the hospital's OR team. A location needs to be identified to which the patient will return in the event they do not die in the time frame needed for organ viability *(see Essential 7)*. In some instances, the patient may return to their ICU room, where familiarity with the ICU staff can be comforting for the family. In other instances, as the patient no longer requires critical care, the patient may be transferred to an alternative unit or ward for continued comfort care. Because the decision for WLST was made independently of and prior to the donation decision, the patient is not reintubated and palliative or comfort care should continue seamlessly following hospital policies and protocols, as for all end-of-life (EOL) care patients.[2] As part of the donation conversation with the family, the OPO team member prepares the patient's family for the possibility that death may not occur within the timeframe required for organ donation to occur. They also communicate the contingency plan should this occur.

The hospital should address in policy the process for cases when DCD recovery needs to be aborted. In the event that the patient does not die in the time frame needed for organ recovery, the OPO recovery team should assist the hospital patient care team with transport of the patient back to the ICU or other identified location. During patient transport, the OPO team member dedicated to the family should provide ongoing emotional support and escort the family back to the appropriate waiting room. Once the patient is settled into the room, the OPO team member and hospital patient care team can invite the family to the bedside.

Following transport back to the predetermined location, the OPO team members are typically available to the hospital patient care team and family. They will conduct a final assessment of the family and hospital patient care team's needs prior to departing from the hospital. The hospital patient care team is responsible for notifying the OPO of the patient's time of death in a timely manner per Centers for Medicare and Medicaid Services (CMS) Conditions of Participation (CoPs).[3,4] The patient may still be evaluated as a potential tissue and eye donor. Final evaluation for tissue and eye

suitability is performed at time of death. Even if the patient's family declined tissue and eye donation during initial authorization for organ donation, the hospital must still notify the OPO of the death of the patient, as per CMS CoPs.[3,4]

A separate debrief and after action review will be conducted by the OPO hospital development coordinator with the hospital patient care team and the OR staff who were present for the entire process. After action reviews may be conducted through one-on-one conversations with individuals involved and may be conducted in real-time, or they may be more formal meetings. The purpose of the after action review is to thank the hospital team, discuss, and identify any parts of the process that went well or could be improved upon for the next time, and to plan for future process improvement as needed.

Ongoing Care of the Donor Family

It is important to provide family support and information throughout the donation process, especially during times of transition.

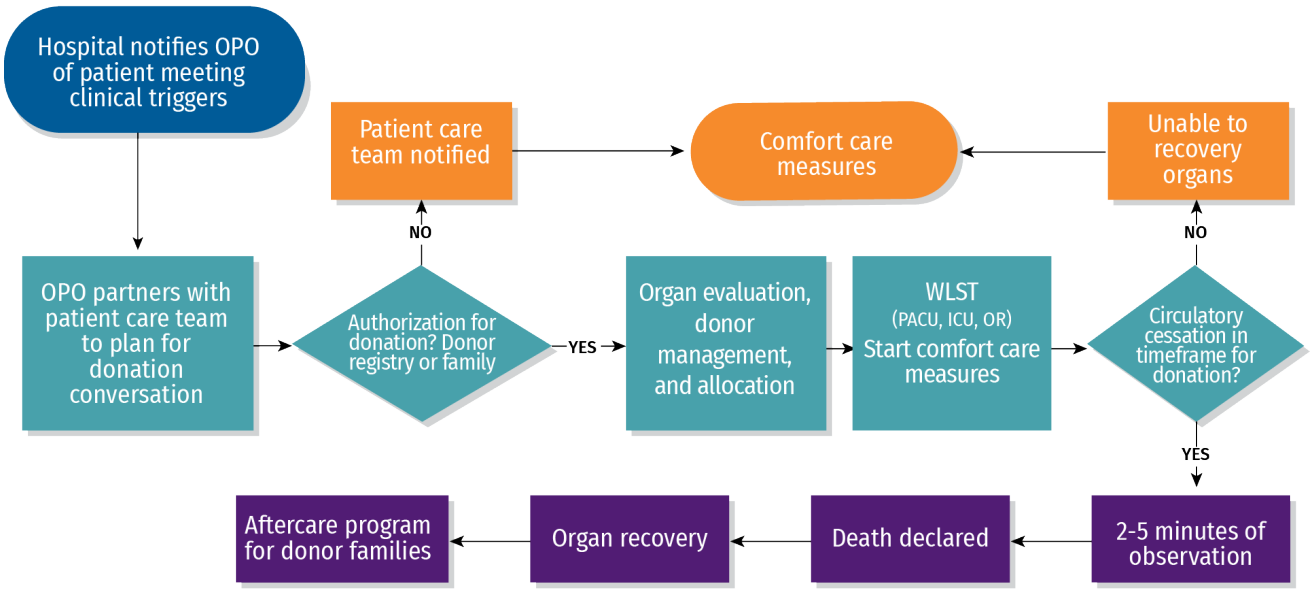
As part of huddles before the donation conversation and throughout the DCD case, the OPO and the hospital patient care team should determine roles and responsibilities of those communicating with the family and what is being communicated, to ensure consistency of information for the family *(see Essential 4)*. Throughout the donation process, the OPO staff will typically keep the family informed of key steps and expectations, including but not limited to:

- What to expect at the start of the DCD case (e.g., laboratory tests, imaging, procedures, assessments)
- Critical care management goals
- Start of allocation and organs expected to be allocated
- Estimated timeline and final determination for WLST
- What to expect for an Honor Walk, if planned
- What to expect during WLST and the dying process
- What to expect in the OR, if WLST occurs in OR
- Preparation to say goodbye and expectation for leaving once death is declared
- What will occur in the event that their family member does not die in the time frame needed for organ recovery
- How long the organ recovery will be and when to expect a follow-up call from the OPO
- Expectations following organ recovery (e.g., tissue and eye recovery and/or autopsy)
- What to expect regarding follow-up notifications once tissue and eye recovery is completed and donor is transported to the funeral home
- What to expect for ongoing communication from the OPO in the weeks and months to follow.

The OPO team member providing family support typically encourages the family to leave the hospital after death declaration while assuring them that they will receive follow-up by phone to inform them of which organs and tissues have been recovered for transplant along with additional phone calls following tissue and eye recovery and transport to the ME/C or funeral home, as applicable.

Regardless of the outcome of DCD donation, the family will have ongoing grief and bereavement needs. Long-term care of the donor family is offered by the OPO's aftercare team. While aftercare programs differ from OPO to OPO, they typically include a donation summary letter and some form of memento to memorialize the donation gifts, as well as resources or tools (e.g., grief pamphlets, etc.). In addition, most OPOs hold an annual donor remembrance ceremony to honor donors and their families, as well as many other events throughout the year for donor families. OPOs will usually include in these events the families of the patients for whom the donation process had to be aborted.

Figure 7. Donation After Circulatory Death (DCD) process



Medical Examiner/Coroner (ME/C) and the Morgue

Patients can be organ donors even when the death falls under the jurisdiction of the ME/C. The National Association of Medical Examiners encourages OPOs and ME/Cs to collaborate together to ensure that ME/Cs obtain what is needed while maximizing donation opportunities.[5] Therefore, communication with the ME/Cs should be well integrated into the donation process.

In DCD cases where permission is necessary in order to proceed with donation, the ME/C is notified of the pending death, circumstances surrounding death, and intent for organ donation to proceed following death determination. Timing for this notification usually occurs once authorization for donation is known by the OPO. Depending on hospital policy, the hospital may make the first notification of the pending death to the ME/C.

OPOs typically discuss donation (organ, tissue, and eye) potential early in the case timeline with the ME/C to determine release for donation and identify any ME/C requirements. OPO staff will work with the ME/C to preserve evidence or assess the state of injury (e.g., obtain blood and/or imaging) as needed to facilitate their investigations. Because ME/C jurisdiction occurs following death declaration, the ME/C may not make any final determination for release of donation until death occurs. Once determination of death occurs, the ME/C must be notified by the OPO or the hospital team (usually the nurse caring for the patient). The OPO will then obtain any additional permissions as needed (e.g., release for tissue/eye recovery, release for research, transportation of the patient to the ME/C office for autopsy), if not already determined in prior conversations between the OPO and the ME/C.

If an autopsy will be performed, all hospital medical devices still attached to the body (e.g., lines and drains) must be left in place.

Once the patient has been transported to the morgue, the OPO recovery team typically ensures the party responsible for transportation of the donor is notified of the location of the patient. From the morgue, the patient may be transported to the funeral home (if no further donation or autopsy will take place), the ME/C's office for autopsy, or the OPO for tissue and eye donation.

Tissue and Eye Donation

Tissue and eye donation are separate to the organ donation process, but are related opportunities that provide families meaning and comfort in their family member's death. Donated tissues such as skin, bone, blood vessels, tendons, ligaments, cartilage, nerves, heart valves, corneas, etc., can dramatically improve the quality of life for recipients and help to save and heal lives. One tissue and eye donor can heal the lives of more than 75 people.[6]

Tissue donation can benefit patients in a number of serious or life-threatening medical situations, including saving patients with severe burns, allowing athletes with torn ligaments or tendons to heal and regain strength, restoring hope and mobility to military men and women who have been injured in combat, and repairing musculoskeletal structures such as teeth, skin, and spinal components. Eye donation can restore sight.[7] Each year, approximately 58,000 tissue donors provide lifesaving and healing tissue for transplant. Approximately 2.5 million tissue transplants are performed each year.[8]

In the DCD case, the potential donor will be screened for tissue and eye donation suitability. Final screening and acceptance occurs after death declaration.

Tissue and eye recovery occurs following declaration of death and organ recovery unless organ donation was aborted due to the patient not dying in the time frame necessary for organ donation. If organ recovery is successful, the OPO recovery team will transition the case over to the tissue recovery team for tissue recovery. Tissue recovery can occur in various locations such as a hospital OR room, potentially in the hospital's morgue, or in a dedicated tissue recovery suite often located at the OPO. Following tissue and eye recovery, the donor's appearance is restored with prosthetics allowing for family and open casket viewing.

In the event that the patient does not die in the time frame needed for DCD recovery to occur, the hospital patient care team is responsible for notifying the OPO at time of death at which point the patient will be re-evaluated for tissue and eye donation.

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9 *Essential*

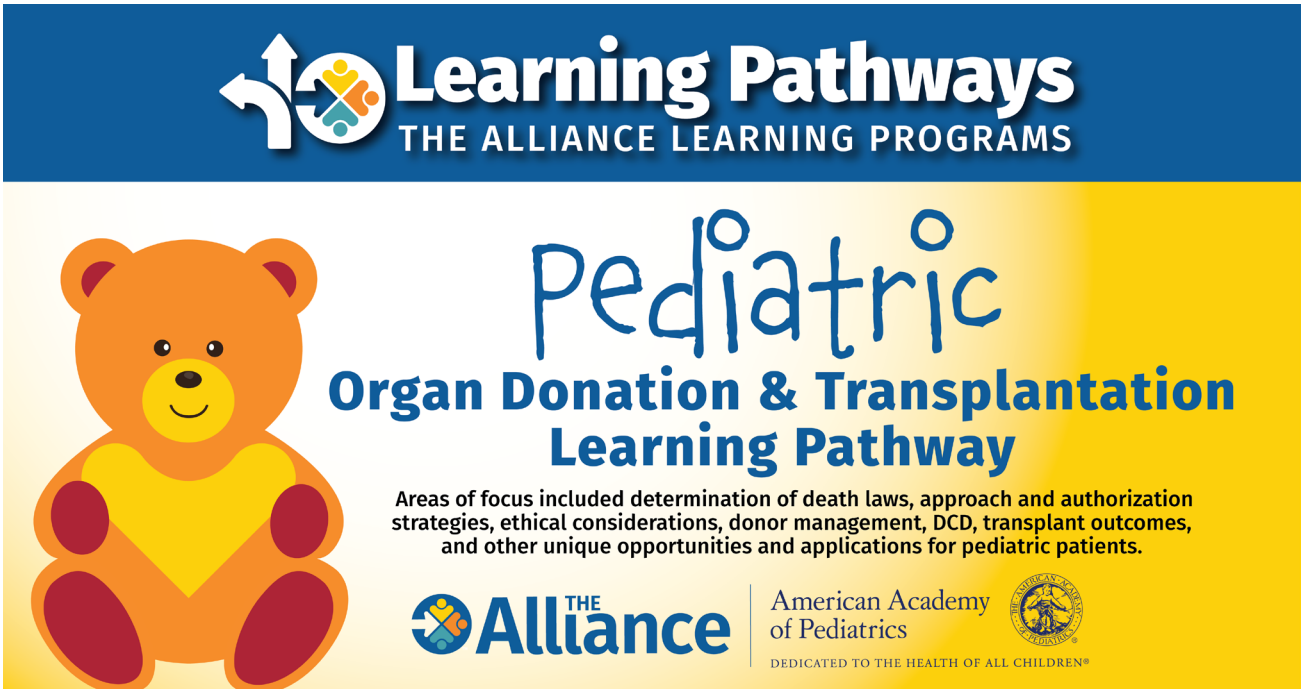
Pediatric & Neonatal Donation after Circulatory Death (DCD)

The unique circumstances that impact the process of pediatric and neonatal DCD

FACT-FINDING QUESTIONS

Hospital leadership should ask:

1. Does our hospital organ donation policy address the neonatal and pediatric DCD process?
2. Do we need a pediatric and neonatal-specific clinical trigger to facilitate the identification of all potential donors, including DCD potentials?
3. How will the organ procurement organization (OPO) and the hospital patient care team collaborate to ensure a cohesive, timely, and sensitive process for the donation conversation every time, including appropriate personnel and integration of organ donation into end-of-life conversations?
4. Are we set up with automated OPO notifications of potential donors from our electronic health record (EHR) system? *(see Essential 2)*
5. How are we meeting the families' cultural and religious needs throughout their child's care?
6. What is our process for the facilitation of a pediatric DCD case at our institution?
7. Do we have a pediatric DCD donor management standard order set developed with the help of the OPO?
8. Are donation cases prioritized as urgent cases on the Operating Room (OR) schedule?
9. Do we have a critical care comfort care order set that can be used for all end-of-life (EOL) care patients undergoing comfort care and can also be used for DCD cases?
10. Do we have patient care physicians or physician designees available and willing to assist with the withdrawal of life-sustaining treatments (WLST) and administration of comfort care at the time of a DCD case?
11. Do we have a well-defined plan to provide appropriate medications for comfort care for a DCD donation case when patients are cared for outside of the ICU setting?



KEY POINTS

Hospital leadership should remember:

1. Early identification of a potential donor is crucial and allows for better family care and communication.
2. Ongoing patient management by the hospital patient care team is essential to sustain organ perfusion and viability and is crucial to the stewardship of the gift the family is making.
3. Organ donation should be a routine consideration as part of end-of-life care.
4. The determination of donation potential must be made by the OPO team.
5. Authorization for donation should be done with collaboration between the OPO coordinators and hospital patient care team.
6. Collaboration between the OPO team and hospital patient care team for donor management will optimize the stewardship of the gift. But, in DCD donation, only the hospital patient care team can order specific tests and treatments for the potential donor prior to pronouncement of death.
7. After action reviews provide an opportunity for hospital staff to debrief and share feedback after DCD cases.

The Need for Pediatric Donors

Children continue to die while waiting for life-saving organ transplants *(see Figure 9-3)*. The number of children added yearly to the organ transplant wait list far exceeds the number of pediatric donors annually *(see Figure 9-2)*. Pediatric organ donation – defined as organ donation from an individual who is newborn up to the age of 18 – can have a significant life-extending benefit to the recipients of these organs and may additionally have a high emotional impact on donor families, allowing them to find a sense of purpose and comfort in their loss.[1] The majority of pediatric organ donors continue to be donors after declaration of brain death/death by neurologic criteria (BD/DNC) *(see Figure 9-1)*. The need to identify all potential pediatric donors and recover more organs for pediatric patients waiting for organ transplantation is essential. This has resulted in a steady increase in the identification of pediatric DCD donors *(see Figure 9-1)* contributing to 5-6% of the national DCD pool of donors in the US and increasing pediatric transplants annually.[2]

Figure 9-1. Comparison of Pediatric Brain Dead to DCD Donors Through 2023[2]

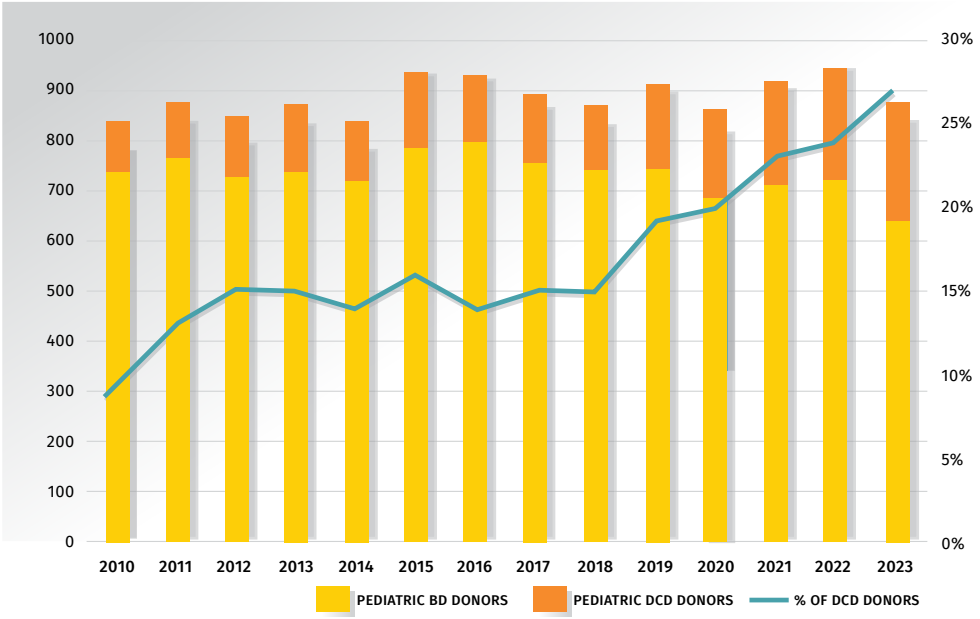


Figure 9-2. Pediatric waitlist additions in comparison to pediatric transplants per year through 2023[2]

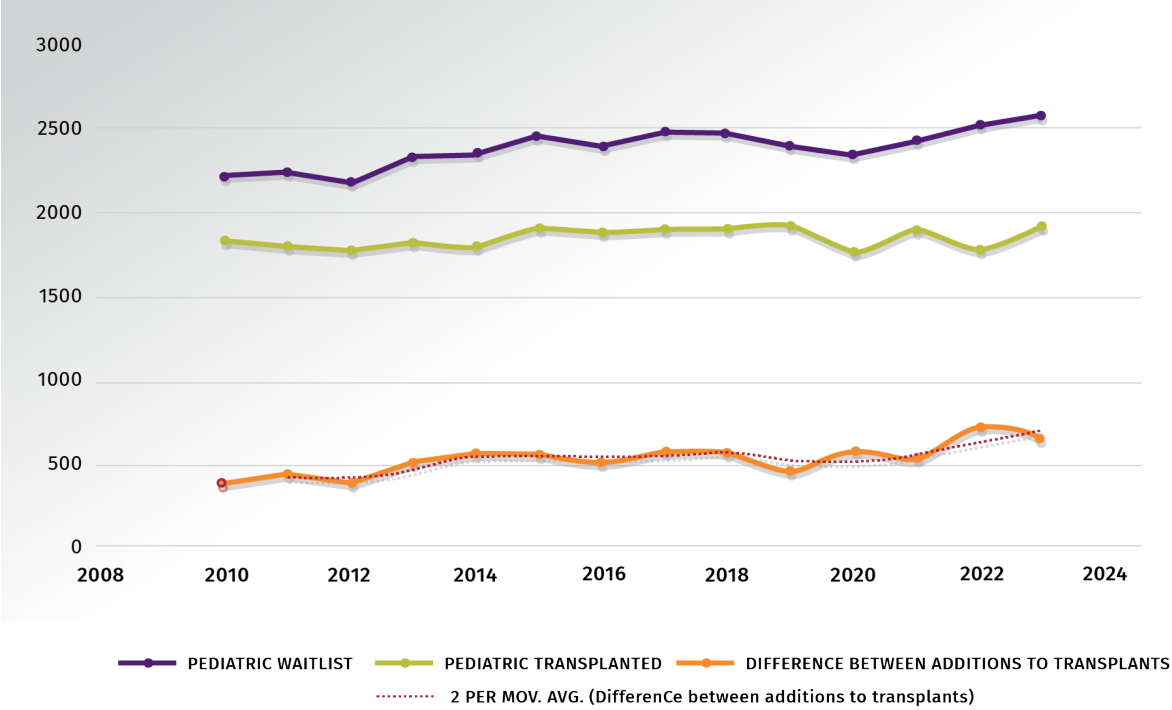
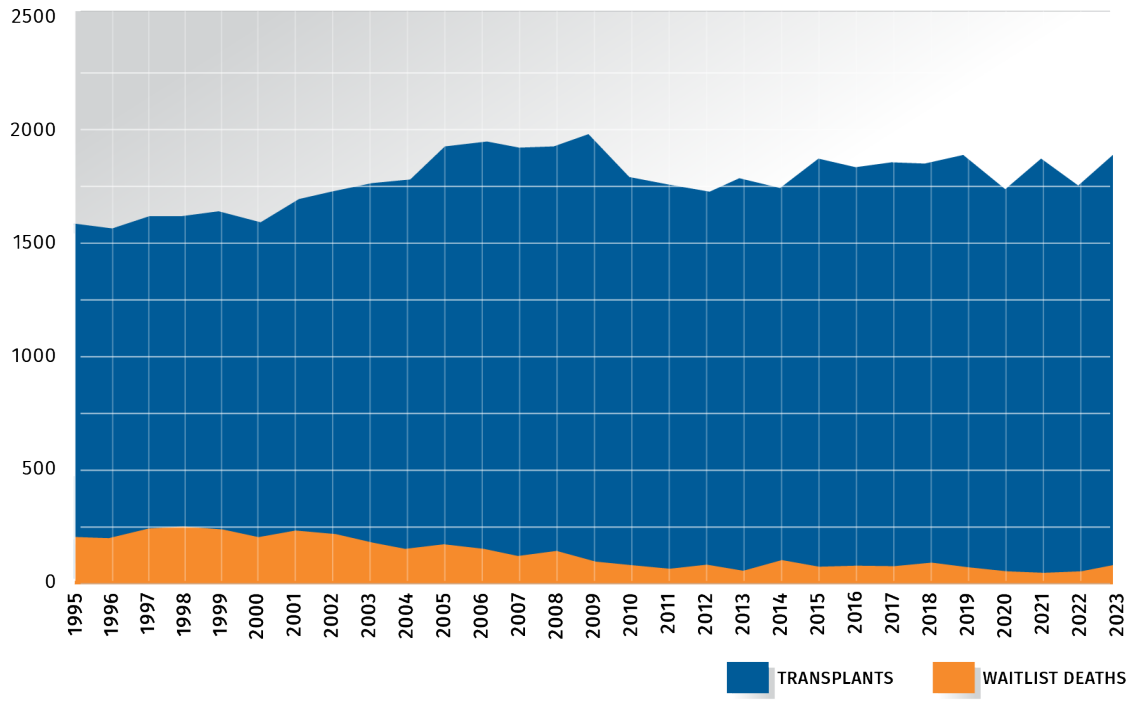


Figure 9-3. The number of pediatric transplants vs the number of pediatric waitlist deaths through 2023[2]



Unique circumstances affecting pediatric donation

- Most critically ill children are cared for at specialized pediatric medical centers.
- Diseases in children can be dependent upon the age of the child and can differ from adult diseases.
- Neurologic or circulatory death is a relatively rare occurrence in children, accounting for 2-6% of all critically ill hospitalized children in PICUs in the United States.[3]
- The majority of pediatric deaths occur following withdrawal of life-sustaining medical treatment (WLST).
- Parental authorization for donation and consent for any procedure is required; children (unemancipated minors) cannot be independent decision-makers. While children can register to be donors (usually at driver permit age or earlier), the final decision for donation remains with the parents until legal adulthood. ***(Visit each state's Uniform Anatomical Gift Act [UAGA] for specifics.)***
- Recovery of smaller organs from pediatric donors requires surgical expertise.

Figure 9-4. The number of pediatric deceased donors in comparison to adult deceased donors through 2023[2]

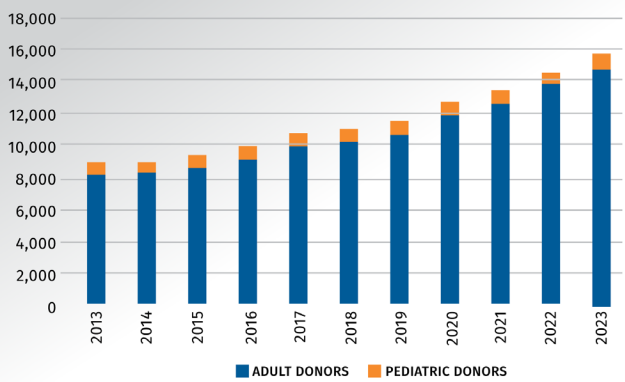
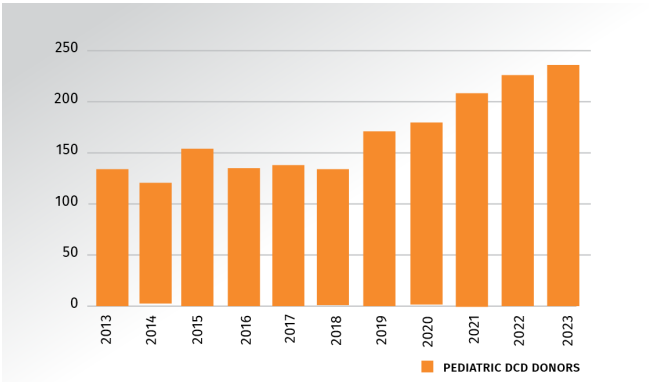


Figure 9-5. The number of pediatric DCD donors through 2023[2]



Model Elements for Pediatric DCD Within the Hospital

Identification of a Potential Pediatric DCD Candidate

Notification of the OPO is requred for potential pediatric organ donation candidates when clinical triggers are met.[4,5] Clinical triggers for adults and children are similar. The OPO should be notified as soon as possible when a patient meets one of these clinical triggers:[6]

- Requires mechanical ventilation; AND
- Exhibits clinical findings consistent with a Glasgow Coma Score that is less than or equal to a mutually-agreed-upon threshold; or
- Loss of a mutually-agreed-upon number of brainstem reflexes; or
- MD/DOs are evaluating a diagnosis of BD/DNC; or
- An MD/DO has ordered that life-sustaining therapies be withdrawn, pursuant to the family's decision.
- A family who is beginning discussions of withdrawal of life-sustaining treatments (WLST)
- A family who initiates a conversation about donation.

Notification to the OPO for evaluation for organ donation should occur for every patient meeting one of the triggers listed above, regardless of their medical condition. After discussion with the hospital patient care team and after reviewing

the patient's complete medical history and current medical course *(see Essential 3)*, the OPO will determine medical suitability for donation. Medical suitability for donation will vary by case, situation, and the patient's condition, which may change over time. The utilization of organs will continue to evolve with medical advances in organ donation. The earlier the hospital notifies the OPO, the more time the OPO has to prepare for the donation conversation should the patient deteriorate to BD/DNC or the family makes the decision to pursue WLST *(see Essential 2)*.

It is important to understand that notifying the OPO when a patient meets clinical triggers does not mean that the hospital patient care team has given up hope of survival for the patient. Many patients who meet clinical triggers for OPO notification eventually improve and survive. There is sometimes a misconception that any notification to the OPO means that the family will be faced with the donation conversation by the OPO; anecdotally, this misconception has led to apprehension about notifying the OPO of a patient's meeting clinical triggers. This is not the purpose of the OPO notification process. The early notification to the OPO, which is commonly referred to by the OPO as "a referral", allows the OPO to partner with the hospital patient care team to better prepare for the family and ensure that in situations where the patient may not survive, the opportunity for donation is preserved.

Benefits of an Automated Notification Process

One way to facilitate a timely notification to the OPO is to institute an automated OPO-notification process through the EHR as well as to provide remote EHR access to the OPO. This process will assist the hospital to remain in compliance with the Centers for Medicare & Medicaid Services (CMS) Conditions of Participation (CoPs)[4,5] *(see Essential 1)*. It will also increase cost-effectiveness by reducing hospital staff time, errors, length of donation cases, as well as the use of intensive care resources. Additionally, it can increase staff satisfaction and allow them to focus on their patients.[7]

Patient Management

Children are best cared for in a pediatric facility with a hospital patient care team that understands the unique needs of children and their families. Children can be medically treated and survive illness despite OPO notification when clinical triggers are met. Additionally, preserving the opportunity of donation through continued medical management provides a family who chooses to donate with a sense of hope, purpose, and comfort in their loss,[1] and it provides a greater chance for a life-saving transplant to those children in need. It is important to note that preserving the opportunity for donation does not conflict with best patient care, as the medical interventions required to preserve the opportunity for donation are the same measures required to give a patient the greatest chance of survival.

In addition, it is best to have a well-established hospital DCD policy and procedure that outlines many of the specifics listed below. See prior Essentials for more information on identification and notification of the potential DCD donor *(Essential 2)*, evaluation of the DCD potential *(Essential 3)*, the donation conversation *(Essential 4)*, and donor management of the DCD donor *(Essential 5)*.

Preserving the opportunity for donation means:

- Medical treatment should continue until decisions regarding EOL care, including the plan for donation, are established.
- Discussions between the hospital patient care team and the OPO regarding donation potential should occur and a collaborative plan made in order to serve the family in the best way possible.
- An established plan of care with treatment goals should be determined for children at EOL.
- Involvement of a Palliative Care specialist or team is encouraged and recommended.

Evaluation of Pediatric DCD Potential

Potential criteria for pediatric DCD organ utilization may vary over time with evolution in modern medicine and technology. It may also vary based on specific recipient needs and surgeon practices. Enhanced hospital collaboration with their OPO is critically important, as OPO staff are aware of the most current donation criteria and needs.

The trajectory of organ function will change during the course of hospitalization, depending on medical management.

In the optimal process, the patient care team will continue medical treatment of the patient to preserve the opportunity for donation, even in situations where there appears to be little to no chance of meaningful recovery. During the same time, the care team holds a collaborative discussion with the OPO to determine donation opportunities as an integral part of end-of-life conversations with the family. There may be circumstances where the patient will not be a potential donor candidate based on specifics of the individual case. This information is best provided by the OPO after a thorough review of the specific patient data. It may assist the hospital patient care team in the discussions they have with the family as well.

In most DCD cases the kidneys and liver will be recovered for transplant; if they appear viable, the lungs and heart may also be recovered for transplantation. In addition, certain developing technologies are increasing the likelihood of additional organs being recovered and transplanted from DCD donors. *(See the Introduction to and Background on Organ Donation & Transplantation and Essential 7 for more details.)*

The hospital should notify the Medical Examiner or Coroner (ME/C) of the pending death per their policy. The OPO staff will ensure that communication and collaboration with the (ME/C) occurs to collaborate for donation release. According to the National Association of Medical Examiners (NAME),[8] the collaboration between ME/Cs and OPO is encouraged to allow for both organ recovery and forensic investigations; however, NAME does not endorse or promote any specific protocols. In some states, the UAGA will have specific directives for the role of the ME/Cs. *(See Essential 8 and review each state's UAGA for these specifics.)*

Authorization for Donation

According to the Report of a National Conference on Donation after Cardiac Death[9] and the American Academy of Pediatrics,[10] in which ethical considerations and recommendations for DCD were established, authorization for donation should only occur after a decision to WLST has been established or when a family initiates conversations about donation.

It is vital to remember that the donation decision could provide the family with a sense of hope, purpose, and comfort.[1] The presentation of the donation potential should therefore be carefully and sensitively planned and presented. The worst-case scenario is a family regretting their final decision. Unfortunately, every OPO has stories of families who have regretted their decision to decline donation. Those families then experience that added loss in addition to the loss of their family member.

Preparation for the donation conversation should include the following:

- A collaborative approach to the donation conversation involving both the physician and the OPO has been demonstrated to enhance authorization rates.[14,15] While CMS designates an OPO representative or a trained designated requestor as the one to initiate the request for donation to the patient's family,[11,12] it is highly recommended that the OPO and hospital patient care team collaborate to determine the best time, best place, and best manner for introducing the donation opportunity to the grieving parents or family.[13]
  - Everyone's role in the donation conversation should be established. For example, the physician discusses the medical details and diagnosis and transitions to the OPO coordinator (typically the OPO family care coordinator), who introduces donation and helps to address the donation-related questions.
- In complex cases and family dynamics, some institutions may require involvement of the ethics committee.

- Further elements of the preparation should include:
  - Establishing that the family's basic human needs have been met (e.g., food, hydration, rest). Sometimes it might be necessary to ensure those needs are met as best as possible prior to the EOL and donation conversation.
  - Honoring the family's religious needs and providing spiritual support as desired by the family.
  - Determining the family's preferred language and the need for using a medical interpreter. (Avoid using family members for interpreting.)
  - Identifying the family's cultural dynamics and cultural decision-maker. The cultural decision-maker may not be the same person as the legal decision-maker in the UAGA hierarchy. It is very important to build trust with the cultural decision-maker and include them in the family conversations, as they will be the ones that influence the family's decision.
  - Establishing that the decision-maker according to the UAGA hierarchy of decision-makers is present and if not, making documented efforts to locate them.

(See Essential 4 for more details about the donation conversation.)

Content of donation conversation with the parents and family may include:

- The process of WLST:
  - Where WLST will occur.
  - Who will be involved with the WLST.
  - Provision of comfort measures, including medications and ongoing patient monitoring.
  - The need for any additional procedures for the purposes of organ recovery.
  - What happens when circulatory death occurs, i.e., if WLST occurred in the ICU or alternate area, the patient will immediately be moved to the OR suite; if WLST occurred in the OR, the family will have to immediately leave the OR suite.

- WLST may be delayed if donation is authorized:
  - Specific laboratory, imaging studies, and procedures may be required to determine viability for donation and recovery of organs.

- Process to determine death, including procedures that might be required to meet current legal standards:
  - Antemortem medication administration and interventions that may be undertaken for the purpose of organ recovery.
  - Arterial cannulation to determine circulatory death.
  - Which organs may potentially be viable for recovery.
  - Organ recovery or transplantation cannot be guaranteed. There may be unknown factors that are not evident during the donor management phase (e.g., the patient may take too long to die or some previously undetected disease processes is found).
  - If death does not occur within the time frame needed for organ viability for transplant, organ donation will no longer be an option. However, tissue and eye donation may still be a possibility after death.
  - What would be the provisions for ongoing care, if the organ donation process is abandoned.
  - The plan for EOL care if donation is not authorized.
  - That authorization for donation can be withdrawn at any time prior to incision for organ recovery or before the recipient has undergone invasive procedures in preparation for transplant. ***(See each state's UAGA for further details.)***

Family declines donation:

If the family *declines* organ donation, ongoing care in the ICU or other hospital pre-designated area (i.e., Palliative Care area etc.) is provided for the patient and family and the usual WLST and EOL protocols will be followed.

Donor Management of a Pediatric DCD Donor

Unlike BD/DNC donor cases, potential DCD candidates require ongoing medical management prior to the death of the patient. The patient remains under the care of the primary hospital patient care team with all orders being written by that team. The OPO will collaborate with the hospital patient care team to communicate any donation specific needs to optimize and steward the gift of donation *(see Essential 5 for specific needs)*. A practice that can help to facilitate a smoother donor management process is to institute a DCD donor management order set. Having a standard DCD order set improves hospital efficiency and ensures a more timely distribution of orders to the various ancillary departments.

Donor patients require many tests, procedures and extensive nursing resources, and should be staffed appropriately to provide optimal and efficient patient care.

Pre-mortem interventions are necessary for donation purposes. Those interventions include line insertions, potential procedures to evaluate organ viability, e.g., laboratory tests, imaging (chest x-rays and computerized tomography), bronchoscopy, and drug administration, in particular high dose of Heparin may be administered during the WLST. Heparin is administered to prevent micro-emboli/thrombi formation and protect the organs during the dying process. While these interventions do not serve to benefit the patient, they may pose a risk to the patient, therefore, most states require that the hospital patient care team obtain an informed consent from the family for these interventions.

Preparation for WLST and DCD

Preparing for WLST at EOL requires extensive collaboration between the family, the hospital patient care team, the OPO recovery team, and OR staff. Other specialists such as Palliative Care and spiritual support become important for families and the medical team. Providing relief of pain and suffering while making the patient comfortable requires administration of analgesic and sedative medications. The family should be prepared for events that are anticipated once extubation occurs. Child life specialists can be helpful to support siblings during this process.

Location of WLST

The location of where WLST will occur must be determined. Appropriate support services must be available if WLST will occur outside of the ICU. An OPO coordinator, usually the OPO family care coordinator who is specialized in caring for grieving families, will remain with the family during WLST and will escort the family through the logistic processes; however, the nurse caring for the patient and a physician will also need to be present to manage the WLST process. It would be an ethical conflict for the OPO staff or anyone from the transplant recovery team to administer comfort care or participate in the process, hence, the clinical care of the patient must remain under the hospital patient care team's purview.

If WLST is to occur outside of the ICU, provisions for ongoing comfort care must be arranged if the child does not die within the specified time period for DCD. Ongoing comfort care may not require an ICU bed as no aggressive measures will be reinstituted. However, comfort care continuity with the same nurses may be helpful to the family's grief. *(See Essential 7 for more details.)*

Preparing the OR

Collaboration with the OR team is essential. The OPO coordinators will prepare and educate the OR team on the DCD process. It is important to recognize the emotional impact to the OR team of witnessing WLST occuring in the OR, particularly when the donor is a child. Detailed communication about the WLST and EOL plan that will be conducted in the OR must occur to ensure all necessary medications are available for comfort care and that everyone understands their role. The plan for how to appropriately monitor the patient to determine circulatory arrest must be made with the declaring physician. *(See Essential 7 for more details.)*

Coordinating the OR availability can be a challenge. The OPO coordinator has to coordinate the schedules of all of the recovering transplant surgeons with the hospital's OR availability. If the OR has limited availability, this can add time to the process, delay the WLST, prolong the need for an ICU bed and staff, and potentially risk the loss of organ viability. It is recommended that the hospitals consider categorizing donor cases as "urgent cases" to facilitate the expedited scheduling of OR times.

Safeguarding against potential conflicts of interest

- No one from the OPO recovery team or transplant recovery team can declare the death of the patient. The declaration of death must be performed by a hospital physician or physician designee (if allowed by state law and hospital policy).
- Comfort care must be administered by the physician or a physician designee and nurse as per usual comfort care measures as for all EOL care patients. DCD patients should not be given different dosages than what would be normal practice.
- The transplant recovery teams must be present at the hospital and ready for surgery, but should be physically separated from the patient during the dying process and until death has been declared *(see Essential 7).*

Determination of Death

Once WLST has occurred, the patient is monitored for loss of pulse pressure (mechanical asystole). It is ideal to have an arterial line in place to continuously monitor blood pressure. If an arterial line is not being utilized, echocardiography demonstrating that there is no flow across the aortic valve is a reasonable alternative to determine loss of pulse pressure. Palpation of the pulse without arterial waveform documentation or echocardiography is much less reliable and not recommended. Electrical activity of the heart may continue after loss of pulse pressure and does not indicate circulation, meaning that the sole use of an EKG is not adequate to make determination of death[16,17] *(see Essential 7 for more details)*.

- Once loss of pulse pressure occurs, the child is monitored for return of spontaneous circulation (autoresuscitation).
- The "observation period" or "hands-off period" should be no less than two minutes and could be up to five minutes, depending on hospital and OPO guidelines or policy. The typical "hands-off period" is 5 minutes.[25]
- If there is no return of spontaneous circulation, the child is pronounced dead. The death will be reported to the ME/C if required. Assuming ME/C release, the recovery of organs can follow.

The waiting period from WLST until death occurs will affect organ recovery and be determined by:

- Medical viability of the organs, the transplant surgeon, and is organ dependent. (For example, the transplant surgeons may deem a liver to no longer be medically viable beyond a specific warm ischemic time [WIT]. For kidneys, that WIT may be quite different.)
- If organ perfusion and preservation techniques and devices are utilized, time frames may also change. The time periods will be determined by each transplant recovery team prior to the organ recovery and will be shared with the hospital personnel participating in these situations on a case-by-case basis.
- Length of WIT and cold ischemic time (CIT). *(See Essential 7 for more details.)*

DCD Organ Recovery

Once circulatory death has occurred in accordance with hospital and state regulations, organ recovery can occur. If WLST occurred in an alternate location to the OR suite, the patient will be moved to the operating suite during the "observation period" or "hands-off period." If WLST occurs in the operating suite, the transplant recovery teams enter the OR suite after circulatory death is determined and the family has left the suite; the surgeons will then begin their organ recovery process. The OPO will leave a copy of the operative note for the patient's chart with the OR nurse.

Following organ recovery

Some families will remain in a holding area during the organ recovery process. Following organ recovery, the family should be allowed time to grieve and spend time with their child. Appropriate emotional support should be provided for the family. Typically, the OPO's family care coordinator will remain with the family. The hospital may consider having additional hospital family support available.

It is beneficial for the hospital patient care team and OPO staff to conduct an after action review to evaluate for any deficiencies in the process for all involved and identify future potential improvements, as well as to acknowledge those processes that worked well and should be incorporated in future cases. *(See Essential 8 for more details.)*

Neonatal DCD

An emerging area for pediatric DCD is the neonatal population.[18] As with adult and pediatric patients, the majority of deaths that occur in neonatal ICU's follow WLST and circulatory death. There has been success with neonatal organ recovery, specifically en bloc kidney transplantation[19] and liver cell transfusion therapy.[20] More recently, neonatal heart recovery and transplantation are occurring in a very small population of patients.[21]

Neonatal DCD comes with significant challenges that need to be addressed:

- Determination of death can be challenging in neonates.
- Size and weight constraints limit the allocation of organs for transplantation.
- Technical expertise of organ recovery and transplantation is required.

Considerations for neonatal DCD:

- Neurologic death in neonates is a rare event.
  - Neurologic death can be declared in term infants (37 weeks gestational age and older).
- Neonates, like older children and adults, can be tissue and eye donors.
  - Recovery of heart valves serves an important source of tissue for correction of complex congenital heart disease.
- Anencephalic infants could potentially be organ donors.[22,23]
  - BD/DNC cannot be declared in anencephalic infants. These infants would therefore be DCD donors and organs are recovered following circulatory death.
  - These patients require intubation followed by extubation at a later time, once plans for EOL and organ recovery have been coordinated.

Ethical Considerations

Pediatric DCD is a medically supported and ethically viable pathway to recover organs from children. Pediatric DCD is supported by the American Academy of Pediatrics[24] and other medical organizations.

Important ethical considerations for pediatric DCD:

- Organ donation should be routinely included into EOL care.
- The decision to donate organs from children is a parent or legal authorizing party (LAP) decision. Each state's UAGA outlines the order of potential decision-makers for donation.
- The first and foremost consideration is the comfort provided to the patient at EOL. Organ recovery can never take precedence over patient care. Comfort care medications should follow normal hospital protocols.
- WLST cannot be influenced by donation. The decision for donation must occur following the decision to pursue WLST.
- Antemortem interventions are ethically acceptable to preserve the opportunity for donation and to facilitate the stewardship of the gift. However, it is important to note that these interventions:
  - Provide no benefit to the potential donor;
  - Should not be conducted to hasten death;
  - Should not have more risk to the patient than routine care in the ICU.
  - Require parental or guardian consent.
- If DCD cannot be accomplished because of religious or cultural beliefs, institutions should provide a pathway to honor the family's wishes for donation.
- The OPO recovery team and transplant recovery team cannot be involved with the decision to WLST, nor can they be involved in administering comfort care or determining the death of the patient. They can be involved with providing specific information about the entire DCD process and in obtaining authorization for donation.
- Provisions for continued comfort care must be made in case the pediatric DCD candidate does not die within the specified time period for organ recovery to occur.

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10 *Essential*

Continuous Quality Improvement Activities

Strategies to implement a continuous quality improvement (CQI) process through critical assessment, process improvement activities, and quality practices to drive improvement in the hospital's organ, eye, and tissue donation program

FACT-FINDING QUESTIONS

Hospital leadership should ask:

1. What is our organ donation rate? What percentage of our organ donors are donation after circulatory death (DCD)?
2. Are all of the policies and procedures mentioned in all of the prior Essentials in place, and do we have a process for measuring compliance in following those policies? Do we have a regular review process for the currency of those policies?
3. How often are we reviewing data for process improvement opportunities with our OPO coordinator?
4. How do we align with national benchmarks?
5. How do we compare to our peers?
6. To improve our donation outcomes, have we conducted a quality assessment utilizing recognized quality tools such as Plan-Do-Study-Act (PDSA), Root Cause Analysis (RCA) and Failure Mode Effects and Criticality Analysis (FMECA)?

KEY POINTS

Hospital leadership should remember:

1. Developing a continuous quality improvement (CQI) process for donation practices and pathways within the hospital will ensure safe, efficient, and ethical donation practices.
2. A robust review of the donation process – from identification of a potential donor until recovery or non-recovery of organs or donation decline, such as with a detailed After Action Review – will result in the recognition of areas in the process requiring improvement.
3. Interweaving the review of donation processes into various meetings as part of the hospital's key performance areas will ensure a proactive refinement of the donation process and prevent donation from being an after-thought.
4. Developing a dedicated Donor Council or Donation Committee with multidisciplinary representation (including physicians) and in partnership with the OPO Hospital Development (HD) coordinator provides for an ongoing forum for the continued development and refinement of the hospital's donation program.

Model Elements for DCD Practice Within the Hospital

Implementing a CQI Process

Continuous quality improvement (CQI) in Donation after Circulatory Death (DCD) is essential to ensure the safety, efficacy, and ethical integrity of the process and ultimately leads to better outcomes for both donation and transplantation. Here are some key aspects of implementing a CQI process in DCD donation:

KEY ASPECTS	IMPLEMENTATION
Data Collection and Analysis	Define key performance indicators (KPIs) to assess the effectiveness and efficiency of the DCD process and establish robust systems for collecting and analyzing data related to ■ The DCD processes ■ The DCD outcomes This data should encompass both quantitative metrics (e.g., donor demographics, organ function) and qualitative feedback (e.g., staff experiences, family satisfaction). *(See the following data section for more details.)*
Quality Assurance Protocols	Develop and implement standardized protocols for every step of the DCD organ donation process, from donor identification to organ recovery and transplantation. These protocols should align with established best practices and regulatory requirements *(see Essential 1)*.
Staff Training and Education	Ensure that all personnel involved in the DCD process receive comprehensive training on relevant protocols, procedures, and ethical considerations. Continuous education programs should be implemented to keep staff updated on the latest advancements and best practices in organ donation and transplantation.
Risk Management	Identify potential risks and complications associated with the DCD process and develop strategies to mitigate them. This may involve regular reviews of adverse events, near misses, and critical incidents, with a focus on learning from these experiences to improve future practices.
Stakeholder Engagement	Foster collaboration and communication among all stakeholders involved in the DCD process, including healthcare providers, OPOs, transplant teams, donor families, and regulatory agencies. Encourage feedback and input from stakeholders to identify areas for improvement and innovation. This can be accomplished through After Action Reviews.
Ethical Considerations	Maintain a strong focus on ethical principles throughout the DCD process, including respect for donor autonomy, beneficence, non-maleficence, and justice. Regular ethical review committee meetings or consultations can help ensure that practices align with ethical standards and societal values.
Continuous Review and Adaptation	Regularly review processes and outcomes and be prepared to adapt practices based on emerging evidence, technological advancements, and changes in regulatory requirements or societal expectations.

Figure 10-1.

Strategies for Engagement and Communication for CQI

For CQI to be effective teamwork, timelines, and proactivity are key. Without implementation of these principles, CQI's challenges can be difficult to overcome.[1]

Challenges to Implementing a CQI Process

Prior to being able to identify how best to develop teamwork and timelines, it is important to identify the challenges that can present themselves with a CQI process:[2]

- Strategic challenges:
  - Setting inappropriate goals.
  - Inadequate planning.
- Cultural challenges:
  - Fear of punishment or blame.
  - Resistance or reluctance to quality-focused culture.
- Technical or structural challenges:
  - Related to the systems, processes, or organizational structure.

Activities to Promote Teamwork, Timelines and Proactivity

Activities that will promote teamwork between the hospital and the OPO, facilitate the identification of timelines, and promote proactivity include:

1. Yearly – ideally twice a year – meetings between the OPO HD coordinator, their OPO leadership, and the hospital's executive leadership to review the hospital's data and alignment with meeting regulatory requirements as well as their service to the community with regard to effective donation processes.
2. Regular – ideally monthly – meetings to review data, discuss processes that are working for kudos and reinforcement, identify areas that are not working, and discuss strategies for process improvement. Meetings should include the OPO HD coordinator and the hospital's middle management involved in the organ donation process (e.g., managers and directors from critical care units [CCUs], the emergency department [ED], the operating room [OR], and quality department).
3. If the hospital has a multi-disciplinary Donor Council or Donation Committee that includes the OPO HD coordinator, this group could provide a lot of value in fostering an ongoing quality assessment of the donation processes within the hospital and communication with the OPO. It is important to note that the most effective Donor Councils or Donation Committees involve several physicians from different specialties.
4. If the hospital does not have a Donor Council or Donation Committee, it can be valuable to incorporate a donation process review by the OPO HD coordinator with and during the hospital's monthly critical or quality care rounds where other key performance indicators for the critical care areas are reviewed.
5. Monthly or quarterly participation of the OPO HD coordinator in trauma meetings to review trauma related data and donation processes.
6. Participation of the OPO HD coordinator in morbidity and mortality rounds in the hospital, in particular in cases where donation was a potential or occurred.
7. Regular participation of the OPO HD coordinator in physician meetings dedicated to improving processes, particularly with physician groups that may see donation cases.

Donation should be interwoven into any hospital meeting where processes occurring in the CCUs, ED, or OR are discussed. This ensures it is considered as a standard area requiring ongoing quality assessment and process improvement. Additionally, it should be integrated into meetings where end-of-life (EOL) care processes are reviewed. Involvement of an OPO representative, typically the OPO HD coordinator, is important to ensure an experienced donation professional can facilitate the answering of donation-related questions.

Donation Related Data

Typically, the OPO HD coordinator shares donation-specific data with the hospital on a monthly basis. These data reports are commonly referred to as dashboards or scorecards. If the hospital has limited donation activities, these reports may be provided quarterly. It is advisable for hospital leadership to engage in discussions with the OPO HD coordinator to identify any additional data requirements beyond the existing provisions. Both process and outcome metrics can provide helpful insights into the areas of strengths and opportunities. The more granular the data, the greater the chance of pinpointing the specific steps in the process that might need to be improved upon. It is also valuable to utilize the data to give kudos and recognition of excellent processes and actions.

Metrics that relate to measuring the DCD donation process could include:

MEASURE	DESCRIPTION	SUGGESTONS
Timely notifications	Timely notification to the OPO of each potential DCD donor	Consider monitoring the impact the timeliness had on ■ Whether the opportunity for donation was maintained clinically, ■ How it relates to whether the family authorized donation Breakdown the timeliness of calls by department, possibly by service line, by type of patient, etc.
Maintaining the opportunity for donation	Was the opportunity for donation preserved by the hospital patient care team?	Measuring Donor Management Goals (DMGs) met at time of authorization is an example. *(See Essential 5 for more details about DMGs.)*
Donation Conversation & Authorization process	How well was the donation conversation managed with the legal next of kin / legal authorizing party (LNOK/LAP)?	■ Was the process for the donation conversation followed by having the OPO coordinator or the hospital's designated requestor (if relevant) lead the conversation? ■ Was a huddle conducted between the OPO team and the hospital patient care team to determine how best to collaborate and customize the approach for the donation conversation for each family? ■ Was the appropriate LNOK/LAP presented with the donation opportunity? ■ Was respect and sensitivity demonstrated toward the LNOK/LAP in relation to their cultural and religious needs and practices as per Centers for Medicare & Medicaid Services (CMS) regulations?[2,3] ■ Was the Uniform Anatomical Gift Act (UAGA)[4] followed? ■ Was the registered donor's decision honored? If not, why not and was that in alignment with the UAGA? ■ If the patient was not identified or no family could be found, was the UAGA followed? ■ If a hospital does not support DCD and does not have a policy, how many families solely declined DCD due to the need to transfer? *(See Essential 4 for more details about the donation conversation and see Essential 1 for more details about CMS regulations and the UAGA.)*

MEASURE	DESCRIPTION	SUGGESTONS
Organ recovery process	How well did the process work to facilitate all aspects needed for organ recovery?	■ Monitor OR scheduling processes (e.g., at what time of the day are the cases usually occurring, how much time is added to donation cases due to OR scheduling, how often are donation cases delayed, how many times do families withdraw authorization due to delays in OR times?) ■ Monitor the death declaration process, e.g., were there any challenges in identifying a declaring physician or physician designee? Did the identification cause any delays in the case? ■ Consider any other organ recovery related processes that could be measured.
Perception of process	How was the process perceived by all involved?	■ Consider measuring family satisfaction with the process? ■ Consider measuring staff (hospital patient care team, OPO recovery team, and transplant recovery team) satisfaction with the process?
Missed DCD opportunities	How many DCD potentials were not identified and the OPO was not notified?	■ Consider breaking down the missed opportunities by demographics, diagnosis, unit, service line, etc., to identify potential trends and education and process improvement opportunities.

Figure 10-2

Metrics that relate to measuring the DCD donation outcomes could include:

MEASURE	DESCRIPTION	SUGGESTONS
Donors	Number of actual donors	■ Consider trending the number of donors ■ Breakdown details of the donors, e.g., demographics, registered vs. non-registered donors, by units, by service lines, by diagnosis, etc.
Declines	Number of declines for donation	■ In addition to the process measures listed in Figure 10-2, track decline reasons. ■ Consider whether the decline reasons were preventable and actionable.
Donation rates	Percentage of potential donors converted to be actual donors	■ Identify the definition of a potential donor utilized in the calculation. ■ If the CMS definition of a potential donor** is utilized, consider comparing the donation rate to what it would have been had it been based only on ventilated potential donors. ■ Review the donation rate trends over a period of time. ■ Identify how the hospital is benchmarking in comparison to peer hospitals of similar make-up.

MEASURE	DESCRIPTION	SUGGESTONS
Authorized Not Recovered (ANR)	Patients that did not become donors despite authorization for donation.	■ If donation did not proceed despite authorization for donation, monitor the reasons and their frequencies. What could have been prevented?
Organ utilization	The number of organs utilized for transplantation	■ Review the organs recovered for transplant versus those that were actually transplanted. ■ Compare the number of organs transplanted in relation to the number of organs that could have been transplanted. ■ Identify reasons for non-utilization of organs, was it something that is preventable?

Figure 10-3

**CMS definition of a potential donor: Inpatient deaths among patients 75 years old or younger with a primary cause of death that is consistent with organ donation (based on death certificates).[5]

Sites for additional data mining can be found in the resource section below.

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5. Organ Procurement Organization (OPO) Conditions for Coverage Final Rule: Revisions to Outcome Measures for OPOs CMS-3380-F | CMS. www.cms.gov. Published November 20, 2020. https://www.cms.gov/newsroom/fact-sheets/organ-procurement-organization-opo-conditions-coverage-final-rule-revisions-outcome-measures-opos

RESOURCES:

1. Review each state's UAGA/RUAGA: *https://www.organdonationalliance.org/resources/state-uaga-legislation-organ-registry-info/*

1. The Alliance Hospital Executive Insight Series: *https://www.organdonationalliance.org/insights/hospital-executive-insights/*

2. HHS Continuous Quality Improvement Tip Sheet.; 2021. *https://teenpregnancy.acf.hhs.gov/sites/default/files/resource-files/CQI%2520Tip%2520Sheet%2520Updated_02.22.21_Final.Images%5B3%5D.pdf*

3. Enable the OPTN to collect donor potential data directly. UNOS. *https://unos.org/transplant/improve-organ-donation-and-transplant-system/automated-donor-referral/#:~:text=The%20timing%20of%20referrals%20to%20OPOs%20is%20critical*

4. UNOS Data & Data Trends: *https://unos.org/data/*

5. OPTN National Data: *https://optn.transplant.hrsa.gov/data/view-data-reports/national-data/* (State and Transplant Center specific data can also be obtained on this site)

6. A wide range of donation and transplantation related national data is available on the Scientific Registry of Transplant Recipients (SRTR): *https://srtr.org/*

7. OPO-specific reports can be located on the SRTR site. Historically, hospital-specific data could be found on each OPO's report. However, as required reporting of outcome measures for hospitals by CMS is unclear, the reports for hospitals have temporarily been removed. (Note: this report is always six months behind and is issued twice per year): *https://srtr.org/reports/opo-specific-reports/interactive-report/*

8. Some hospital- and OPO-specific data can be found in the OPTN reports provided to the donation and transplantation community of practice (note, this report is always 3 months behind due to pending finalizations of medical record reviews): *https://www.organdonationalliance.org/resources/optn-reports/*

Appendices

Example of An Team Effective Huddle Process

Huddles are not one-time events. There are various points in time when it would be valuable to re-group and huddle for the next step. For example:

TIME	PARTICIPANTS	CONVERSATION POINTS:
During initial donation evaluation	■ OPO coordinator ■ Nurse ■ Patient's attending ■ Consulting physicians ■ Unit leadership ■ Supportive staff actively involved with patient and family, e.g., social worker, spiritual care	■ Consider monitoring the impact the timeliness had on ■ Whether the opportunity for donation was maintained clinically, ■ How it relates to whether the family authorized donation ■ Breakdown the timeliness of calls by department, possibly by service line, by type of patient, etc.
During OPO check-ins	■ OPO coordinator ■ Nurse ■ Patient's attending ■ Consulting physicians ■ Unit leadership ■ Supportive staff actively involved with patient and family, e.g., social worker, spiritual care	■ Updates on the current status of the patient and plan for continued treatment. ■ Any updates on the family and possible clues that they may be considering WLST. ■ Reminders of suggested bridging or transition verbiage for the hospital patient care team, should there be a need to bridge time for the donation conversation.
Prior to the physician's poor prognosis discussion with the family	■ OPO coordinator ■ Nurse ■ Patient's attending ■ Unit leadership ■ Supportive staff actively involved with patient and family, e.g., social worker, spiritual care	■ Any updates on details about the family and identification of the legal next of kin / legal authorizing party (LNOK/LAP) according to the UAGA, as well as the patient's donor registration status. ■ Discuss plan for discussion of poor prognosis and plan for WLST and how to transition to the OPO for the donation conversation if the family expresses desire to pursue WLST. ■ Identification for the need of an interpreter based on the family's preferred primary language. ■ Discussion of best location and time for this conversation.

TIME	PARTICIPANTS	CONVERSATION POINTS:
After the physician's poor prognosis discussion with the family	■ OPO coordinator ■ Nurse ■ Patient's attending ■ Unit leadership (if needed) ■ Supportive staff actively involved with patient and family, e.g., social worker, spiritual care	■ Discuss the outcome of the conversation and the family's current mindset. ■ In the case of a brain death (BD) discussion, identify the family's understanding of BD, the finality and the death of their loved one and strategize the introduction of the OPO coordinator to the family. ■ In WLST situations, assess family readiness to move toward WLST. ■ Was donation initiated by the family? Are they asking end of life care related questions? ■ Would it be in the best interest for the OPO to be introduced to the family to be available to address donation related questions. ■ Identify if a collaborative donation conversation involving the physician (or alternate hospital patient care team member) and OPO coordinator would be beneficial for the family. ■ If a collaborative approach is utilized, strategize each participant's role in the conversation, e.g., physician or alternate will address medical and hospital-related questions, the OPO coordinator will address donation-related questions. ■ If the patient is a registered donor, it is vital for the OPO coordinator and hospital patient care team to strategize on how best to present donation and support the family through the next steps, while honoring the patient's decision.
After the family has made a decision for donation	■ OPO coordinator ■ Nurse ■ Patient's attending ■ Unit leadership (if needed) ■ Supportive staff actively involved with patient and family, e.g., social worker, spiritual care	■ OPO coordinator will inform the hospital patient care team of the outcome of the donation conversation and / or any further needs expressed by the family. ■ If the family authorizes donation, the OPO coordinator will communicate any requests from the family and will provide a copy of the authorization form for the patient's chart. ■ The OPO coordinator should communicate to the hospital patient care team what to expect during donor management and organ recovery. ■ If the family declined donation, the OPO coordinator will inform the hospital patient care team, and the nurse or social worker, should place a note in the patient's chart that donation was offered and that the family declined donation.

Resources

Terminology and Data Reference

https://www.organdonationalliance.org/resources/terminology-data-references/