

The DCD Revolution: Rewriting the Donor Pool

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Made for *this*™



Disclosures

- None

- **It takes two to make a transplant**

National Academy of Science, Engineering and Medicine

- National Academy of Science
- Established in 1863 to advise the nation
- Private, nongovernmental institution of experts in science and technology
- National Academy of Engineering added in late 1964
- National Academy of Medicine added in 1972
- First as the Institute of Medicine (IoM)
- NASEM



Organ Procurement and Transplantation Network and United Network for Organ Sharing

OPTN

Federally mandated network

Manages the wait list – matches donors to recipients

Maintains the database of all transplant related events

Establishes policies, best practices

Monitors adherence to policies

Provides support to families of donors and recipients

Educates health professionals

Educates the public

UNOS

Non-profit organization that manages the OPTN

Awarded the first contract in 1986

Only organization to manage

Under increasing scrutiny

- Inequity
- Discarded Organs
- Lack of Performance Metrics to Compare
- Lack of Accountability

NASEM Report 2022

Realizing the Promise of Equity in the Organ Transplantation System

- Achieve equity in the U.S. organ transplantation system in the next five years
- Develop national performance goals for the U.S. organ transplantation system
- Develop new performance metrics and a dashboard of standardized, consensus-based metrics to compare performance of donor hospitals, OPOs, and transplant centers
- Establish Donor Care Units (DCUs) for each OPO

The Status Quo

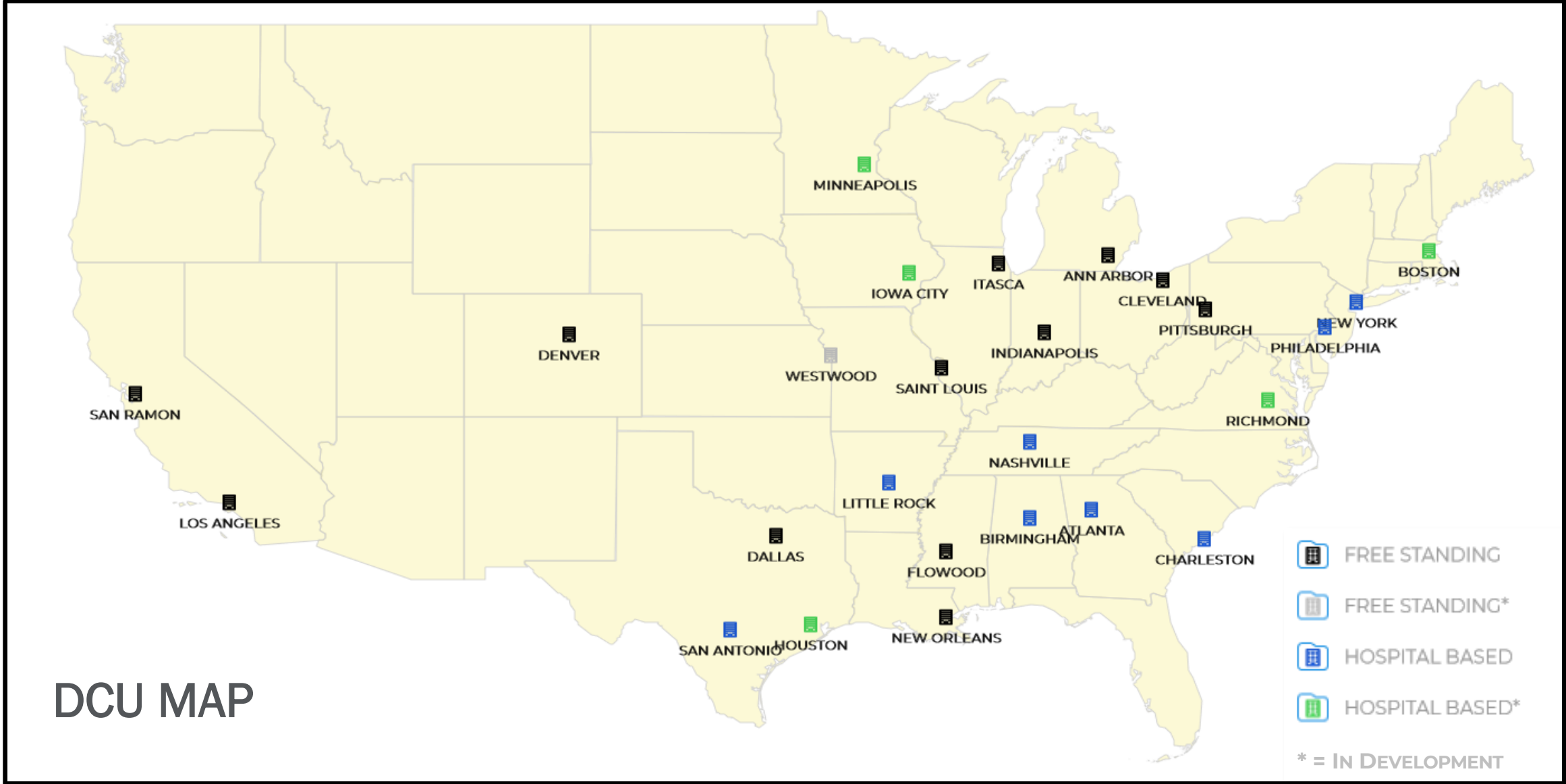
- Patient is declared brain dead
- Organ Procurement Organization
 - (LiveOnNY) is called
- Transplant coordinator sent to the bedside
- Dependent upon the hospital/ housestaff for all orders, testing, and interventions
- Disagreements regarding management
- Limited resources to care for non-living patients
- Advanced diagnostics may not be available
- OR availability limited by staff, traumas, and other emergency cases
- Organ quality is suboptimal
- Potentially transplantable organs are lost
- No consistency or efficiency

The Solution: Donor Care Units

GOAL: Maximize each person's gift

- 1 – Increase quantity of organs
- 2 – Increase quality of organs
- 3 – One stop, full-service recovery center
- 4 – Encourage a positive culture of organ donation
- 5 – Financial cost/benefit





Evidence of improved outcomes using a DCU

- Consistent care
- Increased efficiency
- Benefits to donor family
- Benefit to donor hospital
- Research on donor management
- More daytime organ recovery
- Lower cost

- Greater organ yield = Organs transplanted per donor = OTPD

Evidence of improved outcomes

> Clin Transplant. 2021 Mar;35(3):e14178. doi: 10.1111/ctr.14178. Epub 2020 Dec 14.

Donor management using a specialized donor care facility is associated with higher organ utilization from drug overdose donors

Christian Corbin Frye ¹, Jason M Gauthier ¹, Amit Bery ², William Jingxia Liu ³, M Shea Harrison ¹, Yuriko Terada ¹, Judith E Van Za Michael K Pasque ¹, Ruben G Nava ¹, Bryan F Meyers ¹, Alexander Benjamin D Kozower ¹, Ramsey Hachem ³, Derek Byers ³, Chad V Daniel Kreisel ^{1 5}, Varun Pu

> Clin Transplant. 2020 Feb;34(2):e13784. doi: 10.1111/ctr.13784. Epub 2020 Feb 5.

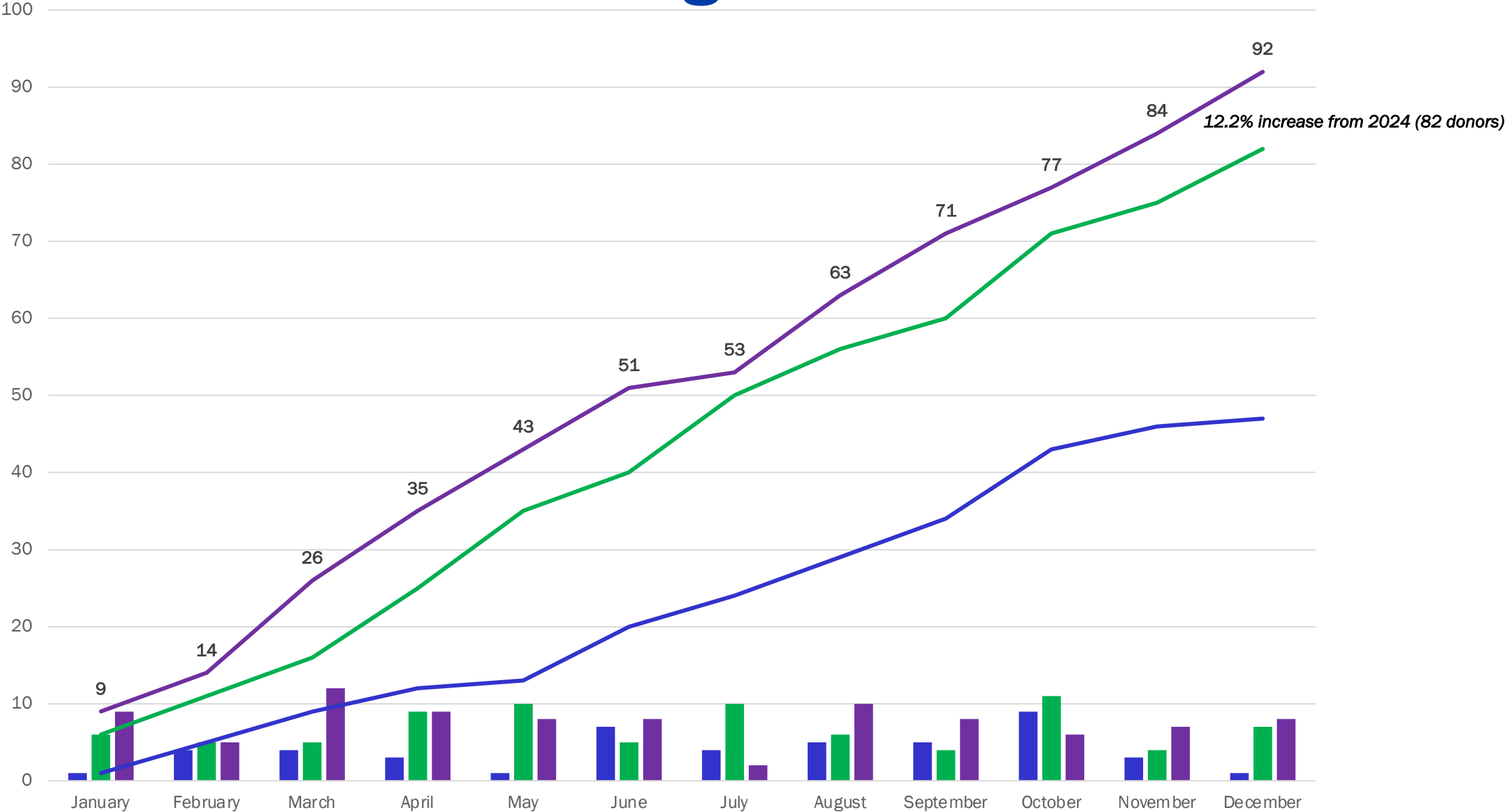
A stroke volume-based fluid resuscitation protocol decreases vasopressor support and may increase organ yield in brain-dead donors

Gary F Marklin ¹, William Dean Klinkenberg ¹, Benjamin Helmers ¹, Thomas Ahrens ²

Organ Donor Recovery Procurement Organization-Based Facility Is an Effective Way to Minimize Organ Recovery Costs and Increase Organ Yield

Majella Doyle ¹, Vijay Subramanian ², Neeta Vachharajani ², Kelly Collins ², Jason R Wellen ², Emily Stahlschmidt ³, Diane Brockmeier ³, Jason Coleman ³, Dean Kappel ³, William C Chapman ²

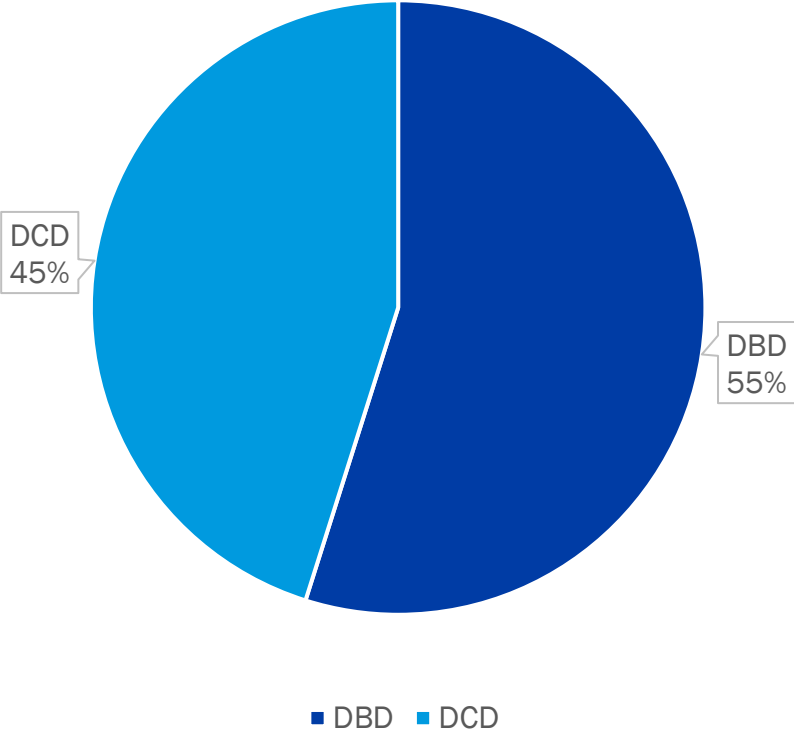
Deceased Organ Donors



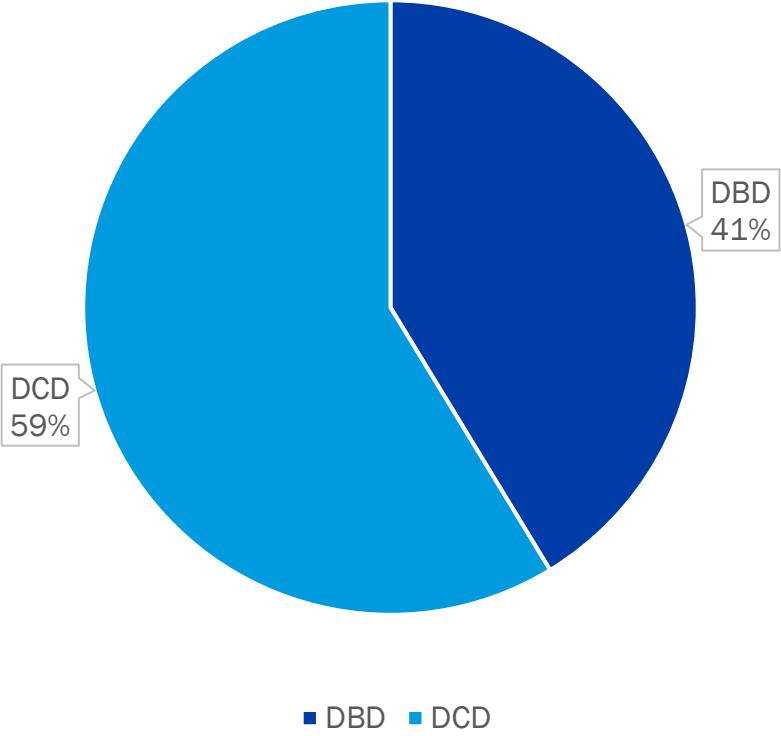
2023 - 2025 (Full Year)
 *with at least one organ transplanted

Increase in Prevalence of DCDs

2024 Donors



2025 Donors



32% increase in DCDs from 2024 - 2025

Donation After Cardiac Death (DCD)

- NOT Dead = Alive
- Poor Prognosis
- Often severe brain injury, anoxic or traumatic
- Family has opted for palliative withdrawal of life-sustaining support.
- LiveOnNY is contacted for an assessment and planned approach

Timely referral is important

In the OR

- Heparin given
- Support withdrawn
- At PEA or asystole, family escorted out
- After observation period, patient declared

- ICU nurse and Intensivist exit

- If the patient does not expire in the designated timeframe, the patient returns to a designated room to continue comfort care.

Direct Procurement and Perfusion

- Organ recovered and flushed
- Connected to the machine for ongoing perfusion
- Assessment
 - Lactate
 - Coronary flow
 - Visual inspection
- Transportation



DCD Normothermic Regional Perfusion (NRP) Recovery

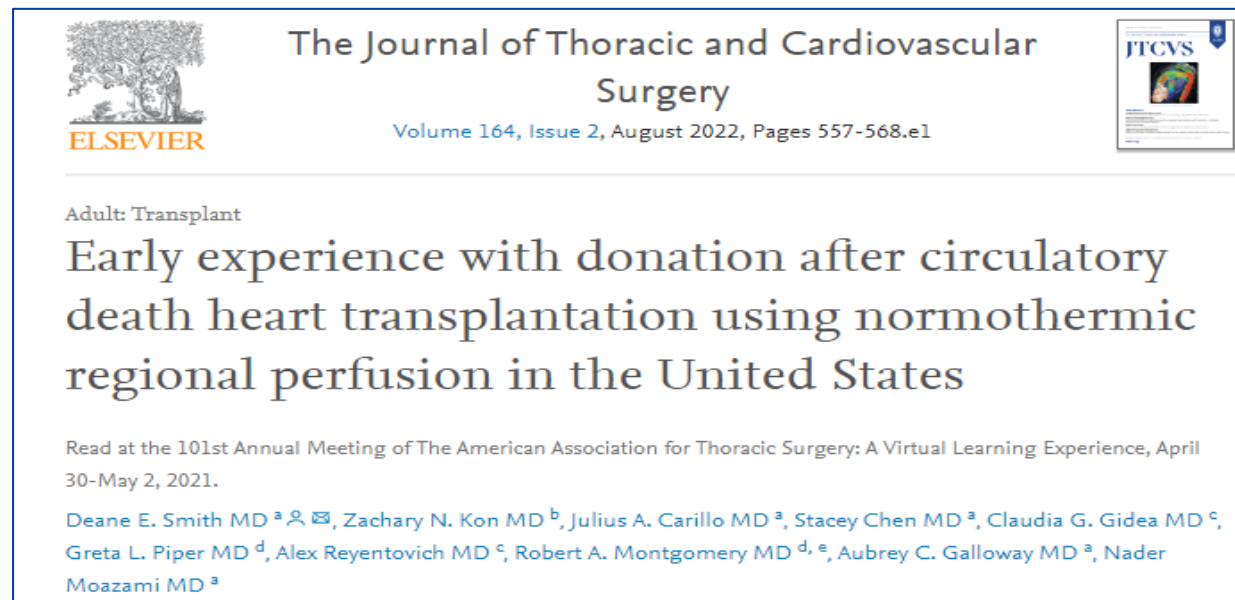


After declaration

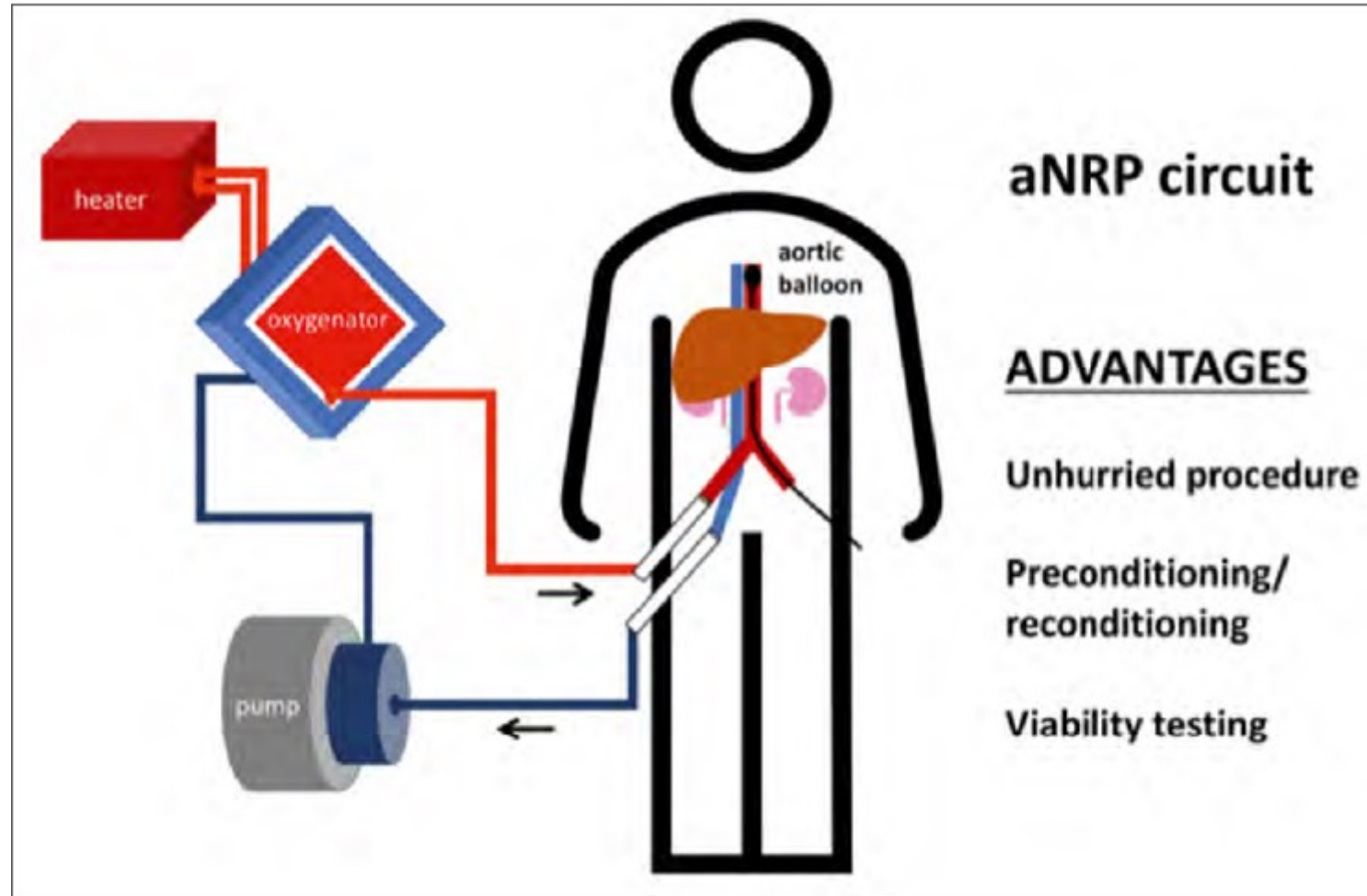
- OR team returns
- Incision, sternotomy, ligation of the arch vessels, and patient is placed on cardiopulmonary bypass
- Patient is reintubated
- After 30 minutes, CPB is weaned, and heart function is assessed.
- Decision regarding acceptance is made or CPB is resumed.
- If accepted, recovery occurs

DCD Recovery with Normothermic Regional Perfusion (NRP)

- A DCD heart transplant protocol using cardiopulmonary bypass to provide normothermic regional perfusion
- Allows for correction of metabolic abnormalities associated with cardiac arrest
- Allows for in situ functional assessment of the donor heart.



Another option – A-NRP



What is different for us when NRP is used:

- Anesthesia is needed for management of the donor
 - Reintubation
 - Ventilator management and Lung recruitment
 - Titration of infusions
- Blood on hold for possible transfusion
- OR time is extended

Why is NRP an improvement?

- Limits warm ischemic time for organs
- Allows for a period of controlled reperfusion
- Allows for in vivo assessment
- Reduces incidence of ischemic cholangiopathy in DCD livers
- DCD NRP kidneys have similar graft survival to DBD kidneys and earlier graft recovery than standard DCD kidneys
- Higher recovery rates in multi-organ recoveries

Controversy/Concerns

- Declaration of death
- Concern for violation of the dead donor rule
- Informed consent
- Public perception

Parent B et al. Ethical and logistical concerns for establishing NRP-cDCD heart transplantation in the United States. *American Journal of Transplantation* June 2020.

So how do we optimize the DCD pool?

- How can we use what we now know to improve the system???
- DCU models now exist and thrive
- DCD numbers now are higher than DNC
- We need education and standardization
- Potential centers of excellence

Potential Barriers to Success in a DCU Setting

- Bed Availability
- OR Staffing / Availability
- Triage and Priority Questions (“Donor” vs “Survivable” Patients)
- Perceived (and Real) Competition Between Hospital Centers
- Metrics and Billing Separation
- Need for Collaboration Between OPO Staff and Hospital Teams

“Today we share a common space and join in a common cause.

*Through the caring touch of our hearts and hands, we join our efforts to care for
[DONOR], and for all who benefit from this
gift of life.*

*For all children, grandchildren, friends, and family who are touched by what we do
here today, may we remember that fresh hopes and dreams began with the gift of
this one person.*

May we take a moment now in silence to honor the life of [DONOR].”

Thank

you

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