DMGs or Not?

The Great Donor Management Debate

TODAY'S PANELISTS

Darren Malinoski
MD, FACS
Chief Clinical
Transformation Officer
OHSU Health

Darry Nethercot
MSN, RN, CPTC, LSSBB
Director,
Organ Operations
LIFESHARING™

Kelsi Kolle
MSN, RN, CCRN, CPTC
Advanced Practice
Coordinator
NEVADA DONOR NETWORK
Hope · Strength · Life

Jeffrey Steinkamp
BSN, RN, CPTC
Advanced Practice
Clinician
STA DONATE LIFE
SOUTHWEST TRANSPLANT ALLIANCE

THE Alliance | *Equipping a Modern Profession of Lifesavers in Organ Donation & Transplantation*

Tuesday, February 4, 2025, 2:00pm – 3:00pm ET

Continuing Education Information

Evaluations & Certificates

Nursing

The Organ Donation and Transplantation Alliance is offering **1.0 hours of continuing education credit** for this offering, approved by The California Board of Registered Nursing, Provider Number CEP17117. No partial credits will be awarded. CE credit will be issued upon request within 30 days post-webinar.

CEPTC

The Organ Donation and Transplantation Alliance will be offering **1.0 Category I CEPTC credits** from the American Board for Transplant Certification. Certified clinical transplant and procurement coordinators and certified clinical transplant nurses seeking CEPTC credit must complete the evaluation form within 30 days of the event.

Certificate of Attendance

Participants desiring CE's that are not being offered, should complete a certificate of attendance.

- Certificates should be claimed within 30 days of this webinar.
- We highly encourage you to provide us with your feedback through completion of the online evaluation tool.
- Detailed instructions will be emailed to you within the next 24 hours.
- You will receive a certificate via email upon completion of a certificate request or an evaluation
- Group leaders, please share the follow-up email with all group participants who attended the webinar.

Deanna Fenton

Senior Manager, Program Development and Operations

THE Alliance

Need Assistance?

Contact Us via Zoom Chat, or
info@organdonationalliance.org
786-866-8730

Meet Our Moderator

Jaclyn Russe

MSN, RN, CPTC

Associate Director, Organ Services

NEVADA DONOR NETWORK
Hope · Strength · Life

Meet Our Presenters

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The Alliance Great Debate 2-4-25

Darren Malinoski, MD, FACS

Donor Management Goals:
History of the Registry and Scientific Foundation

DMRI DONOR MANAGEMENT RESEARCH INITIATIVE

VA U.S. Department of Veterans Affairs

UNOS UNITED NETWORK FOR ORGAN SHARING

UCSF University of California San Francisco

BACKGROUND

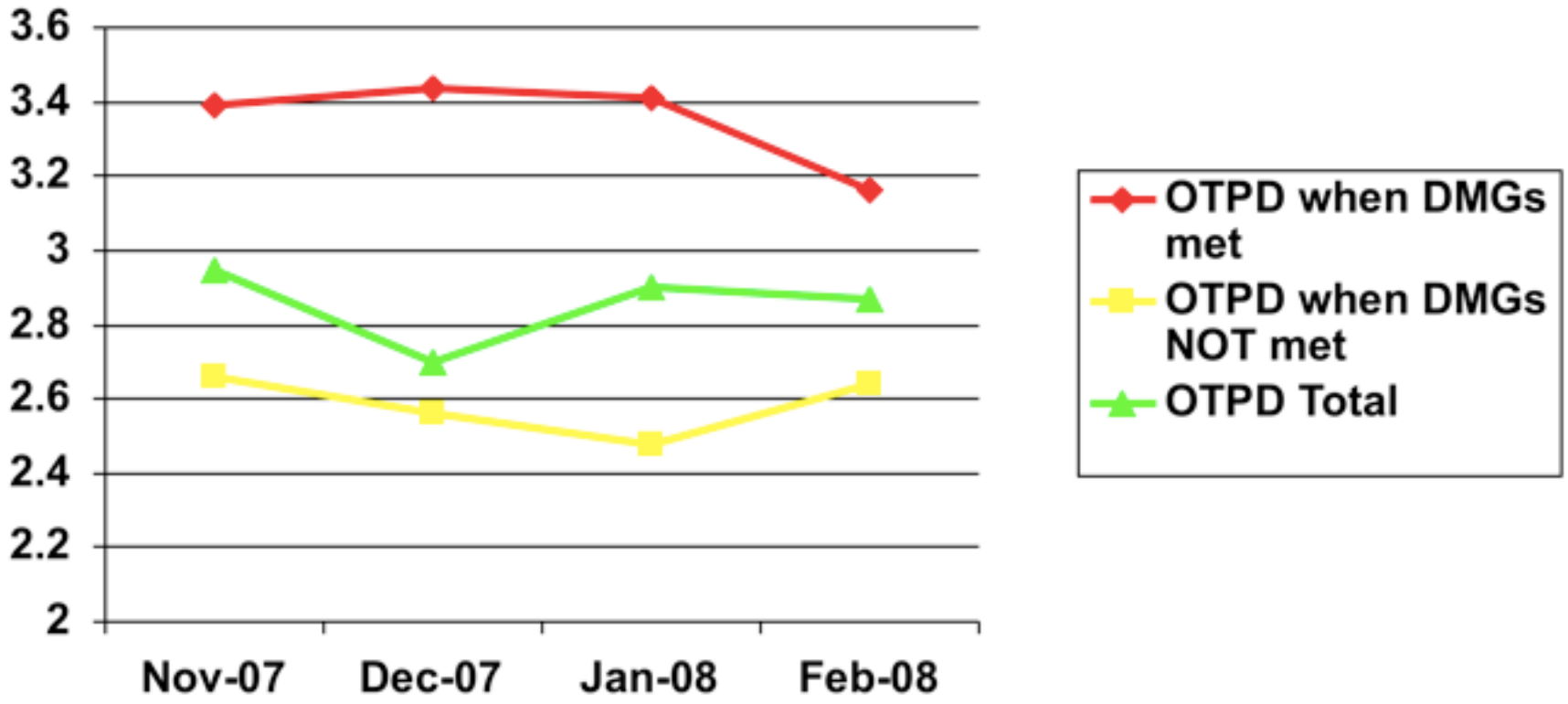
- Need for greater quality and quantity of organs available for transplantation
- National average of < 3 organs transplanted per donor (OTPD)
- Inconsistent donor management practices
  - Lack of scientific foundation
    - Paucity of RCTs
    - Risk adjustment models lack robust donor critical care data

BACKGROUND

- Checklists have demonstrated utility in several arenas
- Standardized critical care endpoints
- Donor Management Goals (DMGs)

OTPD and DMGs:

Current state in 2007



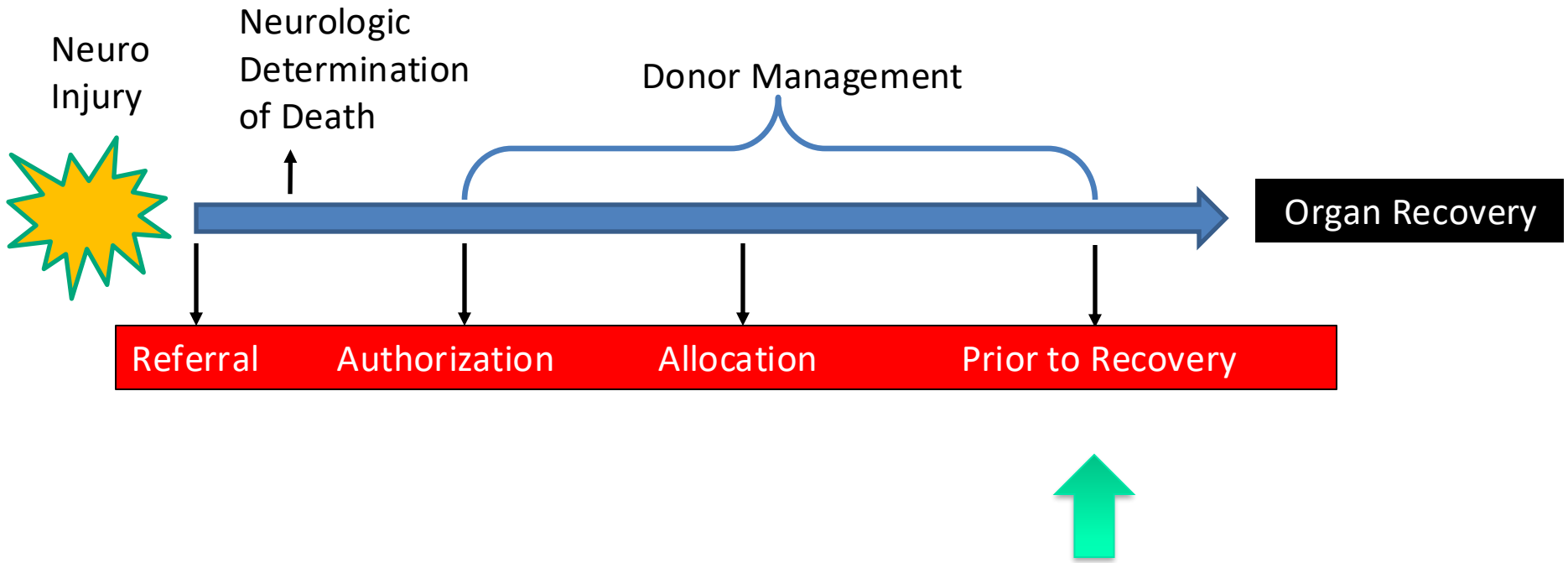
BACKGROUND

UNOS Region 5 DMGs

- Initially utilizing published recommendations, clinical experience, and expert opinions, representatives from 8 OPOs created a "DMG Bundle"

- "Meeting the bundle" = achieving any 7 of the 9 DMGs

Critical Care Endpoint	DMG
1. Mean Arterial Pressure	60 – 110 mmHg
2. Central Venous Pressure	4 – 12 mmHg
3. Ejection Fraction (EF)	$\geq$ 50%
4. Vasopressor use	$\leq$ 1 and low dose
5. Arterial Blood Gas pH	7.3 – 7.5
6. PaO2:FiO2 (P:F)	$\geq$ 300 on PEEP = 5
7. Serum Na	$\leq$ 155 mEq/L
8. Blood Glucose	$\leq$ 180 mg/dL
9. Urine Output	$\geq$ 0.5 cc/kg/hr


Neuro
Injury
Neurologic
Determination
of Death
Donor Management
Organ Recovery
Referral
Authorization
Allocation
Prior to Recovery

UNOS Region 5 DMGs

- Phase 1 – retrospective – 2007-2008
  - 320 Standard criteria brain dead donors (SCDs)
  - Primary outcome measure: ≥ 4 OTPD

Achieving Donor Management Goals Before Deceased Donor Procurement Is Associated With More Organs Transplanted Per Donor

Darren J. Malinoski, MD, Michael C. Daly, MSc, Madhukar S. Patel, ScM, Chrystal Oley-Graybill, Clarence E. Foster III, MD, and Ali Salim, MD

TABLE 2. Impact of DMGs on Organ Yield

	DMGs Met	DMGs Not Met	*p*
% SCDs with ≥4 OTPD	70.1%	38.7%	<0.001*
Mean OTPD ± SD	4.35 ± 1.61	3.32 ± 1.56	<0.001†
Transplanted			
Right lung	37.1%	14.3%	<0.001*
Left lung	36.1%	14.3%	<0.001*
Heart	56.7%	30.5%	<0.001*
Liver	93.8%	81.6%	0.005*
Pancreas	40.2%	24.7%	0.005*
Right kidney	95.9%	87.4%	0.021*
Left kidney	94.8%	88.8%	0.088*
Intestine	2.1%	1.3%	0.641‡

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DMG/Variable	OR ≥4 OTPD	95% CI	p value
Continuous Variables			
Age (years)	0.944	0.923 – 0.966	< 0.001
Creatinine (mg/dL)	0.636	0.409 – 0.987	0.044
Categorical Variables			
Thyroid Hormone use	1.969	1.082 – 3.582	0.026
CVP 4 – 10 mmHg	1.897	1.021 – 3.527	0.043
EF > 50%	3.988	2.095 – 7.592	< 0.001
P:F > 300 on PEEP 5	4.591	2.478 – 8.506	< 0.001
Na 135 – 160 mEq/L	3.352	1.141 – 9.851	0.028
"Goals met"	4.394	2.497 – 7.732	< 0.001

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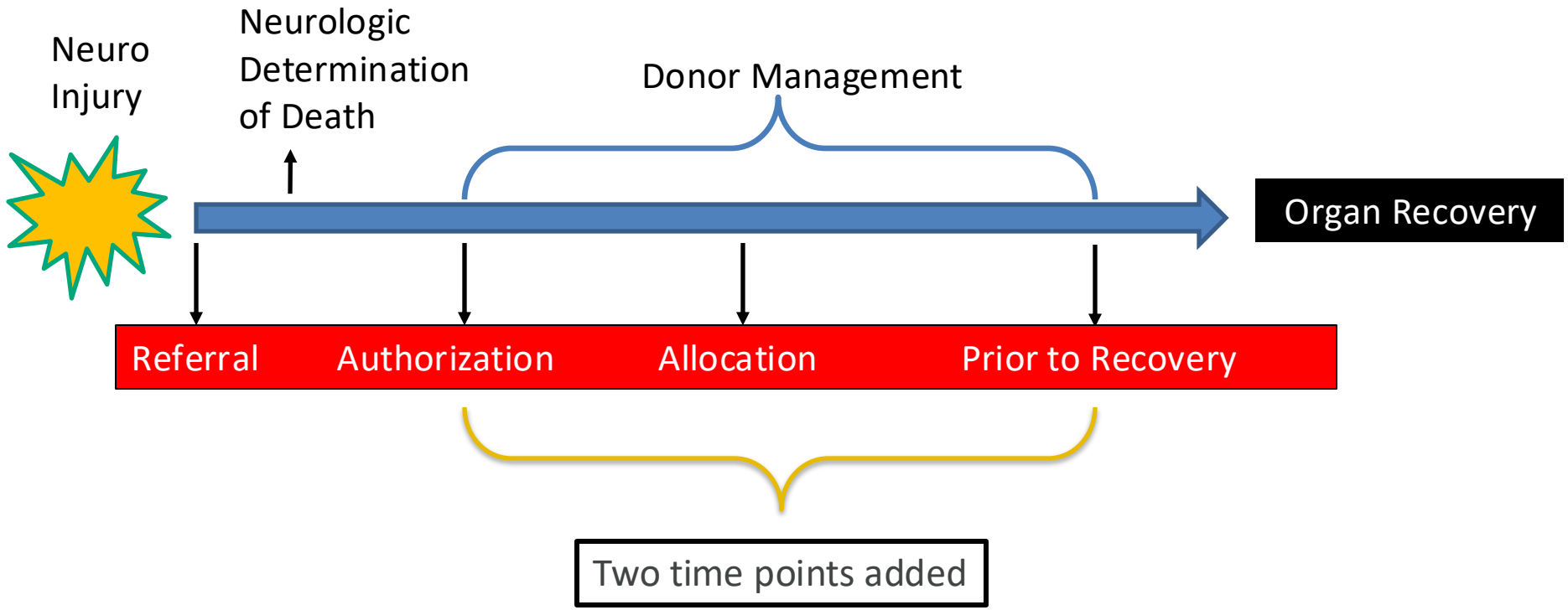
UNOS Region 5 DMGs

- Phase 2
  - Prospective
  - Three time points
    - At authorization for donation
    - 12-18 hours later – organ offers being made
    - Prior to organ recovery
  - Modified DMGs
  - June 2008 – January 2009


Neuro Injury
Neurologic Determination of Death
Donor Management
Organ Recovery
Referral
Authorization
Allocation
Prior to Recovery
Two time points added

Region 5 Donor Management Goal Outcome Measure (DMG) Worksheet (> 13 years old)

Donor Date	DMG / other data points	Parameters	At Consent: DMG met	At Consent: Value	12-18hrs into case: DMG met	12-18hrs into case: Value	Prior To O. R.: DMG met	Prior To O. R.: Value	Additional Comments
	MAP	60-100							
UNOS ID	CVP	4 to 10							
	EF	>50%							
Age (years)	ABG	PH: 7.3-7.45							
	PF Ratio	>300							
Gender	Serum Sodium	135-155							
	Glucose	<150							
	Urine Output	0.5-3cc/kg/hr over 4 hours							
	Number of Vasopressors	</=1 pressor used and Dopa </=10mcg/kg/min or Neo </=60 mcg/min or Norepi </= 10 mcg/kg/min							
Donor Type	Dosages	Dopamine							
		Neosynephrine							
PTC		Norepinephrine							
	Creatinine	Serum level							
OPO	T4	used/infusing | dose (mcg/hr)							
	Vasopressin	used/infusing | dose (units/hr)							
	DMG'S MET	total number (out of 9)	0		0		0		

Organs	Recovered	Tx'd	Decline Code	Comments / Reason
Heart				
Left Lung				
Right Lung				
Liver 1				
Liver 2				
Pancreas				
Intestine				
Left Kidney				
Right Kidney				

DMG-WorkSheet Guidance Document | DMG-Worksheet | Variable Worksheet | DMG-DATA

The impact of meeting donor management goals on the number of organs transplanted per donor: Results from the United Network for Organ Sharing Region 5 prospective donor management goals study

Darren J. Malinoski, MD, FACS; Madhukar S. Patel, MD, MBA, ScM; Michael C. Daly, MSc; Chrystal Oley-Graybill; Ali Salim, MD, FACS; on behalf of the UNOS Region 5 DMG workgroup

- Prospective Data
  - 380 SCDs
  - Primary outcome measure: ≥ 4 OTPD

- 2012 *Critical Care Medicine*

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≥4 OTPD

Variable	OR	95% CI for OR	p value[a]
Analysis using DMGs "met"			
Donor age	**0.948**	**0.932-0.963**	**<0.001**
DMGs "met" at time of consent	**2.034**	**1.066-3.881**	**0.031**
DMGs "met" 12-18 hours later	1.481	0.888-2.470	0.132
DMGs "met" prior to organ recovery	**2.344**	**1.430-3.843**	**0.001**
Creatinine prior to organ recovery	**0.746**	**0.606-0.918**	**0.006**
Analysis using change in DMG's			
Donor age	**0.951**	**0.936-0.966**	**<0.001**
Change in DMG's from consent to 12-18 hours later	**1.130**	**1.001-1.277**	**0.048**
Creatinine prior to organ recovery	**0.727**	**0.595-0.889**	**0.002**

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- 2012 *Critical Care Medicine*

BACKGROUND

- Organs transplanted per donor is not an ideal outcome measure
- Graft function is a better endpoint

The Impact of Meeting Donor Management Goals on the Development of Delayed Graft Function in Kidney Transplant Recipients

D. J. Malinoski[a,*], M. S. Patel[b], O. Ahmed[c], M. C. Daly[c], S. Mooney[c], C. O. Graybill[d], C. E. Foster[c], A. Salim[e] and on behalf of the United Network for Organ Sharing (UNOS) Region 5 Donor Management Goals (DMG) Workgroup†

DGF

Variable	OR	95% CI	p
Age (per year)	1.02	1.01-1.03	0.003
Creatinine prior to recovery (per mg/dL)	1.4	1.1-1.6	0.001
Cold ischemia time (per hour)	1.03	1.01-1.05	0.011
DMGs met at authorization	0.5	0.3-0.9	0.019

- 2013 *American Journal of Transplantatio*

Phase 3 – Refine the DMGs

Determining optimal threshold for glucose control in organ donors after neurologic determination of death: A United Network for Organ Sharing Region 5 Donor Management Goals Workgroup prospective analysis

Mitchell B. Sally, MD, Tyler Ewing, BS, Megan Crutchfield, MPH, Madhukar S. Patel, ScM, Shariq Raza, MD, Salvador De La Cruz, MD, John Zatarain, MD, Darren Jay Malinoski, MD, *and* **On behalf of the United Network for Organ Sharing (UNOS) Region 5 Donor Management Goals (DMG) Workgroup,** *Portland, Oregon*

Impact of Deceased Organ Donor Demographics and Critical Care End Points on Liver Transplantation and Graft Survival Rates

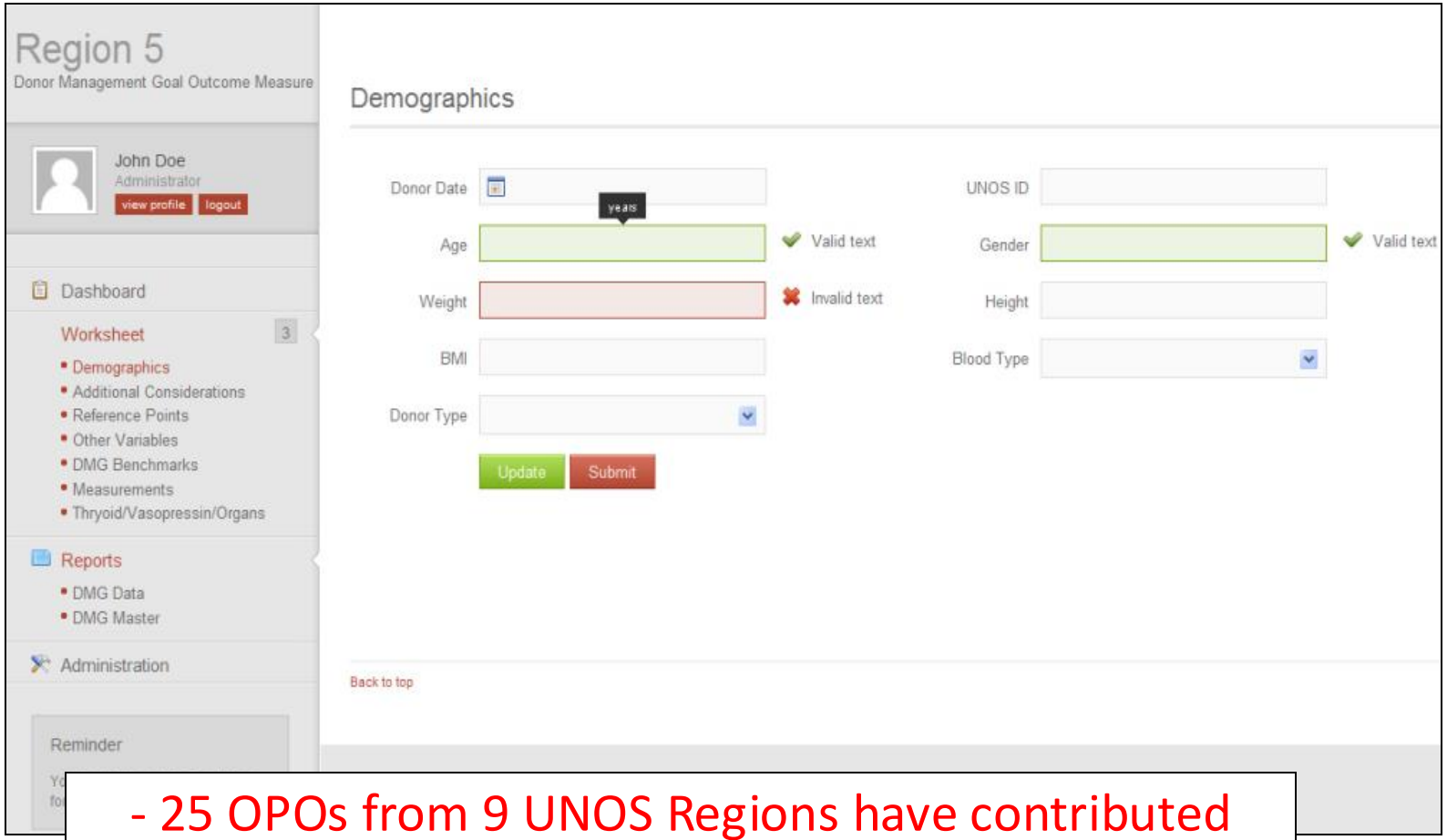
Matthew B Bloom, MD, FACS, Shariq Raza, MD, Akash Bhakta, BS, Tyler Ewing, BS, Madhukar Patel, MD, Eric J Ley, MD, FACS, Daniel R Margulies, MD, FACS, Ali Salim, MD, FACS, Darren Malinoski, MD, FACS

Vol. 220, No. 1, January 2015

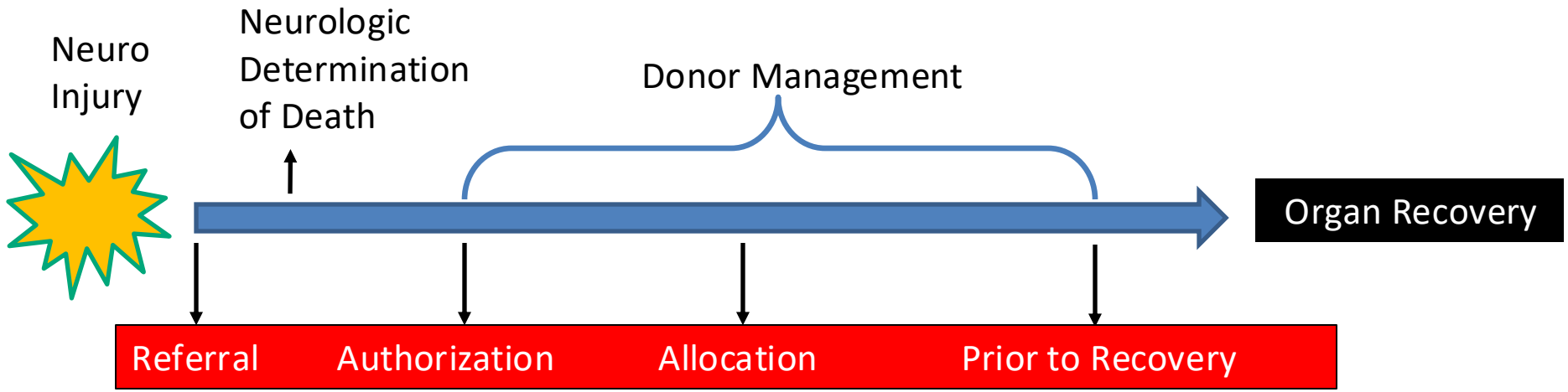
Phase 4: UNOS DMG Web Portal

Launched March 2012 – supported by UBS

- Linked to UNet
- Forced field entry
- Generates reports
- Graft outcome and risk factor data
- *Fields for study data



- 25 OPOs from 9 UNOS Regions have contributed data on >27,000 donors as of January 2025

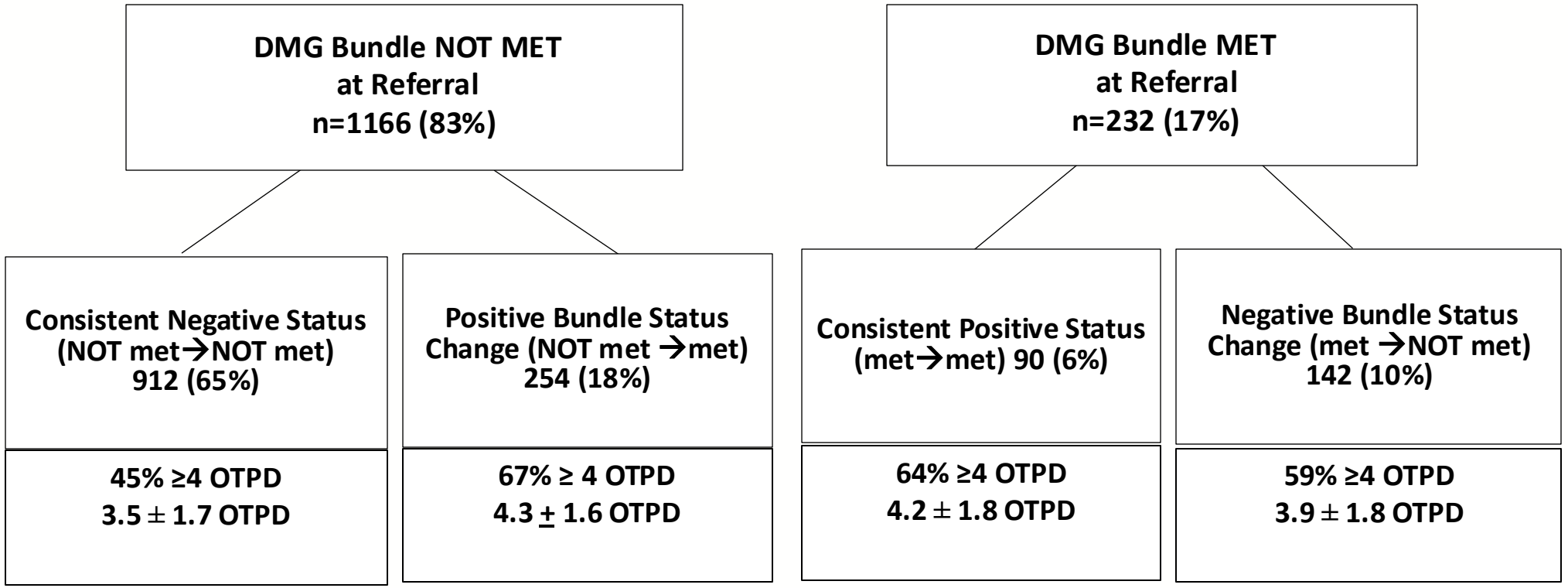


Fourth time point added

Journal of the American College of Surgeons

Active Donor Management During the Hospital Phase of Care Is Associated with More Organs Transplanted per Donor

Patel, et al. JACS 2017



THANK YOU

Darren Malinoski, MD, FACS
malinosk@ohsu.edu

DMRI DONOR MANAGEMENT RESEARCH INITIATIVE

VA U.S. Department of Veterans Affairs

UNOS UNITED NETWORK FOR ORGAN SHARING

UCSF University of California San Francisco

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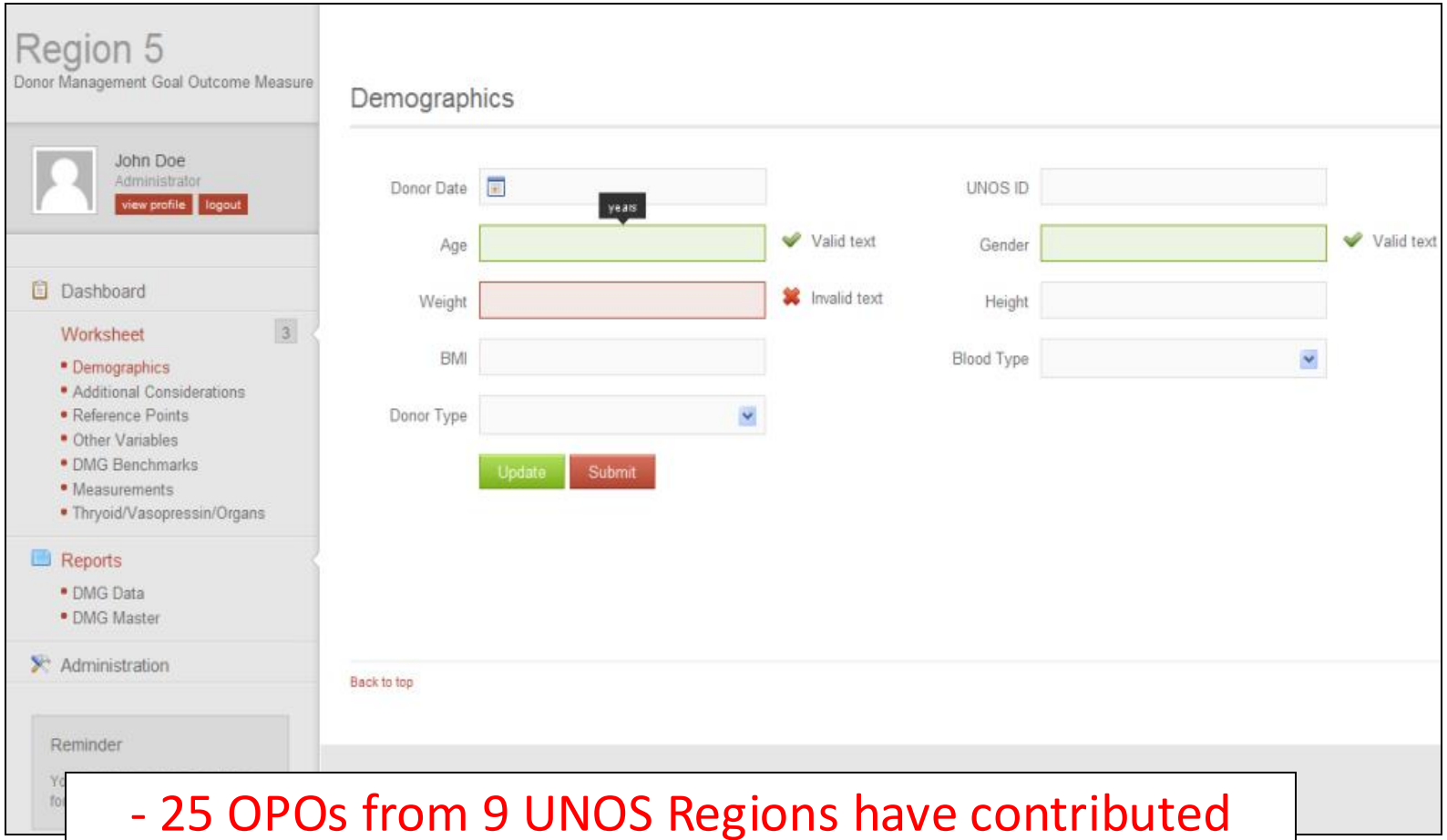

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DMG Registry Web Portal

- OPO Uses:
  - Hospital development
  - Real time clinical care
  - Staff performance / case reviews
  - Data reporting
  - → *Future Goal* – recruit enough OPOs to inform the SRTR OPO and Transplant Center O:E metrics in the annual Program Specific Reports!

DMG Registry Web Portal

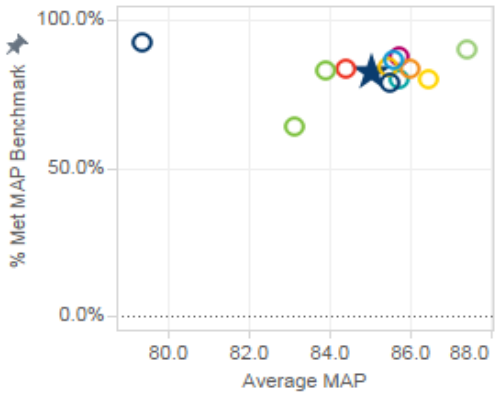
- Recent Enhancements:
  - OPO EMR Import Utility
  - Customizable, Interactive Reports
    - Aggregate de-identified *Tableau* report for comparing your own data to the rest of the country
    - OPO-specific identifiable donor summary report
      - Great for case reviews!!!

National Donor Management Goals (DMG) Registry Aggregate Report
DMG Data

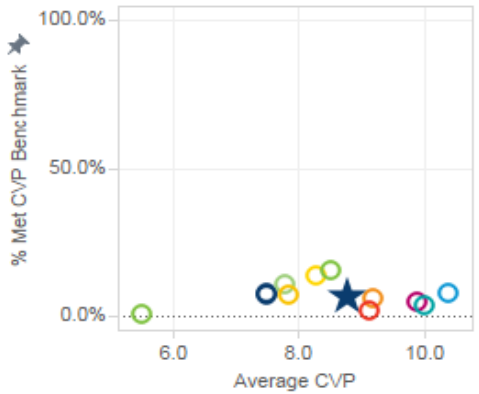
Donor Milestone: At Referral | OPO Size (Prev. Year): (All) | OPO: (All) | Calendar Year (Milestone): (All) | Bundle Met: At Referral: (All) | Start of Case: (All) | Initial Allocation: (All) | Prior to OR: (All) | Organ Transplanted: Heart: (All) | Lung: (All) | Kidney: (All) | Pancreas: (All) | Liver: (All) | Intestine: (All)

Donor Type: (All) | Blood Type: (All) | PHS Increased Risk: (All) | Gender: F, M | Age: 0 – 90 | Weight (KG): 2.2 – 247.7 | Height (CM): 0.0 – 208.0 | BMI: 0.00 – 97.30 | KDPI: 1 – 100 | Cause of Death: (All)

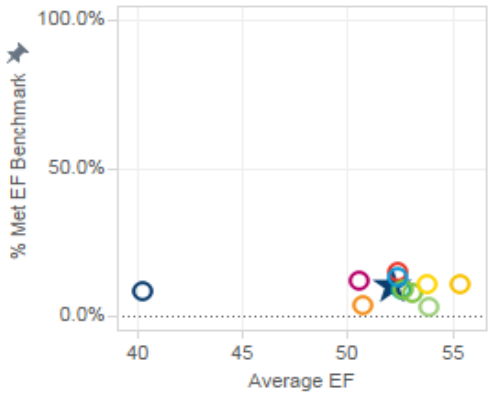
Mean Arterial Pressure (MAP)



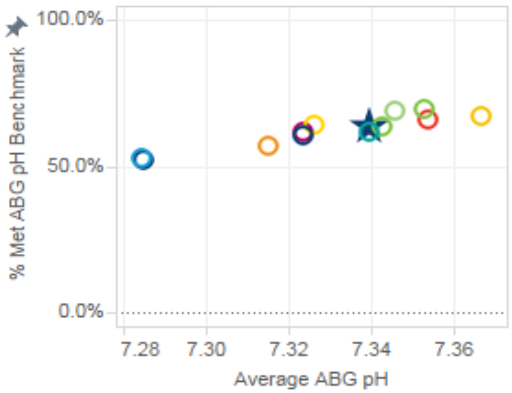
Central Venous Pressure (CVP)



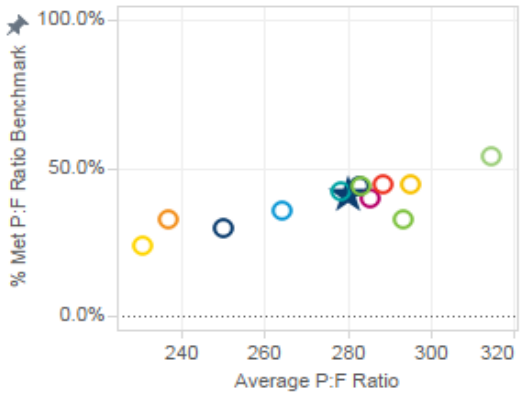
Ejection Fraction (EF)



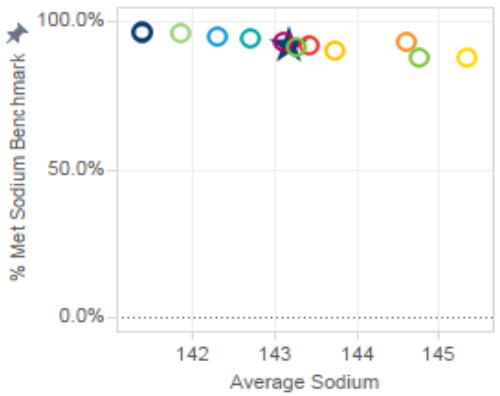
Arterial Blood Gas pH (ABG pH)



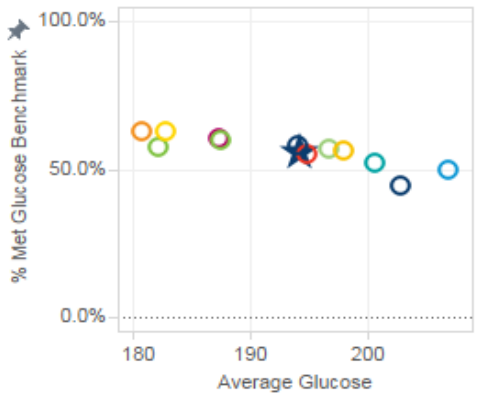
P:F Ratio



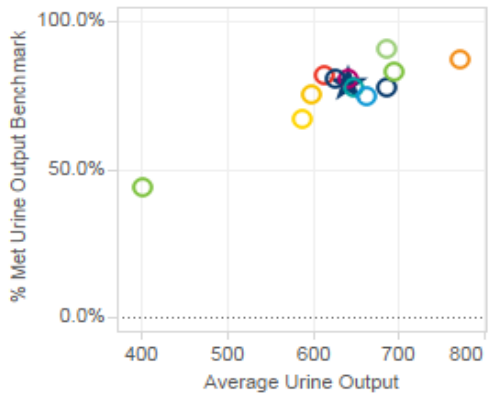
Sodium



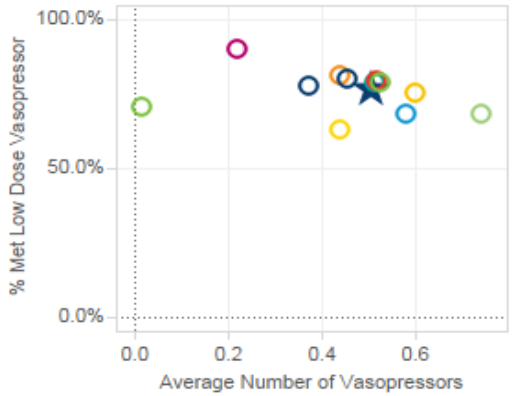
Glucose



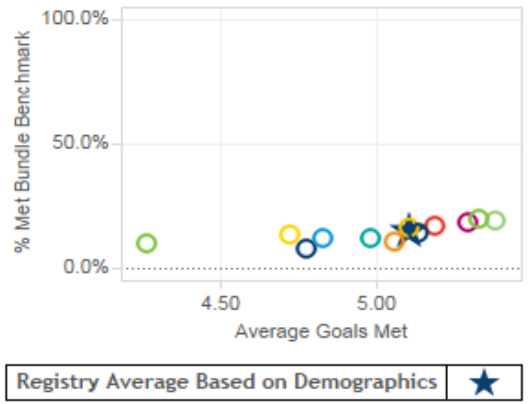
Urine Output



Vasopressors



Bundles Met



Registry Average Based on Demographics ★

National Donor Management Goals (DMG) Registry Aggregate Report
Organ Utilization

OPO Size (Prev. Year): (All) | OPO: (All) | Calendar Year (Clamp Date): (All)

Bundle Met: At Referral: (All) | Start of Case: (All) | Initial Allocation: (All) | Prior to OR: (All)

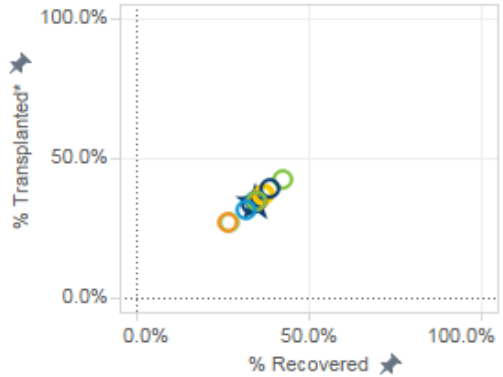
Donor Type: (All) | Blood Type: (All) | PHS Increased Risk: (All)

Gender: ☑ F ☑ M

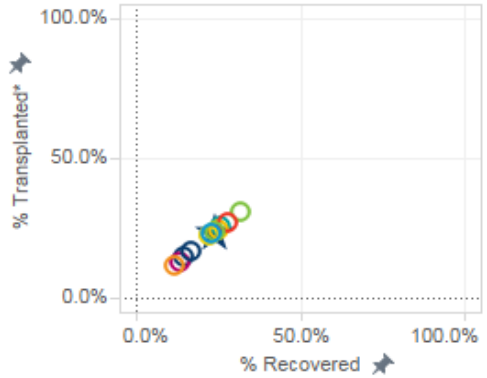
Age: 0 – 90 | Weight (KG): 2.2 – 247.7 | Height (CM): 0.0 – 208.0 | BMI: 0.00 – 97.30 | KDPI: 1 – 100

Cause of Death: (All)

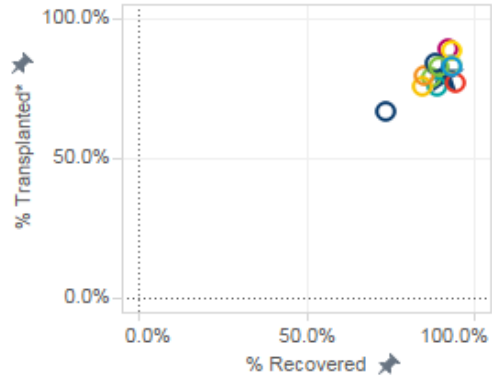
Heart



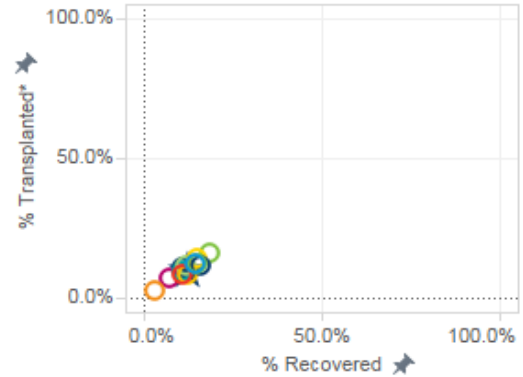
Any Lung**



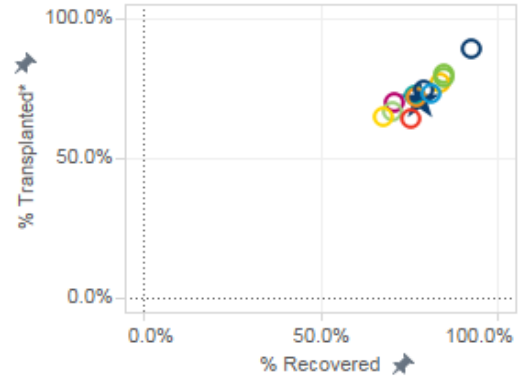
Any Kidney**



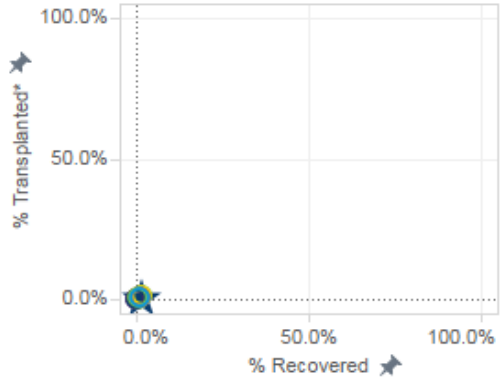
Pancreas



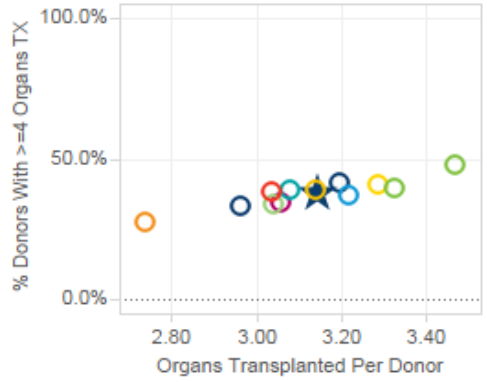
Any Liver Segment**



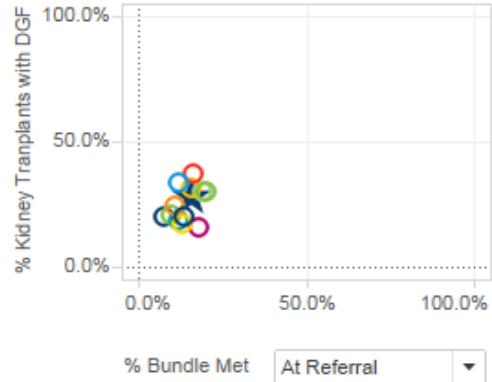
Intestine



Organs Transplanted Per Donor

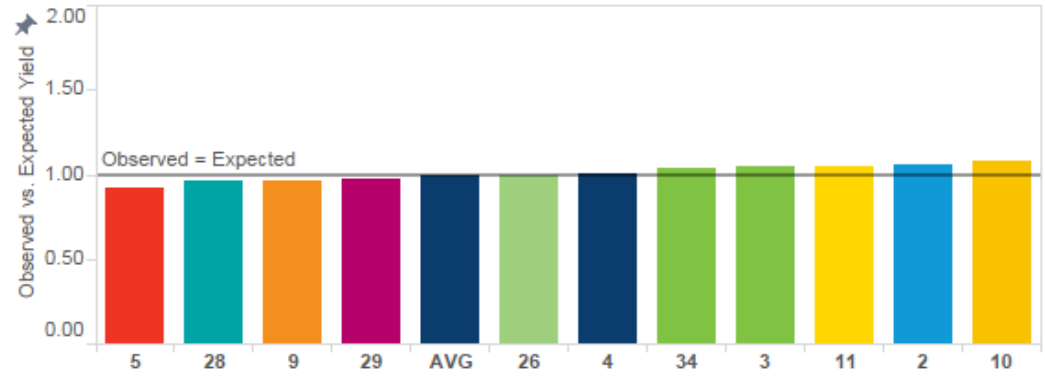


Kidneys with DGF



Observed vs. Expected Organ Yield (2012-20..

Organ: All



Registry Average Based on Demographics ★

* The denominator for all "% Transplanted" calculations is the entire donor population; it includes donors that did not have the associated organ recovered for transplantation.
** "% Recovered" and "% Transplanted" for kidney, lung, and liver are calculated as the percentage of donors with at least one organ recovered.

***The model used to compute the expected organ yields was originally trained for use with donors recovered during 1/1/2015-12/31/2016. Predictions using donor data prior to or since this time period - or for any other purpose - constitute an extrapolation of the model beyond its intended use, and no guarantee may be made as to the accuracy or relevance of the model or its predictions under these circumstances.

OPO single page donor report

National Donor Management Goals (DMG) Single Page OPO Donor Report

Cross Clamp Date Range	Number of Donors	OPO	UNOS ID (only displays if searching for an individual donor)	% Registered Donors	Hospital Code (only displays for an individual donor or if searching for a specific donor hospital)	Search Criteria
Jun 22 2016 12:20AM - Jun 4 2018 4:57PM	4716			47		Cross Clamp dt1; Cross Clamp dt2;

Age (yrs) Age Range	Gender	Height (cm)	Weight (kg)	BMI	Donor Type	Blood Type	Cause of Death	Study Name (only available if selected in report criteria)	Treatment Group (only available if selected in report criteria)
39 0 - 86	61 % M	167.8	80.3	27.9	68 % SCD 16 % ECD 11 % DCD 1 % SCDDCD	52 % O 35 % A 10 % B 2 % AB	29 % CVA 39 % Anoxia 31 % Trauma 0 % CNS Tumor		

Average Case Duration (hours)	64.12	At Referral		Start of Case		At Time of Initial Allocation		Prior to OR	
Date | Time of Each Reference Point (Only available for individual donor search) [mm/dd/yyyy | 24:00]									
PTC Coordinator									
Benchmarks	**Parameters**	**DMG met**	**Value**	**DMG met**	**Value**	**DMG met**	**Value**	**DMG met**	**Value**
1- MAP	60-110	84 %	86	67 %	85	85 %	88	67 %	89
2- CVP	4 to 12	2 %	9	9 %	8	23 %	9	29 %	9
3- EF/SF	≥50%/≥30%	11 %	51	20 %	52	53 %	57	69 %	58
4- ABG	PH: 7.3-7.5	62 %	7.33	73 %	7.36	85 %	7.39	88 %	7.41
5- P/F Ratio (PO2/(FIO2/100))	PO2	41 %	183	0 %	173	45 %	198	49 %	207
	FIO2		68		64		68		67
	≥300		283		279		296		310
6- Sodium	≤155	93 %	143	74 %	149	79 %	148	83 %	147
7- Glucose	≤180	54 %	197	74 %	156	63 %	172	70 %	163
8- Urine Output	>/=0.5cc/kg/hr	70 %	529	66 %	440	75 %	611	75 %	551
			1.97		1.60		2.17		1.98
9- Number of Vasopressors	</=1 pressor used and Dopa </=10mcg/kg/min or Neo </=1 mcg/kg/min or Norepi </= 0.2 mcg/kg/min Epi <0.2 mcg/kg/min (for pediatric donors only)	80 %	0	72 %	0	85 %	0	88 %	0
Dopamine	used/infusing | dose (mcg/kg/min)	3 %	9.17	4 %	7.37	4 %	3.87	4 %	3.48
Neosynephrine		5 %	1.82	13 %	2.09	11 %	1.43	9 %	1.28
Norepinephrine		27 %	0.25	46 %	0.30	23 %	0.27	15 %	0.35
Dobutamine		0 %	3.38	1 %	3.21	13 %	1.06	11 %	0.90
Epinephrine		5 %	0.20	5 %	0.16	2 %	0.36	1 %	0.46
DMG'S MET	Total number (out of 9)	14 %	5.01	16 %	5.14	40 %	6.05	49 %	6.32
Creatinine	Serum level	1.27		1.52		1.58		1.65	
T4	used/infusing | dose (mcg/hr)	1 %	14.62	14 %	19.03	43 %	18.94	32 %	18.18
Vasopressin	used/infusing | dose (units/hr)	9 %	2.06	31 %	1.91	49 %	1.83	40 %	1.4
Temperature	Degrees Celsius	36.2		36.9		36.7		36.8	
Lactate	mmol/L	5.7		2.7		2.9		2.5	
Insulin	Total # of units given between time points					37.7		69.6	
C.O	L/min	6.2		7.4		7.7		8	
Cardiac Index	L/min/m2	3.6		4		4.1		4.3	
	SVV | PPV	4.5	0	9.9	26.6	10.4	15.6	9.4	17.4

Organ Specific Data										
Heart	Troponin (N)	BNP (N)	3.31 (1147)	522.00 (134)	3.84 (1780)	1305.00 (497)	1.59 (2496)	1151.00 (686)	2.87 (2144)	987.00 (404)
Lung	Mode (Single Donor Only)	Tidal Volume (N)		470.00 (4177)		482.00 (4512)		522.00 (4535)		532.00 (4538)
	PIP (N)	PEEP (N)	21.00 (2715)	6.00 (4191)	23.00 (3612)	6.00 (4527)	24.00 (4258)	5.00 (4547)	23.00 (4283)	5.00 (4549)
Liver	T Bili (N)	D Bili (N)	0.70 (2699)	0.32 (557)	0.86 (3150)	0.48 (1963)	1.05 (3783)	0.49 (2950)	1.09 (3713)	0.53 (2822)
	AST (N)	ALT (N)	253.00 (2715)	191.00 (2726)	178.00 (3164)	161.00 (3164)	134.00 (3790)	114.00 (3791)	118.00 (3733)	95.00 (3733)
Panc	Amylase (N)	Lipase (N)	144.00 (264)	161.00 (429)	134.00 (1891)	122.00 (1772)	140.00 (2766)	100.00 (2803)	125.00 (2412)	128.00 (2453)

Organ Utilization	OTPD with Bundle Met	OTPD with Bundle Met	OTPD with Bundle Met	OTPD with Bundle Met
	3.51	3.77	3.91	3.98
	OTPD with Bundle NOT Met	OTPD with Bundle NOT Met	OTPD with Bundle NOT Met	OTPD with Bundle NOT Met
	2.24	2.12	1.49	1.25

	Heart	Lung	Liver	Pancreas	Intestine	Kidney	TOTAL (Organs Per Donor)	Comments
Number Recovered (Organs Per Donor)	2348 (0.50)	3316 (0.70)	4199 (0.89)	958 (0.20)	185 (0.04)	8748 (1.85)	19693 (4.18)	
Number Research (Organs Per Donor)	518 (0.11)	946 (0.20)	258 (0.05)	392 (0.08)	147 (0.03)	331 (0.07)	2586 (0.55)	
Number Discarded (Organs Per Donor)	8 (0.00)	47 (0.01)	298 (0.06)	108 (0.02)	4 (0.00)	1267 (0.27)	1727 (0.37)	
Number Transplanted (OTPD)	1822 (0.39)	2323 (0.49)	3643 (0.77)	458 (0.10)	34 (0.01)	7150 (1.52)	15430 (3.27)	
SRTR Expected*	1801.00	1032.00	3668.00	262.00	0.00	7115.00	14203.00	
SRTR O/E*	1.01	1.16	0.90	1.75		1.00	1.09	
DGF						902/7150(27.0%		

Pediatric DMG Parameters

	Age: 0-30 Days	Age: 31 days to 1 year	Age > 1 year AND Weight < 50 kg	Age >= 17 years OR > 50 kg
MAP	45 to 65	50 to 70	60 to 90	60-110
CVP	4 to 12	4 to 12	4 to 12	4 to 12
EF (SF for pediatrics)	>=30	>=30	>=30	>=50
ABG	7.3 to 7.5	7.3 to 7.5	7.3 to 7.5	7.3 to 7.5
P:F: Ratio	>=300	>=300	>=300	>=300
Sodium	<=155	<=155	<=155	<=155
Glucose	**<=180**	**<=180**	**<=180**	**<=180**
Urine Output	>= 1	>= 1	>= 1	>= 0.5
# of Vasopressors	≤1 pressor used and Dopa ≤ 10 mcg/ kg/ min Levo ≤ 0.2 mcg/kg/ min Epi ≤ 0.2 mcg/kg/min Neo≤ 1 mcg/ kg / min	≤1 pressor used and Dopa ≤ 10 mcg/kg/min Levo ≤ 0.2 mcg/kg/min Epi ≤ 0.2 mcg/kg/min Neo ≤1 mcg/kg/mIn	≤1 pressor used and Dopa ≤ 10 mcg/kg/min Levo ≤ 0.2 mcg/kg/min Epi ≤ 0.2 mcg/kg/min Neo ≤ 1 mcg/kg/min	≤ 1 pressor used and Dopa ≤10 mcg/kg/min Levo ≤ 0.2 mcg/kg/min Neo ≤1mcg/kg/min

If there is time…

The addition of donor critical care data improves the performance of the Scientific Registry of Transplant Recipients deceased donor heart yield model

Elizabeth Swanson, MD PhD; Shaina Kian, MS; Samantha Noreen, PhD; Gaya Shivega, MD; Virginia McBride, RN, MPH; Paul Lange, MD; Mitchell Sally, MD; Darren Malinoski, MD

Association of Organ Procurement Organizations Medical Director's Meeting

Regulatory Changes

- Executive Order 13879 – Advancing American Kidney Health
- Centers for Medicare & Medicaid Services identified two performance metrics for evaluation of Organ Procurement Organizations (OPOs):
  - Donation rate
  - Organ transplantation rate
- Final Rule for OPO Conditions for Coverage
  - Tiers 1-3

Why focus on SRTR expected organ yield models?

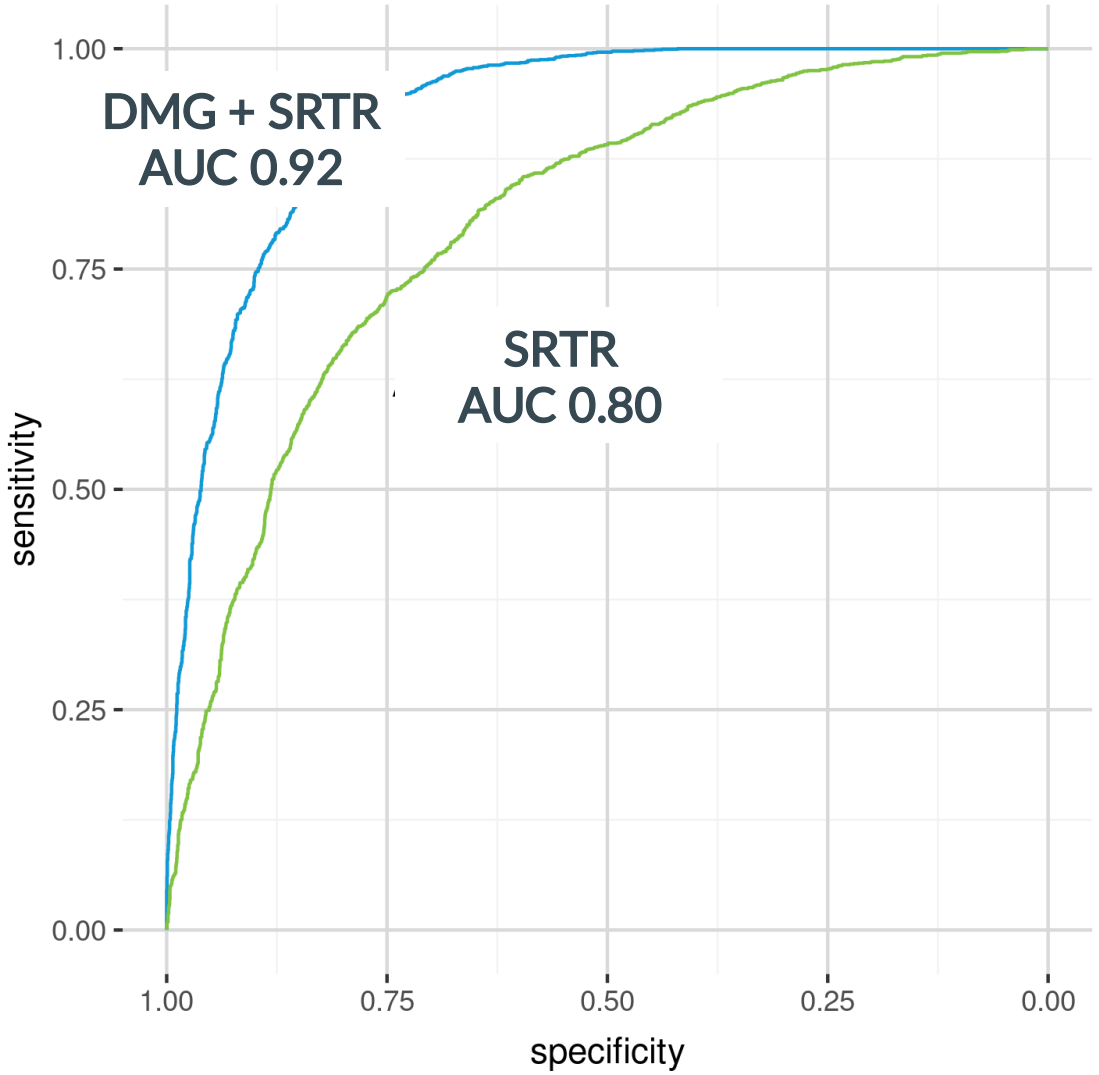
- Used by the Membership and Professional Standards committee to evaluate OPO performance
- Used by OPOs themselves to benchmark their performance in real time
- Accuracy of expected organ yield models is critical to:
  - Fairly evaluate OPOs
  - Guide performance improvement efforts

Data Elements in the July 2022 SRTR Expected Heart Yield Model

Donor Demographics	Donor Health Data and Medical History	Donor Physiologic Data
• Age (years) • Race • Ethnicity • Gender • Organ recovered outside the contiguous 48 states	• Blood type • BMI • Cardiac arrest after brain death • Cause of death • Circumstance of death • Clinical infection (blood, lung, urine, other) • Controlled DCD donor • Current cigarette, cocaine, or other drug use • DCD status • Heavy alcohol use • Height • Weight • History of diabetes • History of insulin dependence • History of hypertension • History of cancer • History of cocaine use • History of other drug use • Mechanism of death • More than 20 pack years • PHS increased infectious risk • Previous MI • Protein in urine • Terminal serum creatinine • Hepatitis B status • Hepatitis C status • HIV status	• Ejection fraction (%) • pO2 (terminal) • pO2/fiO2 (terminal)

Model Measures

Measure	SRTR Model	DMG + SRTR Model
Accuracy	72.9%	83.6%
Sensitivity	71.7%	83.6%
Specificity	73.8%	83.5%
Positive predictive value	67.9%	79.7%
Negative predictive value	77.1%	86.8%


DMG + SRTR
AUC 0.92
SRTR
AUC 0.80
sensitivity
1.00
0.75
0.50
0.25
0.00
1.00
0.75
0.50
0.25
0.00
specificity

Recent DMG Studies

The role of deceased donor liver biopsy: An analysis of 5449 liver transplant recipients

Madhukar S Patel [1 2], Jahan Mohebali [1 2], Taylor M Coe [1 2], Mitchell Sally [3 4], Tahnee Groat [3], Claus U Niemann [5 6], Darren J Malinoski [3 4], Parsia A Vagefi [7]

Machine Learning Prediction of Liver Allograft Utilization From Deceased Organ Donors Using the National Donor Management Goals Registry

Vasopressor selection during critical care management of brain dead organ donors and the effects on kidney graft function

Active Donor Management During the Hospital Phase of Care Is Associated with More Organs Transplanted per Donor

Recent DMG Studies

Deceased organ donor factors influencing pancreatic graft transplantation and survival

Organ donor management goals and delayed graft function in adult kidney transplant recipients

Impact of Deceased Donor Management on Donor Heart Use and Recipient Graft Survival

Critical care and ventilatory management of deceased organ donors impact lung use and recipient graft survival

OHSU

DMRI DONOR MANAGEMENT RESEARCH INITIATIVE

Vasopressor Selection During Critical Care Management of Brain Dead Organ Donors and the Effects on Kidney Graft Function

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AUGUST 7, 2020 – 2:55PM PRESENTER: ELIZABETH SWANSON, PHD

Study design: Conversion to norepinephrine equivalent doses

Drug	Dose	Norepinephrine equivalent
Epinephrine	0.1 µg/kg/min	0.1 µg/kg/min
Norepinephrine	0.1 µg/kg/min	0.1 µg/kg/min
Dopamine	15 µg/kg/min	0.1 µg/kg/min
Phenylephrine	1 µg/kg/min	0.1 µg/kg/min
Vasopressin	0.04 U/min	0.1 µg/kg/min

Source

DMRI DONOR MANAGEMENT RESEARCH INITIATIVE

Vasopressor use varied over the course of donor management

Vasopressor	Authorization (%)	Allocation (%)	Prior to Organ Recovery (%)
Dopamine	7.7	8.9	9.6
Phenylephrine	25.5	20.2	16.4
Norepinephrine	67.9	32.1	22.8
Epinephrine	5.1	1.8	1.4
Vasopressin	53.7	78.2	75.4

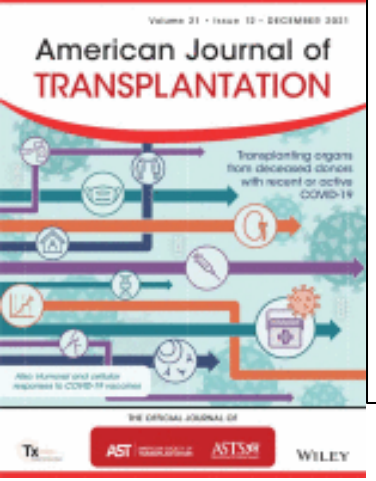
Independent predictors of DGF – model 2

DMG/Variable	OR	95% CI	*p* Value
Cold ischemia time, per hour	1.02	1.01 – 1.02	< 0.001
Kidney donor profile index, per unit	1.01	1.01 – 1.02	< 0.001
Age, per year	1.01	1.00 – 1.02	0.013
Serum creatinine at allocation, per mg/dL	1.28	1.12 – 1.46	< 0.001
Serum creatinine prior to organ recovery, per mg/dL	1.22	1.10 – 1.36	< 0.001
Total norepinephrine equivalent dose, per µg/kg/min			
At authorization	0.77	0.57 – 1.04	0.093
At allocation	0.91	0.54 – 1.53	0.717
Prior to organ recovery	0.21	0.82 – 2.46	0.208

Independent predictors of DGF – model 1

DMG/Variable	OR	95% CI	*p* Value
Cold ischemia time, per hour	1.02	1.01 – 1.03	< 0.001
Kidney donor profile index, per unit	1.01	1.01 – 1.02	< 0.001
Age, per year	1.01	1.00 – 1.02	0.035
Serum creatinine at allocation, per mg/dL	1.29	1.13 – 1.48	< 0.001
Serum creatinine prior to organ recovery, per mg/dL	1.21	1.08 – 1.34	0.001
Phenylephrine prior to organ recovery, per µg/kg/min norepinephrine equivalent	6.93	1.18 – 40.82	0.032

DMRI DONOR MANAGEMENT RESEARCH INITIATIVE



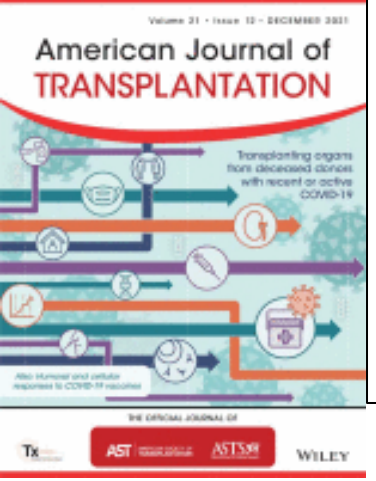
Critical care and ventilatory management of deceased organ donors impact lung use and recipient graft survival

Elizabeth A. Swanson[1] | Madhukar S. Patel[2] | Michael P. Hutchens[3] | Claus U. Niemann[4,5] | Tahnee Groat[3] | Darren J. Malinoski[1,3] | Mitchell B. Sally[1,3]

TABLE 3 Multivariable analysis: independent predictors of donor lung use (individual DMG parameters)

At Allocation		
Mean arterial pressure, mmHg	1.01 (1.00–1.01)	.15
Central venous pressure, mmHg	0.96 (0.93–0.99)	.002
Ejection fraction, ≥50%	1.34 (1.05–1.72)	.02
Arterial blood gas pH, per 0.1 unit	1.11 (0.95–1.31)	.20
PaO_2:FiO_2, ≥300	4.26 (3.41–5.32)	<.001
Urine output, ≥0.5 ml/kg/h	0.75 (0.57–1.00)	.051
Low-dose vasopressors, ≤1 agent	0.85 (0.58–1.25)	.41
Donor serum creatinine, mg/dl	0.97 (0.90–1.04)	.33
Dopamine use	11547036 (0–∞)	1.00
Norepinephrine use	1.17 (0.25–5.51)	.85
Epinephrine use	3549673 (0–∞)	1.00
Vasopressin use	1.56 (0.14–17.9)	.72

Am J Transplant. 2021;21:4003–4011.



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PEEP, cm H_2O	0.95 (0.91–0.99)	.047
PIP, cm H_2O	0.91 (0.89–0.93)	<.001
Tidal volume, ml/kg PBW		
≤8.00	0.52 (0.41–0.67)	<.001
>8.00	—	—
Ventilation mode prior to organ recovery		
AC	—	—
APRV	0.82 (0.42–1.61)	.57
CMV	1.05 (0.70–1.56)	.83
Other	0.75 (0.50–1.13)	.17
PRVC	0.61 (0.42–0.88)	.01
SIMV	1.17 (0.67–2.03)	.58
PC	0.63 (0.38–1.05)	.08

TABLE 3 Multivariable analysis: independent predictors of donor lung use (individual DMG parameters)

Am J Transplant. 2021;21:4003–4011.

Multivariable logistic regression model: Lung graft survival (*SRTR variables included*)

Donor characteristics

Sex
Height
Blood type

Donor physiologic parameters

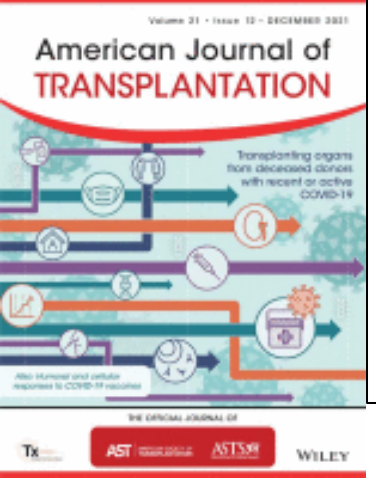
PaO2:FiO2
Serum lactate
Serum creatinine
Arterial blood gas pH

Critical care interventions

Administration of dopamine
Administration of vasopressin
Number of vasopressors
Positive end expiratory pressure
Tidal volume

Recipient characteristics

Chronic steroid use
Dialysis since listing
Previous transplant
FVC percent predicted
Lung allocation score
Six minute walk distance
pCO_2
Age
Cardiac output
Serum creatinine
Total bilirubin
PADP



Critical care and ventilatory management of deceased organ donors impact lung use and recipient graft survival

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TABLE 6 Multivariable analysis: independent predictors of lung graft survival

Variable	OR (95% CI)	*p* value
At Authorization		
PaO_2/FiO_2, ≥300	1.46 (0.80–2.65)	.22
Donor serum lactate, mg/dl	1.03 (0.95–1.12)	.49
At Allocation		
Dopamine use	0.19 (0.06–0.68)	.01
Vasopressin use	0.78 (0.41–1.47)	.44
Number of vasopressors	1.24 (0.68–2.25)	.48

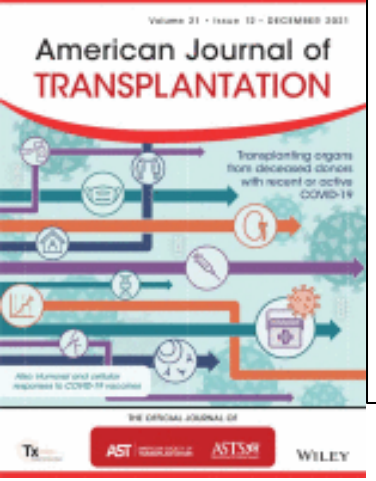

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TABLE 6 Multivariable analysis: independent predictors of lung graft survival

Tidal volume, ml/kg PBW		
≤8.00	0.98 (0.54–1.78)	.95
>8.00	—	—
Prior to Organ Recovery		
PEEP, cm H_2O	1.11 (0.98–1.25)	.11
SRTR-adjusted risk ratio model variables		
Donor blood pH, per 0.1 unit	1.48 (1.01–2.19)	.045

Am J Transplant. 2021;21:4003–4011.

Summary of Findings

- Modifiable donor physiologic and ventilator parameters predict donor lung utilization.

Independent positive predictors	Independent negative predictors
Ejection fraction ≥ 50% PaO2:FiO2 ≥ 300 Tidal volume	Central venous pressure PEEP Peak inspiratory pressure

Summary of Findings

- Higher tidal volumes independently predict donor lung utilization, without affecting lung graft survival.
- A randomized clinical trial is needed to determine optimal ventilator management in organ donors after brain death.

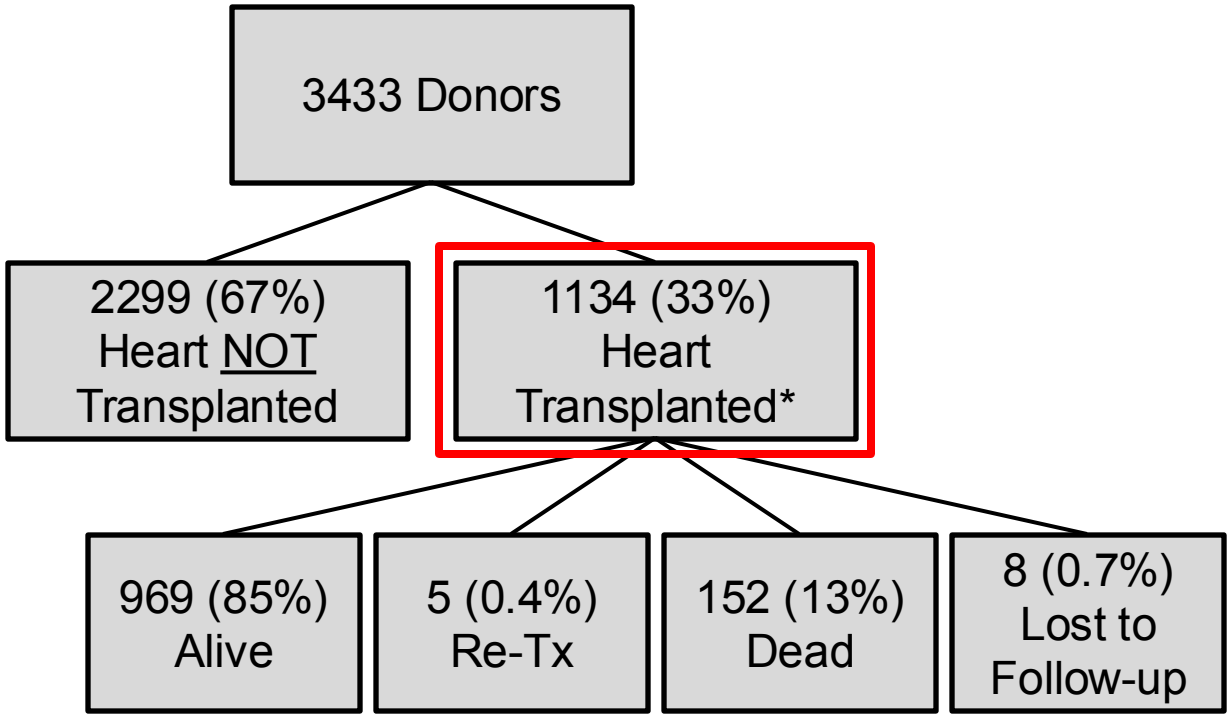
Modifiable Deceased Organ Donor Critical Care Parameters Impact Donor Heart Utilization and Recipient Survival: An Analysis from UNOS Regions 4, 5, and 6

Madhukar S. Patel[1], Salvador De La Cruz[2], Jahan Mohebali[1], Kiran Khush[3], Mitchell Sally[2], Xiang Gao[2], Tahnee Groat[2], Darren J. Malinoski[2]

[1]Massachusetts General Hospital
[2]VA Portland Health Care System and Oregon Health & Science University
[3]Stanford University

Deceased Donor Heart Management Results

- Data from **3433 donors** were collected

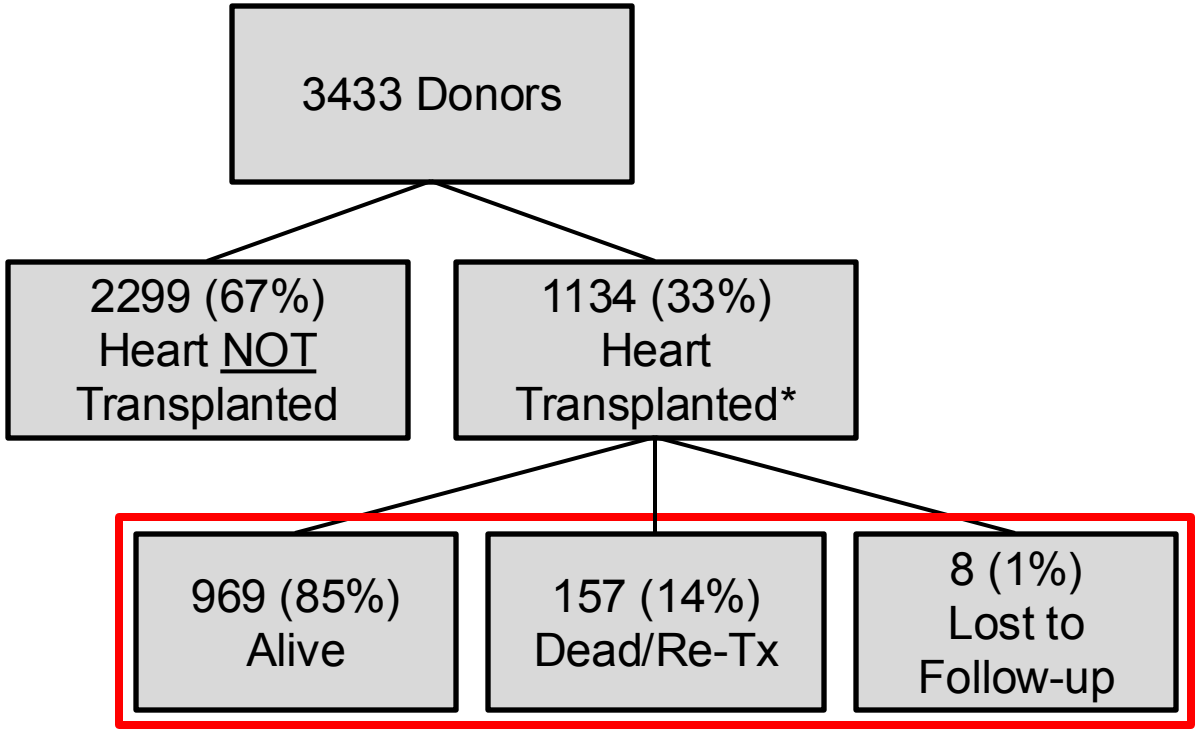


*Median follow-up of **707.5 [369-751]** days

Predictors of Heart Transplantation Results

Multivariable Analysis: Predictors of Heart Transplantation			
Variables	Odds Ratio	95% CI for OR	p-value
Donor Type – SCD	**3.987**	**2.552-6.305**	**<0.001**
Age (per year)	**0.937**	**0.929-0.945**	**<0.001**
BMI > 30	**0.778**	**0.625-0.968**	**0.025**
Gender - Male	**1.692**	**1.372-2.087**	**<0.001**
Ejection Fraction (≥50%)	**1.655**	**1.351-2.028**	**<0.001**
Arterial Blood Gas pH (7.30-7.50)	1.161	0.825-1.633	0.392
PaO_2/FiO_2 (≥300)	**1.034**	**1.068-1.593**	**0.009**
Serum Sodium (≤155mEq/L)	1.102	0.860-1.413	0.442
Urine Output (≥0.5ml/kg/h)	1.103	0.801-1.519	0.548
Vasopressors ≤1 and low dose	1.069	0.786-1.454	0.672
Central Venous Pressure (4-12 mmHg)	1.055	0.854-1.303	0.618
Creatinine (mg/dL)	**0.829**	**0.738-0.894**	**<0.001**
Epinephrine used (>0 mcg/min)	0.534	0.280-1.019	0.057
Dopamine used (>0 mcg/kg/min)	1.088	0.850-1.391	0.504
Norepinephrine used (>0 mcg/kg/min)	0.863	0.620-1.201	0.381
Neosynephrine used (>0mcg/min)	0.825	0.614-1.109	0.202
Thyroid Hormone (unit/hr)	**0.984**	**0.973-0.995**	**0.004**
Hosmer=0.554, CI=0.822			

Predictors of Heart Recipient Survival Results



*Median follow-up of **707.5 [369-751]** days

Predictors of Heart Recipient Survival Results

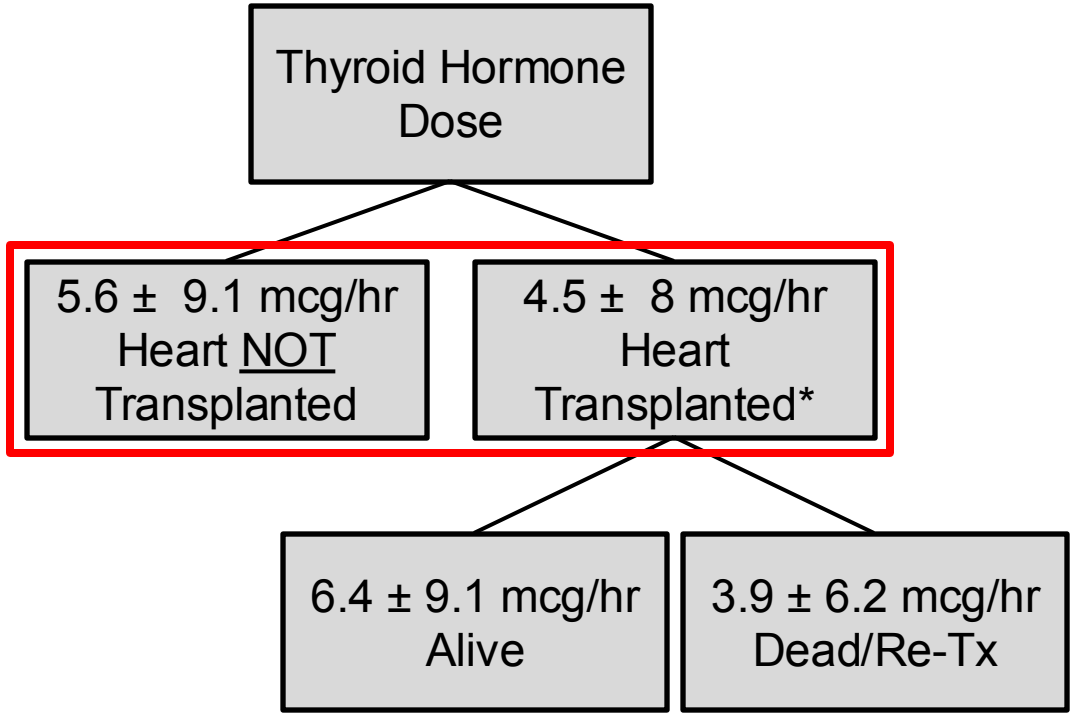
Elements of the **risk-adjusted SRTR 1-year recipient survival model** were **added** to a multivariable model containing **modifiable donor variables**

Elements of Risk-Adjusted SRTR 1-Year Recipient Survival Model
Bilirubin at Transplant
Dialysis at Transplant
Donor Age years
Donor Cause of Death (CVA/Stroke vs Others)
Drug-Treated HTN at Listing
Ischemic Time
Medical Condition
Not Hospitalized
In ICU
Hospitalized Not in ICU
Pulmonary Artery Systolic Pressure
Previous Heart Transplant
Recipient Age at Transplant
Recipient Diagnosis
Coronary Artery Disease
Cardiomyopathy
Congenital Heart Disease
Other/Missing
Recipient Height
Recipient Race/Ethnicity
White
Black
Hispanic/Latino
Asian
Multi-Racial/others/missing
Recipient Serum Creatinine (>1.5)
Recipient on Life Support: ECMO
Recipient on Life Support: VAD
Recipient on Life Support: Ventilator
Sudden Death at Listing

Predictors of Heart Recipient Survival Results

Multivariable Analysis: Predictors of Heart Recipient Survival			
Variables	Odds Ratio	95% CI for OR	p-value
Donor Age	0.985	0.967-1.004	0.132
Mean Arterial Pressure (per mmHg)	0.993	0.981-1.006	0.300
Glucose (≤155mEq/L)	1.197	0.789-1.814	0.398
Vasopressors ≤1 and low dose	1.481	0.977-2.246	0.064
Thyroid Hormone use (unit/Hr)	**1.039**	**1.009-1.071**	**0.011**
Norepinephrine used (>0 mcg/kg/min)	3.729	0.487-28.546	0.205
Hosmer=0.968, CI=0.682			

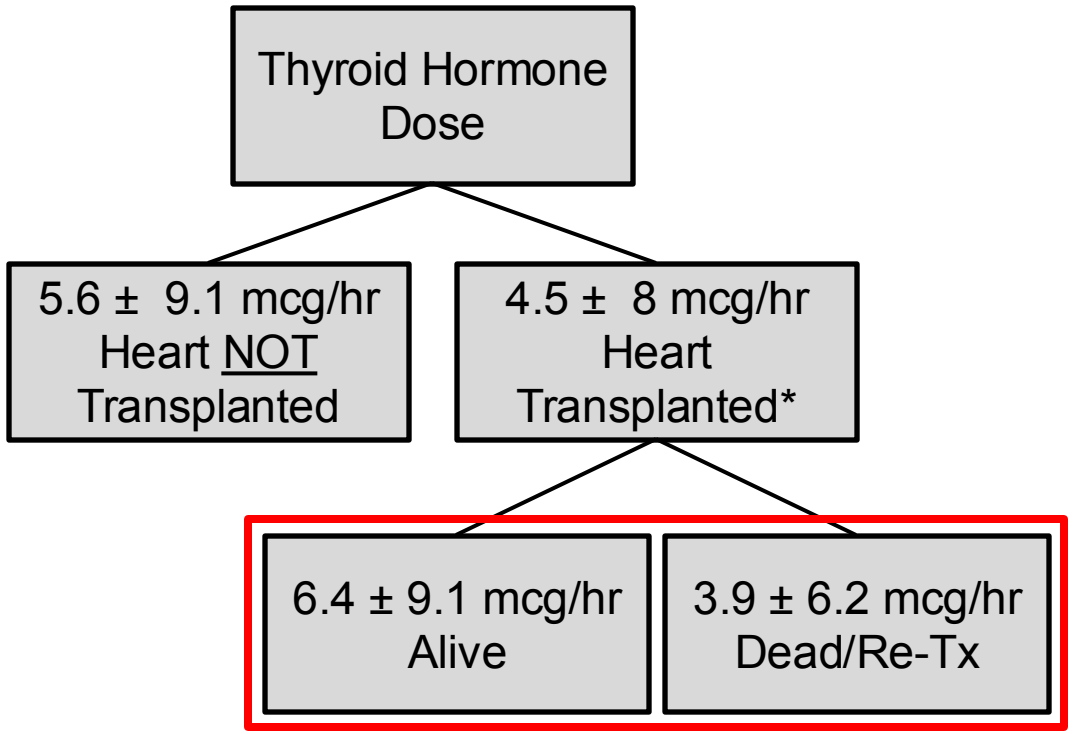
Thyroid Hormone Dose Results



p-value = 0.001

p-value < 0.001

Thyroid Hormone Dose Results



p-value = 0.001

p-value < 0.001

Deceased Donor Heart Management Conclusion

- **Donor demographic** and, more importantly, **modifiable critical care data** predict **heart utilization** and **recipient survival**
- There is a **paradoxical** relationship between **thyroid hormone dose and decreased heart acceptance** (OR=0.98) versus **increased recipient survival** (OR=1.04)
- **Further investigation is warranted** to inform donor optimization and transplant outcomes

Lifesharing's Journey with Donor Management Goals (DMGs)

Darryl Nethercot
Director of Organ Operations

Introduction to DMGs at Lifesharing

Lifesharing's involvement dates back to 2007/2008 as a volunteer research project.

Early focus for DMGs: standardizing donor care plans using best practices.

Transitioned from CBIGs to analysis-driven donor management.

LIFESHARING™

Challenges Faced Over the Years

Challenges: Heavy manual data entry and EMR incompatibilities leading to inefficiencies. Initial manual-only systems evolved to XML uploads but still required corrections.

Engagement: Enthusiasm for DMGs dwindled over time due to workload.

Evolving Practices: Changes in critical care.

Current state: 18 months behind on data entry due to prioritization of donor activities.

LIFESHARING™

National Perspective and Best Practices

Participation in national meetings to align with evolving standards.

Critical care trends: Changes in ICU management can lead to changes in donor management.

Opportunities: Sharing best practices regionally

LIFESHARING™

Recent Internal Focus at Lifesharing

- Push Method: Proactive discussions in morning calls using EMR 'sticky notes.'
- Integration into Workflow: Real-time tracking of DMG adherence and handoffs.
- SRTR Reviews: Monthly trend analysis of DMG time points and case reviews.
- Outcome: Gradual incorporation into team culture and reports.

LIFESHARING™

2025 Year of the DMG

LIFESHARING™

Hospital Development and Engagement

REAL-TIME CASE OUTCOMES AND DMG TRENDS PRESENTED WITHIN TWO DAYS OF OR.

ADDRESSED PHYSICIAN DISENGAGEMENT POST-COVID BY SHOWCASING DONOR POTENTIAL.

USE OF DCD REQUEST SHEETS EXPLAINING HOW REQUESTS IMPROVE DMGS AND OTPD.

LIFESHARING™

Last updated: 12/30/2024

SELECT YEAR: (All)

SELECT HOSPITAL: (All)

SELECT UNOS ID:

LIFESHARING™

Donor Management Goals (DMG)
Donor Report Review

Donor Hospital:		Recovery Date:	12/28/2024
Hospital Unit:	SICU	Age / Gender:	25Y / F
COD:	Cerebrovascular/Stroke	MRN:	
Ht / Wt / BMI:	66.00in / 82.00kg / 29.19	Case Time (hrs:min):	61:03
		BD/DCD Recovery:	BD

Managed by (OPO/Hospital):	Hospital	Hospital	OPO	OPO
Donor Management Goals:	**At Referral**	**At Authorization**	**12-18 hours Into Case**	**Prior to OR**
1. MAP 60-100	Yes	Yes	Yes	Yes
2. CVP 4-12	No	No	No	No
3. EF ≥30%	Yes	Yes	Yes	Yes
4. ABG pH 7.3 - 7.5	Yes	Yes	Yes	Yes
5. P:F Ratio PO2 ≥300	No	Yes	No	Yes
6. Sodium ≤155	Yes	Yes	No	No
7. Glucose ≤180	Yes	Yes	Yes	Yes
8. Urine Output ≥ 1cc/kg/h	Yes	Yes	No	Yes
9. ≤1 pressor used *	Yes	Yes	Yes	Yes
Total DMGs Met (out of 9)	**7**	**8**	**5**	**7**

Organs:	Recovered	Transplanted
Kidney	2	2
Liver	1	1
Lung	2	2
Heart	1	1
Pancreas	0	0
Intestine	0	0
Total	**6**	**6**

Comments

Hospital Development and DMGs

Feedback form that our Hospital Development team can review with the hospital care team. Typically within 2 business days post procurement.

LIFESHARING™

DCD Wishlist & DMGs

LIFESHARING™

ADULT ORGAN DONOR WORK-UP
Donation after Cardiac Death (DCD)

Requests and Recommendations

Labs Q6:

- ☐ CBC
- ☐ CMP
- ☐ Liver Panel (if not included in CMP)
- ☐ PT/INR
- ☐ PTT
- ☐ Magnesium level
- ☐ Phosphorous level
- ☐ Amylase
- ☐ Lipase
- ☐ CK, CKMB, Troponin

Additional Labs:

- ☐ Direct Bilirubin x1
- ☐ ABG x1
- ☐ UA with micro
- ☐ AFB
- ☐ Sputum Gram Stain and Culture
- ☐ 12 hr urine creatinine clearance
- ☐ CXR in AM

Management Recommendations:

- ☐ Maintain MAP >65. Add Neosynephrine as first choice vasopressor.
- ☐ If available, monitor stroke volume variation and maintain SVV 11-13
- ☐ Appropriate antibiotics as needed
- ☐ Maintain urine output >30 ml/hr with fluid boluses or diuresis as needed
- ☐ End of life orders to include comfort medications, extubation, MD/RN to pronounce etc.
- ☐ Heparin 30,000 Units IVP 5 minutes prior to extubation (separate consent obtained by Lifesharing to include witness signature from hospital staff)
- ☐ Additional requests (if needed):

_____

_____

Additional Orders Requested When Pursuing Thoracic Organs for Donation:

- ☐ Bronchoscopy
- ☐ A-line
- ☐ 12 lead ECG
- ☐ Transthoracic cardiac echo (CD of study to Lifesharing staff)
- ☐ Q6 hour ABG x2 on 40% and 100% each time (30 minutes apart)
- ☐ Q6 hour CXR
- ☐ Pulmonary toilet (suction, turnQ2) to maximize oxygenation
- ☐ Vent settings to maximize oxygenation (Maintain PF ratio >300)

LIFESHARING™

ADULT ORGAN DONOR WORK-UP
Donation after Cardiac Death (DCD)

Donor Management Goals

Research has demonstrated that if ≥7 of the Donor Management Goals (DMGs) are met below then we are more likely to get four or more organs transplanted per donor. We understand that not all of these goals are unattainable due to the need to actively treat certain disease and conditions.

Any help in achieving these goals would be greatly appreciated.

DMGs:

MAP	60 to 110
CVP or SVV	CVP 4 to 12; or SVV 11 to 13
EF	≥ 50%
ABG	pH: 7.3- 7.5
P:F Ratio	>300
Sodium	≤ 155
Glucose	≤ 180
Urine Output	≥ 0.5cc/kg/hr
Number of Pressors	≤ 1 pressor used

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Frequent Communication and Feedback Loops

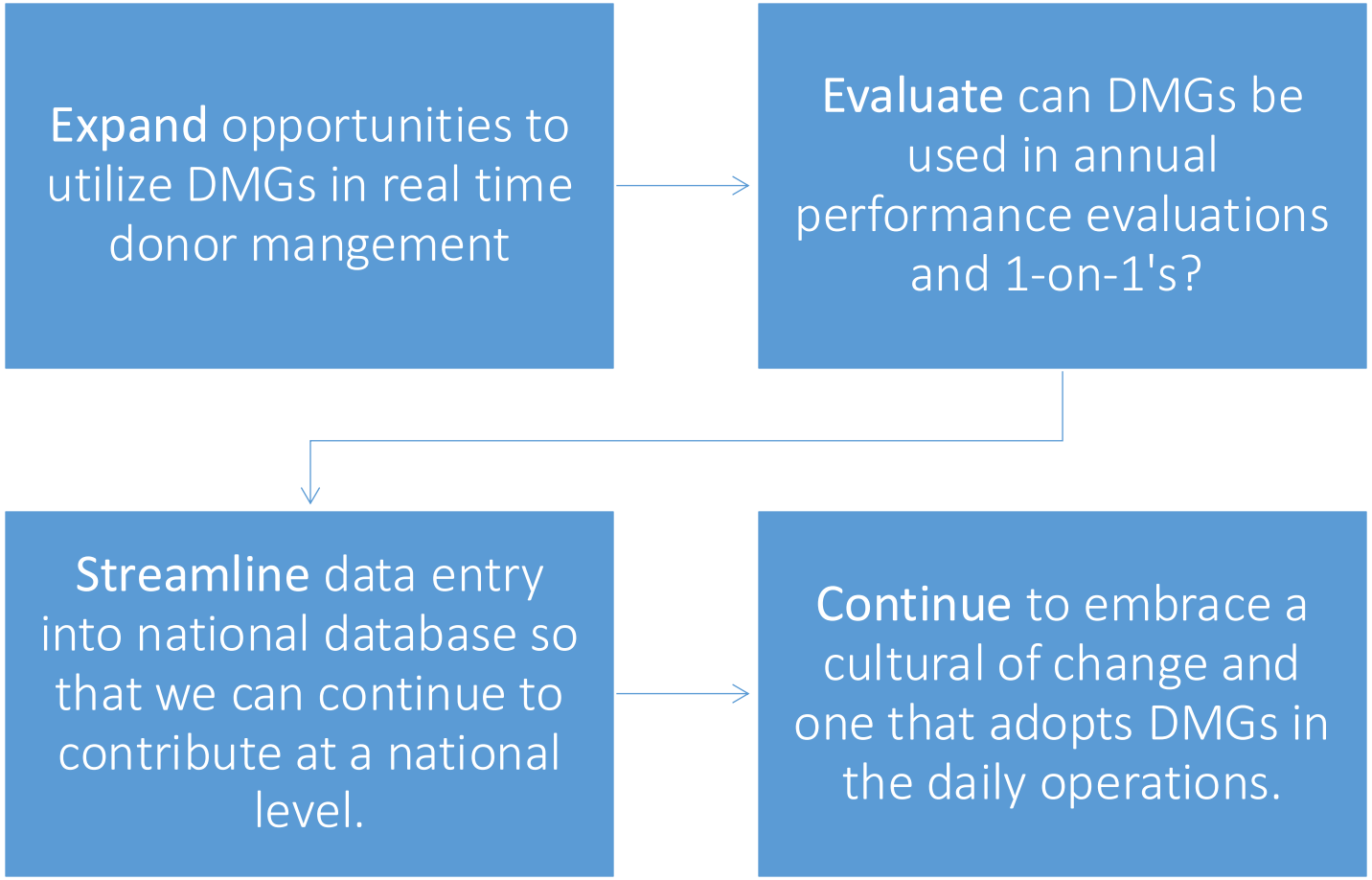
Daily Reminders: Coordinators update DMGs via EMR tools.

Leadership Accountability: AOCs and medical directors track progress in real-time.

Culture shift: Consistent reinforcement and reporting foster gradual improvement.

LIFESHARING™

Next Steps and Strategic Focus



LIFESHARING™

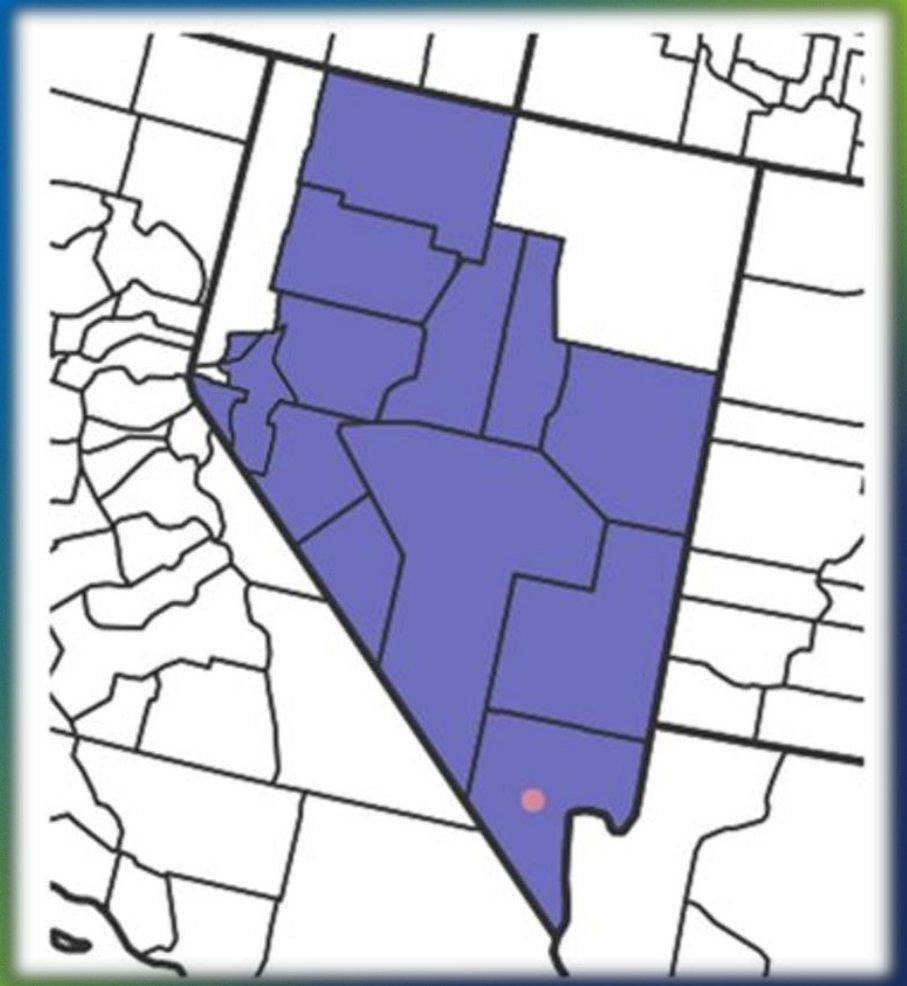
DMGs – Yes Please!

Kelsi Kolle MSN, RN, CCRN, CPTC
Advanced Practice Clinician
Nevada Donor Network

NEVADA DONOR NETWORK #DonateLife

Nevada Donor Network

- Region 5
- Population: 2.8 million
- 14 organ recovery hospitals
  - Major hospitals within 1 hour drive
- 2 transplant centers
  - 1 kidney and pancreas
  - 1 kidney (November 2024)



NEVADA DONOR NETWORK #DonateLife

www.nvdonor.org | 855-NVDONOR (855.683.6667)

IN 2024, WE SAVED & HEALED LIVES THROUGH

206 ORGAN DONORS

631 ORGANS TRANSPLANTED

924 TISSUE DONORS

1,444 OCULAR DONORS

1,706 BIRTH TISSUE DONORS

NEVADA DONOR NETWORK
#DonateLife

www.nvdonor.org | 855-NVDONOR (855.683.6667)

DMG Uses

- Education for critical care professions
- **Real time clinical care**
- **Staff performance/case reviews**
- Feedback/benchmarking

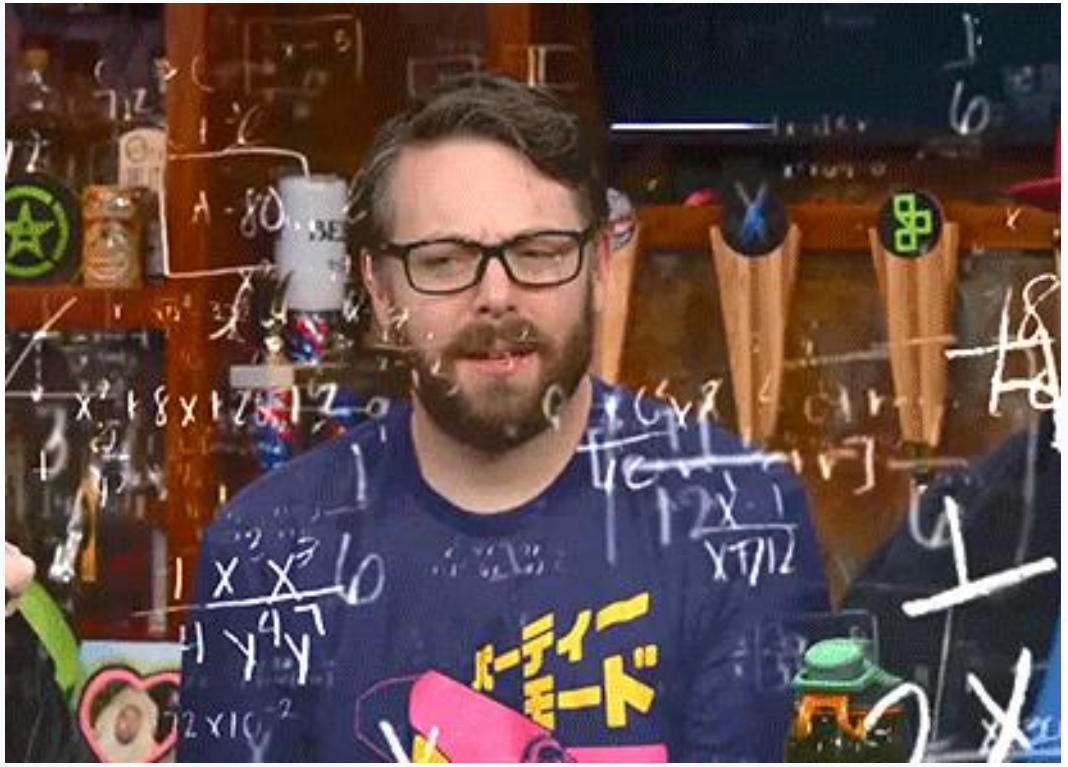
NEVADA DONOR NETWORK #DonateLife

Procurement Transplant Coordinator (PTC)

Cultures

Investigators

Family Support



Allocation

Policy Experts

Referral Management

Donor Management

OR Logistics

Hospital Development

NEVADA DONOR NETWORK #DonateLife

Standardized Shift Change Notes

Received report from (Denise, PTC). Pt is (stable), on the following drips: (MIVF-plasmalyte 100 mls/hr, Vaso 0.001 units/min).

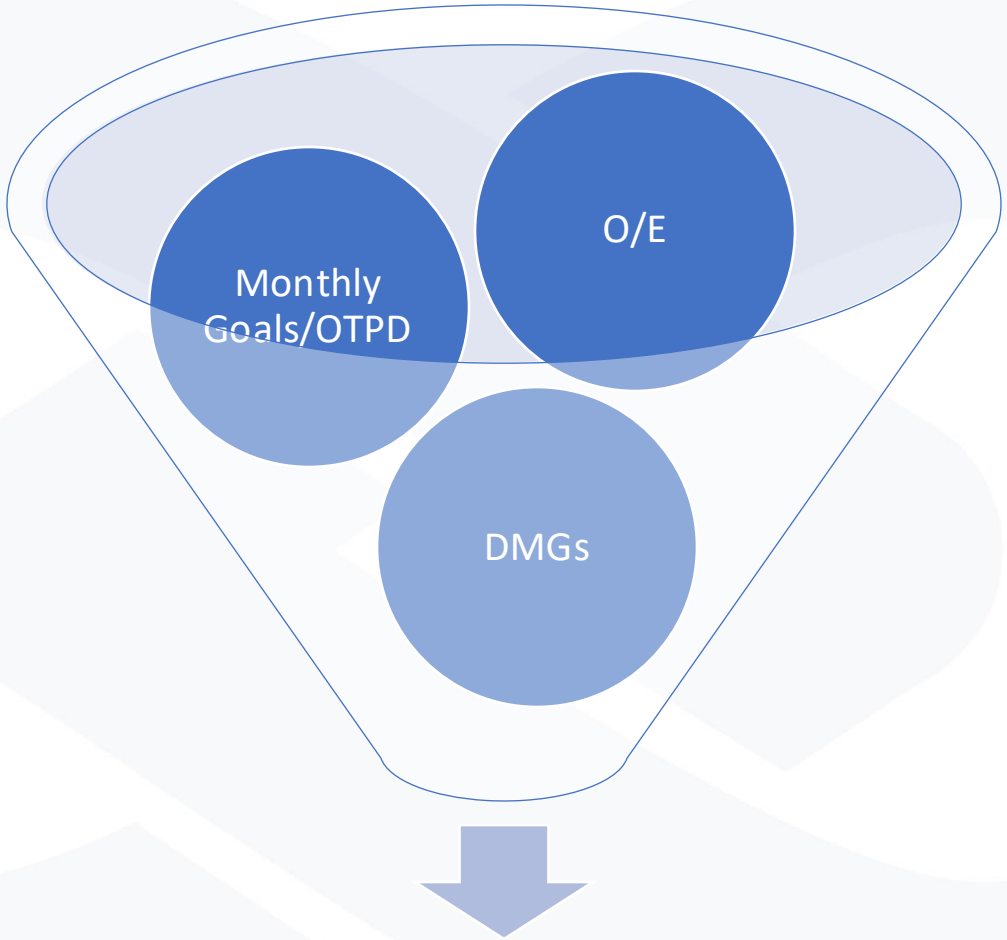
Donor status: BDD
BP: 118/60 (81)
HR: 87 NSR w/ occ'l PVC
Vent Settings:
CVP/PA: 10
Daily weight (dayshift only): 80.0 kg
Temp: 36.6C
DMGs met: 8/9 - UOP

NEVADA DONOR NETWORK #DonateLife

Additional Clinical Goals

Parameter	Goal
Heart Rate (HR)	60-100 beats/min
Blood Pressure	Systolic 90 – 140 mmHg Diastolic 50 – 90 mmHg
Mean Arterial Pressure (MAP)	60-90 mmHg
Central Venous Pressure (CVP)	4-8 mmHg
Oxygen Saturation (SpO_2)	≥ 95%
Temperature	35-37°C
Sodium	≤ 155 mEq/L
Glucose	≤ 180 mg/dL
Urine Output (UO)	1–3 mL/kg/hr
Specific Gravity	1.010-1.025
Serum Osmolality	285-295 mOsm/kg
pH	7.35 - 7.45
PaO2:FiO2 Ratio (P:F)	≥ 300
Peak Inspiratory Pressure (PIP)	≤ 30 cmH2O
Plateau Pressure (Pplat)	< 29 cmH2O
Catecholamine Infusion	≤1 at ≤ 0.5 mcg/kg/min
Cardiac Output (CO)**	4.0 – 6.0 L/min
Cardiac Index (CI)**	≥ 2.4 L/min/m^2
Stroke Volume (SV)**	60 – 100 mL/beat
Systemic Vascular Resistance (SVR)**	800-1200 dyn*sec/cm^5
Stroke Volume Variation (SVV)**	10 – 15%
Pulmonary Artery Pressure (PAP)*	Systolic 15 – 30 mmHg Diastolic 8 – 15 mmHg
Pulmonary Artery Wedge Pressure (PAWP)*	4 – 10 mmHg
Left Ventricular Ejection Fraction (LVEF)	≥50%
Hemoglobin (Hgb)	≥10 gm/dL
Hematocrit (Hct)	≥30%

NEVADA DONOR NETWORK #DonateLife



Case Review

Performance Review

1. Monthly Goals/OTPD

	2021	2022	2023	2024
Donors	202	207	204	206
Organs Transplanted	474	487	498	**631**
BD Donors	148	125	121	138
SCD OTPD	3.59	3.99	3.91	**4.19**
ECD OTPD	1.33	1.32	0.97	**2.03**
DCD Donors	54	82	83	68
DCD OTPD	1.2	1.1	1.4	**2.01**

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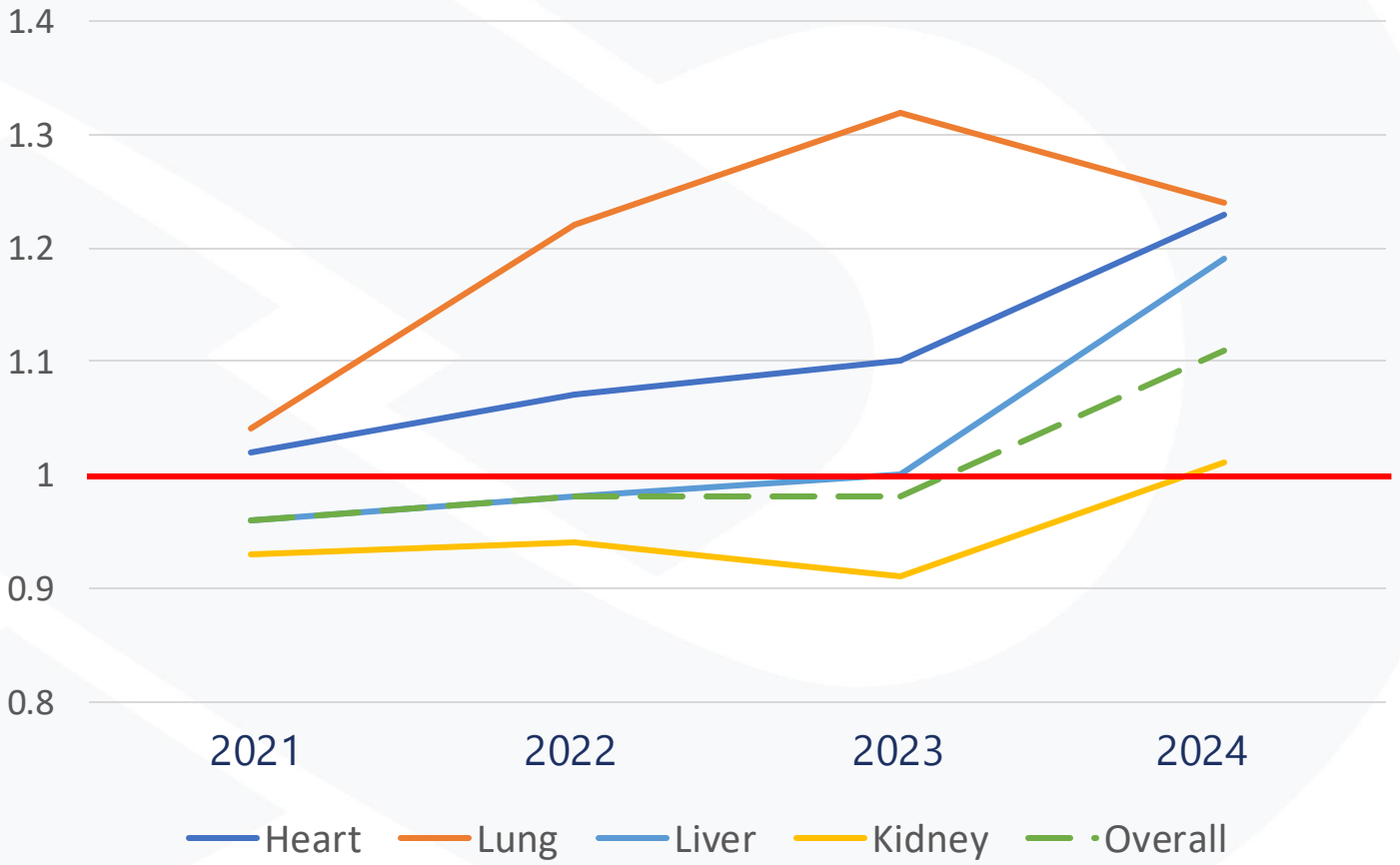
2. Observed/Expected



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3. DMGs

Average DMGs Met	2021	2022	2023	2024
Referral	4.86	4.83	4.83	4.69
Authorization	5.14	5.16	5.24	5.44
Allocation	6.07	5.79	6.12	6.44
Prior to OR	5.96	5.67	6.15	6.47
Kidney DGF	43.9%	43%	41.2%	40%

NEVADA DONOR NETWORK #DonateLife

Thank you!

Kelsi Kolle MSN, RN, CPTC, CCRN
(320) 761-7461
kkolle@nvdonor.org

NEVADA DONOR NETWORK
#DonateLife

STA SOUTHWEST TRANSPLANT ALLIANCE

Beyond the Numbers:

A Balanced Approach to Donor Management Goals

Jeffrey Steinkamp

Advanced Practice Clinician

Nuances of Critical Care

- Good donor management is good critical care
- Donor management goals (DMGs) over-simplify the complex care required of organ donors
- Meet all the goals you want, but if you have stents, emphysema, and polycystic kidney disease….

Historic Value

- Lung surgeons and their reliance on venous pressure
  - MYTH: CVP is a great evaluator of fluid status
- Liver surgeons and their reliance on sodium values
  - MYTH: Hypernatremia leads to liver graft dysfunction
- T4 initiation…

Vallabhajosyula, S., Jentzer, J. C., Kashani, K. B., & Mankad, S. V. (2016). Role of CVP to guide fluid therapy in chronic heart failure. *JACC: Cardiovascular Interventions*, *9*(6), 624–625. https://doi.org/10.1016/j.jcin.2015.12.278

Basmaji, J., Hornby, L., Rochwerg, B., Luke, P., & Ball, I. M. (2020). Impact of donor sodium levels on clinical outcomes in liver transplant recipients: A systematic review. *European Journal of Gastroenterology & Hepatology*, *32*(12), 1489–1496. https://doi.org/10.1097/meg.0000000000001776

Data-recording Timepoints

- At referral
- OPO start of case
- Initial allocation
- Prior to OR

Represent hospital management

- Hospital management may be different
  - Hypernatremia (sodium) management
  - The challenges of a large DSA
    - Over 300 health-care facilities
    - Almost 750 miles across

Finality of a Concrete Value

- Hit the “goal” and now we’re done
- P:F ratio
  - 300 is too low for lung transplant (and too high if goal is “just” perfusion)

Deliberate Non-compliance

- Aggressive diuresis
- Pressor use for volume removal

Centralizing Donation After Circulatory Death to Improve Organ Procurement Practices and Outcomes

Matilin Rigsby, MPH; Chad Trahan; Geoffrey Funk, MD, FACS

Purpose

The organ procurement center (OPC) model entails transporting brain-dead organ donors to a centralized location or facility operated by an organ procurement organization (OPO), where workflows, expertise, and resources dedicated to organ donation and allocation are concentrated. Given the demonstrated success of centralizing donation after brain death (DBD) cases, this study applies the OPC model to donation after circulatory death (DCD) cases to determine its effect on cost and organ outcomes. I have no financial relationships with commercial interests to disclose.

Methods

We compiled a list of all donors at one OPO between January 1, 2023, and December 20, 2023. The donors were stratified by brain death and transfer status, creating four subgroups: DBD not transferred, DBD transferred, DCD not transferred, and DCD transferred. Each group was evaluated based on organ outcomes, individual organ types, and cost per case. Because we are already aware of significant outcome differences between DBD and DCD cases, we ran two-sample t-tests to compare continuous variables among like brain death status groups. Similarly, we applied a Fisher's exact test to compare mean values of categorical variables within like brain death status groups. Then, we calculated odds ratios (OR) to quantify the effect of centralizing patients for each outcome variable.

Figure 1. Donor distribution

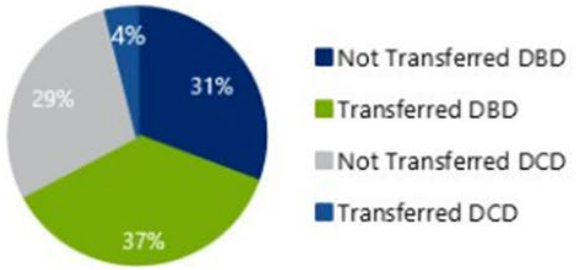


Figure 2. Cost difference

Transferred DBDs cost **18%** less

Transferred DCDs cost **9%** more

Figure 3. Odds ratios

Results

A total of 506 donors were included in this assessment, 31% of which were not transferred DBDs, 37% were transferred DBDs, 29% were not transferred DCDs, and 4% were transferred DCDs **(Figure 1)**. While DBD transferred cases costs the OPO 18% less than managing the donor at the referring hospital, transferred DCDs costs approximately 9% more than DCDs that were not transferred **(Figure 2)**. Among DBD cases, those who were transferred had a significantly higher rate of non-utilized organs (P = 0.048) as well as organs placed for research (P=0.03). There was not a statistically significant difference in the total number of organs recovered or transplanted. Whereas more double lung transplants occurred among transferred DBD cases (OR=1.89, P=0.005), double kidney transplants were more common among donors who remained at the referring hospital (OR=0.08, P=0.002). While the odds of transplanting a liver from a transferred DCD donor is 2.3 times that of a DCD patient who stayed at the referring hospital and the odds ratio of transplanting a heart from a centralized DCD patient is 37% higher than that of a non-transferred patient **(Figure 3)**, these results did not achieve statistical significance. Nonetheless, these data still suggest the OPC model facilitates the transplantation of vital organs.

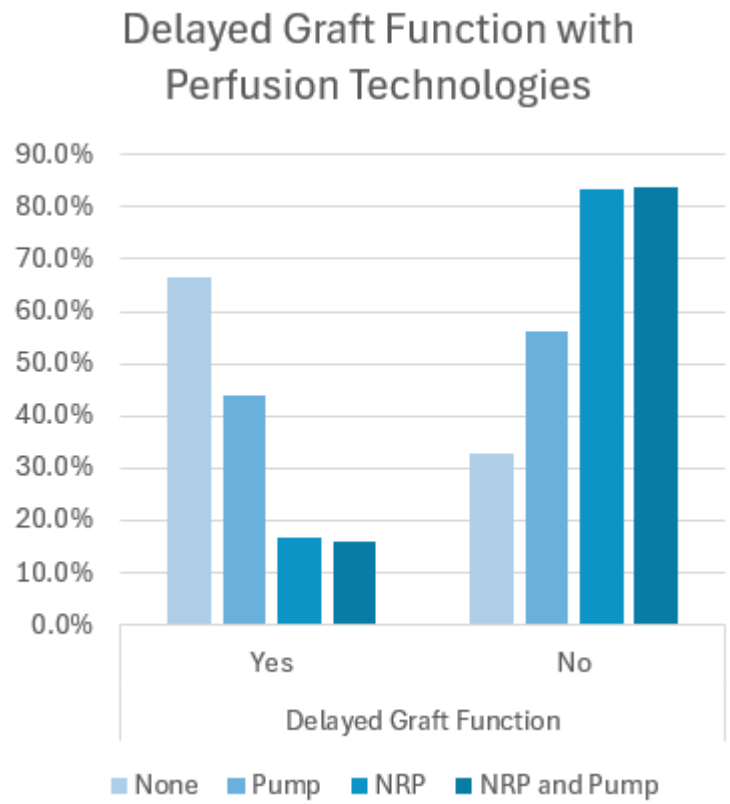
Conclusion

Based on the data available, transferring DCD cases does not yield the same quantitative benefits as transferring DBD cases, and the differences between control and treatment groups did not meet the criteria for statistical significance at 0.05 alpha. However, our analysis demonstrates that centralizing DCDs increases the odds of transplanting some of the most vital organs: hearts and livers. Therefore, implementing the OPC model for all patients renders a better organ yield per donor and overall cost-savings as a best practice for organ procurement and allocation.

(Internal STA data, presented at ATC 2024)

STA SOUTHWEST TRANSPLANT ALLIANCE

			NRP			
	Brain Dead		No		Yes	
	N	%	N	%	N	%
Kidney(s) accepted						
No	70	30.7%	35	40.7%	24	44.4%
Yes	158	69.0%	51	59.3%	30	55.6%
Liver accepted						
No	42	18.4%	53	61.6%	22	40.7%
Yes	186	81.6%	33	38.4%	32	59.3%
Lung(s) accepted						
No	124	54.4%	69	80.2%	46	85.2%
Yes	104	45.6%	17	19.8%	8	14.8%
Pancreas accepted						
No	202	88.6%	86	100.0%	54	100.0%
Yes	26	11.4%	0	0.0%	0	0.0%
Heart accepted						
No	120	52.6%	73	84.9%	39	72.2%
Yes	108	47.4%	13	15.1%	15	27.8%



(Internal STA data based on UNOS data request 1/1/23 – 9/6/24)

How We Utilize Trends

What Does Improvement Look Like?

- More measurements
- Advanced hemodynamic monitoring
- Electrolytes
- Use of perfusion technology
- Standardizing measurements

A Special Thanks to Our Presenters

Darren Malinoski
MD, FACS
Chief Clinical Transformation Officer
OHSU Health

Darry Nethercot
MSN, RN, CPTC, LSSBB
Director, Organ Operations
LIFESHARING™

Kelsi Kolle
MSN, RN, CCRN, CPTC
Advanced Practice Coordinator
NEVADA DONOR NETWORK
Hope · Strength · Life

Jeffrey Steinkamp
BSN, RN, CPTC
Advanced Practice Clinician
STA DONATE LIFE
SOUTHWEST TRANSPLANT ALLIANCE


Q&A
QUESTIONS & ANSWERS