ISHLT JOURNAL WATCH
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Impact of Preoperative Temporary Mechanical Circulatory Support on Durable LVAD Outcomes
An Analysis of The Society of Thoracic Surgeons National Intermacs Database

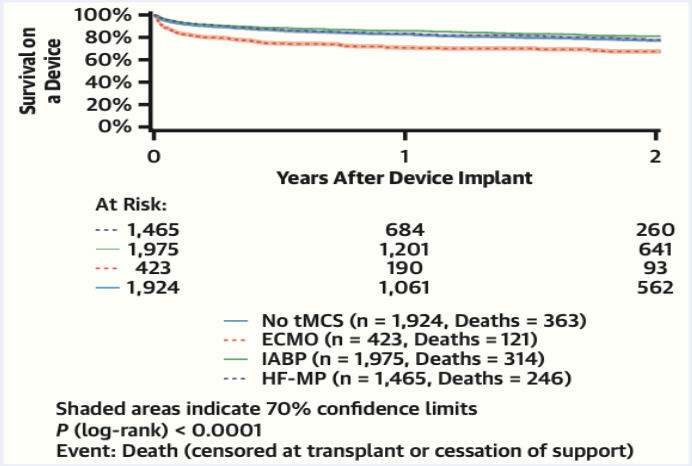
Kanwar MK, Shah P, Cascino T, Grinstein J, et al. *JACC Heart Fail*. 2025;13(11):102671. | DOI: 10.1016/j.jchf.2025.102671

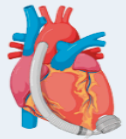
Study Highlights

- **Objective:** Assess impact of preoperative temporary mechanical circulatory support on durable LVAD (HM3) outcomes.
- **Methods:** Adults with INTERMACS 1–3 profiles undergoing HeartMate 3 implantation (2020–2024) were analyzed from the STS INTERMACS database. Survival and stroke outcomes were compared across no tMCS, IABP, Impella 5.0/5.5 (HF-MP), and VA-ECMO cohorts using multivariable and propensity-matched analyses.
- **Results:** Among 5,787 LVAD recipients, two-thirds were bridged with temporary MCS, with Impella 5.0/5.5 use increasing significantly over time. Impella and IABP support were associated with improved survival compared with no tMCS, while ECMO had the worst outcomes; importantly, Impella support improved survival without increasing stroke risk after propensity matching.
- **Conclusion:** Bridging with HF-MP before LVAD is associated with favorable survival without excess stroke.

2-Year Post LVAD Overall Survival Is Excellent

Survival for Patients With Magnetically Levitated by tMCS Status Intermacs: November 24, 2020 to June 30, 2024





No tMCS IPP 1/2 77.0%
IABP 81.2%
HF-MP 77.5%
ECMO 67.1%

Impact of Use of tMCS Devices on Outcomes in Patients Undergoing Durable LVAD: An STS INTERMACS Registry Analysis

Reviewer's Comments

- Largest contemporary HM3 registry analysis.
- HF-MP use increased substantially over study period.
- HF-MP bridge associated with improved survival versus no tMCS.
- Supports aggressive stabilization before durable LVAD implantation.
- Findings align with growing Impella-to-LVAD experience

Limitations

- Retrospective registry study.
- Residual confounding despite propensity matching.
- Device selection bias likely.
- No granular data on management strategies.
- Follow-up limited to 2 years.

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Gene-edited pig cardiac xenotransplantation as a bridge to allotransplantation in infants: Progress in a pig-to-baboon model

Cleveland JD, Mitchell CB, Swicord W, Neal SJ, et al. *AM J Transplant* 2026 May;26(5):980-991. | DOI: 10.1016/j.ajt.2025.12.017

Study Highlights

Objective: Assess a pediatric animal model of orthotopic cardiac xenotransplantation (OCXT) as a potential bridge to allotransplant

- Children <1 year old have 34% waitlist mortality, median wait 110 days
- The authors hypothesize that OCXT could bridge this vulnerable population to allotransplant

Methods: 15 OCXTs performed from gene-edited pig donors to pediatric-sized baboon recipients, 3 of which were selected for allotransplantation >4 months post-OCXT

- Donor pigs (O) & recipient baboons (AB) size & weight matched
- Recipients were monitored with weekly TTE and donor-specific serum reactivity (IgG & IgM), as well as tissue analysis at end of study

Results: 8 of 15 OCXT recipients survived >1 month, with 6 surviving >3 months

- 6 deaths in 1st week: PGD 2/2 myocardial protection (1), technical complications (2), SIRS/pulmonary edema (3)
- Of the 8 >1 month survivors, median survival was 193 days, with death primarily attributable to rejection (6)
- Of the 3 selected for allotransplant, one developed rejection 2/2 no induction and residual porcine IVC, one had technical complication intraop, and one died due to volume overload from induction
- Anti-pig IgG and IgM remained low post OCXT (Figure 4)

Conclusions: OCXT may serve as a temporary bridge strategy

- All porcine tissue must be removed at time of allotransplant
- Induction is indicated and costimulation blockade may be indicated before switching to conventional IS

Baboon OCXT #	1–4	5–9	10–15
Induction			
ATG 5 mg/kg IV (PODs −3 and −1)	+	+	+
Rituximab 10 mg/kg IV (POD −2)	+	+	+
Methylprednisolone 10 mg/kg IV (POD 0)	+	+	+
C1-esterase inhibitor 20 units/kg IV (PODs 0, 4, and 8)	+	+	+
Tocilizumab 10 mg/kg (PODs −1 and 7)	–	–	+
Etanercept 1 mg/kg IV (POD 0), 0.5 mg/kg IV (PODs 3, 7, and 10)	+	–	–
Maintenance			
Anti-CD40 mAb 50 mg/kg IV (PODs 0, 4, 7, 10, and 14, weekly)	+	–	–
Anti-CD154 mAb 20 mg/kg IV (PODs 0 [×2], 2, 7, 10, and 14, weekly)	–	+	+
Rapamycin 1 mg/kg orally ×2/d (from POD-14) (trough 8–12 ng/mL)	+	+	+
Methylprednisolone 5 mg/kg tapering to 0.125 mg/kg IM (daily)	+	+	+

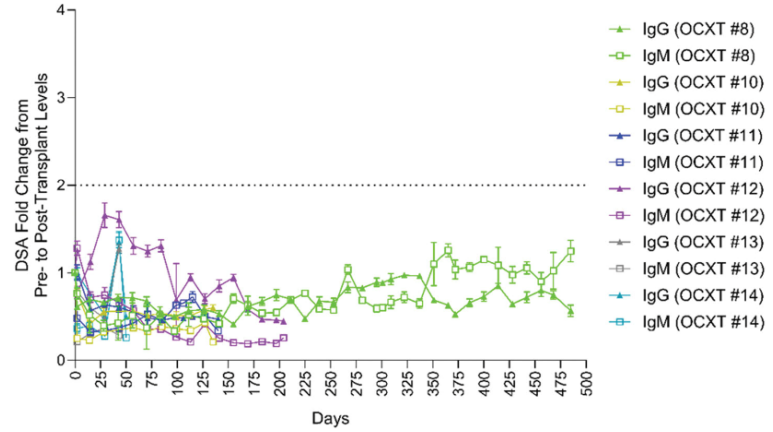

Figure 4.
Measured anti-pig immunoglobulin (Ig)G and IgM levels for NHPs who survived for greater than 30 days following orthotopic cardiac xenotransplantation (OCXT), referenced as a fold change compared with pre-OCXT values. Samples from OCXT #2 and 3 were not obtained for measurement. DSA, donor-specific antibody.

Reviewer's Comments

- Large animal model xeno studies are challenging and often must incorporate a heterogeneous study group, as outlined in limitations
- This group has made important progress in demonstrating feasibility of xeno as a bridge for the months waiting for allotransplant, which is a critical need for children but may also be applicable in adult populations when LVAD is contraindicated
- Growth of these hearts alongside growth of the child has yet to be determined
- More work is needed to perfect the immunosuppression regimen for transition from xeno to allotransplant

Limitations

- Pig: donor breed was adjusted and 4 distinct genetic patterns were used
- IS regimen: the top table outlines regimens, which were adjusted after the 4th and 9th transplants
  - Induction was not used in the 1st allotransplant, and porcine tissue was left in place
- Technical: 3 early cases of respiratory failure resulted in subsequent protocol change to drain pleural space
- Myocardial protection: changed from UW to del Nido after first experiment

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Donation After Circulatory Death Heart Transplant Without Preimplant Reanimation Using Rapid Ultraoxygenated Recovery

Williams AM, Trahanas J, Bommareddi S, McGann KC, et al. *JAMA* 2026 Mar 10;335(10):885-893. | DOI: 10.1001/jama.2025.25169

Study Highlights

Objective: To assess whether REUP, a flush-based DCD heart recovery technique avoiding both in situ (TA-NRP) and ex situ (DPP) reanimation — remains feasible across a broad range of donor ages and ischemic times, beyond its original lower-risk description.

Methods: Single-center, single-arm case series of 24 adult DCD heart transplants (Vanderbilt, Nov 2024–July 2025). After death was declared, the aorta was clamped and an oxygenated, cardioprotective perfusate (blood, del Nido cardioplegia, valproic acid) flushed in situ at 80 mmHg/200 mL/min over 10–12 minutes — no reanimation, no ex situ perfusion — followed by cold static storage and transport. Endpoints: severe PGD, 30-day survival, and acute rejection on first EMB.

Results: All 24 hearts were transplanted (0% discard); mean donor age 32y (38% ≥40y), median ischemic time 258 min (60% >4h, max 8h). Thirty-day survival was 96%. Severe PGD and secondary graft dysfunction each occurred in 4% (1 patient); acute cellular rejection ≥2R occurred in 4% (1 patient), with no antibody-mediated rejection. All patients had LVEF >55% by postoperative day 7.

Conclusions: REUP is feasible with excellent early outcomes regardless of donor age or ischemic time, without preimplant reanimation — potentially expanding the usable DCD heart pool while sidestepping TA-NRP's ethical constraints and DPP's cost burden (~$2,000 vs. ~$100,000/case).

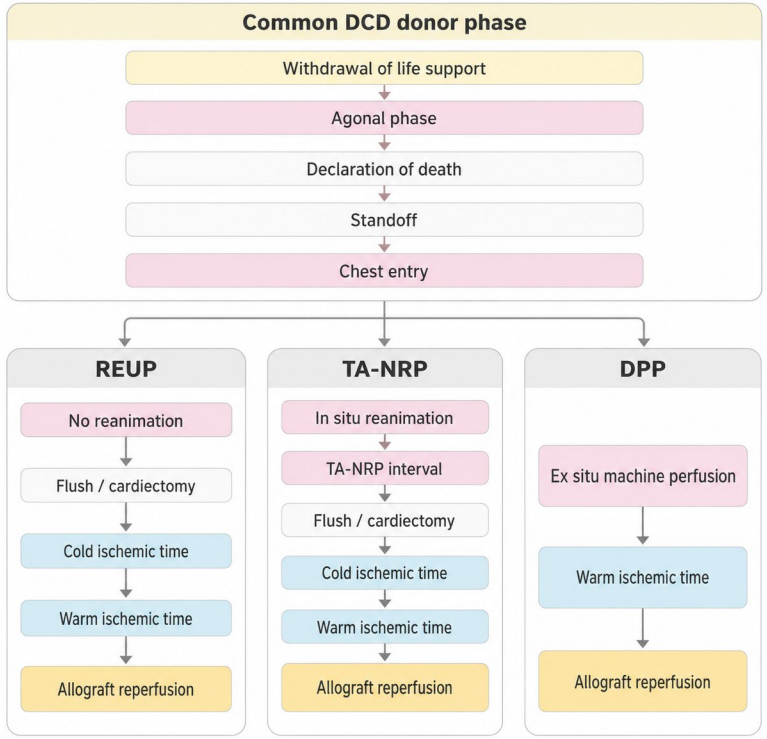

Figure 1 compares three DCD heart procurement timelines — REUP, TA-NRP, and DPP — branching from a shared sequence (withdrawal of life support → agonal phase → declaration of death → chest entry). REUP proceeds directly from chest entry to flush and cold storage with no reanimation step, while TA-NRP inserts an in situ reanimation interval and DPP inserts an ex situ machine-perfusion interval before cold/warm ischemia and reperfusion.

Reviewer's Comments

- Efficacy held up regardless of donor age and ischemic time, both conventionally treated as independent PGD risk factors — this widens the acceptable donor pool, not just the logistics for already-favorable donors.
- Mechanistically plausible advantage over DPP/TA-NRP: REUP imposes a single continuous ischemic period rather than two discontinuous ones, which may explain the favorable PGD rate relative to historical benchmarks (12–16% with other modalities vs. 4%).
- Removes both the ethical friction (no in situ reanimation, no dead-donor-rule controversy) and the cost burden of existing alternatives — a more durable lever for expanding DCD heart access than a marginal technical refinement

Limitations

- **No comparator arm, short follow-up.** Single-arm feasibility series (N=24) with only 30-day outcomes — no causal claim of equivalence or superiority to TA-NRP/DPP is supported, and longer-term data (1-year survival, vasculopathy, rejection burden) are still needed.
- **Single pioneering high-volume center.** Developed and refined in-house; the learning curve, perfusion team experience, and possible residual case-selection bias may not generalize cleanly to other programs.

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Likelihood of lung transplantation before and after introduction of the lung composite allocation score

Mupfudze TG, Weiss S, Hawkins CJ, Goff RR, et al. *JHLT* 2026 Apr 15:S1053-2498(26)01845-0. | DOI: 10.1016/j.healun.2026.04.011

Study Highlights

Objective: The transition to the Continuous Distribution (CD) framework and the Composite Allocation Score (CAS) on March 9, 2023, marked the most significant overhaul of the United States lung transplantation system since 2005. To study whether the new system has been able to optimize medical utility and improve equity.

Methods: A retrospective study was performed on 5887 lung transplant patients, data obtained from Organ Procurement and Transplantation Network data, 2783 patients prior (March 8, 2021–March 8, 2022) and 3104 patients post (March 9, 2023–March 8, 2024) revised system introduction were compared for identification of variables associated with increased chances for lung transplantations.

Results: Pre-CD era organ allocation relied on categorical geographic boundaries combined with the legacy Lung Allocation Score (LAS). This framework created specific disadvantages: for Blood type O, female sex & Northeast region listing. The Continuous Distribution framework removed hard geographic boundaries, evaluating every candidate nationwide on a composite curve that weights medical urgency, expected 5-year post-transplant survival, and biological barriers, leading to improvements in allocation opportunity for younger patients, female sex and West region listing.

Conclusions: CAS implementation has led to favor younger age patients and close sex-based transplant bias. Patients who exhibit blood type O, short stature, and group B (pulmonary vascular disease)/D (Restrictive lung disease) diseases still face a bottleneck. So further guidelines revision is needed to address the persisting inequalities in allocation.

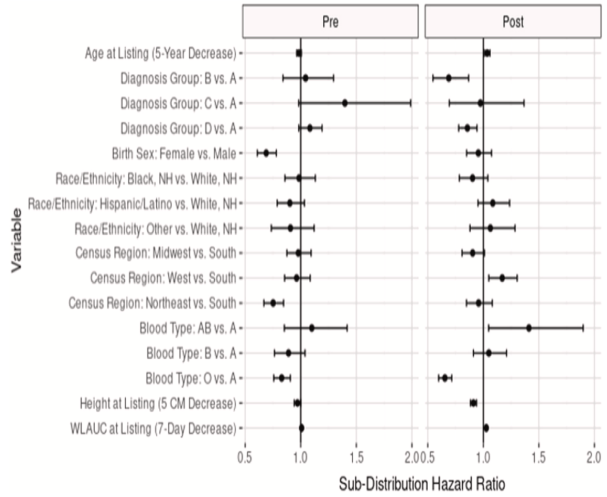

Figure 4 Forest plot of sub-distribution hazard ratios from multivariable models for likelihood of receiving a lung transplant within one year of listing by policy era. Circles represent point estimates. Whiskers are 95% confidence intervals. N = 2783 pre-era; N = 3104 post-era. Abbreviations: NH, non-Hispanic, WLAUC, waitlist area under the curve. NH, non-Hispanic, WLAUC, waitlist area under the curve.

Reviewer's Comments

- This study offers an important evaluation of fairness in lung allocation under the updated system.
- Emphasizes improvements in disparities related to gender, age.
- However, disparities persist in areas such as race, region, gender, height, and blood type, indicating the need for guideline revisions to achieve more equitable lung allocation.
- Ongoing long-term research is necessary to assess the continued impact of the new system and inform policy adjustments.
- Additionally, this study does not analyze center-specific characteristics.
- Further research is needed to examine any changes in the characteristics of patients listed following the implementation of the new system.

Limitations

- The study does not describe using a multiple comparisons correction in its statistical methods section, risking that its key findings are due to random chance.
- As there is an absence of formal statistical testing to directly compare the pre-era and post-era sub-distribution hazard ratios (sHR), does not automatically mean the difference between the two eras is statistically significant.
- The relationship between calculated Panel Reactive Antigens and lung allocation probability was not examined.
- Characteristics of transplant centers, such as donor and recipient acceptance criteria, were excluded from the analysis.
- Finally, individuals not listed for transplantation were not included in the study.