

# Implementing a Living Allogeneic Heart Valve Transplant Program in the Perioperative Department at a High-Volume Quaternary Children's Hospital

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## BACKGROUND/PROBLEM

Prior to 2023, there were no Living Allogeneic Pediatric Heart Valve Transplant programs within the United States of America. Cryopreserved homograft valves were historically the most commonly used to repair congenital heart defects. Younger patients receiving smaller grafts were at the highest risk of reintervention or reoperation following a tissue-based valve replacement.

## OBJECTIVE/AIM

In May 2023, Morgan Stanley Children's Hospital/ NYP completed their first Living Pediatric Valve Heart Transplant, prompting the initiative to start building the Heart Valve Transplant Program for the Perioperative Department, which was the first domino pediatric heart-heart valve transplant in the United States.

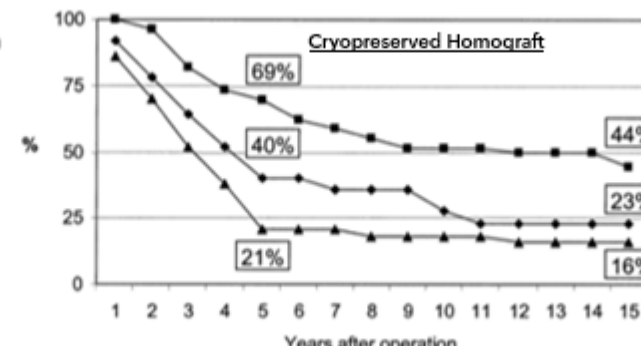
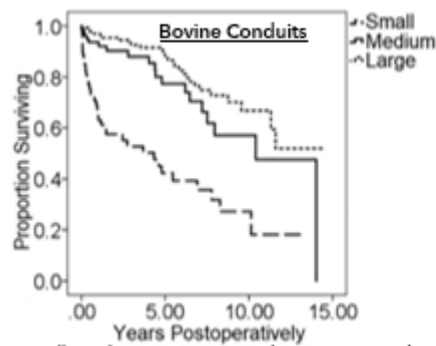
## METHODS

**DESIGN & SETTING :** A Heart Valve Transplant Program was created within the Pediatric Perioperative Department.

**INTERVENTION:** A multidisciplinary workgroup was formed including surgeons, cardiology, nursing, anesthesia, perfusion, quality and regulatory to outline the structure and support needed to facilitate in the creation of a valve transplant program within the perioperative department.

**PRIMARY OUTCOME :** Between May 2023- May 2025, the Pediatric Perioperative Department has completed 10 valve transplants.

## Risk Factors and Failure Modes for Pediatric Patients receiving a Valve Replacement

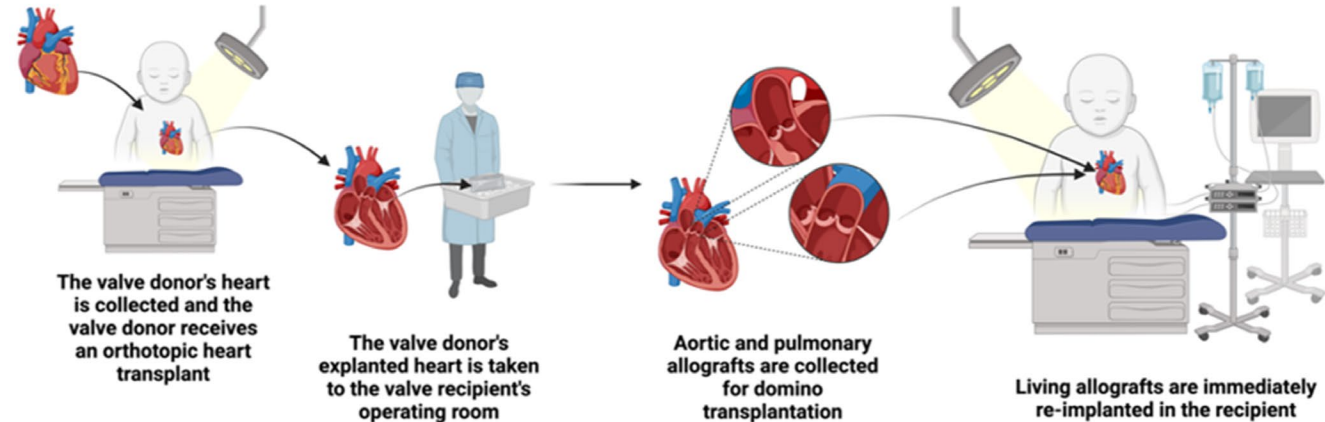


### Common risk factors for valve dysfunction and failure:

- Smaller valve/conduit size
- Younger age at time of surgery
- Complexity of congenital heart disease

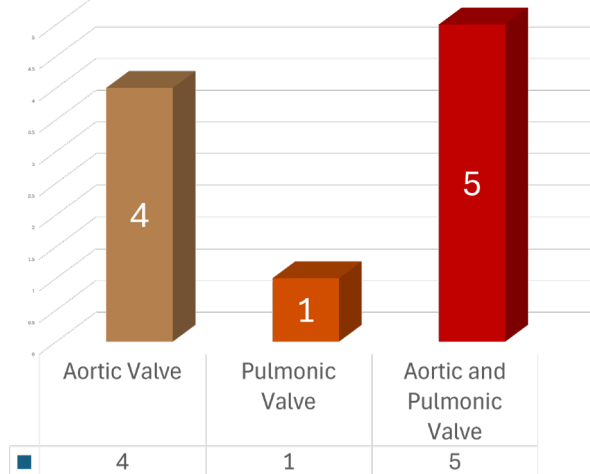
### Common failure modes:

- Calcification
- Non-calcific structural valve degradation



## RESULTS

### Type of Allogeneic Valve Transplanted



## LIMITATIONS

The program has expanded to now include multiple valve recipients, external heart offers and delayed storage options. Long term storage of allogeneic heart valves during delayed domino heart transplants are currently being explored.

## CONCLUSIONS

Since implementation of the living allogeneic pediatric valve heart transplant program, the perioperative department has completed 10 heart valve transplants, 8 were domino and 2 were procured outside the institution, within the perioperative space, revolutionizing and influencing pediatric congenital cardiac care throughout the United States and inspiring other centers to integrate this practice.

## REFERENCES

1. Evaluating safety and outcomes of living allogeneic heart valve transplantation: The case for a multicenter prospective clinical registry. Cordoves, Elizabeth M. et al. The Journal of Thoracic and Cardiovascular Surgery, Volume 169, Issue 6, 1531 - 1535

