



# Research Week 2020

## The Impact of Deceased Donor Management on Donor Heart Utilization and Recipient Graft Survival

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### Abstract

#### Introduction

Current risk-adjusted models used to predict donor heart utilization and cardiac graft survival from organ donors after brain death (DBDs) do not include donor critical care data. We sought to identify novel independent predictors of donor heart utilization and cardiac graft survival to better understand the relationship between donor management and transplant outcomes.

#### Methods

This was a prospective observational study of DBDs managed from 2008 to 2013 by 10 organ procurement organizations. Demographic data, critical care parameters, and treatments were recorded at three standardized time points during donor management. The primary outcome measures were donor heart utilization and cardiac graft survival.

#### Results

From 3,433 DBDs, 1,134 (33%) hearts were transplanted and 969 (85%) cardiac grafts survived after  $684 \pm 392$  days of follow-up. After multivariable analysis, independent positive predictors of donor heart utilization included standard criteria donor status (OR = 3.93), male sex (OR = 1.68), ejection fraction > 50% (OR = 1.64), and  $\text{PaO}_2:\text{FiO}_2 > 300$  (OR = 1.31). Independent negative predictors of donor heart utilization included donor age (OR = 0.94), body mass index > 30 kg/m<sup>2</sup> (OR = 0.78), serum creatinine (OR = 0.83), and use of thyroid hormone (OR = 0.78). For cardiac graft survival, after controlling for known recipient risk factors, thyroid hormone dose was the only independent predictor (OR = 1.04 per  $\mu\text{g/hr}$ ).

#### Conclusion

Modifiable critical care parameters and treatments predict donor heart utilization and cardiac graft survival. Thyroid hormone was identified as a negative predictor of donor heart utilization yet a positive predictor of cardiac graft survival, warranting a randomized clinical trial of thyroid hormone in DBDs to determine the impact on both donor heart utilization and cardiac graft survival.

