Textbook Outcome for the Norwood Operation: An Informative Quality Metric in Congenital Heart Surgery

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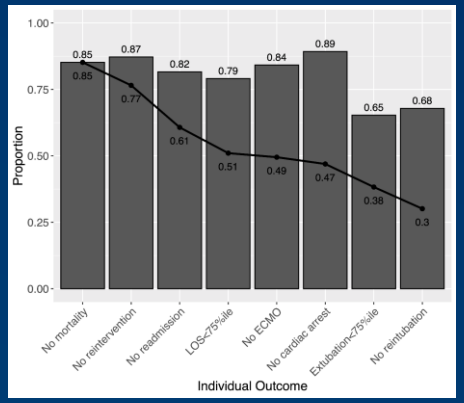
Introduction

- Congenital heart surgery centers have been evaluated almost solely on operative mortality.
- It may be beneficial to examine in more granular detail which centers provide safe & value-based surgical care.
- One solution is to develop a composite endpoint that represents an ideal or "textbook" hospitalization.
- We aim to define a TO for the Norwood operation and evaluate its ability to predict outcomes and cost of care

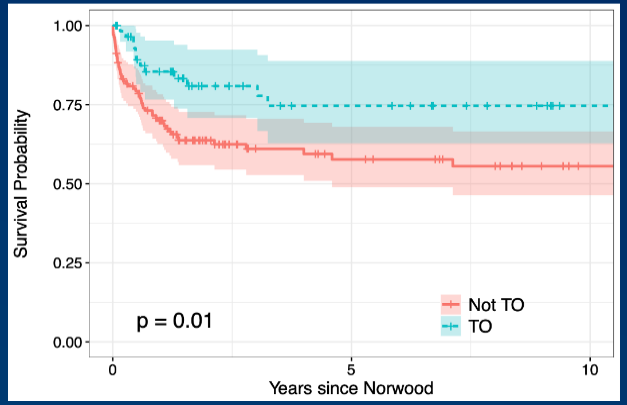
Methods

- Single institution, retrospective review of primary Norwood operations from 2005-2021
- TO = freedom from all the following during the index hospitalization: in-hospital mortality, cardiac re-intervention, readmission within 30 days, extracorporeal membrane oxygenation (ECMO), post-operative cardiac arrest, reintubation, total length of stay > 75th percentile (66 days), and prolonged mechanical ventilation duration > 75th percentile (10 days)
- Survival analysis with Kaplan-Meier, logistic regression to examine associations with TO.

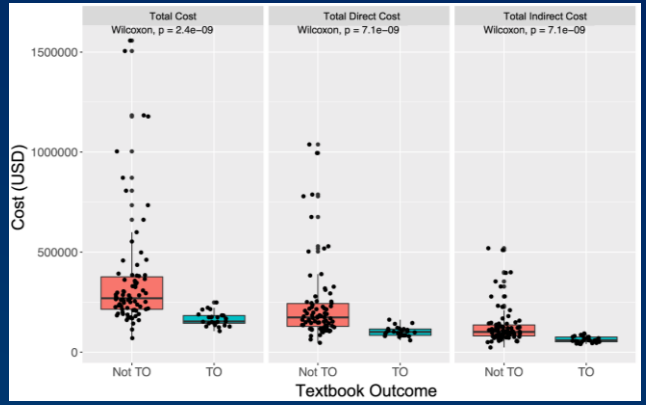
Results



Of 196 patients, 59 (30%) reached TO.
- Higher birthweight, lack of shock pre-operatively, & less time on cardiopulmonary bypass were associated with reaching TO



Mid- & long-term survival was greater when TO was achieved.
- 5 year survival: 74.7% vs. 57.6%
- 10 year survival: 74.7% vs. 55.5%



Total hospital costs were lower when TO was achieved.
- $153,337 vs. $269,241, p<.001).
- Both direct and indirect costs were lower when TO was achieved

Conclusions/Implications

- The Norwood TO represents a combination of expert opinion and data-supported assessment of optimal post-operative outcomes
- Quality improvement initiatives using TOs is to analyze the individual components of the outcome
- Analysis of TO achievement can also identify high-value care

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