Background

• CHSS Critical AS Calculator

Predicts survival difference at 5 years

Univentricular (UVR) vs. Biventricular (BVR) Repair

Initial Echocardiographic Indices
Background

- CHSS Critical AS Calculator
- 2007: Hickey et. al.
Background

UVR Model

BVR Model

Individual neonate

Survival (%)

Years after Initial Intervention

0 1 2 3 4 5

0 10 20 30 40 50 60 70 80 90 100

5y
Purpose

• To evaluate the performance of the CHSS critical aortic stenosis calculator in contemporary cohort (2005 – 2013)
Two Analyses

- BVR Model
- UVR Model

Individual neonate
Two Analyses

BVR Model

UVR Model

Individual neonate

Graph showing survival over years after initial intervention with two models: BVR and UVR.
Two Analyses

- BVR Model
- UVR Model

Individual neonate

Graph showing survival over years after initial intervention.
Critical Aortic Stenosis Evaluation Cohort

- 2005 – 2013
- Inclusion Criteria:
  - Critical aortic stenosis
  - Complete baseline echocardiogram evaluated by Image Core Lab
  - ≤ 30 days old at admission
  - AV, VA concordance
Critical Aortic Stenosis Evaluation Cohort

- 246 patients from 19 institutions
  - UVR: 153
  - BVR: 93

- Median follow up: 5.8 years
Underestimated UVR Survival (n=153)

Survival (%)

Years after Initial Intervention

Actual Survival

Average Predicted Survival

UVR Model
Underestimated BVR Survival (n=93)

- Actual Survival
- Average Predicted Survival

BVR Model

Years after Initial Intervention
Survival Comparison Between Cohorts

- BVR
- UVR

Survival (%)
Years after Initial Intervention

2005 – 2013
1994 – 2001
## Cohort Comparison

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<thead>
<tr>
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<th>2003 (n=362)</th>
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UVR and BVR models do not accurately predict survival

Individual neonate

UVR model

BVR model
Evaluating projected survival difference

Individual neonate

UVR model

BVR model
Calculator Discordant Management

- Surgical decision is opposite of the calculator-predicted optimal pathway
**Calculator Discordant Management**

- Surgical decision is opposite of the calculator-predicted optimal pathway

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<td>1994 – 2001</td>
<td>21% discordant</td>
<td>56% discordant</td>
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<td>2005 – 2013</td>
<td>16% discordant</td>
<td>60% discordant</td>
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Discordant Management 1994 – 2001

Concordantly managed patients (n= 238)

Discordantly managed patients (n=124)
Discordant Management 2005 – 2013

Concordantly managed patients (n=166)

Discordantly managed patients (n=80)
Conclusions

• CHSS Critical Aortic Stenosis calculator does not accurately predict optimal surgical pathway in a contemporary cohort

• Survival has improved after UVR and BVR in critical aortic stenosis

• The revised calculator will account for changed patient variables and management strategies