CARDIOLOGY 2025

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Editorial Comment on Modeling the Right Ventricle

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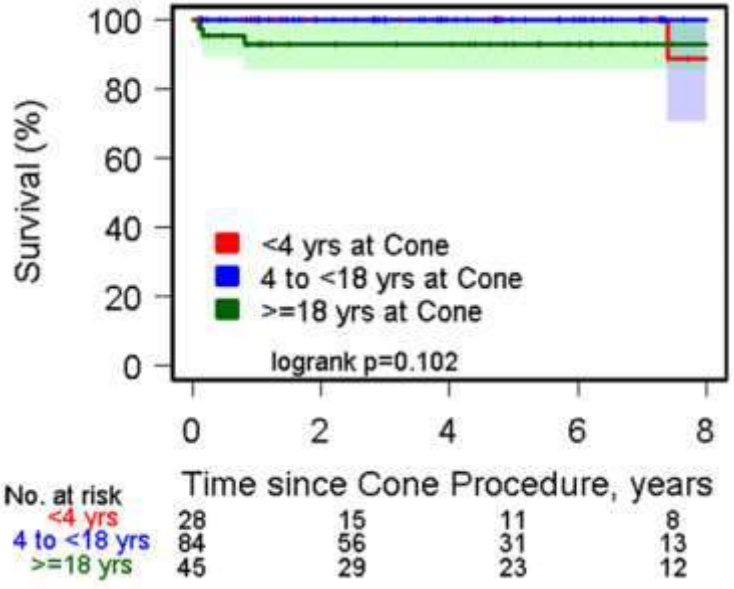
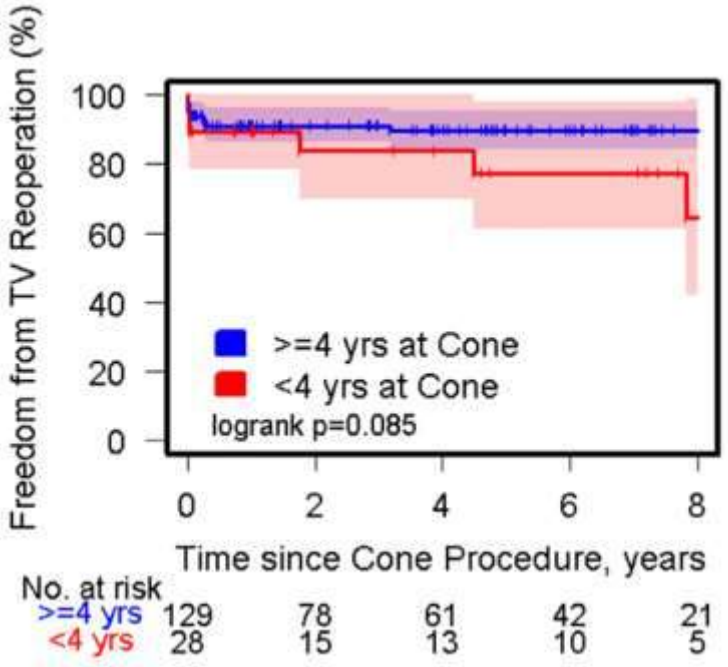
Short term outcomes after surgery are favorable, but…

Survival after Cone procedure



Freedom from TV reoperation



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Schulz A, Baird C. *Semin Thorac Cardiovasc Surg* 2022:205-12

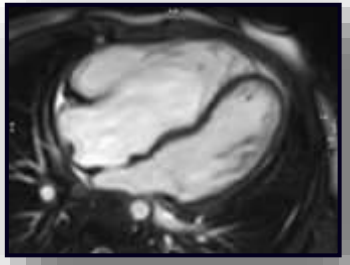
RV modeling can provide insights into

- Ventricular mechanics
- Ventricular-ventricular interactions
- Timing of interventions
- Risk stratification for clinical outcomes
- Possible endpoints for pharmacological or procedural interventional trials

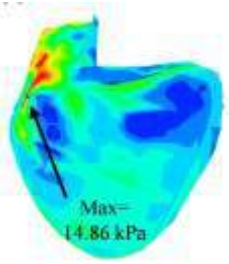




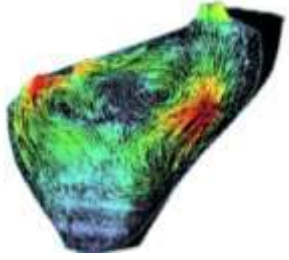
The outputs of RV modeling → novel biomarkers



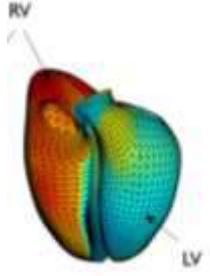
Computational fluid dynamics (CFD)



Finite Element Analysis (FE)



Fluid Structure Interaction (FSI)



Statistical Shape Modeling (SSM)

Novel RV Modeling Biomarkers

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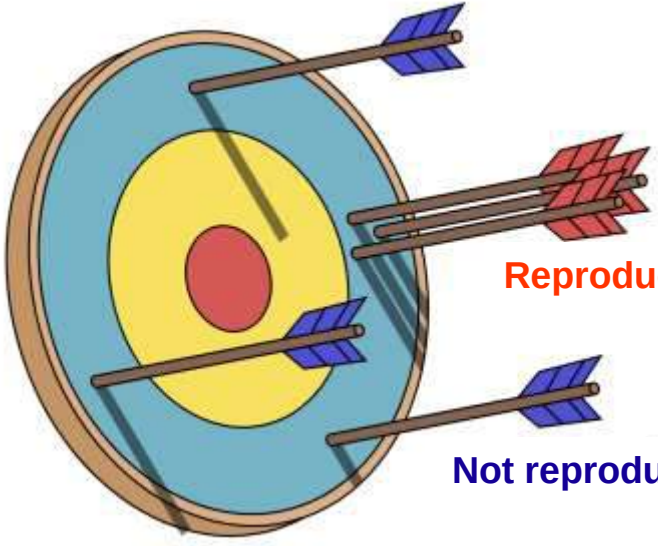
RV modeling biomarkers need



Reproducibility analysis

Validation against other metrics

Validation against clinical outcomes

Innovation is needed to scale modeling biomarkers

Time intensive

Resource intensive

Difficult to integrate into clinical workflow

We need to collaborate and aggregate our data

Final thoughts

- RV modeling biomarkers can provide critical insights into ventricular mechanics and care management
- Significant work is needed
  - Reproducibility analysis
  - Validation (especially against clinical outcomes)
  - Innovation to scale approach
- Meaningful impact will only happen if we collaborate and share our data and expertise

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