

Disclosures

Jonathan Miller, PhD

Biostatistician

Hennepin Healthcare Research Institute, Minneapolis, MN

I have no financial relationships to disclose within the past 12 months relevant to my presentation.

My presentation does not include discussion of off-label or investigational use.

This work was supported wholly or in part by HRSA contract 75R60220C00011. The content is the responsibility of the authors alone and does not necessarily reflect the views or policies of the Department of Health and Human Services, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.



SCIENTIFIC REGISTRY OF
TRANSPLANT RECIPIENTS



SCIENTIFIC
REGISTRY OF
TRANSPLANT
RECIPIENTS

A Patient-facing Calculator for Long-term Heart Transplant Outcomes

Jonathan M. Miller, Elizabeth Murphy, Grace R. Lyden,
David Zaun, Jon J. Snyder

Background

- To assist patients awaiting solid organ transplant engaging with medically complex decisions
- This study describes a patient-facing long-term transplant outcomes calculator.

Heart Transplant

Kidney Transplant

Liver Transplant

Lung Transplant

Calculate long term outcomes for heart transplants

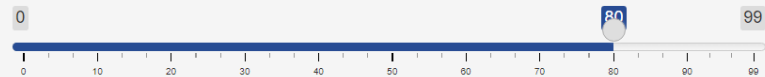
Choose your age:

What is your primary diagnosis

Show Additional Characteristics?

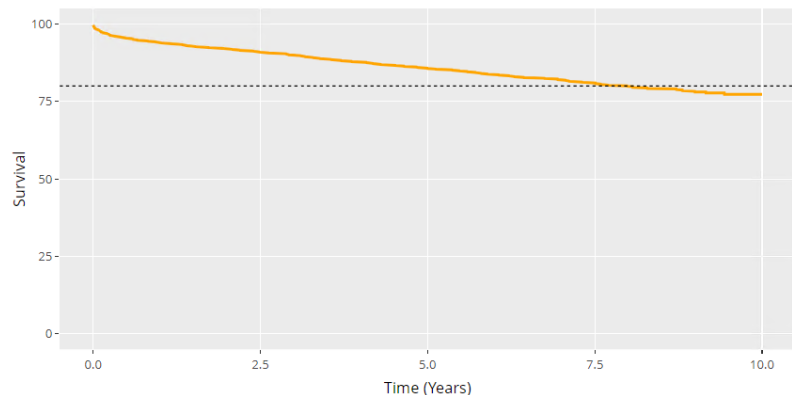
 No Yes

Percent of patients like me (%)



Predicted outcome after transplant

Your predicted outcome: After 8 years, 80% of patients like me are alive with a working transplant.



Predictions based on patients who recieved a heart transplant between September 02, 2013 and September 02, 2022

Methods

- Models can be updated quickly as frequently as each month
- Period prevalent transplant recipient cohort – underwent transplant between 10.5 and 1.5 years prior to the data release date and alive with functioning transplant 3.5 years prior to the data release
- Survival model – Cox proportional hazards model with variable selection via LASSO (least absolute shrinkage and selection operator);
- End point – Survival with a functioning transplant

Results

- Population – 4,128 Pediatric heart recipients who underwent transplant between September 2, 2013, and September 2, 2022, and alive with a functioning graft on September 2, 2020
- Model fit – Concordance = 0.66

Heart Transplant

Kidney Transplant

Liver Transplant

Lung Transplant

Calculate long term outcomes for heart transplants

Choose your age:

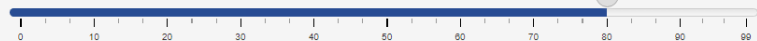
What is your primary diagnosis

Show Additional Characteristics?

 No Yes

Percent of patients like me (%)

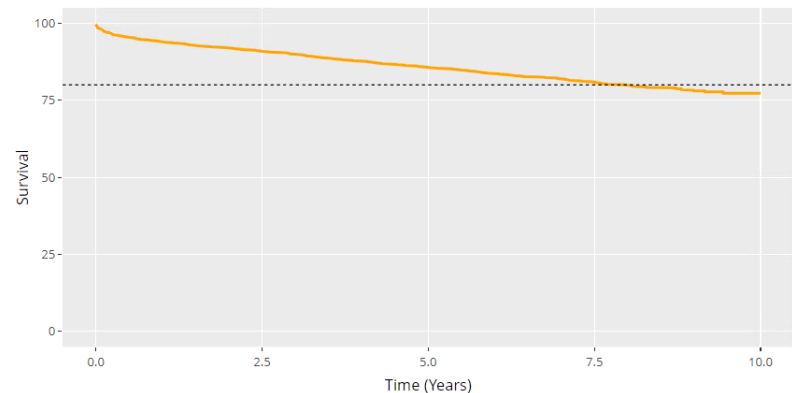
0



99

Predicted outcome after transplant

Your predicted outcome: After 8 years, 80% of patients like me are alive with a working transplant.



Predictions based on patients who received a heart transplant between September 02, 2013 and September 02, 2022.

How can it help with decision-making?



SCIENTIFIC REGISTRY OF
TRANSPLANT RECIPIENTS

Heart Transplant

Kidney Transplant

Liver Transplant

Lung Transplant

Calculate long term outcomes for heart transplants

Choose your age:

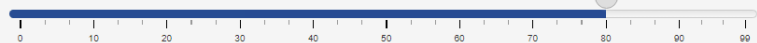
What is your primary diagnosis

Show Additional Characteristics?

 No Yes

Percent of patients like me (%)

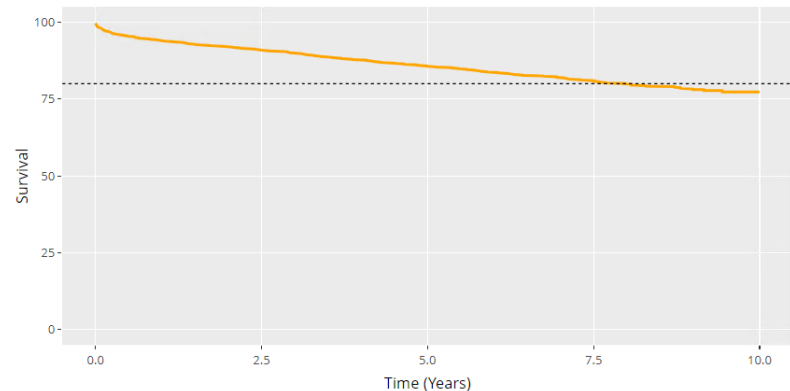
0



99

Predicted outcome after transplant

Your predicted outcome: After **8** years, **80%** of patients like me are alive with a working transplant.



Predictions based on patients who received a heart transplant between September 02, 2013 and September 02, 2022

Heart Transplant

Kidney Transplant

Liver Transplant

Lung Transplant

Calculate long term outcomes for heart transplants

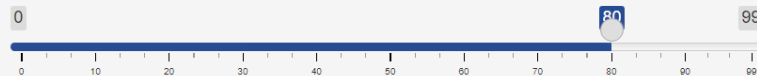
Choose your age:

What is your primary diagnosis

Show Additional Characteristics?

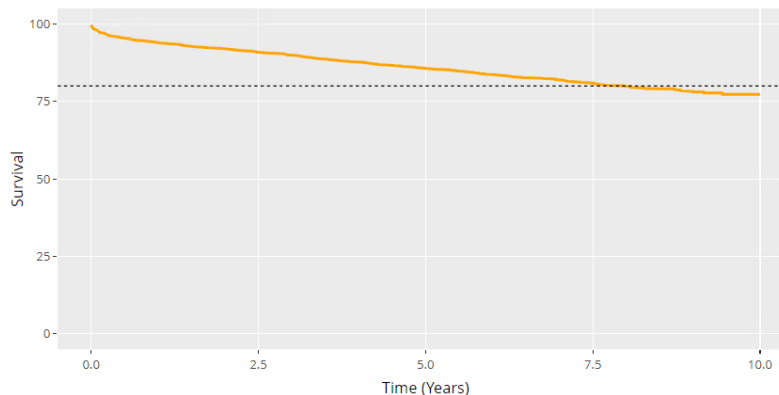
 No Yes

Percent of patients like me (%)



Predicted outcome after transplant

Your predicted outcome: After 8 years, 80% of patients like me are alive with a working transplant.



Predictions based on patients who recieved a heart transplant between September 02, 2013 and September 02, 2022

http://127.0.0.1:7151 Open in Browser Publish

No

What is the maximum donor age you would accept?

20.2128380858582

How many HLA A mismatches are you willing to accept?

0

How many HLA B mismatches are you willing to accept?

0

How many HLA DR mismatches are you willing to accept?

0

Are you on life support?

No

Have you ever been on a ventilator?

No

Which devices are you currently using?

Ventilator

ECMO

Intra-Aortic Balloon Pump

Left Ventricular Assist Device

Primary Diagnosis (Pediatric)	Congenital Heart Disease
Candidate Race: Asian	FALSE
Candidate Race: Black or African American	FALSE
Candidate Implantable Defibrillator?	No
Candidate Staus 1a?	No
Candidate on Life Support?	No
Candidate on ECMO?	No
Candidate on RVAD?	No
Candidate on TAH?	No
Candidate Insurance Type	Other
Candidate Previous Transplant?	FALSE
Candidate CMV?	Not Positive
Candidate HBV antigen?	Not Positive
Candidate Creatinine	0.7801332
Candidate Bilirubin	1.11371
Candidate on Chronic Steroids	No
Candidate on Dialysis	No
Candidate Ever on Ventilator	No
Maximum Ischemic Time	218.4351
Maximum Donor Age	20.21284
Maximum HLA-A mismatches	0
Maximum HLA-B mismatches	0
Maximum HLA-DR mismatches	2
Candidate on Prostaglandins	No



http://127.0.0.1:7151 Open in Browser Publish

No

What is the maximum donor age you would accept?

20.2128380858582

How many HLA A mismatches are you willing to accept?

0

How many HLA B mismatches are you willing to accept?

0

How many HLA DR mismatches are you willing to accept?

2

Are you on life support?

No

Have you ever been on a ventilator?

No

Which devices are you currently using?

Ventilator

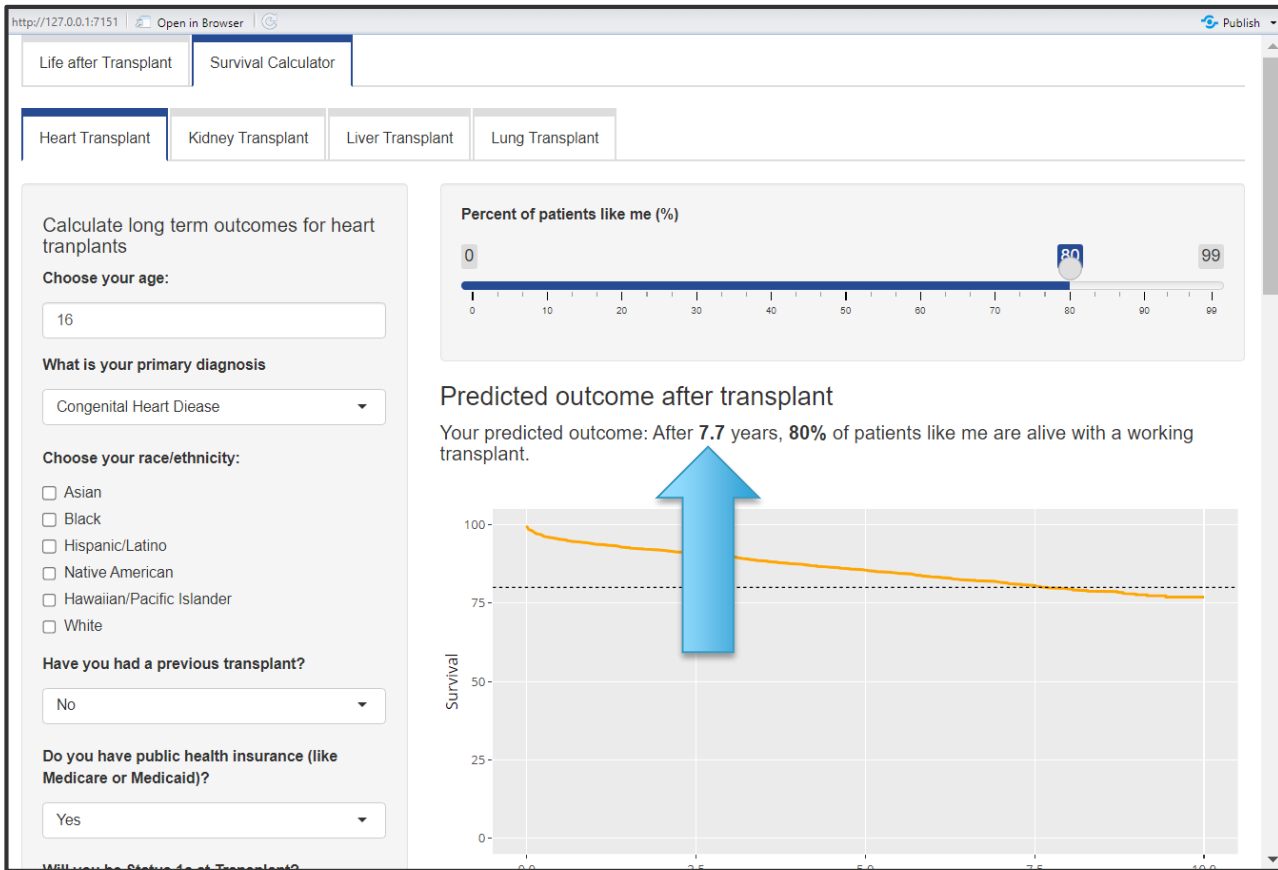
ECMO

Intra-Aortic Balloon Pump

Left Ventricular Assist Device

Primary Diagnosis (Pediatric)	Congenital Heart Disease
Candidate Race: Asian	FALSE
Candidate Race: Black or African American	FALSE
Candidate Implantable Defibrillator?	No
Candidate Staus 1a?	No
Candidate on Life Support?	No
Candidate on ECMO?	No
Candidate on RVAD?	No
Candidate on TAH?	No
Candidate Insurance Type	Other
Candidate Previous Transplant?	FALSE
Candidate CMV?	Not Positive
Candidate HBV antigen?	Not Positive
Candidate Creatinine	0.7801332
Candidate Bilirubin	1.11371
Candidate on Chronic Steroids	No
Candidate on Dialysis	No
Candidate Ever on Ventilator	No
Maximum Ischemic Time	218.4351
Maximum Donor Age	20.21284
Maximum HLA-A mismatches	0
Maximum HLA-B mismatches	0
Maximum HLA-DR mismatches	1
Candidate on Prostaglandins	No





Conclusions

- This tool can give patients and providers information on what to expect after transplant, and
- Help inform pretransplant decision-making





Transplantation

Director Jon Snyder, PhD, MS

Medical Director Ajay Israni, MD, MS

Surgical Director Ryutaro Hirose, MD

Program Manager Caitlyn Nystedt, MPH, PMP

Sr. Administrative Assistant Sydney Kletter

Marketing & Comm. Mona Shater, MA
Amy Ketterer, SMS
Tonya Eberhart

Project Managers Katherine Audette, MS
Bryn Thompson, MPH
Katie Siegert, MPH

Project Coordinator Avery Cook

Medical Editor Anna Gillette

Sr. Manager, Biostatistics David Zaun, MS

Sr. Biostatisticians Jon Miller, PhD, MPH
Grace Lyden, PhD
Nick Wood, PhD

Biostatisticians David Schladt, MS
Tim Weaver, MS
Yoon Son Ahn, MS

IT, Web, Database, Simulation Ryan Follmer
Patrick Johnson
Joshua Pyke, PhD
Eugene Shteyn, MS



SCIENTIFIC REGISTRY OF
TRANSPLANT RECIPIENTS



SCIENTIFIC
REGISTRY OF
TRANSPLANT
RECIPIENTS

Contact us: SRTR@SRTR.org

Follow us:



[@SRTRNews](#)



[Scientific Registry of Transplant Recipients](#)



[SRTR](#)