SCIENTIFIC REGISTRY OF TRANSPLANT RECIPIENTS

A calculator for kidney transplant waitlist outcomes under the new kidney allocation system

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Disclosures

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I have no financial relationships to disclose within the past 12 months relevant to my presentation. The ACCME defines 'relevant' financial relationships as financial relationships in any amount occurring within the past 12 months that create a conflict of interest.

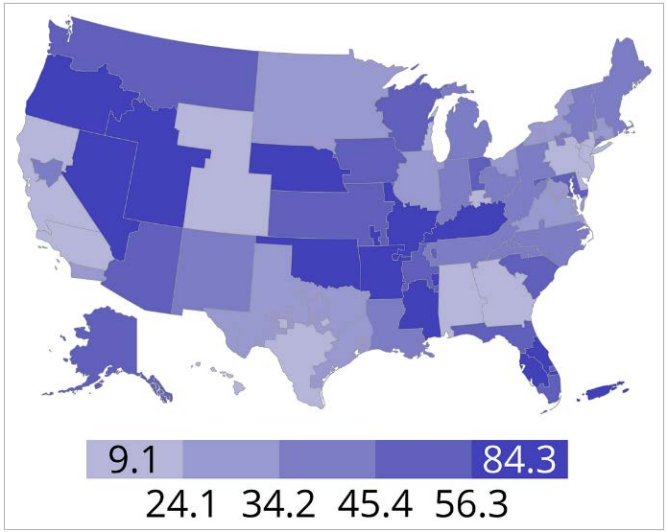
My presentation does not include discussion of off-label or investigational use

I do not intend to reference unlabeled/unapproved uses of drugs or products in my presentation

This work was supported wholly or in part by HRSA contract HHSH-250-2015-00009C, as well as the National Center for Advancing Translational Sciences in the National Institutes of Health Award Number UL1TR000114. The content is the responsibility of the authors alone and does not necessarily reflect the views or policies of the Department of HHS or the National Institutes of Health, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

Outcomes on the kidney transplant waiting list

- Outcomes on the kidney transplant waiting list vary greatly by geography and patient characteristics.
- Median time-to-transplant Kaplan-Meier analyses censor patients who die on the list, providing incomplete information.
- Patients need to understand outcomes in order to make informed decisions.
- Evidence indicates that patients do not understand the likely outcomes on the waiting list.



Percentage of adults who underwent deceased donor transplant within 5 years. SRTR Annual Data Report 2016.

Objectives

- We developed a calculator for outcomes on the kidney transplant waiting list prior to implementation of the new kidney allocation system (KAS).

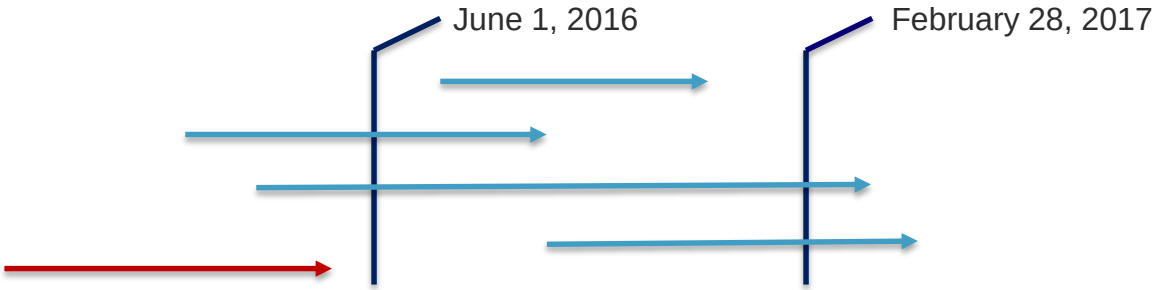
- The new KAS (December 2014) changed probability of transplant for many groups.

- We sought to update the calculator, and create a user-friendly format that can help transplant providers and nephrologists counsel patients about treatment options and outcomes.

Hart et al. Transplantation 2016;100:1571-1577
Hart et al. Am J Transplant 2017;17(Suppl 1):543-564

Methods

- Retrospective cohort:
  - Included all 87,795 adult transplant candidates on the deceased donor waiting list June 1, 2016-February 28, 2017.
  - Left truncated, right censored.
  - Time zero = earlier of dialysis start or listing.
  - Censored at living donor transplant, transfer to another program, or 15 years from listing.



Methods

Predictors:

- Transplant program or DSA
- Age
- Sex
- Race and ethnicity
- Calculated PRA
- Blood type
- BMI
- Time on dialysis
- Comorbid conditions (HTN, DM, stroke, COPD, cancer, PAD)

Competing Outcomes:

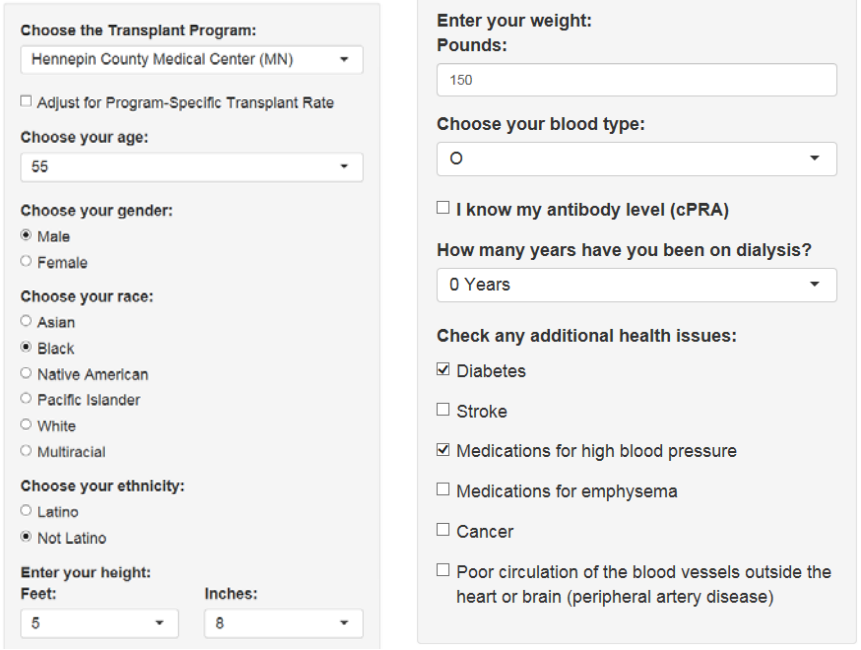
- Deceased donor transplant
- Death or removal from the list due to deteriorating condition
- Still waiting

- Hazards of each outcome calculated using Cox proportional hazard models.
- Modeled cause-specific hazards used to predict the cumulative incidence of each outcome to account for competing risks.

Results

- C-statistics range from 0.67 to 0.75.
- Good calibration demonstrated with calibration plots.
- Probability of deceased donor transplant, death, or removal from the list due to deteriorating condition, or still waiting, are shown at 3, 5, and 7 years.

Calculator input



Sample calculator output

Choose the Transplant Program:

Hennepin County Medical Center (MN)

☐ Adjust for Program-Specific Transplant Rate

Choose your age:

55

Choose your gender:

- ◉ Male
- ○ Female

Choose your race:

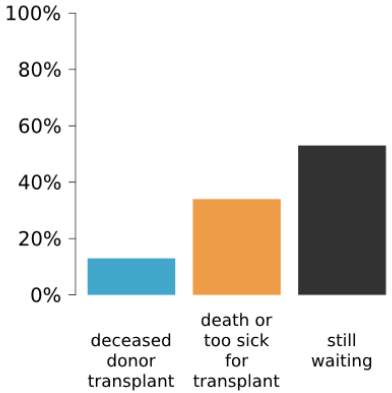
- ○ Asian
- ◉ Black
- ○ Native American
- ○ Pacific Islander
- ○ White
- ○ Multiracial

Choose your ethnicity:

- ○ Latino
- ◉ Not Latino

Bar Plot | Icon Plot

Outcomes in 3 Years | Outcomes in 5 Years | Outcomes in 7 Years



Of patients like you
13% will get a deceased-donor transplant
34% will die or become too sick for transplant
53% will still be waiting

Sample calculator output

Choose the Transplant Program:

Hennepin County Medical Center (MN)

☐ Adjust for Program-Specific Transplant Rate

Choose your age:

55

Choose your gender:

- ◉ Male
- ○ Female

Choose your race:

- ○ Asian
- ◉ Black
- ○ Native American
- ○ Pacific Islander
- ○ White
- ○ Multiracial

Choose your ethnicity:

- ○ Latino
- ◉ Not Latino

Enter your height:

Feet: 5 **Inches:** 8

Bar Plot | Icon Plot

Outcomes in 3 Years | Outcomes in 5 Years | Outcomes in 7 Years

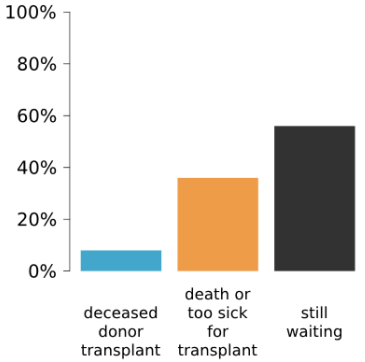
Of 100 patients like you

- **6 patients will get a deceased donor transplant**
- **18 patients will die or become too sick for transplant**
- **76 patients will still be waiting**

55 year old black man in region 3, blood type O, not yet on dialysis, with diabetes and HTN

Bar Plot | Icon Plot

Outcomes in 3 Years | Outcomes in 5 Years | Outcomes in 7 Years

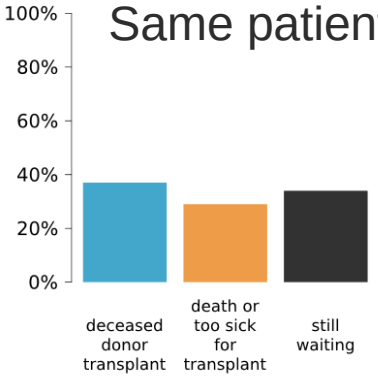


Of patients like you
8% will get a deceased-donor transplant
36% will die or become too sick for transplant
56% will still be waiting

Bar Plot | Icon Plot

Outcomes in 3 Years | Outcomes in 5 Years | Outcomes in 7 Years

Same patient, region 8

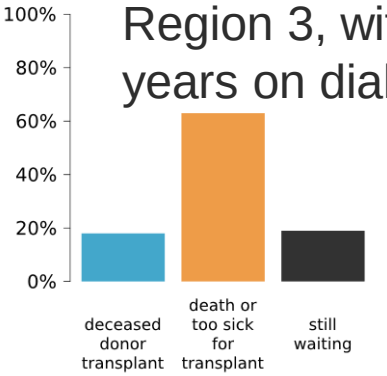


Of patients like you
37% will get a deceased-donor transplant
29% will die or become too sick for transplant
34% will still be waiting

Bar Plot | Icon Plot

Outcomes in 3 Years | Outcomes in 5 Years | Outcomes in 7 Years

Region 3, with 5 years on dialysis



Of patients like you
18% will get a deceased-donor transplant
63% will die or become too sick for transplant
19% will still be waiting

Calculator benefits

- Relevant to candidates in different regions with different clinical characteristics.
- Can be updated frequently to reflect most current outcomes.
- Will be integrated into a tool to facilitate shared decision making with patients and providers.

Limitations

- Parsimonious tool with fewer variables.
    - More user friendly, but increases chance that it will not be applicable to some patients.
- Best approach to communicate probabilities to patients unknown.
    - Bar graph vs. icon array, loss (mortality) vs. gain (survival) framing.

Conclusions

- Since implementation of the new KAS, the probability of deceased donor transplant changed for many groups.
- The calculator provides an individualized prediction of likely outcomes on the deceased donor waiting list.
- Providers can use the calculator to counsel candidates about likely outcomes to promote better decision making.
- Models will be updated regularly to ensure that they remain relevant over time.

Calculator can be accessed on the SRTR beta website for comments

<< Will add URL here when available>>

Thank You