

OPTN Kidney Transplantation Committee

Meeting Summary

July 17, 2023

Teleconference

Jim Kim, MD, Chair

Arpita Basu, MD, Vice Chair

Introduction

The Kidney Transplantation Committee (the Committee) met via teleconference on 7/17/2023 to discuss the following agenda items:

1. Scientific Registry of Transplant Recipients (SRTR) Presentation of Organ Allocation Simulation (OASIM) Results

The following is a summary of the Committee's discussions.

1. Scientific Registry of Transplant Recipients (SRTR) Presentation of Organ Allocation Simulation (OASIM) Results

SRTR staff presented the results of the OASIM report.¹

Presentation summary:

UNOS and SRTR Staff reviewed the modeling objectives the Committee developed for their OASIM request as well as the scenarios of weights that were submitted.

The OPTN Kidney and Pancreas Transplantation Committees requested simulation results for four continuous allocation scenarios which included five "goal" components: medical urgency, posttransplant outcomes, candidate biology, patient access, and placement efficiency. The simulation used OASIM software to create counterfactual comparisons of historical data to show what would have happened under different allocation policies.

The simulation cohort included all active kidney and pancreas candidates and transplanted organs from March 15, 2021 through March 15, 2022. The cohort also included one and 10-year post-transplant survival models for patients transplanted from January 1, 2007 to November 2, 2021.

The results of the simulation study were presented in response to requested research questions summarized below.

Patient Access

Do the proposed continuous distribution (CD) policies maintain the high level of access that pediatric candidates receive in the current system?

- All proposed CD policies maintain high level of access to kidney transplant for pediatric candidates

¹ Scientific Registry of Transplant Recipients, *KIPA2023_01*, July 11, 2023.

https://optn.transplant.hrsa.gov/media/o52pegrg/kipacd_2023_01_analysisreport_2023_07_17.pdf

- The simulation of current policy showed a kidney transplant rate of 0.74 transplants per patient year among candidates aged less than 18 years
- The CD policies showed kidney transplant rates between 0.82 and 0.83 transplants per patient year among candidates aged less than 18 years.
- Overall kidney transplant rates were stable for other age groups as well from the simulation of current policy to the continuous distribution policies

Do the proposed CD policies maintain a high level of access for the extremely highly sensitized?

- Simulation models have shown limited ability to calibrate to historic transplant rates across groups of CPRA; cannot use these models to make definitive conclusions about disparities or equitability of transplant rates across CPRA groups; comparisons within a CPRA group across scenarios have been robust to sensitivity analyses and inference across scenarios within a CPRA group are more well-supported
- Within this limitation, CD scenarios show lower adult kidney transplant rates for all CPRA groups over 0.8 compared to the simulation of current policy:
 - Including patients with CPRA from 0.8 to 0.999, who have historically experienced slightly greater access than other CPRA groups
 - For patients with CPRA 0.999 to 1.0, a group that has historically experienced lower transplant rates than all other CPRA groups
- Among pediatric candidates, CD scenarios showed higher transplant rates compared to the simulation of current policy for the CPRA groups from 0.8 to 0.995, but were not notably different within other CPRA groups

Do the proposed CD policies transplant those with the highest qualifying times at a rate equal to or higher than current policy?

- Adult kidney transplant rates by qualifying time are not dramatically different across continuous distribution scenarios compared to the simulation of current policy.
- For those with the longest qualifying time (more than 5 years), the transplant rate was highest under the scenario which gives the greatest weight to qualifying time, and lowest in the scenario which gave the least weight to qualifying time
- Among pediatric kidney candidates, transplant rates were higher under CD scenarios compared to the simulation of current policy for all waiting time groups

Do the proposed CD policies maintain a high level of access for prior living donors?

- All proposed CD policies maintain high level of access to kidney transplant for prior living donor candidates

Do the proposed CD policies result in appropriate access for safety net candidates?

- All proposed CD policies show a decrease in transplant rate for prior liver recipient safety net status, however transplant rates for these candidates remain higher than non-safety net candidates

Do the proposed CD policies maintain a high level of access for medically urgent candidates?

- The number of candidates in the simulation cohort that ever had a medically urgent status (n = 24) was too small to reasonably examine access across the simulated scenarios for candidates with this status

Placement Efficiency

On average, how far are organs traveling?

- Under the simulation of current policy, the median travel distance for kidneys was 158 NM
- The median travel distance for kidneys was slightly higher under the CD scenarios compared to the simulation of current policy
- The longest median travel distance was 179 NM under the scenario which had the lowest weight placed on proximity efficiency

What is the distribution of travel distance?

- The distribution of kidney travel distances under the simulation of current policy shows a notable boundary at 250 NM, with relatively few kidneys travelling beyond 250 NM
- Under all the CD scenarios, many more kidneys were travelling between 250 NM and 500 NM, though still relatively few were travelling beyond 500 NM

Are higher KDPI kidneys traveling shorter distances?

- KDPI greater than 85 percent kidneys is the only category where the median travel distance is less under all CD scenarios than under simulation of current policy

When organs travel further are they traveling farther to reach vulnerable populations? (i.e. pediatrics, extremely highly sensitized)

- Compared to the simulation of current policy:
 - The distributions of kidney travel distance for pediatric candidates show longer median travel distances under all CD scenarios
 - The distributions of kidney travel distance for the highest adult CPRA categories show lower median travel distances under CD compared to simulation of current policy
 - The distributions of kidney travel distance for pediatric CPRA categories show no substantial difference for the highest CPRA categories, but higher travel distances under CD for all lower CPRA categories

Candidate Biology

Do the proposed policies maintain access for O and B blood type candidates? Do the proposed policies result in fewer disparities in access to transplant across blood types?

- Adult kidney transplant rates did not differ from the simulation of current policy to any of the CD scenarios for candidates with A, B or O blood type
- Kidney transplant rates for adult candidates with blood type AB were lower under all continuous distribution scenarios than the simulation of current policy, but were more similar to those for adult candidates with other blood types

Post-Transplant Outcomes

Do the proposed policies result in decreased graft failure and higher survival (short and long term)?

- One and 10-year kidney graft failure under all CD scenarios was constant with or lower than the simulation of current policy.

Do the proposed policies balance longevity matching and qualifying time?

- Adult kidney transplant rates were slightly higher for EPTS 0-20 percent candidates under continuous distribution compared to the simulation of current policy; These candidates maintained the highest transplant rates of all EPTS categories

- For candidates waiting 5 years or more, the adult kidney transplant rates were highest under the scenario with the most weight on qualifying time and lowest under the scenario with the least weight on qualifying time
- For pediatric kidney candidates at any duration of qualifying time, transplant rates were slightly higher under CD compared to the simulation of current policy

Other

Do the proposed policies help diminish any disparities in access to transplant for subpopulations?

- The small changes in transplant rate by sex from the simulation of current policy to the continuous distribution scenarios bring the rates for females and males closer together
- Transplant rates by race did not show large differences under the CD scenarios compared to the simulation of current policy; however, under all CD scenarios except the scenario with the highest weight on qualifying time, transplant rates for Black and Native American candidates were slightly lower than under the simulation of current policy
- Transplant rates by ethnicity did not show large differences under the CD scenarios compared to the simulation of current policy; however, under all CD scenarios transplant rates for Latino candidates were slightly higher than under the simulation of current policy
- Transplant rates by rural or urban residence did not show large differences under the CD scenarios compared to the simulation of current policy
- Transplant rates by OPTN region did not show large differences under the CD scenarios compared to the simulation of current policy; In the instances where there were slightly lower transplant rates under CD in a region compared to the simulation of current policy it was most marked in regions that already showed the highest simulated transplant rates under current policy

Are there any unintended consequences on waitlist outcomes for any subpopulations?

- No population subgroup showed a difference in cumulative incidence of waitlist mortality from the simulation of current policy to any of the CD scenarios
- For almost every population subgroup, of all the scenarios simulated, including current policy, the median qualifying time at transplant was highest under the scenario that gives the most weight to qualifying time and lowest under the scenario that gives the least weight to qualifying time

Summary of Discussion:

The Chair commented one of the items the Committee should discuss further is CPRA, especially the decrease in access for the highest adult CPRA candidates. The Chair commented the Committee's objective was to equalize access across CPRA groups while maintaining high access for the CPRA 99.9 percent and above group. An SRTR representative commented the Committee could explore adjusting the weight for the CPRA attribute to increase that access. Another SRTR representative further commented one of the big changes in CD compared to classification-based allocation, there is no longer an absolute tier of candidates placed above others.

A member commented the scenarios do not appear to address candidates with highest qualifying time as much as the Committee hoped. An SRTR representative commented the scenario with highest weight on qualifying time did show an increase for candidates with qualifying time of five years or more, though not a large increase. The SRTR representative further commented the Committee could adjust the

weight on the qualifying attribute as well, understanding adjustments to weight on any attribute could affect the outcomes of other attributes.

A member thanked the SRTR for the data presented and commented there should be an effort to convert the presentation into a patient-friendly version. An SRTR representative agreed and commented how this is presented to the general public will be important to consider. The member further commented it would be helpful to present the data via candidate scenarios and animations for better understanding. The Chair agreed it's important to keep the patient population in mind when explaining the data and goals of continuous distribution.

Next Steps

The Committee will continue their review and discussion of the OASIM results on their next meeting.

Upcoming Meetings

- July 31, 2023 – Conference Call

Attendance

- **Committee Members**
 - Jim Kim
 - Arpita Basu
 - Chandrasekar Santhanakrishnan
 - Jason Rolls
 - Marian Charlton
 - Patrick Gee
 - Stephen Almond
 - Reza Saidi
 - Curtis Warfield
 - Eloise Salmon
 - Jesse Cox
 - John Lunz
 - Leigh Ann Burgess
 - Martha Pavlakis
 - Aparna Sharma
 - George Surratt
- **HRSA Representatives**
 - Jim Bowman
- **SRTR Staff**
 - Peter Stock
 - Caitlyn Nystedt
 - Jon Miller
 - Nick Wood
 - Raja Kandaswamy
 - Sommer Gentry
 - Tim Weaver
- **UNOS Staff**
 - Lindsay Larkin
 - Thomas Dolan
 - Keighly Bradbrook
 - Kieran McMahon
 - Kayla Temple
 - Joann White
 - Kim Uccellini
 - Krissy Laurie
 - Lauren Motley
 - Ross Walton
 - Ruthanne Leishman
 - Thomas Dolan
 - Carly Layman
 - Sarah Booker
- **Other**
 - Namrata Jain
 - Rachel Engen