OPTN Kidney Transplantation Committee
Meeting Summary
March 14, 2023
Teleconference

Martha Pavlakis, MD, Chair
Jim Kim, MD, Vice Chair

Introduction

The Kidney Transplantation Committee (the Committee) met via teleconference on 3/14/2023 to discuss the following agenda items:

1. Welcome and Announcements
2. Massachusetts Institute of Technology (MIT) Presentation: Optimized Policy Scenarios
3. Policy Scenario Selection

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

1. Welcome and Announcements

Committee Leadership welcomed the Committee members. Staff reviewed that the goal for the meeting is to review and finalize weight recommendations for the next Organ Allocation Simulation Modeling (OASIM) request. To frame discussion the Chair commented that at a recent regional meeting, they were asked why the Committee doesn't solely use an algorithm to develop the best allocation system. The Chair responded any policy proposal will reflect some level of values judgements and the more people contributing to what those values should be, the more democratic it is. The Chair further commented that in addition to community value judgements, algorithms can be used as a tool to help limit this vast possibility of different policy scenarios to help mold those value decisions.

Summary of discussion:

There were no questions or comments.

2. Massachusetts Institute of Technology (MIT) Presentation: Optimized Policy Scenarios

Representatives from the Massachusetts Institute of Technology (MIT) presented an overview of the methodology they used to provide the Committee with optimized policy scenarios for consideration.

Presentation summary:

The optimization tool simulated over 50,000 policy options to determine how different attribute weights affect a variety of outcomes. The simulated policies were designed so that, as compared to current policy, the following metrics were optimized:

- Graft failure
- Waitlist mortality
- Pediatric transplant rates
- Blood type (ABO), Calculated Panel Reactive Antibody (CPRA), Donation Service Areas (DSA), Racial transplant rate disparities
- Distance kidney traveled

While maintaining:

- 0-20 percent Estimated Post Transplant Survival (EPTS) transplant rate
- 99.9-100 percent CPRA patients transplant rate
- Blood types O and B transplant rate

The MIT team then took these established constraints and tested the effects of allowing distance traveled to increase by 10, 25, and 50 percent, and allowing 0-20 EPTS transplant rate to decrease by three and five percent. These constraints were relaxed in some scenarios to determine effect on other metrics such as donation service areas (DSA) and transplant rate disparities.

Summary of discussion:

There were no questions or comments.

3. Policy Scenario Selection

Staff presented four optimized policy scenarios for the Committee's consideration.

Presentation summary:

The Committee reviewed four optimized policy scenario options as shown in **Figure 1**. The rating scales for all attributes are consistent across all scenarios, and include an increased donor modifier for KDPI 86-100 percent kidneys for the Proximity Efficiency attribute. Staff encouraged the Committee to consider the relative relationship between the attribute weights rather than the individual weights as all of the attributes will interact together.

Figure 1: Optimized Policy Scenarios

Attribute	Optimized Policy Scenarios				Range of Weights (min - max)
	A	**B**	**C**	**D**	
Medical Urgency	15%	15%	15%	15%	15
DR Mismatch	5.6%	8.1%	4.5%	8.2%	4.5 - 8.2
Longevity Matching (Top 20 to Top 20)	6.6%	5.1%	9.6%	7.7%	5.1 - 9.6
Blood Type	14.6%	15.2%	9.8%	14.3%	9.8 – 15.2
CPRA	6.4%	5.8%	6.2%	5.4%	5.4 – 6.4
Prior Living Donor	15%	15%	15%	15%	15
Pediatric	15.1%	15.9%	16.7%	14.1%	14.1 – 16.7
Safety Net	5%	5%	5%	5%	5
Qualifying Time	5.6%	5.3%	7.7%	6.7%	5.3 – 7.7
Proximity Efficiency	11%	9.6%	10.4%	8.6%	8.6 - 11

The policy scenarios allow for the relaxing of distance and EPTS 0-20 constraints as shown in **Figure 2**.

Figure 2: Optimized Policy Scenarios with Relaxed Constraints

EPTS 0-20 Transplant Rate	Travel Distance		
	Maximum 0% increase	Maximum 10% increase	Maximum 25% increase
Maximum 0% decrease	Policy A	Policy B	
Maximum 3% decrease		Policy D	Policy E

The Committee then reviewed some key metrics for the policy scenarios including median distance, number of graft failures, transplant rate by EPTS, CPRA, and blood type groups, pediatric transplant rate, average waiting time, median qualifying time at transplant, and transplant rate disparities (ABO, CPRA, DSA, racial, sex, and Latino transplant rate disparities) as shown in **Figures 3-12**.

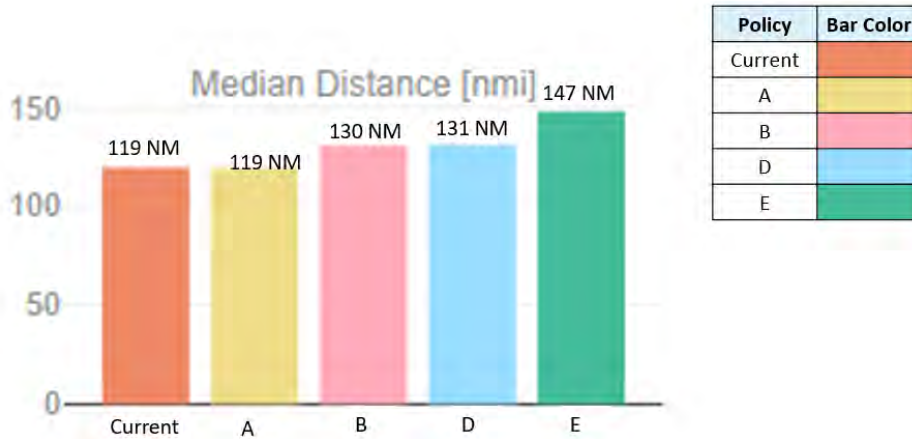### Figure 3: Median Distance (NM) for Each Policy

Policy	Bar Color
Current	
A	
B	
D	
E	

Figure 4: Number of Graf Failures for Each Policy

Policy	Bar Color
Current	
A	
B	
D	
E	

Figure 5: Transplant Rate by EPTS Group

Listed Transplant Rate by EPTS Group

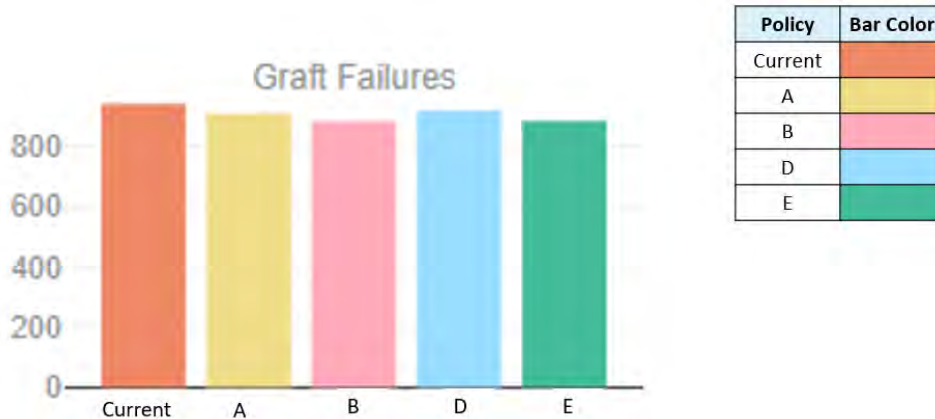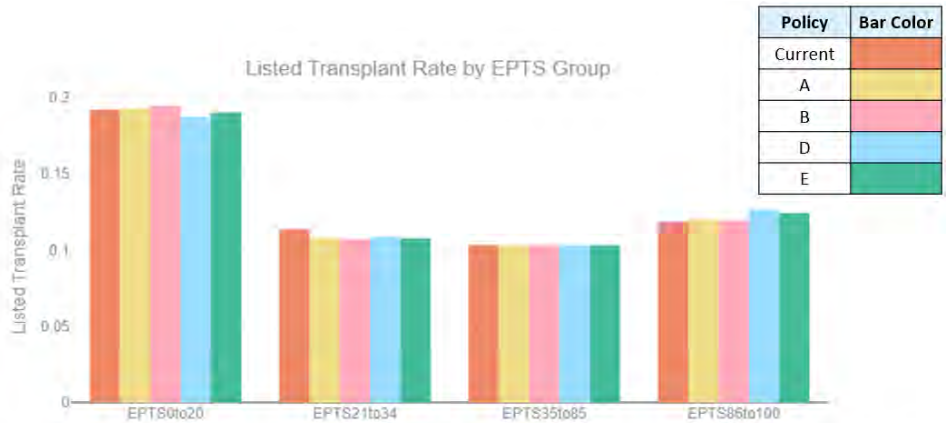| Policy	Bar Color
Current	
A	
B	
D	
E	

Note: This plot shows listed transplant rate which takes into account active and inactive time on the list, qualifying transplant rate is not available for the EPTS buckets in the dashboard
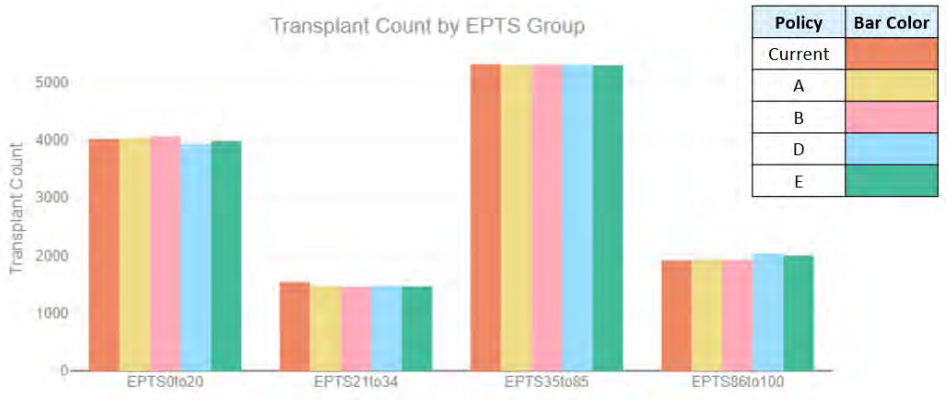
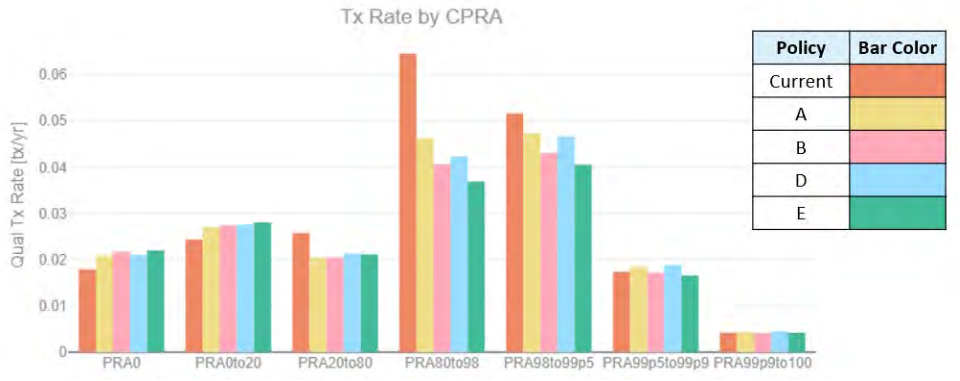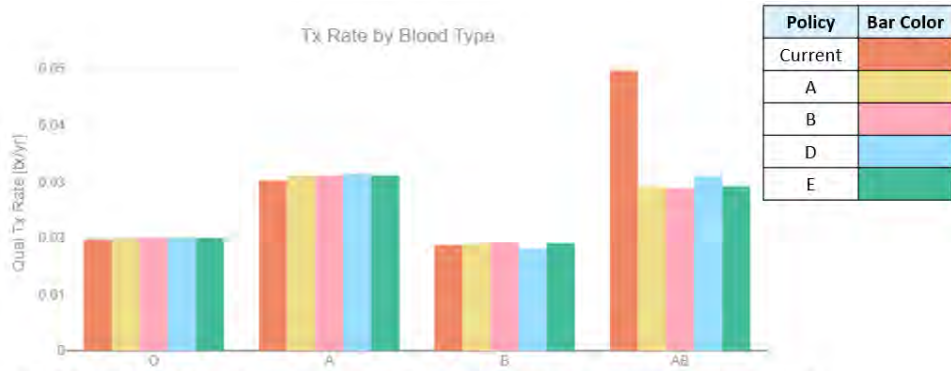## Figure 6: Transplant Counts by EPTS Group

Transplant Count by EPTS Group

Policy	Bar Color
Current	
A	
B	
D	
E	

Figure 7: Transplant Rate by CPRA Group

Tx Rate by CPRA

Policy	Bar Color
Current	
A	
B	
D	
E	

Figure 8: Transplant Rate by Blood Type

Tx Rate by Blood Type

Policy	Bar Color
Current	
A	
B	
D	
E	

Note: Although blood type B access was constrained to do no worse, there was an approximate 4 percent decrease in transplant rate for Blood type B in Policy D
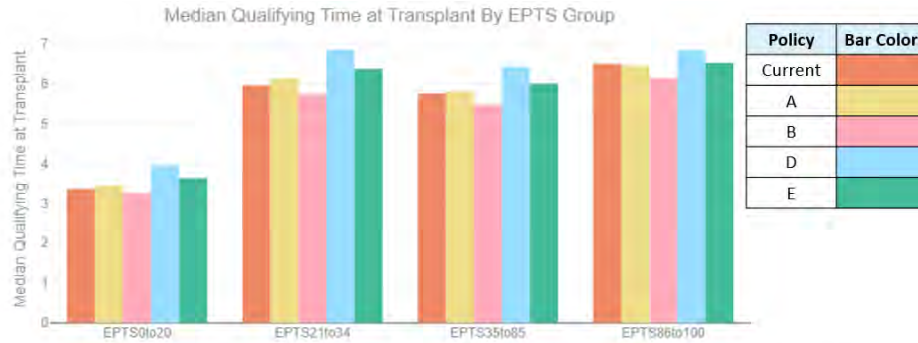
Figure 9: Pediatric Transplant Rate

Pediatric Tx Rate [tx/yr]

Policy	Bar Color
Current	
A	
B	
D	
E	

Figure 10: Average Waiting Time

Avg Waiting Time [yrs]

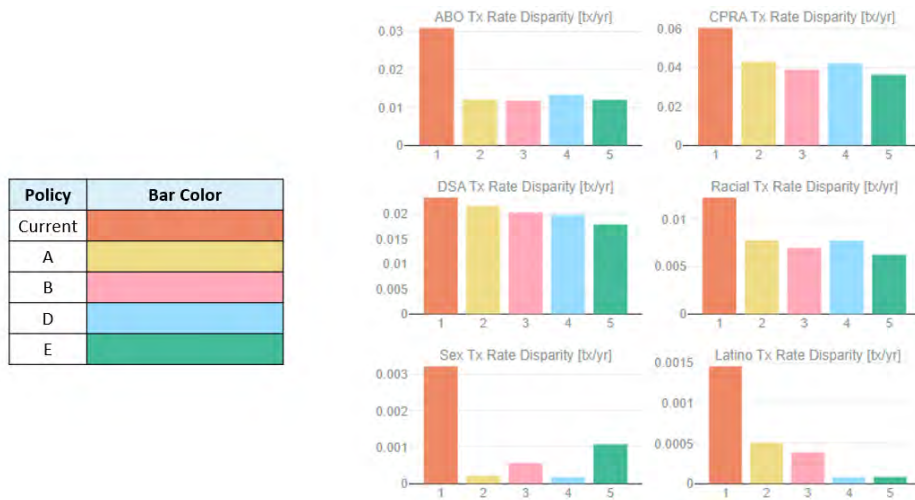| Policy	Bar Color
Current	
A	
B	
D	
E	

Figure 11: Median Qualifying Time at Transplant by EPTS Group

Note: higher median time at transplant means the policy is transplanting those who have been waiting the longest

Figure 12: Transplant Rate Disparities

The four policies shown meet several of the Committee's stated goals for development of continuous distribution:

- Maintaining high priority for pediatric, prior living donor, and medically urgent candidates
- Maintain/slightly increase access for CPRA 99.9+ percent candidates while balancing the access between other CPRA groups
- On average, increase access for patients with longer waiting times
- Decrease disparities in transplant rates by blood type, CPRA group, DSA, racial group, sex, and ethnicity
- Emphasis on access for Blood Type B and O patients

Allowing for slight decreases or variation in EPTS 0-20 access and increases in travel distance allow for some gains in other areas:

- Increasing distance as shown in Policy B, D, and E allows for decreased disparity (including geographic disparity)
- Decreasing EPTS 0-20 access will increase access for candidates with long waiting times, as shown in Policy D and E

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Summary of discussion:

A Committee member asked why policy scenarios for zero decrease for EPTS transplant rate/maximum distance increase of 25 percent and three percent decrease for EPTS transplant rate/maximum distance increase of zero percent were not shown per **Figure 2**. Staff commented those options were explored and the metric results across all scenarios were very similar. After discussing all six scenarios with Committee leadership, the scenarios were narrowed to four that more clearly illustrate the potential benefits and consequences of relaxing certain constraints. The Chair commented upon leadership's review of six optimized scenarios; they opted to remove two scenarios that did not differ much from the four scenarios presented in an attempt to focus the Committee's review. However, the other two scenarios are available to review as well if needed.

Upon review of the outcomes metrics for average waiting time, a member commented that an increase in waiting time would likely not be accepted by the transplant community. Staff clarified the metric for average waiting time at time of transplant represents the policy transplanting candidates who have been waiting longer. Members commented the metrics represent one year of data, and a policy with high median waiting time at transplant would result in transplanting the longest waiting candidates, resulting in a decrease in average waiting time for all candidates over time. Members commented this may be a communication challenge and would be confusing for the public. Members further commented that careful consideration should be given to educating the community on these scenarios and outcomes. A member commented it may be helpful when presenting this metric to have a dynamic projection to show outcomes over a few years to display the benefits over time. Another member asked if OASIM modeling projects past one year of data and staff clarified that it does not currently. The Vice Chair commented it will be important to convey that transplant rate will increase for those candidates who have been waiting the longest. A member also commented there should be enhanced messaging to represent the continuous distribution framework can be enhanced and adjusted over time. A Scientific Registry of Transplant Recipients (SRTR) representative and staff agreed and suggested the Committee hold further discussions on proper messaging in future meetings.

A member asked to review the graph for CPRA transplant rates again and commented even with the most relaxed constraint on distance, there is not a significant increase in transplant rates for highly sensitized candidates. The member asked if there is any way to decrease that disparity further. Another member commented it may be due to the slope of the CPRA rating scale, and the current high transplant rate for 80 percent CPRA may not be fair. Members commented there may still be opportunity to decrease disparity for the highest sensitized. Another member commented there are small improvements in the projections shown, and that the highest sensitized would be very difficult to optimize as the available donor kidneys for those candidates are lower in comparison to other groups. Staff also commented that, similar to the average waiting time discussion, the projections show one year's worth of data that could even out over time. An MIT representative commented that making the CPRA curve steeper may help improve transplant rates for the highest sensitized, however, a different shape may be needed entirely to truly even out transplant rates across all CPRA levels. The Committee agreed to move forward with the current CPRA curve in the second OASIM modeling request and to keep discussing alternate approaches to CPRA disparities.

An SRTR representative asked for more explanation on the metric for DSA transplant rate disparity and the decrease shown for the four policy scenarios. An MIT representative answered the transplant rate was computed across all DSAs over the course of a year, such that the number of transplants that each DSA received is divided by the number of total qualifying time that the candidates in those DSAs accrued

by the end of the year. Then, the average difference in transplant rate between any two DSAs is computed. The SRTR representative commented this metric is very impressive. A Committee member agreed the metric is impressive especially considering the constraints on travel distance. The Chair commented they are impressed every transplant rate disparity the Committee prioritized seems to be reduced with minimal cost.

The Committee was asked to vote on whether to move forward with the four optimized policy scenarios as presented for the second OASIM request. The Committee was also reminded the scenarios should not be considered final and adjustments can be made upon review of the modeling results.

<u>Vote:</u>

Does the Committee support including the proposed policy scenarios for the second OASIM request? The Committee unanimously supported moving forward with the proposed policy scenarios for the second OASIM request.

<u>Next Steps:</u>

The OASIM request will be finalized and submitted to the SRTR to begin analysis.

Upcoming Meetings

- April 17, 2023 – Conference call

Attendance

- **Committee Members**
  - Martha Pavlakis
  - Jim Kim
  - Arpita Basu
  - Bea Concepcion
  - Asif Sharfuddin
  - Chandrasekar Santhanakrishnan
  - Elliot Grodstein
  - Tania Houle
  - Jason Rolls
  - Marian Charlton
  - Patrick Gee
  - Peter Lalli
  - Sanjeev Akkina
- **HRSA Representatives**
  - Jim Bowman
- **SRTR Staff**
  - Ajay Israni
  - Bryn Thompson
  - Grace Lyden
  - Jonathan Miller
  - Peter Stock
- **UNOS Staff**
  - Kayla Temple
  - Lindsay Larkin
  - Kieran McMahon
  - Ben Wolford
  - James Alcorn
  - Joann White
  - Lauren Motley
  - Thomas Dolan
  - Ruthanne Leishman
- **Other**
  - Dimitris Bersitmas
  - Elijah Pivo
  - Nikos Trichakis