OPTN Kidney Transplantation Committee
Meeting Summary
November 21, 2022
Conference Call

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

Introduction

The Kidney Transplantation Committee (the Committee) met via teleconference on 11/21/2022 to discuss the following agenda items:

1. Welcome and Announcements
2. Focused Discussion: Longevity Matching

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

1. Welcome and Announcements

Staff and Committee Leadership welcomed the Committee members.

Summary of discussion:

There were no questions or comments.

2. Focused Discussion: Longevity Matching

The Committee reviewed previous discussions on Longevity Matching, including community feedback and rating scale options. The Committee continued their discussions on Longevity Matching.

Presentation Summary:

The Estimated Post-Transplant Survival score (EPTS) is used to predict a candidate's projected longevity with a functioning kidney. The EPTS calculation includes age, years on dialysis, diabetes status, and whether the candidate has had a previous solid organ transplant. Longevity matching utilizes EPTS and Kidney Donor Profile Index (KDPI) scores to match organs with candidates. Currently, the lowest 20 percent KDPI kidneys are prioritized for the lowest 20 percent EPTS candidates. This is called "top 20 to top 20" matching.

Previously, the Kidney and Pancreas Continuous Distribution Workgroup and the Kidney Committee recognized the importance of longevity matching, including considerations for expanding EPTS/KDPI longevity matching past top 20 to top 20:

- Prior community sentiment on impact on older age groups, including sentiment from the Life Years From Transplant (LYFT) proposal
- Desire to maintain pediatric priority for low KDPI kidneys
- EPTS and KDPI calculations may need to be evaluated first, which would be a future enhancement

Previously, the Committee supported modeling an expanded longevity matching rating scale, with the idea that it would more accurately reflect potential outcomes. The Committee agreed that the system has a responsibility to make the best use of donor kidneys.

For the first round of modeling, the Committee opted for an expanded Longevity Matching rating scale, where the lowest KDPI kidneys are prioritized for low EPTS kidneys, and high KDPI kidneys are prioritized for high EPTS patients. This utilized a linear function of KDPI for a given EPTS. Community feedback included:

- Support for more focus on post-transplant outcomes and importance of longevity matching
- Support for more interaction between EPTS and KDPI
    - More accurately align candidate and kidney function (ASTS)
    - Support for mirror approach to EPTS and KDPI (AST)
- Add more granularity to EPTS
    - Combining with KDPI could create stronger predictive calculation
- Various mixed comments:
    - Some in support of maintaining current practice and some in support of considering a continuous scale for EPTS

The overall results of the analytical hierarchy process (AHP) values prioritization exercise, or values-prioritization exercise, ranged between weights of 7.7 percent and 11 percent. The Kidney Committee's AHP results gave Longevity Matching a weight of 7.4 percent. In modeling, the Kidney Committee opted to increase the weight on longevity matching on one scenario, in order to test the effect. The modeling results for this scenario showed:

- Longevity matching had the desired effect with younger candidates (likely with lower EPTS scores) received lower KPDI Kidneys and older candidates received higher KDPI kidneys
- Higher weight on longevity matching increased transplant rates for 18-35 year olds, with lower median KDPI kidneys
- Consequences of any longevity matching is a decrease in transplant rates for 35-50 year olds
- 1 year graft failure was higher for older groups under the increased longevity matching scenario
    - 1-year graft failure was lower for younger groups under the increased longevity matching scenario

Summary of discussion:

One member noted that the middle EPTS group seems to be disadvantaged, and asked whether that would be due to there being more high and low KDPI donors than middle KDPI donors. Staff explained that the transplant rates by EPTS show a relative level of access, and that the modeling results show additional priority at the end of the rating scale spectrum, but that the middle EPTS group has no additional priority for any KDPI. The member noted that, mathematically, the middle EPTS group is not disproportionately advantaged for any KDPI group, but they are also not disproportionately disadvantaged. The member expressed surprise that this doesn't equalize the transplant rates across EPTS groups more. Staff explained that this could be due to donor facts, and added that behavioral factors and acceptance practices underlie much of this data. Staff noted that increases and decreases in transplant rates by EPTS do play out when the weight of longevity matching is changed.

An SRTR representative pointed out that pediatric patients were separated out when evaluating transplant rates across EPTS, as all pediatric patients were assigned the lowest possible EPTS value, as EPTS is not validated for pediatric candidates and recipients. The SRTR representative continued that decreased transplant rates could potentially be due to fewer kidneys being available in that KDPI cohort. One member asked if this meant there were fewer kidneys available in the middle KDPI range, and the SRTR representative confirmed this. The SRTR representative explained that this is reflected in the one year graft failure rates as well, where younger recipients don't see a change but older recipients have a projected increase in graft failure. The SRTR representative explained that this trend is projected

because more, higher KDPI kidneys are directed to these patients. The SRTR representative noted that this was their best guess at why the transplant rates across age groups and EPTS categories showed this trend, and added that this can be manipulated by increasing the weight on longevity matching as an attribute. The SRTR representative explained that the modeling results show how different weights for longevity matching can shift transplant rates between different groups.

One member asked if a histogram showing the volume and distribution of EPTS across currently waitlisted patients could be shown, so that the relative size of these populations could be considered. Staff shared data showing median of KDPI by EPTS at transplant, which shows 0-10 percent EPTS candidates take low KDPI kidneys, whereas for EPTS 21 percent or greater, the distribution of KDPIs transplanted is much spread out. The member explained that they suspect that the greatest number of people fall in the middle EPTS range, and that as such, this category may represent a disproportionately larger group of people than other categories.

Staff asked the Committee what the ultimate goal of longevity matching should be. Staff asked if the aim of longevity matching would be to have similar transplant rates across all the EPTS categories, or if the Committee thinks certain EPTS categories should have higher transplant rates.

The Chair noted that the Committee at least agrees with top 20 to top 20 matching, but that the Committee has yet to determine whether EPTS 20-100 percent should have equal access. The Chair shared that they find it a problem for EPTS 40-70 percent to have any decrement in transplant rate. The Chair continued that it may not be enough benefit to make patients wait longer for slightly better kidneys. The Chair noted that this may be a values decision. Another member agreed, and pointed out that some candidates have a worse EPTS due to prior solid organ transplant. The member continued that these patients may still be young and not have the opportunity to have access to a lower KDPI kidney, and now would need to wait longer. The member also pointed out that the KDPI equation includes a variable for Hepatitis C, which should be removed.

The member explained that one year graft survival does not provide significant information when evaluating longevity matching, and that five, seven, or eight year graft survival would be more helpful to evaluate.

Another member agreed that KDPI and EPTS are imperfect calculations, and that the Committee could decide that they are insufficient equations upon which to base longevity matching. The member added that rebuilding these equations could require more than a years' worth of discussion and research. The member noted that the transplant community is moving beyond the KDPI and EPTS calculations, and that they are likely no longer sufficient. For example, it is hard to imagine that a candidate's expected post-transplant survival could be based on only four factors. The member continued that the KDPI calculation also ignores several other factors, such as biopsy results. The member commented that the Committee is limited by the need for expediency. The member shared that top 20 to top 20 is what the community came to after the LYFT proposal was shot down. The member added that sticking with top 20 to top 20 will maintain a hard boundary where there should be a more continuous boundary. The member expressed support for matching across a spectrum of donors and recipients.

The Chair pointed out that the inclusion of a race variable also makes KDPI a faulty equation. The Chair explained that the KDPI equation essentially labels all Black donors as high KDPI by virtue of being black, when it is probably only reflecting the small percentage of the Black population with the APOL1 gene mutation. The Chair noted that there are a lot of inaccuracies in both measures, and that it's difficult to pin them together. The Chair also noted that EPTS is tied to survival to a degree, and KDPI has been tied to longevity. The Chair expressed concern that neither calculation is good enough to expand longevity matching further than the current top 20 to top 20.

The Vice Chair remarked that longevity matching should not be a linear relationship between KDPI and EPTS. The Vice Chair explained that, based on median KDPI and EPTS at transplant, it seemed as if bottom 20 to bottom 20 was already playing out in current allocation. The Vice Chair pointed out the data shows a trend towards higher KDPI with higher EPTS in current policy, and noted that adding a "bottom 20 to bottom 20" matching prioritization would steepen the curve for high EPTS patients. The Vice Chair remarked that high EPTS patients should not only be prioritized for more marginal kidneys, particularly as waiting time factors significantly into the EPTS calculation. The Vice Chair pointed out that patients with long waiting times could have very high EPTS, and those patients would be disadvantaged if they were only prioritized for high KDPI kidneys. The Vice Chair continued, noting that a bottom 20 to bottom 20 would be disadvantaging patients who are older, who have diabetes, or who have long waiting times. The Vice Chair pointed out that these patients deserve a chance to access higher quality kidneys.

Staff then presented other options for expanded Longevity Matching for the Committee to consider.

Presentation summary:

- Longevity Matching with peaks – each EPTS is prioritized for the corresponding KDPI, with gradually decreasing priority for other KDPI kidneys
    - For example, EPTS 50 candidates receive the most priority for KDPI 50 percent kidneys, with gradually decreasing priority for kidneys with KDPI 49 percent, 51 percent, 48 percent, 52 percent, and so on
    - A downside to this is that the average rating across donors will be higher for candidates with an EPTS of 50 percent, and lower for candidates near the extremes, because fewer donors tend to be "close" to 0 or 100 on the bounded KDPI scale
- Longevity Matching with corrected peaks – similar to the above option, this includes a correction factor to equalize transplant rates across EPTS category
    - The factor will ensure that patients receive the same longevity matching points, on average, regardless of their EPTS

Summary of discussion:

The Chair asked the Committee what the trends in transplant rates for patients with EPTS 21 to 84 percent should be. The Chair asked if these transplant rates should be steady and equal, or variable based on longevity predictions. A member remarked that, from a broader view, they see the Committee's mandate to do the greatest good for the greatest number of people, with the ultimate goal being the greatest number of years off dialysis for the greatest number of patients, applied equally across all patient populations. Another member commented that the transplant rates, and ultimately access to transplant, needs to be equal across EPTS groups. The member explained that giving some EPTS groups lower access to transplant is not fair.

One member remarked that EPTS is no longer adequately capturing longevity, and shared that this point was brought up in one of the American Society of Transplantation (AST) Workgroups on frailty. The member noted that frailty also plays a role in outcomes, and expressed support for re-evaluating and rebuilding the EPTS calculation, to incorporate more variables impacting longevity and outcomes. The member noted that, without a more updated EPTS calculation, it is difficult to make a decision of this nature.

A member commented that, in their experience, high EPTS patients tend to have worse outcomes with high KDPI kidneys, while low EPTS patients fare slightly better with high KDPI kidneys. The member offered a recommendation, asking if a correction factor could be added for patients above a certain EPTS to ensure those patients had a chance at accessing middle or lower KDPI kidneys.

One member suggested utilizing plateaus, instead of peaks, to see if that makes the transplant rates more equitable. The member added that volume matters a lot, and noted that these numbers can help the Committee determine exactly how allocation shifts.

Staff explained that MIT has a highly sophisticated approach, and that if the goals can be nailed down, they can be accounted for in MIT's modeling. Staff shared that the Committee could explore maximizing longevity matching with a constraint on time on dialysis, in order to find the weight required to see the benefits of longevity matching without increasing dialysis time.

An SRTR representative remarked that, based on previous comments, it seems that the Committee wants to see a higher transplant rate for patients 18-50 years old, and lower rates for the older age group. The Chair corrected this, noting that they are hoping to avoid decreasing transplant rates for these populations. The Chair explained that, when efforts to develop continuous distribution first began, the Committee agreed not to shock the system, barring low hanging fruit. The Chair continued that declining transplant rates for 18-50 year olds is a shock to the system, and this dramatic shift may be hard to justify for these patients. The Chair pointed out that these conversations with patients will be that potential recipients will wait longer for a better age-matched kidney, which is better for the system but not always better for the recipient. The SRTR representative responded that the consequence of more transplants in the 18-50 year old range would be fewer transplants for older age groups, as these kidneys would need to be pulled from somewhere.

A member asked what the data points actually translate to, noting that it is difficult to make these determinations in a relative context. The member asked where the threshold for concern should be, and if this is at an incremental decrease of 0.01 or more. The member noted that it is difficult to discern how impactful the decimal numbers are.

A representative from the Health Resources and Services Administration (HRSA) shared that the basis for top 20 to top 20 allocation was to avoid allocating younger kidneys with extended expected longevity into older candidates that may not have quite as long expected survival with that kidney. The HRSA representative explained that, initially, KDPI and EPTS were not intended to be use to match across the spectrum, but instead was a crude tool to prevent transplant kidneys into patients who may not utilize the full benefit of the organ. The HRSA representative noted that previously, age was cleared as a proxy for longevity and function. The SRTR representative explained that these were historical discussions, and agreed that EPTS and KDPI could be fairly crude measures. The SRTR representative explained that EPTS and KDPI are valid at the extremes, but that the middle range of EPTS and KDPI are more questionable.

One member pointed out that, in the current system, they are still seeing a lot of low KDPI offers for older, higher EPTS patients and high KDPI offers for younger, lower EPTS patients. The member expressed support for expanded matching parameters.

The Committee held a straw poll, to determine overall sentiment regarding expanding longevity matching. The Committee was mixed between opting to table expanded longevity until KDPI and EPTS can be updated, and continuing to explore expanded longevity.

The Vice Chair remarked that expanded longevity matching is a moot point with the current version of KDPI and EPTS, and recommended leaving it to the next iteration of continuous distribution. The Vice Chair clarified that continuing to explore longevity matching would require continued use of the current KDPI and EPTS calculation. Staff confirmed that expanded longevity matching would look at different ways to combine the current KDPI and EPTS calculations. Another member agreed that tabling expanded longevity matching was preferable if using current KDPI and EPTS calculations.

Staff noted that the Committee is largely supportive of a future project to rework EPTS and KDPI.

Many Committee members expressed support for tabling longevity matching, to be addressed after continuous distribution.

Staff asked the Committee whether tabling expanded longevity matching meant they would prefer to maintain the current top 20 to top 20 prioritization or if they would prefer to remove any type of longevity matching. One member explained that they interpreted it to mean that KDPI and EPTS would not be changed, and expressed support for longevity matching on a more continuous system.

Staff confirmed that the question for the Committee is not whether to update KDPI and EPTS calculations, but whether to utilize the same top 20 to top 20 longevity matching currently in allocation policy, or to expand upon it. Staff explained that top 20 to top 20 matching would only give priority for low KDPI kidneys to low EPTS candidates. The Vice Chair clarified that the Committee would still discuss what the relative priority of longevity matching should be. The Vice Chair comments that longevity matching should not be binary, and instead should be some kind of continuous or graded scale. The Vice Chair noted that longevity matching should not be completely changed, but that it should be expanded beyond a simple top 20 to top 20.

A member expressed support for a more continuous system of longevity matching, rather than a binary one. The member explained that this would allow allocation to have a stronger longevity matching framework in place when KDPI and EPTS are updated. The member noted that this means changes will be easier in the future. The member commented that there should be as much continuous variability as possible.

One member expressed support for maintaining top 20 to top 20 matching, with a decreased weight on longevity matching. The member acknowledged that the current KDPI and EPTS systems are imperfect.

Next Steps:

The Committee will continue discussing longevity matching at their next meeting.

Upcoming Meetings

- November 28, 2022 - Teleconference

Attendance

- **Committee Members**
  - Martha Pavlakis
  - Jim Kim
  - Arpita Basu
  - Chandrasekar Santhanakrishnan
  - Tania Houle
  - Marian Charlton
  - Precious McCowan
  - Jason Rolls
- **HRSA Representatives**
  - Jim Bowman
  - Marilyn Levi
- **SRTR Staff**
  - Jon Miller
  - Peter Stock
  - Jodi Smith
- **UNOS Staff**
  - Lindsay Larkin
  - Kayla Temple
  - Joann White
  - Keighly Bradbrook
  - Ben Wolford
  - Carly Layman
  - Kaitlin Swanner
  - Kieran Mcmahon
  - Kim Uccellini
  - Krissy Laurie
  - Lauren Motley
  - Rebecca Fitz Marino
  - Ross Walton
  - Sara Moriarty
  - Sarah Booker
  - Stryker Ann Vosteen
  - Thomas Dolan
  - Tina Rhoades