OPTN Kidney Transplantation Committee
Meeting Summary
October 28, 2024
Teleconference

Jim Kim MD, Chair
Arpita Basu, MD, Vice Chair

Introduction

The OPTN Kidney Transplantation Committee (the Committee) met via teleconference on 10/28/2024 to discuss the following agenda items:

1. Welcome and Objectives
2. Upcoming Default Offer Filters Implementation Updates
3. Removal of Race and Hepatitis C from Kidney Donor Profile Index (KDPI): Donor Distributions
4. Review and Discussion: Finalize "Hard to Place" Definition

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

1. Welcome and Objectives

The Committee Chair welcomed the Committee members, and OPTN Contractor staff reviewed the meeting objectives.

Meeting objectives:

- Share Default Offer Filters implementation timeline and resources
- Review KDPI mapping tables for adjusted KDPI
- Finalize 'donor age' and 'hypertension' duration thresholds for the "hard to place" kidney definition, including final data request to evaluate donor volume

Summary of discussion:

There were no questions or comments.

2. Upcoming Default Offer Filters Implementation Updates

OPTN Contractor staff provided updates to the Committee on the upcoming implementation of Default Kidney Offer Filters.

Presentation summary:

Default Kidney Offer Filters is set to be implemented November 14, 2024. This implementation will:

- Generate new model recommended filters for every Kidney program and automatically activate filters
  - Filters refreshed every 6 months, and are based on 1 year of offers from transplanted donors
  - Programs can modify and remove default filters
  - Pediatric-only programs will not have filters automatically applied

- Default filters will not apply for 0-ABDR mismatch candidates, pediatric candidates, medically urgent candidates, or candidates with a calculated panel reactive antibody (CPRA) greater than 90 percent
- Include new donor filtering criteria and candidate exclusion criteria

Summary of discussion:

One member expressed support for implementation of default offer filters, but noted challenges for smaller programs where different surgeons may have vary widely in offer acceptance practices. The member recommended that a future version of offer filters could allow a surgeon to utilize their specifications while that surgeon was receiving offer call, to support maximum efficiency. The member noted that smaller programs particularly may benefit from such a functionality. Another member agreed, noting that this could be done using different "profiles" based on the user.

A member asked if the default offer filters implementation would alter any filters that their program had already built and activated. OPTN Contractor Staff clarified that this implementation will not impact pre-existing filters, but could add and activate additional filters for some programs. The OPTN Computer System will show which filters are model recommended, and will not overwrite any pre-existing filters. Programs will need to review the default filters and determine whether they would like to maintain use of that filter, modify the filter, or else remove the filter.

One member shared that their program plans to document the filters in use prior to implementation, so that they are able to track any new filters generated with the implementation more easily.

3. **Removal of Race and Hepatitis C from KDPI: Donor Distributions**

OPTN Contractor Staff presented updated donor distributions using KDPI without race and HCV. Typically, the Committee reviews KDPI mapping tables and donor distributions once a year to get a sense of how the donor population and KDPI have shifted over time. With the upcoming implementation of the *Refit KDPI without Race and HCV* policy, the Committee is once again reviewing how the updated KDPI calculation represents the most recent donor population.

Presentation summary:

Background:

- Each donor's Kidney Donor Risk Index (KDRI) score is converted to a KDPI percentage using a KDRI-to-KDPI mapping table
- The mapping table was already updated once this year in April 2024, to be based on 2023 donors, due to the annual change in reference donor population
- The KDPI mapping table will now change again as a result of the removal of race and HCV from KDPI per the *Refit KDPI without Race and HCV* policy, which will be effective on the October 31, 2024 implementation date
- There is no policy requirement for the Committee to vote on this particular updated KDPI mapping table, and so this presentation is for informational purposes only

In tracking the KDRI-to-KDPI mapping over time, the KDPI percentile changes slightly and subtly each year. Overtime, the raw KDRI mapped with each KDPI percentile has increased overtime. This is especially true for the 95th KDPI percentile, which went from 2.18 in 2015 to 2.39 in 2023.

This trend shifts in 2024 using the new KDRI formula without race and HCV, and the raw KDRI numbers mapped to each percentile drop. This drop is most pronounced for the 95th KDPI percentile, which dropped from 2.39 to 2.23; the 75th KDPI percentile saw a drop from 1.73 to 1.65. This is also in part due to the updated refit formula using a more recent population of donors. Using the refit, updated KDRI

formula, the 2024 KDRI-to-KDPI mapping are reflected as follows: 95th KDPI percentile at 2.23 KDRI, 75th KDPI percentile at 1.65 KDRI, 50th KDPI percentile at 1.31 KDRI, 25th KDPI percentile at 1.05 KDRI, and 5th KDPI percentile at 0.84 KDRI.

The updated KDRI-to-KDPI mapping table will be posted to the OPTN site upon implementation on October 31, 204.

<u>Summary of discussion:</u>

The Chair noted that the presentation the Committee received in April was remapping using the old KDRI formula, but that this presentation shows remapping with the new KDRI formula. The Chair asked the presenter to specifically highlight the changes and shifts in donor population with the new KDRI formula in use. OPTN Contractor Staff explained that raw KDRI is being calculated with 8 factors instead of 10, and that thus the weights associated to each of the remaining factors have shifted. The Chair noted that the weights associated with the remaining KDRI factors did not shift equally. OPTN Contractor Staff confirmed this, noting that the Scientific Registry of Transplant Recipients (SRTR) recalculated and refit KDRI using a more updated population of donors to determine the appropriate weight for the remaining KDRI factors, with race and HCV no longer in consideration. As a result, the weights of these predictors have shifted; more information on the updated KDRI weights is published with the SRTR's report on the OPTN site. OPTN Contractor Staff noted that, because the KDRI numbers have shifted, the KDPI mapping will also shift accordingly.

The Chair asked to compare the current KDPI mapping table with the upcoming KDPI mapping table, and OPTN Contractor Staff shared both mapping tables, pointing to the slight shifts. OPTN Contractor Staff noted how KDPI 0% mapped to a KDRI between 0 and 0.4402 on the current table, and that this shifts to a KDRI between 0 and 0.4392 using the refit KDPI. OPTN Contractor Staff explained that these changes persist in each bracket of KDPI, and each part will shift accordingly. The Chair asked if this means that for the equivalent KDPI, the KDRI is a little higher, asking if the risk would have been higher or lower for a given donor with or without HCV. OPTN Contractor Staff explained that this is complicated, noting that any given donor, even a non-black donor without HCV, would have a shift in KDPI due to the overall refitting of the KDRI formula. OPTN Contractor Staff noted that it's not a universal decrease or increase due to the changing relative weights of the other KDRI factors; some donors may have higher or lower KDPI scores in the new system depending on their other clinical factors. OPTN Contractor staff added that the new KDRI formula was also refit using a more updated donor population, which also drives changes in donor distributions across the board. OPTN Contractor Staff noted that the raw KDRI associated with the 95th percentile KDPI increased year after year because the previous model utilized an older donor population that was relatively healthier compared to most recent donor population. The new KDRI calculation is based on donor populations from 2018 to 2021, and so it's adjusted to the relative health and risk associated with a more current pool of donors, and thus the raw KDRI scores associated with the highest KDPI percentiles have decreased. The Chair noted that the mapping tables using the refit KDRI calculation are still using the 2023 donor population to map to KDPI, and that these shifts make sense.

4. Review and Discussion: Finalize "Hard to Place" Definition

The Committee continued their discussions towards finalizing a preliminary definition of "hard to place" kidneys.

<u>Presentation summary:</u>

The Committee initially set out to develop a preliminary, evidence-based definition for kidneys at increased risk of non-use, or "hard to place." This definition is preliminary in that the Committee will be

able to modify and tweak the definition as need for the variety of purposes that such as definition maybe used for, such as expedited placement. The definition is evidence based in that it is supported by data and literature. The rationale for developing this definition of "hard to place" includes establishing a clear, specific standard to describe which kidneys are "hard to place," and identifying which organs are at increased risk of non-use. These discussions of characteristics and potential drivers of non-use may also support the Committee's development of approaches to improve likelihood of transplant and addressing non-use in Continuous Distribution.

After significant literature and data review, the Committee agreed that a multi-pronged approach may be appropriate, considering clinical indicators, allocation-based indicators, and cold ischemic time. The Committee has noted that such a definition captures risk of non-use over time, for both clinical and logistical reasons. The Committee sought feedback on clinical, logistical, anatomical, and allocation characteristics in public comment.

The Committee identified two primary approaches at their last meeting, including:

- Identified "hard to place" – based on lack of placement (allocation thresholds, cold ischemic time)
- Predicted "hard to place" – based on clinical considerations and known related risks of non-use

The Committee previously looked at an adjusted model to understand and outline the criteria that are independently associated with non-use in context with each other. The Committee narrowed down potential criteria to include:

- 6 hours of cold ischemic time, with consideration for transportation and logistics
- Sequence 100, based on precedent established with SRTR metrics
- Hypertension
- Donor age
- Diabetes greater than or equal to 5 years
- Donation after cardiac death (DCD)
- Biopsy results: glomerulosclerosis >10 percent
- Donor use of continuous renal replacement therapy (CRRT)

The adjusted model utilized donor age on a continuous spectrum, and hypertension as a binary characteristic. OPTN Contractor Staff pulled additional data to support further distinction for these characteristics.

In considering distribution of donor age by non-use for 2023, the median donor age for transplanted organs was 40; for non-used organs, the median donor age was 58. In looking at donor age groups, non-use rates were 43.76 percent for donors aged 50-64, and 72.14 percent for donors aged 65 and older. Non-use rates were 37.75 percent for donors aged 50-59, and 63.14 percent for donors aged 60 and older.

In considering donor organ use status by history of hypertension, the data shows that non-use increases as duration of hypertension increases. Specifically, non-use rates were as follows:

- 16.33 percent for donors with no history of hypertension
- 35.41 percent for donors with a 0-5 year history of hypertension
- 48.66 percent for donors with a 6-10 year history of hypertension
- 58.04 percent for donors with a greater than 10 year history of hypertension
- 46.75 percent for donors with a known history of hypertension but unknown duration
- 31.91 percent for donors with an unknown history of hypertension

In looking at hypertension durations combined, non-use rates for donors with a history of hypertension greater than 5 years was 54.21 percent, compared to 19.96 percent for donors with no history of hypertension or a history of hypertension less than 5 years. Non-use rates for donors with a history of hypertension greater than 10 years was 58.04 percent, compared to 22.40 percent for donors with no history of hypertension or a history of hypertension less than 10 years. Donors with an unknown duration of hypertension had a non-use rate of 46.75 percent, and donors with an unknown history of hypertension was 31.91 percent.

Finally, in considering donor organ use status by compliance with hypertension treatment, there is little parity in non-use rate by compliance. Donors compliant with hypertension had a non-use rate of 48.25 percent, compared to 40.78 percent for donors with non-compliance. Donors with unknown compliance had a non-use rate of 44.97 percent.

Summary of discussion:

One member asked if the non-use rates by donor age were further broken down by DCD status, and OPTN Contractor Staff noted that this data does not include that breakdown.

The Chair noted that the Committee wants to pin down the donor age and hypertension variables further, and asked if the Committee would support for a more narrow or broader definition. In considering donor age, the Chair noted that the majority of organs were non-used in both the 60 plus and 65 plus donor age groups. The Chair noted that this was also true of the hypertension duration thresholds, with 54 percent at 5 years and 58 percent at 10 years.

The Vice Chair pointed out that the presence of other characteristics makes a difference, particularly if multiple risk characteristics are present. The Chair agreed, noting that the Committee will need to determine how many characteristics should be met for organs to be considered "hard to place." The Chair noted that potentially, the next data request could consider these characteristics in different combinations with each other.

One member noted that history of hypertension and compliance are only somewhat reliable, and may be based only on conversation with the family member, as opposed to documented medical records. The member remarked that this reliability is reflected in the minimal parity in non-use by compliance, as reported compliance may not be meaningfully reliable in reviewing an organ offer. The member continued that for age and hypertension, the data are normally distributed, and that there is no key inflection point that would support a specific threshold to define "hard to place." The member agreed with other comments, noting that defining clinical thresholds may be less practically useful than defining a specific sequence number. The member continued that offer and organ evaluation considers a great number of variables. The Vice Chair responded that the "hard to place" definition will utilize logistical and allocation factors such as sequence number and cold ischemic time thresholds, as well as predictive, clinical criteria. The member agreed, but noted that this will still require a high level of compromise. The Vice Chair noted that this can be acceptable, noting that this definition will set out to note that a kidney with two or three characteristics will likely become hard to place. The Chair agreed, noting that it was similarly difficult for the Committee to finalize the criteria to require biopsy, as there was no consensus baseline. The Chair continued, noting that there is currently no consensus definition of hard to place, and limited ability to compare other than sequence number at acceptance and non-use.

The Chair remarked that sequence number 100 and 6 hours of cold ischemic time are defined measures post-cross clamp. The Chair continued that it will be important to have clinical criteria to consider prior to recovery, so that OPOs and programs can plan for expedited placement if necessary. The Chair noted that only using post-recovery indicators would limit OPOs and the effectiveness of potential expedited placement. The Chair also pointed out that these variables will need to be considered in combination,

not just as isolated factors. OPTN Contractor Staff added that the Committee will be able to submit a final data request based on these characteristics to understand donor volumes and how these characteristics may interact with each other.

OPTN Contractor Staff noted that hypertension and donor age are consistent with previous data and literature that the Committee has reviewed and discussed, particularly in context with the other criteria. The inclusion of hypertension and donor age as potential indicators of difficulty in placement would be in alignment with the literature as characteristics having an increased risk of non-use.

The Chair remarked that some public comment feedback expressed support for ensuring cold ischemic time thresholds were considered in context with other clinical criteria.

One member commented that the Committee should perform a multivariate analysis to predict likelihood of transplant or non-use. The Chair noted that the Committee still needs to decide if it is necessary to narrow down hypertension by duration, and determine a donor age threshold. OPTN Contractor Staff noted that the multivariate analysis previously reviewed by the Committee had identified hypertension and donor age as independently associated with increased risk of non-use, but that this model did not break out hypertension by duration and utilized donor age as a continuous variable. The Committee could determine these thresholds and review a secondary data request to understand donor volumes and how these characteristics work in combination. Another member remarked that the secondary analysis should maintain the continuous variable of donor age, as opposed to establishing thresholds. A member commented that history of hypertension can be unreliable, particularly if based on family interviews as opposed to medical records.

OPTN Contractor Staff explained that the Committee has reviewed a multivariate analysis, which showed increased risk of non-use for donors with a history of hypertension. The following data request would allow the Committee to evaluate how these components apply to the donor population, and understand relative donor volumes, in order to inform Committee discussions on how many characteristics must be met to be considered "hard to place."

One member remarked that relative importance of these variables should be considered, particularly the covariates. The Chair pointed out that the Committee looked at this previously, and discussed whether certain independently associated variables should be excluded from the definition of "hard to place."

The Chair remarked that the Committee needs to determine these thresholds in order to finalize a definition. The Chair expressed support for not including compliance and non-compliance in the definition of "hard to place."

One member commented that a regression analysis would yield a binary output of "accepted" or "not accepted," as well as the values for these variables that lead to either output. The member continued that the regression will produce a combination of variables that when reached or exceeded predict non-use. The member asked if the Committee is trying to find a grouping of variables that predict non-use, or look at individual variables in terms of non-use. OPTN Contractor Staff remarked that the adjusted model looked at all recovered kidneys and utilized the outcome of transplanted or not transplanted. This analysis gives the Committee a sense of what variables were associated with non-use; this model used hypertension as a binary variable and donor age as a continuous variable, although it did identify these variables as independently associated with non-use.

A member pointed out that a 30 year old donor with a creatinine of 10 is much more concerning than a 50 year old donor with a creatinine of 0.7 mg/dL. The member remarked that the definition of "hard to place" should use a combination of criteria with weighted coefficients.

OPTN Contractor Staff explained that investigating interactions with a model may be difficult due to high levels of noise with interactions between all the different variables. A member noted that organ acceptance decisions are based on these interactions, and that multiple variables are evaluated in real time. The member continued that no variable is considered in isolation, with few exceptions like donor cancer history. The member noted that, in order to reflect the reality of what is being accepted and declined, the predictor needs to replicate the human brains and their multivariate evaluations.

A representative of the Scientific Registry of Transplant Recipients (SRTR) noted that the Committee could potentially explore an adjusted predictive model with a specific cut off, past which a donor would be considered "hard to place." The SRTR representative continued that the Committee could determine different cutoffs based on classification properties, so that the variables could remain continuous and only one threshold would need to be determined. A member expressed support for this. OPTN Contractor Staff remarked that the Expeditious Task Force discussed this concept extensively, ultimately noting that this would require significant iteration to achieve. OPTN Contractor Staff continued that the Task Force agreed, particularly in considering expedited placement, that it could be sufficient to understand where risk of non-use is elevated and utilize a simpler definition initially, and then move towards more sophisticated models. OPTN Contractor Staff continued that this could be feasible, but that this would require significantly more time and resources, and that this may not be necessary to achieve the Committee's initial goal. The Chair agreed, noting that the Committee can continue to have these discussions as continuous distribution is developed.

The Chair noted that the continuous distribution and expedited placement focuses on how to allocate organs, while "hard to place" focuses more on what specific organs may require different kinds of allocation. The Chair continued that the Committee is currently seeking to answer whether there are additional clinical criteria that could help determine whether an organ may be at increased risk of non-use.

A member remarked that it's not difficult to identify which variables may be associated with increased risk of non-use, but that a predictive model for risk of non-use may ultimately be more ideal. The member continued that age can remain a continuous variable in this instance. The member agreed that this model would need to be fully integrated into allocation and the OPTN Computer System in order to operate as initiation criteria for expedited placement or other applications.

Upcoming Meetings

November 18, 2024

Attendance

- **Committee Members**
  - Jim Kim
  - Arpita Basu
  - Chandrasekar Santhanakrishnan
  - Christine Hwang
  - Curtis Warfield
  - Eloise Salmon
  - Jason Rolls
  - John Lunz
  - Leigh Ann Burgess
  - Marc Melcher
  - Patrick Gee
  - Tania Houle
- **HRSA Representatives**
  - James Bowman
  - Marilyn Levi
- **SRTR Staff**
  - Bryn Thompson
  - Grace Lyden
  - Jodi Smith
  - Jon Miller
- **UNOS Staff**
  - Kayla Temple
  - Shandie Covington
  - Kaitlin Swanner
  - Ben Wolford
  - Houlder Hudgins
  - Keighly Bradbrook
  - Lauren Motley
  - Meng Li
  - Rebecca Fitz Marino
  - Ross Walton
  - Sarah Booker
  - Thomas Dolan