

Notice of OPTN Policy Change

Refit Kidney Donor Profile Index without Race and Hepatitis C Virus

Sponsoring Committee:	Minority Affairs
Policy Affected:	8.4.B: Deceased Donor Classifications
Public Comment:	January 23, 2024- March 19, 2024
Board Approved:	June 17, 2024
Effective Date:	Pending implementation and notice to OPTN members

Purpose of Policy Change

The purpose of this policy change is to refit the Kidney Donor Risk Index (KDRI) calculation without race or Hepatitis C Virus (HCV) and re-map it to the Kidney Donor profile index (KDPI) to better reflect the likelihood of graft failure for kidneys from African American/Black and HCV positive deceased donors.¹

Proposal History

The KDPI is a measure that combines deceased donor factors, including clinical parameters and Demographics, to summarize the quality of deceased donor kidneys into a single number.² The OPTN started using KDPI in 2014 as part of the implementation of the Kidney Allocation System (KAS).³ Lower KDPI scores are associated with longer estimated organ function, while higher KDPI scores are associated with shorter estimated organ function and an increased chance of organ non-use.⁴ Currently, kidneys from African American/Black and Hepatitis C virus (HCV) positive deceased donors have an increased KDPI of up to 20% for each factor.⁵ Race is a poor proxy for human genetic variation and due to innovations in treatment, post-transplant outcomes for HCV positive deceased donor kidney transplants are similar to that of HCV negative donor kidneys.^{6, 7}

¹ "Refit Kidney Donor Profile Index without Race and Hepatitis C Virus" public comment proposal, OPTN, Accessed June 10, 2024 Available at https://optn.transplant.hrsa.gov/media/ekkfxy4t/mac_kdpiracehcv_pcjan24.pdf

² Organ Procurement and Transplantation Network. April 19, 2023. A Guide to Calculating and Interpreting the Kidney Donor Profile Index (KDPI). Retrieved November 10, 2023, from https://optn.transplant.hrsa.gov/media/i34dm4mv/kdipi_guide.pdf.

³ Organ Procurement and Transplantation Network. September 17, 2014. The New Kidney Allocation System (KAS) Frequently Asked Questions. Retrieved November 10, 2023, from <https://optn.transplant.hrsa.gov/professionals/by-topic/guidance/thenew-kidney-allocation-system-kas-frequently-asked-questions/#bookmark5>.

⁴ Kadatz M, Gill J, Gill J, Lan J, McMichael L, Chang D, Gill J (2023). The Benefits of Preemptive Transplantation Using High-Kidney Donor Profile Index Kidneys. *Clinical Journal of the American Society of Nephrology*. 18(5):p 634-643 doi: 10.2215/CJN.000000000000134.

⁵ Rao P, Schaubel D, Guidinger MK, Andreoni KA, Wolde RA, Merion RM, Port FK, Sung RS. (2009) A Comprehensive Risk Quantification Score for Deceased Donor Kidneys: The Kidney Donor Risk Index. *Transplantation*, 88(2), 231-6. doi: 10.1097/TP.0b013e3181ac620b.

⁶ Ibid.

⁷ Miller J, Lyden GR, McKinney WT, Snyder JJ, Israni AK. (2023). Impacts of removing race from the calculation of the kidney donor profile index. *American Journal of Transplantation*, 23(5):636-641. <https://doi.org/10.1016/j.ajt.2022.12.016>

Summary of Changes

The KDRI will be refit without race and HCV variables and remapped to the KDPI to better reflect the likelihood of graft failure for kidneys from African American/Black and HCV positive deceased donors.⁸

Implementation

No action is required by transplant hospitals or organ procurement organizations. However, members should familiarize themselves with the changes to the KDPI calculator. This is no expected fiscal impact on transplant programs, organ procurement organizations, or histocompatibility laboratories.

The OPTN will need to make updates to the OPTN Computer System to refit the KDRI calculation without race or HCV and update the KDPI calculation in addition to communicating changes to members of the public.

Affected Policy Language

New language is underlined (example) and language that is deleted is struck through (~~example~~)

8.4.B: Deceased Donor Classifications

Kidneys from deceased donors are classified according to the Kidney Donor Profile Index (KDPI). The KDPI score is derived directly from the Kidney Donor Risk Index (KDRI) score. The KDPI is the percentage of donors in the reference population that have a KDRI less than or equal to this donor's KDRI.

The donor characteristics used to calculate KDRI are provided in *Table 8-5* below.

Table 8-5: KDRI Factors

This deceased donor characteristic:	Applies to:	KDRI score component:
Age (integer years)	All donors	0.0128 <u>0.0092</u> *(age-40)
	Donors with age < 18	-0.0194 <u>0.0113</u> *(age-18)
	Donors with age > 50	0.0107 <u>0.0067</u> *(age-50)
Race	African American donors	0.1790
Creatinine (mg/dL)	All donors	0.2200 <u>0.2128</u> *(creatinine - 1)
	Donors with creatinine > 1.5	-0.2090 -0.2199 *(creatinine -1.5)
History of Hypertension	Hypertensive donors	0.1260 <u>0.1106</u>
History of Diabetes	Diabetic donors	0.1300 <u>0.2577</u>

⁸ "Refit Kidney Donor Profile Index without Race and Hepatitis C Virus" briefing paper, OPTN, Accessed June 10, 2024, Available at https://optn.transplant.hrsa.gov/media/Ozamk0dr/mac_kdpi_board-briefing-paper.pdf

This deceased donor characteristic:	Applies to:	KDRI score component:
Cause of Death	Donors with cerebrovascular accident as cause of death	0.0884 <u>0.0743</u>
Height (cm)	All donors	-0.0464 $-0.0557 * (\text{height} - 170) / 10$
Weight (kg)	All donors with weight < 80 kg	-0.0199 $-0.0333 * (\text{weight} - 80) / 5$
Donor type	DCD donors	0.1330 <u>0.1966</u>
HCV status	HCV positive donors	0.2400

To calculate KDRI, follow these steps:

1. Sum each of the applicable KDRI score components in *Table 8-5*
2. Apply the antilog (base e) function to this sum
3. Divide the KDRI by the median KDRI value of the most recent donor reference population
4. Determine the KDPI using the OPTN's KDRI-to-KDPI mapping table

The KDPI score is rounded to the nearest integer.

The KDPI used for allocation is based on the most recent values of donor characteristics reported to the OPTN before executing a match run.

The reference population used to determine the KDRI-to-KDPI mapping is reviewed annually by the Kidney Transplantation Committee and updated by the OPTN on or before June 1 of each calendar year.