Proposal at a glance

Public Comment Proposal: Eliminate the Use of DSA and Region in Kidney Allocation Policy
Sponsoring Committee: OPTN Kidney Transplantation Committee

You may be interested in this proposal if:

- You or your loved one needs a kidney transplant
- You are a healthcare professional who cares for end stage renal disease patients
- You work for a kidney transplant program or an Organ Procurement Organization (OPO)

Here's what we propose and why

The OPTN Kidney Transplantation Committee proposes to remove Donation Service Area (DSA) and regional boundaries used in the current system and allocate using a 500 nautical mile (NM) circle around the donor hospital. Points would be assigned based on how close the candidate's transplant hospital is to the hospital where the organ donation takes place. This is to prevent a kidney being transported further away when there is a candidate of similar priority closer to the donor hospital. The kidney would first be allocated to all eligible candidates inside the 500 NM circle. If the organ has not been accepted by those candidates, it would then be offered to other eligible candidates.

Location should not hinder access to transplant. The goal of this proposal is to provide consistent distribution units and promote patient access to transplant.

The proposed change would also increase priority for pediatric patients and for prior living donors who now need a transplant. Aside from these changes, kidneys will still be matched with patients according to current criteria.

Why this may matter to you

The goal of this proposal is to increase equity in access for U.S. kidney transplant candidates. Some areas of the country will see an increase in kidney transplants which means other areas will experience a decrease. Some kidneys would have to travel further than they do today, in order to meet this goal. This change would result in new working relationships between OPOs and transplant centers.

Tell us what you think about

- What factors should be used to select a circle size that distributes kidneys broadly and efficiently?
- Should proximity points be used inside the 500 NM circle? Should they be used outside the distribution circle? How should the assigned values be weighted in relation to other kidney allocation points?
- What priority do you think is appropriate for pediatric candidates? Should prioritization be applied inside the distribution circle? Should prioritization be applied outside the distribution circle?

- What priority do you think is appropriate for prior living donor candidates? Should prioritization be applied inside the distribution circle?
- What operational concerns should the committee consider as this policy is being prepared for OPTN board action and implementation?
- Should medical urgency criteria be defined? If so, what specific conditions would qualify? Where should the new medically urgent classification be placed within allocation tables? Should placement within allocation tables vary depending on the KDPI of the donor kidney? How should two medically urgent candidates be prioritized should two appear on the same match run?
- When import back up is granted, do you support the use of an import match run for the import OPO to reallocate the kidney? Should the match run use the same size circle as the original allocation but with increased points for proximity? Should the circle size be smaller? If so, what distance will promote the efficient reallocation of kidneys?

OPTN

Public Comment Proposal

Eliminate the Use of DSA and Region from Kidney Allocation Policy

OPTN Kidney Transplantation Committee

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Eliminate the Use of DSAs and Regions from Kidney Allocation Policy

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Sponsoring Committee:	*OPTN Kidney Transplantation Committee*
Public Comment Period:	*August 2, 2019 – October 2, 2019*

Executive Summary

The Final Rule sets requirements for allocation policies developed by the Organ Procurement and Transplantation Network (OPTN), including the use of sound medical judgement, achieving the best use of organs, preserving the ability for transplant programs to decide whether to accept an organ offer, avoiding wasting organs (unnecessary organ loss), avoiding futile transplants, promoting patient access to transplantation and promoting efficient management of organ placement.[1] The Final Rule also includes a requirement that allocation policies "shall not be based on the candidate's place of residence or place of listing, except to the extent required" by the other requirements.[2]

OPTN Policy 8: Allocation of Kidneys currently uses DSA and region as geographic units of distribution. DSA and region are poor proxies for geographic distance between donors and transplant candidates due to variation in size, shapes, and populations resulting in an inconsistent application for all candidates. As a result, the use of DSA and region in kidney distribution presents a potential conflict with the Final Rule. The proposed solution removes DSA and region as units of distribution in kidney allocation policy, and would allocate using rationally determined units of distribution that are intended to ensure that the most urgent candidates are prioritized, thereby promoting greater equity in access to transplantation.

The OPTN Kidney Transplantation Committee (hereafter, "Committee") proposes removing DSA within kidney allocation policy in favor of a single fixed distance circle encompassing 500 nautical miles (NM)

[1] 42 C.F.R. § 121.8(a).
[2] 42 C.F.R. § 121.8(a)(8).

with the donor hospital at its center. Region as currently determined would be removed as a unit of distribution. The 500 NM circle would include proximity points that award candidates inside the single fixed circle a maximum of four points and award candidates outside of the fixed circle a maximum of eight points based on their distance from the donor hospital. The goal of these changes is to make kidney allocation policy more consistent with the Final Rule and to increase geographic equity in access to transplantation regardless of a candidate's place of listing, while limiting transportation costs and inefficiencies through the use of proximity points.

Also included in this policy proposal are changes that further prioritize pediatric and prior living donor candidates. Additionally, policy changes are included regarding import matches and exceptions for medical urgency that require amendment due to the removal of DSA as a distribution unit from allocation policy.

The Committee encourages all interested individuals to comment on the proposal in its entirety, but specifically asks for feedback regarding:

- What factors should be used to select a circle size that distributes kidneys broadly and efficiently?
- Should proximity points be used inside the 500 NM circle? Should they be used outside the distribution circle? How should the assigned values be weighted in relation to other kidney allocation points?
- What priority do you think is appropriate for pediatric candidates? Should prioritization be applied inside the distribution circle? Should prioritization be applied outside the distribution circle?
- What priority do you think is appropriate for prior living donor candidates? Should prioritization be applied inside the distribution circle?
- What operational concerns should the committee consider as this policy is being prepared for OPTN board action and implementation?
- Should medical urgency criteria be defined? If so, what specific conditions would qualify? Where should the new medically urgent classification be placed within allocation tables? Should placement within allocation tables vary depending on the KDPI of the donor kidney? How should two medically urgent candidates be prioritized should two appear on the same match run?
- When import back up is granted, do you support the use of an import match run for the import OPO to reallocate the kidney? Should the match run use the same size circle as the original allocation but with increased points for proximity? Should the circle size be smaller? If so, what distance will promote the efficient reallocation of kidneys?

What are the Problems this Proposal will Address?

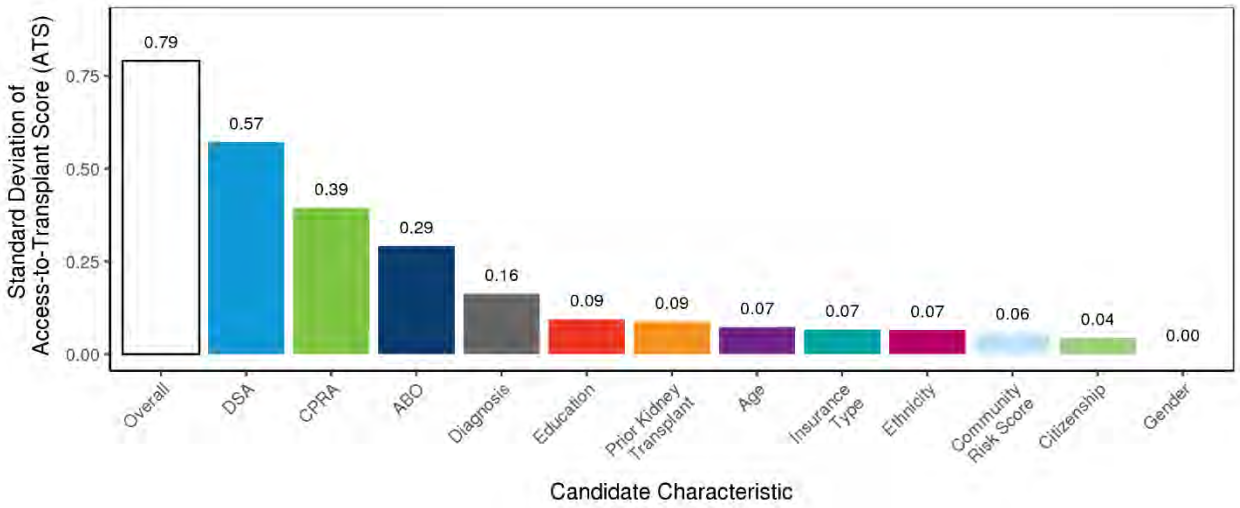
The OPTN is required to develop policies for the "equitable allocation of cadaveric organs among potential recipients."[3] The use of DSA and region as units of distribution for deceased donor kidney allocation results in disparities in access to transplant for waitlisted candidates. Specifically, access to transplant for kidney candidates is impacted by DSA as a disparity metric in kidney allocation, which conflicts with the principle of the Final Rule stating that allocation policies, "shall not be based on a candidae's place of residence or place of listing."[4] The proposal also addresses the problem that DSAs and regions were designed as administrative boundaries and not for purposes of organ distribution, which is a potential conflict with the Final Rule requirement that organ distribution not be limited except to the extent required.[5]

DSA as a Disparity Metric in Kidney Allocation

Under current allocation, research performed by the OPTN highlights DSA as the largest factor related to disparity in kidney allocation.[6] Equity in access can be measured by examining the degree to which candidates' rates of transplant vary depending on patient characteristics.[7] The Access to Transplant Score (ATS) was developed to measure relative differences in candidates' access to transplant associated with patient characteristics such as blood type, cPRA, DSA of listing, age, and ethnicity, and other factors considered to potentially impact a candidate's time-to-transplant and produces a score to measure how each factor affects variability in transplant access.[8] The variation in ATS among candidates on the waiting list (as measured by the standard deviation) is a reflection in the system-level degree of equity in access in kidney allocation. Among the candidate characteristics affecting ATS, the DSA where a candidate is listed has the strongest association with disparities (or highest variability) in access to transplantation (**Figure 1**).[9]

[3] 42 C.F.R. § 121.8(a).
[4] 42 C.F.R. § 121.8
[5] Ibid.
[6] OPTN Descriptive Data Request. "Report on Equity in Access." Presented to the OPTN/UNOS Board of Directors Meeting, December 2016.
[7] Stewart DE, Wilk AR, Toll AE, Harper AM, Lehman RR, Robinson AM, Noreen SA, Edwards EB, Klassen DK. Measuring and monitoring equity in access to deceased donor kidney transplantation. American Journal of Transplantation. 2018 Aug;18(8):1924-35.
[8] OPTN Descriptive Data Request. "Report on Equity in Access." Presented to the OPTN/UNOS Board of Directors Meeting, December 2016.
[9] OPTN Descriptive Data Request. "Report on Equity in Access." Presented to the OPTN/UNOS Board of Directors Meeting, December 2016.

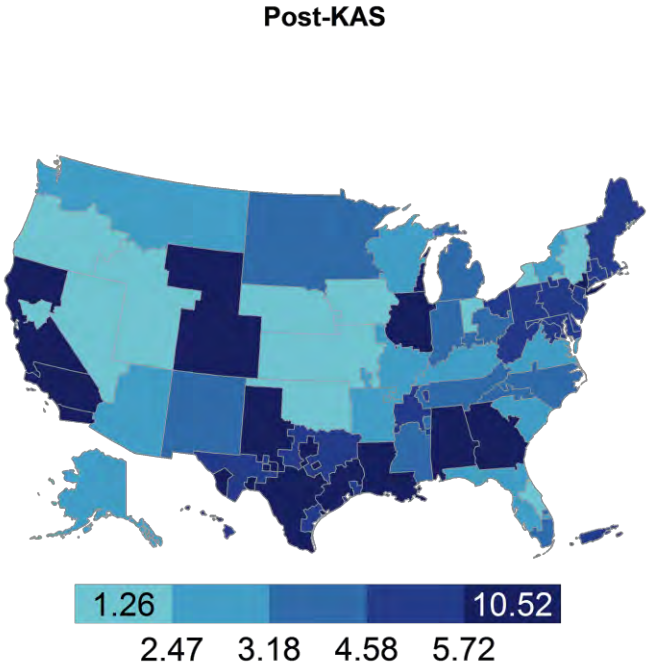
Figure 1: Standard Deviation of Transplant Score and DSA for Kidney Transplants



Additionally, adjusted estimated median waiting time to deceased donor kidney transplant vary greatly across the nation, as shown in **Figure 2**. For example, estimated median waiting times in areas of California are as high as 10.52 years. In contrast, in some areas of the country, median wait times are as low as 1.28 years. The ATS evidence indicates that DSA specifically may violate the Final Rule requirement to promote patient access to transplant, and also the requirement that where a candidate is listed should not impact their access to transplant.[10]

[10] 42 C.F.R. § 121.8

Figure 2: Adjusted Median Waiting Time to Deceased Donor Kidney Transplant across the United States, 3/1/2015 – 3/1/2016



*Adjusted for candidate's age, sex, race, ABO blood type, and cPRA; and program-specific covariates

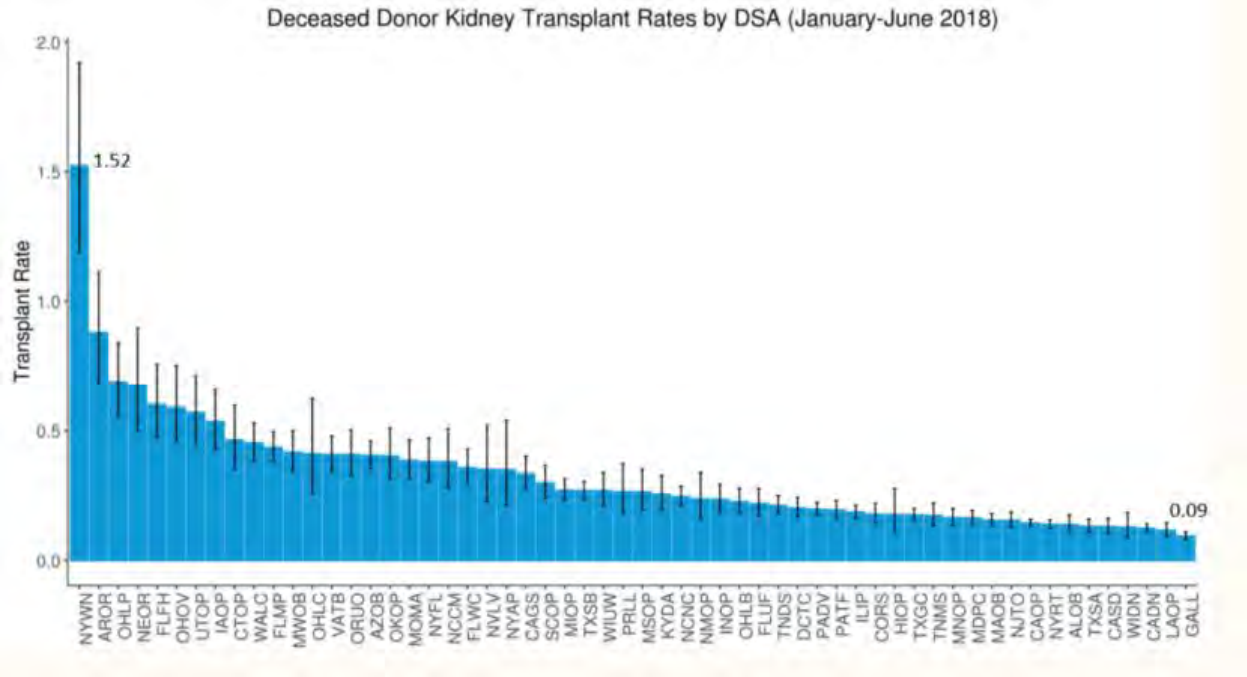
This demonstrated level of observable variation in access to transplant and in estimated median waiting times across the country directly contradicts the principles of the OPTN Final Rule, which states that allocation policies, "Shall not be based on the candidate's place of residence or place of listing."[11] As illustrated by the variance in ATS scores, a candidate's DSA where they are listed is currently a major determinant in access, and therefore needs to be removed from allocation policies, as it is not equitable.

One further illustration of disparities in access across DSAs is illustrated in **Figure 3**, which depicts variations in transplant rate across each of the DSAs. Note that data illustrated are unadjusted transplant rates based on OPTN data.[12]

[11] 42 C.F.R. § 121.8(a).

[12] Stewart DE, Wilk AR, Klassen DK. KAS Turns Four: The State of Deceased Donor Kidney Allocation in the U.S. *OBM Transplantation* 2019;3(1):17; doi:10.21926/obm.transplant.1901041. http://ver01.lidsen.com/journals/transplantation/transplantation-03-01-041#figure06 (accessed July 17, 2019)

Figure 3: Kidney Alone Transplant Rate across DSAs (January to June 2018)



DSAs and Regions Not Optimized as Geographic Units of Allocation

DSAs and regional boundaries were not optimized as geographic units for the purposes of organ allocation. The DSA is the geographic area designated by the Centers for Medicare and Medicaid Services (CMS) that is served by one Organ Procurement Organization (OPO), one or more transplant programs, and one or more donor hospitals. DSA boundaries were drawn to define the boundaries in which an OPO is obligated to recover organs, not for equitable organ distribution purposes.

Regions are administrative boundaries used to facilitate OPTN governance activities. Each region is a collection of DSAs in which there were historical relationships between the OPOs and transplant hospitals. Regions vary in population, transplant volume, and geographic size. These regions are used for multiple purposes (collecting public comment, Board and committee representation, etc.) but were not designed to optimize organ distribution.[13] **Figure 4** and **Figure 5**[14] below illustrate the current geographic layout of DSAs and OPTN regions across the country.

[13] OPTN Bylaws Article IX: Regions. https://optn.transplant.hrsa.gov/media/1201/optn_bylaws.pdf#nameddest=Article_09 (accessed July 9, 2019).

[14] "Regions." Organ Procurement and Transplantation Network. https://optn.transplant.hrsa.gov/members/regions/. (accessed July 3, 2019).

Figure 4: Geographic Layout of DSAs across the United States

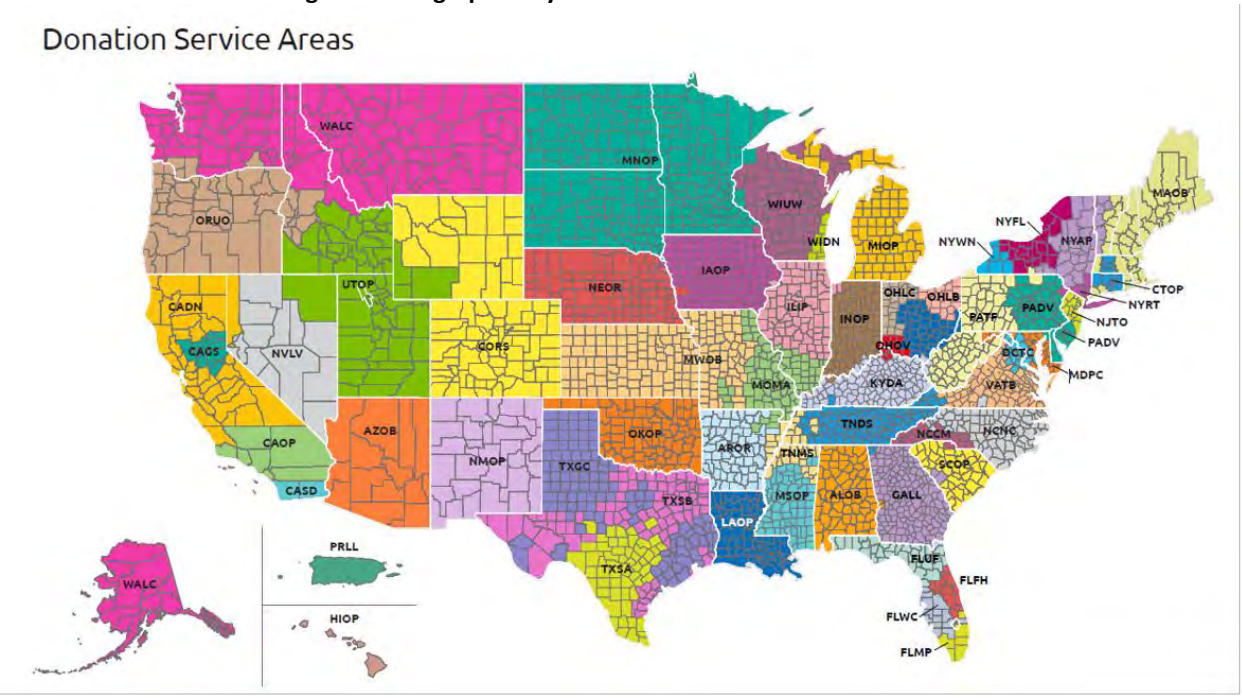
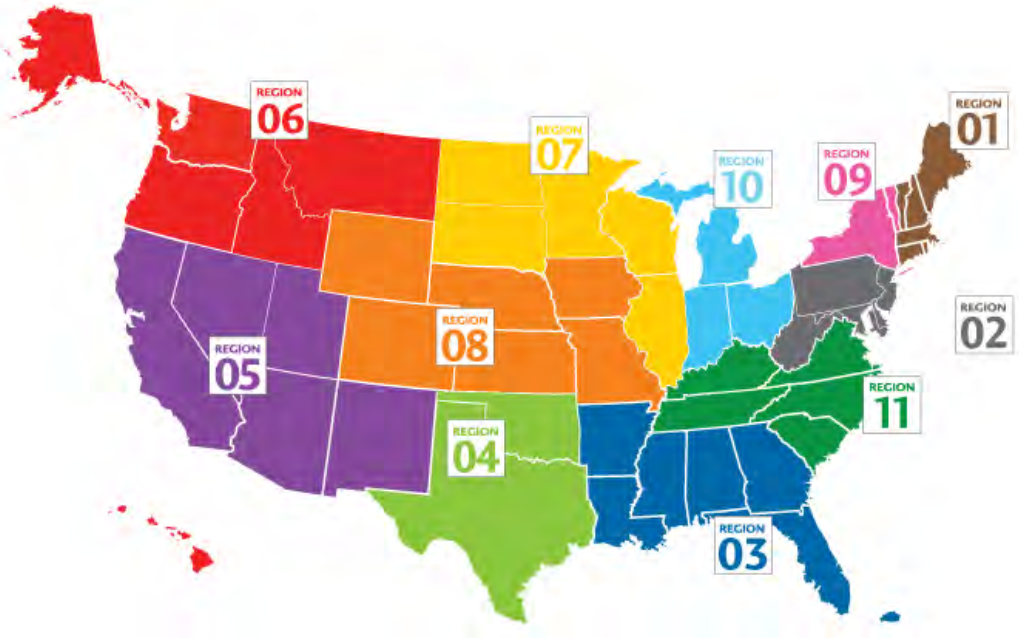


Figure 5: Map of OPTN Regions across the United States



The Final Rule sets requirements for allocation polices developed by the OPTN, including: sound medical judgement, best use of organs, preserving the ability for transplant programs to decide whether to accept an organ offer, avoiding wasting organs, promoting patient access to transplant, avoiding futile transplants, and promoting efficiency.[15] The Final Rule also stipulates that allocation policies "shall not be based on the candidate's place of residence or place of listing, except to the extent required" by the

[15] 42 C.F.R. §121.8(a).

other requirements of Section 121.8 of the Final Rule.[16] Finally, the Final Rule includes a performance goal for allocation policies of "distributing organs over as broad a geographic area as feasible under paragraphs (a)(1)-(5) of this section, and in order of decreasing medical urgency."[17]

The requirement to distribute over a broad geographic area reflects professional consensus that organs are a national resource meant to be allocated based on patients' medical need. In, 1984, the Task Force on Organ Transplantation was formed within the U.S. Department of Health and Human Services to "conduct a comprehensive assessment of organ donation and procurement."[18] The final report of the Task Force stated that:

> "The principle that donated cadaveric organs are a national resource implies that, in principle, and to the extent technically and practically achievable, any citizen or resident of the United States in need of a transplant should be considered as a potential recipient of each retrieved organ on a basis equal to that of a patient who lives in the area where the organs or tissues are retrieved. Organs and tissues ought to be distributed on the basis of objective priority criteria, and not on the basis of accidents of geography."[19]

The Institute of Medicine made this same conclusion in 1999.[20] In 2012, the American Medical Association's Code of Medical Ethics stated that, "[o]rgans should be considered a national, rather than a local or regional resource. Geographical priorities in the allocation of organs should be prohibited except when transportation of organs would threaten their suitability for transplantation."[21] Additionally, a national survey conducted by the U.S. Department of Health and Human Services in 2012 showed that 81.7% of respondents would prefer for their "organs to go to more medically urgent patients regardless of where they live in the U.S."[22] The Advisory Committee on Transplantation (ACOT) recommended, "that the Secretary take steps to ensure the OPTN develops evidence-based allocation policies which are not determined by arbitrary administrative boundaries such as OPO service areas, OPTN regions and state boundaries."[23]

The OPTN Board of Directors has also concluded that organs are a national resource, as evidence by the Principles of Geography composed and affirmed by a Board vote in December 2017.[24]

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[16] 42 C.F.R. §121.8(a)(8).
[17] 42 C.F.R. §121.8(b)(3).
[18] U.S. Dept. of Health & Human Services, Public Health Service, Health Resources and Services Administration, Office of Organ Transplantation, "Organ Transplantation: Issues and Recommendations: Report of the Task Force on Organ Transplantation." Rockville, MD., p. 91, 1987
[19] U.S. Dept. of Health & Human Services, Public Health Service, Health Resources and Services Administration, Office of Organ Transplantation, "Organ Transplantation: Issues and Recommendations: Report of the Task Force on Organ Transplantation." Rockville, MD., p. 91, 1987, quoting Hunsicker, LG.
[20] National Academies Press, "Organ Procurement and Transplantation." (1999).
[21] American Medical Association. "Opinion 2.16 – Organ Transplantation Guidelines." *AMA Journal of Ethics* 14(3) (2012); 204-214, https://journalofethics.ama-assn.org/article/ama-code-medical-ethics-opinions-organ-transplantation/2012-03 (accessed December 26, 2018).
[22] U.S. Department of Health and Human Services, Health Resources and Services Administration, Healthcare Systems Bureau, 2012 National Survey of Organ Donation Attitudes and Behaviors. Rockville, Maryland: U.S. Department of Health and Human Services, 2013.
[23] Advisory Committee on Organ Transplantation Recommendation 51, August 2010. https://www.organdonor.gov/about-dot/acot/acotrecs51.html (accessed July 9, 2019).
[24] Meeting Summary for December 4-5, 2017 meeting, OPTN/UNOS Executive Committee.

This proposal seeks to remove DSA and region from kidney allocation policy and allocate using geographic units that are rationally determined and consistently applied, in accordance with Final Rule requirements that organ allocation not be based on a candidate's residence or place of listing and to result in a more equitable allocation system for kidney candidates.[25]

Background

In July 2018 the Secretary of Health and Human Resources(HHS) directed the OPTN to identify a plan to eliminate the use of Donation Service Area (DSA) and region in non-liver organ policies with a rationally determined substitute that could be consistently applied and aligns with the regulatory requirements of the Final Rule.[26] In response to the Secretary of HHS letter, in August 2018 the OPTN Executive Committee directed the OPTN Kidney and Pancreas Transplantation Committees to pursue removal of DSA and regions from their allocation systems.[27] This directive was made on the grounds that DSAs and regions, as distribution units, are not rationally determined or consistently applied, and thus may create inequalities in candidates' access to organ transplantation.

A Kidney-Pancreas Workgroup ("Workgroup"), with members from the respective committees as well as the OPTN Pediatric Transplantation Committee, developed a modeling request based on Workgroup members' collective clinical experience, OPTN data on current distribution practices, and the OPTN "Geographic Organ Distribution Principles and Models."[28] When developing the modeling request in September 2018, the Workgroup collaborated with relevant stakeholders, including the OPTN Minority Affairs Committee and Ad Hoc Geography Committee.[29]

The Kidney and Pancreas Committees submitted a concept paper for public comment in Spring 2019 to garner feedback from the community on the modeling results and efforts of the Workgroup to remove DSA and region from kidney and pancreas allocation. Now including important stakeholder members from the OPTN Minority Affairs and Organ Procurement Organization (OPO) Committees, the Workgroup met throughout February and March to review public comment themes and consider future modeling requests. Workgroup discussions closely followed public comment feedback, including concerns about system efficiency and the potential impact on socioeconomically disadvantaged candidates. Based on feedback received during the OPTN Spring 2019 Public Comment period, the OPTN Kidney and Pancreas Transplantation Committees composed separate policy proposals for the OPTN Fall public comment period.

The Workgroup voted unanimously that both committees (kidney and pancreas) utilize the same data request for KPSAM modeling to maximize the available bandwidth and thereby model the most framework variations. Furthermore, each committee (kidney and pancreas) wanted to consistently

[25] 42 C.F.R. § 121.8

[26] George Sigounas, letter to Sue Dunn, OPTN President, July 31, 2018.

[27] Meeting Summary for August 1, 2018 meeting, OPTN/UNOS Executive Committee, https://optn.transplant.hrsa.gov/media/2609/20180801_executive_meetingsummary.pdf. (accessed December 26, 2018).

[28] Geographic Organ Distribution Principles and Models Recommendations Report, OPTN/UNOS Ad Hoc Committee on Geography, June 2018, https://optn.transplant.hrsa.gov/media/2506/geography_recommendations_report_201806.pdf (accessed Nov. 16, 2018)

[29] The OPTN Ad Hoc Committee on Geography (the Geography Committee) was formed in December 2017 to examine the principles of geographic distribution of organs. The Geography Committee was charged with establishing guiding principles for the use of geographic constraints in organ allocation, reviewing and recommending models for incorporating geographic principles into allocation policies, and identifying uniform concepts for organ specific allocation policies in light of the requirements of the OPTN Final Rule.

consider the effects on simultaneous kidney-pancreas transplants across variations. Based on the support indicated at OPTN regional meetings and input received on the OPTN public comment site as well as their clinical experience, the Workgroup members voted unanimously to move forward with modeling hybrid variations that included circle sizes of 150, 250, and 500 nautical miles.

The next sections (Hybrid Framework and Changes to the KPSAM Accept/Decline Model) detail the Committees' considerations of elements included in the second KPSAM request, reflecting that the recommendations for the second KPSAM request were thoroughly discussed and considered. Throughout the policy development process, Workgroup discussions were grounded in consideration of the impact of possible solutions on the Final Rule, in particular: avoiding unnecessary organ loss, promoting patient access to transplantation, promoting efficient management of organ placement, and not being based on a candidate's place of residence or listing except to the extent required.

Hybrid Framework

The "hybrid" framework favored by the Committee combines elements of fixed distance and continuous distribution frameworks by using both a fixed-distance circle and proximity points between the donor and potential transplant recipient.[30] The Workgroup unanimously supported modeling only hybrid framework variations in the second KPSAM request because it considered that the "hybrid" framework will broaden distribution while retaining operational efficiency through the use of proximity points. This fulfills the Final Rule requirement that organ allocation not be based on a candidate's place of listing while not violating the Final Rule requirement that organ allocation shall be designed to promote the efficient management of organ placement.[31]

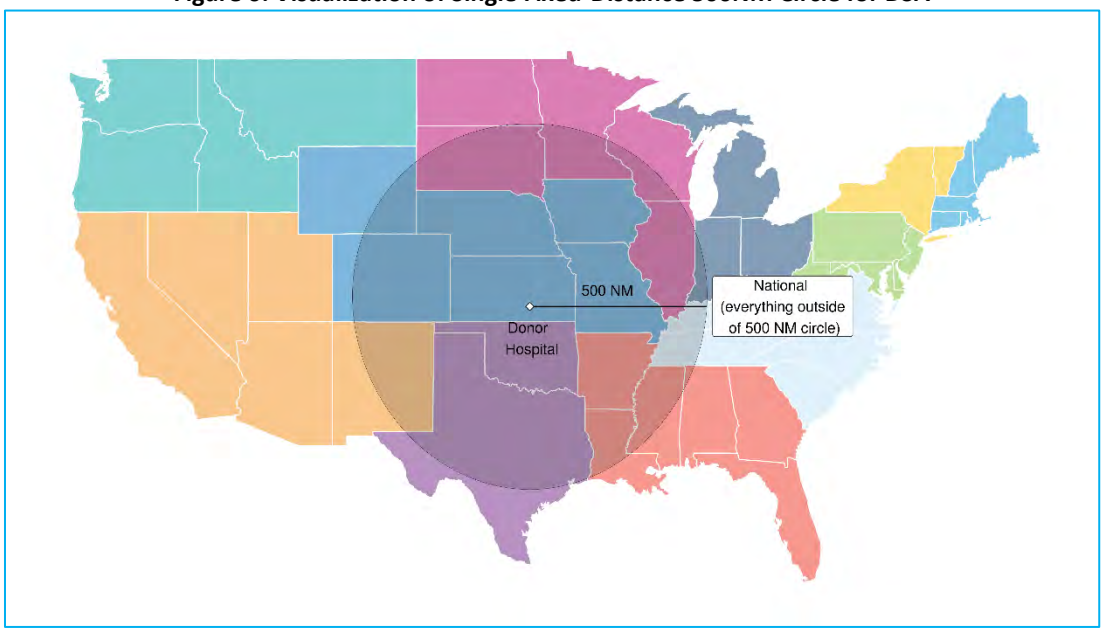
Also, the Workgroup agreed that utilizing a hybrid framework would represent a proactive step towards continuous distribution, which the OPTN Board of Directors directed all organ systems to eventually adopt at their December 2018 meeting.[32] Therefore, the Workgroup focused on potential solutions that utilized proximity points above those potential solutions that did not use proximity points.

Fixed-Distance Circle

The hybrid framework utilizes a single fixed-distance circle to replace DSA in allocation policies. The circle is a fixed geographic unit based on the distance from the donor hospital to the candidate's place of listing and s consistently applied across the country.[33] The hybrid framework removes regional classifications, so any organs that move beyond the single fixed-distance circle would be considered "national" organ offers. This method[34] is illustrated in **Figure 6** below, utilizing a 500 NM circle:

[30] Geographic Organ Distribution Principles and Models Recommendations Report, OPTN/UNOS Ad Hoc Committee on Geography, June 2018, https://optn.transplant.hrsa.gov/media/2506/geography_recommendations_report_201806.pdf (accessed Nov. 16, 2018)
[31] 42 C.F.R. § 121.8
[32] Executive Summary for December 4, 2018 meeting, OPTN/UNOS Board of Directors, https://optn.transplant.hrsa.gov/media/2787/board_executivesummary_201812.pdf
[33] *Frameworks for Organ Distribution*, OPTN Ad Hoc Geography Committee, December 2018, https://optn.transplant.hrsa.gov/media/2762/geography_boardreport_201812.pdf
[34] *Eliminate the Use of DSAs and Regions in Kidney and Pancreas Distribution,* OPTN Kidney Transplantation Committee and OPTN Pancreas Transplantation Committee, January 2019, https://optn.transplant.hrsa.gov/media/2802/kidney_pancreas_publiccomment_20190122.pdf (accessed July 3, 2019).

Figure 6: Visualization of Single Fixed-Distance 500NM Circle for DSA



Proximity Points

The hybrid framework awards proximity points to candidates based on the distance between the program where a candidate is registered and the donor hospital.[35] The intent of proximity points is to reflect requirements of the Final Rule to promote the efficient management of organ placement and avoid unnecessary organ loss by reducing unnecessary transportation time, cold ischemic time, cost, and the potential for higher offer refusal rates. The effect of proximity points imply that a kidney would not travel substantially further for a candidate with only slightly higher waiting time compared to a nearby candidate.[36]

Candidates listed at centers closer to the donor hospital will receive more proximity points than those listed at centers further away. The current kidney allocation system is still utilized to determine the order these candidates appear within each classification to receive organ offers on the match run. Proximity points would represent an additional value to the match run that could change the order of the match run based on a candidate's proximity to the donor hospital. Based on the current kidney allocation tables, one proximity point can be thought of as equivalent to one year of waiting time.[37] Importantly, no matter how many proximity points are awarded, all candidates *inside the circle* will be prioritized ahead of all candidates *outside the circle*. In other words, proximity points only affect rank-ordering of candidates *within* classifications (e.g. "Inside circle EPTS <=20%"); they cannot cause candidates in a lower classification to be prioritized over candidates in a higher classification. For example, under proposed policy, a CPRA 99% candidate could never be prioritized above an inside the circle pediatric candidate, as their classification falls below that of pediatrics.

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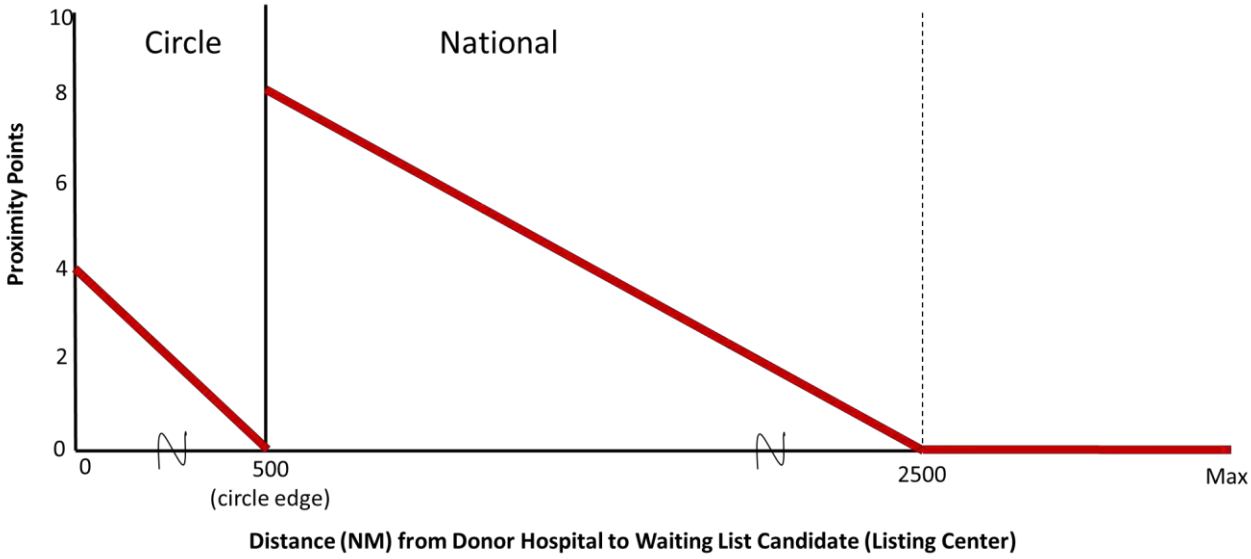
[35] *Frameworks for Organ Distribution*, OPTN Ad Hoc Geography Committee, December 2018, https://optn.transplant.hrsa.gov/media/2762/geography_boardreport_201812.pdf

[36] *Eliminate the Use of DSAs and Regions in Kidney and Pancreas Distribution,* OPTN Kidney Transplantation Committee and OPTN Pancreas Transplantation Committee, January 2019, https://optn.transplant.hrsa.gov/media/2802/kidney_pancreas_publiccomment_20190122.pdf (accessed July 3, 2019).

[37] OPTN Policy 11.4 Pancreas, Kidney-Pancreas, and Islet Allocation Classifications and Rankings. https://optn.transplant.hrsa.gov/media/1200/optn_policies.pdf#nameddest=Policy_11 (accessed July 7, 2019).

Points are awarded in a linear fashion, so a candidate listed at the donor hospital at the center of the fixed-distance circle would receive the maximum four points. The recommended solution utilizes a 500 NM fixed distance circle, so a candidate listed at a transplant program located 320 NM from the donor hospital would be awarded 2.56 proximity points. If no candidate within the fixed-distance circle accepts the organ offer, allocation then moves outside of the fixed-distance circle. At this stage of allocation, a candidates can receive a maximum of eight proximity points. A candidate listed at a center 500.1 NM away from the donor hospital would be awarded that maximum number of proximity points. Points continue to be awarded linearly out to an endpoint of 2500 NM. Beyond 2500 NM, no proximity points are awarded. Therefore, a candidate listed at a transplant program located 1125 NM miles away from the donor hospital would be awarded 5.50 proximity points. **Figure 7** illustrates the linear nature in which proximity points are awarded first inside of the fixed-distance circle and then subsequently outside the fixed-distance circle.

Figure 7: Illustration of Proximity Points Allocation



The higher the maximum number proximity points awarded inside and/or outside of the fixed-distance circle, the greater the geography weighs when determining a candidates position on a match run compared to waiting time for kidney candidates. Therefore, if the maximum number of points awarded is high, then points awarded for these candidate characteristics will have relatively less effect on candidate match run placement.

Regardless of the maximum number of proximity points utilized, a candidate cannot move from one classification to another on the match run. Therefore, candidates cannot cross the line representing the circle edge in **Figure 7**, with the exception of mandatory national shares outlined in policy. Proximity points simply reorder candidates against each other, in terms of identified characteristics as well as geography *within* their classification. This is illustrated in **Figure 8** below, which simulates a kidney match run with different maximum proximity point values.

Figure 8: Simulated Match Run with Various Maximum Proximity Point Values

Match Classification	Initial Allocation Pts	Initial Allocation Pts Breakdown	Distance (NM)	Current Seq #	New Allocation Pts (Including Proximity Points) and Sequence #							
					Up to 2	Seq #	Up to 4	Seq #	Up to 10	Seq #	Up to 20	Seq #
Inside Circle	9.128356	CPRA 1.09, Waiting Time 6.038356, HLAMM 2	100.097538	1	10.72796585	2	12.3275757	2	17.12640524	2	25.12445448	4
(Local)	9.065753	Waiting Time 7.065753, HLAMM 2	11.552598	2	11.01954261	1	12.97333222	1	18.83470104	1	28.60364908	1
	8.167808	CPRA 4.05, Waiting Time 3.117808, HLAMM 1	56.459213	3	9.941971148	3	11.7161343	3	17.03862374	3	25.90943948	2
	5.517808	CPRA 4.05, Waiting Time 0.458739, HLAMM 1	2.613756	4	7.507352976	4	9.496897952	4	15.46553288	4	25.41325776	3
	5.508739	CPRA 4.05, Waiting Time 3.117808, HLAMM 1	475.64834	5	5.60614564	7	5.70355228	8	5.9957722	10	6.4828054	10
	5.470726	CPRA 0.34, Waiting Time 4.139726, HLAMM 1	36.459213	6	7.324889148	5	9.179052296	5	14.74154174	5	24.01235748	5
	4.626234	CPRA 0.34, Waiting Time 3.286234, HLAMM 1	154.67954	7	6.00751584	6	7.38879768	6	11.5326432	6	18.4390524	7
	4.001367	CPRA 0.34, Waiting Time 1.661367, HLAMM 2	239.28946	8	5.04420916	8	6.08705132	7	9.2155778	8	14.4297886	8
	3.290411	Waiting Time 2.290411, HLAMM 1	351.964387	9	3.882553452	9	4.474695904	10	6.25112326	9	9.21183552	9
	1.096784	Waiting Time 0.96784, HLAMM 1	367.89551	10	1.62520196	11	2.15361992	11	3.7388738	11	6.3809636	11
	1.005479	Waiting Time 0.005479, HLAMM 1	16.459213	11	2.939642148	10	4.873805296	9	10.67629474	7	20.34711048	6
				Current Seq #	Up to 2	Seq #	Up to 4	Seq #	Up to 10	Seq #	Up to 20	Seq #
Outside Circle	204.1384	CPRA 202.1, Waiting Time 1.038356, HLAMM 1	1372.419474	12	205.2659365	12	206.3935171	12	209.7762586	12	215.4141613	12
(National)	58.91466	CPRA 50.09, Waiting Time 6.824658, HLAMM 2	1092.8594	13	60.3217986	13	61.7289392	13	65.950361	13	72.986064	13
	57.8626	CPRA 50.09, Waiting Time 6.772603, HLAMM 1	1982.5005	14	58.3801025	14	58.897602	16	60.4501005	16	63.037598	18
	57.40233	CPRA 50.09, Waiting Time 5.312329, HLAMM 2	1727.498212	15	58.17483079	16	58.94733258	15	61.26483794	15	65.12734688	16
	56.78315	CPRA 50.09, Waiting Time 4.693151, HLAMM 2	1091.3683	16	58.1917827	15	59.6004144	14	63.8263095	14	70.869468	14
	55.39137	CPRA 50.09, Waiting Time 3.301370, HLAMM 2	1534.9864	17	56.3563836	17	57.3213972	17	60.216438	17	65.041506	17
	51.18041	CPRA 50.09, Waiting Time 0.090411, HLAMM 1	1091.3683	18	52.5890427	18	53.9976744	18	58.2235695	18	65.266728	15
	41.41781	CPRA 17.3, Waiting Time 23.117808, HLAMM 1	1727.498212	19	42.19030979	19	42.96281158	19	45.28031694	19	49.14282588	19
	15.27945	Waiting Time 13.279452, HLAMM 2	1251.19039	20	16.52826161	20	17.77707122	21	21.52350005	21	27.7675481	21
	14.28562	CPRA 4.05, Waiting Time 9.235616, HLAMM 1	718.2672	21	16.0673488	21	17.8490816	20	23.19428	20	32.102944	20
	9.923288	Waiting Time 8.923288, HLAMM 1	828.87145	22	11.59441655	22	13.2655451	22	18.27893075	22	26.6345735	22
	9.70411	Waiting Time 7.704110, HLAMM 2	1251.19039	23	10.95291961	23	12.20172922	23	15.94815805	23	22.1922061	23
	9.70137	Waiting Time 7.701370, HLAMM 2	1511.6697	24	10.6897003	24	11.6780306	24	14.6430215	24	19.584673	25
	6.320548	Waiting Time 4.320548, HLAMM 2	1726.8535	25	7.0936945	25	7.866841	25	10.1862805	27	14.052013	28
	6.320548	Waiting Time 5.320548, HLAMM 1	2435.9697	26	6.3845783	26	6.4486086	27	6.6406995	29	6.960851	29
	1.679452	Waiting Time 0.679452, HLAMM 1	718.2672	27	3.4611848	28	5.2429176	28	10.588116	26	19.49678	26
	1.668493	Waiting Time 0.668493, HLAMM 1	505.567123	28	3.662925877	27	5.657358754	26	11.64065739	25	21.61282177	24
	1	HLAMM 1	869.2852	29	2.6307148	29	4.2614296	29	9.153574	28	17.307148	27
	1	HLAMM 1	3001.6792	30	1	30	1	30	1	30	1	30

Figure 8 illustrates how the rank ordering of candidates on a match run would change by awarding points based on shallower versus steeper proximity point functions. Candidates are shown rank ordered by current total points awarded by KAS (column 2; Initial allocation points). The current sequence number (column 5) shows how these candidates are rank-ordered under KAS. Note that distance (column 4) does not currently affect rank-ordering in KAS.

Column 6 ("Up to 2") shows how each candidate's total KAS points would change if proximity points were awarded in a linear fashion with a maximum of 2 points going to candidates listed at a program zero miles away from the donor hospital (i.e., at the same hospital). For example, points for the candidate at sequence #1 – listed at a center 100.09 miles away from the donor hospital -- would rise from 9.12 to 10.73. However, the candidate at sequence #2 – just 11.55 miles away – would rise from 9.07 to 11.01, and thus candidate #2 would now be ranked #1 due to proximity points.

Candidate sequence numbers that would change due to proximity points are highlighted in yellow. As the maximum proximity points rise to 4, 10, and 20, the number of highlighted candidates increases, indicating the greater effect that proximity would have as the proximity point function becomes steeper.

Based on this illustration and the results of the first KPSAM modeling, the Workgroup decided that the maximum points awarded inside and outside of the fixed-distance circle should be increased in the second KPSAM modeling request.

Additionally, some Workgroup members expressed interest in utilizing no proximity points within the fixed-distance circle to avoid prioritizing programs within a reasonable driving distance to the donor

hospital.[38] Other Workgroup members stated that 500 NM is an unreasonable driving distance in many parts of the country, and subsequently suggested a "points plateau" or "zone of equivalence" that utilized proximity points inside the fixed distance circle but instead awarded the same amount of proximity points to candidates within 150 NM or 250 NM of the donor hospital.[39] **Figure 9** illustrates how proximity points are awarded inside the circle in variations where a "points plateau" is utilized.

Figure 9: Variations Containing a Points Plateau Inside the Fixed Distance Circle

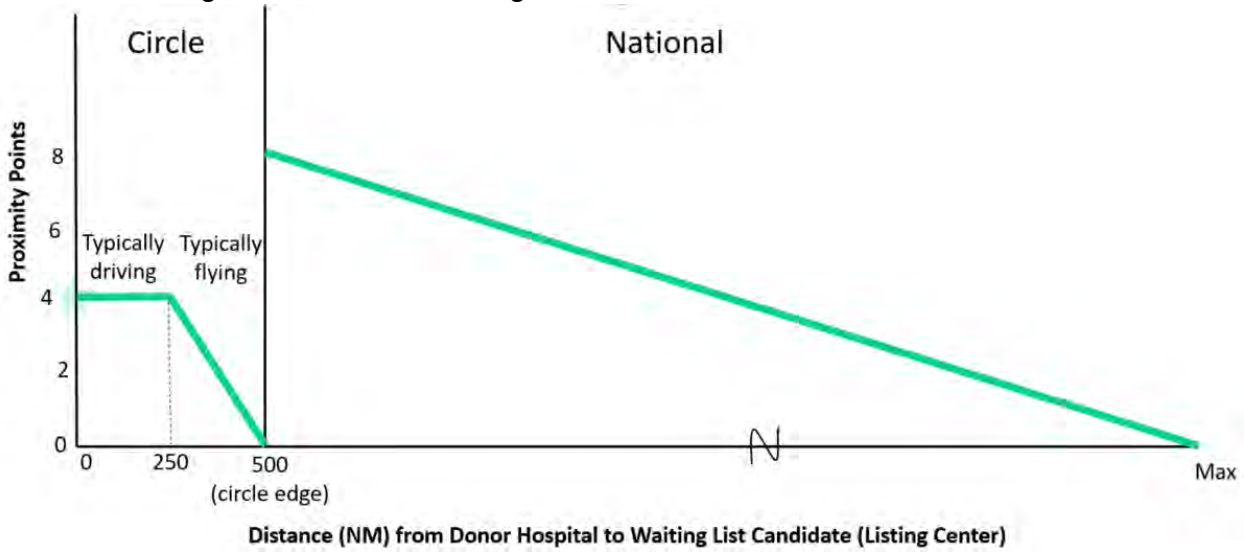


Figure 10, below, outlines the combinations of maximum proximity points inside and outside of the circle for each variation modeled in the second KPSAM request.

Figure 10: Second KPSAM Modeling Request: Variations Requested

Model Number	Scenario	Circle Size: KI	Circle Size: KP/PA	Inner Circle Maximum Points	Outside of Circle Maximum Points
BL-ped	BL-ped (Baseline)	Local/Regional/National	L/R/N	NA	NA
2	500.500.0.8	500	500	0	8
3	500.500.4.8	500	500	4	8
4	500.150.0.8	500	150	0	8
5	250.250.2.4	250	250	2	4
6	250.250.0.8	250	250	0	8
7	250.150.0.8	250	150	0	8
8	150.150.0.8	150	150	0	8
9	150.150.0.20	150	150	0	20
10	500.500.step150	500	500	4* (flat from 0-150NM)	8
11	500.500.step250	500	500	4* (flat from 0-250NM)	8

[38] Meeting Summary for March 28, 2019 meeting, OPTNS Kidney Pancreas Workgroup.
[39] Meeting Summary for March 28, 2019 meeting, OPTNS Kidney Pancreas Workgroup.

Figure 10 lists each modeled variation as a row in the table. Each "scenario" is defined by its fixed-distance circle size for kidney (KI), its fixed-distance circle size for pancreas (PA), its inner circle maximum points, and its outside-the-circle maximum points. The first scenario, "BL-ped," represents the baseline and is simulated under current KAS conditions with the exception that pediatric candidates are further prioritized in the KAS classification tables (see "Pediatric and Prior Living Donor Prioritization section below). The last two variations (scenarios 10 and 11) feature the "points plateau." Scenario 10 features a points plateau that ends at 150 NM and Scenario 11 features a points plateau that ands at 250 NM.

Pediatric and Prior Living Donor Prioritization

Throughout the spring Workgroup meetings, the OPTN Kidney Transplantation Committee members of the Workgroup continued to express interest in including further prioritization for pediatric and Prior Living Donor (PLD) candidates within kidney classification tables as part of the greater geography project. This prioritization would only occur within the 500 NM circle. This effort represents a continuation of work that was in progress and subsequently paused in order to address geography within the Kidney Transplantation Committee.[40] The Committee reviewed data on their May 2018 teleconference examining pediatric survival.

The Workgroup discussed three options for the Kidney Committee to model in order to predict the effects of increased pediatric prioritization.

- Include no further prioritization because the first round of modeling predicted better access for pediatric patients as an effect of broader distribution[41]
- Move local PLD and only local pediatrics just below 100 percent highly sensitized candidates (only inside the fixed distance circle)
- Move local PLD and all pediatrics just below 100 percent highly sensitized candidates

The Workgroup expressed unanimous support for including a baseline model with local pediatric prioritization, a baseline model without pediatric prioritization, and 9 other variations with further prioritization of local pediatric and local PLD in the second modeling request.[42] Including the baseline with the prioritization of pediatrics would be used as a basis of comparison with the 9 other variations in order to distinguish between the effects of further prioritization of local pediatric candidates in the classification tables against greater access observed as an effect of broader distribution.

Figure 11 illustrates where local pediatric and PLD candidates were placed in the allocation tables for the purposes of modeling.

[40] Meeting Summary for January 8, 2018 meeting, OPTN Kidney Transplantation Committee.
[41] Scientific Registry of Transplant Recipients, *SRTR KI2018_01*, December 7, 2018, https://optn.transplant.hrsa.gov/media/2768/kp_analysisreport_20181207.pdf
[42] Meeting Summary for March 28, 2019 meeting, OPTNS Kidney Pancreas Workgroup.

Figure 11: Candidate Priority by Sequence in Kidney Allocation

Sequence A KDPI 0-20%	Sequence B KDPI 20-34%	Sequence C KDPI 35-85%	Sequence D KDPI 86-100%
100% Highly Sensitized Inside circle prior living donor Inside circle pediatrics	100% Highly Sensitized Inside circle prior living donor Inside circle pediatrics	100% Highly Sensitized Inside circle prior living donor	All Highly Sensitized 0-ABDRmm Inside circle safety net Inside circle National
98-99% Highly Sensitized 0-ABDRmm Inside circle top 20% EPTS 0-ABDRmm (all) Inside circle (all) National pediatrics National (top 20%) National (all)	98-99% Highly Sensitized 0-ABDRmm Inside circle safety net Inside circle adults National pediatrics National adults	98-99% Highly Sensitized 0-ABDRmm Inside circle safety net Inside circle National	

KPSAM Modeling Results

Alongside committee members' clinical and professional experience, the SRTR KPSAM modeling is an important tool that OPTN committees use when developing changes to organ allocation policy. The second KPSAM analysis report for this project, published in spring 2019, models the effects of replacing current DSA and region boundaries in kidney and pancreas allocation policies with hybrid framework variations illustrated in **Figure 10**. This report reflects the changes made to the aforementioned KPSAM accept/decline model and focused on hybrid options that preserved proximity points, which align with community preferences for these potential solutions as well as Final Rule requirements to avoid unnecessary organ loss and to promote the efficient management of organ placement by avoiding unnecessary ischemic or travel time.[43]

While the second KPSAM modeling analysis showed there was a projected decrease in kidney alone and pancreas alone transplants, the *total* number of kidney transplants (kidney alone combined with KP), varied little across model variations, and almost no change was seen from baseline. As expected, the decrease in kidney alone, and concurrent increase in kidney-pancreas, was greatest for the policy options containing the biggest circles (e.g. 500 NM) and change was minimal with the smaller circles (e.g. 150 NM). This result was expected, as currently KP candidates are prioritized at the local level over all kidney-alone and pancreas-alone candidates. KPSAM results showed that proximity points were successful in reducing travel of the organ inside the circle, but were less impactful in national allocation in terms of travel efficiency, though they will still affect how candidates are ordered on the match run.[44]

[43] 42 C.F.R. § 121.8

[44] Scientific Registry of Transplant Recipients, *KI2019_01_AnalysisReport_Update*, June 21, 2019, https://optn.transplant.hrsa.gov/media/2985/ki2019_01_analysisreport.pdf (accessed July 3, 2019)

Figure 12 shows the projected impact on kidney transplant counts for KP, kidney alone, and the combined changes compared to baseline.

Figure 12: KPSAM Modeling Kidney Transplant Counts

Model	KI Transplant Counts	KP Transplant Counts	Total KI Transplants (KI & KP)	KI Change from BL	KP Change from BL	Total KI Change from BL
BL- Current KAS	13062	822	13884			
BL- Peds Priority	13080	815	13895			
500.500.0.8	12748	1111	13859	-2.5%	36.3%	-0.3%
500.500.4.8	12766	1122	13888	-2.4%	37.3%	-0.1%
500.150.0.8	12965	937	13902	-0.9%	15.0%	0.1%
250.250.2.4	12830	1056	13886	-1.9%	29.6%	-0.1%
250.250.0.8	12832	1052	13884	-1.9%	29.1%	-0.1%
250.150.0.8	12945	945	13890	-1.0%	16.0%	0.0%
150.150.0.8	12915	970	13885	-1.3%	19.0%	-0.1%
150.150.0.20	12946	966	13912	-1.0%	18.5%	0.1%
500.500.step150	12720	1118	13838	-2.8%	37.2%	-0.4%
500.500.step250	12727	1124	13851	-2.7%	37.9%	-0.3%

Figure 12 demonstrates minimal change in total transplant counts for all variations when compared to baseline. Each variation is listed in the leftmost column with names corresponding to the scenarios in **Figure 10**, with the exception of the "BL – Current KAS" variation which represents the baseline without increased local pediatric priority. The fourth column, titled, "Total KI Transplants (KI & KP)" reflects the total number of kidney transplants when kidney alone transplant counts and KP transplant counts are combined. Columns titled, "KI Change from BL," "KP Change from BL," and "Total KI from BL" directly compare the "Total KI Transplants (KI & KP)" against the baseline without increased local pediatric priority. The results show that while percentage increases in the number of KP transplants varied greatly across each of the modeled variations (from 15.0% to 37.9%), the percentage changes in total kidney alone transplants vary much less (-0.4% to +0.1%).

Nearly all variations yielded similar results in terms of the direction of projected effects on key subpopulations. The larger the circle utilized, the greater the increase in median organ travel distance.[45] Kidney-pancreas transplant rates increased across all broader distribution scenarios modeled, with the largest KP transplant rate increases coming from larger fixed-distance circle policy options. As the combined kidney-pancreas/pancreas circle size increased, KP transplant counts increased, leading to subsequent decreases in kidney and pancreas alone transplants. This is due to several factors, such as the fact that KP candidates outnumber pancreas alone candidates nearly 3:1, and that absolute priority is given to KP and PA candidates over kidney-alone candidates at the local level.[46]

African American candidates, Latino candidates, female candidates, candidates with Medicare, and cPRA ≥ 80% candidates received projected greater access to transplants within almost all of the variations.

[45] Scientific Registry of Transplant Recipients, *KI2019_01_AnalysisReport_Update*, June 21, 2019, https://optn.transplant.hrsa.gov/media/2985/ki2019_01_analysisreport.pdf (accessed July 3, 2019)
[46] OPTN Policy 11: Allocation of Pancreas, Kidney-Pancreas, and Islets. https://optn.transplant.hrsa.gov/media/1200/optn_policies.pdf#nameddest=Policy_11 (accessed July 9, 2019).

These projected impacts on key subgroups will be outlined in greater detail in the next section, titled, "Committee Analysis."

KPSAM results projected that proximity points would be successful in reducing travel distance of organs within the fixed-distance circle but were less impactful in national allocation. The SRTR KPSAM analysis report explains:

> "Proximity points within the circle tend to reduce the distance traveled. For example, the median distance in run 500.500.0.8 for a kidney transplant was 303 NM, but in run 500.500.4.8 (which employed a maximum of 4 proximity points [inside the fixed-distance circle]) the median distance for a kidney transplant was 199 NM. The effect of proximity points outside the circle was less strong, likely because relatively few transplant were predicted there (10%-20%)."[47]

Because KPSAM makes the simplifying assumption that an organ is discarded after the 200th decline, and offers beyond the 200th are most likely national, KPSAM likely under-predicts the number of kidney transplants occurring from acceptances further down the match run.

Other KPSAM limitations include inability to account for changes in organ acceptance behavior or to predict beyond one year of waiting list dynamics. For these reasons, KPSAM output should not be considered a perfect reflection of reality but rather an approximation. KPSAM results should be relied upon, then, for assessing anticipated directional changes and for some insights into the magnitude of those changes, but not for precise estimates (particularly for small patient subpopulations).

Committee Analysis

Removing DSA and region in favor of a circle with proximity points will comply with the Final Rule by providing rationally determined and consistent boundaries, while permissibly taking into account system efficiency. Specifically, the Final Rule requirement that organ distribution not be based on a candidate's place of listing or residence indicates that the distribution of the circle should be as broad as possible except to the extent required by the other factors listed in the Final Rule. Even with a large initial distribution circle, use of proximity points achieves compliance with the Final Rule efficiency factors by limiting unnecessary travel and preservation time added to kidneys and providing some priority for candidates closer to the donor hospital. Distributing broadly also positively corresponds to another Final Rule requirement that organ allocation be designed to promote patient access to transplantation.[48]

Committee members utilized their collective sound medical judgment, clinical and operation experience, as well as the results of the KPSAM modeling in order to inform their analysis and decisions. The sections below illustrate that key metrics indicate similar outcomes across the variations modeled. With similar impact across key metrics and variations, the Committee considered that broader distribution is more in compliance with the Final Rule than a more restricted distribution size. This indicated to the Committee that a 500 NM option would be most appropriate. Within the 500 NM variation options, the Committee considered that importance be placed on preserving efficiency by including steep proximity points both inside and outside the circle. The committee believes that the metrics they considered, outlined in the analysis to follow, illustrate the balance struck between broader distribution and system

[47] Scientific Registry of Transplant Recipients, *KI2019_01_AnalysisReport_Update*, June 21, 2019, https://optn.transplant.hrsa.gov/media/2985/ki2019_01_analysisreport.pdf (accessed July 3, 2019)
[48] 42 C.F.R. § 121.8

efficiency without negatively impacting patient outcomes by choosing a proposed solution that utilizes a large initial circle of 500 NM and steep proximity points both inside and outside the circle.

The committee considered all modeled variations, however, the scope of some analysis is focused primarily on the two variations that the committee ultimately preferred, which were the following:

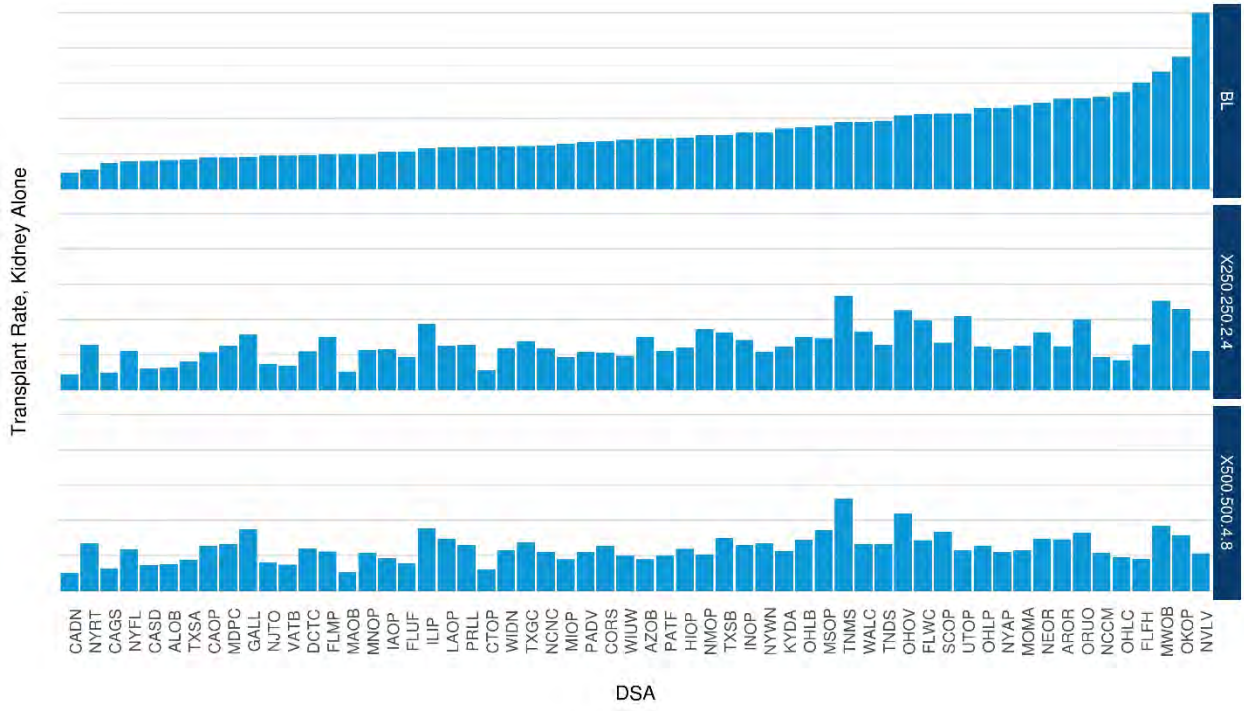
- **500.500.4.8:** Containing a 500 NM fixed circle for kidney, a 500 NM fixed circle for pancreas, a maximum of four points inside the circle, and a maximum of eight points outside of the circle.
- **250.250.2.4:** Containing a 250 NM fixed circle for kidney, a 250 NM fixed circle for pancreas, a maximum of two points inside the circle, and a maximum of four points outside of the circle.

Geographic Equity in Access to Transplant

The Final Rule stipulates that allocation policies "shall not be based on the candidate's place of residence or place of listing, except to the extent required" by the other requirements of Section 121.8 of the Final Rule.[49] Additionally, the Final Rule includes a performance goal for allocation policies of "Distributing organs over as broad a geographic area as feasible under paragraphs (a)(1)-(5) of this section, and in order of decreasing medical urgency."[50]

Figure 13 illustrates how the proposed allocation framework reduces disparities in access among the DSAs compared to current practice under KAS.

Figure 13: Kidney Transplant Rate by DSA



By examining DSA-level data provided in the KPSAM analysis report, the committee was able to observe the projected effects on transplant rate by DSA of their two preferred variations compared to baseline.

[49] 42 C.F.R. §121.8(a)(8).
[50] 42 C.F.R. §121.8(b)(3).

Figure 13 demonstrates that greater equity in access to transplant based on a candidate's place of listing across the country s achieved under both the 500.500.4.8 variation (represented by the plot on the bottom) as well as the 250.250.2.4 variation (represented by the plot in the middle. By removing DSA and region from kidney allocation policy in favor of a framework that utilizes a fixed-distance circle of 500 NM and implements proximity points, the committee believes it can reduce disparities in access by the greatest amounts while still accounting for operation and system efficiencies.[51]

Figure 14 illustrates the projected variation of transplant rate at the DSA level across all modeled scenarios in the second KPSAM modeling run.

Figure 14: Variance in Kidney Transplant Rates by DSA among Modeled Variations Averaged Results from 10 Iterations per Scenario

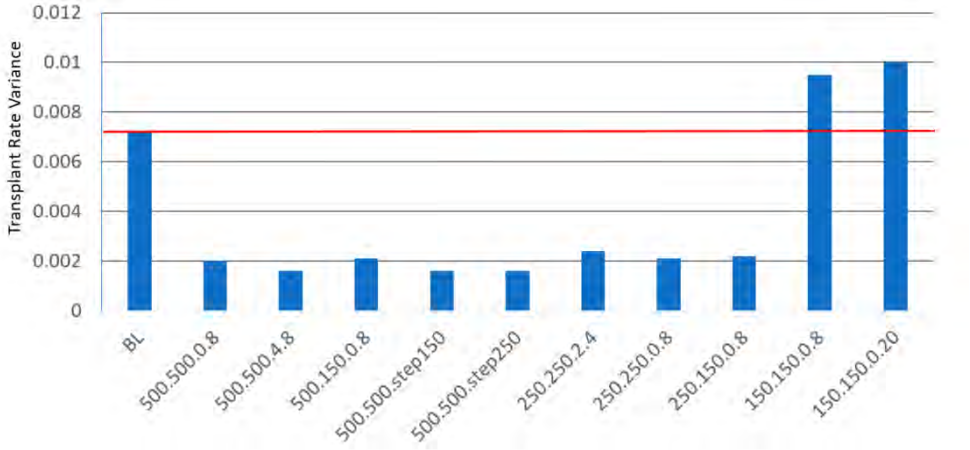


Figure 14 demonstrates the projected impacts on transplant rate variance by DSA among variations utilizing fixed distance circles at 500 NM or 250 NM. Decreases in variance compared to baseline are greatest among the 500 NM variations. It is also noteworthy that variations utilizing fixed-distance circles of 150 NM saw projected increases in variance in kidney transplant rate by DSA

Figure 15 below shows simulated projections on transplant rate and transplant count for each of the modeled variations.

Figure 15: Average Transplant Rate for Kidney Transplants from KPSAM Modeling Average from 10 Iterations per Scenario

Scenario	Transplant Rate per Patient-Year
BL	0.118
500.500.0.8	0.115
500.500.4.8	0.115
500.150.0.8	0.117
250.250.2.4	0.116
250.250.0.8	0.116
250.150.0.8	0.117
150.150.0.8	0.117

[51] Meeting Summary for July 08, 2019 meeting, OPTN Kidney Transplantation Committee.

Scenario	Transplant Rate per Patient-Year
150.150.0.20	0.117
500.500.step150	0.115
500.500.step250	0.115

The second column illustrates the differences in transplant rate per patient year of each of the modeled variations from the modeled baseline. The difference between the highest and lowest scenario only differs at the thousandth decimal place. These results emphasize that greater equity in access based on geography could be achieved among modeled variations with 500 NM and 250 NM fixed-distance circles without considerable decreases in the overall transplant rate.

Waitlist Mortality Count, Waitlist Mortality Rate, and Graft Failure Rate

Waitlist mortality count, waitlist mortality rate per patient year (censored at removal from the waitlist), and graft failure rate per patient year were also requested by the committee and included in an appendix report. The waiting list mortality rates from KPSAM are censored at removal from the waiting list, so they only reflect the risk of death while waiting. They are not a measure of pre-transplant mortality, or survival post-listing, since they do not include deaths that may occur after removal from the waiting list for non-transplant reasons. **Figure 16** below shows simulated projections on these three metrics for each of the modeled variations:

Figure 16: Average Waitlist Mortality Count, Average Waitlist Mortality Rate, and Average 1-Year Post-transplant Graft Failure Rate from KPSAM Modeling
Average from 10 Iterations per Scenario

Scenario	Waitlist Mortality Rate per Patient-Year	Waitlist Mortality Count (N)	1-Year Posttransplant Graft Failure Rate
BL	0.047	5,237	0.075
500.500.0.8	0.048	5,266	0.079
500.500.4.8	0.048	5,276	0.079
500.150.0.8	0.048	5,265	0.078
250.250.2.4	0.047	5,261	0.077
250.250.0.8	0.047	5,263	0.077
250.150.0.8	0.047	5,251	0.077
150.150.0.8	0.047	5,249	0.076
150.150.0.20	0.047	5,255	0.075
500.500.step150	0.048	5,270	0.077
500.500.step250	0.048	5,273	0.075

The committee observed that the graft failure rate per patient year only varied at the thousandth decimal place. Furthermore, the graft failure count varied by less than one percent between the highest and lowest value across all modeled variation. Finally, graft failure rate per patient year only varied at the thousandth decimal place.

With the understanding that that the Final Rule requires justification for not distributing organs as broadly as possible, the committee recognized that none of the projected variations seen in the waitlist mortality count, waitlist mortality rate by patient year, or graft failure rate by patient year sufficiently justified a fixed circle with any radius less than 500 NM.

Time on Dialysis

One of the metrics that the committee identified as being important to consider when identifying a preferred variation is the time on dialysis for candidates at time of transplant. Specifically, committee members wanted to ensure that patients with the longest times on dialysis would receive greater access to transplants. By allowing for candidates with the highest dialysis times with greater access to transplants, some of the most medically urgent candidates will receive organs and, consequently, average time on dialysis at the time of transplant overall could be reduced. **Figure 17** below illustrates the projected outcomes for time on dialysis at time of transplant among the modeled variations:

Figure 17: Projected Time on Dialysis at Time of Transplant from KPSAM Modeling Results (Averaged Results from 10 Iterations per Scenario)

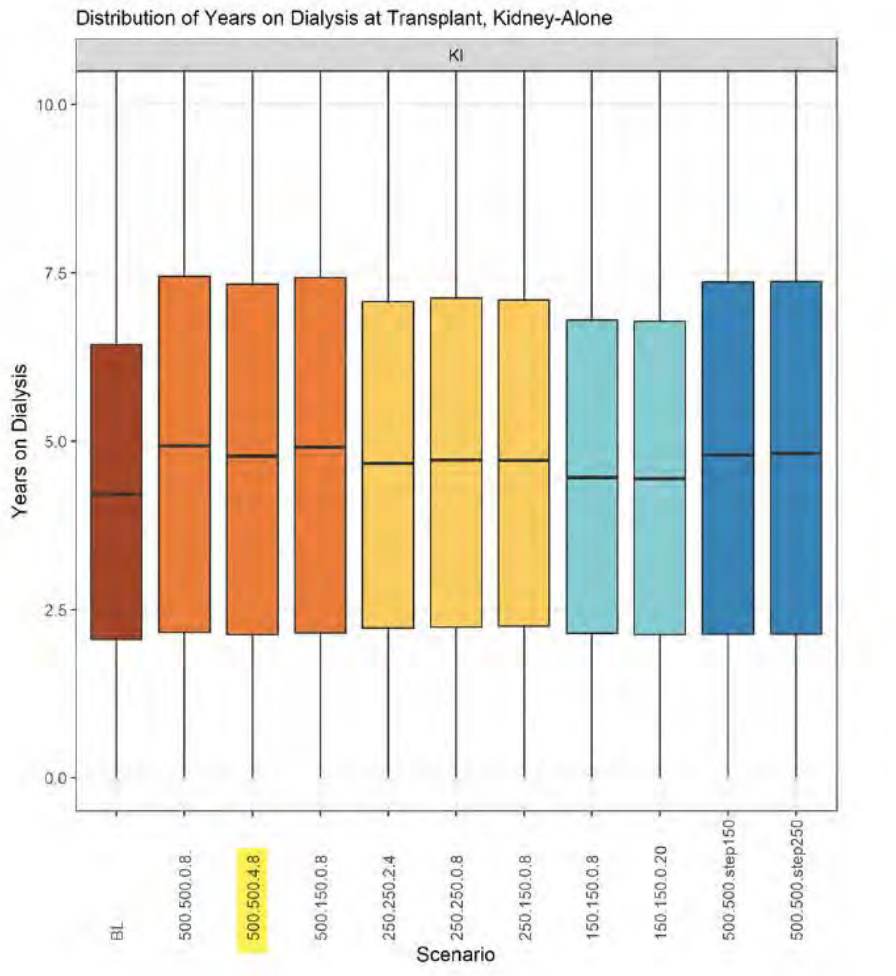


Figure 17 illustrates that the largest fixed distance circles results in the greatest increases in access for candidates with longer dialysis times. All of the variations modeled expand access to these candidates; however, the committee noted the largest increases in access among the 500 NM variations and the smallest increases among the 150 NM variations. These results do not indicate that candidates will spend more time on dialysis before receiving a transplant; rather, the data suggest that candidates on the waitlist that have longer time on dialysis and therefore more priority points and will have greater access to transplant in the modeled variations compared to baseline.

High Calculated Panel Reactive Antibody (cPRA) Candidates

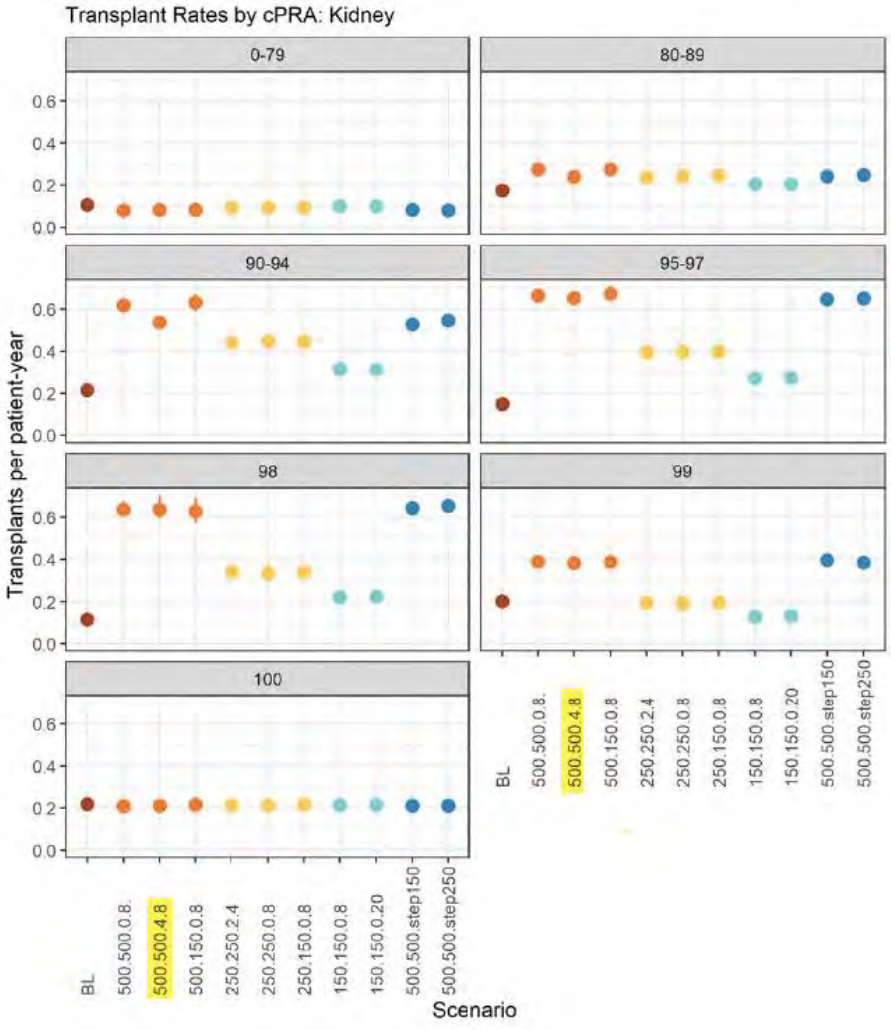
Candidates with high cPRA scores represent another subgroup of interest to the committee in terms of equity in access to transplant. Given the difficulty of finding organ matches for these candidates due to the possession of antibodies that make graft rejection more likely, the committee wants to maintain their access in order to achieve greater equity system-wide.

Because the hybrid framework removes regional classification from allocation policy, the committee had to decide how to prioritize 99% cPRA candidates. Currently in KAS, these candidates receive mandatory regional shares, while 100% cPRA candidates receive mandatory national shares. The committee decided to place 99% cPRA in classifications just above 98% cPRA candidates in local shares.[52] This decision was made following committee review of post-KAS implementation data which the Committee concluded may indicate the possibility that some CPRA 99% candidates received a greater percent of transplants than intended.[53]

Figure 18 below shows the range of results across the 10 simulations as a vertical line extending from the minimum value to the maximum value for that metric and scenario. A point along that line marks the mean value of the metric across the 10 iterations.

[52] Meeting Summary for March 28, 2019 meeting, OPTN Kidney Pancreas Workgroup.
[53] Meeting Summary for October 15, 2018 meeting, OPTN Kidney Transplantation Committee.

Figure 18: Projected Effects on Transplant Rate by cPRA



The committee noted that very marginal projected decreases can be seen in candidates with a cPRA from 0 to 79; however, more noticeable projected increases in transplant rate are observed for all candidate subgroups with a cPRA between 80 and 99. Transplant rates for candidates with cPRA 100 remained relatively unchanged and, as expected, remain at the top of the list.

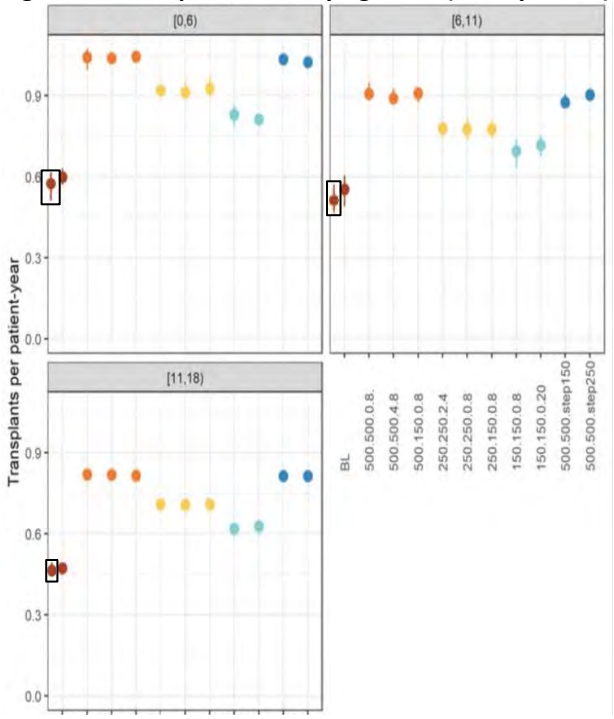
The committee observed that the across each of the modeled variations, those that utilized a 500 NM fixed distance circle saw the greatest increases in transplant rates for candidate subgroups with cPRAs between 80 and 99. Smaller increases over baseline were projected across most cPRA subgroups between 80 and 99 for variations with a 250 NM fixed circle, with the exception of the cPRA 99 subgroup, which saw relatively steady transplant rates. Finally, the smallest increases over baseline were projected across most cPRA subgroups between 80 and 99 for variations with a 150 NM fixed circle, with the exception of the cPRA 99 subgroup, which saw observable projected decreases in transplant rate for these candidates.

Pediatric Candidate Transplant Rate

As previously stated, the Committee was interested in incorporating previous work focused on further pediatric prioritization as a component of this project. This interest further galvanized following the first round of KPSAM modeling, which did not include any additional pediatric prioritization, projected that pediatric candidates received greater access to transplant as distribution broadened.[54] Members of the committee expressed the aspiration to include increased pediatric prioritization in kidney allocation tables in the second round of modeling in order to observe any noticeable effects on the new round of framework variations.[55] Workgroup members expressed the need to do so with two baselines: one baseline that included the increased pediatric priority in allocation tables, and one that did not. By performing two baselines scenarios, the committee could effectively compare increased access for pediatric candidates that resulted from broader distribution to those that occurred as a direct result of the allocation table changes.[56]

Figure 19 and **Figure 20** show the projected effects on pediatric candidate access that resulted in each modeled variation in the second round of KPSAM modeling. The figures show the range of results across the 10 simulations as a vertical line extending from the minimum value to the maximum value for that metric and scenario. A point along that line marks the mean value of the metric across the 10 iterations.

Figure 19: Transplant Rates by Age 0-17 (Kidney-Alone)

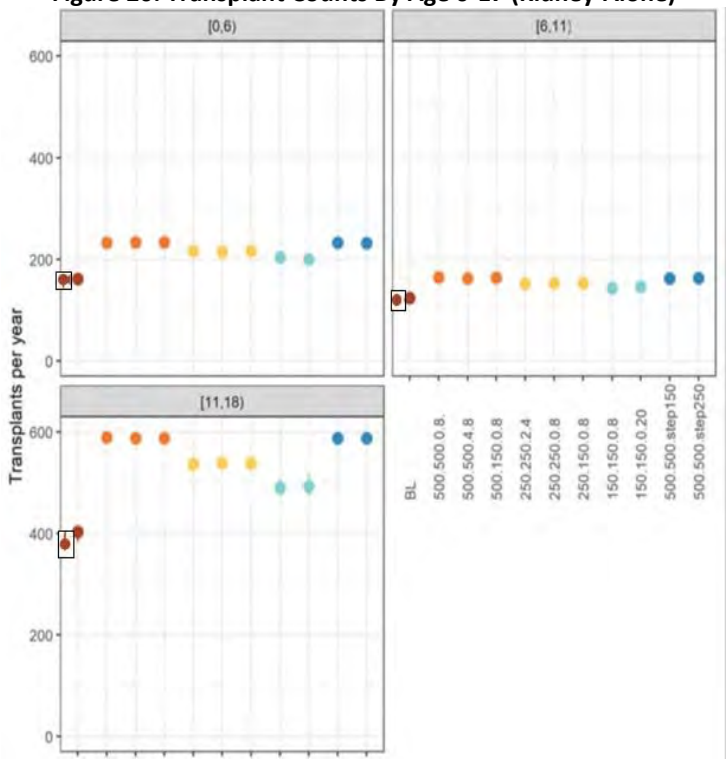


[54] Scientific Registry of Transplant Recipients, *SRTR KI2018_01*, December 7, 2018, https://optn.transplant.hrsa.gov/media/2768/kp_analysisreport_20181207.pdf

[55] Meeting Summary for March 28, 2019 meeting, OPTNS Kidney Pancreas Workgroup.

[56] Meeting Summary for March 28, 2019 meeting, OPTNS Kidney Pancreas Workgroup.

Figure 20: Transplant Counts By Age 0-17 (Kidney-Alone)



The two reddish-brown dots (the leftmost values) in **Figure 19** and **Figure 20** represent the two baseline runs. The reddish-brown dot with a box surrounding it represents the value for the baseline run that did not include additional pediatric priority in allocation tables. The projected results illustrate that observable increases in transplant rate and count occur amongst all of the pediatric-age subgroups in each of the modeled variations. Increases in transplant rate and count are largest among variations that utilize a fixed-distance 500 NM circle and smallest among variations utilizing a 150 NM fixed-distance circle.

Additionally, the committee observed that the increases that resulted in only further prioritizing them in allocation tables were relatively marginal. It appears that increases in transplant rate among pediatric candidates can be correlated much more closely with broader distribution than with additional allocation table priority.

Transplant Rate by Socioeconomic and Geographic Factors

One of the major themes that emerged from community feedback received during the OPTN Spring 2019 Public Comment period concerning the KP Concept Paper was that the committee should continue to apply focus on effects in access for socio-economically disadvantaged populations.[57] Furthermore, some community members expressed concern that rural populations would be disadvantaged by broader distribution. It was in direct response to his feedback that prompted the Committee to apply focus to these candidate populations and geographic characteristics during the formation of their second KPSAM modeling request and subsequent analysis, though these metrics were also included in the first round of KPSAM modeling. More specifically, the committee chose to examine changes in

[57] Meeting Summary for March 25, 2019 meeting, OPTN Kidney Transplantation Committee.

transplant rate by payment status, median household income of candidate permanent zip code at listing, and urbanicity.

Figure 21 illustrates the modeled variation's projected effects on transplant rate by payment status. The figure shows the range of results across the 10 simulations as a vertical line extending from the minimum value to the maximum value for that metric and scenario. A point along that line marks the mean value of the metric across the 10 iterations.

Figure 21: Transplant Rate by Payment Status (Kidney-Alone)

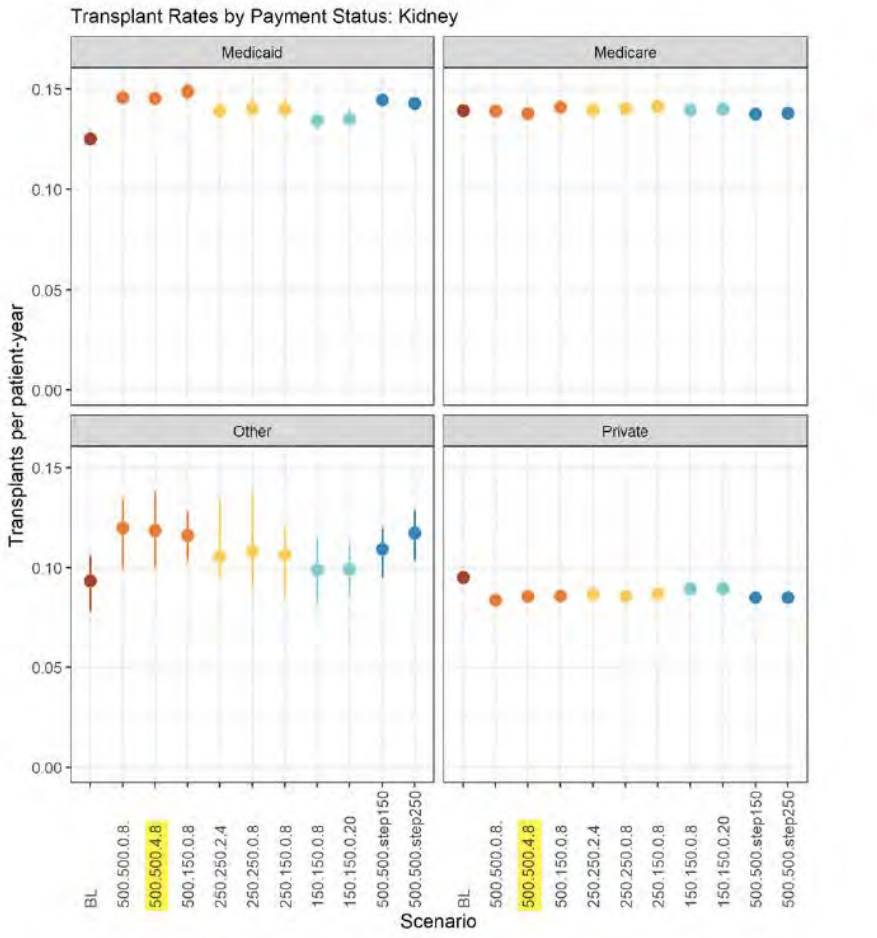


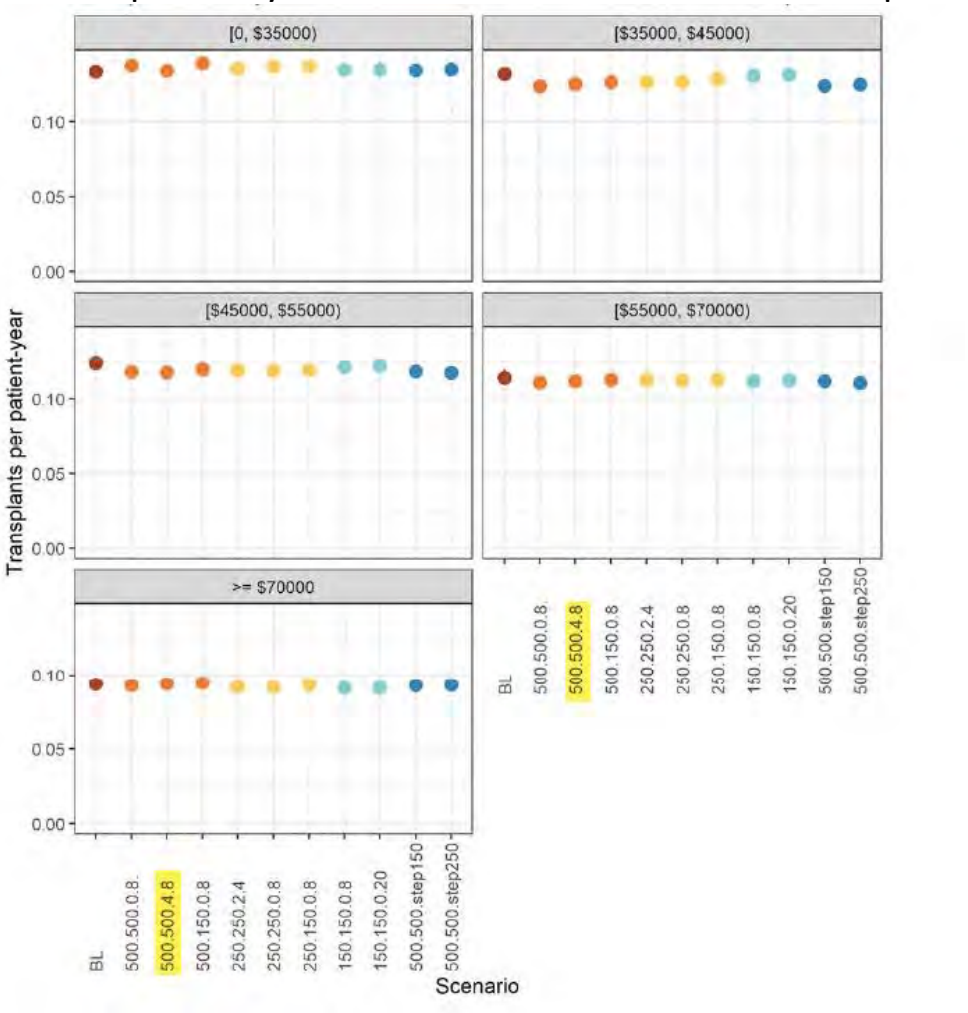
Figure 21 demonstrates a projected increase in transplant rate for candidates enrolled in Medicaid, and that those projected increases are greatest within 500 NM variations and smallest within 150 NM variations. Candidates enrolled in "Other" forms of insurance coverage saw similar projected outcomes. Movement was marginal among all variations for candidates enrolled in Medicare, and all variations showed slight decreases in transplant rate for candidates enrolled in private insurance. The impact on candidates with Medicare is especially significant given that the Final Rule identifies policies that reduce inequities resulting from socioeconomic status as a priority.[58]

Figure 22 illustrates projected changes among the modeled variations concerning transplant rate by median household income of candidate permanent zip code. The figure shows the range of results

[58] 42 C.F.R. § 121.4(a)(3).

across the 10 simulations as a vertical line extending from the minimum value to the maximum value for that metric and scenario. A point along that line marks the mean value of the metric across the 10 iterations.

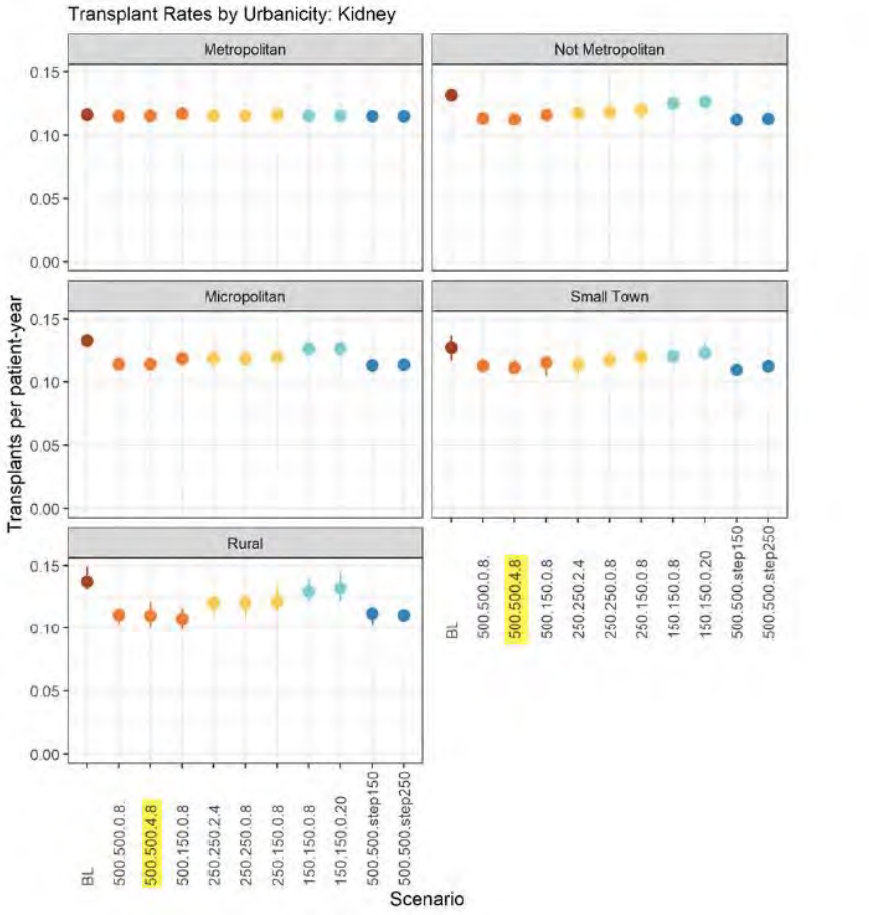
Figure 22: Transplant Rate by Median Household Income of Candidate Permanent Zip Code



The committee observed that only marginal changes in transplant rate occurred in each of the median income subgroups amongst all modeled populations. This metric has some of the least variation amongst those analyzed and considered by the committee and only see marginal projected changes; however, members understand the need to examine these changes in order to address community concerns.

Finally, **Figure 23** outlines the projected changes in transplant rate by urbanicity. The figure shows the range of results across the 10 simulations as a vertical line extending from the minimum value to the maximum value for that metric and scenario. A point along that line marks the mean value of the metric across the 10 iterations.

Figure 23: Transplant Rates by Urbanicity (Kidney-Alone)



The committee observed that while projected transplant counts remained relatively consistent across all variations for candidates in metropolitan areas (big cities), there were observable projected decreases in transplant rates for candidates in all of the other urbanicity subgroups. Although transplant rates in non-metropolitan areas declined under broader distribution compared to what they were at baseline, they are now more similar to transplant rates for metropolitan candidates. It can be concluded that broader distribution is not disadvantaging non-metropolitan candidates compared to metropolitan candidates; it is equalizing their access

As can be expected, these changes are smallest in variations that use the smallest fixed-distance circle size of 150 NM. This is likely because under KAS, approximately 50 percent of kidneys are distributed within 72 miles.[59] Though kidneys are characterized by the longest tolerable cold ischemic times among transplantable organs,[60] they tend to be distributed very locally. As the first unit of allocation expands to 150 NM, 250 NM, or 500 NM, the median travel distance for kidneys will likely increase and more candidates beyond the range of what might be considered "local" under current practice will have

[59] *Eliminate the Use of DSAs and Regions in Kidney and Pancreas Distribution,* OPTN Kidney Transplantation Committee and OPTN Pancreas Transplantation Committee, January 2019, https://optn.transplant.hrsa.gov/media/2802/kidney_pancreas_publiccomment_20190122.pdf (accessed July 3, 2019).
[60] *Eliminate the Use of DSAs and Regions in Kidney and Pancreas Distribution,* OPTN Kidney Transplantation Committee and OPTN Pancreas Transplantation Committee, January 2019, https://optn.transplant.hrsa.gov/media/2802/kidney_pancreas_publiccomment_20190122.pdf (accessed July 3, 2019).

greater access. This is consistent with Final Rule requirements that organ allocation promote patient access to transplantation and not be based on candidate's place of residence or listing.[61] This change in allocation is borne out in the projected results in **Figure 24** and further examined in the following sub-section titled, "Travel Distance."

Travel Distance

This project seeks to remove DSA and OPTN region from kidney allocation policy in favor of a more consistently applied and rationally determined framework. Because such a change fundamentally transforms the nature of kidney distribution, the committee sought to utilize the modeling, to the extent possible, to project and help analyze the new shape of distribution that would result from frameworks considered. At their October 15, 2018 meeting, the majority of the OPTN Kidney Committee agreed that broader distribution of kidneys is a value that they would like to see strengthened in whichever framework variation is selected.[62] The OPTN Board of Directors concurs with this sentiment, as evidenced by the Board-approved principle of distribution that "organs should be distributed as broadly as is feasible."[63] The Final Rule also specifies that organ allocation shall not be based on a candidate's place of listing or residence.[64]

With that principle in mind, the committee sought to find a variation that effectively balanced broader distribution with operation and systemic efficiency. It was this consideration that led the workgroup to reject consideration of a purely national allocation system with no limitations on geographic distribution for either kidney or pancreas. There are specific concerns with the impact that such a system would have on the efficiency of organ management, best use of organs and organ loss. While each of the variations considered constrain distribution in some way, the constraints account for the increase in inefficiency and travel costs that may result from a national system while still increasing distribution compared to the current system. Additionally, Workgroup members expressed concern about best use of organs and potential increases in organ loss due to increased ischemic time, which can impact graft outcomes.[65] Both committees would continue to consider how a continuous distribution framework could, in the future, mitigate these concerns.

For their analysis, the committee sought to examine the shape of distribution, the distribution of travel distance, the percentage of organs traveling further than 500 NM as well as further than 250 NM, which the workgroup had previously noted as a reasonable distance to denote a transition between organs driven and organs flown based on UNOS Organ Center travel data.[66]

[61] 42 C.F.R. § 121.8
[62] Meeting Summary for October 15, 2018 meeting, OPTN/UNOS Kidney Committee, https://optn.transplant.hrsa.gov/media/2743/20181015_ kidney_committee _minutes.pdf (accessed July 3, 2019).
[63] Geographic Organ Distribution Principles and Models Recommendations Report, OPTN/UNOS Ad Hoc Committee on Geography, June 2018, https://optn.transplant.hrsa.gov/media/2506/geography_recommendations_report_201806.pdf (accessed July 6, 2019).
[64] 42 C.F.R. § 121.8(a)(8).
[65] *Eliminate the Use of DSAs and Regions in Kidney and Pancreas Distribution,* OPTN Kidney Transplantation Committee and OPTN Pancreas Transplantation Committee, January 2019, https://optn.transplant.hrsa.gov/media/2802/kidney_pancreas_publiccomment_20190122.pdf (accessed July 3, 2019).
[66] Meeting Summaries for August 7, 2018 and August 14, 2018 meetings, OPTN Kidney Pancreas Workgroup.

Figure 24 uses violin plots to project the shape of distribution across the modeled variations.

Figure 24: Distribution of Organ Travel Distance, Kidney-Alone
Averaged Results from 10 Iterations per Scenario

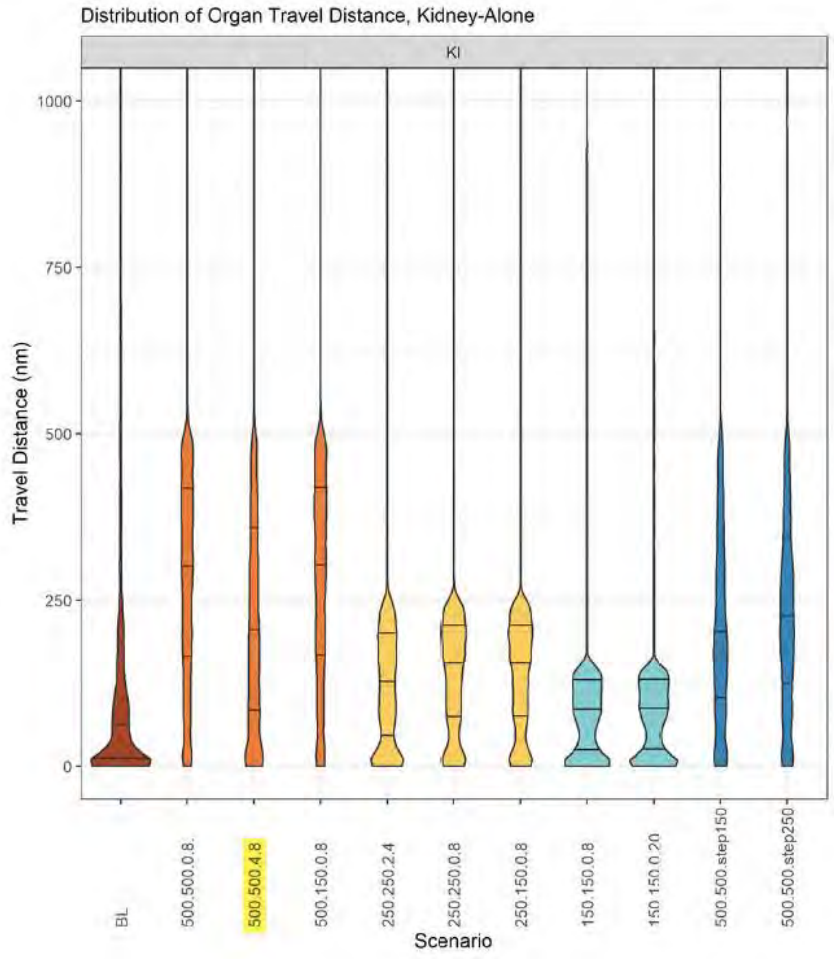


Figure 24 illustrates the projected differences in the shape of distribution that results from differently sized fixed distance circles among the modeled variations as well as the projected effects of proximity points. For example, among the three 500 NM variations without points plateaus (illustrated in orange), there is a noticeable difference in the shape of distribution for the variation that utilized four maximum proximity points inside the fixed-distance circle, indicating that the use of proximity points was successful in reducing the distance a kidney would travel. More kidneys are projected to be distributed within 250 NM in that variation, which indicates the effect of the proximity points within the fixed-distance circle. This is further evidenced by the differences in the distribution quartiles between the three variations, which are represented by the black horizontal lines on each violin plot.

As expected, variations with 150 NM fixed-distance circles most closely resemble the distribution shape of the baseline runs under current KAS conditions, where half of kidneys are distributed within 72 NM from the donor hospital.[67] Variations utilizing 250 NM fixed distance circles projected distribution

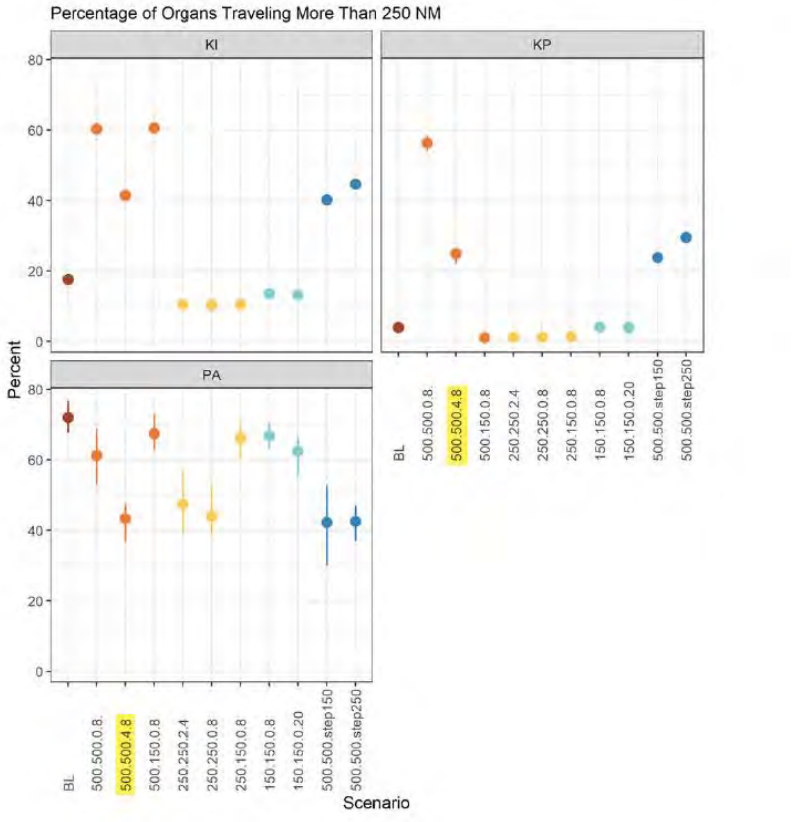
[67] *Eliminate the Use of DSAs and Regions in Kidney and Pancreas Distribution,* OPTN Kidney Transplantation Committee and OPTN Pancreas Transplantation Committee, January 2019, https://optn.transplant.hrsa.gov/media/2802/kidney_pancreas_publiccomment_20190122.pdf (accessed July 3, 2019).

shapes broader than those of the baseline run; however, the broadest distribution occurred in variations with fixed-distance circles of 500 NM.

During committee deliberation, a member noted that the ideal distribution shape would be a rectangle, which would represent equal organ distribution at every distance.[68] The same member posited that the shaped projected by the 500 NM variations most closely represented a rectangular pattern of distribution.[69]

The committee sought to break down travel distance more granularly, and therefore examined projected effects on the percentage of organs traveling beyond 250 NM, which the committee had previously established as an acceptable approximation for a change in travel method, from driving to flying.[70] **Figure 25** illustrates those projected effects.

Figure 25: Percentage of Organs Traveling Beyond 250 NM
Averaged Results from 10 iterations per Scenario



As expected, only variations utilizing 500 NM fixed-distance circles saw increases in the percentage of organs traveling beyond 250 NM for kidney and kidney-pancreas. Also for kidney and kidney pancreas, variations with 250 NM and 150 NM fixed distance circles saw projected decreases in the number of organs traveling beyond 250 NM when compared to the baseline run. Interestingly, variations in kidney

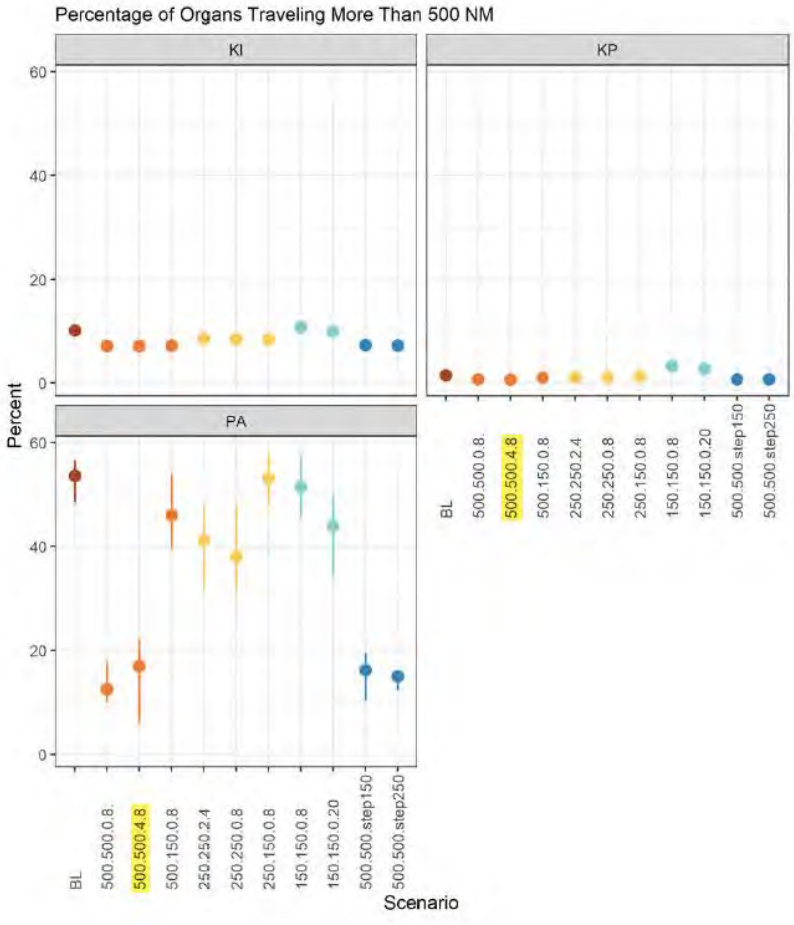
[68] Meeting Summary for June 25, 2019 meeting, OPTN Kidney Transplantation Committee.
[69] Meeting Summary for June 25, 2019 meeting, OPTN Kidney Transplantation Committee.
[70] *Eliminate the Use of DSAs and Regions in Kidney and Pancreas Distribution,* OPTN Kidney Transplantation Committee and OPTN Pancreas Transplantation Committee, January 2019, https://optn.transplant.hrsa.gov/media/2802/kidney_pancreas_publiccomment_20190122.pdf (accessed July 3, 2019).

and kidney pancreas that utilized fixed-distance circles at 150 NM actually saw more organs travelling beyond 250 NM than did the variations that utilized a 250 NM fixed-distance circle.

For kidney-alone, the committee noted the magnitude of projected increases for the percentage of kidneys traveling beyond 250 NM among the variations utilizing 500 NM fixed distance circles. Specifically, the 500 NM variation that utilized a maximum of four proximity points within the fixed-distance circle more than doubled the percentage of kidneys traveling beyond 250 NM at baseline. Furthermore, the 500 NM variations that did not utilize proximity points inside the fixed-distance circle tripled the percentage of kidneys traveling beyond 250 NM at baseline. Organ procurement organization representatives on the committee stressed the operational impact that these projected changes could produce, especially as it relates to procurement logistics and increases in air travel.[71]

In addition to projected changes in the percentage of organs traveling beyond 250 NM, the committee sought to examine the projected effects of the modeled variations on the percentage of organs traveling beyond 500 NM. **Figure 26** illustrates those projected changes.

Figure 26: Percent of Organs Traveling Beyond 500 NM
Averaged Results from 10 iterations per Scenario



[71] Meeting Summary for June 25, 2019 meeting, OPTN Kidney Transplantation Committee.

Figure 26 magnifies the projected changes in shape of distribution seen beyond 500 NM that are observed on the violin plots in **Figure 24**. Variations with a 150 NM fixed-distance circle saw percentages remain relatively unchanged compared to baseline; however, 250 NM variations and 500 NM variations saw projected decreases from baseline, with the latter seeing the largest projected decreases.

What the combination of projected outcomes in **Figure 25** and **Figure 26** demonstrate to the committee is that for 500 NM variations, the biggest changes in the distribution shape from baseline will occur as a result of projected movement from organs being distributed within 250 NM to organs being distributed between 250 NM and 500 NM. Predicted changes in organ distribution for kidney and kidney-pancreas beyond 500 NM are less noticeable in comparison.

Finally, the committee sought to view the projected changes in numerical form in order to better understand the shifts in distribution shape from baseline. **Figure 27** outlines the relevant numerical analysis.

Figure 27: Distribution of Travel Distance, Kidney-Alone Transplants
Averaged Results from 10 Iterations per Scenario

Variation	5th Percentile	Q1	Median	Mean	Q3	95th Percentile	Standard Deviation
BL	0.00	7.41	57.08	189.51	170.55	970.88	376.15
500.500.0.8	13.47	163.48	302.88	340.14	420.15	823.13	335.76
500.500.4.8	2.86	76.09	199.34	274.65	357.62	815.16	349.56
500.150.0.8	13.56	165.36	304.86	341.25	420.99	825.06	333.33
250.250.2.4	1.31	39.16	126.15	209.85	202.02	918.99	366.57
250.250.0.8	3.11	74.23	158.45	225.97	214.51	907.22	354.58
250.150.0.8	3.14	74.62	158.37	225.73	214.92	894.72	355.64
150.150.0.8	0.00	22.48	87.47	196.11	133.22	1043.31	390.59
150.150.0.20	0.00	22.52	87.58	188.28	132.99	977.27	374.98
500.500.step150	5.46	99.20	200.15	279.03	344.55	823.97	344.00
500.500.step250	8.23	121.35	226.13	291.29	344.17	822.72	340.71

Figure 27 lists projected distance statistics for each of the modeled variations. Of particular interest to the committee are the first quartile distance, median distance, mean distance, and 3rd quartile distance for each variation.

The committee noted in their analysis the large projected differences between these statistics for variations that utilized proximity points within the fixed-distance circle. Specifically, when comparing the 500.500.4.8 with the 500.500.0.8 variation, the committee observed that the first quartile distance differed by approximately 87 NM. Furthermore, the median distance for the 500.4.8 variation was predicted at approximately 199 NM, well within the previously established 250 NM approximation for changes in travel method. The mean travel distance for this variation fell just outside of that distance at approximately 275 NM.

Within the variations that utilized a 250 NM circle, the projected numerical effect on changes in travel distance can again be observed. Between the 250.250.2.4 variation and the 250.250.0.8 variations, the first quartile predicted distances varied by approximately 35 NM. Their predicted median distances differed by approximately 32 NM and their predicted means differed by approximately 15 NM.

Overall Transplant Count

The goal of this project is to remove DSA and region from kidney allocation policy and thereby make allocation compliant with the Final Rule and more geographically equitable for candidates across the country. In turn, this project primarily aligns with OPTN Strategic Goal 2: Provide equity in access to transplants, although other goals may be impacted as well.[72] However, based on the feedback received in the first round of public comment for the KP Concept Paper, the committee sought to find a solution that had a negligible effect on the overall transplant count.

The second KPSAM modeling results showed little to no meaningful effect on replacing DSA and region with any of the modeled variations. While there was some movement of kidney-alone and pancreas-alone transplants towards simultaneous kidney-pancreas transplants, the total number of projected kidneys transplanted ranged only from a net negative 57 transplants to a net positive 17 transplants, as illustrated in **Figure 28** below:

Figure 28: KPSAM Average Transplant Count Differences from Baseline Total
Average from 10 iterations per Scenario

Variation	Transplant Count KI alone	Transplant Count KP	Total	Difference from Baseline KI alone	Difference from Baseline Total	Percent Change from Baseline* KI alone	Percent Change from Baseline* Total
Actual 2017	14038	789	14827				
BL - Current KAS	13062	822	13884				
BL- Peds Priority	13080	815	13895				
500.500.0.8	12748	1111	13859	-332	-36	-2.5%	-0.3%
500.500.4.8	12766	1122	13888	-314	-7	-2.4%	-0.1%
500.500.step150	12720	1118	13838	-360	-57	-2.8%	-0.4%
500.500.step250	12727	1124	13851	-353	-44	-2.7%	-0.3%
250.250.2.4	12830	1056	13886	-250	-9	-1.9%	-0.1%
250.250.0.8	12832	1052	13884	-248	-11	-1.9%	-0.1%
500.150.08	12965	937	13902	-115	+7	-0.9%	+0.1%
250.150.0.8	12945	945	13890	-135	-5	-1.0%	0.0%
150.150.0.8	12915	970	13885	-165	-10	-1.3%	-0.1%
150.150.0.20	12946	966	13912	-134	+17	-1.0%	+0.1%

The variations with a 500 NM circle showed minimal variation in the overall transplant count when compared to the baseline scenario run under the current KAS. The variation that utilized 500 NM circles for both kidney and pancreas allocation systems as well as proximity points both inside and outside of the circle (without utilizing a points plateau) saw the smallest change in overall transplant count among the 500 NM variations. A projected change of seven organs among a baseline total of 13,062 corresponds to a .0005 (0.05 percent) change in the total transplant count, which amounts to negligible change. Furthermore, it is important to note that the KPSAM, which utilized a simulation cohort of all

[72] *OPTN Strategic Plan*, Organ Procurement and Transplantation Network, https://optn.transplant.hrsa.gov/governance/strategic-plan/ (accessed July 3, 2019).

candidates listed between January and December of 2017, produced a baseline count of 13,062 transplants, when in reality, 14,038 transplants occurred in that year. The simulation under-predicted the total transplant count by nearly one-thousand transplants, which speaks to the aforementioned limitations of the KPSAM modeling.

Nearly all variations yielded similar results in terms of projected effects on key subpopulations. This is significant in terms of compliance with the Final Rule. Given similar results across key subpopulations, the Committee overall considered a larger circle of 500 NM to be more compliant with the Final Rule because it decreases the importance of geographic location of the candidate's place of listing or residence.

Consensus Achieved

The culmination of the committee analysis and deliberation resulted in the following conclusions:

A fixed-distance circle size of either 500 NM or 250 NM should be utilized in the proposed hybrid framework.

The Committee concluded that the lack of noteworthy variation in overall transplant counts, transplant rates, waitlist mortality rate by patients year, and graft failure rates by patient year among the modeled variation could not justify a circle size limited to a distance less than 500 NM given the requirements of the Final Rule for not basing organ allocation on a candidate's place of residence or listing. Furthermore, transplant rates for key vulnerable populations, including pediatric candidates, highly-sensitized candidates, candidates with dialysis times greater than 5 years, and socioeconomically-disadvantaged candidates increased most under 500 NM variations, which also indicates compliance with the Final Rule requirement to develop policies that reduce inequities resulting from socioeconomic status.

The fixed distance circle provides a consistently applied and reasonably determined mechanism as a replacement for DSA. The framework is consistently applied because every circle around every transplant program is the same size for the first phase of allocation (exactly 500 NM), regardless of where a candidate is listed. Furthermore, the hybrid framework is reasonably determined based on sound medical judgment, which included the collective clinical and operational experience of the OPTN Kidney Transplantation Committee, historical data, stakeholder input, and simulation modeling to determine a framework that removes DSA and region from kidney allocation policies.

This analysis resulted in a committee conclusion that a variation utilizing a 150 NM fixed distance circle would no longer be considered in the policy development process.

Proximity points should be implemented inside and outside of the fixed-distance circle

Members of the Committee expressed concerns about operational and systemic efficiency for transplant programs and OPOs as they react and adapt to an allocation framework that broadens distribution. Specifically, committee members noted that the number of flights could increase dramatically, which complicates system logistics for organ recovery and delivery.[73] The Committee examined the results illustrated in **Figure 25** and **Figure 26**, noting that the percentage of organs traveling beyond 250 NM (when flying is more likely) actually decreases with variations utilizing a fixed-distance circle at 250 NM. However, compared to baseline, the percentage of organs traveling beyond 250 NM is projected to

[73] Meeting Summary for June 25, 2019 meeting, OPTN Kidney Transplantation Committee.

increase from approximately 18 percent to around 60 percent. Members noted that the 500 NM variation with a maximum of 4 proximity points inside the fixed-distance circle limited that projected increase, moving from 60 percent to approximately 42 percent. These logistical and cost considerations led the Committee to conclude that the 250 NM fixed-distance circle should continue to be considered.

A proximity points plateau should not be utilized in the proposed framework, may add value for released organs

Though the Committee initially thought negating the effect of distance within 150 NM or 250 NM of the donor hospital inside of a 500 NM fixed-circle would add some projected or operational efficiencies or perhaps material improvements in clinical outcomes; neither of these suppositions were borne out in the KPSAM modeling results. Additionally, from an implementation and community education standpoint, introducing such a mechanism to the proposed system may not be advisable unless the value it added seemed significant. The workgroup concluded that a proximity points plateau would not be included in the proposed allocation framework.

The Committee believes that a proximity points plateau may have some operational value in the case of released organs when the host OPO elects to utilize import back up. This is because there is no additional allocation circle beyond the 150 NM fixed-distance circle proposed in the import back up solution outlined in the section below titled, “Impact on OPTN Policy 5.9: Released Organs (Import Back Up).”

Recommended Solution

The OPTN Kidney Transplantation Committee recommends the removal of DSA and OPTN from kidney allocation policy in favor of an allocation framework that utilizes a fixed-distance circle and proximity points. Specifically, the Committee proposes an allocation framework containing a 500 NM fixed circle for kidney, a 500 NM fixed circle for pancreas, a maximum of four points inside the circle, and a maximum of eight points outside of the circle.

This committee has proposed this solution based on the following conclusions:

Greatest Geographic Equity

The Final Rule stipulates that allocation policies “shall not be based on the candidate’s place of residence or place of listing, except to the extent required” by the other requirements of Section 121.8 of the Final Rule.[74] Additionally, the Final Rule includes a performance goal for allocation policies of “Distributing organs over as broad a geographic area as feasible under paragraphs (a)(1)-(5) of this section, and in order of decreasing medical urgency.”[75]

Based on analysis of **Figure 13**, **Figure 14**, and **Figure 15**, the committee concluded that the greatest gains in equity in access to transplant could be achieved with a variation utilizing a 500 NM. Furthermore, geographic disparity could be reduced without considerable changes in the overall transplant rate.

[74] 42 C.F.R. §121.8(a)(8).
[75] 42 C.F.R. §121.8(b)(3).

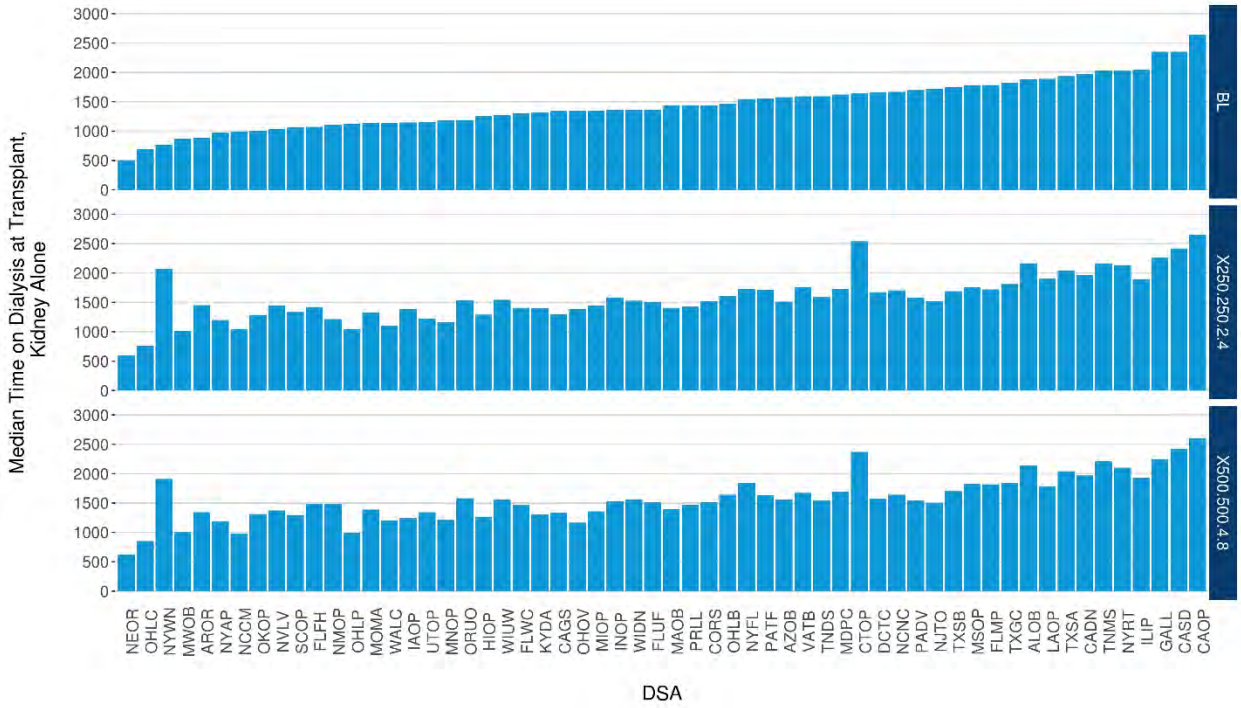
Projected Increase in Access to Transplant for Vulnerable Populations

In addition to the greatest decreases in geographic disparities in access to transplant, the Committee also considered the projected effects of the 500.500.4.8 variation on access to transplant for key subgroups, including pediatric candidates, candidates with greater than 5 years on dialysis, and highly-sensitized candidates.

Utilizing DSA-level data, the Committee examined the projected outcomes for these metrics for their two preferred variations compared to baseline in KPSAM modeling.

Figure 29 illustrated projected effects on median time on dialysis at transplant among the two preferred variations.

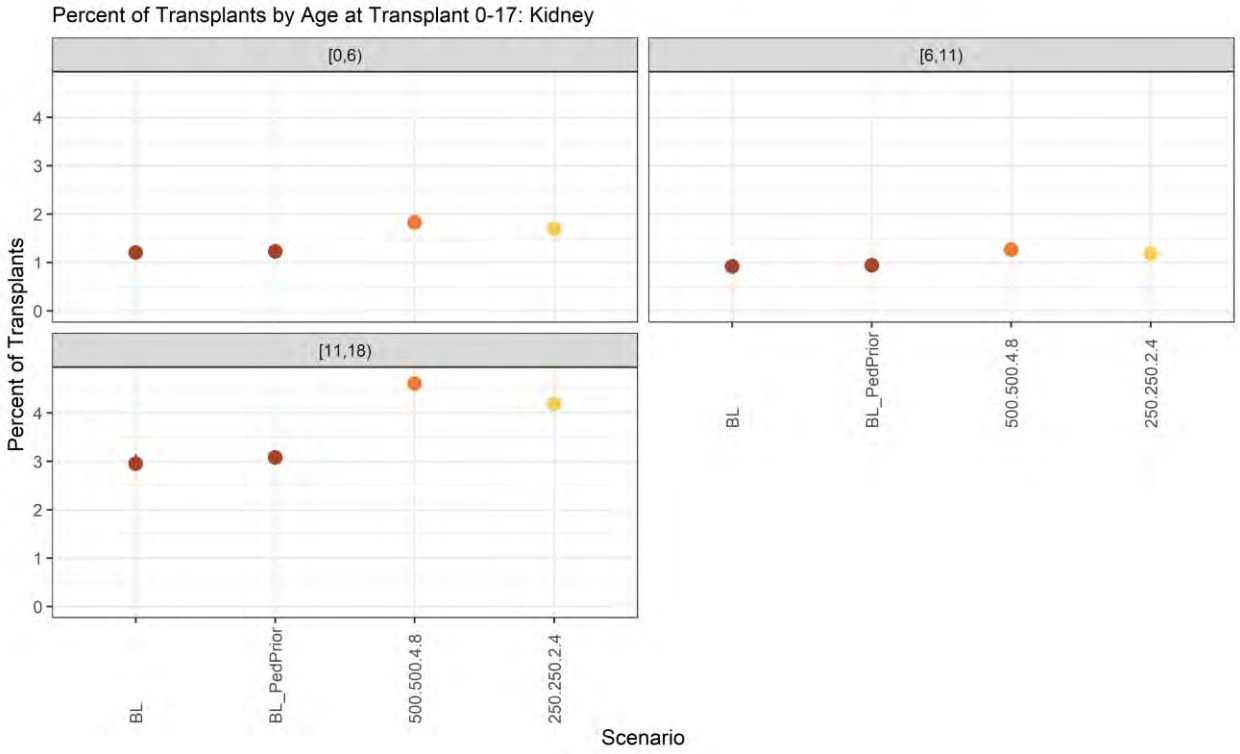
Figure 29: Projected Median Time on Dialysis at Transplant by DSA (Kidney-Alone)



The Committee observed that candidates with longer dialysis times were projected to have increased access under the two preferred variations compared to baseline and that those increases were slightly higher under the 500.500.4.8 variation in KPSAM modeling. This slight increase is depicted in another way in **Figure 14**, which shows projected median and third quartile dialysis times slightly higher for the 500 NM variations than the 250 NM variations. This does not mean that some DSAs will have candidates waiting longer on dialysis to receive transplant, but rather that candidates that currently have longer dialysis times will see greater access to transplant. This is due the variations with the broadest fixed-distance circles saw the greatest increases in transplant rates for candidates with more than five years of dialysis time.

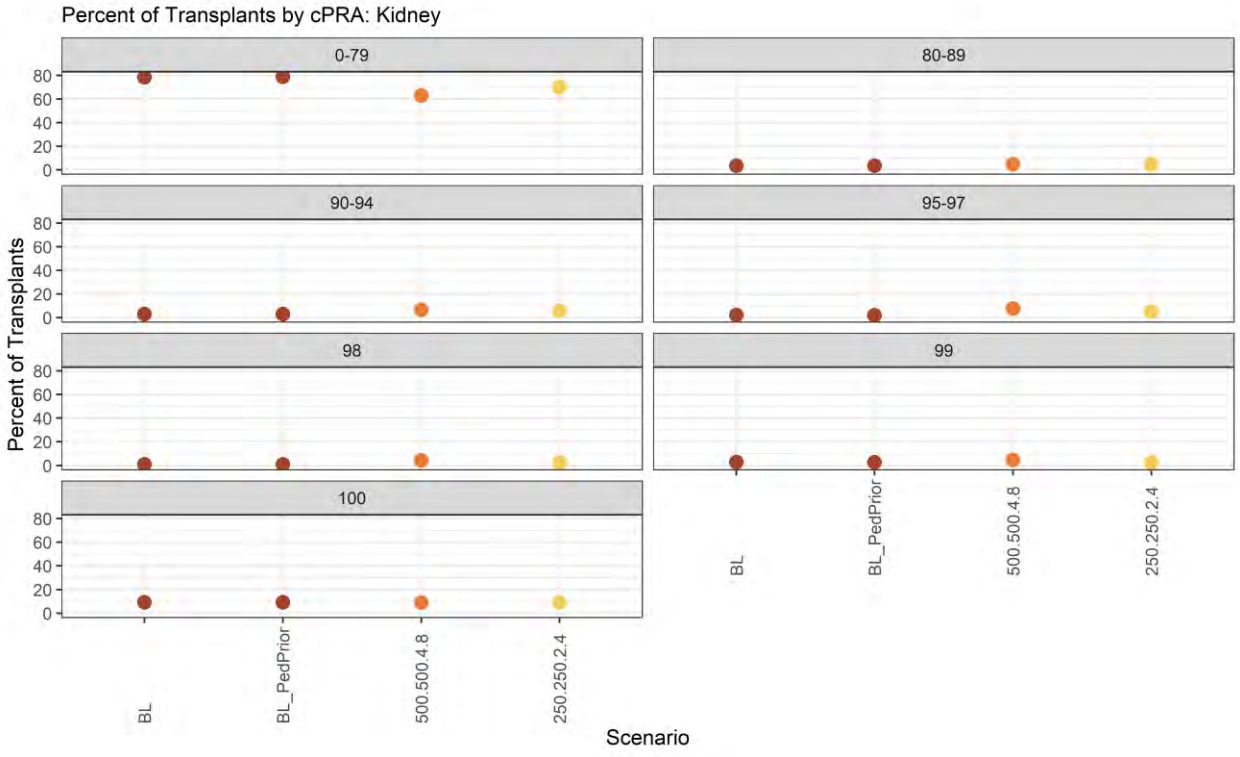
Projected increases in access for pediatric candidates were patterned similarly, in that they appeared greater in the 500.500.4.8 variation than for the 250.250.2.4 variation, though both saw projected increases. **Figure 30** illustrates those projected increases.

Figure 30: Transplant Rate for Pediatric Candidates (Kidney-Alone)



Additionally, highly-sensitized candidates saw the greatest increases in percent of transplants under the 500.500.4.8 variation compared to the 250.250.2.4 variation, as depicted in **Figure 31**.

Figure 31: Transplant Rate by cPRA (Kidney-Alone)



The Committee recognizes that KAS prioritized previously underrepresented CPRA subgroups (i.e. the highly sensitized) to create greater access for these candidates, as noted in the post-KAS implementation reports.[76] The Committee recognizes projected decreases in the percent of transplants for candidates with cPRA between 0 and 70; however, they do not believe that the projected results demonstrate an over-prioritization of highly sensitized candidates and are encouraged by projected results for candidates with cPRAs between 90 and 99 for the 500.500.4.8 variation.[77]

Operational and Logistical Efficiency

The Workgroup, as they noted in the KP Concept Paper, data, and results from simulation allocation modeling conducted by the SRTR. The Workgroup considered and rejected the option of a national allocation system with no limitations on geographic distribution for either kidney or pancreas. There are specific concerns with the impact that such a system would have on the efficiency of organ management, best use of organs and organ loss. While each of the variations considered constrain distribution in some way, the constraints account for the increase in inefficiency and travel costs that may result from a national system while still increasing distribution compared to the current system.

Additionally, Workgroup members expressed concern about the best use of organs and potential increases in organ loss due to increased ischemic time, which can impact graft outcomes.[78]

Regarding the frameworks modeled in the second KPSAM request, the Committee understood that broader distribution and reduced disparities in access by candidate geography was going to come with increase travel, which comes with increased costs and logistical complications. The committee sought to find a balance between gains in equity and increases in travel, and understand that every modeled variation with a 500 NM saw projected increases in the percentage of organs moving beyond 250 NM (as illustrated in **Figure 22**).

The committee believes that the projected efficiencies gained from the utilization of proximity points within the 500 NM fixed-distance circle in the proposed framework help strike the balance between broader distribution and increased travel, reducing the median travel distance to 199 NM down from 304 NM projected for the 500 NM variation without proximity points inside the fixed-distance circle.. Furthermore, members believe that gains in equity in access based on geography and increased access for pediatric candidates, highly-sensitized candidates, and candidates with more than 5 years of dialysis time outweigh the expected increases in travel.[79]

Finally, understanding the OPTN Board of Directors directive that all organ-specific committees moving towards a continuous distribution framework, the proposed framework represents a step in that direction in terms of the operational and logistical consideration that will be required of that transformation.

[76] OPTN Descriptive Data Request. “Two Year Evaluation of the New, National Kidney Allocation System (KAS).” Prepared for OPTN Kidney Transplantation Committee Teleconference, April 19, 2017.
[77] Meeting Summary for July 8, 2019 meeting, OPTN Kidney Transplantation Committee.
[78] *Eliminate the Use of DSAs and Regions in Kidney and Pancreas Distribution,* OPTN Kidney Transplantation Committee and OPTN Pancreas Transplantation Committee, January 2019,
[79] Meeting Summary for July 08, 2019 meeting, OPTN Kidney Transplantation Committee.

Compliance with National Organ Transplantation Act (NOTA) and the Final Rule

The proposed distance of 500 NM removes DSAs from kidney allocation policy while striking an appropriate balance with the Final Rule requirements. This distance has an inconsequential effect on transplant rate and distributes kidneys as broadly as feasible while minimizing the potential for organ discards and the deleterious effect of long ischemic times on post-transplant mortality. In addition, it seeks to mitigate system inefficiency of longer donor-recipient distances and both the administrative and financial impediments on OPOs and transplant programs by implementing proximity points that greatly reduce the median travel distance of transplanted kidneys. This impacts the Final Rule requirements that organ allocation shall not be based on the candidate's place of residence or listing except to the extent required. It also reflects compliance with the Final Rule requirement to avoid unnecessary organ loss and to promote the efficient management of organ placement by limiting travel distance with proximity points.

The proposed policy represents an improvement in kidney allocation, making it more consistent with the Final Rule and potentially benefitting the most medically urgent candidates.

The Committee determined that their collective clinical and operational expertise and experience from the implementation of KAS in 2014 fulfills the requirement that this proposed policy is based on sound medical judgement.[80]

Finally, the illustrated decrease in transplant access disparities across DSA, shown in **Figure 14** and **Figure 15**, demonstrates that the recommended policy would reduce the effect that a candidate's DSA of listing would have on their chances of receiving a transplant.

Impact on OPTN Policy 8.2.A: Exceptions Due to Medical Urgency

Current medical urgency policy for kidneys is outlined in *Policy 8.2.a Exceptions Due to Medical Urgency*. Current policy states that:

> Prior to receiving an organ offer from a deceased donor in the same DSA, a candidate's transplant physician may use medical judgment to transplant a candidate out of sequence due to medical urgency. If there is more than one kidney transplant program in the DSA, then the candidate's physician must receive agreement from the other kidney transplant programs in the DSA to allocate the kidney out of sequence and must maintain documentation of this agreement in the candidate's medical record.[81]

The Committee recognizes that the removal of DSA from kidney allocation policy will affect current practice regarding medical urgency. When DSA is removed, the boundary wherein a transplant program would have to receive consensus to allocate a kidney out of sequence ceases to exist.

[80] Meeting Summary for May 29, 2019 meeting, OPTN Kidney Pancreas Workgroup

[81] OPTN Policy 8.2.a: Exceptions Due to Medical Urgency. https://optn.transplant.hrsa.gov/media/1200/optn_policies.pdf#nameddest=Policy_8 (accessed July 9, 2019).

The Committee briefly considered utilizing the 500 NM fixed-distance circle as the geographic boundary; however, the number of centers within a 500 NM circle could far outnumber the centers that exist within the current boundary (DSA), around which current policy was originally adopted.[82] Furthermore, the center of that fixed boundary would change depending on the donor hospital, creating a system wherein a transplant hospital might have to receive consensus from a different set of programs than that of another transplant hospital only 50 NM away.[83]

The Committee also notes that these cases are rare, and the clinical criteria of what defines a medically urgent candidate may vary DSA-to-DSA in current policy. The committee recognized the need for a consistently applied and rationally determined solution and elected to treat these cases.

The proposed kidney medical urgency policy will create a new "medically urgent" classification within kidney allocation tables. Transplant hospitals seeking to obtain the classification for one of their medically urgent patients will be prompted to apply for the status when certain clinical criteria are selected while initiating or updating the candidate's waitlist record.

This form will then receive an expedited, prospective review by the Medically Urgent Status subcommittee. Subcommittee review will occur within four (4) calendar days. If the subcommittee approves the candidate for medically urgent status, the candidate will receive the classification. Future match runs will reflect that classification for the candidate.

The committee elected that the priority position of the medically urgent classification would differ depending on the KDPI of the available kidney. Proposed placement of the medical urgent classification within each allocation table is reflected in the section titled, "Policy and Bylaws Changes" and summarized below:

- For *Allocation of Kidneys from Deceased Donors with KDPI Scores less than or equal to 20%,* medically urgent candidates would be placed at *Classification 7* after 100% cPRA 0-ABDR mismatch, 100% cPRA, local prior living donors, and local pediatrics
- For *Allocation of Kidneys from Deceased Donors with KDPI Scores Greater Than 20% but Less Than 35%*, medically urgent candidates would be placed at *Classification 7* after 100% cPRA 0-ABDR mismatch, 100% cPRA, local prior living donors, and local pediatrics
- For *Allocation of Kidneys from Deceased Donors with KDPI Scores Greater than or Equal to 35% but Less than or Equal to 85%*, medically urgent candidates would be placed at *Classification 6* after 100% cPRA 0-ABDR mismatch, 100% cPRA, and prior living donors
- For *Allocation of Kidneys from Deceased Donors with KDPI Scores Greater than 85% ,* medically urgent candidates would be placed at *Classification 5* after 100% cPRA 0-ABDR mismatch, and 100% cPRA

Impact on OPTN Policy 5.9: Released Organs (Import Back Up)

OPTN Policy 5.9: Released Organs specifies that transplant programs must let the host OPO know when an organ is not transplanted in the intended recipient. The host OPO that originally procured the organ has the opportunity to continue allocating according to the original match run or delegate that

[82] OPTN Policy 8.2.a: Exceptions Due to Medical Urgency. https://optn.transplant.hrsa.gov/media/1200/optn_policies.pdf#nameddest=Policy_8 (accessed July 9, 2019).
[83] Meeting Summary for July 08, 2019 meeting, OPTN Kidney Transplantation Committee.

responsibility to the receiving OPO (the OPO in the DSA of the transplant program that received the organ). The latter practice is known as "import back up" or "local back up" and is utilized to prevent ischemic time and inefficiencies in organ allocation by providing OPOs for options regarding what to do with organs that are not transplanted into the original, intended recipient.

Removing DSA and region in favor of a 500 NM circle means that more organs may travel farther and accrue more ischemic time prior to being released by the import OPO. If not addressed in the policy changes by creating special allocation tables for released organs, organs would travel according to the allocation tables that specify a 500 NM circle around the donor hospital. If an organ is sent 499 NM away and is then released, the organ would need to be shipped to the next person on the list who could be almost 1000 NM away because a new fixed-distance circle has been placed around the accepting program, which may be 490 miles away from the center of origin. Given that the organs have already accrued a certain ischemic time, shipping them that far would not be the best use of organs, a tenet of the Final Rule.[84]

There are different situations in which the host OPO may wish to continue allocating according to the original match run, however. To optimize the flexibility of the system while ensuring utilization and efficiency, the Committee is considering a solution by which the host OPO may:

- Allocate according to the original match run, OR
- Delegate allocation to the receiving OPO. The receiving OPO runs a new match run based on new allocation tables in policy that use a smaller 150 NM distance from the transplant program
- If import back up allocation should not yield a recipient within the 150 NM circle, the kidney would then become a national offer.

The benefit of this solution is that it is equitable in still using the match run to determine who should receive the organ. At the same time, it avoids inefficiencies by allowing a new match run based on a smaller NM distance around the transplant program. Finally, the Committee considers that this solution provides flexibility for the host OPO in choosing the appropriate option depending on the particular situation that arises.

Alternative Solutions Considered

The Committee considered solutions that would use a smaller circle size, as well as those utilizing fewer or no proximity points. However, the Committee takes seriously the directive of the OPTN Board of Directors to distribute as broadly as possible.[85] KPSAM modeling indicated the smaller fixed-distance circle solutions were substantively similar across the relevant metrics requested by the Committee. Furthermore, fixed-distance circle sizes of 150 NM demonstrated projected increases in variances in transplant rate based on candidate geography. Given the similarities between the modeling results, and the Final Rule directive that geography not be considered except to the extent necessary, the Committee considered that alternative solutions utilizing smaller circles than 500 NM would not be optimal for maximizing compliance or equity. However, the Committee understands the importance of efficiency and avoiding a negative impact on transplant rate or organ utilization. The Committee

[84] 42 C.F.R. § 121.8(a).

[85] Geographic Organ Distribution Principles and Models Recommendations Report, OPTN/UNOS Ad Hoc Committee on Geography, June 2018, https://optn.transplant.hrsa.gov/media/2506/geography_recommendations_report_201806.pdf (accessed July 6, 2019).

rejected solutions that utilized less or no proximity points because the Committee considers that proximity points may mitigate the effect of large circle sizes around donor hospitals on operational efficiency and preservation times.

The Committee considers a 500 NM circle with up to 4 points inside and up to 8 points outside strikes an appropriate balance between the different alternative solutions considered.

Which populations are impacted by this proposal?

This proposal impacts all kidney candidates by providing equity in access to transplants by ensuring transplant candidates, regardless of their geographic location, have broader and more similar access to donor kidneys. Based on OPTN data as of June 27, 2019, there were 103,035 candidates on the kidney waiting list with 1,115 pediatric candidates and 101,920 adult candidates.

The total number of transplants varied by fewer than 200 across all variations in the KPSAM modeling results. Transplant rates increased for pediatric, African American, Latino, and female candidates. Transplant rates also increased for candidates with five or more years of dialysis time and for candidates with a cPRA 80-99.

Transplant rates for candidates 50 years old or older, and particularly for candidates 65 years old or older somewhat decreased. There was also a small decrease in transplant rates for candidates in non-metropolitan areas, though access was more equalized with metropolitan candidates. Candidates with an Estimated Post Transplant Survival score (EPTS) less than or equal to 20 saw a small projected decrease in transplant rate.

Implementation

How Will the OPTN Implement This Proposal?

Programming changes will be required for this proposal. This will be an “Enterprise” size effort in terms of IT implementation.

Changes will be made to the kidney allocation and combined kidney/pancreas & pancreas match allocation to remove DSA and Region and allocate using a nautical mile circle. In addition to that, classification titles in the kidney and combined KP/PA allocations will also be changed to remove references to “local” and “regional.”

UNOS will follow established protocols to inform members and educate them on any policy changes through Policy Notices. UNOS Professional Education will monitor for additional educational needs throughout the development of this proposal.

How Will Members Implement This Proposal?

Transplant Hospitals

As a result of the increased distance, some transplant hospitals will receive offers from OPOs with whom they have not worked previously. Transplant hospitals may need to develop relationships with all OPOs within a travel distance the transplant hospital believes is realistic for obtaining an organ. Furthermore,

under the broadened relationships, transplant hospitals may need to adjust their operations to account for the practices of their new OPO partners, including how they communicate with one another.

The changes to kidney distribution may also impact overall transplantation program costs, as broader distribution may increase the number, distance, and time of additional kidney fly outs. Some programs may need to hire more transplant surgeons to travel further to recover kidneys from donors. Transplants hospitals may want to establish a process for sharing organ acquisition cost information as part of their outreach to new OPOs.

Finally, transplant hospitals may have to train staff on changes to medical urgency policy, as this will now have its own classification that requires submission of a form for prospective subcommittee review.

OPOs

OPOs will continue allocating donor organs through the match runs. OPOs that will be working with transplant hospitals for the first time may want to consider developing working relationships to address issues such as sharing donor information and coordinating recoveries.

OPO practices may also be impacted by the modifications to import back up policy. Should a host OPO delegate import back up, import OPOs will run new match runs based on the original intended recipients transplant hospital.

Will this proposal require members to submit additional data?

Yes. Based on changes to medical urgency policy, this proposal will require transplant hospital staff to submit an additional form to seek subcommittee review to receive medical urgency classification for a patient.

How will members be evaluated for compliance with this proposal?

This proposal will not change the current routine monitoring of members. All policy requirements, as well as any data entered in UNet℠, may be subject to OPTN review, and members are required to provide documentation as requested. OPTN contractor staff will continue to review deceased donor match runs that result in a transplanted organ to ensure that allocation was carried out according to OPTN policy, and staff will continue to investigate potential policy violations.

How will the sponsoring Committee evaluate whether this proposal was successful post implementation?

This policy will be formally evaluated approximately 3 months, 6 months, 1 year, and 2 years post-implementation. The following metrics, and any subsequently requested by the committee, will be evaluated as data become available (Appropriate lags will be applied, per typical UNOS conventions, to account for time delay in institutions reporting data to UNet (e.g., TIEDI forms may take 60+ days to be submitted)) and compared to an appropriate pre-policy cohort to assess performance before and after implementation of this policy:

Waitlist

1. Total kidney registrations on the waitlist (snapshot by month)
2. Kidney registrations added to the list, overall and by age, gender, ethnicity, cPRA, blood type, diagnosis, time on dialysis, and insurance status at time of listing
3. % of candidates in active status
4. % of candidates multi-listed
5. Waitlist mortality per 100 patient years, overall and by candidate age, gender, ethnicity, cPRA, blood type, diagnosis, EPTS score, and time on dialysis.

Transplants

1. Donor, recipient and transplant characteristics: number and percent of transplants by recipient age, ethnicity, waiting time (days on the waiting list), time on dialysis, ABO, cPRA, HLA-ABDR mismatch level, diagnosis, EPTS score, KDPI, DCD, inside/outside fixed circle, and cold ischemic time (CIT).
    a. Distribution of kidney travel distance (NM), overall and by inside/outside fixed circle
    b. Distribution of KDPI by inside/outside fixed circle and pediatric age group (pediatric recipients only)
    c. Distribution of KDPI by inside/outside fixed circle and cPRA
    d. Distribution of KDPI by inside/outside fixed circle and prior living donor status
    e. Distribution of KDPI by inside/outside fixed circle and CIT
2. Change in access by location: N and % of transplants by
    a. Share type (local/regional/national)
    b. OPTN region
    c. Donation Service Area (DSA)
    d. (de-identified) transplant center
    e. State
3. Deceased donor transplants per 100 patient years by recipient age, ethnicity, time on dialysis, ABO, cPRA, HLA-ABDR mismatch level, diagnosis, EPTS score, and DSA.
4. Variance in deceased donor transplant rate across DSA
5. Rates of receiving kidney offers per 100 patient years by recipient age, time on dialysis, ethnicity, ABO, cPRA, HLA-ABDR mismatch level, diagnosis, and EPTS score.
6. Rates of delayed graft function (DGF)
7. Number and percent of multi-organ kidney transplants by type (KP, SLK, HR-KI, other), overall and by KDPI

Utilization and Efficiency of Allocation

1. Number kidney donors recovered for transplantation, overall and by KDPI
2. Number and percent of kidneys recovered but not utilized (discarded), overall and by KDPI
3. Number and percent of kidneys discarded by discard reason
4. Number and percent kidneys with a final acceptance
5. Offer acceptance per 100 patient years by recipient age, ethnicity, waiting time (days on the waiting list), time on dialysis, ABO, cPRA, diagnosis, EPTS score, DCD, and inside/outside fixed circle among organs with a final acceptance.
6. Distribution of sequence number of final acceptor

7. Distribution of time between electronic offer and cross-clamp
8. Number and percent by cPRA, of kidney offers refused due to a positive cross-match
9. Number of candidates transplanted with medically urgent classification, overall and sorted by KDPI

Outcomes

The following analyses are reserved for future (1-year, 2-year) reports as enough data become available:

- Post-transplant graft and patient survival rates, overall and stratified by recipient age, gender, ethnicity, cPRA, blood type, diagnosis, time on dialysis, HLA-ABDR mismatch, EPTS score, KDPI, and CIT.

Summary

DSA and region need to be removed as units of distribution from kidney allocation because they are inconsistently drawn and not rationally determined. The Committee has considered all available evidence and expertise in proposing the current solution: to remove DSA/region and allocate using a 500 NM circle around the donor hospital with up to 4 points inside the circle and up to 8 points outside the circle. This will improve equity in access to transplant by increasing access for certain vulnerable populations, encouraging competition and utilization of kidneys, and addressing a major disparity in kidney allocation. The Committee will consider all public comment feedback in October before voting to send the proposed changes to the Board with any modifications from public comment feedback. The Board will review and vote on the proposal at its December 2019 in-person meeting.

The Committee encourages all interested individuals to comment on the proposal in its entirety, but specifically asks for feedback regarding:

- What factors should be used to select a circle size that distributes kidneys broadly and efficiently?
- Should proximity points be used inside the 500 NM circle? Should they be used outside the distribution circle? How should the assigned values be weighted in relation to other kidney allocation points?
- What priority do you think is appropriate for pediatric candidates? Should prioritization be applied inside the distribution circle? Should prioritization be applied outside the distribution circle?
- What priority do you think is appropriate for prior living donor candidates? Should prioritization be applied inside the distribution circle?
- What operational concerns should the committee consider as this policy is being prepared for OPTN board action and implementation?
- Should medical urgency criteria be defined? If so, what specific conditions would qualify? Where should the new medically urgent classification be placed within allocation tables? Should placement within allocation tables vary depending on the KDPI of the donor kidney? How should two medically urgent candidates be prioritized should two appear on the same match run?

- When import back up is granted, do you support the use of an import match run for the import OPO to reallocate the kidney? Should the match run use the same size circle as the original allocation but with increased points for proximity? Should the circle size be smaller? If so, what distance will promote the efficient reallocation of kidneys?

Policy Language

Proposed new language is underlined (example) and language that is proposed for removal is struck through (~~example~~).

[Subsequent headings affected by the re-numbering of this policy will also be changed as necessary.]

5.1 Minimum Acceptance Criteria

~~Minimum acceptance criteria define which import deceased donor organs will be offered by the Organ Center to transplant hospitals from OPOs outside the receiving transplant hospital's Donation Service Area (DSA).~~

5.1.A Kidney Minimum Acceptance Criteria

Kidney transplant programs must report to the OPTN Contractor annually minimum kidney acceptance criteria for offers for deceased donor kidneys more than 500 nautical miles away. The kidney minimum acceptance criteria will not apply to imported ~~zero antigen~~ 0-ABDR mismatch ~~(0-ABDR)~~ offers or offers to highly sensitized candidates according to *Policy 8.5.F: Highly Sensitized Candidates*.

Policy 8: Allocation of Kidneys

8.2 Exceptions

~~8.2.A Exceptions Due to Medical Urgency~~

~~Prior to receiving an organ offer from a deceased donor in the same DSA, a candidate's transplant physician may use medical judgment to transplant a candidate out of sequence due to medical urgency.~~

~~If there is more than one kidney transplant program in the DSA, then the candidate's physician must receive agreement from the other kidney transplant programs in the DSA to allocate the kidney out of sequence and must maintain documentation of this agreement in the candidate's medical record.~~

8.3 Kidney Allocation ~~Points~~ Score

Candidates receive ~~points according to~~ an allocation score according to *Tables ~~8-1 and 8-2 below~~*.

Table 8-1: Kidney Points

If the candidate is:	And the following allocation sequence is used:	Then the candidate receives this many points:
Registered for transplant and meets the qualifying criteria described in *Policy 8.4: Waiting Time*	8.5.H, 8.5.I, 8.5.J, or 8.5.K	1/365 points for each day since the qualifying criteria in *Policy 8.4: Waiting Time*

Aged 0-10 at time of match and a 0-ABDR mismatch with the donor	8.5.H, 8.5.I, or 8.5.J	4 points
Aged 11-17 at time of match and a 0-ABDR mismatch with the donor	8.5.H, 8.5.I, or 8.5.J	3 points
Aged 0-10 at time of match and donor has a KDPI score <35%	8.5.H, 8.5.I	1 point
A prior living donor	8.5.H, 8.5.I, or 8.5.J	4 points
Sensitized (CPRA at least 20%)	8.5.H, 8.5.I, or 8.5.J	*See Table 8-2: Points for CPRA*
A single HLA-DR mismatch with the donor*	8.5.H, 8.5.I, or 8.5.J	1 point
A zero HLA-DR mismatch with the donor*	8.5.H, 8.5.I, or 8.5.J	2 points
Meets the qualifying criteria described in *Table 8-3: Points for Allocation of Kidneys based on Proximity to Donor Hospital*	8.5.H, 8.5.I, 8.5.J, or 8.5.K	*See Table 8-3: Points for Allocation of Kidneys based on Proximity to Donor Hospital*
Meets the qualifying criteria described in *Table 8-4: Points for Allocation of Released Kidneys based on Proximity to Receiving Transplant Program*	8.7	*See Table 8-4: Points for Allocation of Released Kidneys based on Proximity to Receiving Transplant Program*

*****Donors with only one antigen identified at an HLA locus (A, B, and DR) are presumed "homozygous" at that locus.

Table 8-3: Points for Allocation of Kidneys based on Proximity to Donor Hospital

If the candidate is:	Then the candidate receives this many points:
Registered at a transplant program that is within 500 nautical miles of the donor hospital	4-(.008 x distance in NM between the candidate's hospital of registration and the donor hospital)
Registered at a transplant program that is at least 500 nautical miles away from but within 2500 nautical miles of the donor hospital	8-[(8/(2500-500)) x distance in NM between the candidate's hospital of registration and the donor hospital (8*500/(2500-500))]
Registered at a transplant program that is 2,500 nautical miles or more away from the donor hospital	0

Points based on proximity to donor hospital will be rounded to the hundredth decimal place.

Table 8-4: Points for Allocation of Released Kidneys based on Proximity to Receiving Transplant Program

If the candidate is:	Then the candidate receives this many points:
Registered at a transplant program that is within 150 nautical miles of the receiving transplant program of the original intended recipient	0
Registered at a transplant program that is 150 nautical miles or more away but less than 2500 nautical miles away from the receiving transplant program of the original intended recipient	8 - [(8 /(2500-150)) x distance in nautical miles between the candidate's hospital of registration and the receiving transplant program of the original intended recipient – (8*150/(2500-150))]
Registered at a transplant program 2500 nautical miles or more away from the receiving transplant program of the original intended recipient	0

Points based on proximity to receiving transplant program will be rounded to the hundredth decimal place.

8.5.E. Prioritization for Medically Urgent Candidates

If a candidate's transplant program believes that a candidate is medically urgent, the transplant program may submit a medically urgent priority request to the Kidney Medically Urgent Subcommittee.

The Kidney Medically Urgent Subcommittee must review priority requests within four days of the date the request is submitted to the OPTN Contractor. If the Kidney Medically Urgent Subcommittee fails to make a decision on the priority request by the end of the four day review period, the candidate will be assigned the medically urgent classification.

8.5.F Highly Sensitized Candidates

Before a candidate with a CPRA score of 99% or 100% can receive offers in ~~allocation~~ classifications 1 through ~~10~~ 9 according to *Tables 8-7 and 8-8,* classifications 1 through 8 according to *Table 8-9,* and classifications 1 through 7 in *Table 8-10*, the transplant program's HLA laboratory director and the candidate's transplant physician or surgeon must review and sign a written approval of the unacceptable antigens listed for the candidate. The transplant program must document this approval in the candidate's medical record.

8.5.H Allocation of Kidneys from Deceased Donors with KDPI Scores less than or equal to 20%

Kidneys from deceased donors with a kidney donor profile index (KDPI) score of less than or equal to 20% are allocated to candidates according to *Table 8-~~5~~7* below.

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64 ~~Table 8-5: Allocation of Kidneys from Deceased Donors with KDPI Less Than or Equal To 20%~~

~~Classification~~	~~Candidates that are within the:~~	~~And are:~~	~~When the donor is this blood type:~~
~~1~~	~~OPO's DSA~~	~~0 ABDR mismatch, CPRA equal to 100%, blood type identical or permissible~~	~~Any~~
~~2~~	~~OPO's DSA~~	~~CPRA equal to 100%, blood type identical or permissible~~	~~Any~~
~~3~~	~~OPO's region~~	~~0 ABDR mismatch, CPRA equal to 100%, blood type identical or permissible~~	~~Any~~
~~4~~	~~OPO's region~~	~~CPRA equal to 100%, blood type identical or permissible~~	~~Any~~
~~5~~	~~Nation~~	~~0-ABDR mismatch, CPRA equal 100%, blood type identical or permissible~~	~~Any~~
~~6~~	~~Nation~~	~~CPRA equal to 100%, blood type identical or permissible~~	~~Any~~
~~7~~	~~OPO's DSA~~	~~0-ABDR mismatch, CPRA equal to 99%, blood type identical or permissible~~	~~Any~~
~~8~~	~~OPO's DSA~~	~~CPRA equal to 99%, blood type identical or permissible~~	~~Any~~
~~9~~	~~OPO's region~~	~~0-ABDR mismatch, CPRA equal to 99%, blood type identical or permissible~~	~~Any~~
~~10~~	~~OPO's region~~	~~CPRA equal to 99%, blood type identical or permissible~~	~~Any~~
~~11~~	~~OPO's DSA~~	~~0 ABDR mismatch, CPRA equal to 98%, blood type identical or permissible~~	~~Any~~
~~12~~	~~OPO's DSA~~	~~CPRA equal to 98%, blood type identical or permissible~~	~~Any~~
~~13~~	~~OPO's DSA~~	~~0-ABDR mismatch, top 20% EPTS or less than 18 years old at time of match run, and blood type identical~~	~~Any~~
~~14~~	~~OPO's region~~	~~0-ABDR mismatch, top 20% EPTS or less than 18 years old at time of match run, CPRA greater than or equal to 80%, and blood type identical~~	~~Any~~
~~15~~	~~Nation~~	~~0 ABDR mismatch, top 20% EPTS or less than 18 years old at time of match run, CPRA greater than or equal to 80%, and blood type identical~~	~~Any~~
~~16~~	~~OPO's region~~	~~0-ABDR mismatch, less than 18 years old at time of match, CPRA greater than or~~	~~Any~~

Classification	Candidates that are within the:	And are:	When the donor is this blood type:
		equal to 21% but no greater than 79%, and blood type identical	
17	Nation	0 ABDR mismatch, less than 18 years old at time of match, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Any
18	OPO's region	0-ABDR mismatch, less than 18 years old at time of match, CPRA greater than or equal to 0% but less than or equal to 20%, and blood type identical	Any
19	Nation	0-ABDR mismatch, less than 18 years old at time of match, CPRA greater than or equal to 0% but less than or equal to 20%, and blood type identical	Any
20	OPO's region	0 ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Any
21	Nation	0 ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Any
22	OPO's DSA	0-ABDR mismatch, top 20% EPTS or less than 18 years old at time of match run, and blood type B	O
23	OPO's region	0 ABDR mismatch, top 20% EPTS or less than 18 years old at time of match run, CPRA greater than or equal to 80%, and blood type B	O
24	Nation	0-ABDR mismatch, top 20% EPTS or less than 18 years at time of match run, CPRA greater than or equal to 80%, and blood type B	O
25	OPO's region	0-ABDR mismatch, less than 18 at time of match, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
26	Nation	0 ABDR mismatch, less than 18 at time of match, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O

Classification	Candidates that are within the:	And are:	When the donor is this blood type:
27	OPO's region	0 ABDR mismatch, less than 18 at time of match, CPRA greater than or equal to 0% but less than or equal to 20%, and blood type B	O
28	Nation	0-ABDR mismatch, less than 18 at time of match, CPRA greater than or equal to 0% but less than or equal to 20%, and blood type B	O
29	OPO's region	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
30	Nation	0 ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
31	OPO's DSA	0-ABDR mismatch, top 20% EPTS or less than 18 years old at time of match run, and blood type permissible	Any
32	OPO's region	0 ABDR mismatch, top 20% EPTS or less than 18 years old at time of match run, CPRA greater than or equal to 80%, and blood type permissible	Any
33	Nation	0-ABDR mismatch, top 20% EPTS or less than 18 years old at time of match run, CPRA greater than or equal to 80%, and blood type permissible	Any
34	OPO's region	0-ABDR mismatch, less than 18 years old at time of match run, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any
35	Nation	0-ABDR mismatch, less than 18 years old at time of match run, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any
36	OPO's region	0 ABDR mismatch, less than 18 years old at time of match run, CPRA greater than or equal to 0% but less than or equal to 20%, and blood type permissible	Any
37	Nation	0-ABDR mismatch, less than 18 years old at time of match run, CPRA greater than or equal to 0% but less than or equal to 20%, and blood type permissible	Any

Classification	Candidates that are within the:	And are:	When the donor is this blood type:
38	OPO's region	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any
39	Nation	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any
40	OPO's DSA	Prior living donor, blood type permissible or identical	Any
41	OPO's DSA	Registered prior to 18 years old, blood type permissible or identical	Any
42	OPO's DSA	Top 20% EPTS, blood type B	A2 or A2B
43	OPO's DSA	Top 20% EPTS, blood type permissible or identical	Any
44	OPO's DSA	0-ABDR mismatch, EPTS greater than 20%, blood type identical	Any
45	OPO's region	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 80%, and blood type identical	Any
46	Nation	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 80%, and blood type identical	Any
47	OPO's region	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Any
48	Nation	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Any
49	OPO's DSA	0-ABDR mismatch, EPTS greater than 20%, and blood type B	O
50	OPO's region	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 80%, and blood type B	O
51	Nation	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 80%, and blood type B	O

Classification	Candidates that are within the:	And are:	When the donor is this blood type:
52	OPO's region	0 ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
53	Nation	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
54	OPO's DSA	0 ABDR mismatch, EPTS greater than 20%, and blood type permissible	Any
55	OPO's region	0 ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 80%, and blood type permissible	Any
56	Nation	0 ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 80%, and blood type permissible	Any
57	OPO's region	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any
58	Nation	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any
59	OPO's DSA	EPTS greater than 20%, blood type B	A2 or A2B
60	OPO's DSA	All remaining candidates, blood type permissible or identical	Any
61	OPO's region	Registered prior to 18 years old, blood type permissible or identical	Any
62	OPO's region	Top 20% EPTS, blood type B	A2 or A2B
63	OPO's region	Top 20% EPTS, blood type permissible or identical	Any
64	OPO's region	EPTS greater than 20%, blood type B	A2 or A2B
65	OPO's region	All remaining candidates, blood type permissible or identical	Any
66	Nation	Registered prior to 18 years old, blood type permissible or identical	Any
67	Nation	Top 20% EPTS, blood type B	A2 or A2B

~~Classification~~	~~Candidates that are within the:~~	~~And are:~~	~~When the donor is this blood type:~~
~~68~~	~~Nation~~	~~Top 20% EPTS, blood type permissible or identical~~	~~Any~~
~~69~~	~~Nation~~	~~All remaining candidates, blood type permissible or identical~~	~~Any~~

Table 8-7: Allocation of Kidneys from Deceased Donors with KDPI Less Than or Equal To 20%

Classification	Candidates that are	And registered at a transplant program that is within this distance from the receiving transplant program of the original intended recipient	With this donor blood type:
1	0-ABDR mismatch, CPRA equal to 100%, blood type identical or permissible	500NM	Any
2	CPRA equal to 100%, blood type identical or permissible	500NM	Any
3	0-ABDR mismatch, CPRA equal 100%, blood type identical or permissible	Nation	Any
4	CPRA equal to 100%, blood type identical or permissible	Nation	Any
5	Prior living donor, blood type permissible or identical	500NM	Any
6	Registered prior to 18 years old, blood type permissible or identical	500NM	Any
7	Medically Urgent	Nation	Any

8	0-ABDR mismatch, CPRA equal to 99%, blood type identical or permissible	500NM	Any
9	CPRA equal to 99%, blood type identical or permissible	500NM	Any
10	0-ABDR mismatch, CPRA equal to 98%, blood type identical or permissible	500NM	Any
11	CPRA equal to 98%, blood type identical or permissible	500NM	Any
12	0-ABDR mismatch, top 20% EPTS, and blood type identical	500NM	Any
13	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 80%, and blood type identical	Nation	Any
14	0-ABDR mismatch, less than 18 years old at time of match, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Nation	Any
15	0-ABDR mismatch, less than 18 years old at time of match, CPRA greater than or equal to 0% but less than or equal to 20%, and blood type identical	Nation	Any
16	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Nation	Any
17	0-ABDR mismatch, top 20% EPTS, and blood type B	500NM	O
18	0-ABDR mismatch, top 20% EPTS or less than 18 years at time of match run, CPRA greater than or equal to 80%, and blood type B	Nation	O

19	0-ABDR mismatch, less than 18 at time of match, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	Nation	O
20	0-ABDR mismatch, less than 18 at time of match, CPRA greater than or equal to 0% but less than or equal to 20%, and blood type B	Nation	O
21	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	Nation	O
22	0-ABDR mismatch, top 20% EPTS, and blood type permissible	500NM	Any
23	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 80%, and blood type permissible	Nation	Any
24	0-ABDR mismatch, less than 18 years old at time of match run, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Nation	Any
25	0-ABDR mismatch, less than 18 years old at time of match run, CPRA greater than or equal to 0% but less than or equal to 20%, and blood type permissible	Nation	Any
26	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Nation	Any
27	Top 20% EPTS, blood type B	500NM	A2 or A2B
28	Top 20% EPTS, blood type permissible or identical	500NM	Any
29	0-ABDR mismatch, EPTS greater than 20%, blood type identical	500NM	Any

30	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 80%, and blood type identical	Nation	Any
31	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Nation	Any
32	0-ABDR mismatch, EPTS greater than 20%, and blood type B	500NM	O
33	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 80%, and blood type B	Nation	O
34	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	Nation	O
35	0-ABDR mismatch, EPTS greater than 20%, and blood type permissible	500NM	Any
36	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 80%, and blood type permissible	Nation	Any
37	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Nation	Any
38	EPTS greater than 20%, blood type B	500NM	A2 or A2B
39	All remaining candidates, blood type permissible or identical	500NM	Any
40	Registered prior to 18 years old, blood type permissible or identical	Nation	Any
41	Top 20% EPTS, blood type B	Nation	A2 or A2B

42	Top 20% EPTS, blood type permissible or identical	Nation	Any
43	All remaining candidates, blood type permissible or identical	Nation	Any

8.5.I Allocation of Kidneys from Deceased Donors with KDPI Scores Greater Than 20% but Less Than 35%

Kidneys from deceased donors with KDPI scores greater than 20% but less than 35% are allocated to candidates according to *Table 8-~~6~~ 8* below.

~~Table 8-6: Allocation of Kidneys from Deceased Donors with KDPI Scores Greater Than 20% but Less Than 35%~~

~~Classification~~	~~Candidates that are within the:~~	~~And are:~~	~~When the donor is this blood type:~~
~~1~~	~~OPO's DSA~~	~~0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~2~~	~~OPO's DSA~~	~~CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~3~~	~~OPO's region~~	~~0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~4~~	~~OPO's region~~	~~CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~5~~	~~Nation~~	~~0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~6~~	~~Nation~~	~~CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~7~~	~~OPO's DSA~~	~~0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical~~	~~Any~~
~~8~~	~~OPO's DSA~~	~~CPRA equal to 99%, blood type permissible or identical~~	~~Any~~
~~9~~	~~OPO's region~~	~~0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical~~	~~Any~~
~~10~~	~~OPO's region~~	~~CPRA equal to 99%, blood type permissible or identical~~	~~Any~~

~~Classification~~	~~Candidates that are within the:~~	~~And are:~~	~~When the donor is this blood type:~~
~~11~~	~~OPO's DSA~~	~~0-ABDR mismatch, CPRA equal to 98%, blood type permissible or identical~~	~~Any~~
~~12~~	~~OPO's DSA~~	~~CPRA equal to 98%, blood type permissible or identical~~	~~Any~~
~~13~~	~~OPO's DSA~~	~~0-ABDR mismatch, blood type identical~~	~~Any~~
~~14~~	~~OPO's region~~	~~0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical~~	~~Any~~
~~15~~	~~Nation~~	~~0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical~~	~~Any~~
~~16~~	~~OPO's region~~	~~0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type identical~~	~~Any~~
~~17~~	~~Nation~~	~~0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type identical~~	~~Any~~
~~18~~	~~OPO's region~~	~~0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type identical~~	~~Any~~
~~19~~	~~Nation~~	~~0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type identical~~	~~Any~~
~~20~~	~~OPO's region~~	~~0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical~~	~~Any~~
~~21~~	~~Nation~~	~~0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical~~	~~Any~~
~~22~~	~~OPO's DSA~~	~~0-ABDR mismatch, blood type B~~	~~O~~

Classification	Candidates that are within the:	And are:	When the donor is this blood type:
23	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	O
24	Nation	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	O
25	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type B	O
26	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type B	O
27	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type B	O
28	Nation	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type B	O
29	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
30	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
31	OPO's DSA	0-ABDR mismatch, blood type permissible	Any
32	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type permissible	Any
33	Nation	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type permissible	Any
34	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type permissible	Any

Classification	Candidates that are within the:	And are:	When the donor is this blood type:
35	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type permissible	Any
36	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type permissible	Any
37	Nation	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type permissible	Any
38	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any
39	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any
40	OPO's DSA	Prior living donor, blood type permissible or identical	Any
41	OPO's DSA	Registered prior to 18 years old, blood type permissible or identical	Any
42	OPO's DSA	Prior liver recipients that meet the qualifying criteria according to *Policy 8.5.G: Prioritization for Liver Recipients on the Kidney Waiting List*, blood type permissible or identical	Any
43	OPO's DSA	Blood type B	A2 or A2B
44	OPO's DSA	All remaining candidates, blood type permissible or identical	Any
45	OPO's region	Registered prior to 18 years old, blood type permissible or identical	Any
46	OPO's region	Blood type B	A2 or A2B
47	OPO's region	All remaining candidates, blood type permissible or identical	Any

~~Classification~~	~~Candidates that are within the:~~	~~And are:~~	~~When the donor is this blood type:~~
~~48~~	~~Nation~~	~~Registered prior to 18 years old, blood type permissible or identical~~	~~Any~~
~~49~~	~~Nation~~	~~Blood type B~~	~~A2 or A2B~~
~~50~~	~~Nation~~	~~All remaining candidates, blood type permissible or identical~~	~~Any~~

Table 8-8: Allocation of Kidneys from Deceased Donors with KDPI Scores Greater Than 20% but Less Than 35%

Classification	Candidates that are	And registered at a transplant program that is within this distance from the receiving transplant program of the original intended recipient	With this donor blood type:
1	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	500NM	Any
2	CPRA equal to 100%, blood type permissible or identical	500NM	Any
3	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	Nation	Any
4	CPRA equal to 100%, blood type permissible or identical	Nation	Any
5	Prior living donor, blood type permissible or identical	500NM	Any
6	Registered prior to 18 years old, blood type permissible or identical	500NM	Any
7	Medically Urgent	Nation	Any

8	0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical	500NM	Any
9	CPRA equal to 99%, blood type permissible or identical	500NM	Any
10	0-ABDR mismatch, CPRA equal to 98%, blood type permissible or identical	500NM	Any
11	CPRA equal to 98%, blood type permissible or identical	500NM	Any
12	0-ABDR mismatch, blood type identical	500NM	Any
13	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical	Nation	Any
14	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type identical	Nation	Any
15	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type identical	Nation	Any
16	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Nation	Any
17	0-ABDR mismatch, blood type B	500NM	O
18	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	Nation	O
19	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type B	Nation	O

20	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type B	Nation	O
21	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	Nation	O
22	0-ABDR mismatch, blood type permissible	500NM	Any
23	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type permissible	Nation	Any
24	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type permissible	Nation	Any
25	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type permissible	Nation	Any
26	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Nation	Any
27	Prior liver recipients that meet the qualifying criteria according to *Policy 8.5.G: Prioritization for Liver Recipients on the Kidney Waiting List*, blood type permissible or identical	500NM	Any
28	Blood type B	500NM	A2 or A2B
29	All remaining candidates, blood type permissible or identical	500NM	Any
30	Registered prior to 18 years old, blood type permissible or identical	Nation	Any

31	Blood type B	Nation	A2 or A2B
32	All remaining candidates, blood type permissible or identical	Nation	Any

8.5.J Allocation of Kidneys from Deceased Donors with KDPI Scores Greater than or Equal to 35% but Less than or Equal to 85%

Kidneys from donors with KDPI scores greater than or equal to 35% but less than or equal to 85% are allocated to candidates according to *Table 8-~~7~~ 9* below and the following:

- Classifications 1 through ~~47~~ 30 for one deceased donor kidney
- Classifications ~~48 through 50~~ 31 and 32 for both kidneys from a single deceased donor

~~Table 8-7: Allocation of Kidneys from Deceased Donors with KDPI Greater Than or Equal To 35% and Less Than or Equal To 85%~~

~~Classification~~	~~Candidates that are within the:~~	~~And are:~~	~~And the donor is this blood type:~~
~~1~~	~~OPO's DSA~~	~~0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~2~~	~~OPO's DSA~~	~~CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~3~~	~~OPO's region~~	~~0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~4~~	~~OPO's region~~	~~CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~5~~	~~Nation~~	~~0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~6~~	~~Nation~~	~~CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~7~~	~~OPO's DSA~~	~~0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical~~	~~Any~~
~~8~~	~~OPO's DSA~~	~~CPRA equal to 99%, blood type permissible or identical~~	~~Any~~
~~9~~	~~OPO's region~~	~~0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical~~	~~Any~~
~~10~~	~~OPO's region~~	~~CPRA equal to 99%, blood type permissible or identical~~	~~Any~~
~~11~~	~~OPO's DSA~~	~~0-ABDR mismatch, CPRA equal to 98%, blood type permissible or identical~~	~~Any~~
~~12~~	~~OPO's DSA~~	~~CPRA equal to 98%, blood type permissible or identical~~	~~Any~~
~~13~~	~~OPO's DSA~~	~~0-ABDR mismatch, blood type identical~~	~~Any~~

Classification	Candidates that are within the:	And are:	And the donor is this blood type:
14	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical	Any
15	Nation	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical	Any
16	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type identical	Any
17	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type identical	Any
18	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type identical	Any
19	Nation	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type identical	Any
20	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Any
21	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Any
22	OPO's DSA	0-ABDR mismatch, and blood type B	O
23	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	O
24	Nation	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	O
25	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type B	O
26	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type B	O
27	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type B	O

Classification	Candidates that are within the:	And are:	And the donor is this blood type:
28	Nation	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type B	O
29	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
30	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
31	OPO's DSA	0-ABDR mismatch, blood type permissible	Any
32	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type permissible	Any
33	Nation	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type permissible	Any
34	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 years old at time of match, and blood type permissible	Any
35	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 years old at time of match, and blood type permissible	Any
36	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 years old at time of match, and blood type permissible	Any
37	Nation	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 years old at time of match, and blood type permissible	Any
38	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any
39	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any
40	OPO's DSA	Prior living donor, blood type permissible or identical	Any
41	OPO's DSA	Prior liver recipients that meet the qualifying criteria according to *Policy 8.5.G: Prioritization for Liver Recipients on the Kidney Waiting List*, blood type permissible or identical	Any

~~Classification~~	~~Candidates that are within the:~~	~~And are:~~	~~And the donor is this blood type:~~
~~42~~	~~OPO's DSA~~	~~Blood type B~~	~~A2 or A2B~~
~~43~~	~~OPO's DSA~~	~~All remaining candidates, blood type permissible or identical~~	~~Any~~
~~44~~	~~OPO's region~~	~~Blood type B~~	~~A2 or A2B~~
~~45~~	~~OPO's region~~	~~All remaining candidates, blood type permissible or identical~~	~~Any~~
~~46~~	~~Nation~~	~~Blood type B~~	~~A2 or A2B~~
~~47~~	~~Nation~~	~~All remaining candidates, blood type permissible or identical~~	~~Any~~

Table 8-9: Allocation of Kidneys from Deceased Donors with KDPI Greater Than or Equal To 35% and Less Than or Equal To 85%

Classification	Candidates that are	And registered at a transplant program that is within this distance from the receiving transplant program of the original intended recipient	With this donor blood type:
1	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	500NM	Any
2	CPRA equal to 100%, blood type permissible or identical	500NM	Any
3	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	Nation	Any
4	CPRA equal to 100%, blood type permissible or identical	Nation	Any
5	Prior living donor, blood type permissible or identical	500NM	Any
6	Medically Urgent	Nation	Any

7	0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical	500NM	Any
8	CPRA equal to 99%, blood type permissible or identical	500NM	Any
9	0-ABDR mismatch, CPRA equal to 98%, blood type permissible or identical	500NM	Any
10	CPRA equal to 98%, blood type permissible or identical	500NM	Any
11	0-ABDR mismatch, blood type identical	500NM	Any
12	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical	Nation	Any
13	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type identical	Nation	Any
14	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type identical	Nation	Any
15	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Nation	Any
16	0-ABDR mismatch, and blood type B	500NM	O
17	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	Nation	O

18	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type B	Nation	O
19	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type B	Nation	O
20	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	Nation	O
21	0-ABDR mismatch, blood type permissible	500NM	Any
22	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type permissible	Nation	Any
23	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 years old at time of match, and blood type permissible	Nation	Any
24	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 years old at time of match, and blood type permissible	Nation	Any
25	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Nation	Any
26	Prior liver recipients that meet the qualifying criteria according to *Policy 8.5.G*: *Prioritization for Liver Recipients on the Kidney Waiting List*, blood type permissible or identical	500NM	Any
27	Blood type B	500NM	A2 or A2B
28	All remaining candidates, blood type permissible or identical	500NM	Any

29	Blood type B	Nation	A2 or A2B
30	All remaining candidates, blood type permissible or identical	Nation	Any
31	Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical	500NM	Any
32	Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical	Nation	Any

8.5.K Allocation of Kidneys from Deceased Donors with KDPI Scores Greater than 85%

With the exception of 0-ABDR mismatches, kidneys from deceased donors with KDPI scores greater than 85% are allocated to adult candidates according to *Table 8-~~8~~ 10* below and the following:

- Classifications 1 through ~~30, 32, 34~~ 21, 23 and ~~35~~ 24 for one deceased donor kidney
- Classifications ~~31, 33, and 36~~ 22 and 25 for both kidneys from a single deceased donor

~~Table 8-8: Allocation of Kidneys from Deceased Donors with KDPI Scores Greater Than 85%~~

~~Classification~~	~~Candidates that are within the:~~	~~And are:~~	~~And the donor is this blood type:~~
~~1~~	~~OPO's DSA~~	~~0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~2~~	~~OPO's DSA~~	~~CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~3~~	~~OPO's region~~	~~0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~4~~	~~OPO's region~~	~~CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~5~~	~~Nation~~	~~0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~6~~	~~Nation~~	~~CPRA equal to 100%, blood type permissible or identical~~	~~Any~~
~~7~~	~~OPO's DSA~~	~~0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical~~	~~Any~~

Classification	Candidates that are within the:	And are:	And the donor is this blood type:
8	OPO's DSA	CPRA equal to 99%, blood type permissible or identical	Any
9	OPO's region	0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical	Any
10	OPO's region	CPRA equal to 99%, blood type permissible or identical	Any
11	OPO's DSA	0-ABDR mismatch, CPRA equal to 98%, blood type permissible or identical	Any
12	OPO's DSA	CPRA equal to 98%, blood type permissible or identical	Any
13	OPO's DSA	0-ABDR mismatch, blood type permissible or identical	Any
14	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical	Any
15	Nation	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical	Any
16	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Any
17	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Any
18	OPO's DSA	0-ABDR mismatch, blood type B	O
19	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	O
20	Nation	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	O
21	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
22	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
23	OPO's DSA	0-ABDR mismatch, blood type permissible	Any
24	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type permissible	Any
25	Nation	0-ABDR mismatch, CPRA greater than or equal to 80% , and blood type permissible	Any
26	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any

~~Classification~~	~~Candidates that are within the:~~	~~And are:~~	~~And the donor is this blood type:~~
~~27~~	~~Nation~~	~~0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible~~	~~Any~~
~~28~~	~~OPO's DSA~~	~~Prior liver recipients that meet the qualifying criteria according to *Policy 8.5.G: Prioritization for Liver Recipients on the Kidney Waiting List*, blood type permissible or identical~~	~~Any~~
~~29~~	~~OPO's region~~	~~Blood type B~~	~~A2 or A2B~~
~~30~~	~~OPO's region~~	~~All remaining candidates, blood type permissible or identical~~	~~Any~~
~~31~~	~~Nation~~	~~Blood type B~~	~~A2 or A2B~~
~~32~~	~~Nation~~	~~All remaining candidates, blood type permissible or identical~~	~~Any~~

Table 8-10: Allocation of Kidneys from Deceased Donors with KDPI Scores Greater Than 85%

Classification	Candidates that are	And registered at a transplant program that is within this distance from the receiving transplant program of the original intended recipient	With this donor blood type:
1	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	500NM	Any
2	CPRA equal to 100%, blood type permissible or identical	500NM	Any
3	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	Nation	Any
4	CPRA equal to 100%, blood type permissible or identical	Nation	Any

5	Medically Urgent	Nation	Any
6	0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical	500NM	Any
7	CPRA equal to 99%, blood type permissible or identical	500NM	Any
8	0-ABDR mismatch, CPRA equal to 98%, blood type permissible or identical	500NM	Any
9	CPRA equal to 98%, blood type permissible or identical	500NM	Any
10	0-ABDR mismatch, blood type permissible or identical	500NM	Any
11	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical	Nation	Any
12	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Nation	Any
13	0-ABDR mismatch, blood type B	500NM	O
14	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	Nation	O
15	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	Nation	O
16	0-ABDR mismatch, blood type permissible	500NM	Any

17	0-ABDR mismatch, CPRA greater than or equal to 80% , and blood type permissible	Nation	Any
18	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Nation	Any
19	Prior liver recipients that meet the qualifying criteria according to *Policy 8.5.G: Prioritization for Liver Recipients on the Kidney Waiting List*, blood type permissible or identical	500NM	Any
20	Blood type B	500NM	A2 or A2B
21	All remaining candidates, blood type permissible or identical	500NM	Any
22	Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical	500NM	Any
23	Blood type B	Nation	A2 or A2B
24	All remaining candidates, blood type permissible or identical	Nation	Any
25	Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical	Nation	Any

8.7 Allocation of Released Kidneys

For kidneys allocated according to *Policy 5.9: Released Organs*, the host OPO may

1. Continue allocation according to the original match run, or
2. Delegate allocation of the kidney to the OPTN Contractor or the OPO serving the receiving transplant program's DSA.

If the host OPO delegates allocation of the kidney, the OPTN Contractor or receiving OPO must execute a released kidney match run and allocate the kidney using this updated match run according to *Tables 8-*

11, 8-12, 8-13, and *8-14*.

Table 8-11: Allocation of Released Kidneys from Deceased Donors with KDPI Less Than or Equal To 20%

Classification	Candidates that are	And registered at a transplant program that is within this distance from the receiving transplant program of the original intended recipient	With this donor blood type:
1	0-ABDR mismatch, CPRA equal to 100%, blood type identical or permissible	150NM	Any
2	CPRA equal to 100%, blood type identical or permissible	150NM	Any
3	0-ABDR mismatch, CPRA equal 100%, blood type identical or permissible	Nation	Any
4	CPRA equal to 100%, blood type identical or permissible	Nation	Any
5	Prior living donor, blood type permissible or identical	150NM	Any
6	Registered prior to 18 years old, blood type permissible or identical	150NM	Any
7	Medically Urgent	Nation	Any
8	0-ABDR mismatch, CPRA equal to 99%, blood type identical or permissible	150NM	Any
9	CPRA equal to 99%, blood type identical or permissible	150NM	Any

10	0-ABDR mismatch, CPRA equal to 98%, blood type identical or permissible	150NM	Any
11	CPRA equal to 98%, blood type identical or permissible	150NM	Any
12	0-ABDR mismatch, top 20% EPTS, and blood type identical	150NM	Any
13	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 80%, and blood type identical	Nation	Any
14	0-ABDR mismatch, less than 18 years old at time of match, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Nation	Any
15	0-ABDR mismatch, less than 18 years old at time of match, CPRA greater than or equal to 0% but less than or equal to 20%, and blood type identical	Nation	Any
16	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Nation	Any
17	0-ABDR mismatch, top 20% EPTS, and blood type B	150NM	O
18	0-ABDR mismatch, top 20% EPTS or less than 18 years at time of match run, CPRA greater than or equal to 80%, and blood type B	Nation	O
19	0-ABDR mismatch, less than 18 at time of match, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	Nation	O
20	0-ABDR mismatch, less than 18 at time of match, CPRA greater than or equal to 0% but less than or equal to 20%, and blood type B	Nation	O
21	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 21%	Nation	O

	but no greater than 79%, and blood type B		
22	0-ABDR mismatch, top 20% EPTS, and blood type permissible	150NM	Any
23	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 80%, and blood type permissible	Nation	Any
24	0-ABDR mismatch, less than 18 years old at time of match run, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Nation	Any
25	0-ABDR mismatch, less than 18 years old at time of match run, CPRA greater than or equal to 0% but less than or equal to 20%, and blood type permissible	Nation	Any
26	0-ABDR mismatch, top 20% EPTS, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Nation	Any
27	Top 20% EPTS, blood type B	150NM	A2 or A2B
28	Top 20% EPTS, blood type permissible or identical	150NM	Any
29	0-ABDR mismatch, EPTS greater than 20%, blood type identical	150NM	Any
30	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 80%, and blood type identical	Nation	Any
31	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Nation	Any

32	0-ABDR mismatch, EPTS greater than 20%, and blood type B	150NM	O
33	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 80%, and blood type B	Nation	O
34	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	Nation	O
35	0-ABDR mismatch, EPTS greater than 20%, and blood type permissible	150NM	Any
36	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 80%, and blood type permissible	Nation	Any
37	0-ABDR mismatch, EPTS greater than 20%, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Nation	Any
38	EPTS greater than 20%, blood type B	150NM	A2 or A2B
39	All remaining candidates, blood type permissible or identical	150NM	Any
40	Registered prior to 18 years old, blood type permissible or identical	Nation	Any
41	Top 20% EPTS, blood type B	Nation	A2 or A2B
42	Top 20% EPTS, blood type permissible or identical	Nation	Any
43	All remaining candidates, blood type permissible or identical	Nation	Any

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Table 8-12: Allocation of Released Kidneys from Deceased Donors with KDPI Scores Greater Than 20% but Less Than 35%

Classification	Candidates that are	And registered at a transplant program that is within this distance from the receiving transplant program of the original intended recipient	With this donor blood type:
1	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	150NM	Any
2	CPRA equal to 100%, blood type permissible or identical	150NM	Any
3	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	Nation	Any
4	CPRA equal to 100%, blood type permissible or identical	Nation	Any
5	Prior living donor, blood type permissible or identical	150NM	Any
6	Registered prior to 18 years old, blood type permissible or identical	150NM	Any
7	Medically Urgent	Nation	Any
8	0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical	150NM	Any
9	CPRA equal to 99%, blood type permissible or identical	150NM	Any
10	0-ABDR mismatch, CPRA equal to 98%, blood type permissible or identical	150NM	Any

11	CPRA equal to 98%, blood type permissible or identical	150NM	Any
12	0-ABDR mismatch, blood type identical	150NM	Any
13	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical	Nation	Any
14	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type identical	Nation	Any
15	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type identical	Nation	Any
16	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Nation	Any
17	0-ABDR mismatch, blood type B	150NM	O
18	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	Nation	O
19	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type B	Nation	O
20	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type B	Nation	O
21	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	Nation	O
22	0-ABDR mismatch, blood type permissible	150NM	Any

23	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type permissible	Nation	Any
24	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type permissible	Nation	Any
25	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type permissible	Nation	Any
26	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Nation	Any
27	Prior liver recipients that meet the qualifying criteria according to *Policy 8.5.G: Prioritization for Liver Recipients on the Kidney Waiting List*, blood type permissible or identical	150NM	Any
28	Blood type B	150NM	A2 or A2B
29	All remaining candidates, blood type permissible or identical	150NM	Any
30	Registered prior to 18 years old, blood type permissible or identical	Nation	Any
31	Blood type B	Nation	A2 or A2B
32	All remaining candidates, blood type permissible or identical	Nation	Any

Table 8-13: Allocation of Released Kidneys from Deceased Donors with KDPI Scores Greater than or Equal to 35% but Less than or Equal to 85%

Classification	Candidates that are	And registered at a transplant program that is within this distance from the receiving transplant program of the original intended recipient	With this donor blood type:
1	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	150NM	Any
2	CPRA equal to 100%, blood type permissible or identical	150NM	Any
3	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	Nation	Any
4	CPRA equal to 100%, blood type permissible or identical	Nation	Any
5	Prior living donor, blood type permissible or identical	150NM	Any
6	Medically Urgent	Nation	Any
7	0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical	150NM	Any
8	CPRA equal to 99%, blood type permissible or identical	150NM	Any
9	0-ABDR mismatch, CPRA equal to 98%, blood type permissible or identical	150NM	Any
10	CPRA equal to 98%, blood type permissible or identical	150NM	Any

11	0-ABDR mismatch, blood type identical	150NM	Any
12	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical	Nation	Any
13	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type identical	Nation	Any
14	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type identical	Nation	Any
15	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Nation	Any
16	0-ABDR mismatch, and blood type B	150NM	O
17	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	Nation	O
18	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 at time of match, and blood type B	Nation	O
19	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 at time of match, and blood type B	Nation	O
20	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	Nation	O
21	0-ABDR mismatch, blood type permissible	150NM	Any
22	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type permissible	Nation	Any

23	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, less than 18 years old at time of match, and blood type permissible	Nation	Any
24	0-ABDR mismatch, CPRA greater than or equal to 0% but less than or equal to 20%, less than 18 years old at time of match, and blood type permissible	Nation	Any
25	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Nation	Any
26	Prior liver recipients that meet the qualifying criteria according to *Policy 8.5.G*: *Prioritization for Liver Recipients on the Kidney Waiting List*, blood type permissible or identical	150NM	Any
27	Blood type B	150NM	A2 or A2B
28	All remaining candidates, blood type permissible or identical	150NM	Any
29	Blood type B	Nation	A2 or A2B
30	All remaining candidates, blood type permissible or identical	Nation	Any
31	Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical	150NM	Any
32	Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical	Nation	Any

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Table 8-14: Allocation of Released Kidneys from Deceased Donors with KDPI Scores Greater than 85%

Classification	Candidates that are	And registered at a transplant program that is within this distance from the receiving transplant program of the original intended recipient	With this donor blood type:
1	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	150NM	Any
2	CPRA equal to 100%, blood type permissible or identical	150NM	Any
3	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	Nation	Any
4	CPRA equal to 100%, blood type permissible or identical	Nation	Any
5	Medically Urgent	Nation	Any
6	0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical	150NM	Any
7	CPRA equal to 99%, blood type permissible or identical	150NM	Any
8	0-ABDR mismatch, CPRA equal to 98%, blood type permissible or identical	150NM	Any
9	CPRA equal to 98%, blood type permissible or identical	150NM	Any
10	0-ABDR mismatch, blood type permissible or identical	150NM	Any

11	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical	Nation	Any
12	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Nation	Any
13	0-ABDR mismatch, blood type B	150NM	O
14	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	Nation	O
15	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	Nation	O
16	0-ABDR mismatch, blood type permissible	150NM	Any
17	0-ABDR mismatch, CPRA greater than or equal to 80% , and blood type permissible	Nation	Any
18	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Nation	Any
19	Prior liver recipients that meet the qualifying criteria according to *Policy 8.5.G: Prioritization for Liver Recipients on the Kidney Waiting List*, blood type permissible or identical	150NM	Any
20	Blood type B	150NM	A2 or A2B
21	All remaining candidates, blood type permissible or identical	150NM	Any
22	Candidates who have specified they are willing to accept both kidneys	150NM	Any

	from a single deceased donor, blood type permissible or identical		
23	Blood type B	Nation	A2 or A2B
24	All remaining candidates, blood type permissible or identical	Nation	Any
25	Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical	Nation	Any

8.~~7~~8 Administrative Rules

8.~~7~~8.A Choice of Right versus Left Donor Kidney

If both kidneys from a deceased donor are able to be transplanted, the transplant program that received the offer for the candidate with higher priority on the waiting list will get to choose first which of the two kidneys it will receive.

However, when a kidney is offered to a 0-ABDR mismatched candidate, a candidate with a CPRA greater than or equal to 99% ~~in classifications 1 through 10 in allocation sequences according to *Tables 8-5* through *8-8* above~~ (classifications 1 through 8 in *Tables 8-5 and 8-6;* classifications 1 through 7 in *Table 8-7;* and classifications 1 through 6 in *Table 8-8*), or to a combined kidney and non-renal organ candidate, the host OPO determines whether to offer the left or the right kidney.

8.~~7~~8.B National Kidney Offers

The host OPO must allocate deceased donor kidneys according to *Table 8-~~9~~ 15* below. For purposes of this section, national candidates are those candidates registered at transplant programs more than 500 nautical miles from the donor hospital.

Table 8-~~9~~15: National Kidney Offers

If the organ offer is for:	Then the host OPO must:
A national 0-ABDR mismatch candidate	Allocate the kidney or contact the Organ Center for assistance allocating the kidney
A national 100% CPRA candidate in match classifications 1 through ~~10~~ 4 in allocation	Allocate the kidney or contact the Organ Center for assistance allocating the kidney

If the organ offer is for:	Then the host OPO must:
sequences according to *Tables 8-5* through *8-8.*	
Any other national candidates	Contact the Organ Center for assistance allocating the kidney

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