

**DHHS Contract #250-2019-00001C**

**Date of Request:** March 28, 2019

**Requesting Committee:** KP Workgroup of the Kidney Transplantation Committee and  
Pancreas Transplantation Committee

**Date Committee Met:** February 6, 2019; March 5, 19, 22, 25, 27, and 28, 2019

**Date of Next Meeting:** June 2019

**OPTN staff member referring Committee's requests:** Amber R. Wilk, PhD, Read Urban, MPH

**Chair Approval?:** Yes

**ANALYSES REQUESTED:**

• **Descriptive Statistical Requests (responsibility of OPTN contractor)**

- None

• **Inferential Statistical Requests (responsibility of SRTR contractor)**

**Data Request 1:** *Provide KPSAM simulation data on effect of removing DSA and Region from kidney/pancreas/kidney-pancreas organ allocation policy*

**Background:** On July 31, 2018 HRSA directed the OPTN to propose changes to policy removing any reference to DSA and Region as units of allocation in response to a critical comment submitted to the Secretary of Health and Human Services on May 30, 2018. The OPTN has committed to a multi-step plan to eliminate the use of DSAs and Regions in distribution in a deliberative manner and within a timeframe that will reduce the likelihood of unintended consequences. In response, the Kidney Transplantation Committee developed a workgroup ("Committee") consisting of Committee members, Pancreas Committee members, Minority Affairs Committee members, and Pediatric Transplantation Committee members to develop an appropriate policy proposal that removes DSA and OPTN Region as geographic units of organ allocation. This request is the second phase of KPSAM modeling, with the first being reviewed in December 2018 and compiled into a concept paper for public comment from January to March 2019. This request is the response to continued discussion within the Committee as well as feedback from OPTN regional meetings and public comment from the community.

Towards the goal of utmost compliance with the Final Rule, the Committee has discussed options for a revised allocation proposal that will reduce disparities in access to kidney and pancreas transplants, as well as decrease potential unintended consequences of an expedited policy change. The Committee agreed to focus solely on a "hybrid" framework for this second round of KPSAM modeling in response to public comment feedback. This framework represents a hybrid between a framework bound by fixed concentric circles and a framework that would move us one step further towards continuous distribution. The framework meets the same goals of removing DSA and region from kidney and pancreas allocation policy while aligning with the principles of the Final Rule emphasizing the broadest feasible sharing and efficient operation of the OPTN while mitigating unintended consequences. Specifically, this hybrid framework allows broader distribution by eliminating the second circle and allowing for the first circle to be potentially larger than it may be under a concentric circle framework. At the same time, it adheres to the principle of efficiency in distribution by giving candidates at transplant hospitals closer to the donor

hospital proximity points. The modeling requests provide options of giving closer candidates more points (and more priority) or fewer points (and less priority) both within the circle and in the national allocation geographic unit. Furthermore, the hybrid framework seeks to maintain the principles of the newly implemented Kidney Allocation System (KAS) in order to limit unintended externalities as well as ease the transition to a new system of allocation within the greater transplant community.

The OPTN Final Rule requires that organ allocation policies “shall not be based on the candidate's place of residence or place of listing, except to the extent required by” the OPTN Final Rule. (42 CFR 121.8(a)(8)). Furthermore, the OPTN Final Rule states that “Allocation policies shall be designed to achieve equitable allocation of organs among patients ... [by] (3) 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.” (42. CFR 121.8(b).) Consistent with these requirements, the Committee has discussed the feasibility of national organ distribution. Committee members have stated that there are improved outcomes for kidneys with lower cold ischemic time (CIT). CIT, on average, increases as the distance between the donor hospital and transplant hospital increase. This relationship and the desire to decrease CIT justifies a local priority due to the need to “achieve the best use of donated organs” (42 CFR 121.8(a)(2)). Furthermore, committee members have noted that pancreas surgeons often travel to participate in organ procurement efforts. Therefore, organ offers that require additional travel time result in more surgeons away from the hospital and unavailable to perform transplants. This justifies a local priority due to the need “to promote the efficient management of organ placement.” (42 CFR 121.8(a)(5)).

Additionally, the Committee discussed that the transportation method of procurement impacts the efficiency of the system. While there is a cost increase for each additional mile between the donor and transplant hospital, there is a significant cost increase when the transportation method changes from driving to flying. Therefore, the Committee requested modeling with circles at 150 NM and 250 NM to represent the distance when procurement changes from driving to flying. This justifies a local priority due to the need “to promote the efficient management of organ placement.” (42 CFR 121.8(a)(5)), and aligns with feedback from the community during the most recent public comment cycle to examine the use of a smaller circle in the hybrid framework.

For a larger circle, the Committee discussed options that could effectively remove DSA and region from kidney and pancreas allocation policy while promoting broader sharing than the current system. This would more effectively align with the Final Rule, which promotes, “(3) 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.” (42. CFR 121.8(b).) The larger circle of 500 NM represents a geographic surface area larger than current average region size. According to OPTN data, the current average size of a region is 260 square miles. The Committee desired a variation in which distribution was broadened beyond the 260 square mile average, thus electing to model a 500 NM circle. Furthermore, data indicate that approximately 80% of kidneys (slightly higher percent for pancreata) are currently shared within 500 NM and therefore a circle at 500 NM could reduce inefficiencies in the OPTN system.

Alongside removing the DSA and OPTN regional boundaries, the Committee would like to enhance priority for currently local prior living donors and local pediatrics in kidney allocation by moving them closer to the top of the match run. Specifically, the Committee would like both groups to appear, in the order they are currently, immediately below the highly sensitized candidates with 100% CPRA, but before the 98-99% CPRA highly sensitized candidates in the kidney allocation sequences in which local prior living donors and local pediatrics receive priority currently under KAS. See the classification tables in the request for specific classification order. In order to see the effect of this elevated priority, the Committee requested an additional baseline run with this change in priority for these groups (highly sensitized, local prior living donors, and local pediatrics) in kidney allocation, but no other changes.

Lastly, the Committee would like to see an acceptance model for KPSAM that includes offer number and donor characteristics. The Committee would like to see the December 2018 report updated with this acceptance model as well for comparison.

The goal of this round of modeling is to investigate the effects of various circle sizes and proximity point selection to inform the choice of the final policy proposal for the 2019 fall public comment period beginning in August 2019, prior to the December 2019 Board of Directors meeting. The request laid out below, incorporating feedback from the community during public comment and the clinical expertise of members of the Committee, will aid the Committee in their recommendation to the Board of Directors regarding the most appropriate policy that should be adopted.

**Strategic Goal or Committee Project Addressed:** Evaluate the effect associated with the removal of DSA and Region as geographic units of allocation from kidney and pancreas organ distribution. The project is in alignment with the strategic goal to improve equity in access to transplants.

**Request:** Using the most recently available KPSAM version and data, model the kidney, pancreas, and kidney-pancreas distribution systems outlined below.

**“Hybrid” Allocation Framework: Single Circle Distribution with and without proximity points**

Kidney classification tables (kidney alone) for deceased donors with KDPI scores 0-20% and 21-34% will be modeled with elevated local (now within circle) prior living donor (current classification 40) and local (now within circle) pediatric (current classification 41) priority, shifting those two candidate classifications to fall between the 100% CPRA patients (current classifications 1-6) and the CPRA 98-99% patients (current classifications 7-12). Additionally, kidney classification tables (kidney alone) for deceased donors with KDPI scores 35-85% will be modeled with elevated local (now within circle) prior living donor (current classification 40) priority, shifting this candidate classification to fall between the 100% CPRA patients (current classifications 1-6) and the CPRA 98-99% patients (current classifications 7-12).

There are three circle sizes of interest to allocate organs for candidates within XX NM of the donor hospital: 150, 250, and 500. All are listed in the classification tables, separated by a '/'; the specific combinations to be modeled with KPSAM are shown after the classification tables in a separate table.

**Allocation of Kidneys from Deceased Donors with KDPI Scores Less Than or Equal to 20%**

Kidney classification tables (kidney alone) for deceased donors with KDPI scores 0-20% will be modeled with elevated local (now within circle) prior living donor (current classification 40) and local (now within circle) pediatric (current classification 41) priority, shifting those two candidate classifications to fall between the 100% CPRA patients (current classifications 1-6) and the CPRA 98-99% patients (current classifications 7-12). These changes are highlighted in yellow.

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 the table below:

Classification	Candidates that are within XX NM of the donor hospital:	And are:	When the donor is this blood type:
1	500/250/150	0-ABDR mismatch, CPRA equal to 100%, blood type identical or permissible	Any
2	500/250/150	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

Classification	Candidates that are within XX NM of the donor hospital:	And are:	When the donor is this blood type:
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
40	500/250/150	Prior living donor, blood type permissible or identical	Any
41	500/250/150	Registered prior to 18 years old, blood type permissible or identical	Any
7	500/250/150	0-ABDR mismatch, CPRA equal to 99%, blood type identical or permissible	Any
8	500/250/150	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	500/250/150	0-ABDR mismatch, CPRA equal to 98%, blood type identical or permissible	Any
12	500/250/150	CPRA equal to 98%, blood type identical or permissible	Any
13	500/250/150	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 equal to 21% but no greater than 79%, and blood type identical	Any
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	Any

Classification	Candidates that are within XX NM of the donor hospital:	And are:	When the donor is this blood type:
		equal to 0% but less than or equal to 20%, and blood type identical	
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	500/250/150	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	⊖
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	⊖
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
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	⊖
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	⊖
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

Classification	Candidates that are within XX NM of the donor hospital:	And are:	When the donor is this blood type:
31	500/250/150	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
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
42	500/250/150	Top 20% EPTS, blood type B	A2 or A2B
43	500/250/150	Top 20% EPTS, blood type permissible or identical	Any
44	500/250/150	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



Classification	Candidates that are within XX NM of the donor hospital:	And are:	When the donor is this blood type:
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	500/250/150	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
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	500/250/150	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	500/250/150	EPTS greater than 20%, blood type B	A2 or A2B
60	500/250/150	All remaining candidates, blood type permissible or identical	Any

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

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

Kidney classification tables (kidney alone) for deceased donors with KDPI scores 21-34% will be modeled with elevated local (now within circle) prior living donor (current classification 40) and local (now within circle) pediatric (current classification 41) priority, shifting those two candidate classifications to fall between the 100% CPRA patients (current classifications 1-6) and the CPRA 98-99% patients (current classifications 7-12). These change are highlighted in yellow.

Kidneys from deceased donors with KDPI scores greater than 20% but less than 35% are allocated to candidates according to the table below:

Classification	Candidates that are within XX NM of the donor hospital:	And are:	When the donor is this blood type:
1	500/250/150	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	Any
2	500/250/150	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



Classification	Candidates that are within XX NM of the donor hospital:	And are:	When the donor is this blood type:
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
40	500/250/150	Prior living donor, blood type permissible or identical	Any
41	500/250/150	Registered prior to 18 years old, blood type permissible or identical	Any
7	500/250/150	0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical	Any
8	500/250/150	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	500/250/150	0-ABDR mismatch, CPRA equal to 98%, blood type permissible or identical	Any
12	500/250/150	CPRA equal to 98%, blood type permissible or identical	Any
13	500/250/150	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	Any

Classification	Candidates that are within XX NM of the donor hospital:	And are:	When the donor is this blood type:
		than 18 at time of match, and blood type identical	
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	500/250/150	0-ABDR mismatch, blood type B	O
23	OPO's region	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	⊖
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	⊖
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	⊖
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	⊖
30	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
31	500/250/150	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

Classification	Candidates that are within XX NM of the donor hospital:	And are:	When the donor is this blood type:
33	Nation	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type permissible	Any
34	OPO's region	<del>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</del>	Any
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	<del>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</del>	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	<del>0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible</del>	Any
39	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any
42	500/250/150	Prior liver recipients that meet the qualifying criteria according to <i>Policy 8.5.G: Prioritization for Liver Recipients on the Kidney Waiting List</i> , blood type permissible or identical	Any
43	500/250/150	Blood type B	A2 or A2B
44	500/250/150	All remaining candidates, blood type permissible or identical	Any
45	OPO's region	<del>Registered prior to 18 years old, blood type permissible or identical</del>	Any
46	OPO's region	Blood type B	A2 or A2B
47	OPO's region	<del>All remaining candidates, blood type permissible or identical</del>	Any
48	Nation	Registered prior to 18 years old, blood type permissible or identical	Any
49	Nation	Blood type B	A2 or A2B

Classification	Candidates that are within XX NM of the donor hospital:	And are:	When the donor is this blood type:
<b>50</b>	Nation	All remaining candidates, blood type permissible or identical	Any

**Allocation of Kidneys from Deceased Donors with KDPI Scores Greater Than or Equal to 35% but Less Than or Equal to 85%**

Kidney classification tables (kidney alone) for deceased donors with KDPI scores 35-85% will be modeled with elevated local (now within circle) prior living donor (current classification 40) priority, shifting this candidate classification to fall between the 100% CPRA patients (current classifications 1-6) and the CPRA 98-99% patients (current classifications 7-12). This change is highlighted in yellow.

Kidneys from deceased donors with KDPI scores greater than or equal to 35% but less than or equal to 85% are allocated to candidates according to the table below:

Classification	Candidates that are within XX NM of the donor hospital :	And are:	And the donor is this blood type:
<b>1</b>	<b>500/250/150</b>	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	Any
<b>2</b>	<b>500/250/150</b>	CPRA equal to 100%, blood type permissible or identical	Any
<b>3</b>	OPO's region	<del>0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical</del>	Any
<b>4</b>	OPO's region	<del>CPRA equal to 100%, blood type permissible or identical</del>	Any
<b>5</b>	Nation	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	Any
<b>6</b>	Nation	CPRA equal to 100%, blood type permissible or identical	Any
<b>40</b>	<b>500/250/150</b>	Prior living donor, blood type permissible or identical	Any
<b>7</b>	<b>500/250/150</b>	0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical	Any
<b>8</b>	<b>500/250/150</b>	CPRA equal to 99%, blood type permissible or identical	Any
<b>9</b>	OPO's region	<del>0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical</del>	Any
<b>10</b>	OPO's region	<del>CPRA equal to 99%, blood type permissible or identical</del>	Any
<b>11</b>	<b>500/250/150</b>	0-ABDR mismatch, CPRA equal to 98%, blood type permissible or identical	Any
<b>12</b>	<b>500/250/150</b>	CPRA equal to 98%, blood type permissible or identical	Any
<b>13</b>	<b>500/250/150</b>	0-ABDR mismatch, blood type identical	Any
<b>14</b>	OPO's region	<del>0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical</del>	Any

Classification	Candidates that are within XX NM of the donor hospital :	And are:	And the donor is this blood type:
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	500/250/150	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	⊖
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	⊖
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	⊖
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	⊖

Classification	Candidates that are within XX NM of the donor hospital :	And are:	And the donor is this blood type:
30	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
31	500/250/150	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
41	500/250/150	Prior liver recipients that meet the qualifying criteria according to <i>Policy 8.5.G: Prioritization for Liver Recipients on the Kidney Waiting List</i> , blood type permissible or identical	Any
42	500/250/150	Blood type B	A2 or A2B
43	500/250/150	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
48	500/250/150	Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical	Any

Classification	Candidates that are within XX NM of the donor hospital :	And are:	And the donor is this blood type:
49	OPO's region	<del>Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical</del>	Any
50	Nation	Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical	Any

**Allocation of Kidneys from Deceased Donors with KDPI Scores Greater 85%**

With the exception of 0-ABDR mismatches, kidneys from deceased donors with KDPI scores greater than 85% will be allocated to adult candidates only.

Kidneys from deceased donors with KDPI scores greater than 85% are allocated to candidates according to the table below:

Classification	Candidates that are within XX NM of the donor hospital:	And are:	And the donor is this blood type:
1	500/250/150	0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical	Any
2	500/250/150	CPRA equal to 100%, blood type permissible or identical	Any
3	OPO's region	<del>0-ABDR mismatch, CPRA equal to 100%, blood type permissible or identical</del>	Any
4	OPO's region	<del>CPRA equal to 100%, blood type permissible or identical</del>	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	500/250/150	0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical	Any
8	500/250/150	CPRA equal to 99%, blood type permissible or identical	Any
9	OPO's region	<del>0-ABDR mismatch, CPRA equal to 99%, blood type permissible or identical</del>	Any
10	OPO's region	<del>CPRA equal to 99%, blood type permissible or identical</del>	Any
11	500/250/150	0-ABDR mismatch, CPRA equal to 98%, blood type permissible or identical	Any
12	500/250/150	CPRA equal to 98%, blood type permissible or identical	Any
13	500/250/150	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



Classification	Candidates that are within XX NM of the donor hospital:	And are:	And the donor is this blood type:
15	Nation	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type identical	Any
16	OPO's region	<del>0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical</del>	Any
17	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type identical	Any
18	500/250/150	0-ABDR mismatch, blood type B	O
19	OPO's region	<del>0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B</del>	O
20	Nation	0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type B	O
21	OPO's region	<del>0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B</del>	O
22	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type B	O
23	500/250/150	0-ABDR mismatch, blood type permissible	Any
24	OPO's region	<del>0-ABDR mismatch, CPRA greater than or equal to 80%, and blood type permissible</del>	Any
25	Nation	0-ABDR mismatch, CPRA greater than or equal to 80% , and blood type permissible	Any
26	OPO's region	<del>0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible</del>	Any
27	Nation	0-ABDR mismatch, CPRA greater than or equal to 21% but no greater than 79%, and blood type permissible	Any
28	500/250/150	Prior liver recipients that meet the qualifying criteria according to <i>Policy 8.5.G: Prioritization for Liver Recipients on the Kidney Waiting List</i> , blood type permissible or identical	Any
29	OPO's region	Blood type B	A2 or A2B
30	500/250/150	All remaining candidates, blood type permissible or identical	Any
31	500/250/150	Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical	Any
32	OPO's region	<del>All remaining candidates, blood type permissible or identical</del>	Any

Classification	Candidates that are within XX NM of the donor hospital:	And are:	And the donor is this blood type:
33	OPO's region	<del>Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical</del>	Any
34	Nation	Blood type B	A2 or A2B
35	Nation	All remaining candidates, blood type permissible or identical	Any
36	Nation	Candidates who have specified they are willing to accept both kidneys from a single deceased donor, blood type permissible or identical	Any

**Allocation of Pancreas, Kidney-Pancreas, and Islets from Deceased Donors 50 Years Old and Less with a BMI Less Than or Equal to 30 kg/m<sup>2</sup>**

Pancreas, kidney-pancreas, and islets from donors 50 years old or less and who have a BMI less than or equal to 30 kg/m<sup>2</sup> will be allocated to candidates according to the below based on waiting time:

Classification	Candidates that are within XX NM of the donor hospital:	And are:
1	500/250/150	Zero antigen mismatch, CPRA greater than or equal to 80%, and either pancreas or kidney-pancreas candidates
2	500/250/150	CPRA greater than or equal to 80% and either pancreas or kidney-pancreas candidates
3	OPO's region	<del>Zero antigen mismatch, CPRA greater than or equal to 80%, and are either pancreas or kidney-pancreas candidates</del>
4	Nation	Zero antigen mismatch, CPRA greater than or equal to 80%, and either pancreas or kidney-pancreas candidates
5	500/250/150	Pancreas or kidney-pancreas candidates
6	OPO's region	<del>CPRA greater than or equal to 80% and either pancreas or kidney-pancreas candidates</del>
7	OPO's region	<del>Pancreas or kidney-pancreas candidates</del>
8	Nation	CPRA greater than or equal to 80% and either pancreas or kidney-pancreas candidates
9	Nation	Pancreas or kidney-pancreas candidates
10	500/250/150	Islet candidates

Classification	Candidates that are within XX NM of the donor hospital:	And are:
11	OPO's Region	Islet candidates
12	Nation	Islet candidates

### Allocation of Pancreas, Kidney-Pancreas, and Islets from Deceased Donors More than 50 Years Old or with a BMI Greater Than 30 kg/m<sup>2</sup>

Pancreas, kidney-pancreas, and islets from deceased donors more than 50 years old or from deceased donors who have a BMI greater than 30 kg/m<sup>2</sup> are allocated to candidates according to the table below based on waiting time:

Classification	Candidates that are within XX NM of the donor hospital:	And are:
1	500/250/150	Zero antigen mismatch, CPRA greater than or equal to 80%, and either pancreas or kidney-pancreas candidates
2	500/250/150	CPRA greater than or equal to 80% and either pancreas or kidney-pancreas candidates
3	OPO's region	<del>Zero antigen mismatch, CPRA greater than or equal to 80%, and either pancreas or kidney-pancreas candidates</del>
4	Nation	Zero antigen mismatch, CPRA greater than or equal to 80%, and either pancreas or kidney-pancreas candidates
5	500/250/150	Pancreas or kidney-pancreas candidates
6	500/250/150	Islet candidates
7	OPO's region	Islet candidates
8	Nation	Islet candidates
9	OPO's region	<del>CPRA greater than or equal to 80% and either pancreas or kidney-pancreas candidates</del>
10	OPO's region	<del>Pancreas or kidney-pancreas candidates</del>
11	Nation	CPRA greater than or equal to 80% and either pancreas or kidney-pancreas candidates
12	Nation	Pancreas or kidney-pancreas candidates

**Specific variations, metrics, and subgroups:**

All variations should include the prior living donor and pediatric priority changes (elevating local, now within circle, priority), as well as the separated highly sensitized priority to split 100% and 98-99%, indicated in the kidney classification tables above. Specifically, kidney classification tables (kidney alone) for deceased donors with KDPI scores 0-20% and 21-34% will be modeled with elevated local (now within circle) prior living donor (current classification 40) and local (now within circle) pediatric (current classification 41) priority, shifting those two candidate classifications to fall between the 100% CPRA patients (current classifications 1-6) and the CPRA 98-99% patients (current classifications 7-12). Additionally, kidney classification tables (kidney alone) for deceased donors with KDPI scores 35-85% will be modeled with elevated local (now within circle) prior living donor (current classification 40) priority, shifting this candidate classification to fall between the 100% CPRA patients (current classifications 1-6) and the CPRA 98-99% patients (current classifications 7-12).

The Committee wants to use an acceptance model for KPSAM that includes offer number and donor characteristics (without candidate characteristics).

**Model 1:** The Committee requested a second “baseline” run in which the current system is modeled with the addition of the elevated PLD (KDPI sequences A-C) and pediatric (KDPI sequences A-B) priority for deceased donor kidney allocation with no other changes.

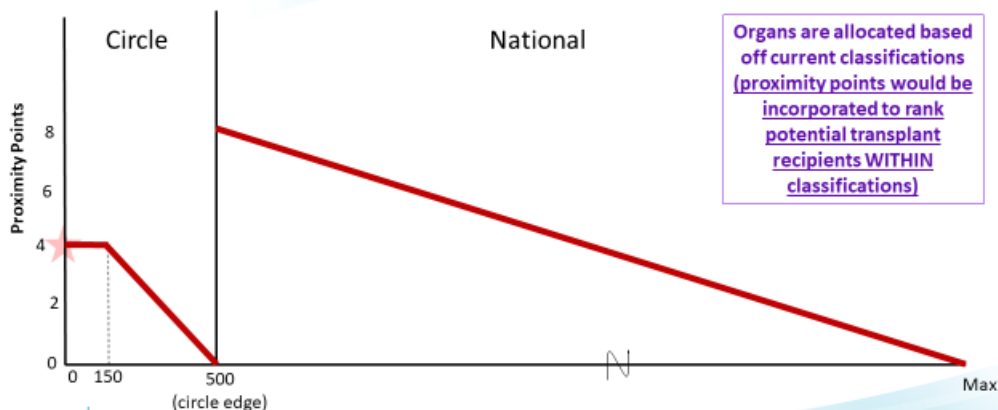
**Models 2-9:** The following combinations of circle sizes and proximity points should be used for simulation modeling (table below). Proximity points within the circle will be assigned linearly, starting at X points for a 0 NM distance between the donor hospital and transplant center, and tapering to 0 points at the circle edge. National proximity points will be assigned linearly, starting at Y points *outside* the circle edge and tapering to 0 points at the **max distance possible between a donor hospital and a transplant center**. This is a change from the prior KPSAM request in which we stopped assigning proximity points at 2500 NM.

		Linearly Assigned Proximity Points					
		Circle Size (NM)		Inside the Circle		Outside the circle (to max possible distance between a donor hospital and transplant center)	
Model #	KI	PA/KP	KI	PA/KP	KI	PA/KP	
2	500	500	0	0	8	8	
3	500	500	4	4	8	8	
4	500	150	0	0	8	8	
5	250	250	2	2	4	4	
6	250	250	0	0	8	8	
7	250	150	0	0	8	8	
8	150	150	0	0	8	8	
9	150	150	0	0	20	20	

**Models 10-11:** Two variations should be modeled wherein there is a stepwise approach to assignment of proximity points within a 500 NM circle. National proximity points will be assigned linearly as above.

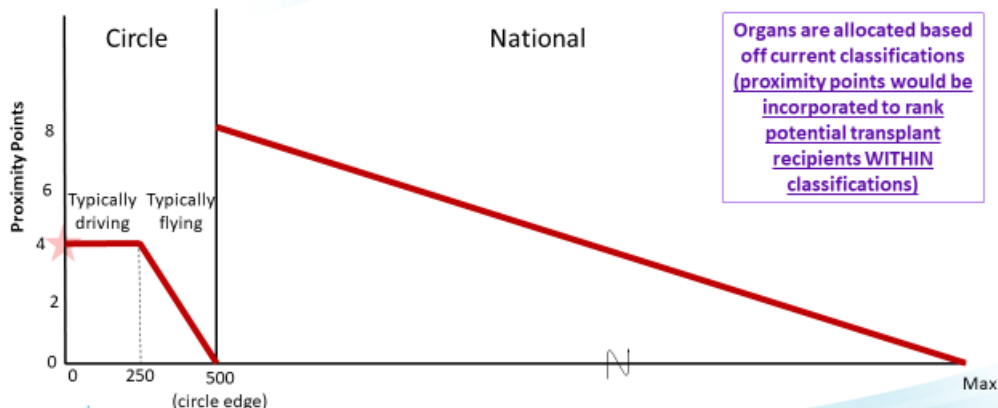
**Model #10:** A constant value of 4 proximity points within the 500 NM circle will be assigned between 0 and 150 NM. Then proximity points will be assigned linearly starting at 4 proximity points and tapering linearly to 0 points at 500 NM. National proximity points will be assigned linearly, starting at 8 points outside 500 NM and tapering to 0 points at the max distance possible between a donor hospital and a transplant center. This will be the same for both kidney and kidney-pancreas/pancreas. A visual representation is shown below.

### Model #10: Single 500NM, stepwise proximity pts inside and linear proximity pts outside



**Model #11:** A constant value of 4 proximity points within the 500 NM circle will be assigned between 0 and 250 NM. Then proximity points will be assigned linearly starting at 4 proximity points and tapering linearly to 0 points at 500 NM. National proximity points will be assigned linearly, starting at 8 points outside 500 NM and tapering to 0 points at the max distance possible between a donor hospital and a transplant center. This will be the same for both kidney and kidney-pancreas/pancreas. A visual representation is shown below.

### Model #11: Single 500NM, stepwise proximity pts inside and linear proximity pts outside



Based on the above 11 models, provide the following metrics. Metrics will be stratified by organ (kidney-alone, kidney-pancreas, pancreas-alone) and defined subgroups (DSA and others). These are ordered by priority and include metrics and subgroups to provide should time permit.

**Metrics to analyze:**

1. Count (%) of transplants
2. Transplant rates
3. Time on dialysis (days) distribution at transplant
4. Time on waiting list (days) distribution at transplant
5. Organ travel distance distribution (NM) for transplants
6. Percent of organs traveling over 250 NM
7. Waitlist mortality rates (subgroups in appendix)

The following metrics should be provided if time permits:

8. One year post-transplant graft survival rates
9. One year post-transplant patient survival rates
10. Count (%) of waitlist deaths

**Metrics to display in choropleth maps \*by DSA\* and tables (tables provided in an appendix):**

1. Transplant rates
2. Variance in transplant rates
3. Median dialysis time (days) at transplant
4. Variance of median dialysis time (days) at transplant
5. Median waiting time (on the list, in days) at transplant
6. Variance of median waiting time (on the list, in days) at transplant
7. Median CPRA at transplant
8. Waitlist mortality rates (overall only)

The following metric by DSA should be provided if time permits:

9. Change in count (%) of waitlist deaths

**Metrics by organ should also be assessed by the following subgroup populations (including a comparison of % of WL vs. % of transplants where applicable):**

1. **Candidate/Recipient age:** 0-5, 6-10, 11-17, 18-34, 35-49, 50-64, 65+
2. **Candidate/Recipient race/ethnicity:** Caucasian, African-American, Hispanic, Asian, Other/Unknown
3. **Candidate/Recipient blood type (ABO):** A, B, AB, O
4. **Candidate/Recipient CPRA:** 0-80, 80-90, 90-94, 95-97, 98, 99, 100
5. **Candidate/Recipient diagnosis:** Diabetes, Hypertension, GN, Cystic kidney disease, Other
6. **SES-related:**
  - a. **Candidate/Recipient insurance status:** Public vs. Private
  - b. **Median income by recipient zip code at listing/transplant distribution:** using the ACS zip code level publically available dataset
  - c. **Urbanicity:** Urban vs. Rural, based on RUCA codes (individually, and grouped by metropolitan vs. micropolitan + small town + rural)
7. **KDPI:** 0-20%, 21-34%, 35-85%, 86-100% (transplant only)
8. **EPTS:** 0-20% vs. 21-100%
9. **Geography:**
  - a. **% local (DSA), regional, national**
  - b. **By OPTN Region:** 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

The following subgroup populations should be provided if time permits:

10. **Donor type:** DCD vs. not DCD (transplant only)

11. **Candidate/Recipient gender:** Male vs. Female

12. **Candidate/Recipient Sensitization:**

- a. **0-HLA mismatch:** 0 vs. non-0
- b. **DR mismatch level:** 0, 1, 2

The SRTR should provide the OPTN with readable data (.csv or .txt) as requested to be able to juxtapose simulation results with other OPTN data for presentations such as regional meetings and the Board of Directors meeting. Factor specific rates (waiting list mortality, transplant, etc) by DSA can be provided after the report submission as requested.

Additionally, the SRTR will rerun the December 2018 KPSAM request using the updated acceptance model that excludes candidate characteristics so that the Committee can compare this request to the former during policy development.