Proposal for a National Kidney Paired Donation (KPD) Pilot Program

Sponsoring Committee: Kidney Transplantation Committee

Summary and Goals of the Proposal:

This proposal provides the steps for implementation of a pilot program to match living donors and their intended candidates with other living donor/intended candidate pairs when it is determined that the living donors cannot donate to the persons they initially hoped would receive their kidney. Such matching enables multiple transplants to occur where the transplant opportunities otherwise would be lost. The proposal is designed to maximize the number of living donor kidney transplants to allow the possibility for some candidate or candidate/donor pair prioritization, and to acknowledge logistical constraints and system improvements that will become more feasible as experience with the pilot program is evaluated.

Background and Significance of the Proposal:

The number of persons listed on the national waiting list waiting for kidney transplantation has grown from 32,955 at year-end 1996 to 74,124 at year-end 2007.[1] Increases in the number of kidneys procured from deceased donors during this same period have been relatively modest, approximating an average of 3.4% per year.[1] Increased numbers of living donors rather than deceased donors are contributing in important ways to higher volumes of kidney transplants each year. In 2001, for example, the number of living donors exceeded the number of deceased donors for the first time. Living donor kidney transplant recipients also benefit from improved short and long term outcomes relative to deceased donor kidney transplant outcomes.[2]

Candidates in need of kidney transplantation who have willing living donors may not be able to accept transplants from these donors, however, because they are incompatible either by blood type or positive crossmatch (i.e., the candidate has preformed human leukocyte antigen (HLA) antibody that will result in rejection of the donor kidney). Successful desensitization techniques exist to remove the immunologic barriers that prevent these transplants from occurring. However, they are resource demanding and can result in unpredictable rates of accelerated rejection and graft loss.[2]

In an effort to avoid the costs and risks associated with desensitization and still permit the living donor kidney transplant to proceed, protocols for matching incompatible donor-candidate pairs have been in existence for some time. These programs can suffer from too small living donor and candidate populations to result in sufficient numbers of matches and ultimate transplants to support the infrastructure needed for the programs. A total of 51 individuals were reported as having received transplants through kidney paired donation as of September 2004.[3] Organizing and implementing a protocol through the Organ Procurement and Transplantation Network (OPTN) would build upon

[1] Based on OPTN Data as of May 9, 2008.

[2] Delmonico FL, Morrissey PE, Lipkowitz GS, Stoff JS, Himmelfarb J, Harmon W, Paviakis M, May H, Goguen J, Luskin R, Milford E, Basadonna G, Chobanian M, Bouthot B, Lorber M, Rohrer RJ. Donor Kidney Exchanges: American Journal of Transplantation 2004; 4: 1628-1634.

[3] Segev DL, Gentry SE, Warren DS, Reeb B, Montgomery RA. Kidney Paired Donation and Optimizing the Use of Live Donor Organs: (Reprinted) JAMA 2005; Vol. 293, No. 15: 1883-1890.

infrastructure already in place for collecting the data and developing and operating the systems needed for performing donor-to-candidate matches. Additionally, the KPD Program would have access to incompatible living donor-candidate pairs on a national scale. Although it is difficult to predict the number of additional kidney transplants that would occur under such a system, numbers of 1,000 to 2,000 transplants per year have been suggested.[4]

The OPTN/UNOS Kidney Transplantation Committee conducted a review of the elements required for establishing a national KPD program. Following this review in the summer of 2004, the Committee requested public comment regarding the concept of a national KPD program developed and administered through the OPTN. Of the 46 individuals who commented on the proposal, 100% supported the proposal and 0% opposed the proposal. Of the 8 Regions that met in time for their input to be considered by the Committee, all 8 Regions supported the proposal with minimal or no opposition. A copy of the proposal briefing paper summarizing the proposal and all comments received is attached as Appendix A.[5] At its November 18-19, 2004, meeting, the Board of Directors voted to endorse the concept of the establishment and administration of a National Living Kidney Paired Donation (KPD) Program through the OPTN with the understanding that the details of the program will be developed over time.

Subsequently, concerns have been discussed regarding potential conflict of the practice of KPD with prohibitions in the National Organ Transplant Act (NOTA) of 1984, as amended, against the transfer of organs for use in human transplantation for valuable consideration.[6] Continued work on the KPD program was deferred for a time pending resolution of these concerns. On November 17-18, 2005, the Board of Directors approved the following resolutions:[7]

RESOLVED, that the terms "kidney paired donations" and "list paired donations," are hereby adopted for use in OPTN/UNOS matters. Existing Bylaw and Policy references shall be amended to conform to these terms, effective November 18, 2005.

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[4] Zenios SA, Woodle ES, Ross LF. Primum non nocere: avoiding harm to vulnerable wait list candidates in an indirect kidney exchange. Transplantation 2001; 72(4):648-654; Gentry SE, Segev, Montgomery RA. A Comparison of Populations Served by Kidney Paired Donation and List Paired Donation. American Journal of Transplantation 2005; 5:1914-1921.

[5] In reviewing the briefing paper in Appendix A, please note that it includes information as of the time it was written (i.e., 2004), some of which may have subsequently changed.

[6] A position statement written by UNOS legal counsel, explaining why NOTA § 301 is legally and historically inapplicable to today's living donation arrangements, can be found at: http://www.unos.org/ContentDocuments/Section_301(NOTA).pdf.

[7] These resolutions were modified by the OPTN/UNOS Board of Directors on June 29-30, 2006, to better reflect accepted terminology. The final resolutions are set forth below:

> RESOLVED, that the terms "kidney paired donations" and "kidney list donations," are hereby adopted for use in OPTN/UNOS matters. Existing Bylaw and Policy references shall be amended to conform to these terms, effective June 30, 2006. "Kidney list donations" and "list paired donations" are synonymous terms and may be used interchangeably.
>
> FURTHER RESOLVED, that the Department of Health and Human Services be requested to assist the OPTN in federal legislative efforts to amend NOTA to specifically endorse kidney paired donation and kidney list donation, and also to seek supportive language in the Report of Conferees to accompany the 2007 HHS Appropriation, and other appropriate legislative vehicles, as appropriate.

FURTHER RESOLVED, that the Department of Health and Human Services be requested to assist the OPTN in federal legislative efforts to amend NOTA to specifically endorse kidney paired donation and list paired donation, and also to seek supportive language in the Report of Conferees to accompany the 2006 HHS Appropriation, and other appropriate legislative vehicles, as appropriate.

In January 2006, the Kidney Transplantation Committee resumed work on the KPD program initiative by reconstituting a Work Group, with individuals from all segments of the country and with diverse experience using KPD. The Work Group developed a KPD proposal that set forth fundamental elements for operation of a national KPD program. These elements include:

- How donor/candidate pairs will be matched.
- How donor/candidate pairs will be selected when multiple combinations are possible.
- How sensitized candidates will be identified and matched to avoid incompatible matches.
- What data will be required for submission to the program.

This proposal was approved by the Kidney Transplantation Committee during the Committee's meeting on May 15, 2006, with several issues clarified following the meeting using electronic mail discussion, for distribution for public comment and subsequent reconsideration by the Committee. This proposal was again distributed for public comment in August 2006. The proposal as circulated for public comment is attached as Appendix B.

Because there was some ambiguity as to whether kidney paired donation constituted "valuable consideration" under NOTA, the OPTN could not approve or implement a national kidney paired donation system in 2006. On December 6, 2007, Congress passed H.R. 710, the Charlie W. Norwood Living Organ Donation Act, which amended NOTA to state that kidney paired donation did not constitute valuable consideration. President George W. Bush signed this bill into law on December 21, 2007. Therefore, the OPTN/UNOS Kidney Transplantation Committee is moving forward with this proposal to establish a national kidney paired donation system. A copy of the Charlie W. Norwood Living Organ Donation Act is attached as Appendix C.

In the time since the 2006 KPD proposal was sent out for public comment, advances have been made in the field of kidney paired donation. In October 2007, UNOS, as the OPTN contractor, sent out a request for information (RFI) on kidney paired donation. This RFI asked for information on software systems used to facilitate matching of potential kidney recipient and donor pairs. Nine groups responded, and they all gave presentations to UNOS Staff, OPTN leadership, and EDS consultants on February 4, 2008. The Kidney Transplantation Committee made several revisions to the 2006 KPD Proposal based on the recommendations from these presentations. These revisions are listed below and outlined further in the "Pilot Program Details" section of this document.

After Congress passed the Charlie W. Norwood Living Donation Act in December 2007, the Executive Committee voted that the Kidney Transplantation Committee should forward a KPD proposal to the Board in June 2008. The Executive Committee also directed the Kidney Transplantation Committee to include 3-way exchanges in the program from the beginning. On March 12th, 2008, the Kidney Transplantation Committee made voted to send the proposal that went out for public comment in 2006 to the Board with the following minor revisions:

- Centers may use distance willing to travel and other donor and candidate choices to eliminate potential matches
- Both 2-way and 3-way exchanges will be included in the initial pilot program.

The Kidney Transplantation Committee has decided to begin with a pilot program so the OPTN can gain experience in kidney paired donation. By having a pilot program, the Kidney Transplantation Committee will be able to gather the information necessary to create a solid evidence-base for national policy. The pilot program structure will give the Kidney Transplantation Committee and the OPTN the necessary flexibility to correct inefficiencies in the system, test new priorities, and clarify program requirements. There will be regular conference calls between transplant center participants, UNOS staff, and Kidney Transplantation Committee members to discuss the operations of the system and make recommendations for improvement of the pilot program.

A list of all the individuals who have worked on this kidney paired donation proposal through participation in the Kidney Paired Donation Work Group, its subcommittees, or by responding to the RFI is attached as Appendix D. This collaboration has permitted the Kidney Transplantation Committee to benefit from the substantial work accomplished in developing KPD protocols across the U.S., as well as lessons learned through these efforts. It also has prompted important dialogue and sharing of ideas. The Kidney Transplantation Committee very much appreciates the time and input contributed by all these individuals.

Pilot Program Details:

A. <u>Mathematics of Pilot Program and Basis for Matching Donor/Candidate Pairs</u> A subgroup of the KPD Work Group evaluated the possible options for determining how donor and candidate pairs would be matched for receipt of kidney offers. Once incompatibility between a living donor and his/her intended candidate is established, the donor/candidate pair may be entered into the pilot program by the transplant center. Assuming multiple such pairs are entered, there may be more than two pairs whose donors are compatible with the pairs' candidates. The system must be programmed to find and select among suitable pairs. It is possible, for example, for the program to search the list of eligible pairs and simply match the first two pairs it finds who are compatible. This method provides a single possible pairing. It may not be the best solution or pairing for the two sets of donors and candidates directly involved or for the system as a whole. This occurs, for example, because the first pairs matched would be removed from the system and transplantation of the candidates arranged. They could no longer be considered for other possible pairing opportunities that might have provided better matches in terms of the pilot program's objectives. These objectives may focus upon quantitative measures, such as number of matches produced, and qualitative measures, such as greater matching opportunity for candidates whose access to kidney transplantation is limited due to biologic factors. As an example, assume that a donor/candidate pair includes a blood group O donor. Searching for the first two compatible pairs may quickly find a match, but there may be other match combinations that would result in a greater number of transplant opportunities overall. System objectives are discussed further in Section B below.

An optimization protocol looks at every possible matching (or set of matches) from the list of potential donor/candidate pairs, compares the possible matchings using predetermined weights based on any objectives established for the pilot program, and selects the matching with the greatest number of points. The computer program would assign scores for matched pairs based upon any priorities selected, total scores for each possible matching, and select the combination of matches that produces the highest score. The optimized protocol has been demonstrated to maximize the number of pairs who can be transplanted for any given set of logistical and quality priorities selected.[3] It is the protocol recommended by the subgroup and is further described in the attached consensus statement (Appendix E).

Two-Way Matching vs. Three-Way Matching The consensus statement discusses the possibility of matches involving three pairs, as well as, two pairs. Both are mathematically possible. Matches utilizing both two and three way pairing would mathematically result in a greater number of potential transplants. In practice, however, logistic and other complexities (e.g., positive crossmatch, donor or candidate illness) that can prevent the matched pairs from progressing to transplantation can be further complicated by adding a third pair. The number of transplants actually performed with three-way matching could be far less than the mathematical potential since failure of one of the pairs to complete the transplant can result in lack of successful transplantation for all three (versus two) pairs in the match. The 2006 KPD public comment proposal stated that the program would only use two-way matching initially, with two- and three-way matching as the goal of the system in the future. However, between June 2006 and the present, the option for three-way matching has become common in many existing kidney paired donation programs. Based on the presentations on February 4th, it was apparent that many kidney paired donation systems currently incorporate altruistic donors and donor chains and that these systems would look for the inclusion of these features in a national system. There are two types of donor chains: closed chain and open chain. A "closed-chain" is simply an "n-way" matching if it involves only living donor pairs and is completed or "closed" during the same match cycle. A simple 2-pair exchange is classified as a 2-pair closed chain. Likewise, a 3-way paired exchange could be termed a 3-way closed chain. If the exchange is started from a non-directed donor kidney (often called an "altruistic" living donor; a living donor donating their kidney to any needy candidate or potentially a deceased donor graft), the last recipient will have a living donor(s) who has not donated during the match cycle - termed the "Bridge Donor(s)". This Bridge Donor can either donate to the deceased donor list and close the chain (a form of List-Exchange), or can be used to start the next chain in a subsequent match cycle (open-chain). If the system attempts to keep chains "open" as long as possible, the term "Never-Ending Kidney Donation" has been used. In order to keep these open chains going, programs have used strategies such as only using a recipient to end a cycle chain who has more than one potential living bridge donor as it is less likely that one of two or more potential living donors will be unable to donate in the future. Programs may also prefer for the bridge donor(s) to be a person with a favorable blood type for donation, such as Type O or A.

A closed chain system could be theoretically started with a donation from the deceased donor pool in a given region, then the final living donation could go back to that same deceased donor candidate pool so there is no penalty to the deceased donor candidates, while providing a significant gain to the living recipients, as well as a decrease in the number of wait list candidates due to the successful living donations.

Therefore, the Executive Committee asked that the national KPD Pilot Program include the option for three-way matching. In the proposed system, two-way matching will be the default for transplant centers, so that centers may avoid the logistical complexities associated with three-way matching. However, any center may choose to allow three-way matching for its candidates. Providing maximum flexibility and choices to the transplant centers, candidates, and potential living donors would encourage participation throughout the country, thus leading to greater probabilities of finding potential living donors for candidates.

Because the donor chain feature was not included in the 2006 Kidney Paired Donation Proposal that went out for public comment, the donor chain concept will be sent out for public comment separately and then sent to the Board for approval.

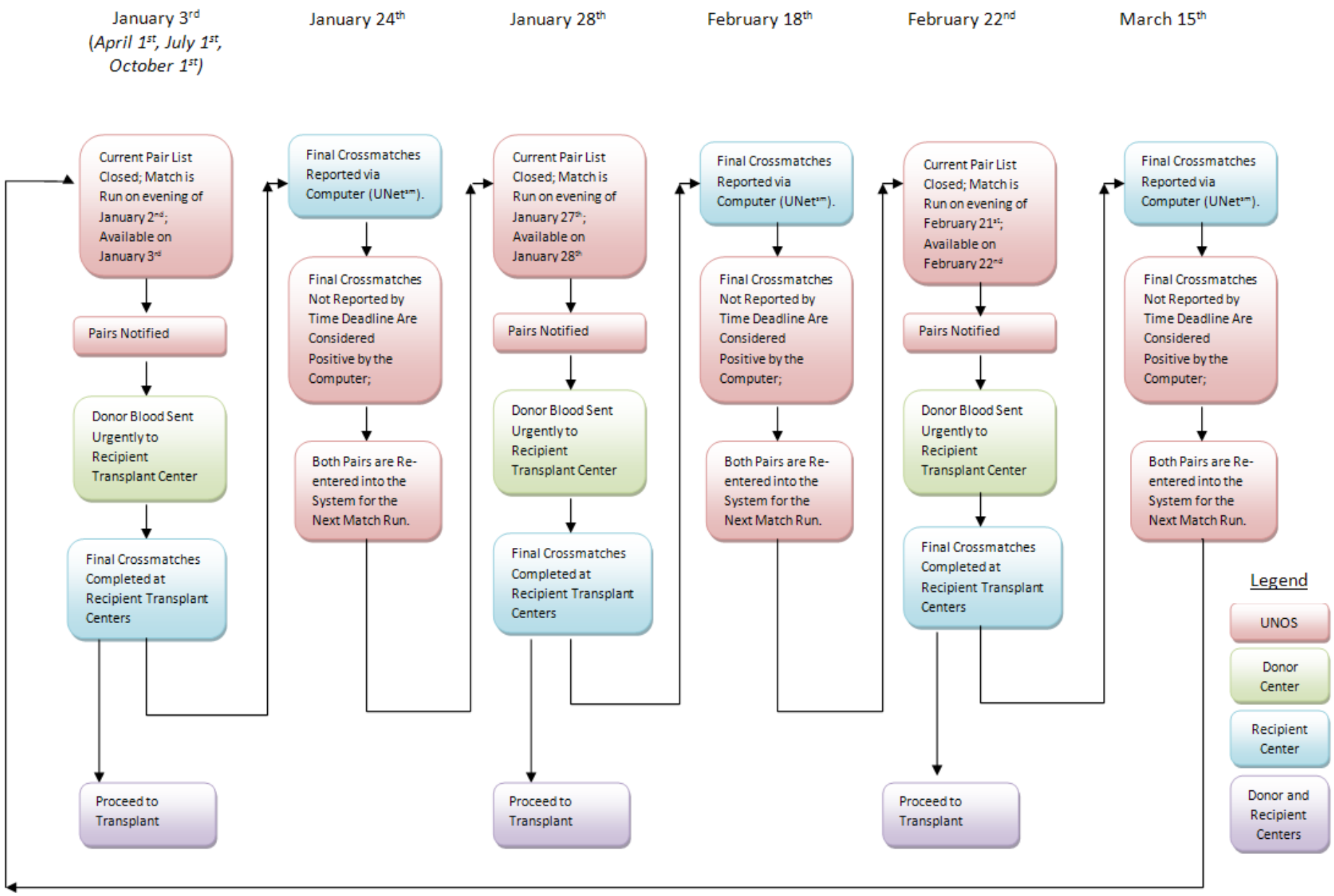
Match Cycle Theoretically, the system could be programmed to run a match as soon as multiple donor/candidate pairs are entered and each time a new pair is entered. This method may help to assure that any particular candidate does not miss an opportunity for a transplant considered "ideal" for the candidate (e.g., a candidate whose immune system will reject kidneys from the vast majority of donors (highly sensitized) matched with living donor in close geographic proximity). However, it would be very resource intensive in terms of system administration. Moreover, it would not permit sufficient time to accumulate enough pairs in the system to enable optimized, i.e., the best, matching for the pool of candidates overall. Studies to date show that matches based upon a list of 100 – 250 pairs do enable such optimization (Appendix E). Matches that include more pairs result in a greater proportion of pairs receiving a match and a greater ability to match more highly sensitized candidates.

It also would be possible to run a match for a group listed pairs only once with large time periods in between match cycles. This method would be frustrating for participants because a match may not progress to transplantation due to an unanticipated positive crossmatch or some temporary impediment to transplantation. Making the particular pairs wait for another potential match until the next run cycle could be a disincentive to remaining in the program. As an alternative, the Work Group discussed and approved the following computer match cycle, using a quarterly time frame as an approximation of when the optimal number of pairs would have entered the program. The schedule would include four cycles each year, with three match runs per cycle. This timeline allows almost all possible matches to be identified for the pool of donors/candidate pairs participating in the cycle, as demonstrated in the attached simulations (Appendix F). For example, in the first simulation, which assumes a false negative crossmatch rate of 20% for candidates defined as highly sensitized and 250 donor/candidate pairs entered into the system, the first three runs are expected to result in approximately 115 transplant opportunities identified, with at most only one expected additional transplant opportunity identified as a result of two subsequent runs. A similar simulation not included in Appendix F, which assumes a very large number of pairs entered into the system (i.e., 1,000), indicates comparable results with approximately 590 transplants identified after three runs and, again, up to one expected additional transplant opportunity identified following two subsequent runs.

Once the pair list is closed for each quarterly cycle, any new pairs who enroll in the pilot program will be included in the next match cycle. Therefore, the same pool of donor-candidate pairs are considered for each match run throughout a cycle.

There was considerable discussion regarding the time frame for reporting final crossmatch information to the computer matching algorithm (UNet^{sm}). Allowing a relatively short period of 10 – 21 days improves efficiency of the system by permitting a full three match runs per match cycle. In the event the deadline is missed, the crossmatch will be considered positive but the pairs will be returned to the system for a subsequent run in the same match cycle. It does not prevent later transplant opportunities. Moreover, as discussed further in Section C below, the pilot program will require that candidate unacceptable antigens be listed using sensitive testing techniques to permit calculation of probability of positive crossmatch. While the calculations will not be 100% accurate, they are expected to be approximately 80% accurate, which should reduce the number of unanticipated final positive crossmatches substantially. Twenty-one days was selected acknowledging that, in addition to sharing crossmatch information, this period will be used to share other information regarding the matched living donors that will determine acceptability for proceeding to donation and transplantation. Such information should be readily available and easily conveyed as described further in Section D. A period of 21 days would allow a reasonable time to enable necessary communications. Several days are provided between match runs to facilitate system administration.

KPD Match Cycle



B. Prioritization The optimization protocol for matching donor/candidate pairs maximizes the quantity and/or quality of potential transplants according to the priorities assigned. For example, it is possible to assign priority only for the highest number (i.e., quantity) of matches (potential transplants) that can be accomplished. This priority could allow greatest flexibility to the transplant centers and candidates to determine for themselves acceptability of the pairing. Particularly with the larger pool of donors and candidates expected in a national KPD Pilot Program, there would be multiple combinations of matches that would meet this objective. Some mechanism for choosing among these combinations of potential matches is needed. Whereas a local program with relatively few donor/candidate pairs may be able to perform this function using a medical review group or similar entity, basing their decisions upon collective medical judgment, this practice would not be feasible on a national level. Instead, an automated, objective solution is needed.

Additionally, the likelihood of accepting identified matches will be important as donors, candidates, and transplant programs decide whether to enroll and remain in the pilot program. Matched pairs who do not proceed to transplantation may be returned to the pool for subsequent matching opportunities. If this happens frequently, it could be frustrating, and interest in the pilot program could be jeopardized.

Use of donor and candidate preferences should increase efficiency of the system by eliminating possible matches based upon factors the donors, candidates, and transplant have considered in advance to be unacceptable to them. These choices include distance willing to travel for both donors and candidates and donor age acceptable to candidates. The 2006 KPD proposal stated that donor and candidate preferences would not be used to limit matches in the initial phase of the KPD Pilot Program. However, existing KPD systems have indicated that such flexibility is necessary to increase participation and to improve system efficiency. Therefore, on March 12, 2008, the Kidney Transplantation Committee voted to use donor and candidate preferences to screen out possible matches in the initial match runs of the KPD system. This information would be collected at the time of entering the donor/candidate pair into the pilot program and is further described in Section D.

The Work Group considered several other factors that may be appropriate in prioritizing among combinations of potential matches. In each case, they are factors included based upon expected improvement of the graft following transplant and/or issues of access to transplantation due to candidate biologic or other reasons. They include the following:

- Zero antigen mismatch between donor and candidate: 200 points
- Highly sensitized(e.g., probability of positive crossmatch≥80%)candidate: 125 points
- Prior living donor status of candidate: 150 points
- Pediatric (i.e., age < 18 years) candidate: 100 points
- Waiting time accumulated within the KPD Pilot Program: 50 points per cycle
- Geographic proximity (i.e., transplant center, local, regional): 75, 50, 25 points

Further discussion on how the Kidney Transplantation Committee decided upon these weights can be found in the Supporting Evidence and Modeling section of this proposal. Opportunities to incorporate additional parameters and expected benefit to be derived would be explored as experience with the pilot program is gained.

There was considerable discussion that benefit to the candidate in terms of improved kidney graft survival is apparent now based upon donor age and degree of HLA similarity between the potential

donor and recipient. Others suggested that these findings have not yet been demonstrated for living donor transplantation through objective data. This opinion was supported by a preliminary study evaluated by the Kidney Transplantation Committee during the initial phase of the Committee's work on this program (Appendix G), and is confirmed by later studies. Moreover, the system will allow candidates to select acceptable age ranges based upon the experience and advice of their physicians. Particularly in the absence of available evidence to support restrictions in this regard, this approach appears to be the better option. The highest level of match between donor and candidate(i.e., zero antigen mismatch) was included based upon the consensus of opinion that a transplant with a zero antigen mismatched kidney, whether from a living or deceased donor, continues to be valued and improves opportunities for matching for sensitized candidates.

C. Histocompatibility Requirements A successful strategy for identifying sensitized candidates and instituting safeguards to match candidates with compatible donors is important to protect patient safety and promote system efficiency. Work Group participants noted the challenge that ensuring compatibility presents, even with locally and regionally based programs. Rapid determination of final crossmatch results, as well as predictability and accuracy of these results is required for donor/candidate pairs to remain interested in the pilot program, for matches to proceed to transplantation, and for the public to trust the system.

In December 2006, the Board passed a proposal sponsored by the Histocompatibility and Kidney Transplantation Committees to replace the measure of sensitization level from panel reactive antibody (PRA) to calculated panel reactive antibody (CPRA).[8] CPRA is the calculated frequency of donors having one or more HLA antigens that would be considered as incompatible or contraindicated for a given transplant candidate. The criteria for listing unacceptable antigens will be determined by each transplant center and should include all antigens that would be considered a contraindication to transplantation as defined by the presence of HLA specific antibodies and/or by other criteria in accordance with the transplant center's protocols. The proposal included the following elements:

- Required entry into the computer matching algorithm (UNet^{sm}) of all candidate unacceptable antigens
- Calculated probability of positive crossmatch (i.e., incompatible donors) based upon frequency of the general population with unacceptable antigens, replacing PRA as method to determine level of candidate sensitization
- Required antibody identification using solid phase immunoassays

In the pilot program, centers will have the opportunity to enter undesirable antigens as well as unacceptable antigens. Undesirable antigens are antigens that the center would prefer for a donor not to have, but the center would not rule out a donor completely based on these antigens. A candidate will not match with a donor who has the candidate's unacceptable antigens. A candidate can match with a donor who has the candidate's undesirable antigens. However, a match with a donor who has none of the candidate's undesirable antigens will be favored over a match with a donor who has the candidate's undesirable antigens. It will be up to the transplant center to decide which antigens should be listed as unacceptable and as undesirable. The Kidney Transplantation Committee will work with the Histocompatibility Committee to provide further education on this topic.

As noted in Section D, candidates in the pool will not even be considered for matches with donors who have unacceptable antigens. Better characterization of HLA specific antibodies using solid phase testing

[8] For a detailed description of the CPRA policy, please review: Explanation of CPRA for Professionals, located at http://www.unos.org/SharedContentDocuments/CPRA_Professionals.pdf

should result in providing improved information about expectations for the final crossmatch than PRA alone, making this an effective screening tool. There will continue to be some error with the new system. Therefore, timely and accurate crossmatches continue to be fundamentally important. As an additional protection, therefore, the KPD Pilot Program will require that both the preliminary and final crossmatch be performed at the intended recipient transplant center's histocompatibility laboratory. Thus, the techniques and sensitivity of the test procedures meet the transplanting center's criteria. A review body also will be established to monitor and evaluate the incidence of unexpected positive crossmatches and to make recommendations for system improvements based upon their findings.

CPRA will replace PRA in 2009 and will be incorporated into the KPD Pilot Program. The improved system notwithstanding, it is recognized that the occurrence of unexpected positive crossmatches in the KPD Pilot Program may present different risks and challenges to ensuring patient safety and system efficiency than in the deceased donor system. The Histocompatibility Committee estimates that highly sensitized candidates will have an approximately 20% incidence of an unexpected positive crossmatch despite the rigorous definition of unacceptable antigens by solid phase techniques. Some centers claim this unexpected positive crossmatch rate may be up to twice as high. The KPD Pilot Program, unlike the deceased donor system, is an opt-in program. Candidate access to living donor kidneys is not limited to the national system. It is possible, therefore, that additional requirements for reporting and updating candidate antibody specificity, for example, may be considered for incorporation into the pilot program.

D. <u>Requirements for Participation</u>

- The transplant center must be approved by UNOS to perform living donor kidney transplants
- Candidate must be registered on the deceased donor waiting list
- The transplant center must have a designated contact for kidney paired donation
- The transplant center must agree to all rules associated with the KPD Pilot Program

Supporting Evidence and/or Modeling:

Simulations have been run to approximate results from the KPD Pilot Program assuming various priority assignments using the factors noted above and projecting numbers of donor/candidate pairs in the match run ranging from 50 to 350. The simulated patients were estimated from the OPTN/UNOS 2003 Wait List and other sources (Figure 1).

	% of all	Source of Data
Pediatric	3.07%	UNOS WL Additions 2003
Prior Living Donor	0.052%	UNOS WL Additions 2003
Center	Of 242 centers	UNOS WL Additions 2003
Race **Caucasian** **African-American** **Hispanic**	(exclude other) 52.55% 30.45% 17.00%	UNOS WL Additions 2003
Blood Group	Genotype frequencies, by race	Zenios et al. Transplantation, 72, 648-654, 2001.
PRA Range **0-9** **9-80** **80-100**	 71.31% 18.66% 10.02%	UNOS WL Additions 2003
HLA-A, -B, -DR	By race	Leffel et al. Transplantation, 58, 1119-1130, 1994.
Predicted Positive Crossmatch Rate **PRA 0-9** **PRA 9-80** **PRA 80-100**	 5% 45% 90%	Assumed from definition of PRA, no data available

Figure 1. Data Sources for Simulation Models

In the simulation models, the probability of positive crossmatch is assumed to be: 90% for high PRA candidates, 45% for mid-level PRA candidates, and 5% for low PRA candidates. These assumptions are consistent with those reported in the peer-reviewed literature. Blood groups for the recipients and donors in the simulated pool were chosen by a decision tree model that incorporates both genetic inheritance of these traits within families (who are likely donors to a given recipient) and the blood-group-linked probability of having an incompatible donor. It takes into account the fact that mothers are often sensitized against their children and spouses.[9]

Outputs from the simulations are attached as Appendix H and summarized below for several simulations. In this simulation model, each transplant equals 200 points plus any priority points assigned to a candidate (e.g., pediatric, sensitized, prior living donor), or to the match (zero mismatch, geographic proximity).

[9] The decision tree model is fully described in Gentry SE, Segev DL, Montgomery RA. A comparison of populations served by kidney paired donation and list paired donation. Am J Transplant. 2005 Aug;5(8):1914-21.

	100 Pairs in Match Run						350 Pairs in Match Run					
Average % Candidates Receiving TXs	33.4%		33.4%		32.4%		43.4%		43.3%		42.2%	
	Priority	% TXed	Priority	% TXed	Priority	% TXed	Priority	% TXed	Priority	% TXed	Priority	% TXed
Pediatric Priority*	0	34.2%	100	52.4%	500	52.7%	0	41.3%	100	66.9%	500	68.7%
Prior Living Donor Priority*	0	50%	150	80%	1000	80%	0	55.6%	150	77.8%	1000	77.8%
Sensitized Priority*	0	6.3%	125	7.7%	1000	8%	0	17.6%	125	21.5%	1000	22.3%
Same Center Priority†	0	0.6%	75	4.5%	500	5.3%	0	1%	75	8.1%	500	9.9%
Same State Priority†	0	4.8%	50	13.5%	100	14.9%	0	4.7%	50	19.6%	100	18.4%
Same Region Priority†	0	5.1%	25	13.7%	50	13.8%	0	5.4%	25	13.3%	50	13.1%
Zero Antigen MM Priority*	0	0.0%	200	0.0%	1000	0.062%	0	0.13%	200	0.152%	1000	0.162%

* “0/34.2” is 0 priority points results in 34.2% of the simulated number of pediatric candidates being matched in this run.

† For geographic locations, 0/0.6% translates to: with 0 priority points, 0.6% of the donors can stay at the same center as the candidate (if they have elected that they would travel if necessary). The larger areas do not include the smaller areas, so the total percentage of donors who would not need to travel beyond their region (even if they agree to travel as far as necessary), would be the summation of the “same center + same state + same region”.

	350 Pairs in Match Run									
Average % Candidates Receiving TXs	43.2%		43.2%		43.1%		41.1%		42.2%	
	Priority	% TXed	Priority	% TXed	Priority	% TXed	Priority	% TXed	Priority	% TXed
Pediatric Priority*	0	42.0%	25	54.8%	100	65.2%	100	52.8%	500	66.9%
Prior Living Donor Priority*	0	50.0%	50	50.0%	150	61.1%	150	44.4%	1000	61.1%
Sensitized Priority*	0	17.9%	50	18.5%	125	21.8%	125	16.3%	1000	22.6%
Same Center Priority†	0	1%	50	8.3%	75	8.6%	200	9.3%	500	9.9%
Same State Priority†	0	5.3%	40	21.6%	50	18.8%	175	25.9%	100	17.9%
Same Region Priority†	0	5.9%	30	17.7%	25	14.3%	150	21.7%	50	14.1%
Zero Antigen MM Priority*	0	0.026%	50	0.046%	200	0.159%	200	0.049%	1000	0.149%

Modifying the priorities does allow the opportunity for a greater number of transplants for those assigned priority while only minimally impacting the total number of expected transplants. *The larger impact upon the total number of expected transplants results from the number of pairs in the match run, with a greater number of pairs contributing to a greater overall percentage of pairs matched and an expected increase in transplants for most priority assignments.* After an initial evaluation of the simulations shown above, the following priority points are suggested to start the KPD Pilot Program with further adjustment of points to be recommended by the Kidney Transplantation Committee based upon continual evaluation of the KPD Pilot Program.

Additional Priority Points based on 200 points for transplant pair match:

- Zero antigen mismatch between donor and candidate: 200 points*
- Highly sensitized(e.g., probability of positive crossmatch≥80%)candidate: 125 points
- Prior living donor status of candidate: 150 points
- Pediatric (i.e., age < 18 years) candidate: 100 points
- Waiting time accumulated within the KPD Pilot Program: 50 points per cycle
- Geographic proximity (i.e., transplant center, local, regional): 75, 50, 25 points

* Discussions following the meeting of and recommendations from the Kidney Transplantation Committee have indicated concern regarding including zero antigen mismatch as a priority in the system. This concern is due to lack of data supporting any significant impact upon transplant outcomes based upon this factor. The simulations show few matches or transplants would be modified by including even a relatively high priority value for this variable. Therefore, neither including nor removing it as a priority should alter results substantially.

Expected Impact on Program Goals, Strategic Plan, and Adherence to OPTN Final Rule:

This proposal addresses the first challenge of the strategic plan to increase donors and transplants. Kidney paired donation allows multiple transplants to occur when living donor transplant opportunities would otherwise be lost. This proposal also offers greater safety for living donors because the system will be under OPTN guidance. Therefore, the OPTN, the Kidney Transplantation Committee, and the Living Donor Committee can continually monitor the pilot program for living donor safety and recommend appropriate care for living donors in the pilot program.

Plan for Evaluating the Proposal:

- **What questions/hypotheses are guiding the evaluation of the proposal?**
  - How many centers are participating in the system?
  - How many pairs are registered in the system?
  - How many matches are made through the system?
  - How many matches made through the system proceed to transplant?
  - What are the characteristics of potential candidates and potential donors?
  - What are the characteristics of actual candidates and actual donors?
  - What are the characteristics of matched pairs that do not proceed to transplant?
  - What are the patient and graft survival outcomes for the transplants facilitated through the system?

- **Pilot Program Performance Measures:**

Once experience with the KPD Pilot Program yields information sufficient to begin assessment of performance, the following measures will be evaluated to determine if the system is achieving its objective of increasing transplant opportunities for kidney candidates:

- Number of living donors and candidates registered in the KPD Pilot Program
- Number of centers participating in the KPD Pilot Program
- Number of match cycles run
- Number of transplants facilitated by the KPD Pilot Program overall
- Number of transplants, by candidate ABO, candidate calculated panel reactive antibody (CPRA) level, by candidate age, and by candidate diagnosis
- Percent of matched pairs that proceed to transplant
- Percent of matched pairs that have crossmatch results within the specified timeframe
- Number of matched pairs that refuse the match before a crossmatch is run and associated refusal reasons
- Patient and graft survival rates, rates of delayed graft function (not as a primary end point, but to evaluate impacts from the system overall)
- Living donor outcomes
- Number of match cycles that have been performed since any changes to the Operating Guidelines have been made (measure of stability)

- **Time Line for Evaluation**

As soon as sufficient time has passed after implementation of the pilot program, the Kidney Transplantation Committee will evaluate the program every 6 months for the first three years of the pilot program and recommend appropriate adjustments to the system. The Kidney Transplantation

Committee will share data on the KPD system with the Living Donor Committee and the Patient Affairs Committee.

In its evaluation, the Kidney Transplantation Committee will consider when it is reasonable to write policy language for the national KPD system. The Kidney Transplantation Committee will take into account both the stability of the pilot program and pilot program performance measures described above. The stability of the pilot program can be assessed by investigating the number of match cycles that have been performed since any changes to the Operating Guidelines have been made and by the percent of transplant centers that are able to complete all the requirements for the KPD match within the specified timeframe. After three match cycles have been run, the Kidney Committee will re-evaluate how it will measure whether the pilot program has met its objectives and when it is appropriate to transition from a pilot program to a national program with policy language. More information on the implementation of this program can be found in the Expected Implementation Plan section.

Additional Data Collection:

Data Submission Requirements One of the benefits of implementing a national KPD Pilot Program through the OPTN is the comprehensive system for candidate and deceased donor kidney registration and allocation already in place. Information from living donors also is currently collected. The UNet^{sm} system has the additional capability to accept digital radiology tests including chest films, CT scans, MR scans, Ultrasounds/ Echocardiograms, ECGs, and Arteriograms. Any information that can be digitalized can be accepted into this system. This feature will allow centers to view all necessary living donor tests performed at another institution online. The intent is to build upon this existing infrastructure, incorporating into the KPD Pilot Program relevant data from the candidate, as well as deceased and living donor registration forms and adding new data elements only as necessary. For candidates enrolled in the KPD Pilot Program it is expected that candidate listing information will automatically be transferred into the pilot program from their registration on the deceased donor waiting list.

Living Donor Registration A subcommittee of the Work Group convened to consider KPD program data submission felt strongly that potential living donors should be thoroughly evaluated by the listing centers of their intended recipients to increase the chances that the living donor would be considered medically suitable for donation by a majority of donor surgeons in the KPD Pilot Program. At the same time, consideration was given to limiting requirements where appropriate, allowing for more extensive testing by the recipient transplant center if such testing is considered necessary. This plan accomplishes a balance between initial outlay of costs for living donor evaluation and increased likelihood of acceptance of organ offers by matched pairs. The proposed potential living donor evaluation will include at least the following professional consultations at the listing center or another transplant center that performs living kidney donation:

- nephrologist,
- transplant or donor nephrectomy local surgeon, and
- psychosocial (social worker or psychologist).

The medical evaluation will consist of at least:

- History and physical examination;
- Blood and urine testing; estimation of creatinine clearance (with methods);
- Tissue typing;
- A duplex Ultrasound of both native kidneys documenting size (length and width), presence of cysts and/or other abnormalities (e.g., masses, stones, multiple renal vessels if seen); and

- Age appropriate cancer screening (e.g., PSA for males, Pap Smear and Mammography for females, colonoscopy as appropriate for both genders).

In general, the living donor should be appropriate for kidney donation at the listing center pending the results of the final kidney imaging test per nephrectomy surgeon preference. This test may be performed at the listing center if the listing center desires, or may be completed after preliminary acceptance of the donor by the recipient center. Transplant centers will be required to use consent process outlined in "The Resource Document for Informed Consent of Living Donors." This resource document was developed by the Living Donor Committee and approved by the Executive Committee on December 18, 2007. A copy of this resource document is attached as Appendix I. Once the Living Donor Committee's recommendations for the medical and psychosocial evaluation of living donors is finalized and approved by the Board, these recommendations will be incorporated into the KPD system. The Kidney Transplantation Committee will continue to work with the Living Donor Committee to update these requirements as appropriate.

The Living Donor Registration form already contains necessary demographics and operative/post-operative information including type of operation, complications, blood pressure, and inpatient length of stay. The UNOS identification number of the "Intended Recipient" and the actual recipient will be added to the final version of this form. The Deceased Donor Registration Form has similar demographics that would not need to be developed in duplicate as UNet[sm] can electronically transfer similar data points between any forms in the system. This form has data entry available for most of the necessary information for the potential living donor including:

- **Clinical Information** such as necessary basic lab data (serum creatinine, BUN, total bilirubin, AST, ALT, protein in urine (will need to quantify), and additional serologies
- **Donor History** including: substance use such as cigarettes, alcohol, other drugs; history of diabetes, hypertension, cancer; and lifestyle factors
- **Digital Images and Videos** that may be downloaded into DonorNet® for review at any other transplant center
- **Organ Recovery** details to document recovery date and time and anatomy of kidney.

UNet[sm] will contain the required data fields for the necessary living donor histocompatibility testing (with DP added).

New data fields that will be required to be added to UNet[sm] are described further in Appendix J. New questions for the potential living donor to answer at time of registration in the pilot program will include those listed below. The following potential living donor and candidate choices will be listed and used for the generation of the potential exchanges. In addition, the program will generate a "potential exchange" informational run to show both potential living donors and candidates if they would have had more exchange opportunities if their choices were changed (i.e., made more liberal).

1. Travel. Donor will travel to other hospital for nephrectomy operation and recovery. The donor is willing to travel: <50 miles, <500 miles, <1000 miles, and "any distance." In addition, the donor may select the following in addition to the above choice: "donor will travel further but does not have funds."
2. Donor Health Insurance: The donor will state whether he/she has his/her own current health insurance policy (not to cover the donation process, but for future insurability concerns): Yes or No

3. Donor will choose the location or locations the system will consider "local" to calculate distance the donor is willing to travel. This can be done by entering zip codes. The donor may enter one or two zip codes.
4. Donor is willing to be considered for open-chain donation where the donor may donate at a different time than their intended recipient: Y or N
5. All information updated at least every six months
6. If a person comes forward as a non-directed donor, that person can be entered into the system by a transplant center. That transplant center will be earmarked by the exchange algorithm to receive a kidney graft either during that cycle or in the future if the center agrees to an open chain option. This is due to the effort and expense necessary by that transplant center to evaluate the non-directed donor.

A full list of donor and candidate choices can be found in Appendix K.

Negative donor HIV, Hepatitis B Surface Antigen, and HCV status would be minimum requirements for entry of the living donor into the pilot program. Given that transplant programs have different acceptance criteria for living donors, it is recommend that donors included in the paired kidney donation pilot program be generally acceptable to all programs and be evaluated and considered for listing according to the report of the Amsterdam Consensus Conference on Live Kidney Donation (Delmonico F; Council of the Transplantation Society. A Report of the Amsterdam Forum On the Care of the Live Kidney Donor: Data and Medical Guidelines. Transplantation. 2005 Mar 27;79(6 Suppl):S53-66. Review.)

The Kidney Transplantation Committee recommends collecting the following donor information in an effort to protect living donor patient safety and to increase the number of matches that are accepted.

- Creatinine Clearance with method
- Urinary Protein excretion : Microalbumin or Total Protein
- Blood Pressure: static measurements or ambulatory measurement if necessary
- Hematuria screening: # RBC's/hpf

If the value of the data entered is outside the guidelines recommended in the Amsterdam Consensus Conference report, the transplant center will be required to enter an explanation for the value in UNet^{sm}.

Finally, several entries will be optional depending upon results from the donor evaluation. These may include:

- LV ejection fraction / method
- RV ejection fraction / method
- Cardiac evaluation with CO or CI
- Arterial Blood Gas values
- Kidney Biopsy, %GS

Candidate Registration Information entered into UNet^{sm} for candidates already listed for deceased donor transplantation will be transmitted to the KPD system automatically upon enrolling the candidate in this system. In addition, candidates will be asked to answer the following questions:

- Travel. Candidate will travel to other hospital for transplant operation and recovery. The candidate will cover the travel cost. The candidate is willing to travel: No, <50 miles, <500 miles, <1000 miles, and "any distance". In addition, the candidate may select the following in addition to the above choice: "candidate will travel further but does not have funds." It is

anticipated that the candidate will usually not choose to travel or travel only to centers at which they are multi-listed.

- Candidate Health Insurance: The candidate will state whether his/her current health insurance policy will cover some donor travel / lodging expenses and the details: Yes or No (free text box for Yes to enter details of coverage)
- Candidate will choose the location or locations the system will consider local to calculate distance the donor is willing to travel. This can be done by entering zip codes. The candidate may enter one or two zip codes. This implies the candidate is willing to be transplanted at more than one center, usually a center at which he/she is multi-listed.
- The candidate will enter the acceptable donor age: <25 years, <35 years, <45 years, <55 years, <65 years, any age
- Intended KPD Living Donor Number (s). A candidate may have up to two KPD living donors. This limit will be re-evaluated as experience with the pilot program is gained.
- Candidate is a prior living donor: Yes or No (if Yes, provide required information per current policy for deceased donor kidney allocation)
- Candidate will accept a shipped kidney: Yes or No or "Yes, but only if donor cannot travel": if Yes or "Yes, but only if donor cannot travel", then answer: acceptable travel time for shipped kidney is: <6 hours, <12 hours, $\geq$12 hours
- Candidate will accept a donor who is Hepatitis B Core Ab positive and Hep B Surface Antigen Negative. Yes or No
- Candidate is willing to be considered for open chain exchange (his/her donor may be required to donate at a later time). Yes or No
- Candidate is willing to be considered for a deceased donor kidney in exchange for their intended living donor graft. This is a type of List Exchange. Yes or No
- Has candidate started dialysis yet? Yes or No. If yes, date. If yes, Hemodialysis or Peritoneal Dialysis

These questions help to provide important data for donor/candidate pair matching. Other data fields will be modified as appropriate to address all parameters.

- ABO compatibility would be required – blood type B and O candidates would be permitted to choose whether to accept a living donor blood type A_2 (in the case of B and O candidates) or A_2B (in the case of B candidates) kidney[10]. Anti-A2 titers of the candidate will be required per current OPTN/UNOS policies.
    - Future iterations of the pilot program may consider options for ABO incompatible transplants
- Unacceptable antigens with respect to the donor's tissue typing
    - Stringent Criteria: Absolute Unacceptable antigens with split equivalents automatically determined

[10] The existing Committee-Sponsored Alternative System for allocating ABO A_2 & A_2B donor kidneys to ABO B candidates includes the following parameters. Candidate eligibility is determined by submission of required titer and other information, as well as no candidate with probability of positive crossmatch $\geq$ 80% who otherwise would have priority for the organ offer. Required information includes performance of at least two consecutive quarterly anti-A titers where all test results are low (IgG anti-A titer < 1:8) to determine initial eligibility, with anti-A titers performed at least every three months on each candidate thereafter. Potential candidates who have one or more test results, at any time, with a high titer (IgG anti-A titer 1:8 or higher) are excluded from eligibility. Testing is for IgG anti-A antibodies (without human antiglobulin enhancement).

    - Relaxed Criteria: Low level of alloantibody detected. This may result in a negative or positive crossmatch. The expected positive crossmatch rate will be higher if matched across these antigens.
    - Unacceptable antigen information updated at least every 3 months.
- Minimum donor creatinine clearance acceptable to candidate
- Donor blood pressure (SBP/MAP) acceptable to candidate
- Travel distance acceptable for both candidate and donor
- Donor body mass index (BMI) acceptable to candidate
- Donor CMV status acceptable to candidate
- Donor EBV status acceptable to candidate
- Donor history of cancer acceptable to candidate (excluding basal skin cancer)
- All information updated at least every six months

Allowing candidates to enroll in the pilot program with more than one potential living donor permits greater optimization in meeting both quantitative and qualitative objectives. The additional living donors provide more possible matching solutions based upon, for example, their blood type and HLA antigens. It raises issues with respect to payer limitations that are discussed below in Section F.

Expected Implementation Plan:

Phase 1:
UNOS staff and the Kidney Transplantation Committee will develop operating guidelines for the KPD Pilot Program that will clearly explain all the rules and protocols for the program. These operating guidelines will include at least:

- Requirements for participation
- Data entry requirements
- Crossmatching protocol
- Staffing recommendations/ primary transplant center contact
- Rules for when participants can meet
- Informed consent requirements
- Histocompatibility testing requirements
- Living donor evaluation recommendations
- Prioritization points
- Match cycle timeline
- Rules for the shipping of kidneys

Phase 2:
While the system is being programmed, transplant centers will be able to apply to participate in the pilot program of KPD. A sample application can be found in Appendix L. Centers that wish to participate must have approval by UNOS to perform living donor kidney transplants. Also, centers must designate one representative who can be the single point of contact for KPD and who is willing to participate in regular conference calls to discuss the operations of the KPD system. The KPD Financial Subcommittee will continue to meet to address financial barriers to participation in the KPD system.

Phase 3:
Once the system is programmed, the centers participating in the pilot will be able to enter pairs into the system. Centers will have at least two months to enter pairs before the first match. Conference calls to discuss data entry and to prepare for the match process will begin in this phase.

Phase 4:
The first match will be run after centers have entered the pairs. Conference calls with center representatives will continue. Adjustments may be made to this system in this time frame. The Kidney Transplantation Committee, Living Donor Committee, and Patient Affairs Committee will discuss the KPD system and any recommended adjustments at least once a year during the pilot program.

Phase 5:
Once the pilot has shown the best way to run the KPD system, the Kidney Transplantation Committee will draft policy language for the KPD system to be sent out for public comment and Board approval. The pilot study will end when this policy language is approved.

Communication and Education Plan:

If approved by the Board of Directors, the transplant community will receive information regarding the approval of the pilot program via the Policy Notice that follows each Board meeting. Additional details regarding the final implementation date will be sent to members through a UNet^{SM} System Notice.

The Kidney Paired Donation Education Subcommittee is developing educational material for both potential participants and professionals. The subcommittee plans to use the following media to educate the public and the transplant community about the Kidney Paired Donation Pilot Program:

- Brochures
- List of frequently asked questions
- Articles in the UNOS Update
- Website
- Presentations at OPTN/UNOS regional meetings
- Presentations at meetings of national organizations involved in transplantation
- Kidney Paired Donation Telephone Line
- Policy Notice
- System Notice
- DVD on Kidney Paired Donation
- E-mails from UNOS Communications

A Communication and Education Plan for Kidney Paired Donation can be found in Appendix M.

Communication Activities			
Type of Communication	**Audience(s)**	**Deliver Method(s)**	**Timeframe**
UNOS Update Piece 1	members	Print	When passed by BOD
UNOS Update Piece 2	members	Print	1-3 months after implementation
Policy Notice	members	E-mail	30 days after passed by Board
System Notice	members	Through UNet	Implementation Date
Website Enhancement	General public, members	Web-posting	ASAP after BOD approval, [prior to implementation date

Education/Training Activities			
Education/Training Description	**Audience(s)**	**Deliver Method(s)**	**Timeframe**
Online Tutorial	UNet users	Online PowerPoint presentation	Summer 2008
Professional Brochure	Kidney transplant surgeons, transplant coordinators	Brochure	June 2008
Donor/ Candidate Brochure	Potential living donors, kidney candidates	Brochure	June 2008
DVD	Potential living donors, kidney candidates	DVD	TBD
Informed Consent Guidelines	Transplant surgeons, transplant coordinators	Guidelines posted on website	June 2008

Monitoring and Evaluation:

UNOS will monitor participating kidney programs for compliance with the operational guidelines developed for the KPD system and all applicable OPTN/UNOS Policies and Bylaws.

How members will be expected to comply with this pilot program:

Transplant centers will be expected to:

- Comply with all requirements of the participation agreement and operational guidelines, such as:
  - Providing and maintaining current contact information for at least one person who can facilitate living donor paired kidney exchange matches at the transplant center
  - Accurately entering all required information into UNet[sm]
  - Maintaining documentation of pertinent exchange match information, such as:
    - incompatibility between live donor and intended candidate
    - all contact between transplant centers “paired” through the KPD Pilot Program

        - tracking of process once contact initiated
        - reasons why transplant(s) not pursued after contact initiated
        - specific donor elements to be shared with potential recipient and TXC
        - informed consent of all parties
- Add all intended recipients of incompatible living donor kidneys to the waiting list and comply with all requirements of associated OPTN Policies and Bylaws, such as:
    - ABO typing on two separate occasions prior to listing (Policy 3.1.4.2)
    - ABO verification against source documents by two users (Policy 3.1.4)
    - Informing the intended recipient of multiple listing and waiting time transferral options prior to listing (Policy 3.2.3)
    - Written patient notification upon the completion of the evaluation, listing, or removal from the waiting list (OPTN Bylaws Appendix B, Section II.F)
    - Verification of ABO and UNOS Donor ID after receipt of an organ and prior to implant (Policy 3.1.2)
    - Removal from the waiting list within 24 hours of transplant or death (Policy 3.2.4.1)
    - Receiving and responding to information about potential matches of live donor pairs through UNet^{sm} (Policy 3.4.6)
- Submit documentation upon request
- Comply with all OPTN/UNOS requests related to the implementation, execution, monitoring, and analysis of the living donor paired kidney exchange program pilot

How UNOS will evaluate member compliance with this pilot program

UNOS currently monitors transplant center compliance with applicable OPTN/UNOS Policies and Bylaws during site surveys of transplant centers. UNOS staff forward potential violations of OPTN/UNOS Policies and Bylaws to the OPTN/UNOS Membership and Professional Standards Committee for confidential medical peer review.

Upon implementation of a national kidney paired donation (KPD) Pilot Program, UNOS staff would incorporate monitoring for applicable requirements into routine reviews of transplant centers with participating KPD programs. As the KPD Pilot Program develops, UNOS staff will assess the need for additional monitoring efforts. UNOS staff will communicate more detailed information to Members, specific to complying with the KPD Pilot Program, closer to implementation.

Public Comment Responses:

1. Public Comment Distribution

This proposal was distributed for public comment on August 28, 2006. The public comment period ended on October 27, 2006. Some Committees and Regions have chosen to submit additional responses in 2008 since Congress had amended NOTA and the OPTN can move forward with the proposal.

Public Comment Response Tally					
Type	**Response Total**	**In Favor**	**In Favor as Amended**	**Opposed**	**No Comment**
Individual Comments	53	39 (73.6%)	0 (0%)	4 (7.5%)	10 (18.9%)
Regional Comments	11	8 (72.7%)	2 (18.2%)	1 (9.1%)	0 (0%)
Committee Comments	5	3 (60%)	2 (40%)	0 (0%)	0 (0%)

2. Primary Public Comment Concerns/Questions

The major concerns in the public comment feedback include:

- Living donor safety
- The stringency of histocompatibility requirements
- The cost of the program to transplant centers, living donors, and candidates
- Legislative barriers (Note: These concerns have been addressed by the passage of the Charlie W. Norwood Living Donation Act)
- The need for public education on KPD

3. Regional Public Comment Responses

Region	Meeting Date	Motion to Approve as Written	Approved as Amended (see below)	Did Not Consider
1	09/11/2006	12 yes, 0 no, 0 abstentions		
2	10/06/2006	4 yes, 28 no, 1 abstention	29 yes, 0 no, 1 abstention	
3	09/29/2006	13 yes, 0 no, 0 abstentions		
4	10/06/2006	15 yes, 1 no, 1 abstention		
5	09/01/2006	32 yes, 0 no, 0 abstentions		
6	09/15/2006	43 yes, 10 no, 0 abstentions		
7	10/06/2006	13 yes, 0 no, 0 abstentions		
8	09/08/2006		14 yes, 0 no, 0 abstentions	
9	09/27/2006	14 yes, 0 no, 0 abstentions		
10	09/22/2006	5 yes, 9 no, 0 abstentions		
11	09/29/2006	12 yes, 1 no, 0 abstentions		

COMMENTS:

Region 2:

Region 2 supported the following amendment to the proposal:
UNOS/OPTN is appropriate organization to oversee national paired donation program, however given the current legislative barriers, the proposal is premature at this time. Once the OPTN is permitted to implement such a system, the proposal should be reassessed and re-distributed for comment. During the discussion, the following concerns were raised:

- Cost of implementation and maintenance of the program, both for the OPTN and the center
- Risk of public solicitation for donors as paired exchange becomes more prevalent
- Is a national system to cumbersome? Should the program stay local/regional.
- The field of transplant is rapidly changing, this proposal may need to be revised once legislation is passed allowing OPTN to implement the program
- There are limited data to support the details outlined in the proposal.

Committee Response:

The Committee appreciates the comment. OPTN leadership and UNOS staff have been re-evaluating the KPD system in light of medical advances. Based on the experience of existing KPD programs, the Kidney Transplantation Committee voted to allow 3-way matches and to allow donor and candidate choices to screen out matches.

The KPD Financial Subcommittee is working to address financial barriers to participation in KPD.

Additionally, medical and psychosocial screening of potential living donors will be required for participation in the KPD system. The Living Donor Committee is involved in the development of these screening guidelines.

The Committee believes, based on available data, that a national system would result in more matches due to a larger pool of donor/candidate pairs. Participating centers and pairs that desire to only be matched locally or regionally will have that option, but pairs that are difficult to match due to sensitization or other reasons will also have the option to expand their search nationally.

Finally, the KPD Work Group and the Kidney Transplantation Committee have run simulations based on the details of this program, which can be found in Appendix F of this document. Additional analysis on kidney paired donation can be found in Appendix G.

Region 6:

There was support for the proposal with the following questions/concerns:

- What happens if one of the donors backs out at the last minute
- How much information about the donor is provided to the recipient
- Should hospitals be required to have Living Donor Advocates

Projected resources:

- 0.5 FTE to coordinate the program in a transplant center
- Could result in an increase in HLA testing

Committee Response:

The Committee appreciates the comment. If a donor decides not to participate after having been matched, both pairs are returned to the pool to be included in the next match run. If a donor decides

not to participate permanently, then the transplant center should remove that donor from the pool. The recipient must have at least one potential donor to remain in the pool.

The recipient's transplant center will receive medical information about the matched donor, similar to the medical information a center receives about a deceased donor. No personal information about the donor will be conveyed to the recipient as this would be a violation of the Health Information Portability and Accountability Act of 1996 (HIPAA). If the pairs want to meet, the meeting can only occur after the transplants and only if all the participants agree.

Since the time that this comment was submitted, CMS has required that transplant centers have independent donor advocates. These advocates are available to all potential living donors, including those participating in KPD.

Region 7:
Overall the region supported the concept of the proposal. They did have MANY questions about the details and wanted to ensure that there would be additional education on this system provided by UNOS to the regions. There were several inquiries concerning participation in the system and the cost associated with participation. The pediatric representative felt that this system would be a great advantage to the pediatric population and wanted to ensure that there would be provision in the final policy language that required centers that choose not to participate to provide patients with a list of center who do participate. This is to ensure that patients are informed that they have the option to participate in a paired exchange. They also discussed that it seemed a more reasonable scenario to have the donor organ removed at the local transplant center and then ship the organ to the recipient. By doing this, there should be a decrease in the overall cost of the procedure and the donor is able to stay close to their local residence.

Committee Response:
If approved by the Board, the KPD Education Subcommittee plans to give presentations on KPD to the regions in fall 2008. This subcommittee is also preparing other educational materials for centers and for donors and candidates. There will be an option for shipment of the kidney, but it is recommended that donors travel to the recipient centers to decrease cold ischemic time and possible problems with transportation of the kidney.

Region 8:
There was support for the proposal with the amendment that the Committee provide more details about how the program will work and allow the regions an opportunity to provide feedback on the details prior to final approval and implementation.

Committee Response:
The Kidney Transplantation Committee welcomes feedback on the KPD Program from any of the regions both during public comment and if the program moves forward.

Region 10:
There was some very vocal opposition to this proposal and those individuals requested to have their comment directly put in the record. I am waiting on those to include. Additional the region had several other comments:

- Overall sentiment that this is a backwards approach to policy and that UNOS should wait for the final change to NOTA
- Concerned about the travel costs being prohibitive to this patient population.

Committee Response:
Since this comment was submitted, the language in the National Organ Transplant Act (NOTA) was clarified to state that KPD does not constitute valuable consideration. Now that NOTA has been clarified, the Kidney Transplantation Committee is forwarding the KPD proposal to the Board. As for the concern about travel costs, donors and candidates can choose not to travel and still participate in the program. Also, the KPD Education and Financial Subcommittees are compiling a list of resources and financial support for patients participating in KPD.

Region 11:
Projected resource comments:

- This proposal would require more transplant program staff to coordinate schedules and manage data.
- If this proposal is incorporated into UNet, few additional resources would be required.
- CMS and insurers need to cover live donor evaluations and travel expenses more liberally in order for this to work

Committee Response:
The Committee appreciates the comment. This is also a voluntary program that individual centers can choose to participate in if they desire.

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4. Committee Public Comment Responses

Living Donor Committee:
The OPTN/UNOS Living Donor Committee offers conditional support for the development and operation of a national Kidney Paired Donation (KPD) system through the Organ Procurement and Transplantation Network/United Network for Organ Sharing (OPTN/UNOS).

The number of additional kidney transplants per year under a Kidney Paired Donation system has been estimated to be as high as 2000 transplants per year. While the goal of reducing the number of candidates on the waitlist is laudable, the Living Donor Committee seeks to assure the safety of living donors, a group underserved by the transplant community in the past, as this special category of donors increases with any national KPD system.

On June 16, 2006, the Health Resources and Services Administration directed the OPTN to develop policies regarding living organ donors and living organ donor recipients. In response, the OPTN/UNOS Board of Directors adopted a set of limited changes to the Bylaws requiring transplant programs that perform living donor transplants to develop and follow written protocols that address all phases of the living donation process (including the evaluation, pre-operative, operative, and post-operative care) and the submission of data.

The OPTN/UNOS Living Donor Committee has developed resources that can be used by transplant programs in the consent of living donors, and in their own program-specific living donor kidney medical

and psychosocial evaluation protocols as required by the Bylaws. The Committee's efforts to develop and implement such resources has been an arduous process because of what the Committee views as a considerable resistance to any proposed improvement in the consent process and the psychosocial and medical evaluation of living donors.. The Living Donor Committee developed voluntary recommendations for the medical evaluation of living kidney donors after an extensive review of available literature and a survey of transplant programs throughout this country, which remain unapproved by the OPTN/UNOS Board.

Living kidney donation involves risk. Most of the risks and complications associated with the donor nephrectomy procedure occur in the peri-operative period and are relatively well known. However, there remains no national systematic long-term data collection on the risks associated with living organ donation; consequently the risk of renal dysfunction for the living kidney donor is not well known, especially for the non-Caucasian donor.

The Living Donor Committee offers conditional support of the current "opt-in" KPD proposal limited to two-way and three-way matches under the following conditions:

- living donors in the KPD system are consented based on recommendations that have been developed by the Living Donor Committee;
- once finalized and approved by the OPTN/UNOS Board of Directors, recommendations for the medical and psychosocial evaluation of the potential kidney recipients will be used for the evaluation of living donors in any national KPD system;
- a set of recommendations on the medical suitability for transplantation of a potential kidney recipient must be developed. Once approved by the OPTN/UNOS Board recommendations for the screening of potential recipients will be used to evaluate all transplant candidates in any national KPD system; and
- there is provision for updating the system as important information and data about living donors are discovered. There is provision for updating the program as information about recipient characteristics and outcomes is brought to light.

The Living Donor Committee will offer other comment as future enhancements to the system, such as the inclusion of altruistic donors and donor chains, are sent out for public comment.

The Living Donor Committee is ready to work with the Kidney Transplantation Committee to develop safeguards for all living donors involved in a KPD program. Since the national KPD program is an opt-in system, we hope a national system administered by UNOS may be able to provide more protection to living donors than is required in existing KPD systems.

Committee Response:
The Committee appreciates the response. The Kidney Transplantation Committee has adopted the "Resource Document for the Informed Consent for Living Donors" developed by the Living Donor Committee and approved by the Executive Committee in December 2006 for use in the KPD Program. Once other resource documents, such as recommendations for the medical and psychosocial evaluation of living kidney donors, are approved by the Board, the Kidney Transplantation Committee will work to incorporate these resource documents into the KPD Program. As a pilot program, the Kidney Transplantation Committee will have the flexibility to make changes to the system to make it operate more effectively. Additionally, the Kidney Transplantation Committee will share data with the Living Donor Committee and the Patient Affairs Committee at least annually so these Committees can discuss the system and make recommendations for updates to the system.

Pediatric Transplantation Committee:
The Committee considered the proposal and voted unanimously in favor of supporting the continued development of such a process (6-0-0). Members noted that from the pediatric perspective, this system should provide benefit for children and adolescents once HRSA has approved the program to move forward. A member stated that the Kidney Transplantation Committee felt this system should be roughly equivalent to the current allocation system for deceased donor kidneys, which gives a higher priority to children. Recognizing that net benefit is expected to play a role in the new allocation system being considered currently by the Kidney Transplantation Committee, it was acknowledged it may not play a role in living donor allocation using KPD. This will be considered in greater detail after plans for a modified allocation system for kidneys are formalized. It was noted that participation in any KPD plan implemented will be optional.

Committee Response:
The Committee appreciates the comment.

Policy Oversight Committee:
The POC agreed by unanimous vote that the Board should approve the concept of a national live donor paired kidney exchange (LDPKE) program established through and to be administered by the OPTN/UNOS.

Committee Response:
The Committee appreciates the comment.

Transplant Administrators Committee:
The Transplant Administrators Committee met via Live Meeting on April 14, 2008 to discuss the KPD Proposal. After a lengthy discussion the Committee recommends the removal of the language on page 12, section D, number 1 "The donor will cover the travel costs."

The Committee also recommends that there is a need to develop the logistics of how the costs of doing living donor evaluation for potential donors for this pool would get aggregated and allocated to the center that is actually doing the transplant.

Committee Response:
The Committee appreciates the comment. The Kidney Transplantation Committee has removed the language about the donor covering traveling costs. The KPD Financial Subcommittee will continue to work on recommendations for how transplant centers can navigate any financial barriers to KPD.

Transplant Coordinator Committee:
The TCC met on April 2, 2008. The TCC supported the Kidney Paired Donation proposal by a vote of 13-0-0. The TCC felt that a national KPD program would serve a larger population (than the separate existing programs) and create uniformity in practice.

Committee Response:
The Committee appreciates the comment.

5. Individual Public Comment Responses

Comment 1:
vote: Oppose
Creating a national program for a very local problem will only increase cost from bureaucratic overhead and further complicate the logistics of coordinating four surgical procedures.

Committee Response:
The national program will facilitate the matching of a larger number of donor-candidate pairs. The logistics of the surgical procedures will remain in the transplant centers' purview. This program is also optional and local programs can continue to function as they wish.

Comment 2:
vote: Support
I strongly support this proposal. An important factor to this program will be the public education piece. Establishing trust and transparency between the public and medical community will be fundamental to the success of the program.

Committee Response:
The Committee appreciates the comment. There is currently a Kidney Paired Donation Education Subcommittee working on materials to educate both the medical community and the general public on kidney paired donation and the KPD system.

Comment 3:
vote: Support
Lets get this going as quickly as possible. There are several groups going ahead with plans to do this without UNOS involvement.

Committee Response:
The Committee appreciates the comment.

Comment 4:
vote: Support
Concerns expressed at my regional meeting: living donor expenses and policies with cross institutins and different payors could mean new problems. Discussion supported, with more extensive proposal development.

Committee Response:
There is Kidney Paired Donation Financial Subcommittee which is looking into financial barriers to kidney paired donation and trying to find resources to mitigate these barriers. They will be addressing living donor expenses and other financial issues.

Comment 5:
vote: Support
Absolutely important for UNOS to do

Committee Response:
The Committee appreciates the comment.

Comment 6:
vote: Support
I would encourage setting this up in regional or "super regions" vs national sharing.

Committee Response:
In the proposed system, the transplant center can indicate the maximum distance the candidate and the donor are willing to travel. This flexibility in the system will allow transplant centers, candidates, and donors to participate even if they restrict themselves geographically.

Comment 7:
vote: Support
1. Proposal for National Kidney Paired Donation (KPD) Program (Kidney Transplantation Committee) I an in favor of this proposal as it is a common sense approach to enabling live donors to donate, allowing recipients of these live donor organs to have better quality grafts with less waiting time versus deceased donors, and will help to keep the deceased donor wait list shorter by removing the recipients who are able to receive live donor grafts under this system. The ability to have a national system is mathematically necessary for the highly sensitized patients, and the ability to allow candidates and potential donors to list their desires in regards to travel distance, etc., is also important.

Committee Response:
The Committee appreciates the comment.

Comment 8:
vote: Support
Support only with modifications - I support this but 1 am truly surprised that the Histocompatibility Committee estimates that there will be an "approximately 20% incidence of an unexpected positive crossmatch" and that some centers claim this may be up to twice as high (proposal, page 11,section c, last paragraph). I believe this can only occur because antibodies to HLA-C types, HLA-DR51, DR52 and DR53 and to HLA-DQ types cause positive crossmatches and unos has totally ignored these loci by not requiring that donors and recipients be tested for these types and laboratories have, therefore, not bothered to screen for those antibodies. While it might very well be argued that antibodies to hla-c or hla-dq are not clinically relevant, the goal of this proposal ought to be to devise a system that can be used to predict negative crossmatches with a better accurancy than 80% in order to avoid needless delay in transplantation and better selection of donor recipient pairs. To do that, participating centers should be required to type for HLA-C. DR51, DR52, DR53 and HLA-DQ, and to screen for those antibodies using solid phase techiques before they can participate in the exchange.

Committee Response:
This voluntary program will have more stringent alloantibody reporting criteria than the deceased donor listing criteria. These requirements are being developed with the direct input of both the UNOS Histocompatibility Committee (which contains ASHI members), as well as national leaders in this process who are not on UNOS Committees at this time. There were be ongoing quality review of crossmatch outcomes in regards to predictability and assistance offered to centers with more difficulty appropriately predicting crossmatches. Centers will be able to enter unacceptable antigens, and if

approved by the Board, undesirable antigens into the system. If both of these are allowed, the match could occur “twice”; first matching with the stringent criteria (no unacceptable or undesirable antigens), then, for those who so choose, the matches could be performed for those who have not already matched ignoring the undesirable antigens. There will be a higher expected positive crossmatch rate in this later group.

Comment 9:

vote: Support

The program proposed, overall, has great merit and should be pursued. However, as an initial proposal, there are several issues that should be addressed. These are listed below. 1. It is meritorious to explore all matches and to prioritize according to objective criteria. However, there should be some threshold values that take priority. Each patient should have a calculated probability of finding a donor who is ABO and HLA (i.e, negative crossmatch) compatible. It would be worthwhile to establish a priority ranking for patients based on these probabilities. For example, for a patient who has a 1 in 10,000 chance of finding a compatible donor, what is the point of continuing to look for other matches if one is found. Since this patient is unlikely to find another donor, the match found should be accepted or the patient should not be given false hope by continuing his/her enrollment in the program.2. The proposal allows for 10-21 days for reporting final crossmatches beyond which the unreported crossmatch results will default to positive. As a histocompatibility expert, I believe this to be wrong. A turn-around time of 5-10 business days should be adequate and should be imposed. Further delays might be the result of miscommunication or of computer errors for which the patient should not be penalized by being made to wait until the next cycle and then undergo additional testing. It is a simple matter to have centers notified automatically, by email, when the test results are at the 5 and 10 day point. This is done routinely by journal editors to prompt reviewers about their review deadlines. Further, this program does not establish when the clock starts. If it is at the day of receipt of the donor specimens, there must be a way to establish that recipient serum has already been received.3. The proposal discusses the calculation of a probability of a positive crossmatch and assumes that the calculation will be only 80% accurate and that this will affect the likelihood of an unanticipated positive crossmatch. First, this probability does not affect crossmatch outcome, the presence of antibodies does. The probability figure is useful only for prioritizing patients. The single largest factor affecting the likelihood of obtaining a negative crossmatch is the accurate identification of antibody specificities. To this end, it is possible to achieve a very high degree of accuracy (>80%) of antibody characterization if the proper assays are used. Because of the extent of effort and expense that this program will involve, it is reasonable to require that recipient antibodies be tested and identified using panels of both phenotypes and single specificities of HLA class I and class II antigens on either the Luminex or flow cyotmeter platforms to achieve the highest deg ree of sensitivity and specificity.4. The following sentence from the proposal is unclear and needs explanation: "As the number of donor/candidate pairs enrolled in the system reaches a certain threshold or data otherwise demonstrate benefit in using the donor and candidate choices, it is expected that they will be used in the program as absolute restrictions, precluding pairs who do not satisfy the preference of one another from being considered as possible matches.5. In addition to accurate and complete definition of antibodies being produced by the patient, currently, other information is important to evaluating compatibility and centers should be required to provide such information. This includes information about sensitizing events - number and HLA type of previous transplants, number of children (female patients), age of youngest child and the HLA types of children or their fathers (female patients), dates of multiple transfusion events and date of most recent transfusion. Centers that do not obtain such information should not be included in the program. Centers should also be encouraged or required to provide antibody screen data and aliquots of historic sera when requested.6. It is unclear where the committee obtained the figure of a 20% incidence of unexpected

positive crossmatches. Numerous studies done when antibody identification was performed using cytotoxicity testing have repeatedly shown that positive crossmatches were predicted with a high degree of accuracy while negative crossmatches were not. With the currently available antibody screening methods, the rate of unexpected positive crossmatches should be no greater than 1-2%. The proposal should include a requirement for typing for HLA-A, -B, -Cw, DRB1, DRB3-5, and DQ. Also, all unexpected positive crossmatches should be investigated and the cause of the positive result determined.

Committee Response:
1. Candidates who are less likely to find a donor because they are highly sensitized do receive priority in the proposed system.

2. 21 days was selected because it would allow time for shipment of samples from the donor center to the recipient center and would give the groups an opportunity to discuss any other logistical issues that might prevent proceeding with the transplant at that time. Additionally, several days are needed for administrative purposes.

3. Centers will be able to enter unacceptable (and undesirable antigens if later approved) into the system.

4. The sentence referenced has been removed. It explained that donor and candidate choices, such as maximum acceptable age or maximum distance willing to travel, will not be used to rule out any matches in the program until there are a large number of pairs enrolled in the system. However, the Kidney Transplantation Committee has decided to allow donor and candidate choices to rule out matches in the initial program.

5. The Committee is trying to balance the need for relevant clinical information and the data burden associated with this KPD Pilot Program. As a result, the above suggestions are not included as required fields. However, centers may request additional data in the 21 day period after matches have been found. The HLA subcommittee of this KPD Program will be monitoring for unexpected positive crossmatches and offer reference laboratory assistance to programs with higher than expected positive crossmatches.

Comment 10:
vote: Support
1. Proposal for National Kidney Paired Donation (KPD) Program (Kidney Transplantation Committee) I an in favor of this proposal as it is a common sense approach to enabling live donors to donate, allowing recipients of these live donor organs to have better quality grafts with less waiting time versus deceased donors, and will help to keep the deceased donor wait list shorter by removing the recipients who are able to receive live donor grafts under this system. The ability to have a national system is mathematically necessary for the highly sensitized patients, and the ability to allow candidates and potential donors to list their desires in regards to travel distance, etc., is also important.

Committee Response:
The Committee appreciates the comment.

Comment 11:
vote: Support
More information is needed to assess the impact of this proposal.

Committee Response:
The Committee will continue to gather data on the impact of this program on kidney transplantation and on living donors. The Committee will evaluate this data to inform future policy decisions and to make improvements to the system.

Comment 12:
vote: Support
Proposal 1: Proposal for a National Kidney Paired Donation Program ASHI supports the proposal for a National Kidney Paired Donation initiative in concept and believes that the experience gained by the existing local/regional paired exchange programs in terms of logistics, costs and graft outcomes will be of great importance in establishing a national KPD program. We believe that more data needs to be collected and analyzed before attempting implementation. ASHI urges that the following elements be included in the final proposal: prioritization for zero mismatched donor/recipient pairs. Although the proposal cites a lack of data supporting a benefit of zero-mismatched grafts, a recent publication supports data generated by the SRTR. The report shows an increase in the half life of SCD kidney grafts from 10.5 yr. for unmatched grafts o 14.2 yr. for zero mismatched grafts (Cecka JM, Clinical Transplantation 2005, p. 6); consideration of patient sensitization and CPRA; timely, accurate crossmatching at the appropriate level at the recipient transplant center; and, listing of Unacceptable Antigens necessary to support CPRA and used in accordance with policies of the recipient transplant center. There are deficiencies in the OPTN/UNOS databases that limit the utility of histocompatibility testing for this proposal. With the use of solid phase testing it has been recognized that patients have antibodies specific for HLA DQ, DP and Cw and to alleles of their own antigens. These antibodies may be present alone or with other antibodies but are not included in CPRA which currently only considers HLA A, B and DR antibodies. The antibodies may cause positive crossmatches that would not be predicted by the CPRA and there are an increasing number of reports of rejection due to these antibodies. OPTN/UNOS and ASHI must consider requiring typing for donor HLA DR 51, 52, 53, DQ, DP and Cw antigens and modifying Unacceptable Antigens reporting to include antibodies specific for these antigens. Both ASHI and OPTNUNOS members should be encouraged to publish their reports of positive crossmatches, rejection episodes and graft outcomes involving these and other antibodies. The ASHI Board of Directors pledges its educational resources to assist in the full implementation of this proposal.

Committee Response:
Zero antigen mismatched matches and highly sensitized candidates do receive priority in the current system. The proposal requires that crossmatching must occur at the recipient transplant center within 21 days of the match. If antibodies to HLA-Cw, DQ, and DR51-53 are identified they can be entered as unacceptable antigens and they will be used in the calculation of CPRA.

Comment 13:
vote: Support
NATCO supports a national KPD list. The estimated impact on the number of kidney transplants that could occur with this program is 2200 transplants/year. This is the single largest initiative to increase live kidney donation in many years. The UNOS Subcommittee on Kidney Paired Donation has been very

diligent in examining many factors contributing to the success and fairness of the program. I believe NATCO can take a leadership role in certain areas such as Public and Professional Education, Informed Consent and Logistics based on our excellent reputation in these areas. If the proposal moves forward in a positive direction, the consistency of the information provided about the program and the transparency of the guidelines and oversight is paramount to the national medical communityâ€™s trust and ultimate participation. The logistical concerns are appropriate but can be overcome, particularly in the system that has been proposed by the subcommittee. The subcommittee has given much thought to the financial concerns in donors traveling in a paired exchange and has recommended a system that will diminish this barrier

Committee Response:
The Committee appreciates the comment.

Comment 14:
vote: Support
The American Society of Transplantation (AST) supports the UNOS/OPTN proposal for National Kidney Paired Donation (KPD) Program as long as it would not oblige individual centers to participate in the programs.

Committee Response:
The proposed system is an opt-in system. Individual centers will not be required to participate.

Comment 15:
NAPDN Position Statement on
A National Paired Donation Program
Requisites for Establishment of a National Paired Donation Program

1. A national paired donation program should be established by a legislative mandate by Congress.
2. The national paired donation program should be established only after a majority of all US kidney transplant programs consent to establish the program. Kidney transplant programs should indicate that they are sufficiently educated about paired donation prior to providing consent.
3. Prior to passage of legislation establishing a national paired donation program, Congress should conduct an extensive evaluation of the current status of paired donation programs and matching technologies. This evaluation should include public hearings that allow input by the public and all interested parties.
4. Congressional legislation for a national paired donation program should require the national paired donation program be administered by DHHS under a grant or contract to a private or public entity (in a manner similar to that stipulated by NOTA). The legislation should include provisions of adequate federal funding for: a) education of transplant professionals and kidney disease patients regarding paired donation, b) transplant program personnel support for paired donation and desensitization programs, c) increased data submission requirements, d) electronic transfer of patient data from existing computer-based paired donation programs, e) future technological development of computer-based matching software, and f) increased quality assurance monitoring requirements.
5. The national paired donation program should include an enforcement capability to assure compliance with established policies.

6. The governing structure of the national paired donation program should consist of a minimal bureaucracy, with the intent that it be agile so as to be able to respond quickly to new developments in policy and technology.

Process of Establishment of a National Paired Donation Program

7. Congress should have adequate modeling data available to assess the logistic and pragmatic considerations for the passage of paired donation legislation, including: 1) inter-programmatic issues at the individual transplant program level, 2) logistical issues regarding prelisting histocompatibility testing, 3) financial impact of additional crossmatch testing, and 4) eligibility criteria for patient entry.
8. The selection process for the contractor for the national paired donation program should be transparent and based on a comprehensive evaluation of multiple factors, including experience, creativeness, ethical standards, and educational ability.

Assurance of Patients' Interests

9. The primary criterion for development and implementation of a national paired donation program is to protect patient's interests including autonomy and equity. The mandate should assure that all policies address the protection of patient interests at all times.
10. The national paired donation program should include monitoring and review processes to assure that patients have appropriate access for matching with all available listed patients.
11. Electronic transfer of patient data from paired donation programs already in existence should be provided prior to clinical initiation of a national paired donation program.

Committee Response:

The Committee thanks you for your feedback. Please note that to the extent that the substance of your response is beyond the authority or discretion of the OPTN, the Committee is unable to respond.

The *Federal Register* notice (Vol. 71, No. 116) published on June 16, 2006, contains a response by the Health Resources and Services Administration directing the OPTN to give living donor guidelines the same status as other OPTN policies and to develop such policies in the same manner used for policies on deceased donor organs and recipients. In addition, on December 6, 2007, Congress passed the Charlie W. Norwood Living Organ Donation Act (H.R. 710), which amended the National Organ Transplant Act (NOTA) to clarify that kidney paired donation did not constitute valuable consideration. President Bush signed this bill into law on December 21, 2007. Given these authorities, it appropriately within the purview of the OPTN to establish a kidney paired donation system.

The Kidney Transplantation Committee agrees that the protection of patient interests of both the candidate and the living donor is of primary importance. Therefore, the Kidney Transplantation Committee will be working with the Patient Affairs Committee and the Living Donor Committee to monitor and evaluate the system and to make recommendations, as appropriate, addressing the protection of patient interests.

Post Public Comment Consideration:

On March 12, 2008, the Kidney Transplantation Committee voted to send the proposal for the establishment on the KPD Pilot Program to the Board in June 2008. Additional enhancements for the system will be proposed before the KPD system is implemented. The Kidney Transplantation Committee plans to send out a proposal for public comment to include altruistic donors and donor chains in the KPD

system. The transplant community and the Board will have an opportunity to consider the proposal on altruistic donors and donor chains separately from this proposal.

Additional materials are being developed and will be provided to the Board before the KPD system is implemented, including:

- An updated monitoring plan
- Operational Guidelines and requirements for participation for the KPD System
- Educational materials

On June 20, 2008, the OPTN/UNOS Board of Directors unanimously approved a national kidney paired donation pilot program to be administered by the OPTN as set forth in this proposal(27-Support, 0-Oppose, 0- Abstain).