Just Another Option: Paired Kidney Exchange

Karen M. Miller, RN, BSN, CCTC
Kidney Transplant Coordinator
UW Health
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Blood Type Compatibility

- O or A₂ donor → O recipient
- A or O donor → A recipient
- B, O or A₂ donor → B recipient
- A, B, AB or O donor → AB recipient

30% of donors will be ABO incompatible with their intended recipient
Paired Exchange Configurations

Two way paired exchange
Exchange between 2 incompatible pairs

Three way paired exchange
Simultaneous Domino Paired Donation (DPD)

Nonsimultaneous Extended Altruistic Donor Chains (NEAD)

Cluster #1

Cluster #2

Cluster #3

Etc.
Transportation
Ship the donor or the kidney?

**Donor**
- Reduce CIT
- Procurement team & Tx team are the same
- Tx surgeries would not occur outside normal work times

**Kidney**
- Easier to maintain anonymity
- Donor can remain in familiar setting
- Minimize barriers to participation
- Simplify logistics.

Fortin, Open Med, 2011
Segev, AJT, 2011
56 LD kidneys transported among 30 centers 4/07 to 4/10.

- Median distance: 400 miles (range 1-2570)

Segev, AJT, 2011
Neither uop or Scr were associated with CIT.
No pt received HD in 1\textsuperscript{st} week

Conclusion:
LD kidney transport is safe & feasible
• UW Health Internal

• United Network for Organ Sharing

• Alliance for Paired Kidney Exchange

• National Kidney Registry
<table>
<thead>
<tr>
<th>Pos</th>
<th>D Ctr</th>
<th>Donor Alias</th>
<th>R Ctr</th>
<th>Recipient Alias</th>
<th>D-ABO</th>
<th>R-ABO</th>
<th>D-Age</th>
<th>R-Age</th>
<th>Recp Avoids</th>
<th>PMP</th>
<th>CPRA</th>
<th>Wait Time</th>
<th>Match Points</th>
<th>Presel ect Status</th>
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<td>CON WIL</td>
<td>B</td>
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<td>64</td>
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Match Offer Process

- Daily Match Runs
- Match Offers Emailed
- Match Acceptance Emailed
- Cross Matches Initiated
- Cross Matches Completed
- Surgery Date/Time Set
- Surgeries Performed

- 1 - 2 Days
- 10 Days
- 2-5 Weeks
• Review donor chart
• Obtain donor blood sample for crossmatch
• Obtain donor CT CD
• Present at donor committee review meeting
National Kidney Registry
Why Does it Work?

- 70 centers have joined
- 51 of those centers have participated in an exchange
- 2,106 transplants
- 306 active donors in the pool
- Match runs completed daily
UW Update

Joined NKR 12/2010

- 1st paired exchange 2/2011
- 17 transplants in 2011
- 18 transplants in 2012
- 18 transplants in 2013
- 22 transplants in 2014
- 36 transplants in 2015
- 30 transplants in 2016
Compatible Share

- A compatible pair is a donor and recipient that are biologically compatible but want to find a better match through a paired exchange swap.
- An improved match (younger donor, better HLA match, better GFR).
- Compatible pairs that have the following characteristics will benefit most from entering an NKR swap:
  - Blood group A, B, or AB patients who have O donors
  - Patients with low level antibody
• 48 y.o. female donor (spouse), ABO = O
• 58 y.o. male recipient, ABO = A

• Wanted a better HLA match
48 y.o. female (spouse)  
ABO = O

58 y.o. male  
ABO = A

65 y.o. male (friend)  
ABO = A

57 y.o. female  
ABO = O
48 y.o. female (spouse)
ABO = O

58 y.o. male
ABO = A

45 y.o. male (friend)
ABO = A

57 y.o. female
ABO = O
Voucher Program

- Only offered via NKR
- Donor is allowed to donate prior to their intended recipient needing a kidney
- Their intended recipient will receive a voucher for a kidney when needed
• Voucher donor is 64 years old and will be too old to donate to a grandchild who has been diagnosed with a kidney problem which may require a kidney transplant in 15 years.

• Recipient has a current functioning allograft but may need a second transplant in 20 years. The father is 52 and wants to donate but will be too old in 20 years.
Voucher Requirements

• No guarantee the patient can be matched and transplanted
• Voucher donor and recipient complete and return Informed Consent
• Voucher donor may identify up to five intended recipients
• When a Voucher donor identifies multiple intended recipients, the first appropriate candidate for transplant will receive the Voucher Kidney.
• Intended Voucher recipients must be a kidney transplant recipient or currently have, or be expected to have, some form of renal function impairment.
• Voucher expires when the intended recipient expires and can’t be transferred.
• Donor can’t withdraw the Voucher from the intended recipient after kidney donation.
• Intended recipient may only redeem Voucher when transplantation is indicated as a therapeutic modality for End Stage Kidney Disease.
• If the NKR were to undergo a change of control, the surviving organization must honor all Vouchers with the same or better capacity to fulfill all outstanding Voucher obligations.
### Advanced Donation Program

#### Summary

<table>
<thead>
<tr>
<th>Type</th>
<th>Cases</th>
<th>Add'l TXPs Facilitated</th>
<th>80%+ cPRA TXPs Facilitated</th>
<th>95%+ cPRA TXPs Facilitated</th>
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<td>20</td>
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<td>27</td>
<td>16</td>
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<td>Voucher**</td>
<td>6</td>
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<tr>
<td>Total</td>
<td>26</td>
<td>113</td>
<td>36</td>
<td>20</td>
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</table>

*Short-Term— At time of advanced donation the intended ADP Recipient is in need of transplant

**Voucher - At time of advanced donation the intended ADP Recipient is not in need and may never be in need of transplant. JSinacore-NKR
The Process
What No One Tells You About Paired Kidney Exchange…

- Kidney cargo off-loaded due to overweight plane
- Courier takes kidney to wrong hospital
- Kidney is never tendered to flight
- GPS not functioning
- Kidney ‘stuck’ in NYC traffic
- Gate change
A hero is within each of us.
An everyday hero.
Consider your Call to Action

Guardian of the Gift
Icon of Innovation
Voice of Valor

Illuminator of Life
Idol of Inspiration
Face of Fortitude
Final Message

• Encourage finding a living donor
• There is always hope, since there is an everyday hero in ALL of us.
FROM START TO FINISH A donation by a Good Samaritan, Rick Ruzzamenti, upper left, set in motion a 60-person chain of transplants that ended with a kidney for Donald C. Terry Jr., bottom right.

By KEVIN SACK  Published: The New York Times - February 18, 2012