NINE NON-SIMULTANEOUS EXTENDED ALTRUISTIC DONOR (NEAD) CHAINS

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INTRODUCTION: Kidney paired donation is an evolving strategy for achieving living donor kidney transplants for candidates with willing, but incompatible living donors. Since 2008 kidney paired donation activity in America has eclipsed the total prior activity. Part of this growth has resulted from the incorporation of non-directed donors to produce chains of transplants rather than simple exchanges. It is controversial whether these chains should be performed simultaneously (called domino paired donation, DPD) or nonsimultaneously (called nonsimultaneous extended altruistic donor chains, NEAD). NEAD chains create “bridge donors” whose incompatible recipients receive living donor kidneys before the bridge donor donates. We report our experience with nine NEAD chains.

METHODS: Sixteen transplant centers in thirteen states have transplanted patients as part of a larger network that shared altruistic donors and arranged them into NEAD chains. Altruistic donors initiated NEAD chains that were extended by allowing recipients to receive kidneys before their incompatible donors, referred to as “bridge” donors, donated.
NEAD Chain 1

1 The initiating donor was an unpaired altruistic donor from Michigan.
2 The recipient of Transplant 6 required desensitization to HLA DSA by T and B cell flow cytometry.
3 The recipient of Transplant 9 required desensitization to blood group (AHG titer of 1:8).
NEAD Chain 2

<table>
<thead>
<tr>
<th>Date</th>
<th>PRA</th>
<th>Ethnicity</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEC 2007</td>
<td>86%</td>
<td>Cauc</td>
<td>Mother</td>
</tr>
<tr>
<td>DEC 2007</td>
<td>69%</td>
<td>Cauc</td>
<td>Daughter</td>
</tr>
<tr>
<td>DEC 2007</td>
<td>85%</td>
<td>Cauc</td>
<td>Daughter</td>
</tr>
<tr>
<td>OCT 2008</td>
<td>100%</td>
<td>Cauc</td>
<td>Husband</td>
</tr>
<tr>
<td>OCT 2008</td>
<td>79%</td>
<td>Cauc</td>
<td>Husband</td>
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NEAD Chain 5

<table>
<thead>
<tr>
<th>Month</th>
<th>Ethnicity</th>
<th>Relationship</th>
<th>PRA</th>
<th>Ethnicity</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEB 2009</td>
<td>Cauc</td>
<td>Husband</td>
<td>55%</td>
<td>Cauc</td>
<td>Wife</td>
</tr>
<tr>
<td>MAY 2009</td>
<td>Cauc</td>
<td>Wife</td>
<td>89%</td>
<td>Cauc</td>
<td>Sister-in-law</td>
</tr>
<tr>
<td>JUNE 2009</td>
<td>Cauc</td>
<td>Husband</td>
<td>68%</td>
<td>Cauc</td>
<td>Sister-in-law</td>
</tr>
<tr>
<td>AUG 2009</td>
<td>Cauc</td>
<td>Wife</td>
<td>26%</td>
<td>Cauc</td>
<td>Husband</td>
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</table>

NEAD Chain 7

<table>
<thead>
<tr>
<th>Month</th>
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<th>PRA</th>
<th>Ethnicity</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
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<td>AA</td>
<td>Daughter</td>
<td>70%</td>
<td>Cauc</td>
<td>Wife</td>
</tr>
<tr>
<td>FEB 2010</td>
<td>AA</td>
<td>Husband</td>
<td>8%</td>
<td>Cauc</td>
<td>Husband</td>
</tr>
<tr>
<td>JAN 2010</td>
<td>AA</td>
<td>Husband</td>
<td>90%</td>
<td>Indian</td>
<td>Wife</td>
</tr>
<tr>
<td>APR 2010</td>
<td>Cauc</td>
<td>Wife</td>
<td>0%</td>
<td>Cauc</td>
<td>Husband</td>
</tr>
<tr>
<td>APR 2010</td>
<td>Cauc</td>
<td>Husband</td>
<td>23%</td>
<td>Cauc</td>
<td>Husband</td>
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</tbody>
</table>
NEAD Chain 8

Donor: APR 2010
From WI
OHCO OHCO

PRA: 12%
Ethnicity: Cauc
Relationship: Friend

NEAD Chain 9

Donor: JULY 2010
OHCO

PRA: 0%
Ethnicity: Cauc
Relationship: Brother

Donor: JULY 2010
OHCO

PRA: 0%
Ethnicity: AA
Relationship: Wife

Donor: AUG 2010
OHCO

PRA: 77%
Ethnicity: Cauc
Relationship: Cousin

Donor: AUG 2010
MISM

PRA: 68%
Ethnicity: Cauc
Relationship: Husband

Donor: AUG 2010
COSL

PRA: 90%
Ethnicity: Cauc
Relationship: Daughter

Donor: AUG 2010
COUC

PRA: 0%
Ethnicity: Cauc
Relationship: Husband
CONCLUSIONS

1. NEAD Chains have allowed for 34 transplants from nine altruistic donors facilitated by the Alliance for Paired Donation (average length of chain is 3.8 transplants).

2. Nineteen of thirty-four (56%) have a PRA over 60%.

3. Fifteen of thirty-four (44%) have blood type O.

4. NEAD Chains increase the quantity AND quality of paired donation transplants compared with simultaneous exchanges.

5. The average bridge donor waits 6.7 months to donate. The longest “bridge donor” donated after a 10 month wait.

6. No bridge donor has reneged.