Global Kidney Exchange

Transplant precluded by financial barriers

Type A

PATIENT

Type O

DONOR

Transplant precluded by immunologic barriers

Type O

PATIENT

Type A

DONOR
Global Kidney Exchange

Without dialysis or kidney transplantation, the international patient dies.
Global Kidney Exchange

Without kidney transplantation the US patient remains on dialysis.
Global Kidney Exchange

The cost of dialysis is 3X the cost of kidney transplantation over 3-5 years.
Global Kidney Exchange
Global Kidney Exchange

$450,000 - $750,000

Transplant precluded by financial barriers

PATIENT
Type A
DONOR
Type O

Transplant precluded by immunologic barriers

PATIENT
Type O
DONOR
Type A
Global Kidney Exchange

PATIENT Type A

Transplant precluded by financial barriers

DONOR Type O

PATIENT Type O

Transplant precluded by immunologic barriers

DONOR Type A

3X
Global Kidney Exchange

The cost of dialysis is 3X the cost of kidney transplantation over 3-5 years.
Global Kidney Exchange

The cost of dialysis is 3X the cost of kidney transplantation over 3-5 years.
Global Kidney Exchange

The cost of dialysis is 3X the cost of kidney transplantation over 3-5 years.
Global Kidney Exchange

The cost of dialysis is 3X the cost of kidney transplantation over 3-5 years.
Global Kidney Exchange

- PATIENT Type A
  - Transplant precluded by financial barriers

- DONOR Type O
  - Feasible transplant

- PATIENT Type O
  - Transplant precluded by immunologic barriers

- DONOR Type A
Global Kidney Exchange
Global Kidney Exchange

The continuing cost of long-term dialysis for a US patient can be redirected into three streams.

- Long-term savings that accrue to the insurance payer
- Transplant and long-term care for the US patient
- Transplant and long-term care for an international patient

PATIENT
Type A
Transplant precluded by financial barriers

DONOR
Type O

PATIENT
Type O
Transplant precluded by immunologic barriers

DONOR
Type A

Feasible transplant
Advantages and benefits

• Everybody wins:
  • Indigent international patient and donor
  • American Patient
  • American insurance company
  • American Transplant Center
  • Pharmaceutical Industry
  • US Government – Medicare
  • American Taxpayers
Global Kidney Exchange
Global Kidney Exchange

PATIENTS

1. PRA: 28%
   Race: Asian
   Age: 33 yo
   Insurance: Philanthropy
   Dialysis start: Oct 2014
   Transplant: Jan 2015
   State: OH

2. PRA: 68%
   Race: Caucasian
   Age: 48 yo
   Insurance: Medicare
   Dialysis start: Jan 2012
   Transplant: Jan 2015
   State: MN

3. PRA: 0%
   Race: Caucasian
   Age: 32 yo
   Insurance: Medicare
   Dialysis start: Sep 2010
   Transplant: Jan 2015
   State: WA

4. PRA: 22%
   Race: Caucasian
   Age: 59 yo
   Insurance: Medicare
   Dialysis start: Apr 2013
   Transplant: Mar 2015
   State: GA

5. PRA: 1%
   Race: African Amer
   Age: 36 yo
   Insurance: Private
   Dialysis start: Sep 2014
   Transplant: Mar 2015
   State: GA

6. PRA: 93%
   Race: Caucasian
   Age: 59 yo
   Insurance: Medicare
   Dialysis start: May 2014
   Transplant: Mar 2015
   State: GA

7. PRA: 1%
   Race: Caucasian
   Age: 68 yo
   Insurance: Medicare
   Dialysis start: Dec 2014
   Transplant: Mar 2015
   State: NC

8. PRA: 95%
   Race: Caucasian
   Age: 54 yo
   Insurance: Medicare
   Dialysis start: Jan 2012
   Transplant: Apr 2015
   State: CA

9. PRA: 58%
   Race: African Amer
   Age: 46 yo
   Insurance: Medicare
   Dialysis start: Aug 2011
   Transplant: Aug 2015
   State: CA

10. PRA: 0%
    Race: African Amer
    Age: 48 yo
    Insurance: Medicare
    Dialysis start: Apr 2015
    Transplant: Aug 2015
    State: CA

11. PRA: 1%
    Race: Caucasian
    Age: 48 yo
    Insurance: Private
    Dialysis start: Apr 2015
    Transplant: Aug 2015
    State: CA

DONORS

A

O

B

A

O

A

A

O

O

O

O

O

O

B

A

Relationship: Altruistic
Race: Caucasian
Age: 53 yo

Race: Asian
Age: 29 yo

Race: Caucasian
Age: 44 yo

Race: Caucasian
Age: 54 yo

Race: Caucasian
Age: 47 yo

Race: African Amer
Age: 30 yo

Race: Caucasian
Age: 42 yo

Race: Caucasian
Age: 48 yo

Race: Caucasian
Age: 53 yo

Race: Asian
Age: 60 yo

Race: Caucasian
Age: 52 yo

Race: Caucasian
Age: 47 yo

Barrier: Financial
Barrier: Friend
Barrier: Father-in-law
Barrier: Friend
Barrier: Father-in-law
Barrier: Friend
Barrier: Friend
Barrier: Friend
Barrier: Friend
Barrier: Friend
Barrier: ABOI
Barrier: ABOI

Jose and Kristine
Filipino Pair
Global Kidney Exchange

Donor 1

Recipient 1

Recipient 2

Donor 2

$300k to $500k

$150k

$100k

$50k

Ongoing Immuno suppression + Healthcare + Donor Follow up

Poverty

Developing World

US
One Year Later
Deceased Donor-initiated NEAD Chains

Marc Melcher, John Roberts, Alan Leichtman, Alvin Roth and Michael Rees
NEAD Chain Ethical Considerations

Deceased Donor Waiting List

Patient at top of the Deceased Donor Waiting List
As determined by UNOS allocation algorithm
NEAD Chain Ethical Considerations

Deceased Donor
Waiting List

Patient at top of the Deceased Donor Waiting List
As determined by UNOS allocation algorithm

Altruistic Donor
NEAD Chain Ethical Considerations

Allocation of altruistic donor kidney according to UNOS deceased donor allocation algorithm

Altruistic Donor

Patient at top of the Deceased Donor Waiting List
As determined by UNOS allocation algorithm
NEAD Chain Ethical Considerations

UNOS Allocation of altruistic donor kidney according to UNOS deceased donor allocation algorithm

- Altruistic Donor
- Patient on Deceased Donor Waiting List without an incompatible, but willing living donor
  
  Estimated Distribution by Ethnicity*  
  - Caucasian: 38.4%  
  - African American: 34.0%  
  - Hispanic: 18.1%  
  - Asian: 8.1%  
  - Other: 1.4%  

- Patient at top of the Deceased Donor Waiting List  
  As determined by UNOS allocation algorithm
NEAD Chain Ethical Considerations

---→ Allocation of altruistic donor kidney according to UNOS deceased donor allocation algorithm

- Altruistic Donor
- Patient on Deceased Donor Waiting List without an incompatible, but willing living donor
  
  Estimated Distribution by Ethnicity*
  
  - Caucasian 38.4%
  - African American 34.0%
  - Hispanic 18.1%
  - Asian 8.1%
  - Other 1.4%

- Patient at top of the Deceased Donor Waiting List
  As determined by UNOS allocation algorithm
NEAD Chain Ethical Considerations

Allocation of altruistic donor kidney according to NEAD chain allocation algorithm

Patient on Deceased Donor Waiting List with an incompatible, but willing living donor

*Estimated Distribution by Ethnicity*
- Caucasian: 70.3%
- African American: 12.5%
- Hispanic: 13.0%
- Asian: 2.9%
- Other: 1.2%
NEAD Chain Ethical Considerations

Allocation of altruistic donor kidney according to NEAD chain allocation algorithm

Patient on Deceased Donor Waiting List with an incompatible, but willing living donor

*Estimated Distribution by Ethnicity*

- Caucasian: 70.3%
- African American: 12.5%
- Hispanic: 13.0%
- Asian: 2.9%
- Other: 1.2%
NEAD Chain Ethical Considerations

Allocation of altruistic donor kidney according to NEAD chain allocation algorithm

Patient on Deceased Donor Waiting List with an incompatible, but willing living donor

*Estimated Distribution by Ethnicity*
- Caucasian: 70.3%
- African American: 12.5%
- Hispanic: 13.0%
- Asian: 2.9%
- Other: 1.2%
NEAD Chain Ethical Considerations

Allocation of altruistic donor kidney according to NEAD chain allocation algorithm

Patient on Deceased Donor Waiting List with an incompatible, but willing living donor

Estimated Distribution by Ethnicity*:
- Caucasian: 70.3%
- African American: 12.5%
- Hispanic: 13.0%
- Asian: 2.9%
- Other: 1.2%
NEAD Chain Ethical Considerations

Allocation of altruistic donor kidney according to NEAD chain allocation algorithm

Patient on Deceased Donor Waiting List with an incompatible, but willing living donor

*Estimated Distribution by Ethnicity*
- Caucasian: 70.3%
- African American: 12.5%
- Hispanic: 13.0%
- Asian: 2.9%
- Other: 1.2%
NEAD Chain Ethical Considerations

Allocation of altruistic donor kidney according to NEAD chain allocation algorithm

Patient on Deceased Donor Waiting List with an incompatible, but willing living donor

Estimated Distribution by Ethnicity*

- Caucasian: 70.3%
- African American: 12.5%
- Hispanic: 13.0%
- Asian: 2.9%
- Other: 1.2%
NEAD Chain Ethical Considerations

Allocation of altruistic donor kidney according to NEAD chain allocation algorithm

Patient on Deceased Donor Waiting List with an incompatible, but willing living donor

Estimated Distribution by Ethnicity:
- Caucasian: 70.3%
- African American: 12.5%
- Hispanic: 13.0%
- Asian: 2.9%
- Other: 1.2%
NEAD Chain Ethical Considerations

---

Allocation of altruistic donor kidney according to NEAD chain allocation algorithm

---

Patient on Deceased Donor Waiting List with an incompatible, but willing living donor

*Estimated Distribution by Ethnicity*

- Caucasian: 70.3%
- African American: 12.5%
- Hispanic: 13.0%
- Asian: 2.9%
- Other: 1.2%
NEAD Chain Ethical Considerations

Patient on Deceased Donor Waiting List with an incompatible, but willing living donor

Estimated Distribution by Ethnicity*

- Caucasian: 70.3%
- African American: 12.5%
- Hispanic: 13.0%
- Asian: 2.9%
- Other: 1.2%

Result after NEAD allocation

Allocation of altruistic donor kidney according to NEAD chain allocation algorithm
NEAD Chain Ethical Considerations

---

Allocation of altruistic donor kidney according to UNOS deceased donor allocation algorithm

---

Result after UNOS allocation

---

Patient on Deceased Donor Waiting List without an incompatible, but willing living donor

Estimated Distribution by Ethnicity*

- Caucasian: 38.4%
- African American: 34.0%
- Hispanic: 18.1%
- Asian: 8.1%
- Other: 1.4%

* Estimated distribution by ethnicity based on UNOS data.
NEAD Chain Ethical Considerations

- Allocation of altruistic donor kidney according to UNOS deceased donor allocation algorithm
- Allocation of altruistic donor kidney according to NEAD chain allocation algorithm

Patient on Deceased Donor Waiting List with an incompatible, but willing living donor

Estimated Distribution by Ethnicity*

- Caucasian: 70.3%
- African American: 12.5%
- Hispanic: 13.0%
- Asian: 2.9%
- Other: 1.2%
NEAD Chain Ethical Considerations

Allocation of altruistic donor kidney according to UNOS deceased donor allocation algorithm

Allocation of altruistic donor kidney according to NEAD chain allocation algorithm

Altruistic Donor

Patient on Deceased Donor Waiting List without an incompatible, but willing living donor

Estimated Distribution by Ethnicity*

- Caucasian: 38.4%
- African American: 34.0%
- Hispanic: 18.1%
- Asian: 8.1%
- Other: 1.4%

Patient on Deceased Donor Waiting List with an incompatible, but willing living donor

Estimated Distribution by Ethnicity*

- Caucasian: 70.3%
- African American: 12.5%
- Hispanic: 13.0%
- Asian: 2.9%
- Other: 1.2%

Patient at top of the Deceased Donor Waiting List
As determined by UNOS allocation algorithm
NEAD Chain Ethical Considerations

Pool of 10 NDDs

Deceased Donor Pool

Patient on Deceased Donor Waiting List without an incompatible, but willing living donor

Estimated Distribution by Ethnicity*

- Caucasian: 38.4%
- African American: 34.0%
- Hispanic: 18.1%
- Asian: 8.1%
- Other: 1.4%

Patient on Deceased Donor Waiting List with an incompatible, but willing living donor

Estimated Distribution by Ethnicity*

- Caucasian: 70.3%
- African American: 12.5%
- Hispanic: 13.0%
- Asian: 2.9%
- Other: 1.2%

Living Donor Pool
NEAD Chain Ethical Considerations

Deceased Donor Pool

NDD Pool

Living Donor Pool

1:1
NEAD Chain Ethical Considerations

Deceased Donor Pool

NDD Pool

Living Donor Pool

1:1

Ten Transplants
NEAD Chain Ethical Considerations

Deceased Donor Pool

NDD Pool

Living Donor Pool

NEAD Chain

5:1
NEAD Chain Ethical Considerations

Deceased Donor Pool

NDD Pool

Living Donor Pool

Fifty Transplants

NEAD Chain 5:1
NEAD Chain Ethical Considerations

Deceased Donor Pool

Living Donor Pool

Ten Transplants

Three of desired group transplanted

1:1
NEAD Chain Ethical Considerations

Deceased Donor Pool

Living Donor Pool

Fifty Transplants

Six of desired group transplanted

NDD Pool

5:1
NEAD Chain Ethical Considerations

Deceased Donor Pool

Living Donor Pool

NDD Pool

Ten Transplants

Fifty Transplants

Three of desired group transplanted

Six of desired group transplanted

1:1

5:1
Deceased Donor Allocation

Ethical Considerations

Deceased Donor Pool

KPD Pool

KPD Pool of Incompatible Pairs

Ten Transplants

Fifty Transplants

Three of desired group transplanted

Six of desired group transplanted

1:1

5:1

Deceased Donors