

Crossing borders in search of health, welfare, and safety

(**Kidney failure**, Surrogacy, and Refugee qualification)

Market Design Perspectives on Inequality

HCEO, Chicago, August 2016

Al Roth

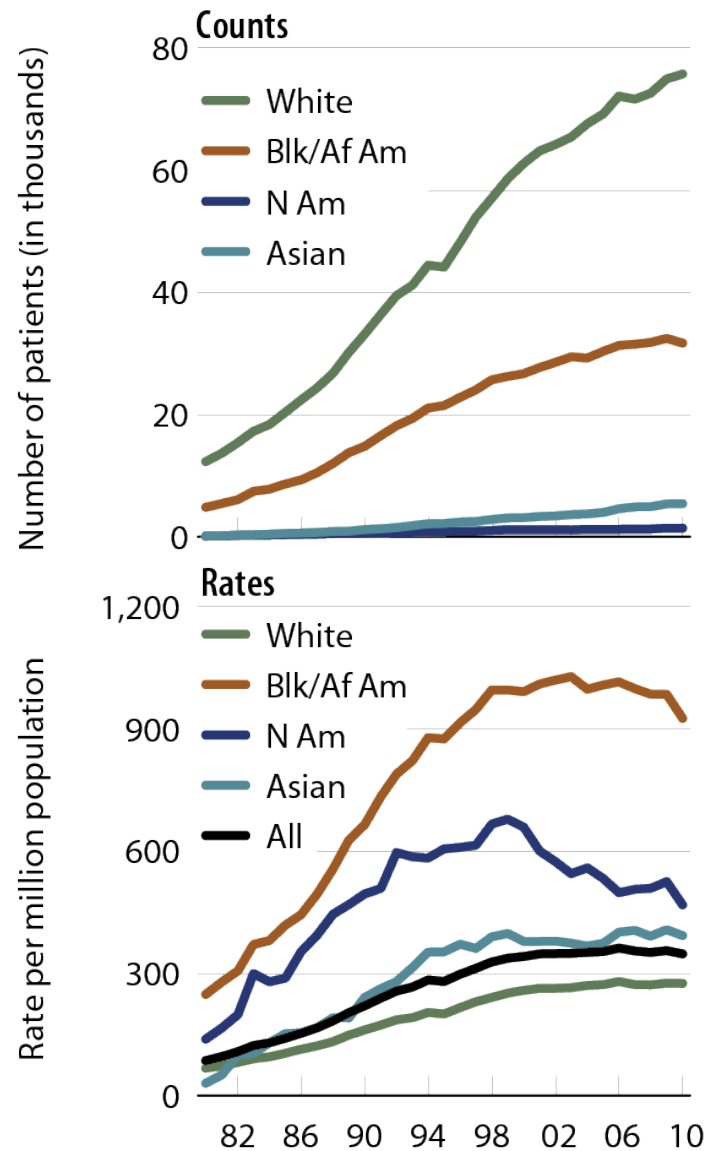
Stanford University

Health inequality

- Kidney failure

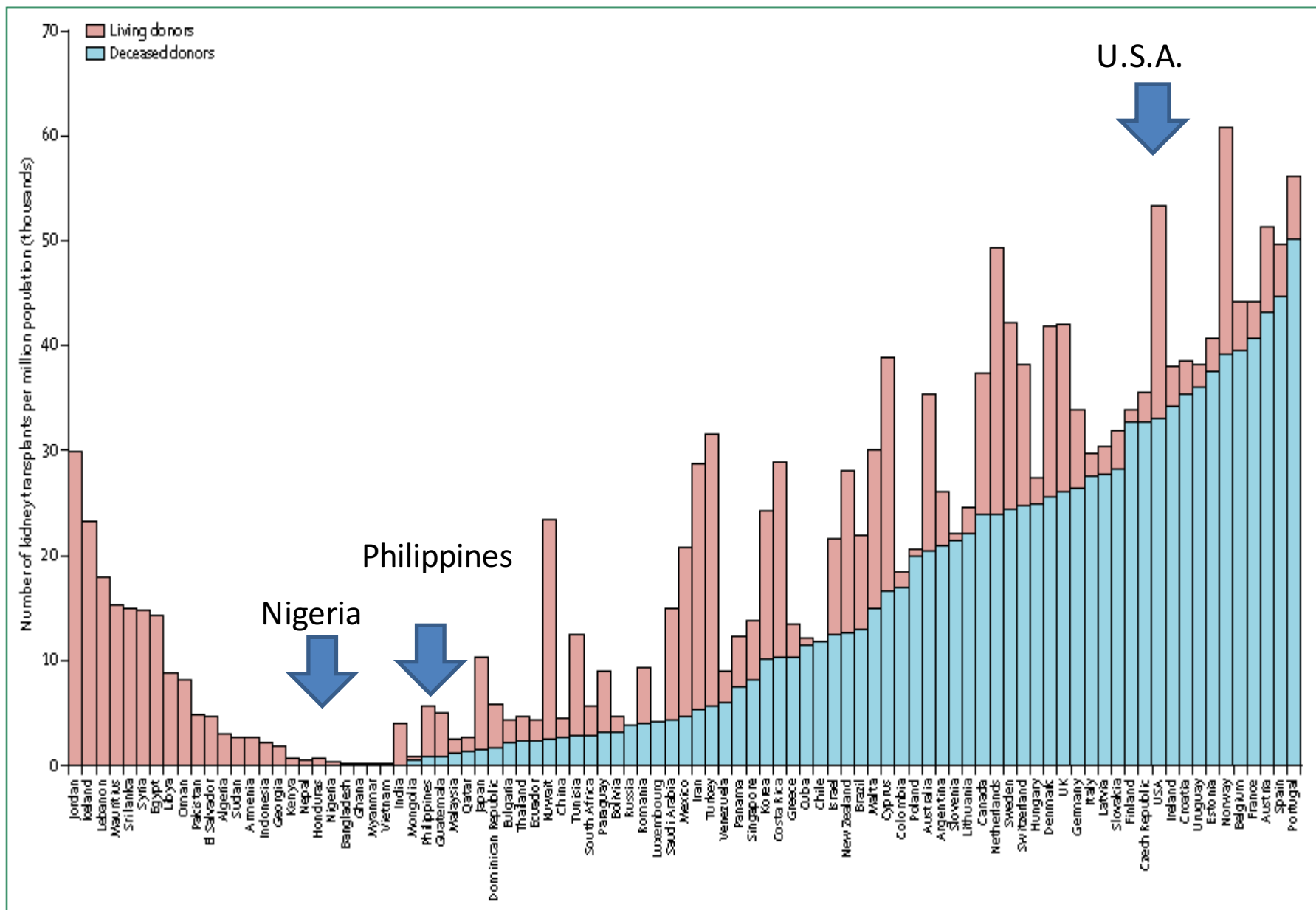
U.S. Incident counts (new patients) & adjusted rates of ESRD, by race

Figure 1.5 (Volume 2)



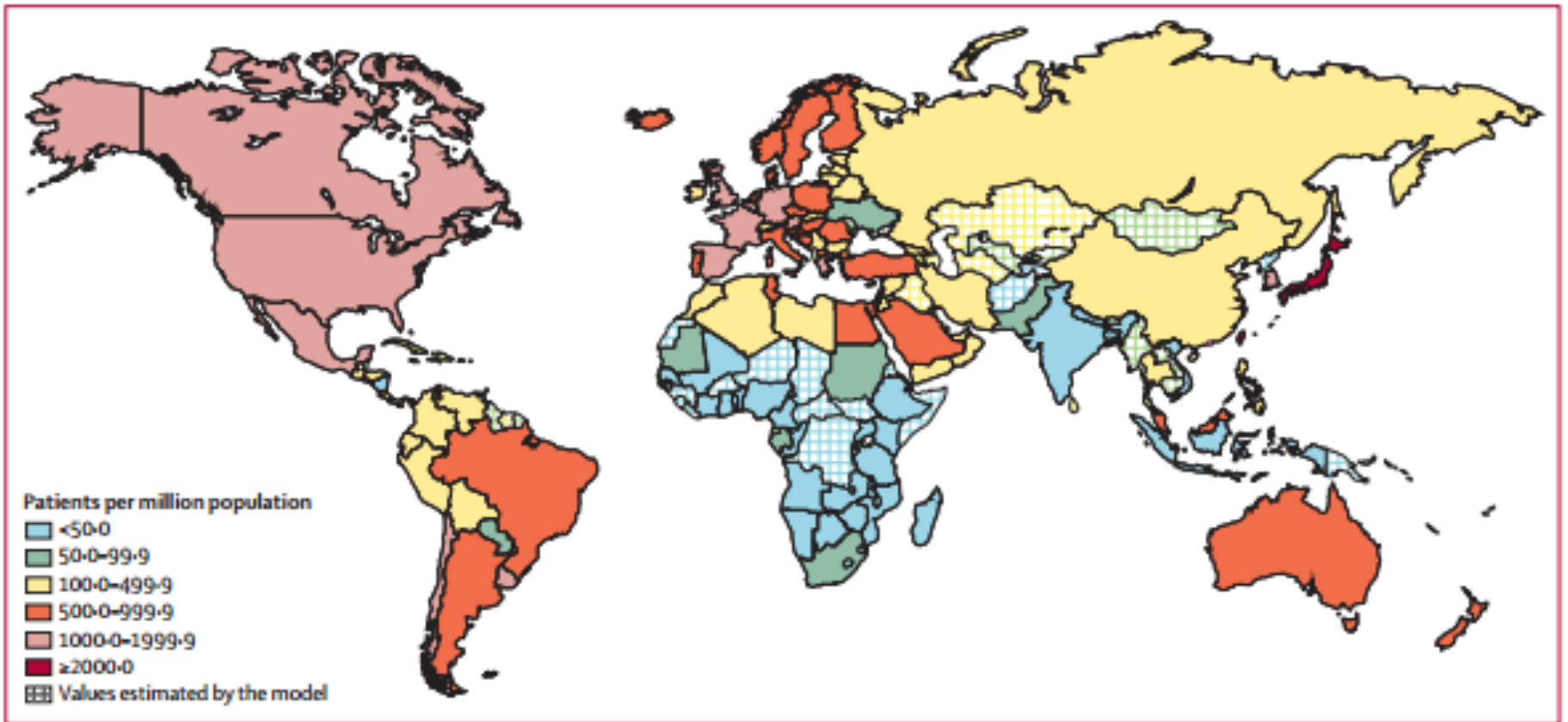
Incident ESRD patients.
 Adj: age/gender; ref: 2005 ESRD patients.
 USRDS 2012 ADR

Kidneys Transplanted per million population



Nigeria, Philippines

Patients receiving renal replacement therapy (dialysis) in 2010 (estimate)



Liyanage T, Ninomiya T, Jha V, et al. Worldwide access to treatment for end-stage kidney disease: a systematic review. *Lancet* 2015;385:1975-82.

In the U.S., 100,000 people are on the deceased donor waiting list, but we only have 12,000 deceased donor transplants per year

Elsewhere, 2-7 million people die every year worldwide due to inability to pay for either dialysis or kidney transplantation

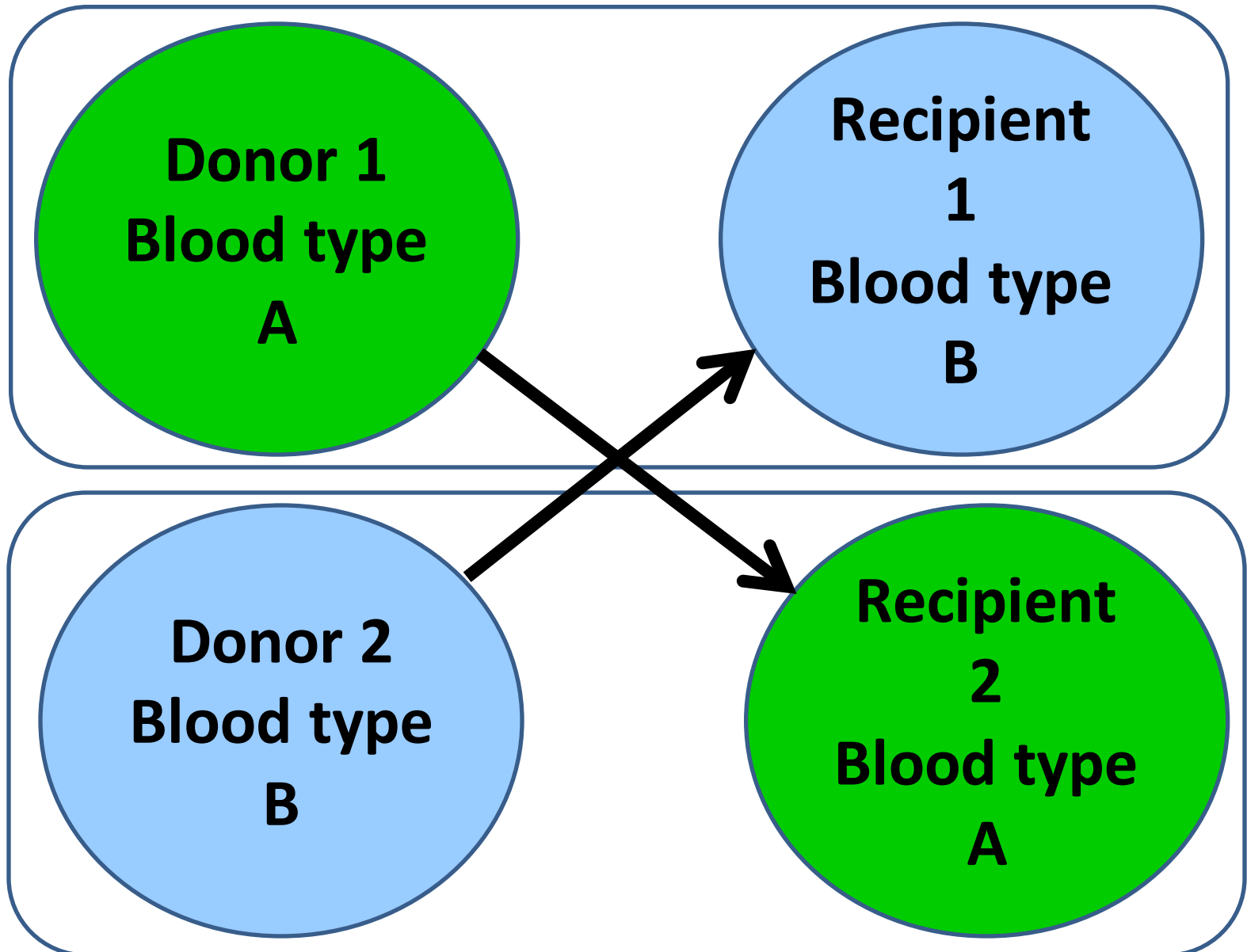
Papers

- **Global Kidney Exchange**, Michael A. Rees, Ty B. Dunn, Christian S. Kuhr, Christopher L. Marsh, Jeffrey Rogers, Susan E. Rees, Alejandra Cicero, Laurie J. Reece, Alvin E. Roth, Obi Ekwenna, David E. Fumo, Kimberly D. Krawiec, Jonathan E. Kopke, Samay Jain, Miguel Tan and Siegfredo R. Paloyo, submitted.
- **“Financing Transplant Costs of the Poor: Global Kidney Exchange,”** Afshin Nikzad, Mohammad Akbarpour, Michael Rees, and Alvin E. Roth, working paper, 2016

Kidney exchange—U.S. background

- Many more people need kidney transplants than there are available organs.
- The waiting list in the US has about 100,000 people
 - The wait can be years, and many die while waiting (4,448 in 2015, with another 4,377 removed from waiting list as “too sick to transplant”).
 - In 2015 we had 12,250 transplants from deceased donors
- Transplantable organs can also come from **living donors**.
 - In 2015 we had 5,628 transplants from living donors
- Sometimes donors are incompatible with their intended recipient.
- This opens the possibility of *exchange* .

Simple two-pair kidney exchange



Notice that no money changes hands...

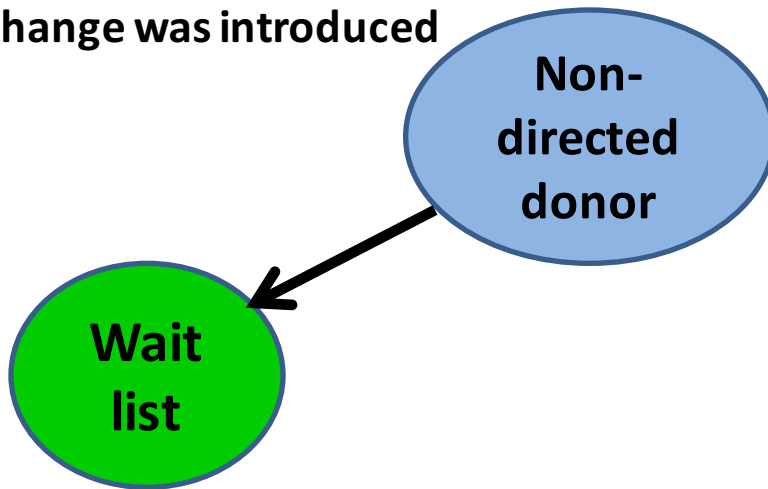
- Kidney exchange is an “in kind” exchange
- **Section 301, National Organ Transplant Act (NOTA), 42 U.S.C. 274e 1984: “it shall be unlawful for any person to knowingly acquire, receive or otherwise transfer any human organ for valuable consideration for use in human transplantation”.**

2-way exchange involves 4 *simultaneous* surgeries



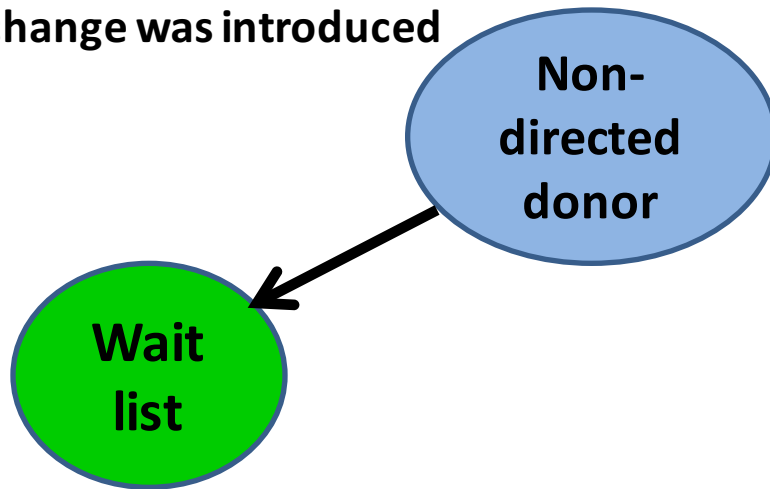
Chains initiated by non-directed (altruistic) donors

Non-directed donation before kidney exchange was introduced

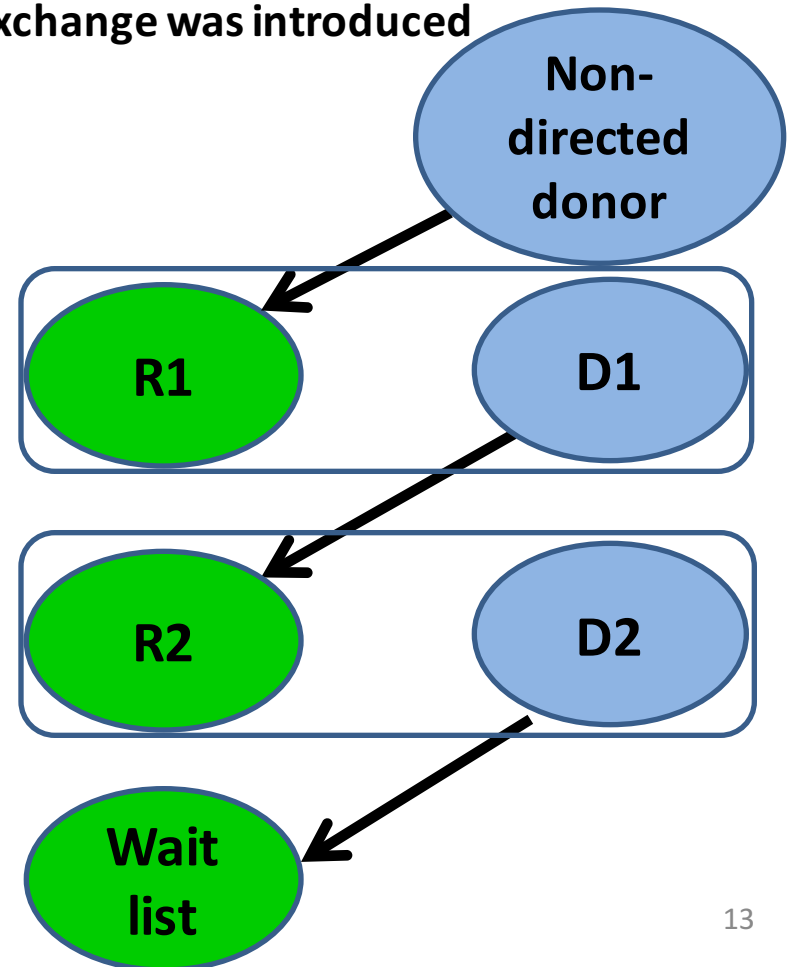


Chains initiated by non-directed (altruistic) donors

Non-directed donation before kidney exchange was introduced



Non-directed donation after kidney exchange was introduced



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A Nonsimultaneous, Extended, Altruistic-Donor Chain

Michael A. Rees, M.D., Ph.D., Jonathan E. Kopke, B.S., Ronald P. Pelletier, M.D.,
Dorry L. Segev, M.D., Matthew E. Rutter, M.D., Alfredo J. Fabrega, M.D.,
Jeffrey Rogers, M.D., Oleh G. Pankewycz, M.D., Janet Hiller, M.S.N.,
Alvin E. Roth, Ph.D., Tuomas Sandholm, Ph.D., M. Utku Ünver, Ph.D.,
and Robert A. Montgomery, M.D., D.Phil.

SUMMARY

We report a chain of 10 kidney transplantations, initiated in July 2007 by a single altruistic donor (i.e., a donor without a designated recipient) and coordinated over a period of 8 months by two large paired-donation registries. These transplantations involved six transplantation centers in five states. In the case of five of the transplantations, the donors and their coregistered recipients underwent surgery simultaneously. In the other five cases, “bridge donors” continued the chain as many as 5 months after the coregistered recipients in their own pairs had received transplants. This report of a chain of paired kidney donations, in which the transplantations were not necessarily performed simultaneously, illustrates the potential of this strategy.

	1	2	3	4	5	6	7	8	9	10
Transplant Date:	Jul 2007	Jul 2007	Sep 2007	Sep 2007	Feb 2008	Feb 2008	Feb 2008	Feb 2008	Mar 2008	Mar 2008
Recipient's State:	AZ	OH	OH	OH	MD	MD	MD	NC	MD	OH
Recipient's Sex and ABO type:	♀ O	♀ O	♀ A	♂ A	♀ B	♀ A ²	♀ A	♂ A	♂ A ³	♀ A
Donor's Sex and ABO type:	♂ O ¹	♀ O	♀ A	♀ A	♀ B	♀ A	♀ A	♂ AB	♀ A	♀ AB
Recipient's PRA:	62%	0%	23%	0%	82%	78%	64%	3%	100%	46%
Recipient's Ethnicity:	Cauc	Cauc	Cauc	Cauc	Cauc	Hispanic	Cauc	Cauc	Cauc	AA
Recipient-to-Donor Relationship:	Wife Husband	Daughter Mother	Mother Daughter	Brother Sister	Husband Wife	Daughter Father	Wife Husband	Friend Friend	Brother Brother	Mother Daughter

¹ The initiating donor was an unpaired altruistic donor from Michigan.

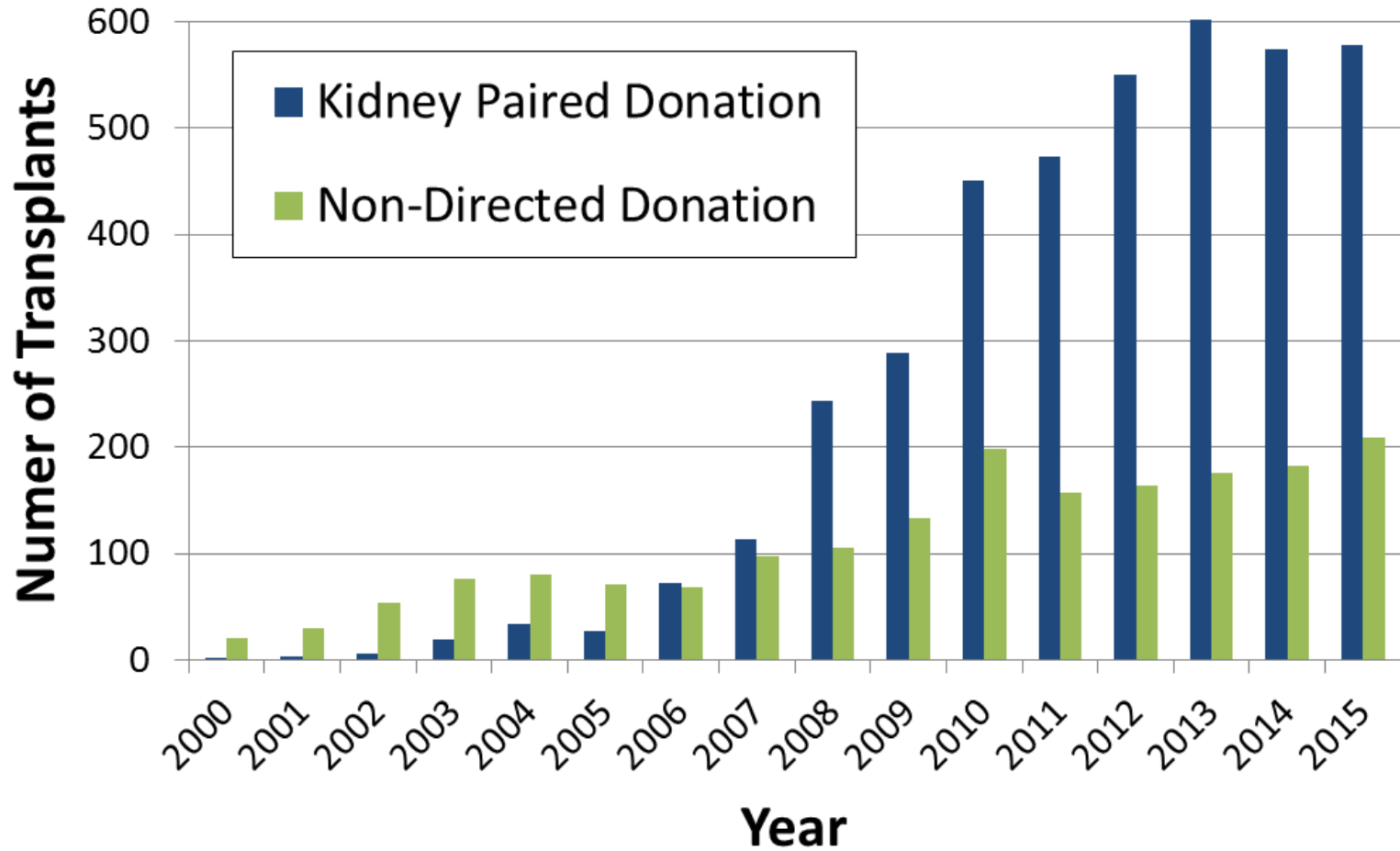
² The recipient of Transplant 6 required desensitization to HLA DSA by T and B cell flow cytometry.

³ The recipient of Transplant 9 required desensitization to blood group (AHG titer of 1:8).

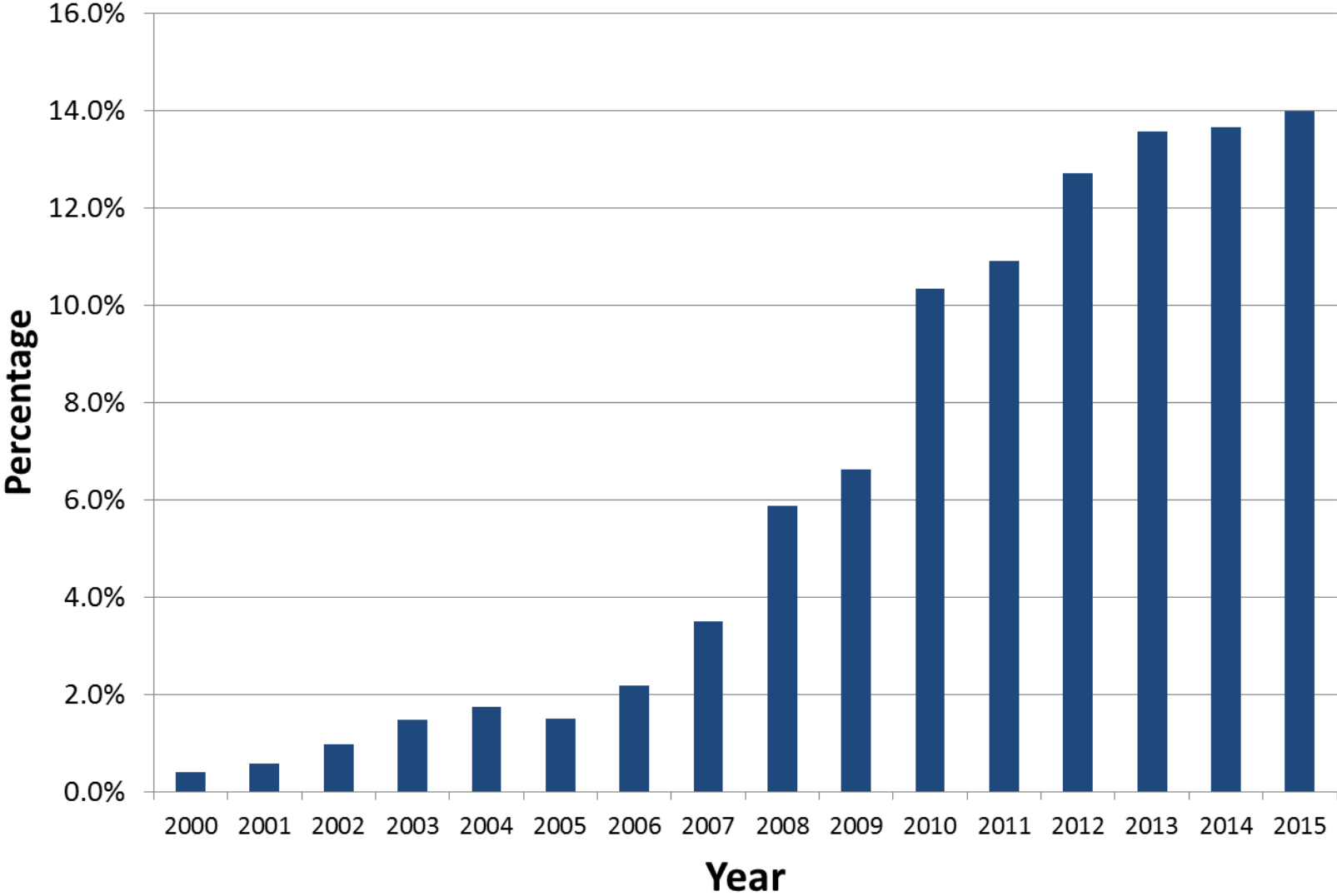
2009 HEROES AMONG US AWARDS



KPD and NDD Transplants in U.S.



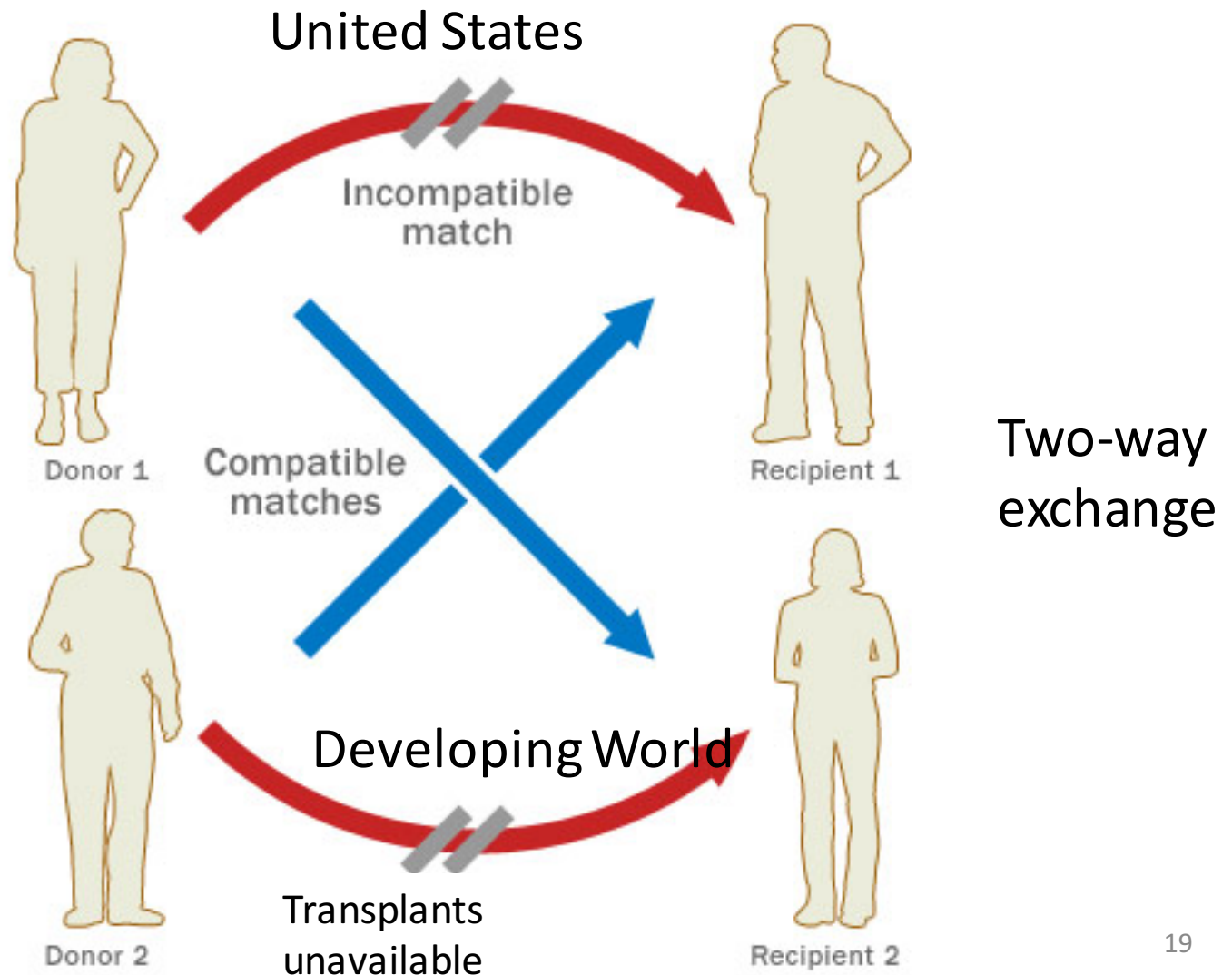
KPD and NDD as % of LD in the United States



Kidney exchange outside the U.S.

- Wednesday, August 3, 2016 [First kidney exchange in Nepal](#)
- March 7, 2016 [First paired kidney exchange transplant done in Singapore](#)
- Friday, July 24, 2015 [Kidney exchange in Turkey](#) (1st exchanges there)
- April 10, 2015 [A first non-directed donor kidney exchange chain in Italy](#)
- March 30, 2015 [A first kidney exchange in Argentina](#)
- March 5, 2015 [First kidney exchange in Poland](#)
- Friday, November 7, 2014 [Kidney exchange in Spain: now more than 100 transplants](#)
- June 7, 2014 [Kidney exchange in France](#)
- December 19, 2013 [Kidney exchange in Vienna](#)
- August 19, 2013 [Ten kidney exchange transplants on World Kidney Day in Ahmedabad, India](#)
- July 28, 2013 [First Kidney Exchange in Portugal:](#)
- July 23, 2013 [Kidney exchange chain in India](#)
- June 6, 2013 [Kidney exchange between Jewish and Arab families in Israel](#)
- December 26, 2012 [Kidney exchange in Canada](#)
- December 1, 2012 [Kidney exchange in India](#)
- June 1, 2012 [Mike Rees and Greece: an intercontinental kidney exchange](#)
- March 27, 2012 [Kidney exchange in Britain](#)
- February 5, 2012 [Kidney exchange in Australia, 2011](#)
- April 29, 2011 [First kidney exchange in Spain](#)
- December 8, 2010 [National kidney exchange in Canada](#)
- August 3, 2010 [Kidney Exchange in South Korea](#)
- Tuesday, August 3, 2010 [Kidney Exchange in South Korea](#)
- Friday, July 30, 2010 [Kidney transplantation advice from the Netherlands](#)
- March 9, 2010 [Kidney exchange news from Britain](#) (1st 3-way there)
- January 27, 2010 [The Australian paired Kidney eXchange \(AKX\) goes live](#)
- June 25, 2009 [Kidney exchange in Canada](#) (1st exchange there)
- February 27, 2009 [Kidney Exchange in Australia](#) (in Western Australia)

Global kidney exchange: a possibility of mutual aid

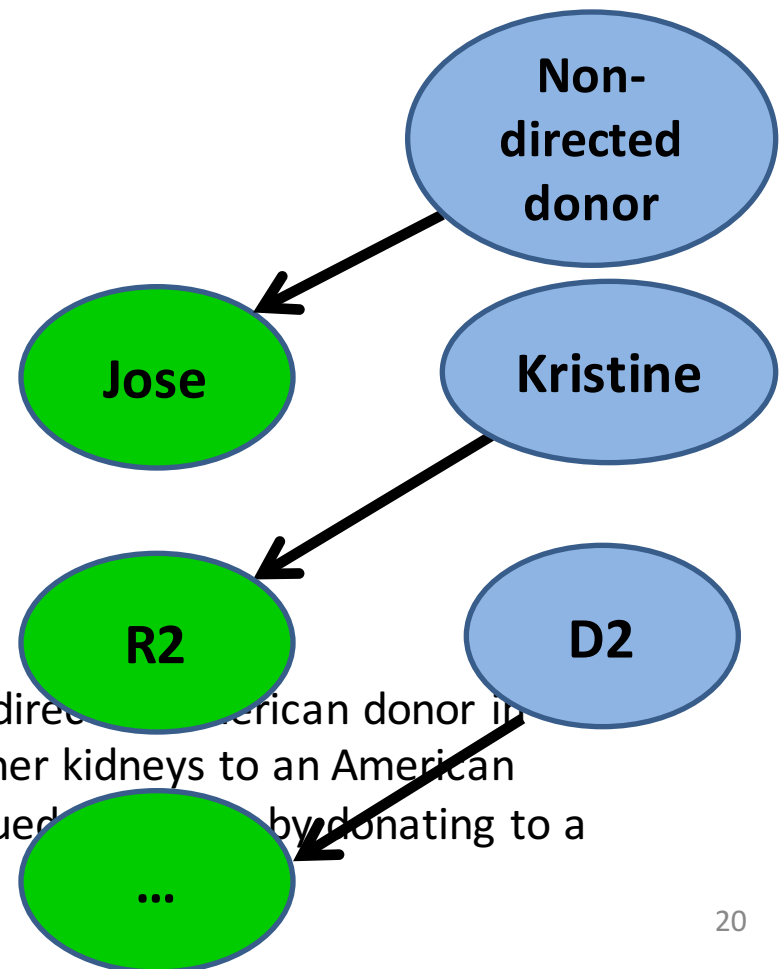


- # First global kidney exchange, with a pair from the Philippines—January 2015,
- Alliance for Paired Donation (Rees et al.)

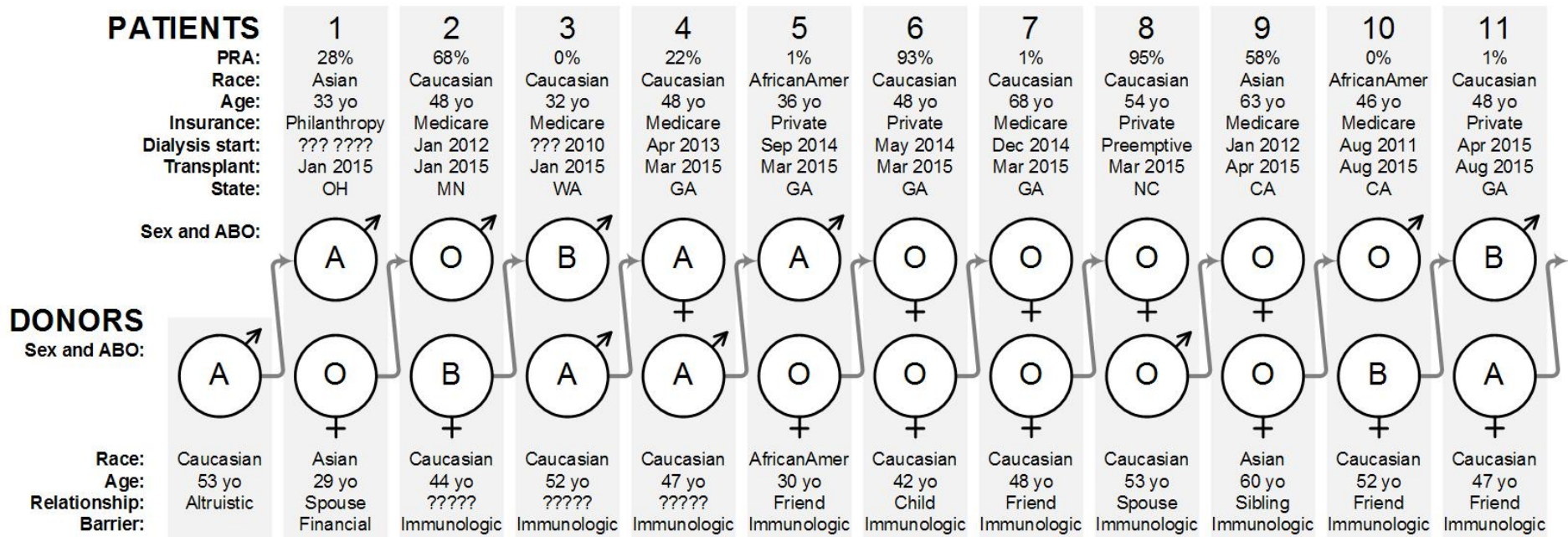


Jose Mamaril received a kidney from a non-directed American donor in Georgia. His wife, **Kristine**, donated one of her kidneys to an American recipient in Minnesota, whose donor continued the chain by donating to a patient in Seattle.

THE BLADE/JETTA FRASER



The chain to date



Safely home...

- \$50,000 escrow fund for post-surgical care



Global Kidney Exchange

The GKE proposal is “self-financing”.

- Back of the envelope calculation:
 - cost of hemodialysis \approx \$90, 000 per year
 - average time under dialysis \approx 5 years
 - cost of transplant \approx \$120, 000 per surgery (plus \$20,000 in maintenance therapy costs per patient per year)
- But in steady state, waiting time decreases. So dialysis costs will go down...how long will GKE remain self financing?

GKE remains self financing even when it becomes widespread.

Intuition:

- Some domestic pairs immediately find a match
- Some other do not find a match upon arrival.
 - They increase the average waiting cost
- International pairs get matched to those the latter type of domestic pairs
- So even if the *average* dialysis cost is less than the surgery costs, GKE can still be self-financing because it matches domestic patients with higher-than-average dialysis costs.

The medical logistics may not be the
hard part

Financial flows

- Savings:
 - Medicare—complex legislative/bureaucratic
 - Private insurers (33 months)
- Costs:
 - Surgeries—transplant centers
 - Post surgical treatment in home countries
 - Infrastructure development in home countries
- USAID?--Same Federal budget, but no change needed in Medicare
- Allow insurance companies to nominate patients?

Repugnance constraints

- Living donors
 - From poor countries
- As a first reaction, many people are going to conflate global kidney exchange with buying kidneys (which is illegal everywhere except Iran—a ‘repugnant transaction’)

Repugnance

- 1. **“the plan is really not about the international recipient (nor...about the international donor), but only about getting organs for US citizens. So it is exploitative.”**
- 2. **“Lets solve problems at home first...We should encourage programs that allow Americans to help Americans.”**
- 3. **“There is an exploitation of a social condition (being destitute in a foreign country) that kidney transplantation should not be the remedy of resolving social inequities.”**

- Repugnance Concerns:
 - Inadequate post-surgical care
 - Escrow funds for immunosuppressive drugs and post surgical care (in Philippines)
 - Basic infrastructure (in Nigeria)—USAID?
 - Inappropriate/illegal/unethical donor solicitation (how can we ensure that foreign donors aren't selling their kidney?)
 - Family requirement?
 - For non-directed donors too?

Fertility tourism

- The urge to have kids is strong.
- Some fertility services are repugnant in some places but not in others.
- non-border crossing: womb transplants ([Womb transplants in Sweden \(where surrogacy is illegal\)](#))

German Surrogacy Law

Surrogacy contracts in which a woman declares her readiness to undergo artificial or natural insemination or to have an embryo, which is not hers, transferred to her or to carry a baby otherwise to the full term are viewed as unethical and therefore treated as void in Germany. Pursuant to the Embryo Protection Act and the Adoption Placement Act, **the activities performed by those arranging surrogate mothers and by physicians in connection with surrogacy are punishable offences.** Under German law, the woman who commissions a child in such a way (commissioning mother) is not the mother of the child. **The mother of the child is the woman who gave birth to him/her, that is, the surrogate mother and not the commissioning mother.**

...For this reason, **German authorities cannot recognize the maternity of a commissioning mother even if a foreign birth certificate confirms her as the ostensible mother.**

Federal Foreign Office: <http://www.auswaertiges-amt.de/EN/Infoservice/FAQ/GermanFamilyLaw/Leihmutterschaft.html?nn=479790>

Surrogate child denied German passport

09 May 2011

By [Nisha Satkunarajah](#) Appeared in BioNews [606](#)

A child born to a surrogate mother in India has been refused a German passport despite the commissioning German parents being named on the birth certificate.

The German couple made the application to the German Embassy in India but a passport was refused after the embassy said it had doubts over the child's German citizenship. The place of birth on the child's birth certificate was stated as an agency which specialises in surrogacy.

A court in Berlin ruled the embassy was entitled to refuse the application. ...

'The phenomenon is widespread in India where many childless Germans go to fulfil their wish to have babies', a spokesman for the court said. 'They think it is possible without any problems to take the child to Germany. But that's not the case'.

Canada: Assisted Human Reproduction Act (2004)

- **Payment for surrogacy: 6. (1) *No person shall pay consideration to a female person to be a surrogate mother***, offer to pay such consideration or advertise that it will be paid.
- **Acting as intermediary: (2)** No person shall accept consideration for arranging for the services of a surrogate mother, offer to make such an arrangement for consideration or advertise the arranging of such services.
- **Surrogate mother — minimum age: (4)** No person shall counsel or induce a female person to become a surrogate mother, or perform any medical procedure to assist a female person to become a surrogate mother, knowing or having reason to believe that the female person is under 21³³ years of age.

Surrogacy

- market design/rule of law "Black market" surrogacy in England, and subsequent legal complications
- Rule of law is a work in progress
<http://www.nytimes.com/2014/07/28/us/surrogacy-agency-planet-hospital-delivered-heartache.html>
- California law: escrow accounts:
<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=fam&group=07001-08000&file=7960-7962>
- India is attractive to some for other contracting capabilities—e.g. supervision of the surrogate's behavior regarding nutrition, sleep, exercise (not to mention drinking and drugs)

Migration by refugees and others:

- Steps: Qualification (for refugee status, etc.), Determination of country of asylum, settlement in that country.
- Settlement: Alex and Will --settling refugees who have already been granted asylum somewhere has some strong similarities with—and differences from--school choice. Tommy Andersson and Lars Ehlers: matching refugees to housing/landlords.
- Determination of country: that has some elements that resemble school choice (refugee preferences will be informative) but also has a much bigger political element involving country quotas—Hillel and Jesús Fernández-Huertas Moraga have interesting ideas on choosing country capacities.
- But qualifying for refugee status is a different kind of problem, more akin to police investigation, since there are some kinds of information (e.g. foreign fighter) that it may never be safe for applicants to admit... and this is potentially a first order problem, now that security is such a high profile political issue with far-reaching consequences

Brexit: Anti EU/anti-immigrant posters



Designing procedures for eliciting and verifying information

- Dominant strategy mechanisms—powerful but rare.
 - “Do you speak English?”
 - Do you speak Bulgarian?
 - Did you carry a gun?
- Police style investigations are going to be easier for migrants who are part of an accessible network