

New Ways to Tackle a Growing Health Care Dilemma - ESRD

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George Washington University

Professor of Surgery

Chief, Transplant Surgery and Transplant Institute

Thanks to our speaker!



- **Dr. Keith Melancon**
- Director of the George Washington Transplant Institute
- Professor of surgery & the medical director of the Ron and Joy Paul Kidney Center
- Internationally renowned expert in paired kidney exchanges, ABO incompatible kidney transplantation, pancreas transplantation, and immunologic desensitization for organ transplants
- On four occasions set the world's record for largest paired kidney exchange

Nietzsche – “The Birth of Tragedy”

- Apollo



- Dionysis



Why ESRD?

- Diabetes
- Hypertension
- Obesity
- Increased rates in minority population

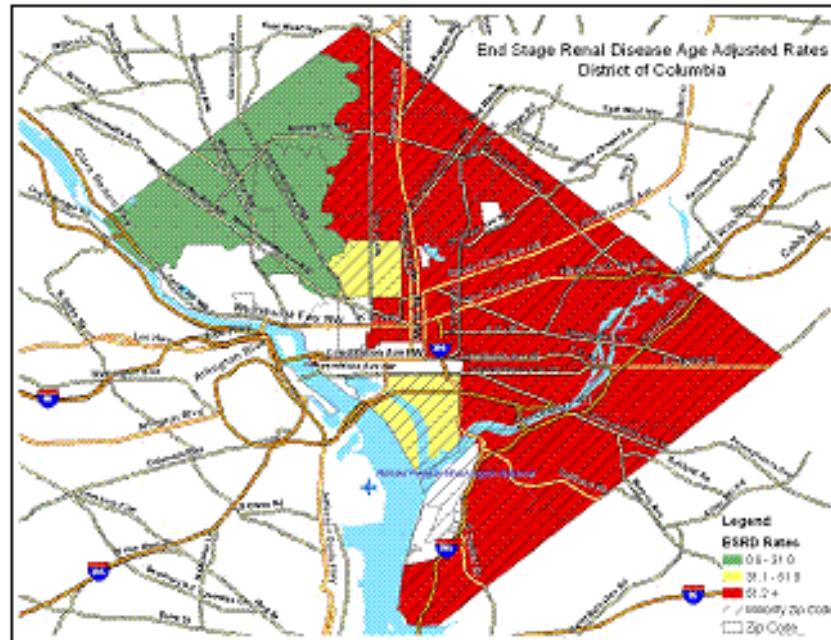
Hypertension



Diabetes



Where is ESRD?



Who is ESRD?



Addressing Disparities

National
 **MOTTEP**®
minority organ tissue transplant education program

Community Outreach

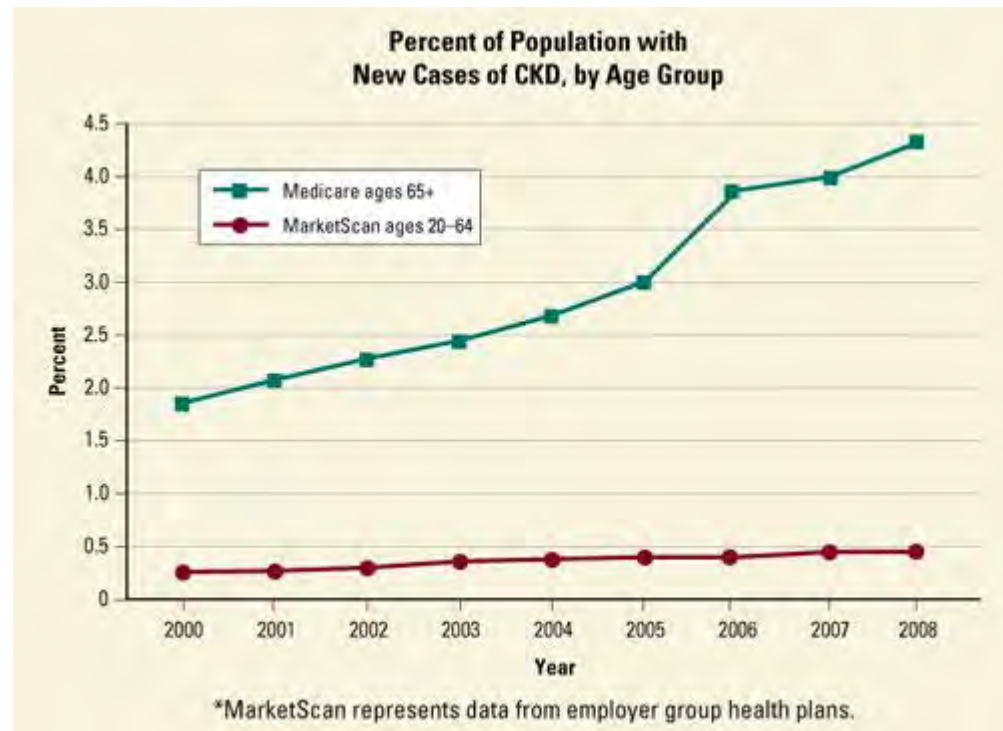


Community Health Delivery Models

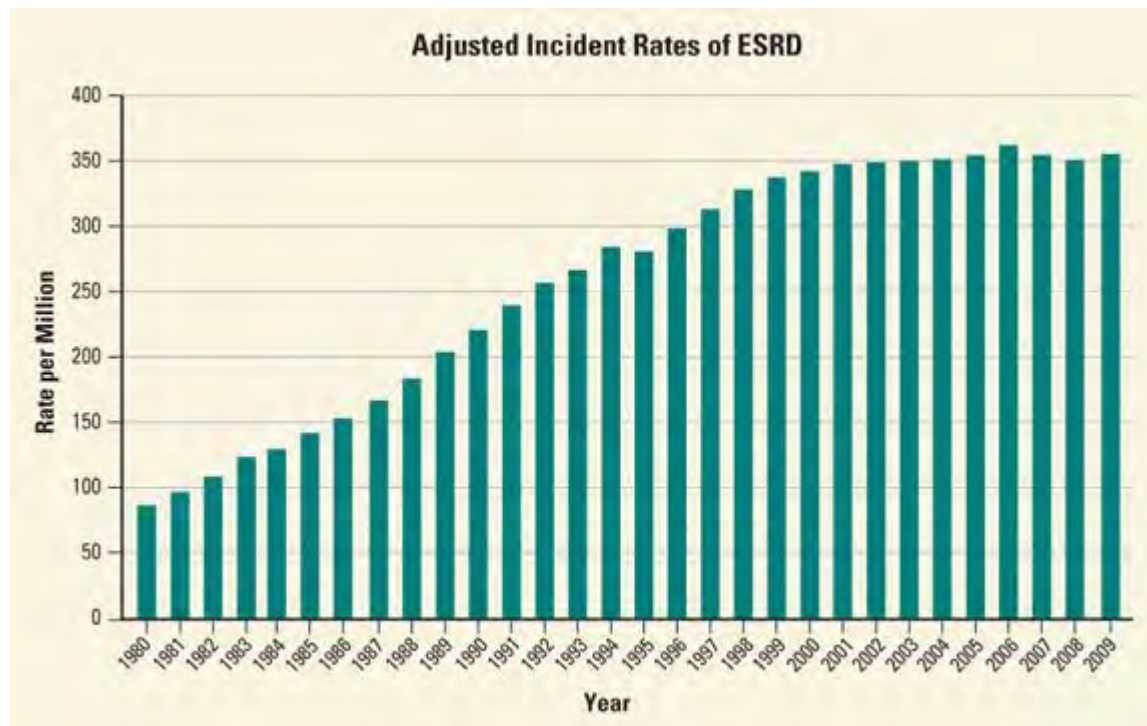


Washington Blade | Michael Key

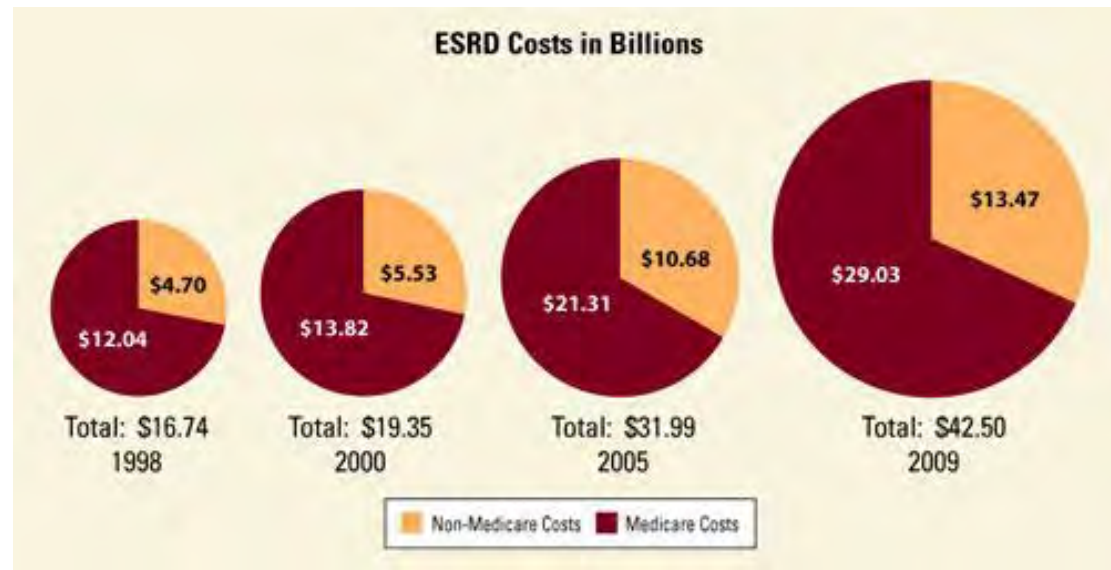
CKD Increasing



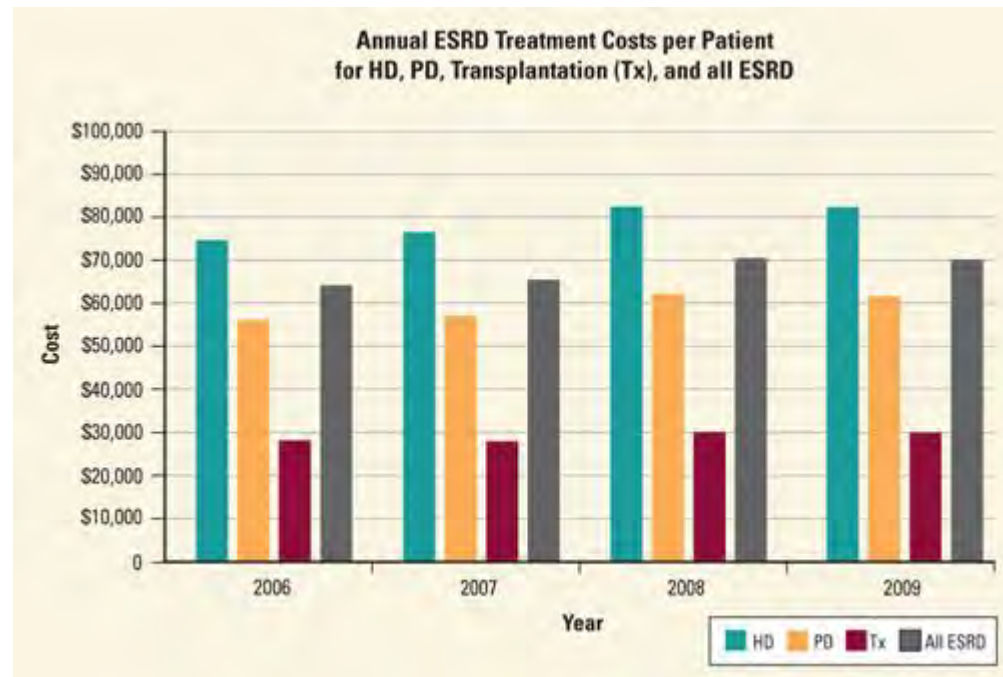
Incidence ESRD



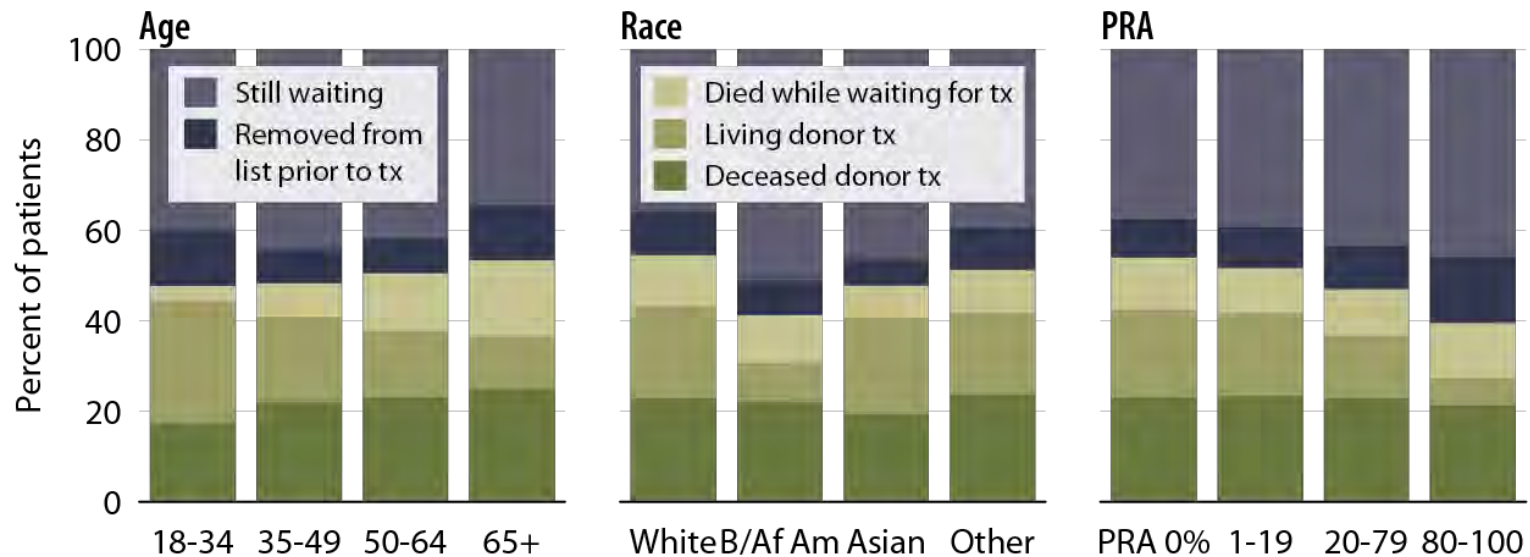
Cost of ESRD



Cost of ESRD vs Transplant

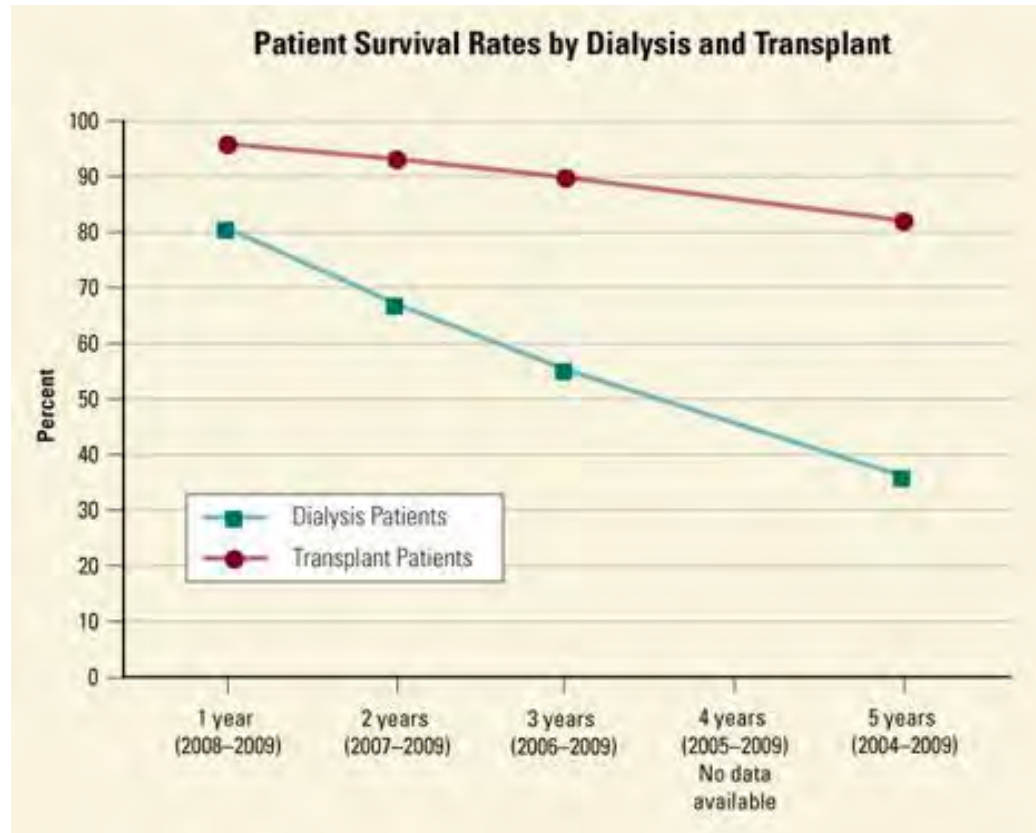


Outcomes for first-time wait-listed patients three years after listing in 2008, by age, race, & PRA Figure 7.5 (Volume 2)

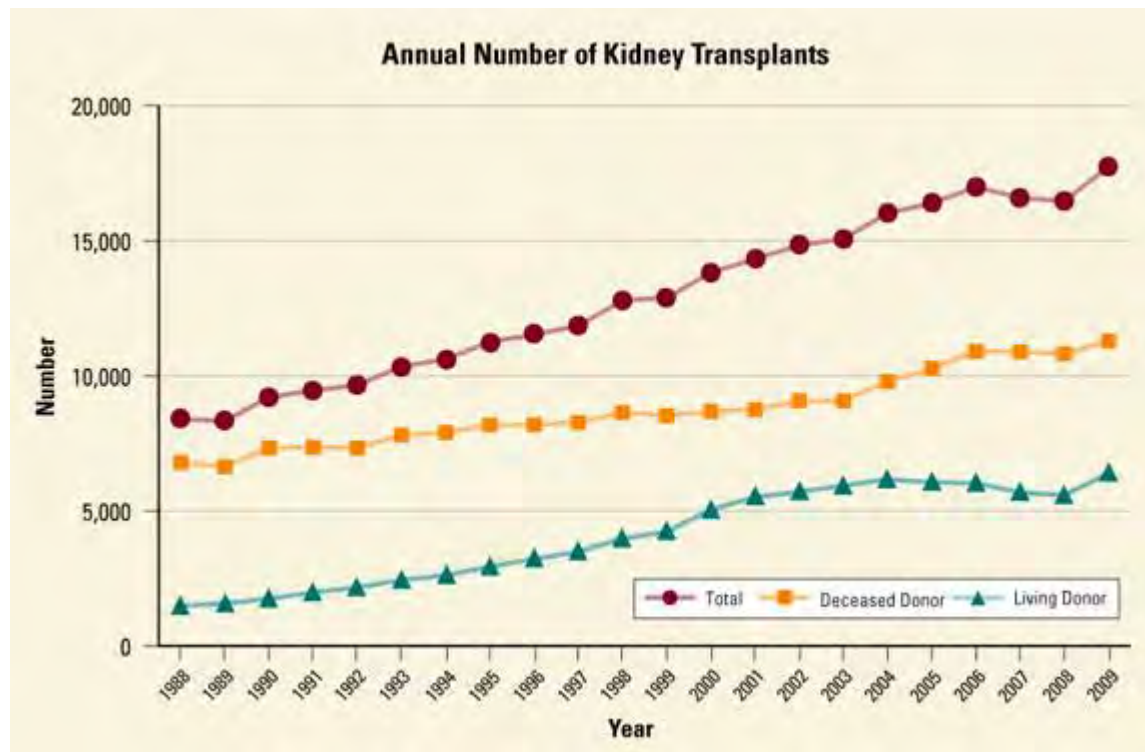


Patients age 18 & older listed for a first-time, kidney-only transplant in 2008; transplanted patients may have subsequent outcomes in the three-year follow-up period.

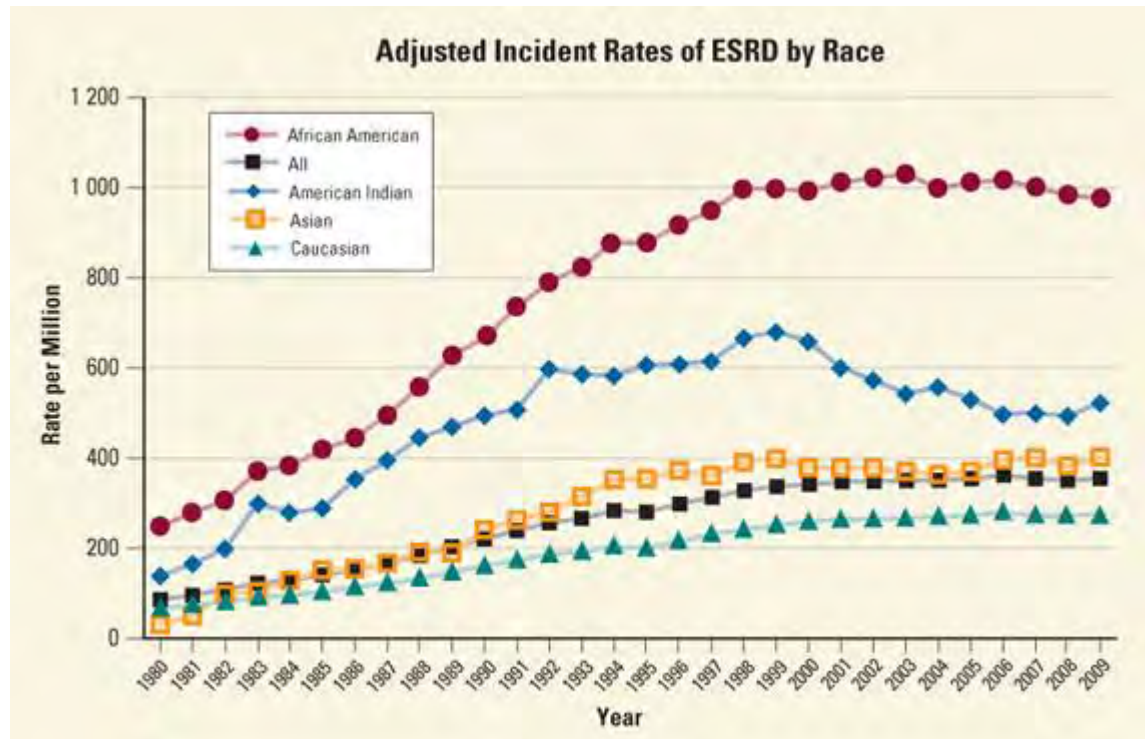
Survival Difference: Transplant vs. Dialysis



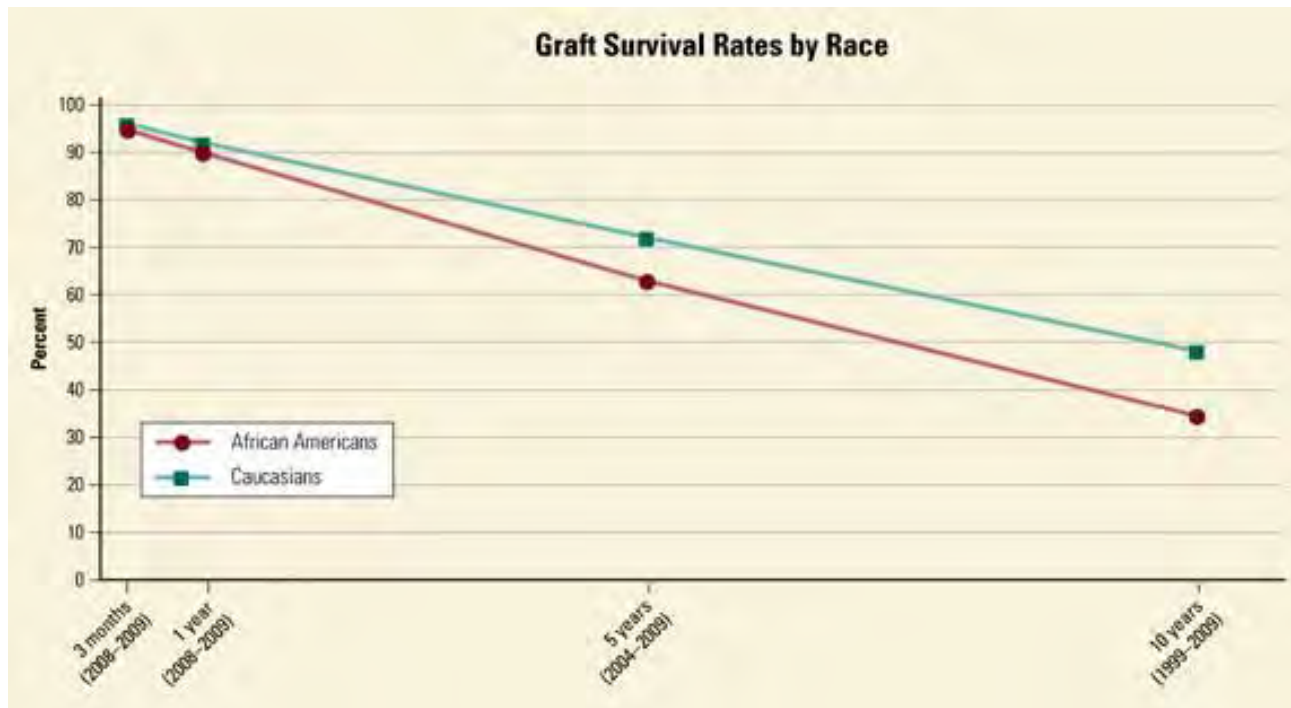
Number of Kidney Transplants



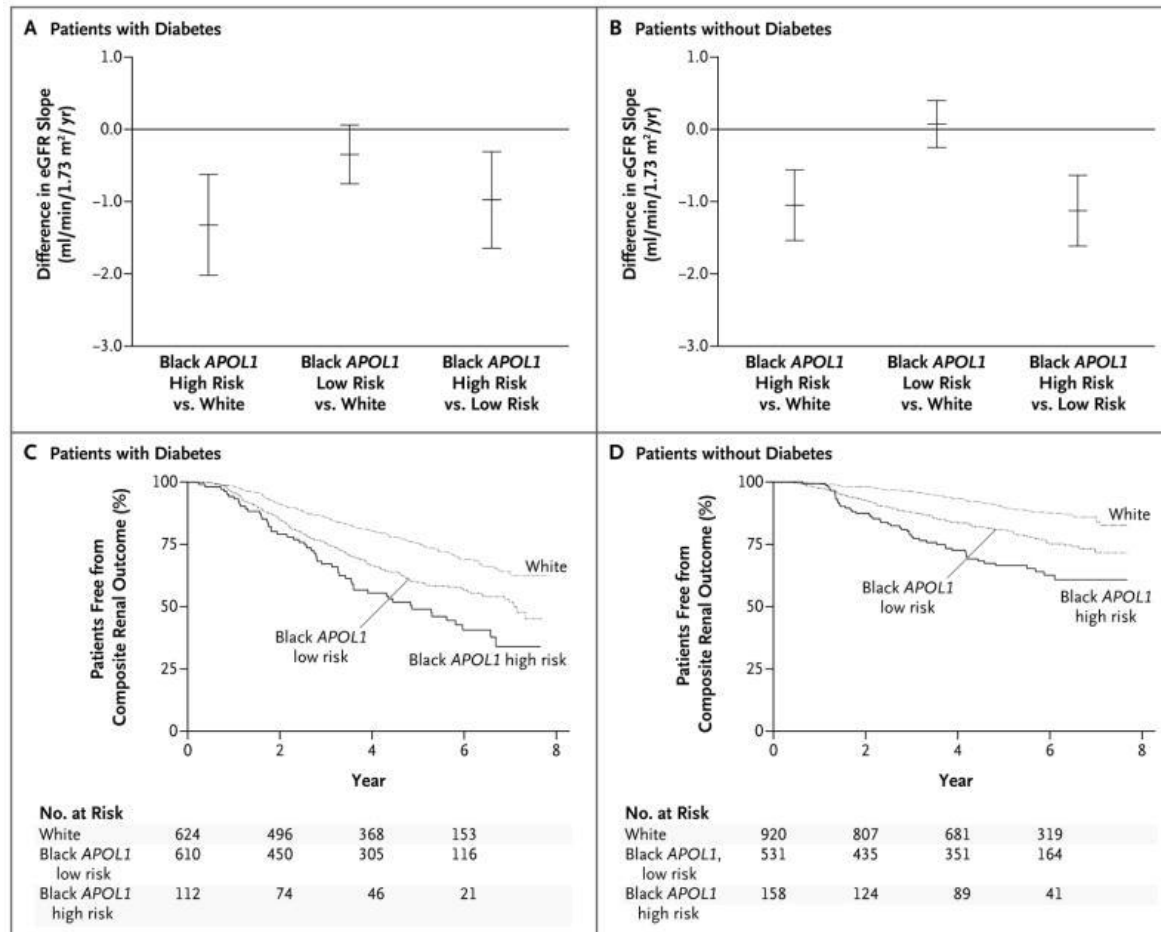
Incidence of ESRD by Race



Graft Survival by Race



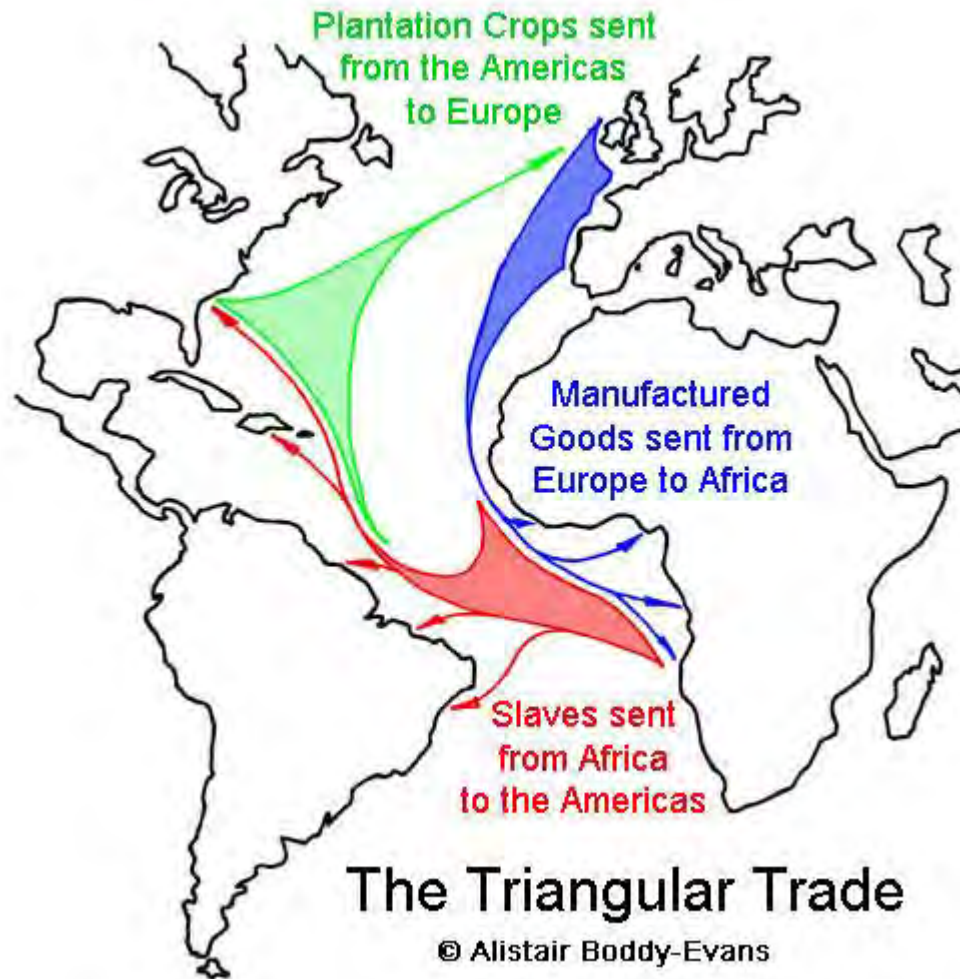
ApoI1 in Black Patients **Nejm** raj 2013



African Ethnicities



Middle Passage



Current Issues in Kidney Transplantation

- Access
- Graft survival
- Sensitization
- Increasing organ numbers (DD and LD)

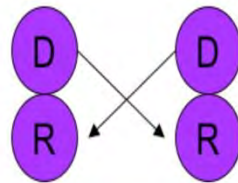
Addressing Kidney Transplant Issues

- Access – outreach, education
- Sensitization- PKE (paired kidney exchange), desensitization
- Graft survival- novel immunosuppressive protocols, tolerance
- Donors – sign up potential donors, educate potential living donors

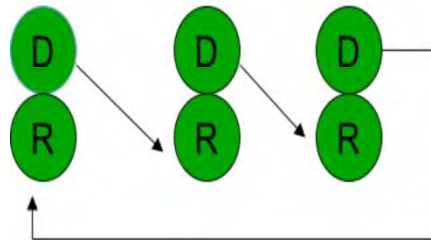
Paired Kidney Exchange

Traditional Paired Exchange

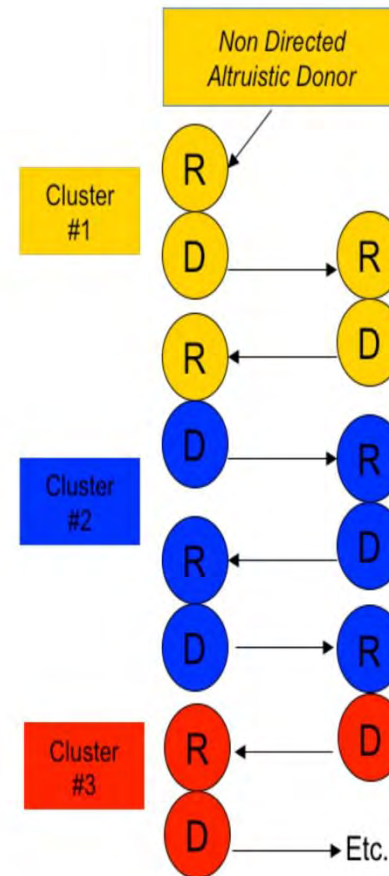
Two Pair Exchange



Three Pair Exchange



Chains



Desensitization



Addressing Crisis – Increasing Organ Availability

- DCD/ECD organs
- Increasing living donation/ Altruistic donation
- ABO incompatible transplantation
- Desensitization protocols
- Paired kidney exchanges

ABO Incompatible Transplantation

- Must know and reduce ABO titer incompatibility (Antibody therapy, plasma exchange)
- Oftentimes better option than sensitized transplantation and timing better than PKE

Desensitization Protocols

- Must have luminex single bead technologies to isolate Antibody specificities and then tract titers during reduction therapy (Antibody therapy, plasma exchange, immunoglobulin therapy)
- Best fitted for living donor transplantation

Paired Kidney Exchanges

- Utilize computerized matching algorithms to optimize organ utilization schemes in local, regional, and national organ exchanges
- Can be combined with ABO incompatible transplant and desensitization
- Domino exchanges can be fashioned to multiply successes

Disparities

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Impact of Medicare Coverage on Disparities in Access to Simultaneous Pancreas and Kidney Transplantation

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Introduction

The incidence of type 1 diabetes, a common cause of end-stage renal disease (ESRD) (1), has been rising steadily in the United States (2). Studies have consistently shown that simultaneous pancreas and kidney transplantation (SPKT) is the best treatment for patients with both type 1 diabetes and ESRD, offering a significant survival advantage over kidney transplant (KT) alone (3–11). Significant improvements in diabetic neuropathy, gastropathy and vasculopathy have been demonstrated following SPKT (3–9), and it is the only method of reliably maintaining euglycemia (12). Long-term outcomes are excellent, with a 45% lower risk of death 10 years following SPKT compared to KT (13). Furthermore, the current allocation system favors combined

Paired Kidney Exchanges

Paired Kidney Donor Exchanges and Antibody Reduction Therapy: Novel Methods to Ameliorate Disparate Access to Living Donor Kidney Transplantation in Ethnic Minorities

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- BACKGROUND:** Currently ethnic minority patients comprise 60% of patients listed for kidney transplantation in the US; however, they receive only 55% of deceased donor renal transplants and 25% of living donor renal transplants. Ethnic disparities in access to kidney transplantation result in increased morbidity and mortality for minority patients with end-stage renal disease. Because these patients remain dialysis dependent for longer durations, they are more prone to the development of HLA antibodies that further delay the possibility of receiving a successful kidney transplant.
- STUDY DESIGN:** Two to 4 pretransplant and post-transplant plasma exchanges and IV immunoglobulin were used to lower donor-specific antibody levels to less than 1:16 dilution; cell lytic therapy was used additionally in some cases. Match pairing by virtual cross-matching was performed to identify the maximal exchange benefit. Sixty candidates for renal transplantation were placed into 4 paired kidney exchanges and/or underwent antibody reduction therapy.
- RESULTS:** Sixty living donor renal transplants were performed by paired exchange pools and/or antibody reduction therapy in recipients whose original intended donors had ABO or HLA incompatibilities or both (24 desensitization and 36 paired kidney exchanges). Successful transplants were performed in 38 ethnic minorities, of which 33 were African American. Twenty-two recipients were white. Graft and patient survival was 100% at 6 months; graft function (mean serum creatinine 1.4 g/dL) and acute rejection rates (20%) have been comparable to traditional live donor kidney transplantation.
- CONCLUSIONS:** Paired kidney donor exchange pools with antibody reduction therapy can allow successful transplant in difficult to match recipients. This approach can address kidney transplant disparities. (J Am Coll Surg 2011;212:740–747. © 2011 by the American College of Surgeons)
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Results

	Category	Caucasian	AA	Other	Mean Cr	Median Cr	Range of Cr	Pt/Graft Survival
Non PKDE	ABOi	7	3	0	1.38	1.3	0.9 to 2.1	100%/100% (12 months)
	Sensitized	5	4	1	1.34	1.3	0.9 to 2.3	100%/100% (9.9months)
PKDE	ABOi	2	4	0	1.58	1.35	0.8 to 2.6	100%/100% (6.4months)
	ABOc Non Sensitized	6	12	3	1.44	1.4	0.8 to 3.2	100%/100% (4.4 months)
	ABOc Sensitized	2	10	1	1.38	1.3	0.9 to 1.9	100%/100% (7.4months)
Total		22	33	5	1.42	1.3	0.8 to 3.2	100%/100% (7.4months)

Table 1. Categories of patients with and follow up creatinine.

ABOi = ABO incompatible

ABOc = ABO compatible

Results

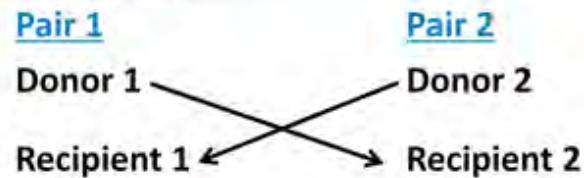
Categories	Local (PKDE)	US
AA	55%	13.7%
Whites	37%	66%
Others	8%	20%
Male	50%	61%
Female	50%	39%

Table 2. Demographics of local PKDE participants vs national living donor kidney recipients.

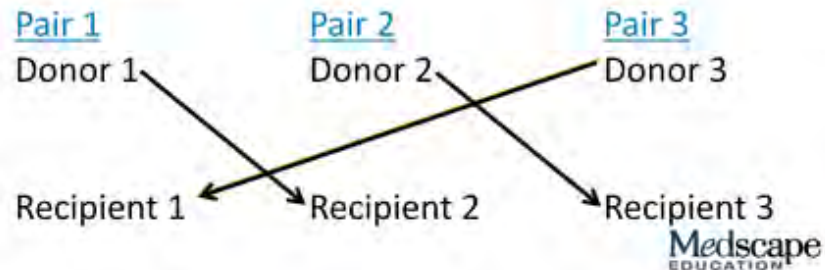
PKE (Paired Kidney Exchange)

Multiple-Pair Matching

2-Pair Donation



3-Pair Donation



The Bonds that Tie

13-way kidney transplants form life-altering bond

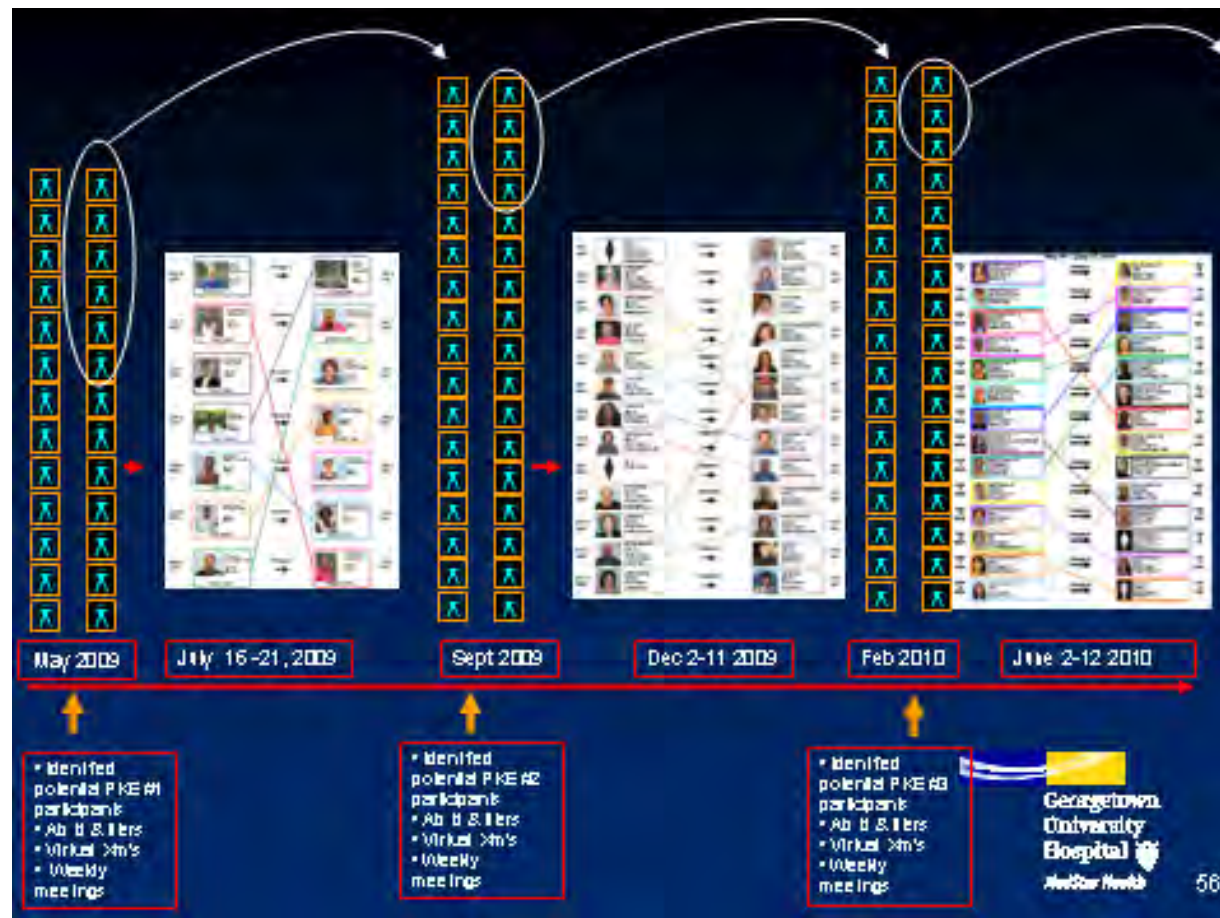
Surgeons at Georgetown University and Washington Hospital Center performed a 13-way kidney exchange, performing 26 operations to give 13 people healthy new kidneys.



SOURCE: Georgetown University Hospital

AP

Paired Exchanges



World's Largest Kidney Exchange



Questions?

Join us for next month's webinar!

Unique Strategies for Improving the Effectiveness of
Exercise Training in Patients with Kidney Failure

Tuesday, January 17
1-2 p.m. (ET)

Dr. Ken Wilund

- Associate Professor in the Department of Kinesiology and Community Health and Division of Nutritional Sciences at the University of Illinois at Urbana-Champaign



Join us to learn about:

- Research regarding exercise in hemodialysis and transplant patients (What has worked, and what has not)
- Strategies for improving outcomes from exercise training interventions (How much and what type of exercise is recommended)
- Strategies for improving patient compliance with exercise and physical activity programs

Go to www.KidneyFund.org/webinars to learn
more and register!