Individualizing Dialysis Modality Choice and Addressing Disparities Among Dialysis Patients: Opportunities to Improve Care

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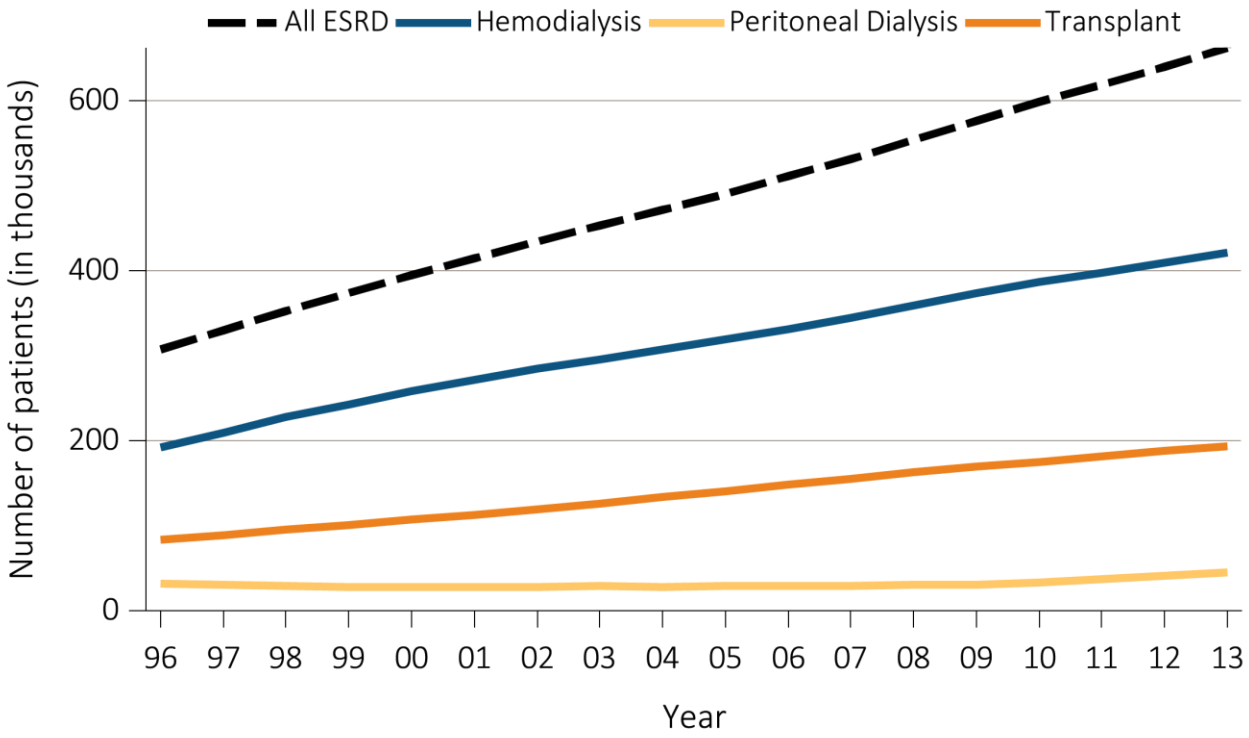
Overview

1. Discuss current state of dialysis in the US
   - Discuss modality options available to our patients
   - Benefits of home dialysis
2. Discuss factors that lead to start of dialysis
   - Timing of dialysis initiation
   - Patient education of CKD/ESRD
   - Patient preferences
3. Address disparities in use of home dialysis

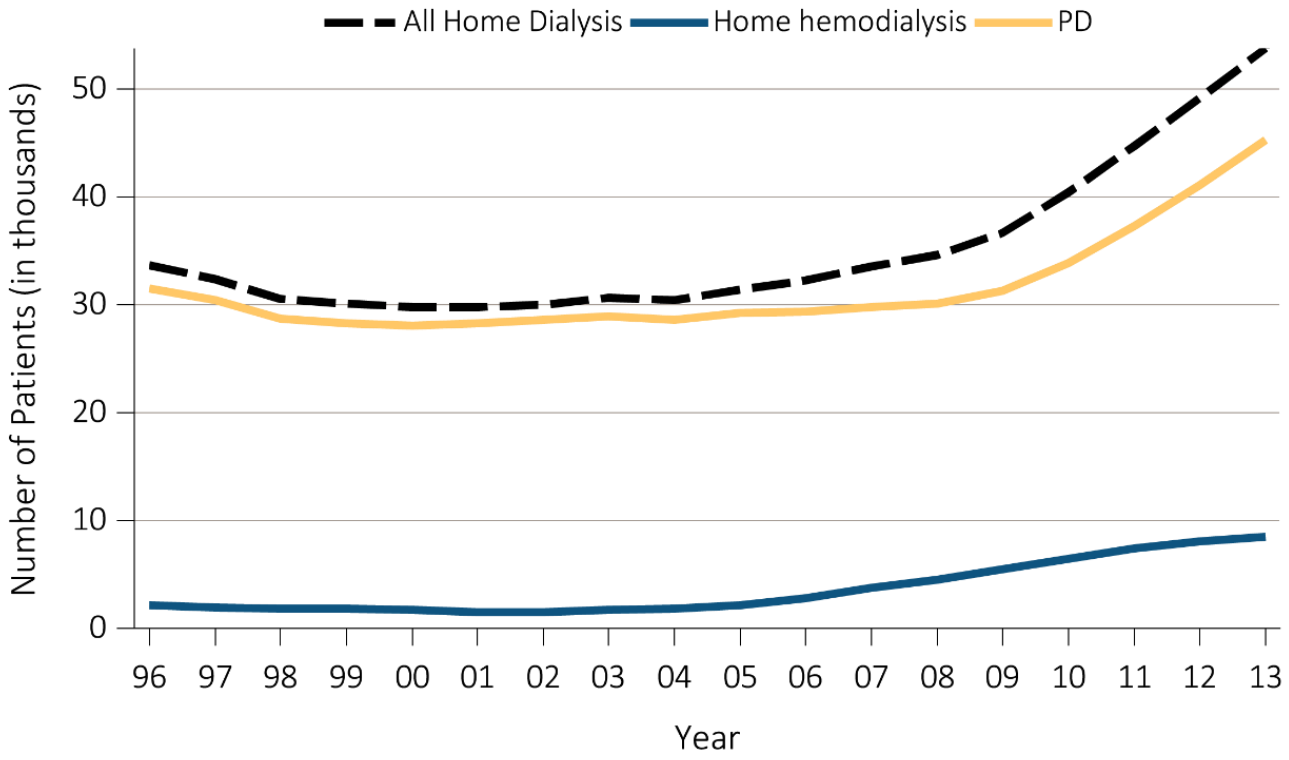
Prevalent ESRD rates by modality



460,000 prevalent PD and HD patients

USRDS ADR 2015

Home dialysis in the United States



45,000 PD (~10%)

9,000 HHD (< 2%)

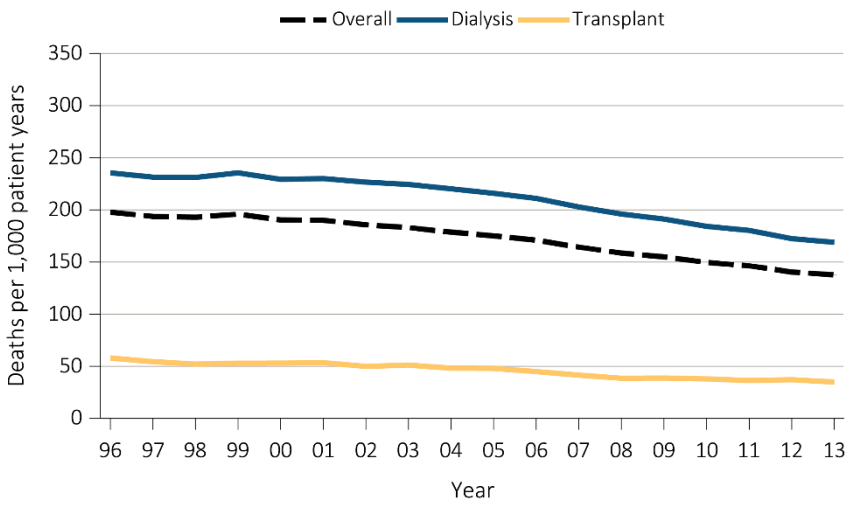
USRDS ADR 2015

Golper, et al. Home Dialysis in the New USA Bundled Payment Plan. *PDI*, 2010.

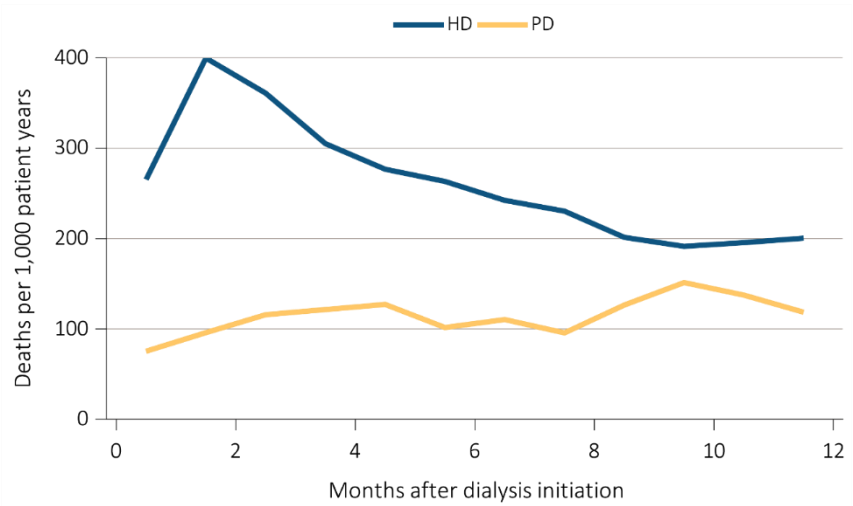
Hornberger, et al. Financial Implications of Choice of Dialysis Type of Revised Medicare Payment System. *AJKD* 2012.

Mortality is high for US hemodialysis patients

All-cause mortality by treatment modality 1996-2013



Mortality by treatment modality and # months after initiation, 2012

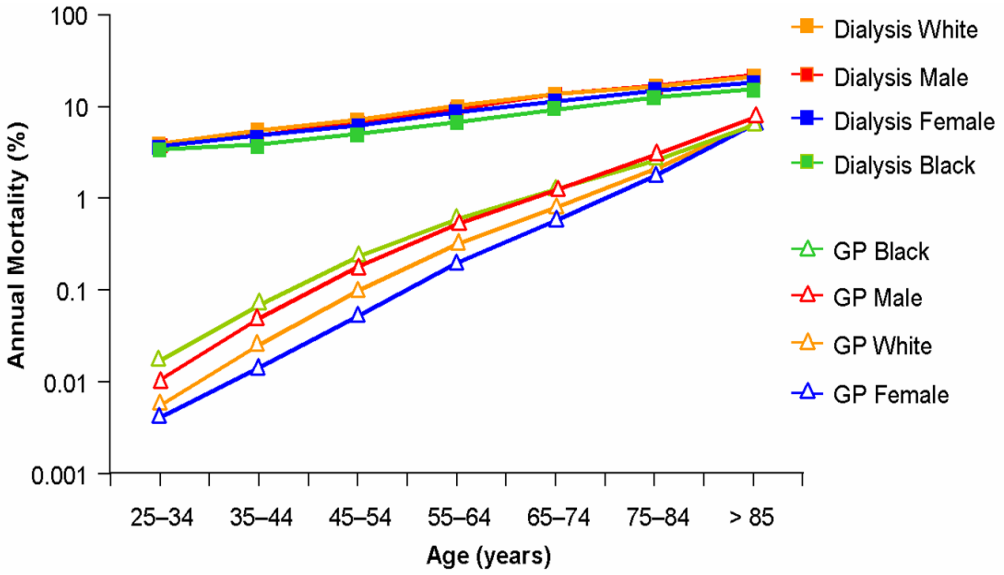


USRDS ADR 2015

Dialysis patients need something better

- Average of 1.75 hospitalizations/year
- Quality of life and functional status poor
  - Inflexible schedule
  - Difficulty working
  - Travel to dialysis/vacation
  - Many medications
  - Post-dialysis fatigue
  - Decreased sense of well-being/cognitive function

Cardiovascular Disease Mortality
General Population vs. ESRD



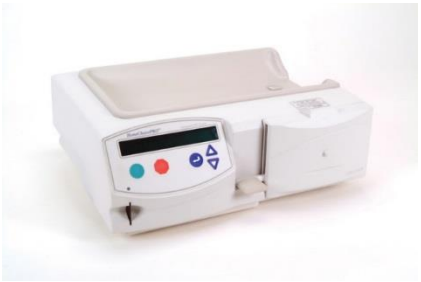
Sarnak MJ, et al, *Am J Kidney Dis,* 2000:35(4 Suppl 1) S:117-131.

Dialysis options of the past…

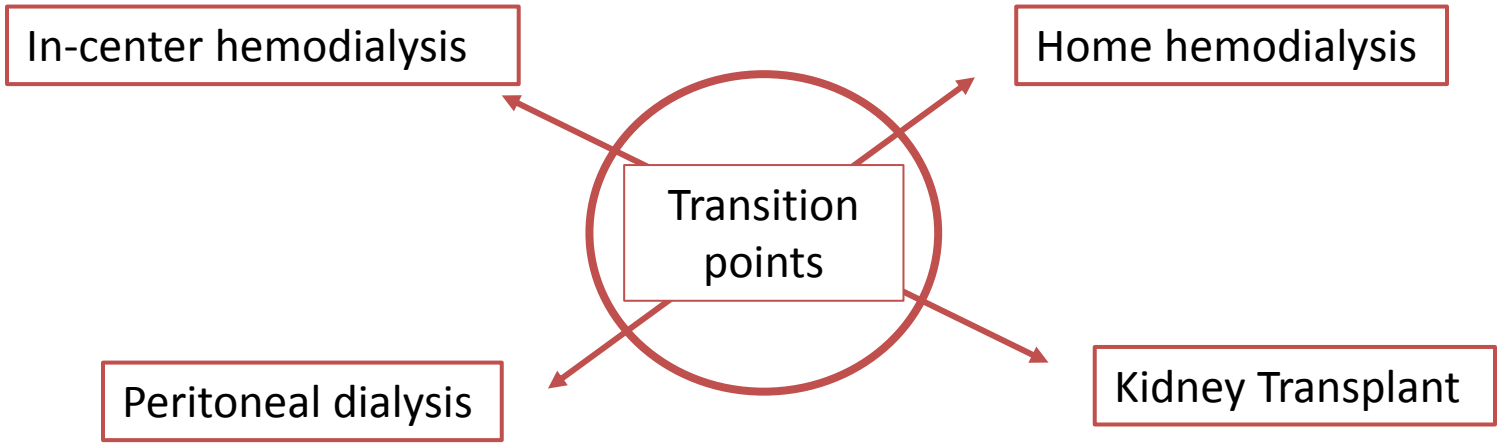
- In-center hemodialysis
- Peritoneal dialysis
- Transplant

Fitting dialysis into the patient's life…

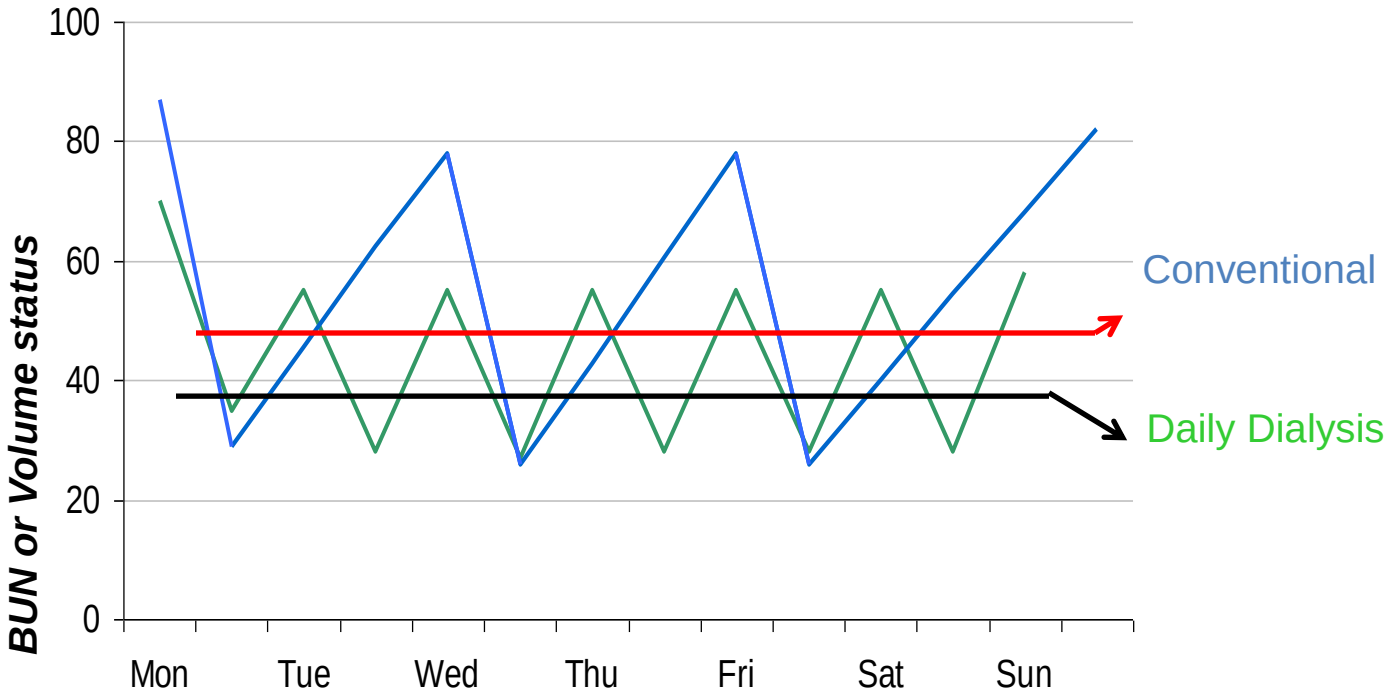
- Transplant
- Home dialysis
  - Home hemodialysis (HHD)
    - Nocturnal (5 nights/week, 6-8 hours)
    - Short daily (5 days/week, 2-3 hours)
    - Traditional 3X/week
  - Peritoneal dialysis (PD)
    - Cycler dialysis
    - Manual exchanges
- In-center
    - Nocturnal 3x/week
    - Traditional 3x/week



Options for Renal Replacement Therapy



Frequent dialysis more physiologic



Slide courtesy of Joel Glickman, MD

Improved clinical outcomes with HHD

- Quality of Life measures
- Freedom and flexibility over schedule
- Less extreme solute and volume fluctuations in a given time period
- Less intradialytic symptoms: hypotension, nausea/vomiting
- Less time for post-dialysis recovery

- Phosphorous control
- Cardiovascular outcomes (including hypertension)
- Survival

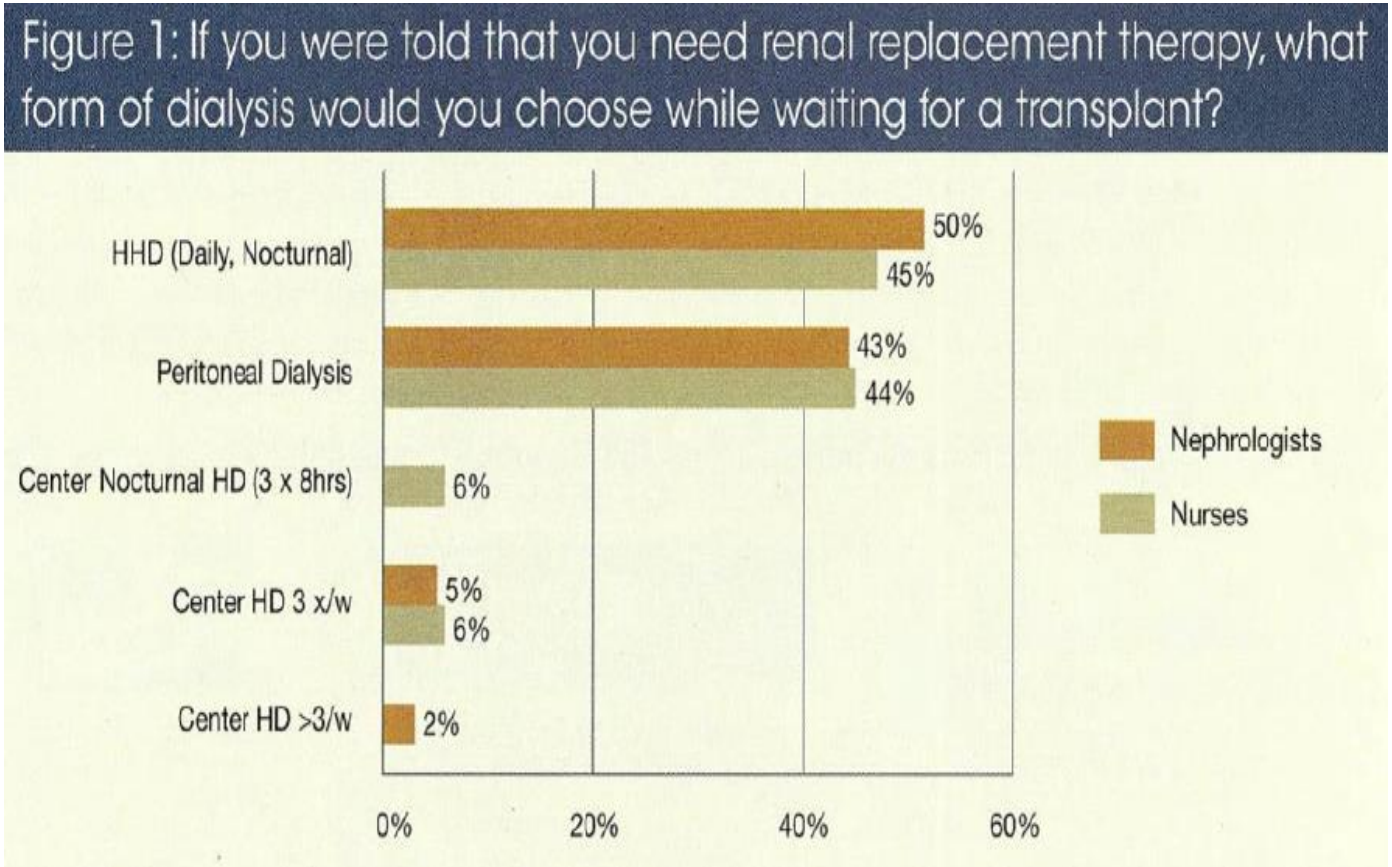
- Take home message:

  More dialysis (more frequent or more time) offers improved outcomes and is typically a home dialysis modality in the United States

Advantages to PD

- Flexible schedule, at home, can travel
- Relatively easy to learn, does not require a partner
- No needles and no blood!
- Body image – catheter concealed, no arm disfigurement
- Increased hemodynamic/electrolyte stability – feel better
- BP easier to control
- Better preservation of residual renal function
- Lower cost

A Major Disparity: Nephrologists vs. Our Patients



Schiller, et al. Nephrology News & Issues. September 2010.

Some Patients Aren't Eligible for PD

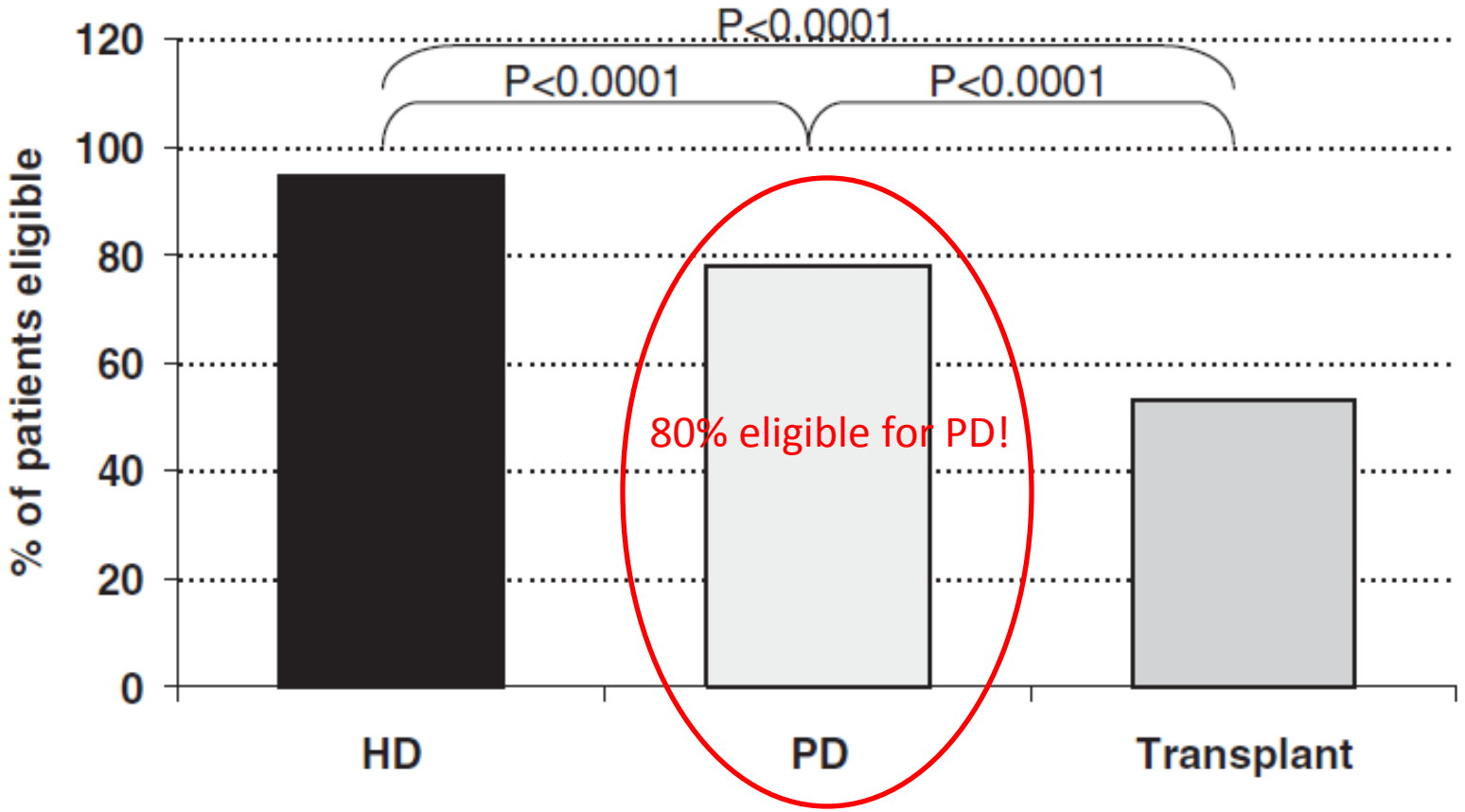


Fig. 3. Overall eligibility for the three RRT modalities.

Mendelssohn, et al. NDT, 2009

What Influences Modality Selection?

- Dialysis provider
- Lifestyle issues
- Clinical urgency
- Modality availability
- Pre-dialysis care
- Economics
- Policy

Who Influences Modality Selection?

- Patient
- Nephrologist
- Primary care doctors
- Dialysis nurses
- Other nurses, CKD educators
- Family
- Friends

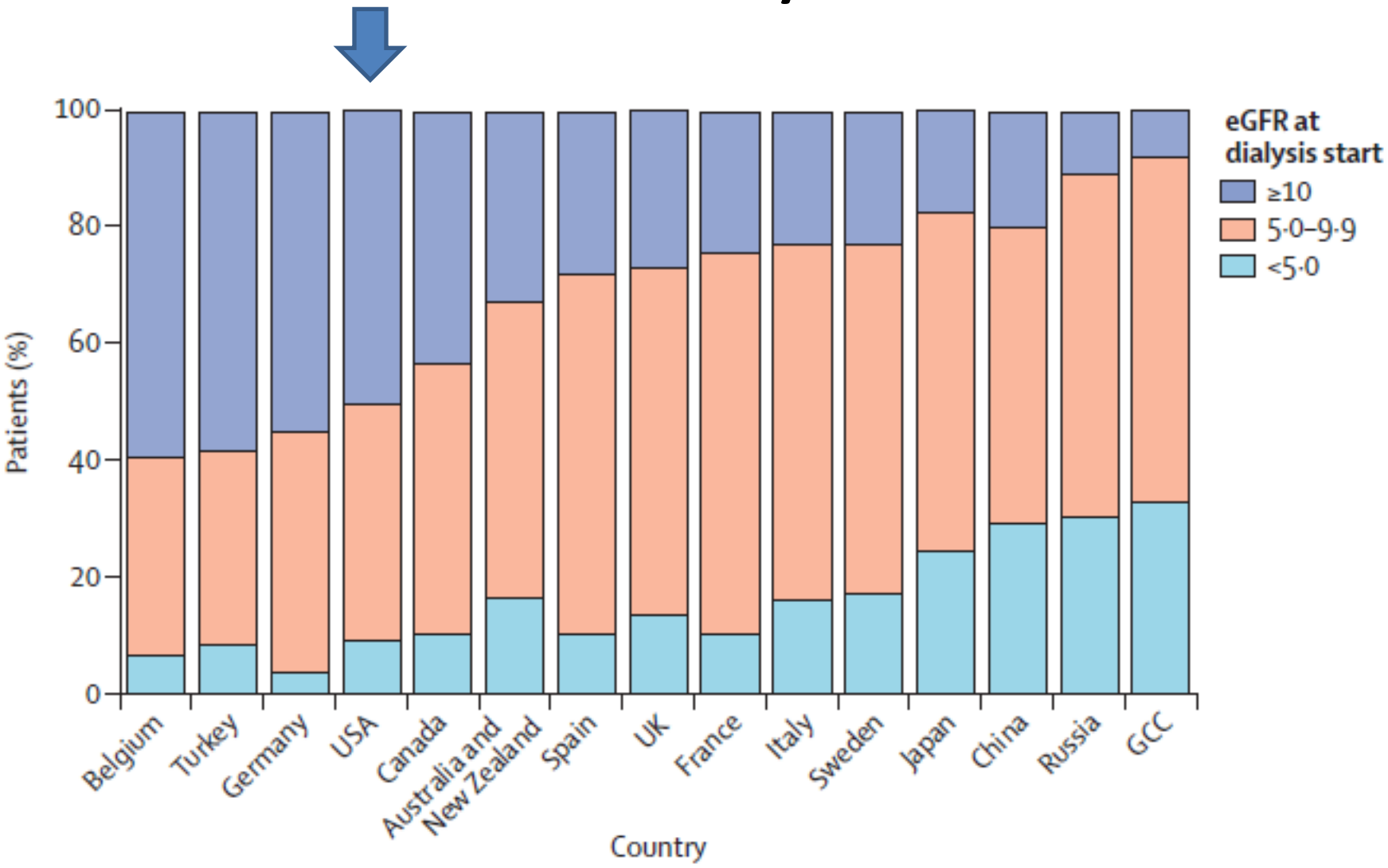
Barriers

- Insufficient education of patients / physicians
- Perceived medical or social contraindications

- Lack of confidence
- Concerns about complications
- Lack of space or other home-related issues

Factors involved in initiation of dialysis….

eGFR at Dialysis Start

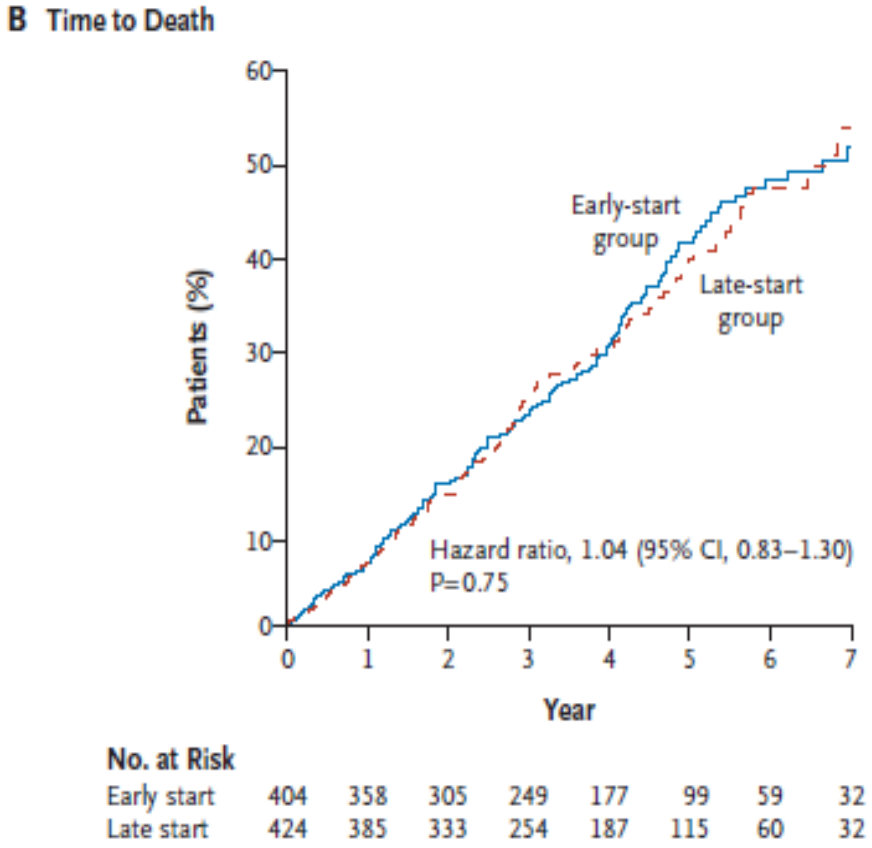


Robinson, et al. Lancet 2016

No Benefit to Early Start

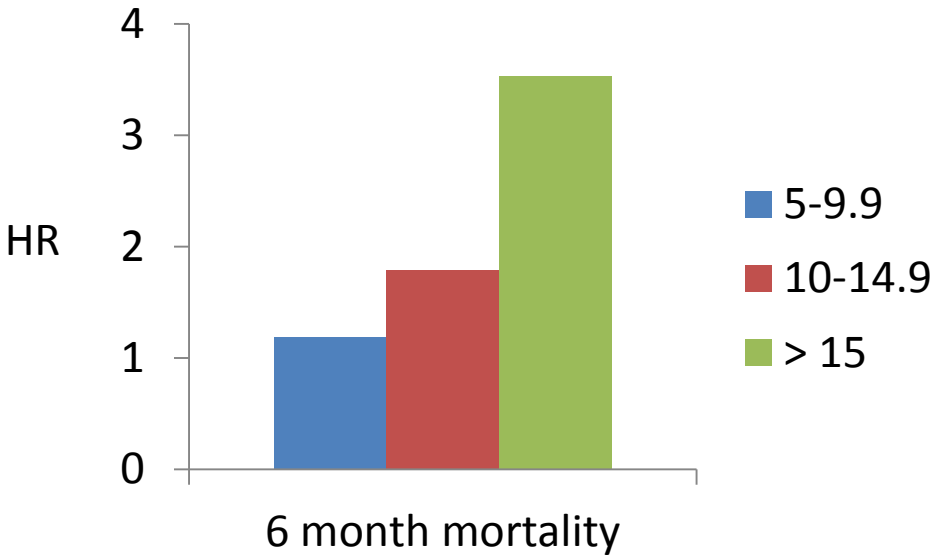
Early start: 10-14 ml/min
Late start: 5-7 ml/min

Late start group started dialysis ~ 6 months later than early start group



Cooper, et al. NEJM 2010 (IDEAL study)

Early Starts may be harmful?



- In 2012, 41% of patients started dialysis without prior pre-dialysis nephrology care
  - Modality selection
  - Access
  - BP control
  - Anemia management
  - Shared decision-making and goals of care
  - Transplant evaluation

Rosansky, et al JAMA 2011

Original Investigation

Timing of Initiation of Maintenance Dialysis
A Qualitative Analysis of the Electronic Medical Records of a National Cohort of Patients From the Department of Veterans Affairs

Susan P. Y. Wong, MD; Elizabeth K. Vig, MD, MPH; Janelle S. Taylor, PhD; Nilka R. Burrows, MPH; Chuan-Fen Liu, PhD; Desmond E. Williams, MD, PhD; Paul L. Hebert, PhD; Ann M. O'Hare, MD, MA

- *Charts of 1691 patients in the VA system reviewed for central themes related to timing of initiation of dialysis*
- *Central themes: physician practice, momentum, patient-physician dynamics*

JAMA Internal Medicine, 2016

Factors Governing Dialysis Initiation: **Physician Practices**

- Variation in practice in forestalling dialysis with medical management versus starting dialysis sooner
- Variation in how and when physicians performed modality education and planned access placement
- The presence of functional access for dialysis seemed to have an almost disinhibitory effect, tipping the balance in favor of initiation of dialysis when there did not seem to be pressing clinical indications

Factors Governing Dialysis Initiation: **Momentum**

- Clinical events precipitated the start of dialysis
  - Acute illness
  - “Bad labs” with or without symptoms
  - Needs surgery, cardiac catheterization
- The imperative to treat often seemed to override patient choice
- Simply being in the hospital seemed to increase the likelihood of initiation of dialysis
  - Patients identified as being “predialysis”
  - Physicians saw the “opportunity” to start dialysis in patients who had been reluctant as outpatients

Factors Governing Dialysis Initiation: **Patient-Physician Dynamics**

- Sometimes adversarial, paternalistic, conflicting with patient priorities
  - "Push-pull relationship" between patients and doctors
- Family members sometimes seemed more eager for patients to start dialysis than the patients
- At times, physicians pressed patients to start dialysis despite patient's clear reluctance
  - Prior declining to start dialysis on multiple occasions was "not uncommon"

Patient Voices

- “The only thing the doctor said was that I was going on dialysis…I didn’t have a choice”
- “I’d like to stay as normal as I can…[hemodialysis] would be less disruptive of our life”
- “I don’t want it at home. I don’t want to be reminded of having an illness”
- “Peritoneal dialysis is better because I can work…”
- “…[home dialysis] gives me a bit more freedom”
- “If I can’t have a semblance of normal life, then why would I want to live”

Various sources, cited in Harwood and Clark, Int J Nurs Studies 2013

CKD Patient Knowledge about ESRD Therapies

- No knowledge of HD 43%
- No knowledge of PD 60%
- No knowledge of transplantation 56%
- No knowledge of any 35%

- Many did not understand advantages and disadvantages of different modalities

- Even with CKD Stage 5 21-35% had no knowledge of one or more of these ESRD therapies

Finkelstein, FO, et al. KI 2008

Who's Decision?

- 180 CKD patients asked:

  "Do you feel the decision to go on HD/PD was largely yours?"

  – NO (32.2%): HD 46.8%, PD 2.6%

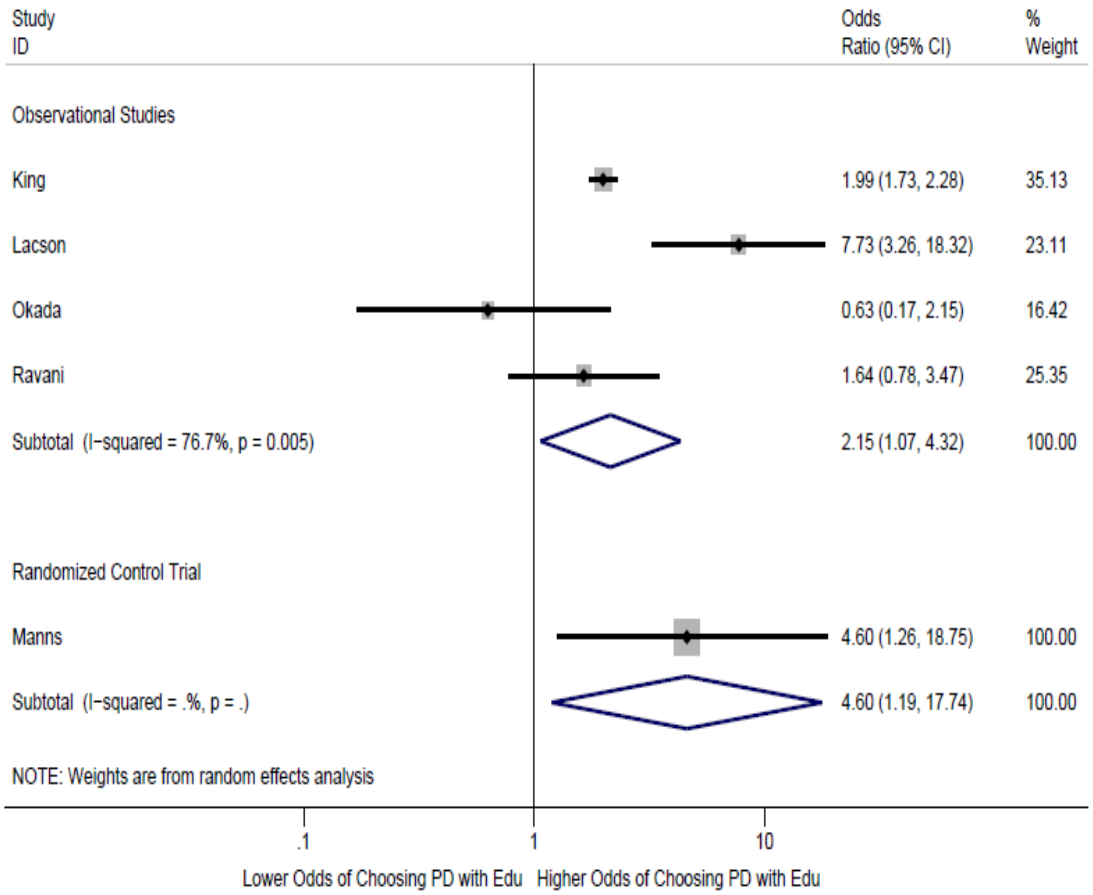
  – YES (62.6%): HD 46.8%, PD 94.7%

  – Combined (5.2%): HD 6.5%, PD 2.6%

  – If not YES, mostly driven by doctors

Dahlerus, AJKD 2016

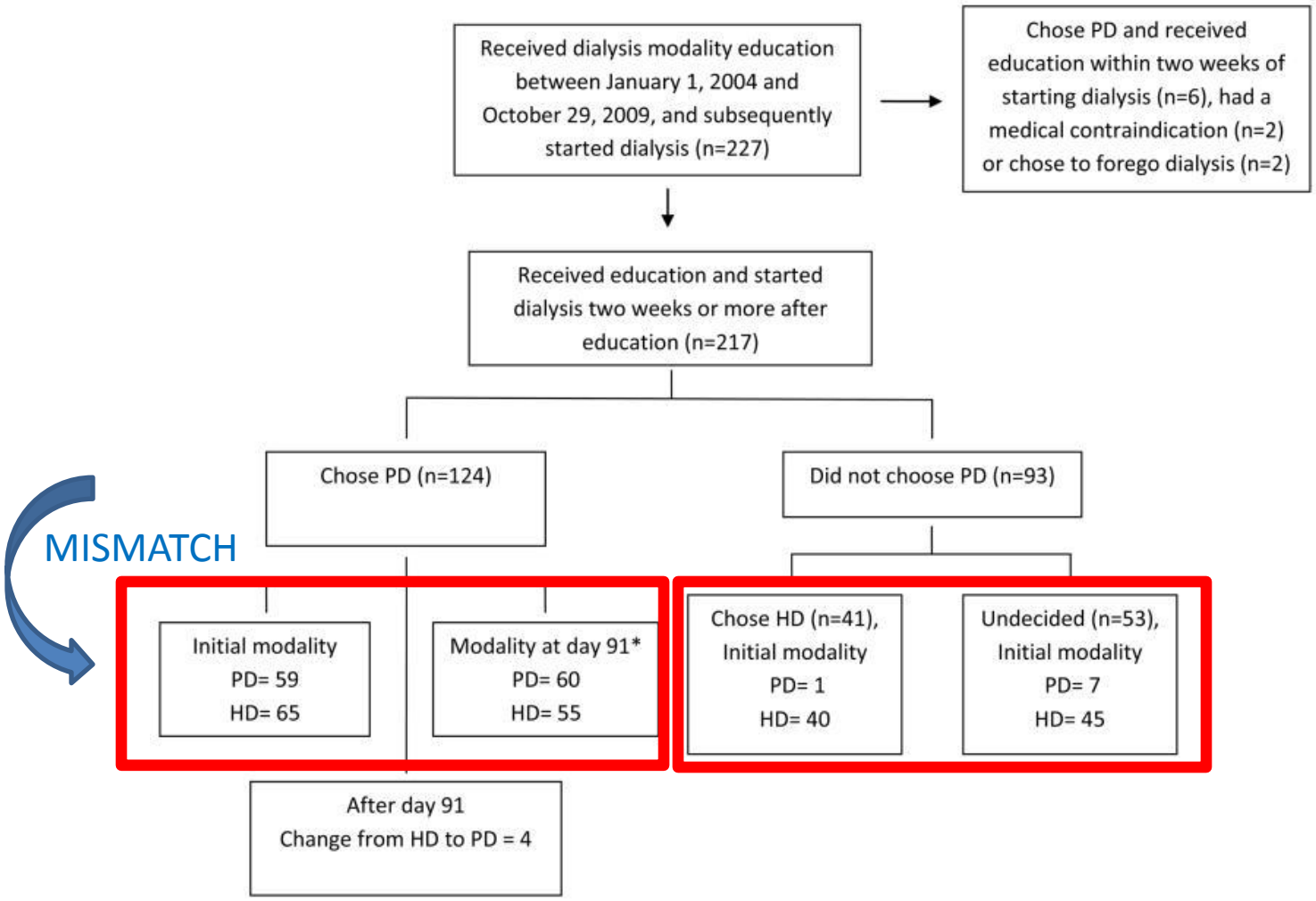
Patients choose PD when educated



- Patient targeted modality education→
- 2.1X increase in odds of choosing PD in observational studies and 4.6X increase in RCT
- 3.5X increase odds of patients initiating PD

Devoe, et al. AJKD 2016; 68(3): 422-433.

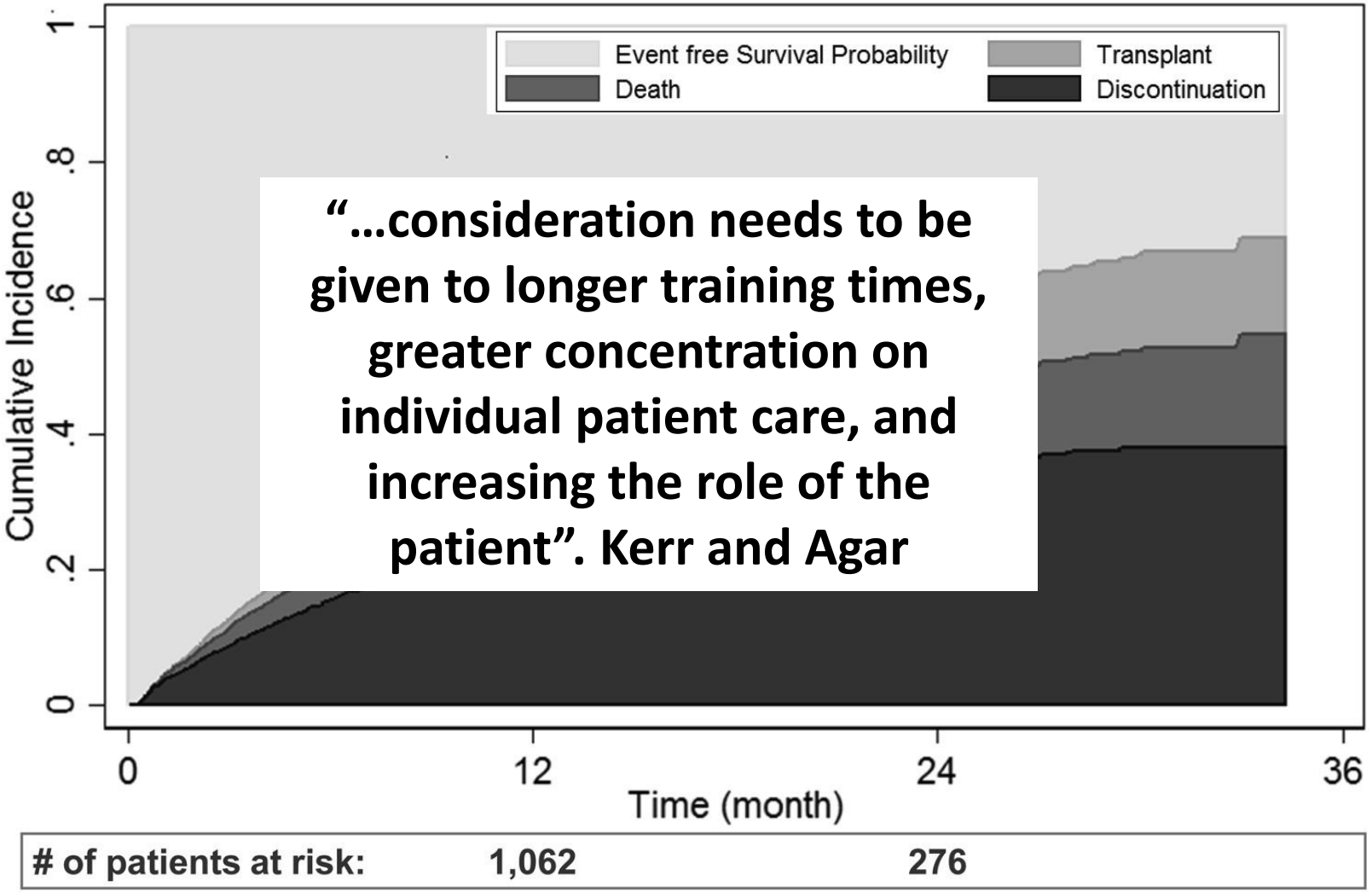
Modality Selection ≠ Modality Initiation



Patients often stay on the modality they start

Liebman, et al AJKD 2012

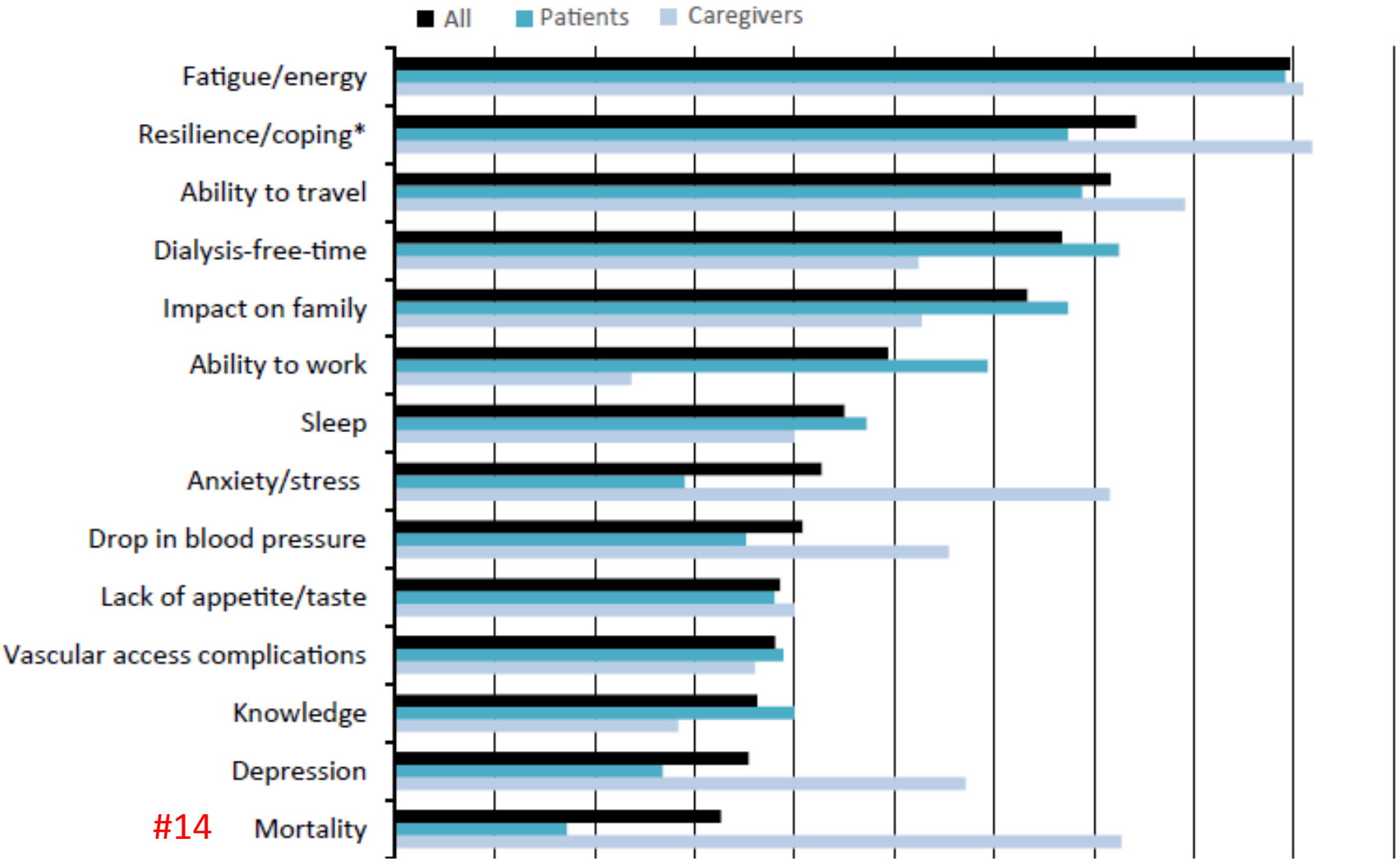
Many Don’t Stick with HHD



“…consideration needs to be given to longer training times, greater concentration on individual patient care, and increasing the role of the patient”. Kerr and Agar

Seshasai, AJKD 2016

What Do Our Patients Care About?

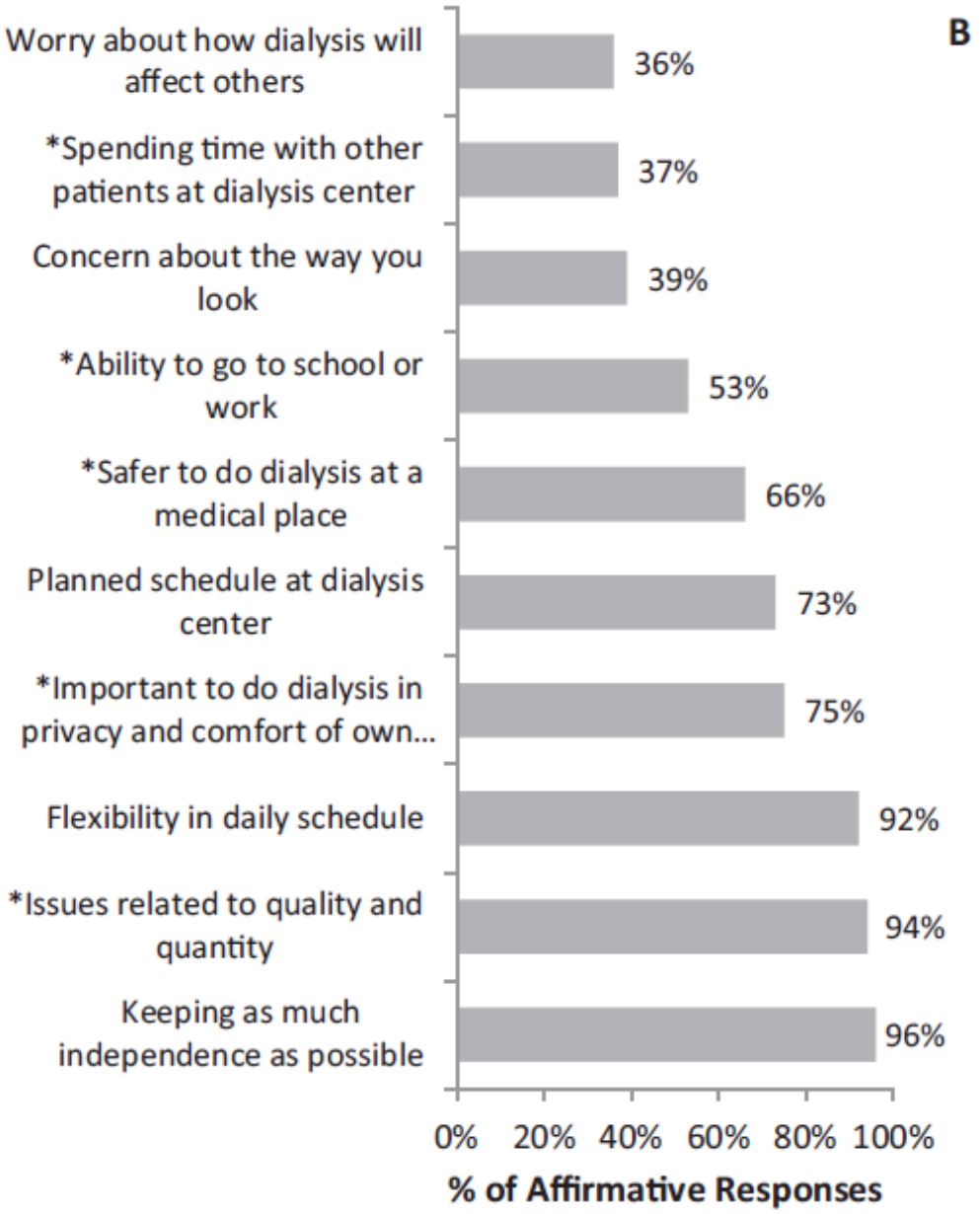


Urquhart-Secord, et al. AJKD 2016

What is Important to Our Patients?

The EPOCH-RRT Study
Dahlerus, AJKD 2016

180 patients; mixture of CKD, HD, PD patients



Honoring Our Patient's Preferences

- Dialysis is a high cost medical therapy—some patient thrive on dialysis, many don't
- Its use should reflect physician's expertise on prognosis, risks, benefits but must value even more patient's values, goals, and preferences
- The focus should be on our patient's concerns and wishes and aligning treatment decisions with patient priorities
- We should ensure that patients get on the right dialysis modality for them….not for us

Dialysis and Racial Disparities

A Historical Perspective

- All patients beginning dialysis in N. Carolina, S. Carolina, and Georgia 1989-1991.

- PD initial modality in 22% (of 10,726 patients)
  - 30% of white patients
  - 16% of African-American patients
  - African-Americans 57% less likely to initiate with PD

- Not explained by analyzed demographic, comorbid, severity of illness, socioeconomic factors, access to care

Barker-Cummings, et al. JAMA 1995

A Historical Perspective

- Choices for Healthy Outcomes in Caring for End-Stage Renal Disease (CHOICE) Study
  - Cross-sectional analysis of incident dialysis patients recruited from 81 dialysis units in 19 states
  - Multivariable analysis of factors associated with use of PD v HD at the start of dialysis

- African-Americans 65% less likely to initiate with PD

Miskulin, et al. AJKD 2002

Racial Differences in PD/HHD

Initial modality, %	White	Black	Hispanic	Asian	Other
In-center HD	90	94	92	89	91
PD	9	6	7	10	8
Home HD	1	<1	<1	<1	<1
Ever treated, %					
PD	13	9	10	13	10
Home HD	2	1	1	1	1

Patients starting dialysis between 2007-2011

Mehrotra, et al JASN 2016

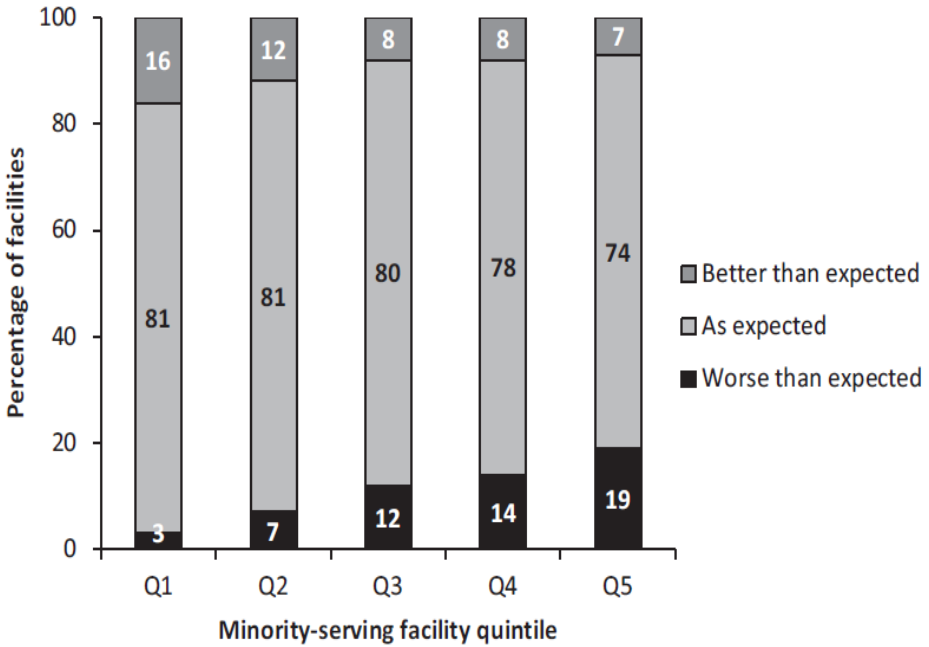
Zip Code Racial Composition and Dialysis Facility Characteristics

- HD facilities in zip codes with greater proportion of black residents:
  - More in-center HD stations
  - Less likely to offer home options
  - Less likely to offer late shifts
  - More likely to have higher than expected mortality
- Time to transplantation was longer for both whites and blacks when living in a largely black neighborhood compared to a largely white neighborhood

Rodriguez, et al. AIM 2007

Characteristics of Minority-Serving Dialysis Facilities

- Facilities with a greater proportion of minority patients were
  - Bigger
  - Had more part-time staff
  - Less likely to offer home dialysis training
- The patients were
  - More anemic
  - Less likely to have had Pre-ESRD care
  - Less likely to have an AVF



Hall, et al. Health Services Res 2014

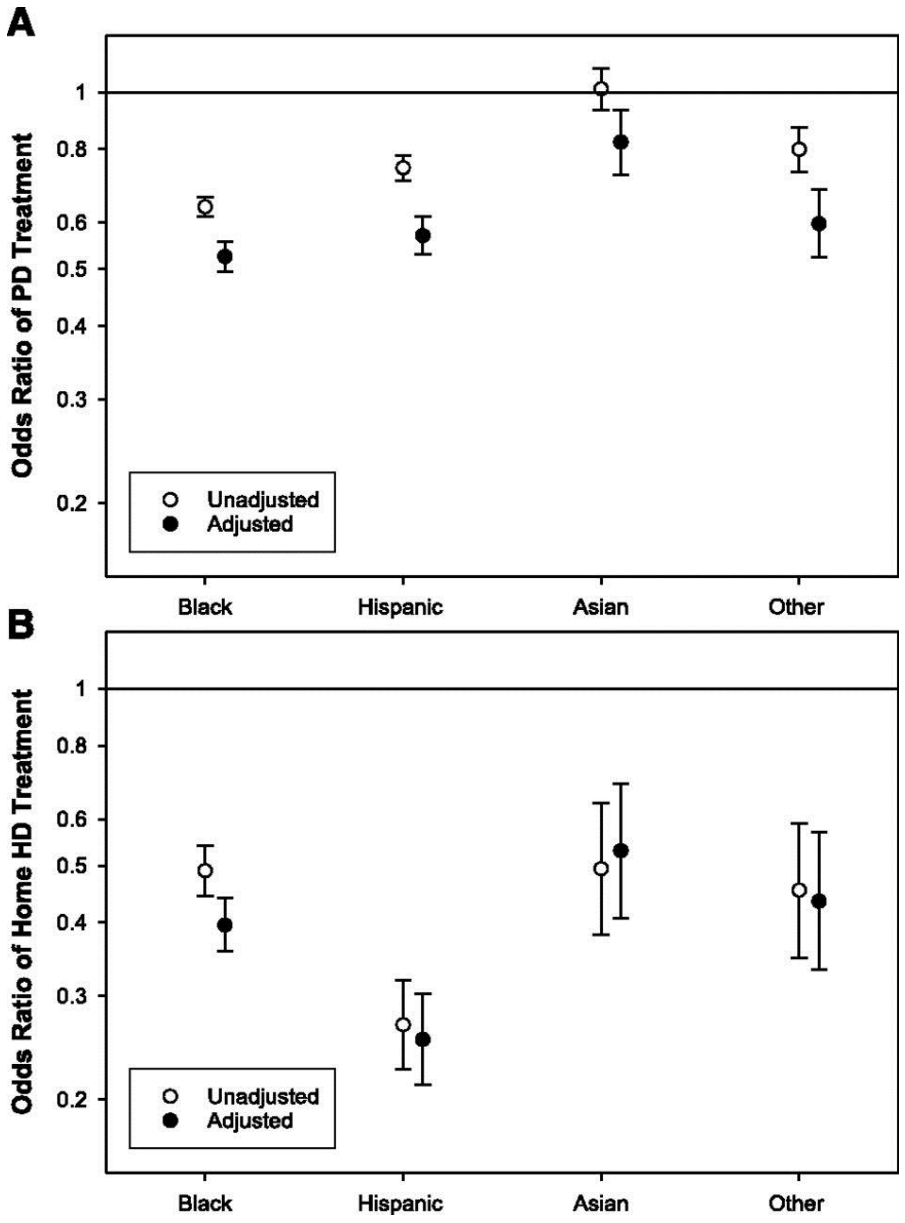
Proximity Does not Equal Access

- African-Americans compared to whites
  - Lived closer to the nearest dialysis facility
  - Lived closer to high quality dialysis facilities
  - Traveled the same distance to their facility
  - 14% less likely to dialyze in a high quality facility
    - 31% less likely after controlling for distance
    - 53% less likely after controlling for other individual and neighborhood factors

High quality dialysis facilities were defined as those with a total performance score (TPS) greater than 26 (out of 30), based on the ESRD Quality Incentive Program scoring algorithm which gave a 1-10 rating for the proportion of patients with 1) a hemoglobin (Hgb)<10g/dL, 2) Hgb>12g/dL, and 3) urea reduction rate≥65

Saunders, et al J Racial Ethn Health Disparities. 2014

Association of Race/Ethnicity with Treatment with PD or home HD

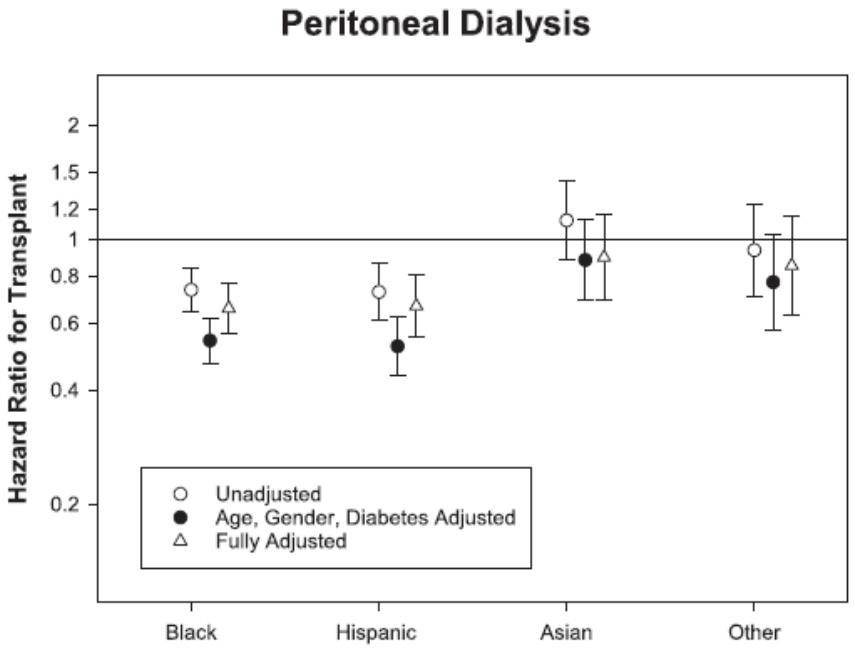


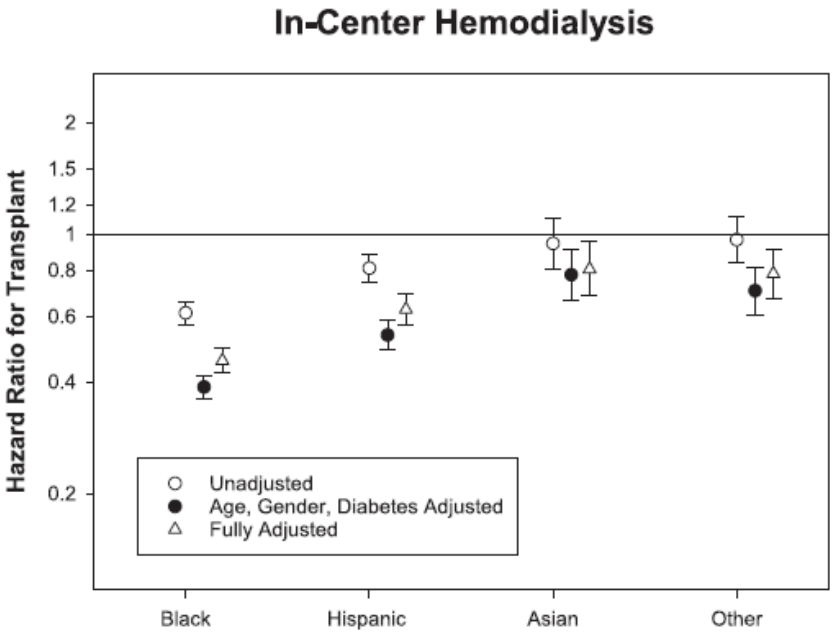
Compared to Whites

Compared to Whites

Mehrotra et al. JASN 2016

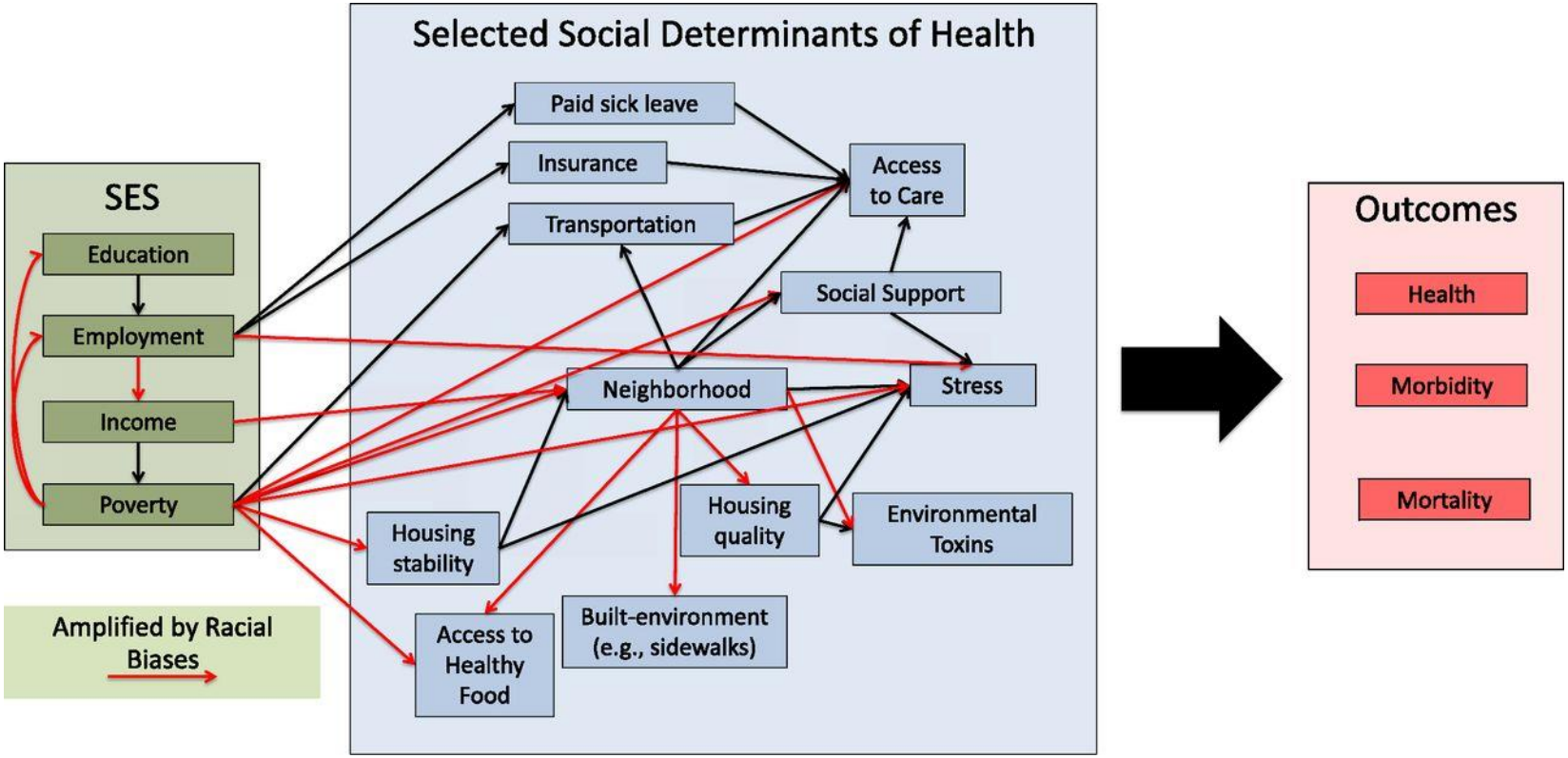
Association of Race/Ethnicity with Probability of Receiving a Kidney Transplant





Mehrotra et al. JASN 2016

Interconnected Mechanisms Underlying Associations Between SES and Health.



Norton et al. JASN 2016

Conclusions

- Patients start dialysis when they don't know enough to really decide, they don't want to start, or they won't benefit (enough) from starting
- More patients can do home dialysis than we give them credit for…we should help them do what is best for them. And it is often home dialysis.
- Racial disparities have existed among dialysis facilities and patients for many years and persist
- It is important that these be identified, discussed and addressed

Patient's shouldn't live to do dialysis, they should do dialysis to live!

Thank you!

Individualizing Dialysis Modality Choice and Addressing Disparities Among Dialysis Patients: Opportunities to Improve Care

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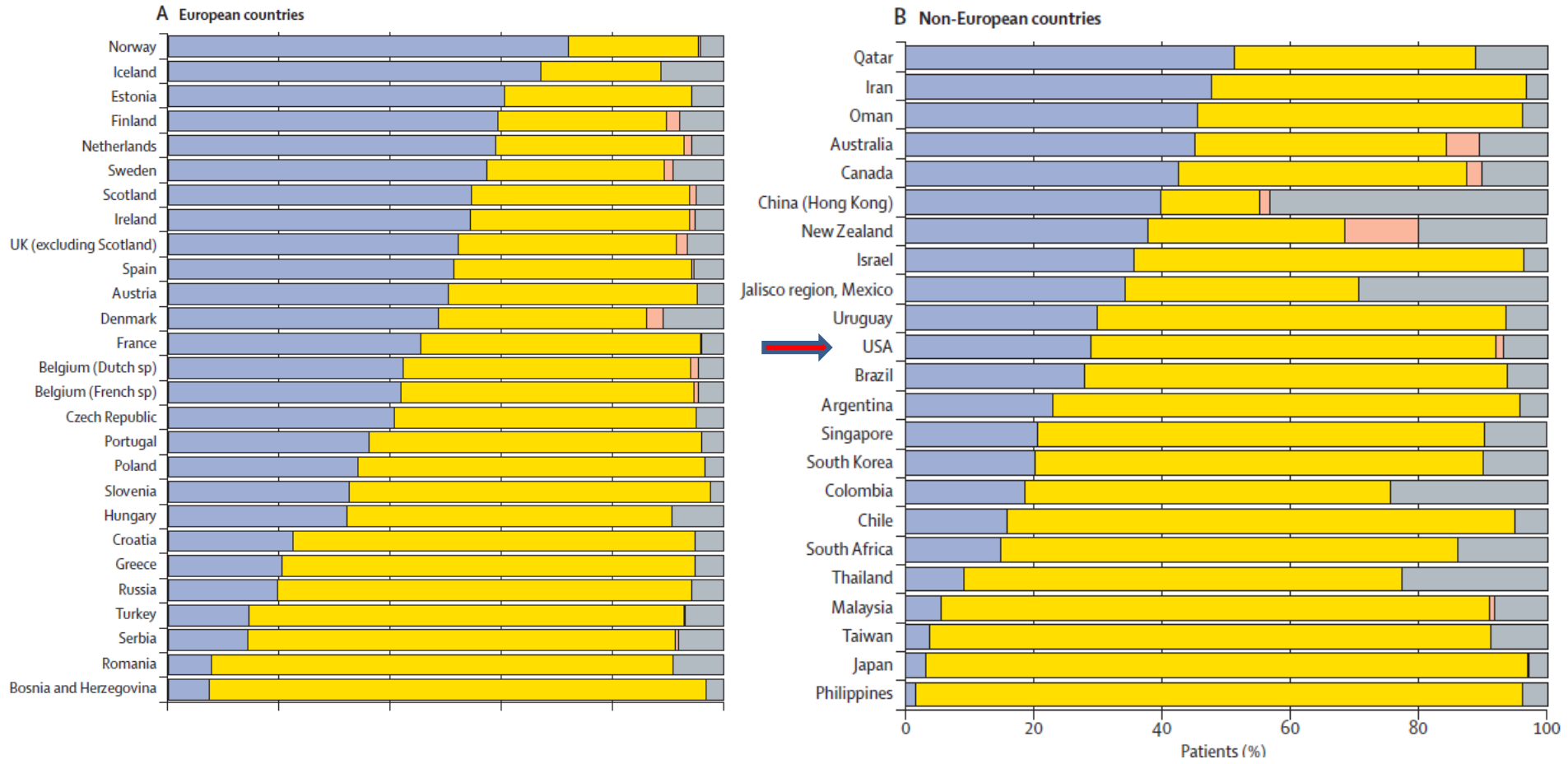
October 6, 2016

Old slides

Dialysis Modalities Around the Globe



Robinson, et al.
Lancet 2016