



Peritoneal Dialysis

The bark **is** better than the bite

PD Education Day, June 6, 2008

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Objective

- To explain why, if suitable, no reasonably informed patient would or should say no to trying peritoneal dialysis during their life on RRT—preferably at the start of dialysis or after a transplant

What will be covered in this talk?

- Clarify when and why PD is a good RRT option for many patients—especially as a first modality
 - Renal advantages
 - Comorbidity advantages
 - Transplant advantages
 - Survival advantages
 - Social advantages
- Theorize why PD is not being used by most patients



What will not be topics of this talk?

- Current mix of RRT modalities
- Costs of treatment or other societal implications
- Hemodialysis bashing
- Transplantation
- Practical management of PD patients



A wise man said:

‘It has been said that democracy is the worst form of government except all others that have been tried’

Sir Winston Churchill



A nephrologist in search of a great quote said:

Dialysis is a complicated, depressing treatment fraught with inconveniences, side effects and a slow steady decline in quality of life that eventually leads to death...it just happens to have a better QOL and survival likelihood than not choosing it at all.

Suneet Singh

In RRT, any fork in the road leads to:



The roundabout—this is the most important message we can give patients up front

DEATH

PD



HD

Chronic kidney disease
'predialysis'

Goal of First RRT Modality

- Rather than look at survival rates of PD vs HD at one point in time, the goal of the first modality selected should be **to attain the *best quality of life for the patient throughout the continuum of their care to:***

Optimize the use of each treatment modality

Maximize advantages of each modality

Avoid or minimize the disadvantages of each modality



1. Renal advantages of PD

Preservation of kidney (native and transplant) function

- Morbidity and mortality increase with every stage of CKD
 - This does not stop once you reach stage 5l
 - Preserved RRF means
 - More liberal diet
 - Fewer medications
 - Improved survival
 - Proven on PD and emerging data in HD

Preservation of residual renal function

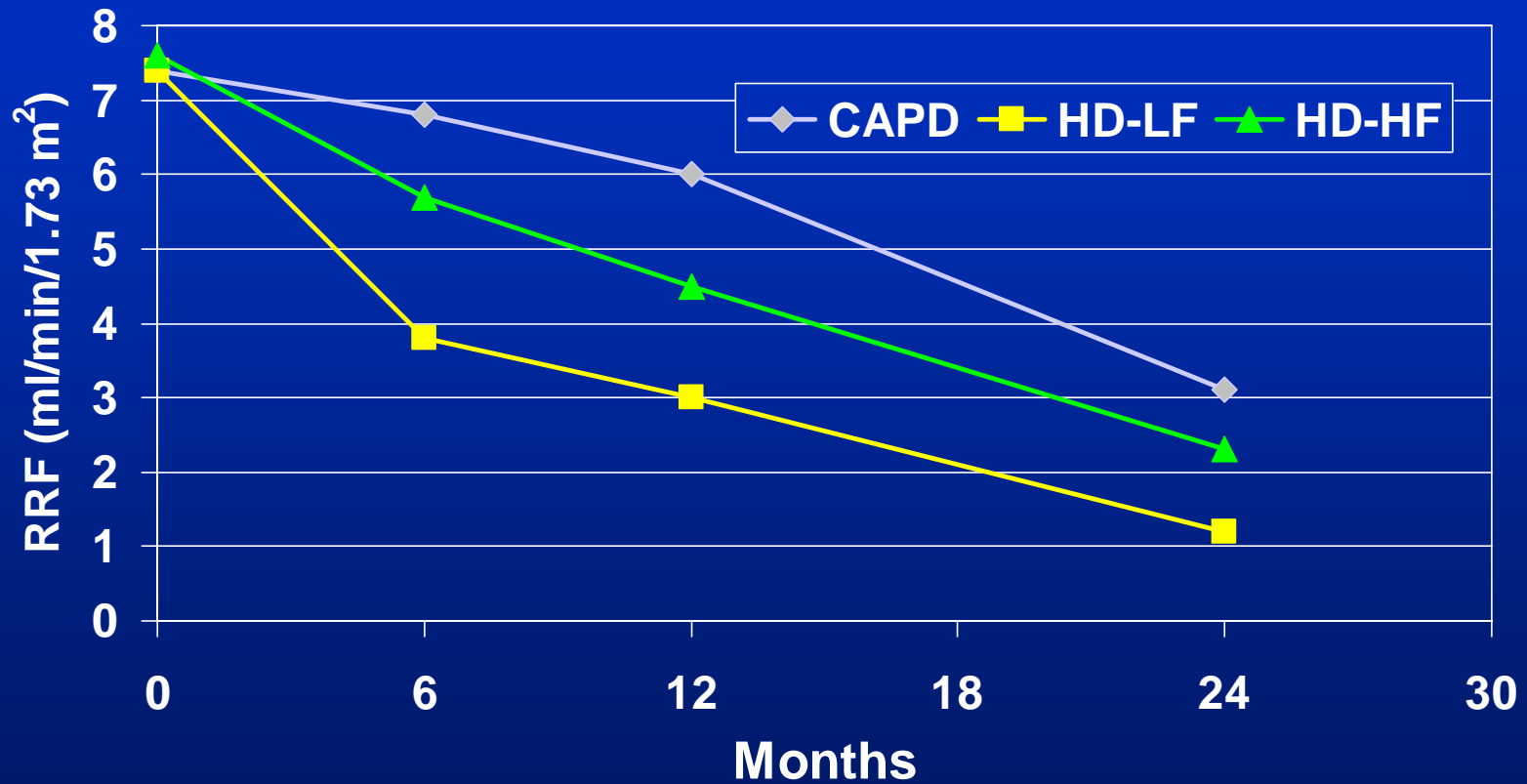
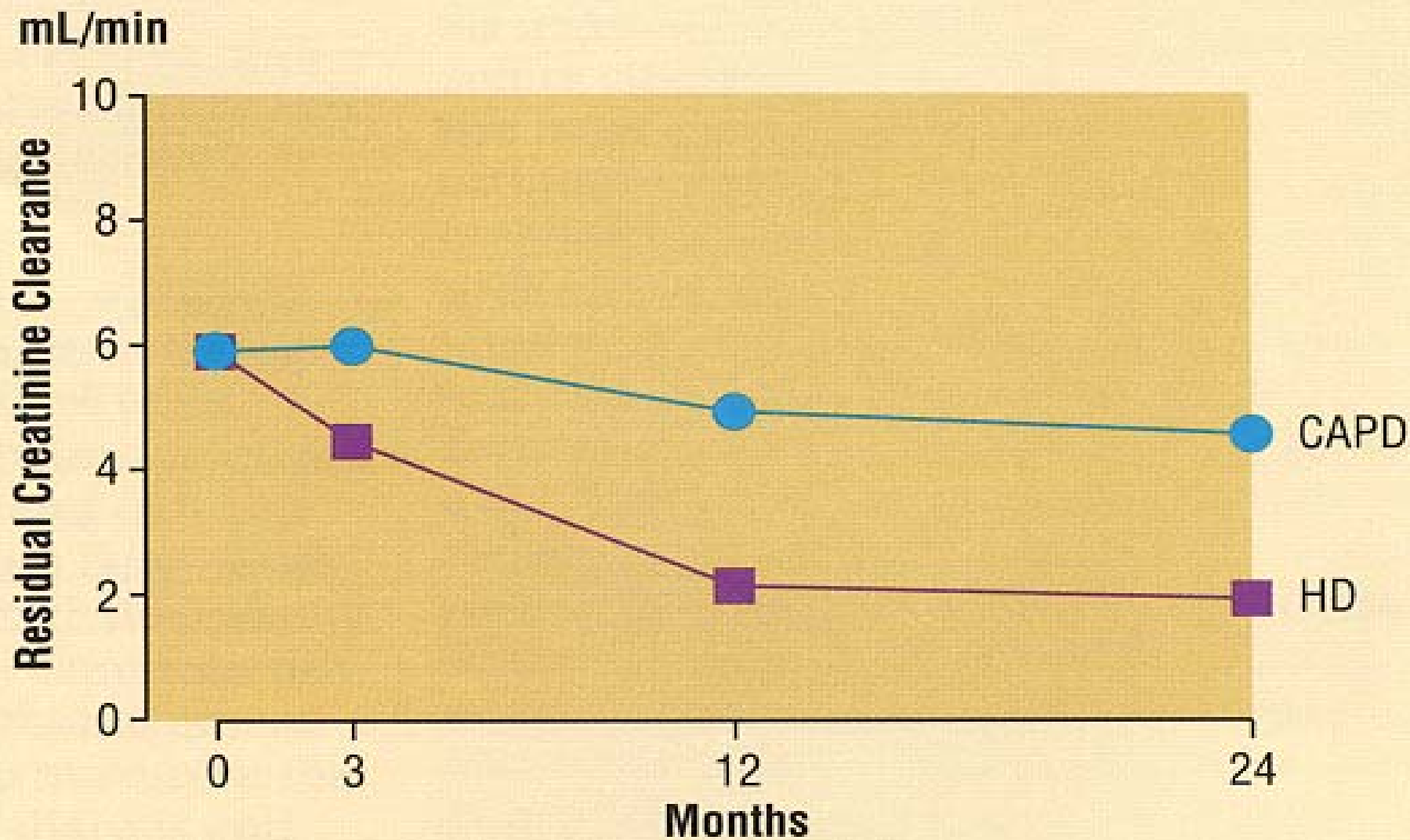
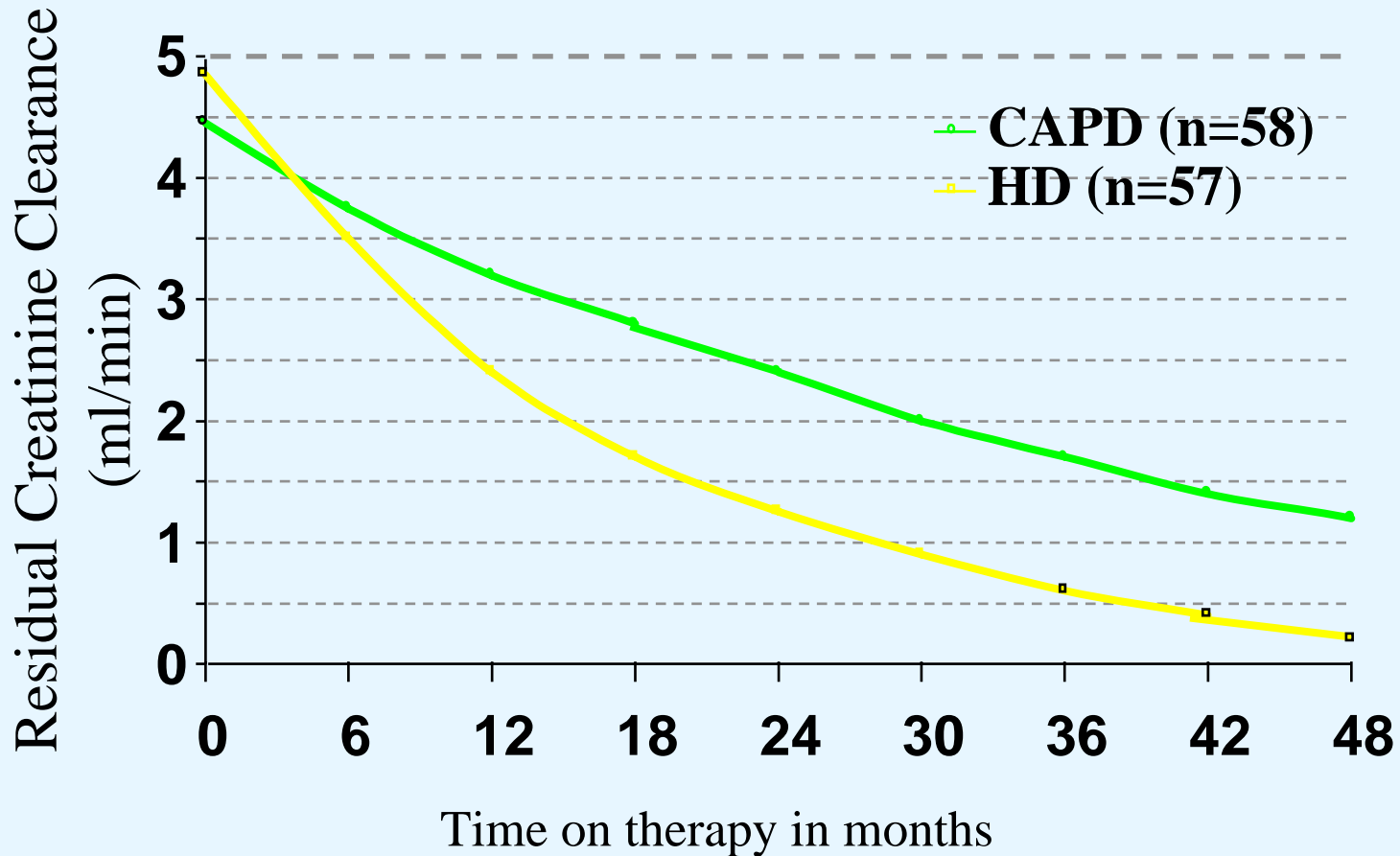


Figure 2. Effect of Dialysis Modality on Residual Renal Function



Adapted from Lameire N, Van Biesen W. *Perit Dial Int.* 1997;17(suppl 2):S102-S110.

Starting patients initially on HD leads to more rapid loss of residual renal function



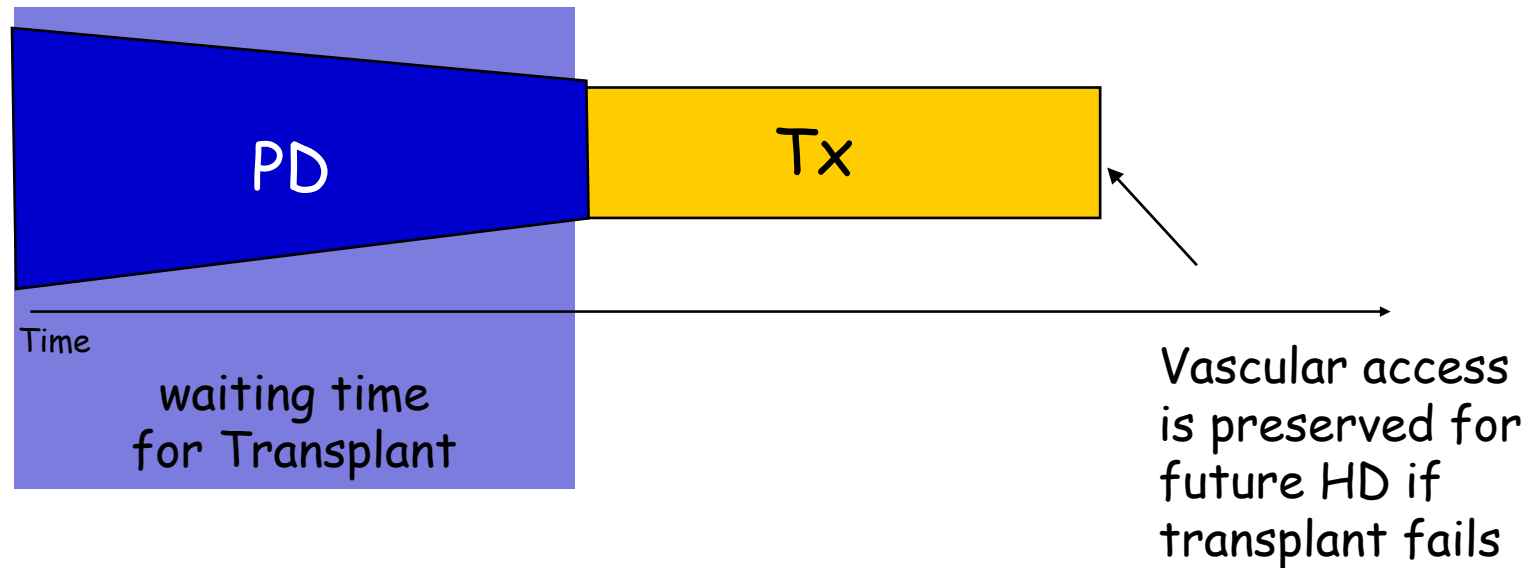
Lysaght MJ, et al, *ASAIO Trans*, 1991; 37(4):598-604

Preservation of vascular access

- Access complications account for 25% hospitalizations
- Biggest 'failure' of hemodialysis
 - 30% catheter rate
 - Life of AVF 2.5 years
 - Premature use causes loss of AVF
- In the life of a dialysis patient—two-three years is a long time without an access issue

“Vascular access management is an sound argument to start with PD”

Technique survival for PD is 50% after 3 years, estimated 75% of patients are still on PD after 18 months



Transplant success

■ PD patients:

- Clinically and statistically decreased incidence of delayed graft function
 - Better hemodynamics preoperatively
- Decreased need for transfusions—decreased antibody sensitization pre transplant thus less rejection
- Less mortality in waiting time



2. Medical advantages of PD

Blood pressure and hemodynamics

- Daily UF—slow and steady
 - Can achieve up to 3L/day of ultrafiltration
- Less left ventricular hypertrophy and clinical arrhythmias/CHF
- Fewer falls

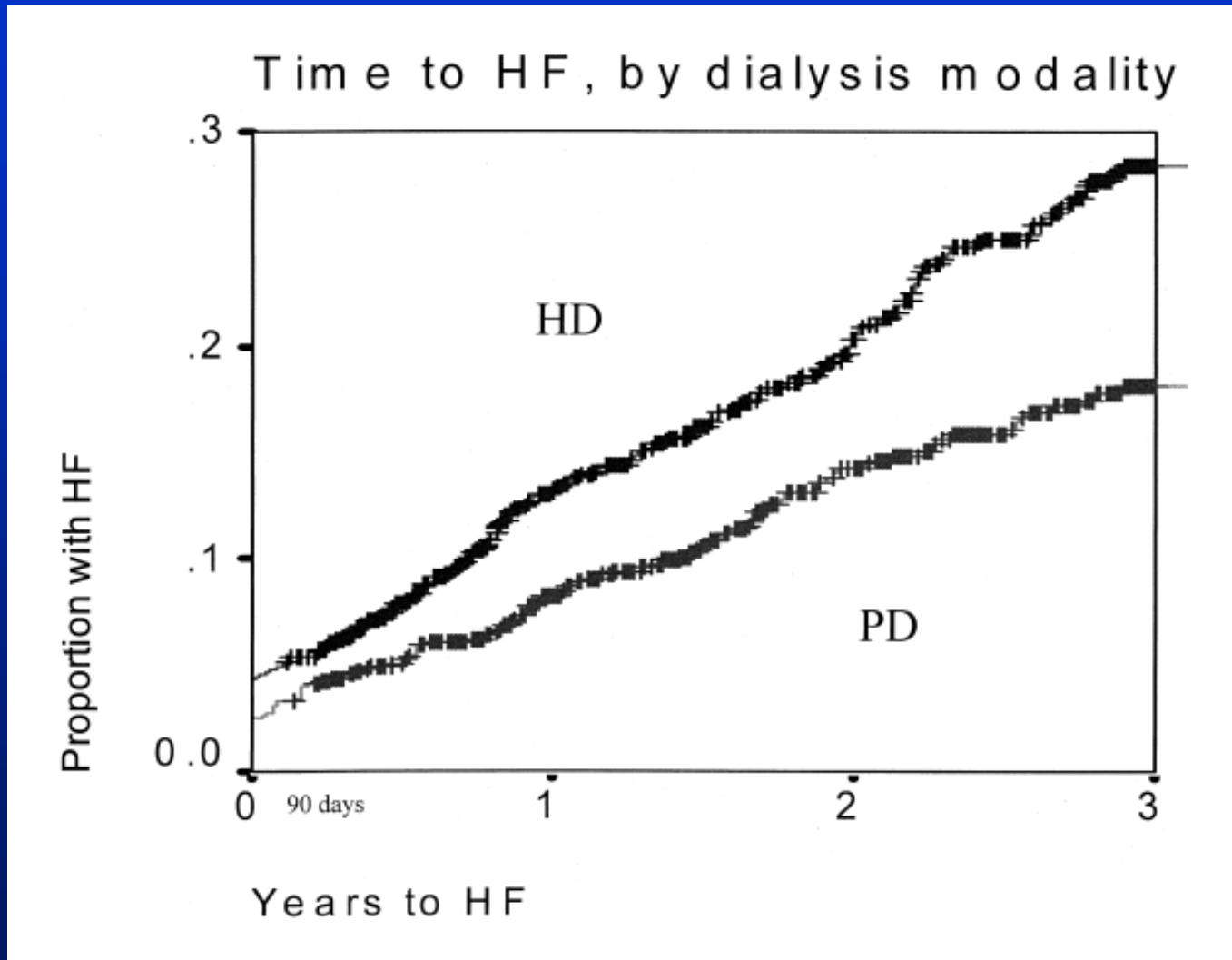
Anemia Management

- Less erythropoietin requirements
 - Able to take po iron
- Fewer transfusions
 - Less blood loss (anticoagulation, circuit)
- But: sc injection

Cardiovascular disease

- Leading cause of death in CKD population
- Different risk factors in both modalities
 - PD atherogenic, ischemic cardiomyopathy
 - HD hypertrophic, dilated cardiomyopathy

Management of Co morbidities: Occurrence of CHF during Rx



Infections

- In a 3 year study rates are the same, but the types of infection differ⁽¹⁾
- HD related infections are often more severe and lead to higher mortality risks⁽²⁾
 - Septicaemia incidence 22%, mortality rate 20%
 - Pneumonia 17%
 - Exit site 37%
- PD related infections have a lower mortality rate
 - Peritonitis incidence 24%, mortality rate 2.3%
 - Pneumonia 3%
 - Exit site 53%
- Krishnan et al, PDI, 1998
- Wang, Piraino, Bernardini et al, JASN 2002

Morbidity of infections

■ PD

- Catheter removal <5%
- Endocarditis/Osteomyelitis—unmeasurable

■ HD

- Catheter (graft) removal 80%
- Systemic infection—15%

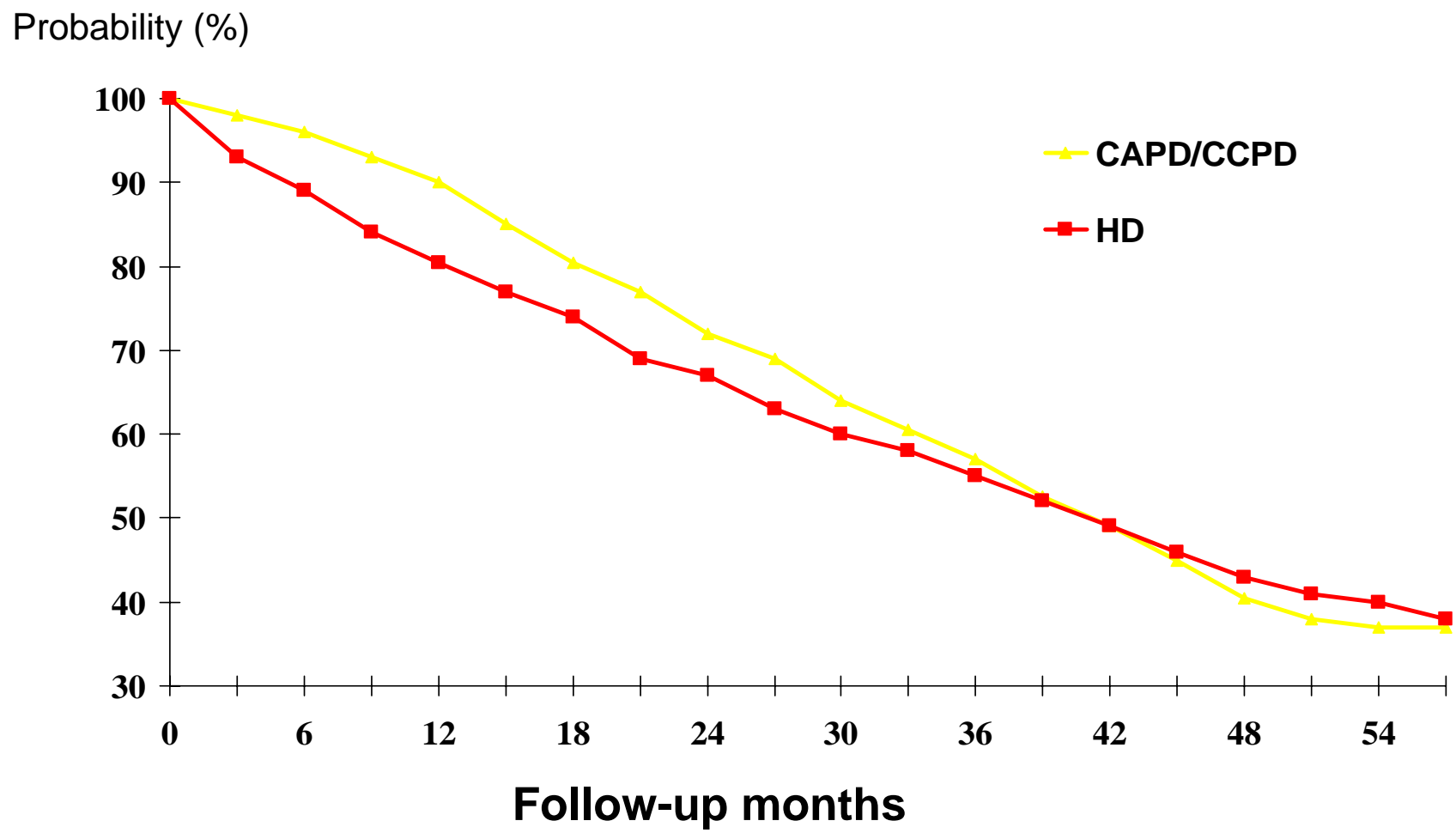


3. Survival advantages

Technique vs. Patient survival

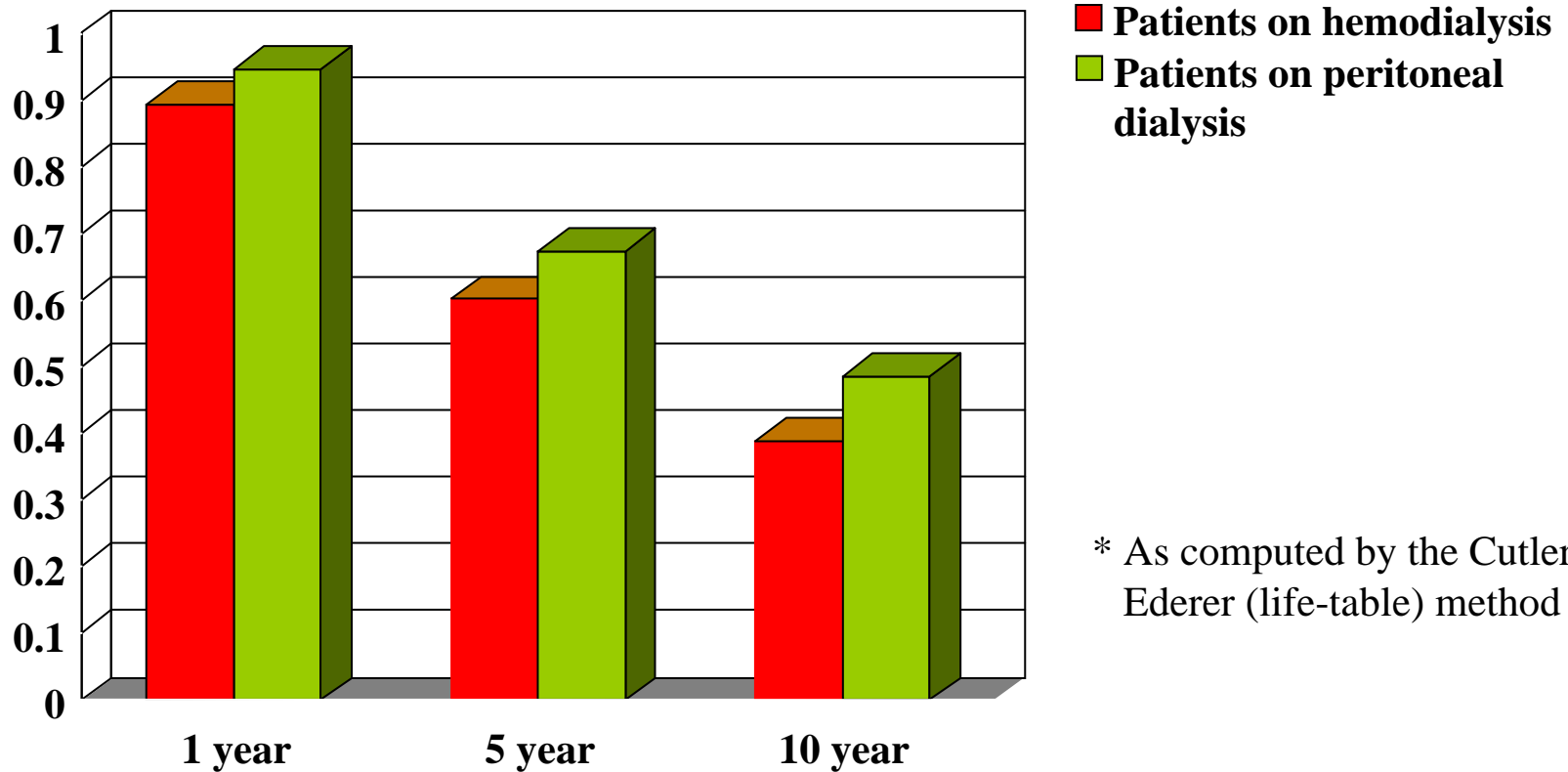
- When discussing PD technique failure—it doesn't translate to patient death
- In HD, because of 'blind spot' in roundabout—technique failure = death
- Survival clearly maximized by using both modalities at appropriate times

Survival Probability for Patients Initiating Dialysis with CAPD/CCPD Compared to HD (1990-94)



Cumulative survival rates by modality: patients starting RRT in Japan during or after 1983

Survival rate*



* As computed by the Cutler-Ederer (life-table) method

More data...

COOR “Canadian registry” 18 000 patients

- PD patients had better survival rates than HD
- When comparing survival rates over 3-5 years PD is equivalent to HD

Danish registry 7011 patients (HD 4568, PD 2443)

- 35% decreased risk of death for PD

Netherlands (Korevarr et al, 2003)

- CKD clinic assigned patients randomly to PD or HD
- Relative risk of death 3.8 times higher for patients started on HD ($p=0,03$)
- Study stopped after 3 years (patient preferred choosing their own modality)

Survival data caveat

- Skewed by USA reporting which shows PD worse in 40% of the populations
 - In Canadian/European centres, each of these subgroups showed superiority or equality between HD and PD
 - USA has <10% penetrance of PD
 - 80% of PD units follow fewer than 20 patients

Summary so far..

■ PD early:

- Improved RRF
- Better transplant outcomes
- Protects vascular access
- Less serious infections
- Some comorbidity benefits

■ PD at any time:

- Rescues those with failed access
- Less serious infections
- Some comorbidity benefits

Treat the disease and the patient

- Patient benefits from PD:
 - Independence and control
 - Dialysis in bed (and maybe breakfast)
 - Flexibility around day to day life
 - No travel to hospital
 - No needles
 - Ability to travel
 - Self reported QOL superiority
 - And last but not least.....



FEWER DIETARY RESTRICTIONS!!!

Inconveniences of PD

- Daily therapy; time commitment
- Independence
- Body image (HD access vs. PD tube)
- Isolation
 - Peer support and medical
- Storage and 'disease in the home'

So why aren't patients doing it?

■ Theories:

- They aren't aware of it
- They don't want it
- We are scaring them
 - Too much wrong info on the complications
 - Too little right info on the medical advantages
- We are not set up to deliver it well
- We are biased
 - Or ignorant

They aren't aware of it?

- USRDS Annual report 1997
 - Only 25% of incident HD patients reported PD education before starting HD
- Canada
 - All dialysis centres offer CKD education on both modalities but..
 - Up to 50% of all new patients starting HD did not have any predialysis care in CKD clinics
- Internet
 - 99% dominated by American sites

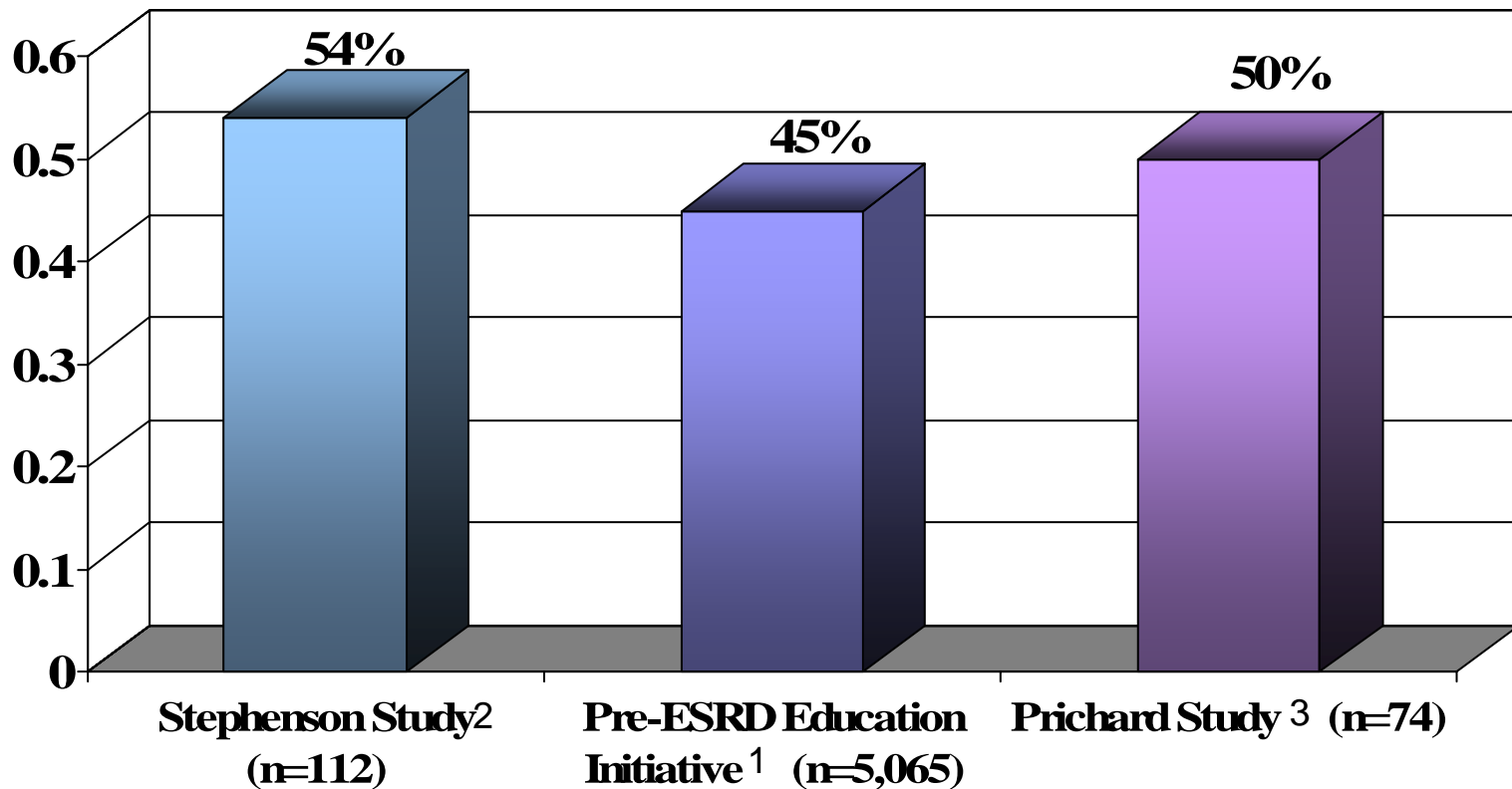


They don't want it...?

50% Want PD!

The National Pre-ESRD Education Initiative Confirmed What Previous Small-scale Studies Showed:

When Patients Understand Their Treatment Options, About Half Preferred PD Over HD

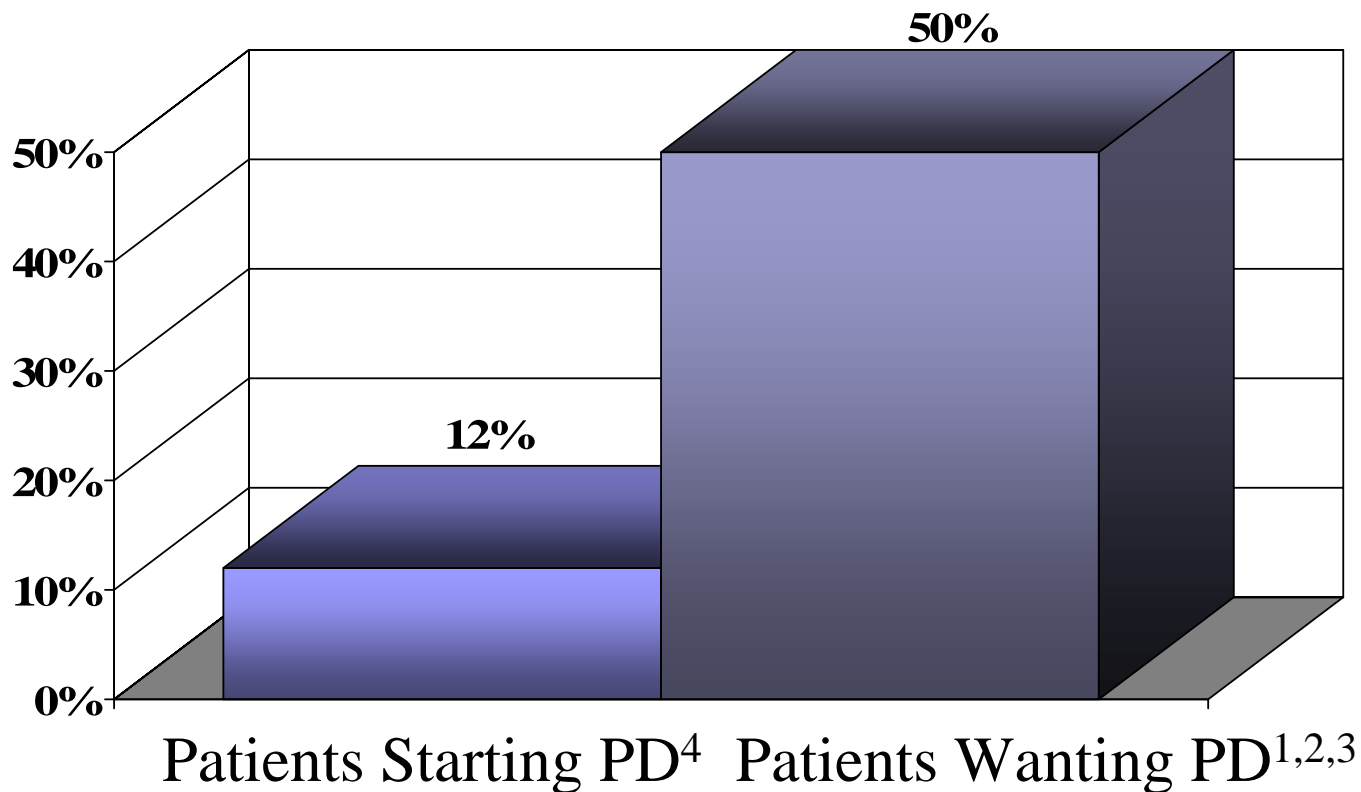


1. Schreiber, et al: National Kidney Foundation Meeting Abstract. April 2000

2. Stephenson, Villano: *D & T*. 556-570, September, 1993

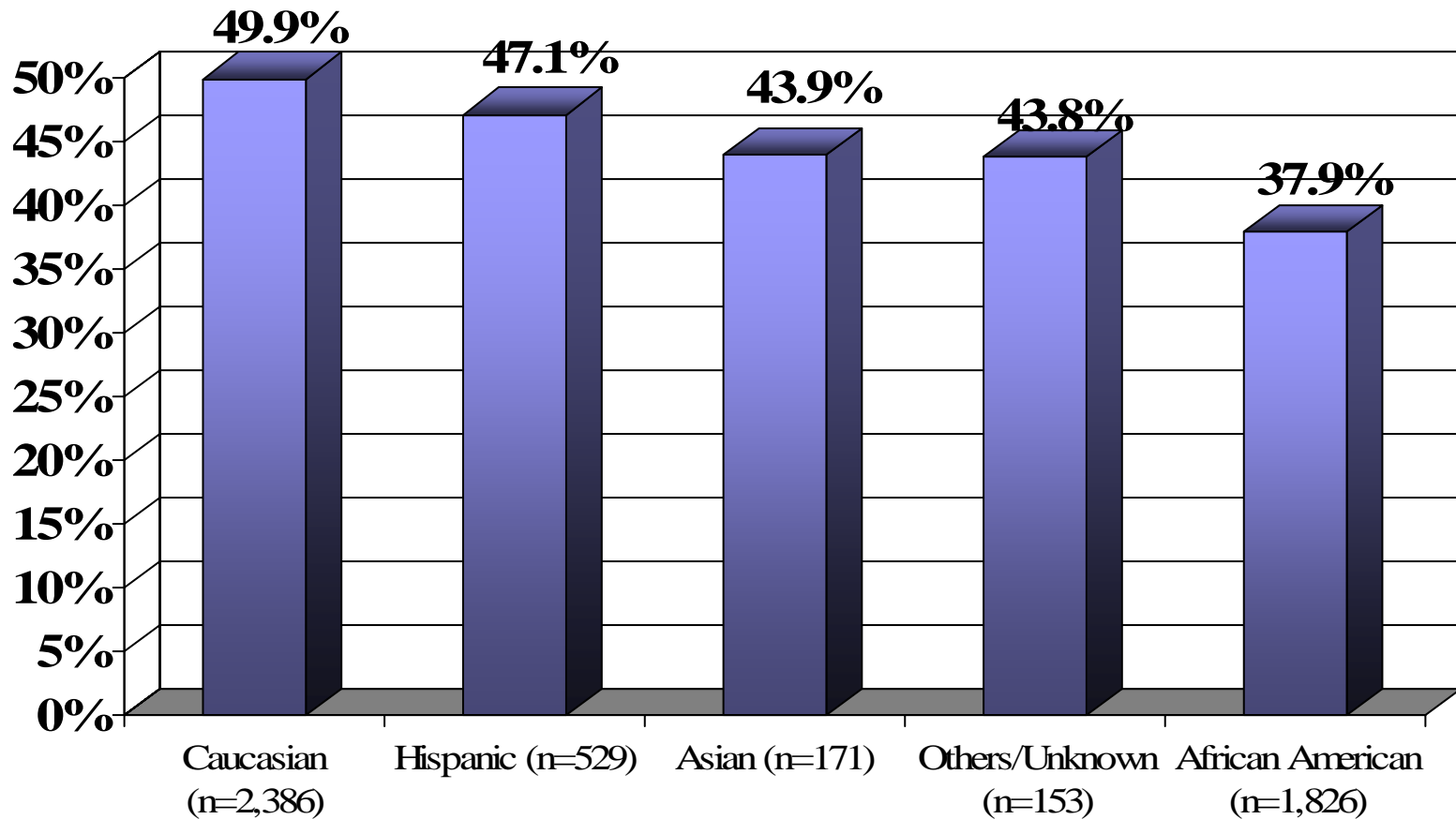
3. Prichard: *Perit Dial Int*, 16:69-72, 1996

Over Four Times As Many Patients Would Prefer PD Than Currently Start On PD In The U.S.

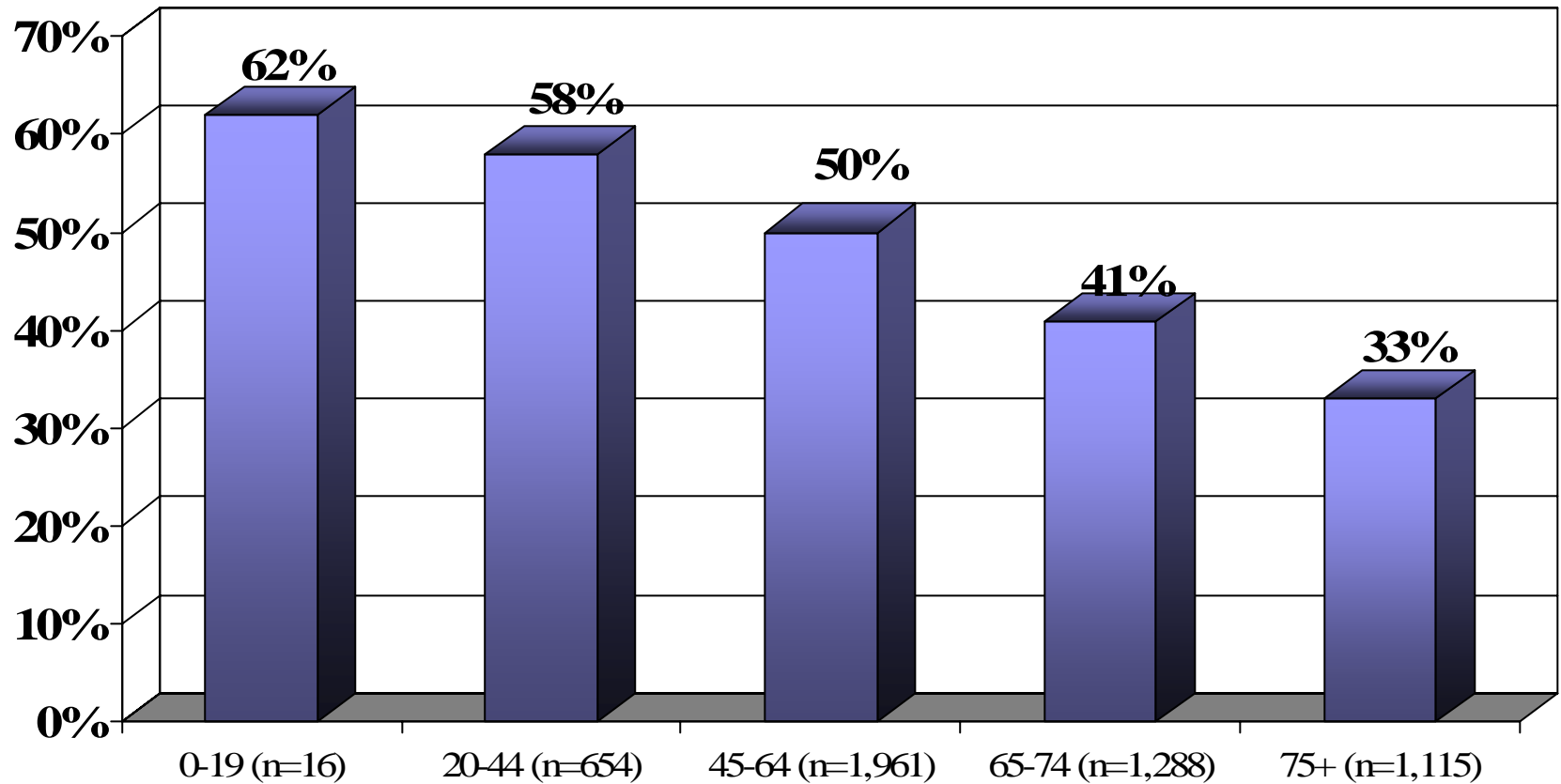


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3. Prichard: *Perit Dial Int*, 16:69-72, 1996
4. USRDS Annual Data Report, Chapter IV, 57-72, 1999

Patients of all Races and Ethnic Groups Prefer PD



Patients of all Ages Prefer PD



Are we biased?

■ Nephrologists

- Younger nephrologists have <5% time exposed to PD in their training
- Older nephrologists haven't kept up with advances in PD

■ Nurses and educators

- Burden of HD so they only see poor outcomes on PD
 - No balanced exposure
- Administrators
 - Only want it because it is cheaper so public is suspicious

What can we do?

- Know why PD should be recommended and to whom it should be offered
- Inform our patients about the roundabout—forget technique failure and discuss transition from one treatment to another
- Evaluate our education programs
 - Stop the HD vs. PD polarization

What should we do?

- It is our job to tell people the best medical therapy first
 - Then help them deal with the barriers to that treatment
- Evaluate new patients starting HD and all those with complications/comorbidities that would be better on PD



Conclusion

- PD is an excellent dialysis modality that is underused
- PD should be used first in all suitable patients