

Peritoneal Dialysis Problems in Different Parts of The World



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Jose Divino, MD, PhD

Division of Renal Medicine, CLINTEC

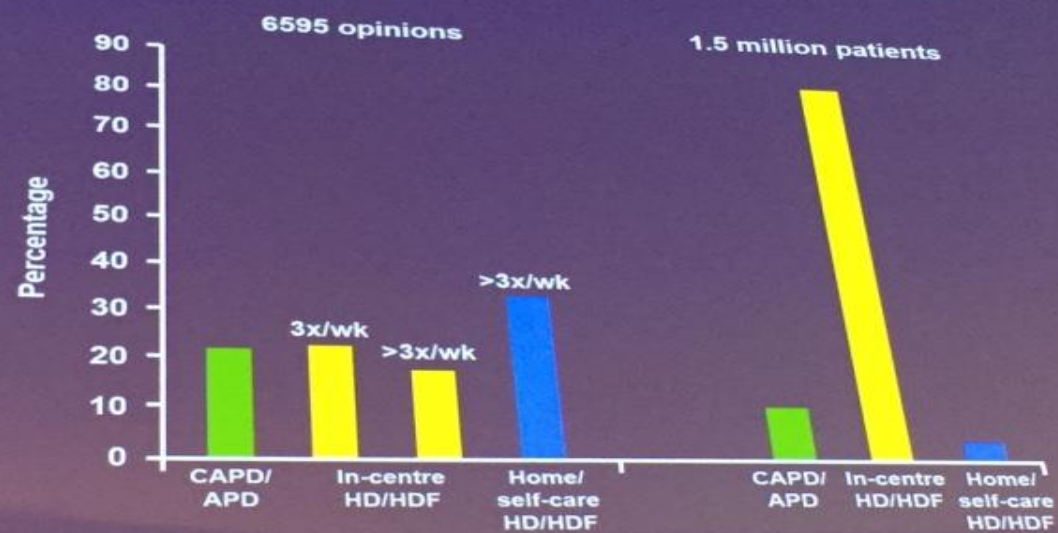
Karolinska Institutet

Stockholm, Sweden

Tabriz, Iran

November 20th, 2019

What is the best long-term dialysis treatment? Opinion vs reality



CAPD, continuous ambulatory peritoneal dialysis; APD, automated peritoneal dialysis; HD, haemodialysis; HDF, haemodiafiltration

Ledebo I, Ronco C. NDT Plus 2008;1:403-8



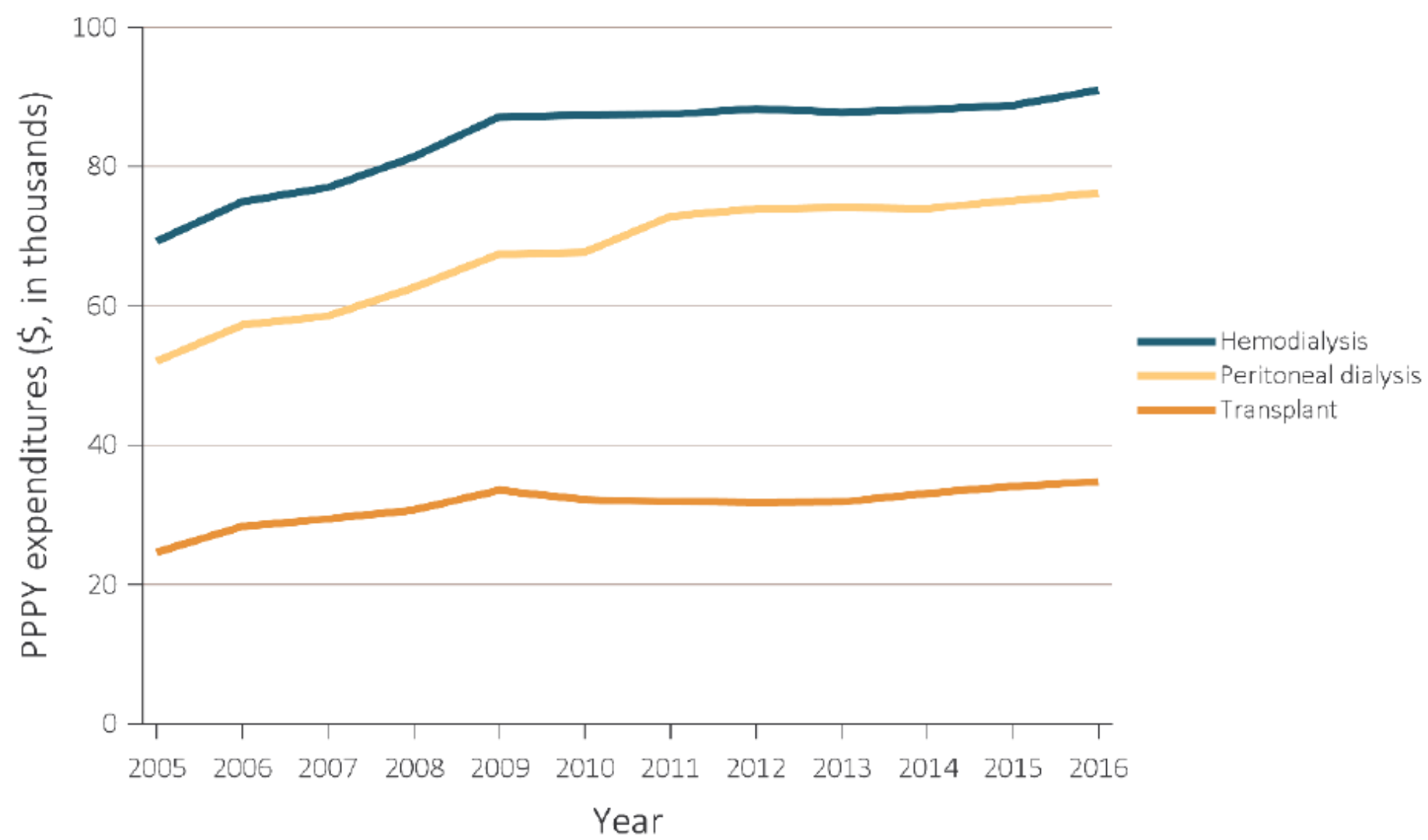
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Can we start by Dialysis Therapy
costs ?

Dialysis Costs Danish National Health Service Medical Technology Assessment Report 2006



vol 2 Figure 9.8 Total Medicare ESRD expenditures per person per year, by modality, 2004-2016



Peritoneal Dialysis and In-Centre Haemodialysis: A Cost-Utility Analysis from a UK Payer Perspective

Catrin Treharne · Frank Xiaoqing Liu ·
Murat Arici · Lydia Crowe · Usman Farooqui

Key Points for Decision Makers

Increasing peritoneal dialysis (PD) usage among incident patients with end-stage renal disease (ESRD) requiring dialysis has the potential to result in significant cost savings.

The possible clinical benefits and improvements in patient quality of life associated with PD could also reduce the burden of disease to the patient.

Implementing the use of PD as a first choice dialysis modality among appropriate patients could be a positive step towards supporting the National Health Service (NHS) QIPP (Quality, Innovation, Productivity and Prevention) programme in its aims to reduce costs while improving the quality and delivery of patient care.

Costs

- Need to show equal or cheaper alternative to HD
- Cost benefits
 - ↻ Can be nurse led
 - ↻ Lower nursing requirement (1:14 vs 1:4)
 - ↻ Lower transport cost
 - ↻ Fewer inpatient days if dialysed adequately
 - ↻ Lower Epo requirement
 - ↻ Fewer lines
 - ↻ Acute dialysis cheaper than haemofiltration
- Patient benefits
 - ↻ Better financial situation
 - ↻ Work/schooling

PD VS HD IN POST-ECONOMIC CRISIS GREECE—DIFFERENCES IN PATIENT CHARACTERISTICS AND ESTIMATION OF THERAPY COST

Marilena G. Koukou,¹ Vassilios E. Smyrniotis,² Nikolaos F. Arkadopoulos,² and Eirini I. Grapsa³

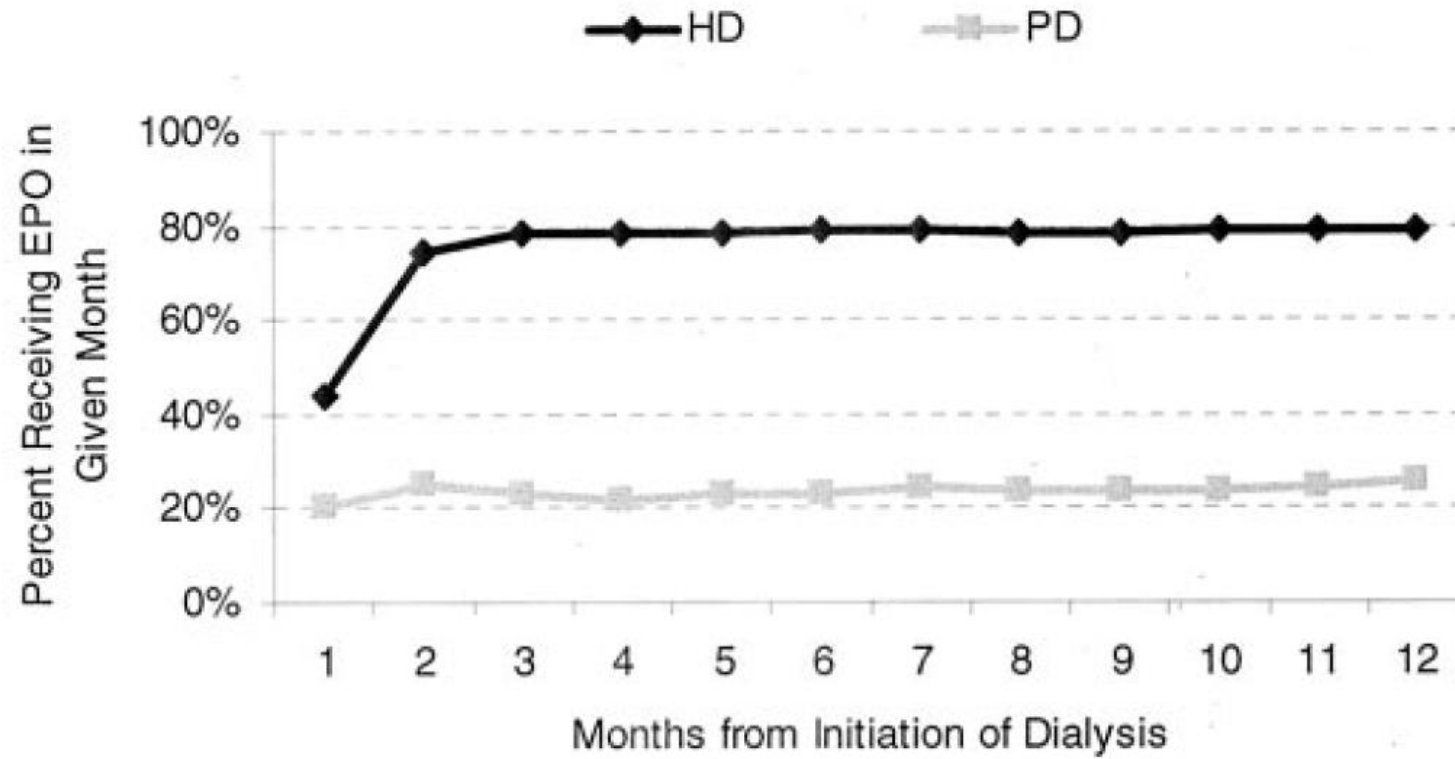
Monthly Direct Medical Costs (in €) for the Entire Sample of PD and HD Patients Paid by Insurance (2013–2014)

Insurance (prices in €)	APD	CAPD	HD ^a	HDF ^a
Dialysis process	0	0	1,677	1,677
Consumables	4,010	2,800	287.40	287.40
Drugs	420	420	517.40	517.40
Laboratory tests	151.10	151.10	177.70	177.70
Transportation	0	0	250	250
Subsistence (food)	362	362	362	362
Total treatment cost	4,943.10	3,733.10	3,271.50	3,271.50

Monthly Indirect Costs (in €) for the Entire Sample of PD and HD Units Paid by the State (2013–2014)

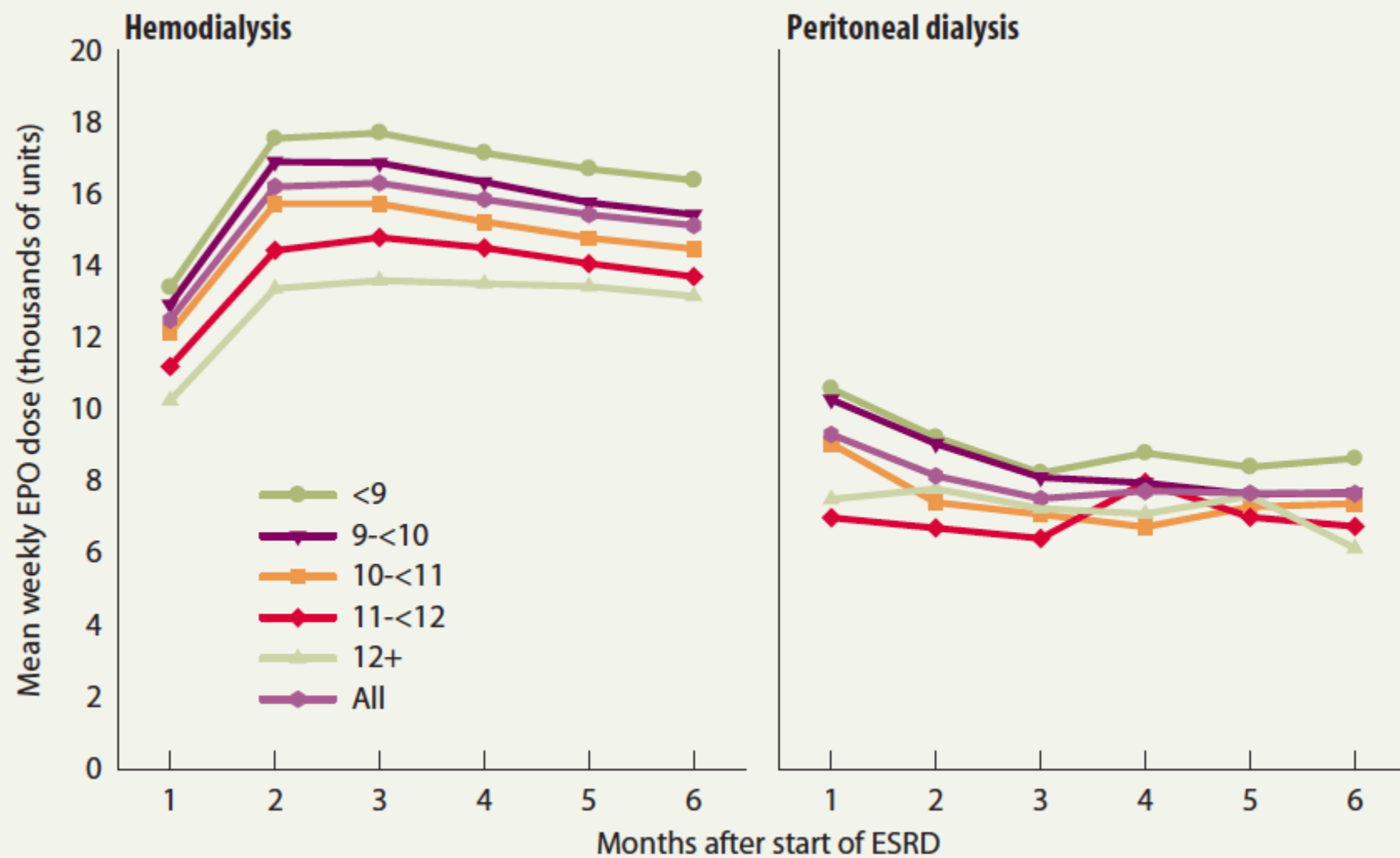
State (prices in €)	PD (both APD and CAPD)	HD (both HD and HDF)
Salary	11,560	28,460
General healthcare consumables	100.80	6,247.10
Dialysis consumables	0	14,980.50
Operational expenses of the unit (excluding salaries)	0	1,911
Equipment (maintenance and depreciation of machinery)	0	3,002
Sterilization of the machines	0	1,669.90
Total maintenance cost	11,660.80	56,270.50

Anaemia

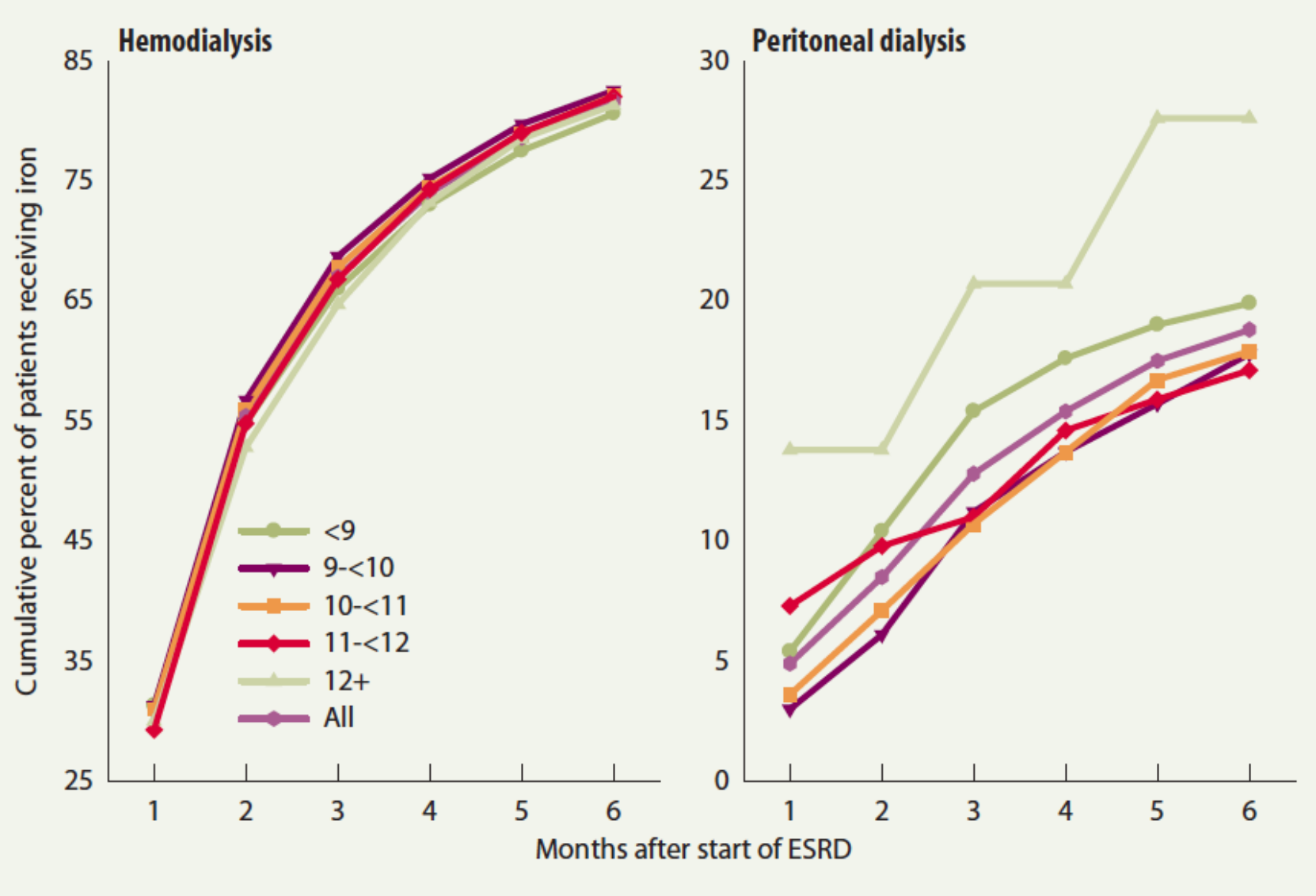


Snyder J JASN 2004

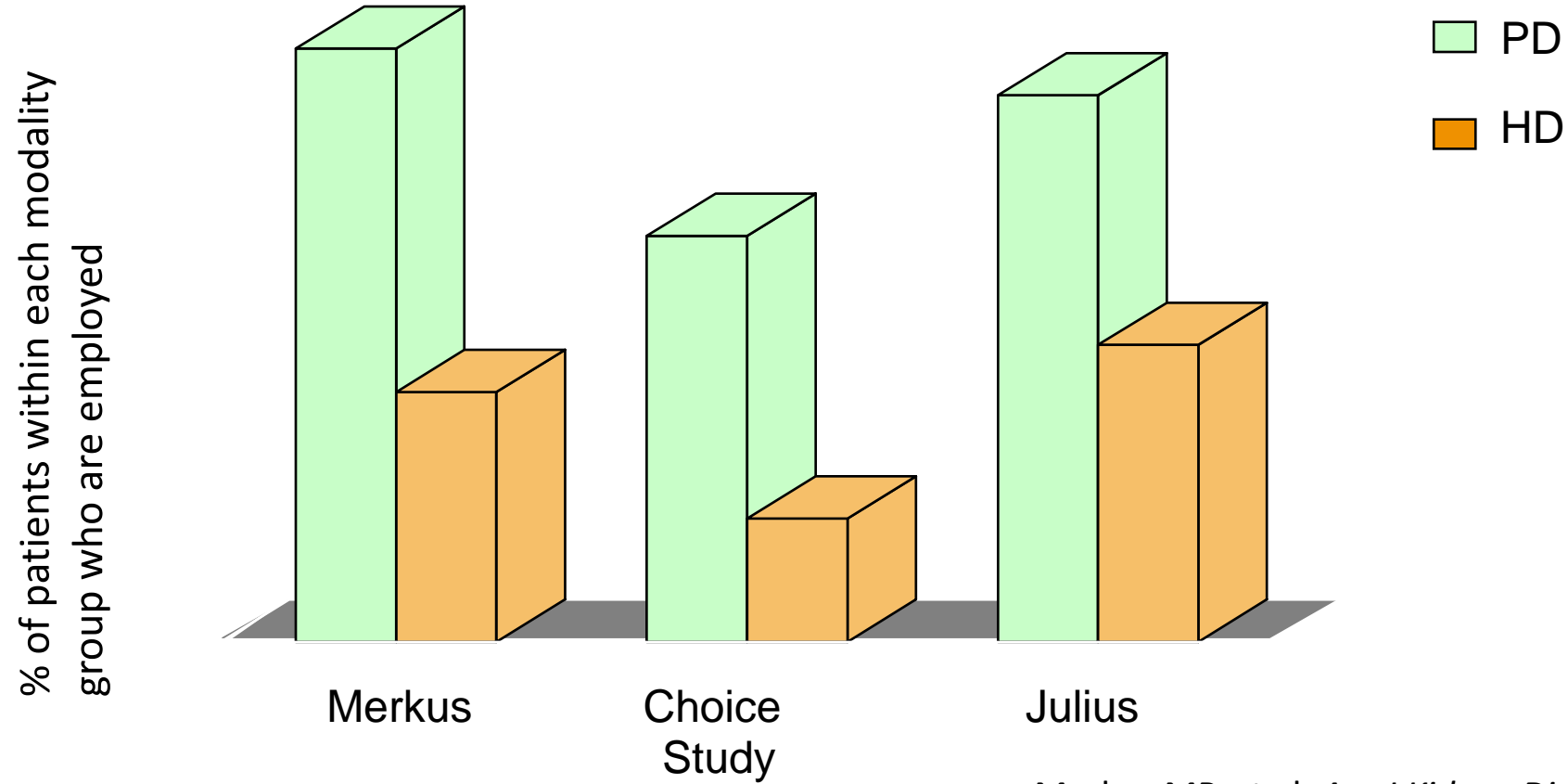
4.6 · Mean EPO dose per week



4.7 · Percentage of patients receiving iron



Higher Employment for Patients on Peritoneal Dialysis



Merkus MP, et al. *Am J Kidney Dis*, 1997; 4:584-592

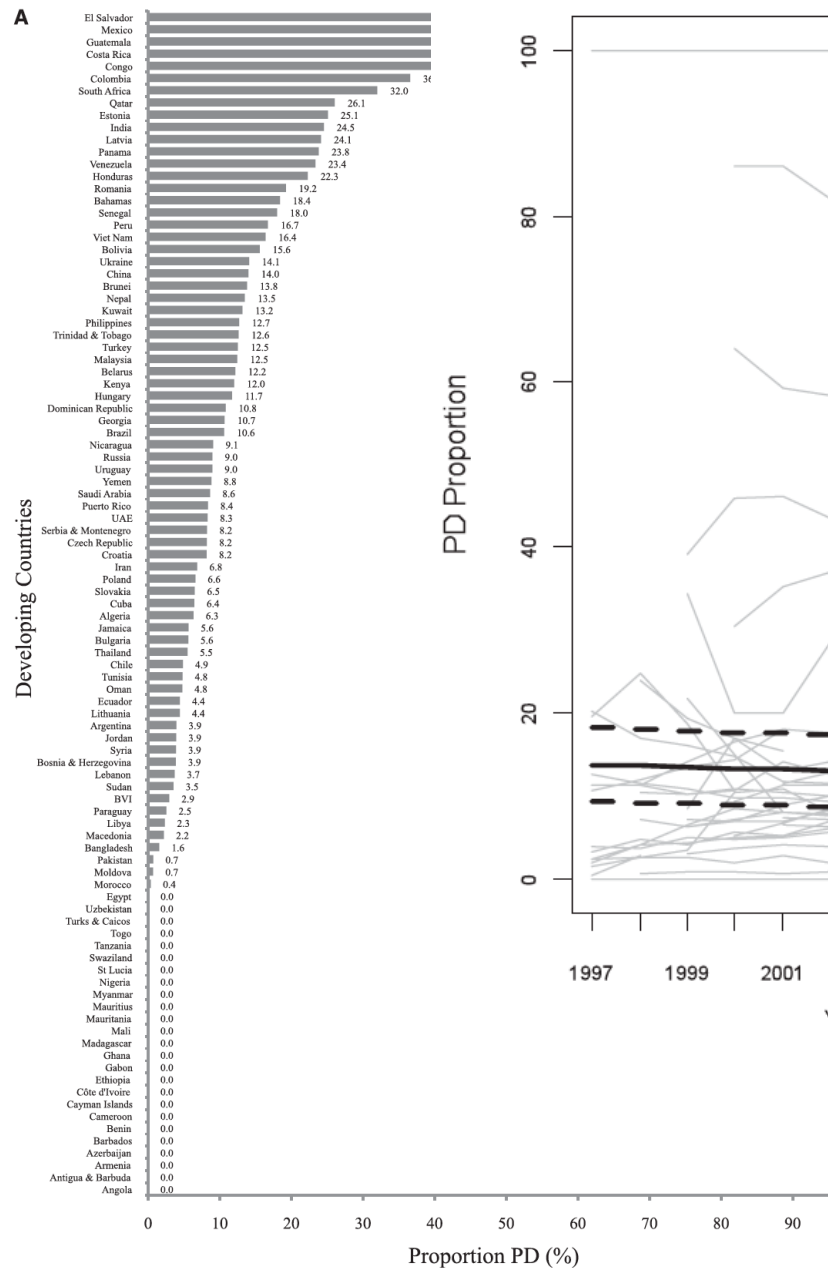
Powe NR, Fink NE, *Nefrologia*, 1999; 68-72

Julius M, et al. *Arch Intern Med*, 1989; 129:839-842

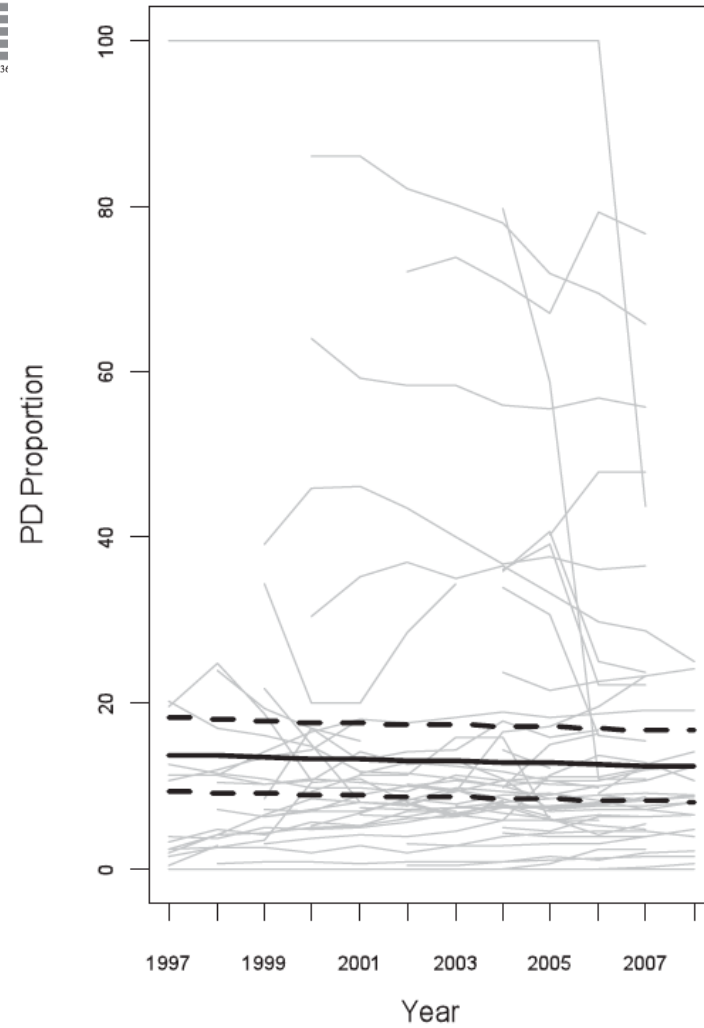


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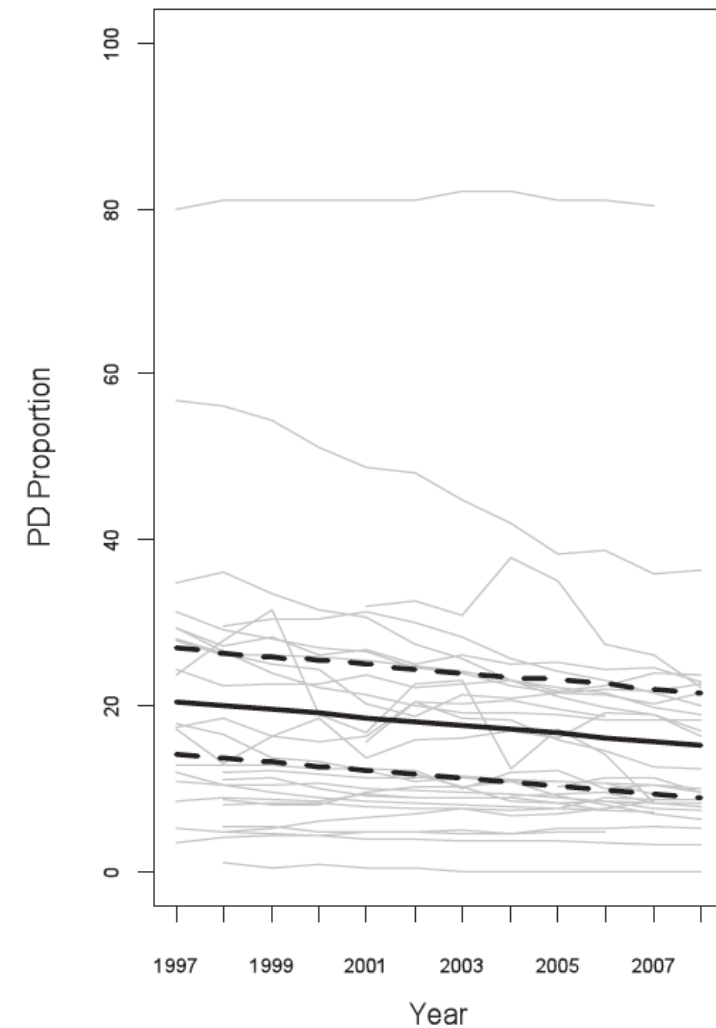
PD Growth



Developing Countries



Developed Countries



Jain A CJASN 2012



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Indications and Contra-indications



GUIDELINES FOR PERITONEAL DIALYSIS ADEQUACY : GUIDELINE 30

- Absolute Contra-indications for PD
(Opinion)
- 1. Documented loss of peritoneal function or extensive abdominal adhesions that limit dialysate flow
- 2. In the absence of a suitable assistant, a patient who is physically or mentally incapable of performing PD
- 3. Uncorrectable mechanical defects that prevent effective PD or increase the risk of infection (eg, surgically irreparable hernia, omphalocele)



GUIDELINES FOR PERITONEAL DIALYSIS ADEQUACY : GUIDELINE 31

-

Relative Contraindications for PD (Opinion)

- Fresh intra-abdominal foreign bodies (eg, 4-month wait after abdominal vascular prostheses, recent ventricular-peritoneal shunt)
- Peritoneal leaks
- Body size limitations, morbid obesity
- Intolerance to PD volumes necessary to achieve adequate PD dose.
- Inflammatory or ischemic bowel disease
- Abdominal wall or skin infection
- Severe malnutrition
- Frequent episodes of diverticulitis

Indications for PD

- Pediatric patients
 - No vascular access needed
 - More gentle treatment
 - Regular school attendance

Automated peritoneal dialysis as the modality of choice: a single-center, 3-year experience with 458 children in Mexico

**Rosaura Fabian Velasco • Jesus Lagunas Muñoz •
Veronica Sanchez Saavedra •
Jorge E. Mena Brito Trejo • Abdul Rashid Qureshi •
Elvia García-López • Jose C. Divino Filho**

Received: 17 May 2007 / Revised: 22 August 2007 / Accepted: 22 August 2007
© IPNA 2007



Indications for PD

- Patients who cannot tolerate HD
 - Congestive/ischemic heart disease
 - Due to the rapid shifting of volume within fluid compartments during HD, some patients with severe cardiac disease may be better managed on PD

Complementary use of peritoneal and hemodialysis: Therapeutic synergies in the treatment of end-stage renal failure patients

H Kawanishi¹ and C McIntyre^{2,3}

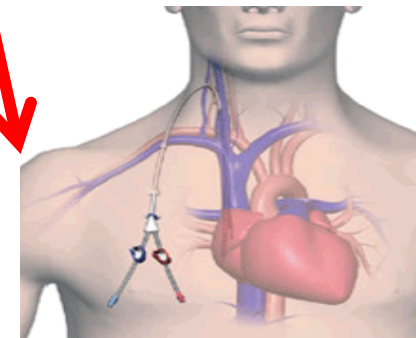
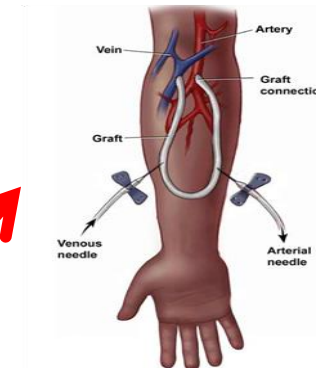
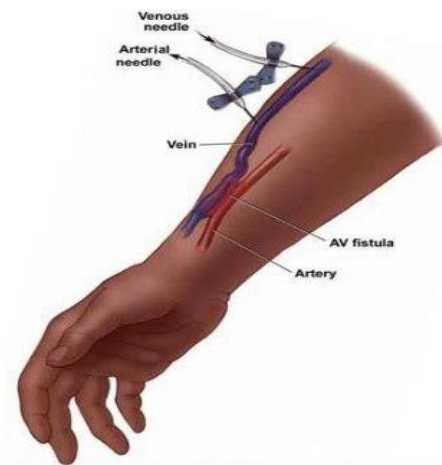
¹Tschiya General Hospital, Hiroshima, Japan; ²Division of Vascular Medicine, School of Graduate Entry Medicine and Health, University of Nottingham Medical School at Derby, Nottingham, UK and ³Department of Renal Medicine, Derby Hospitals NHS Foundation Trust, Derby, UK



Complementary therapy of established PD patients

- Combination therapy used as alternative to increase the dose of PD
- After loss of RRF, removal of larger molecules becomes inadequate
- Increase in daily glucose load may accelerate deterioration of peritoneal membrane
- Limited availability of outcomes data
- Popular in Japan
- Indications : uremic symptoms, fluid overload, combination of both
- Indications: hernia, hydrothorax, holidays, minimize CV complications
-

Indication for PD





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PD Utilization..... a problem ?

PD utilization

- The choice of peritoneal dialysis tends to be extremely variable from country to country and within countries from center to center

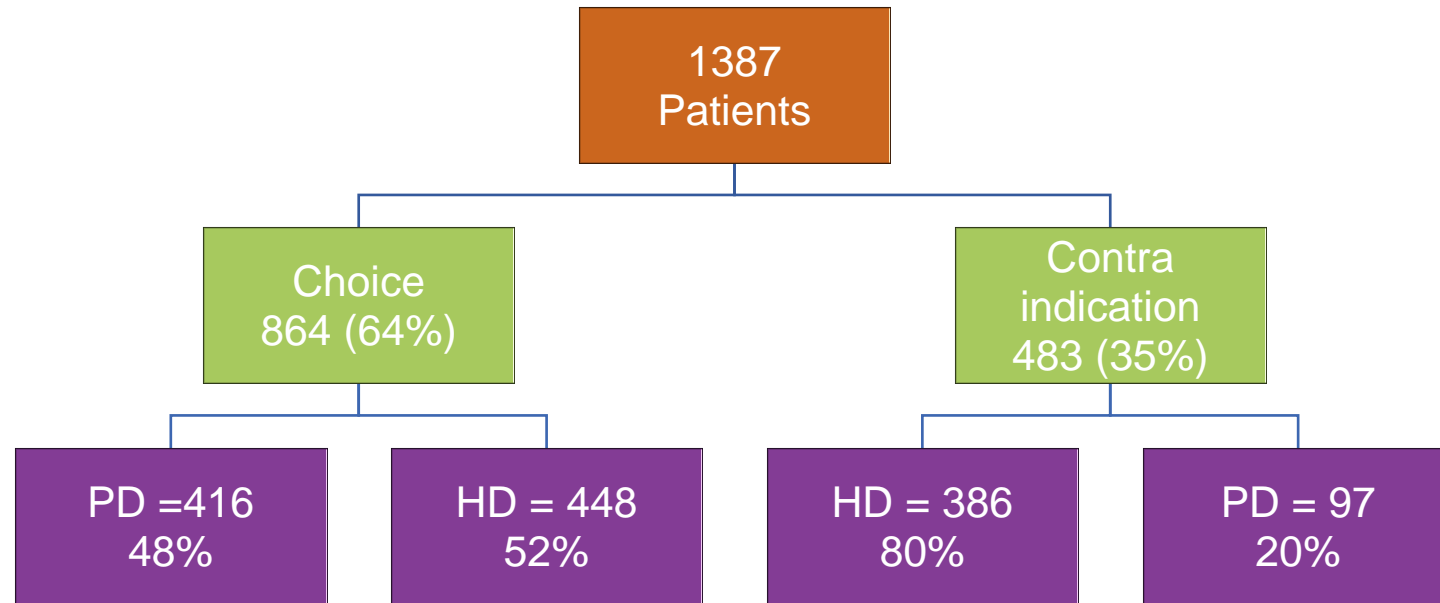
The crucial role of the nephrologist

- According to a questionnaire conducted with 474 nephrologist in Italy (*Viglino et al*) , nephrologists having no or > than 3 years experience on PD provide a significantly more negative evaluation of PD in relation to patient survival, dialytic efficiency and risk of peritonitis
- This lack of modality experience was present in a significantly higher percentage of the directors of centers without PD

The crucial role of the nephrologist

- Mehrotra reported that patients treated with HD have been provided with little or inadequate information on PD and this lack of information is decisive in the failure to choose this modality
- It seems, that incomplete presentation of treatment options is an important factor in the underutilization of the PD therapy too.

Modality Choice in Holland



Modality Choice in Holland

Table 2. Number and Type of Medical and Social Contraindications to HD or PD

Medical contraindications to HD (n = 46)	Medical contraindications to PD (n = 225)*
Poor cardiac condition (n = 24)	Previous major abdominal surgery (n = 85)
Acute start (n = 3)	Cystic kidneys (n = 15)
Other (n = 19)	Poor lung function (n = 13)
	Chronic inflammatory bowel disease (n = 10)
	Poor cardiac condition (n = 10)
	Obesity (n = 5)
	Other (n = 67)
Social contraindications to HD (n = 4)	Social contraindications to PD (n = 150)*
Other (n = 4)	Incapable of performing PD exchanges themselves (n = 116)
	Other (n = 34)

Additional considerations for patients that would do well on PD

- Distance from dialysis facility
 - Patients living in rural communities, Nursing home patients
 - Eliminates the difficulties with transportation three times per week
- Working patients
 - Avoids treatment scheduling conflicts
- Diabetic patients
 - No vascular access needed
 - Intra-peritoneal insulin option



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Patient choice ,
How the RRT options are presented

How are the different RRT options offered to the patients ?



- The patient right to choose.....
- ... Free choice means fair and impartial information on the therapy options .
- Patient's own choice, impact on survival
(Portolés, GCDP, PDI 2010)

[illegible]

DMTs: a structured educational process in place





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Quality of Life

Quality of life

- Benefits of PD

- Treatment at home
- More freedom with diet and fluid
- Ability to travel
- No transport issues
- Dialysis around you
- No post dialysis lethargy
- More able to continue to work

- Benefits of HD

- Less burnout
- 4 free days
- More space at home
- Social contact
- Nicer than home?

Quality of Life

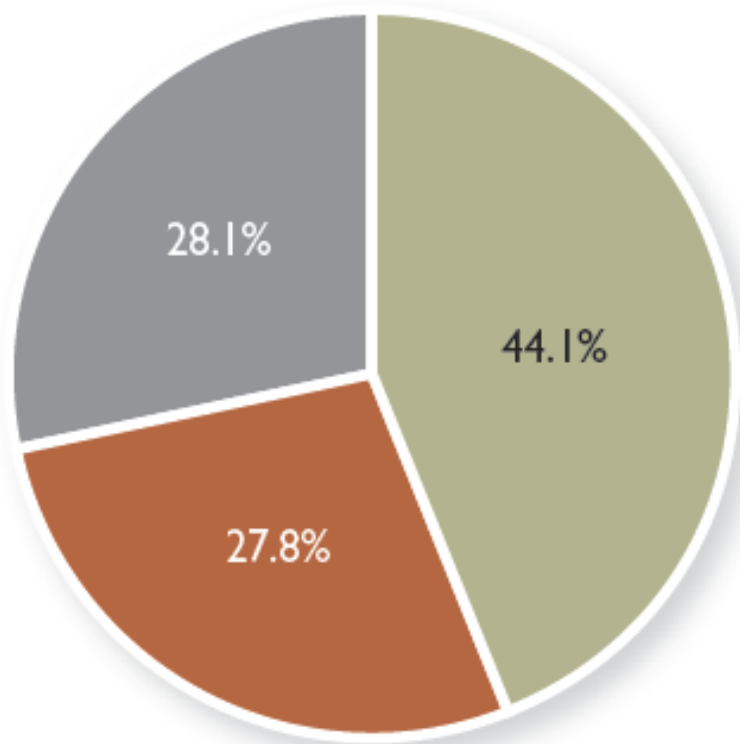
- 7 large studies looking at QOL most correcting for co-morbidity
- All but 2 had significantly better quality of life scores compared with HD

Juergenson E CJASN 2006, Merkus M et al AJKD 1997, Rubin D JAMA 2004, Wu A JASN 2004, Brown E NDT 2010 Tannor E BMC Nephrol 2017

Barriers to PD in South Africa (and rest of the world)

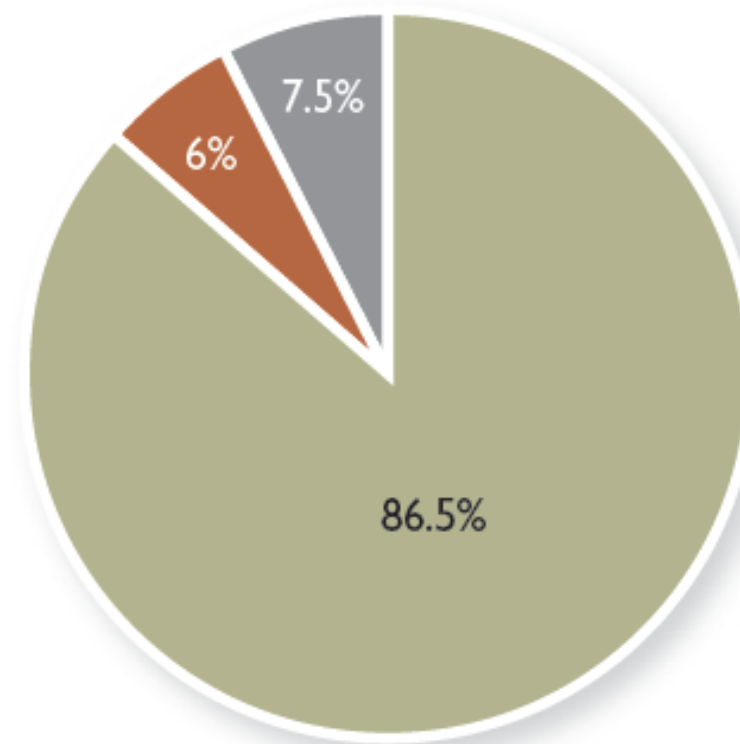
- Skilled Nursing
 - Physician Training
 - Attitudes
 - Remuneration
 - Surgical Expertise
-
- Crash landers
 - Home circumstances and poverty

PUBLIC



HD PD TX

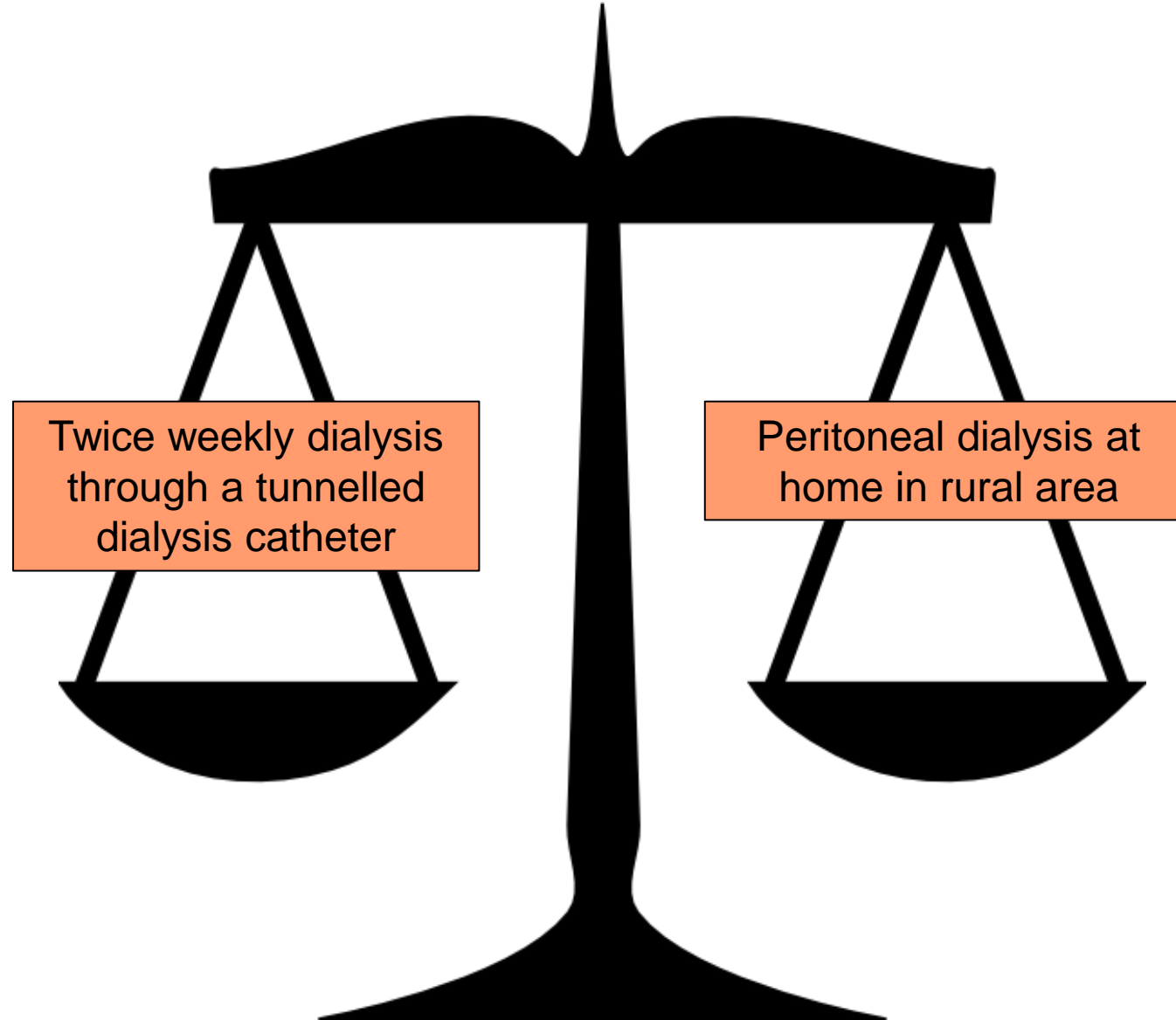
PRIVATE



HD PD TX







Twice weekly dialysis
through a tunneled
dialysis catheter

Peritoneal dialysis at
home in rural area



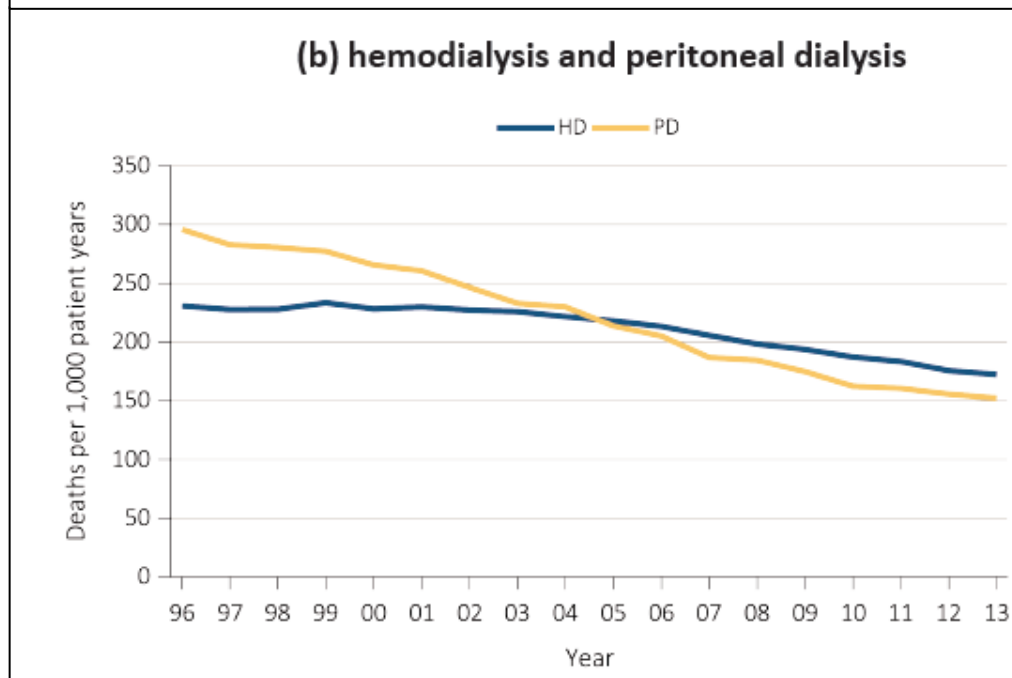
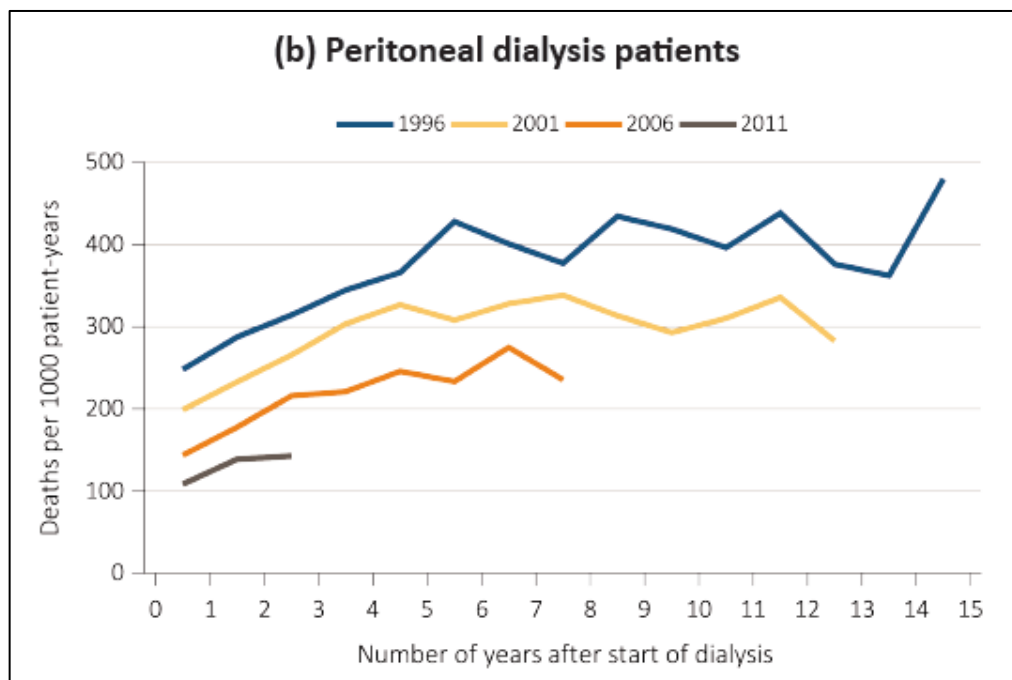
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Clinical Benefits



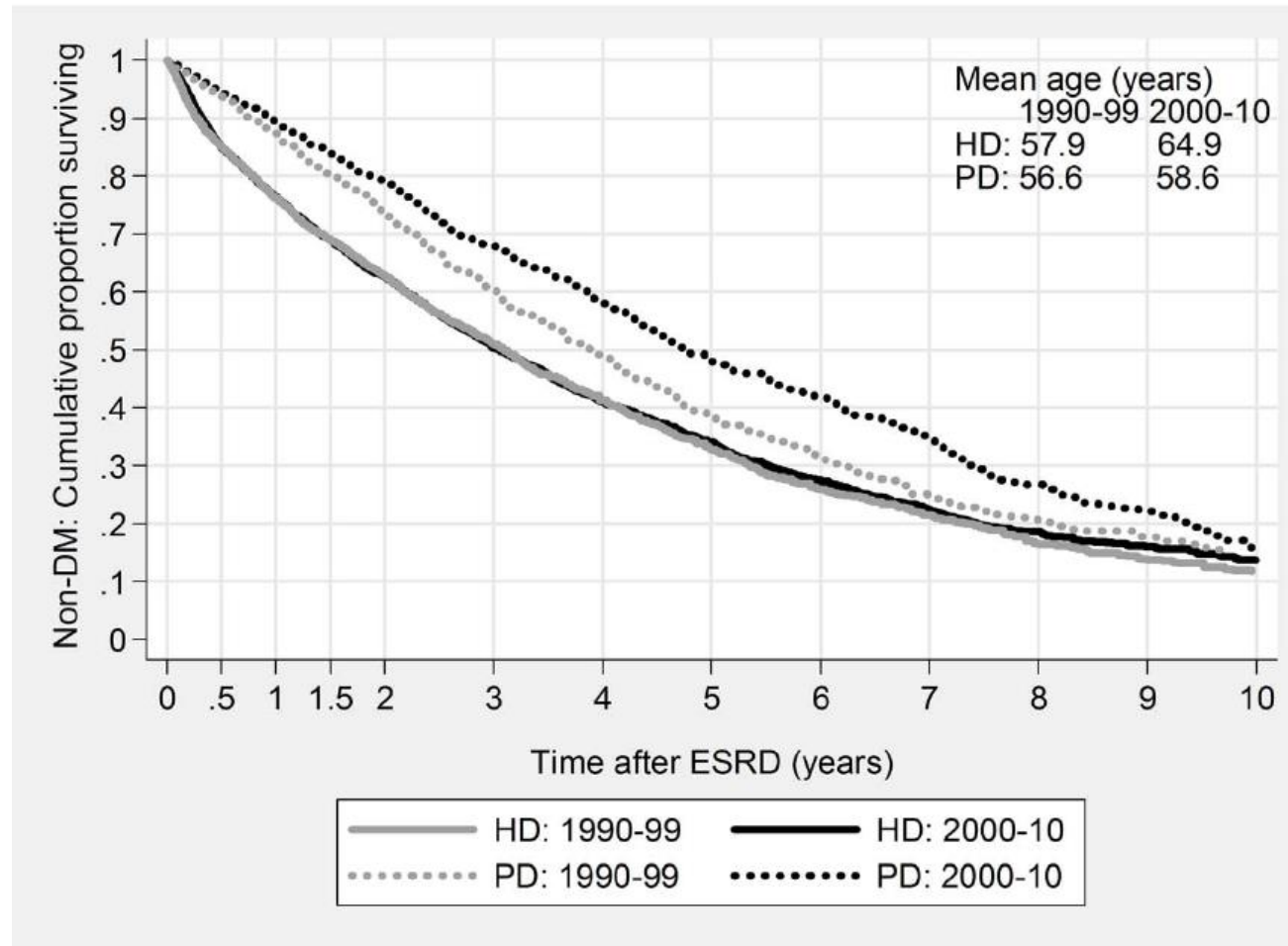
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Survival on Dialysis



Relative Survival of Peritoneal Dialysis and Haemodialysis Patients: Effect of Cohort and Mode of Dialysis Initiation

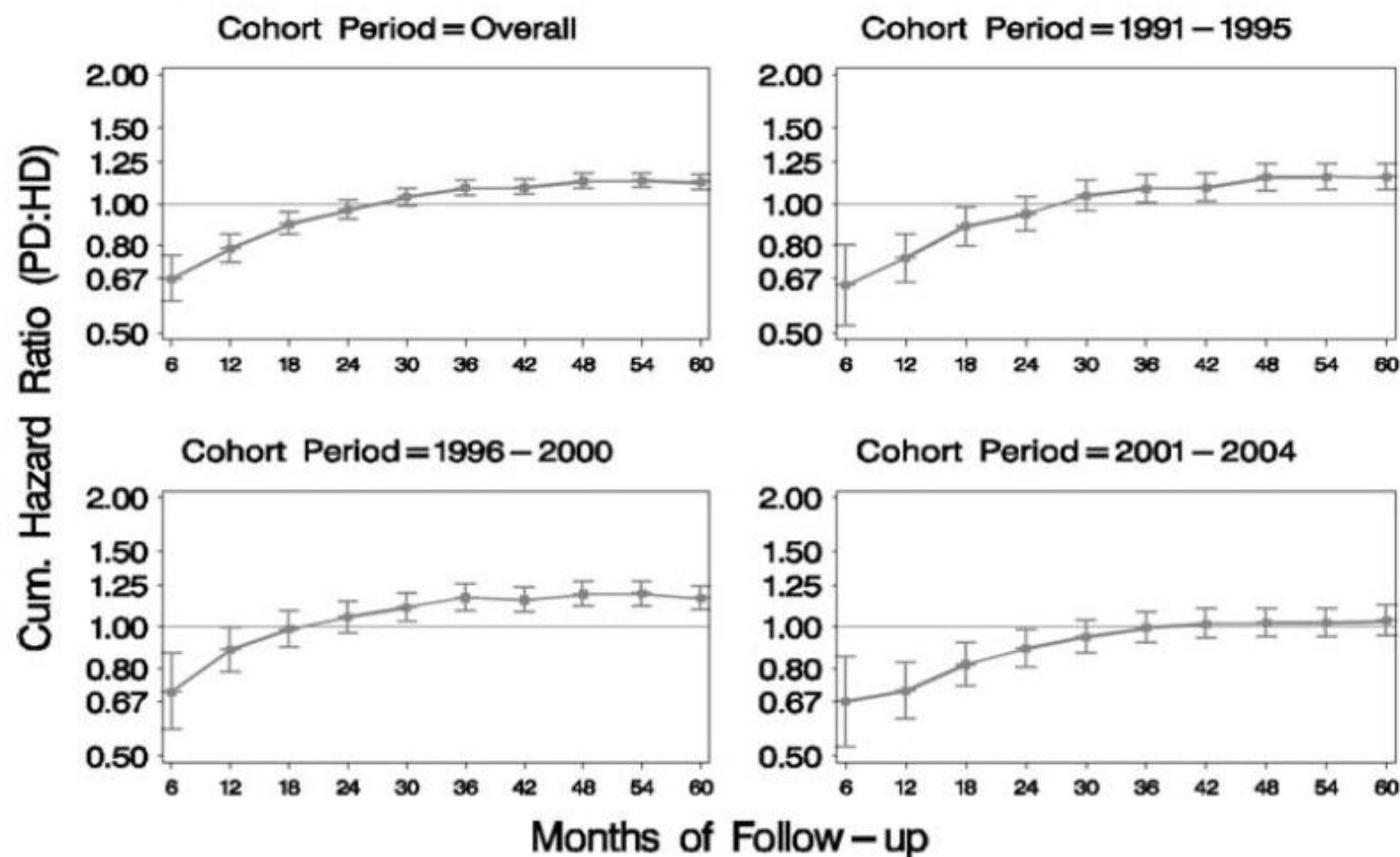
James G. Heaf^{1*}, Sonja Wehberg²

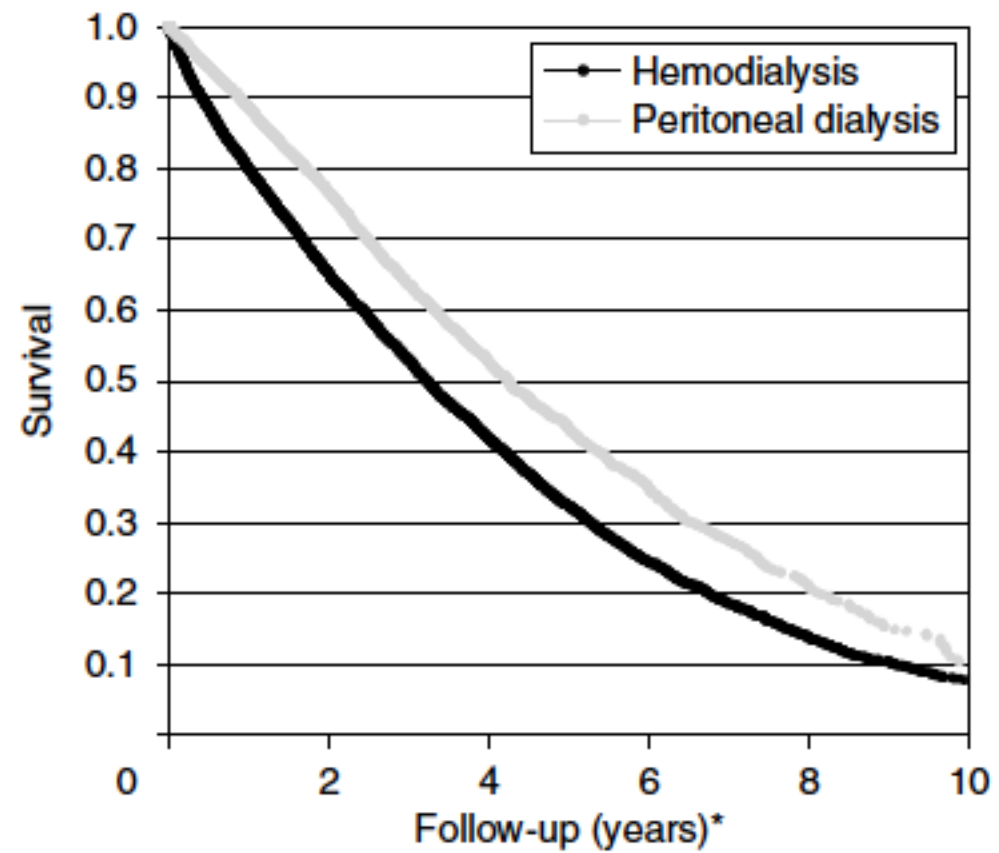


Hemodialysis and peritoneal dialysis are associated with similar outcomes for end-stage renal disease treatment in Canada

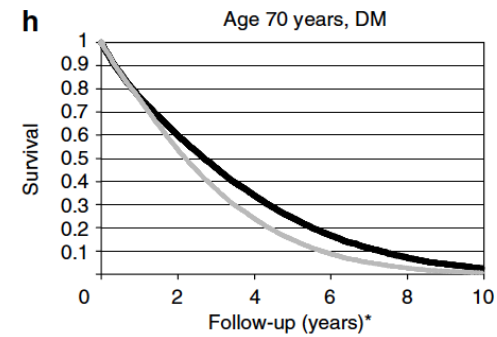
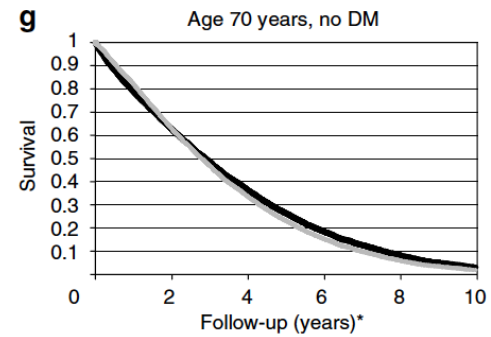
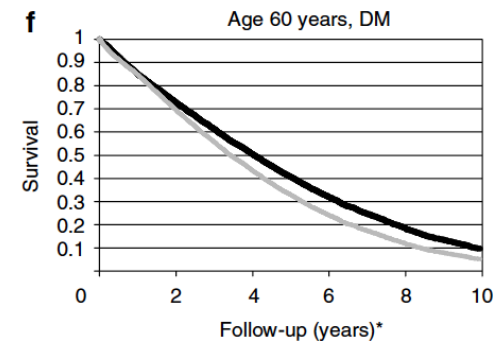
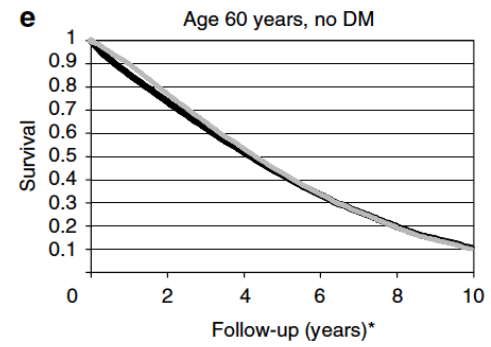
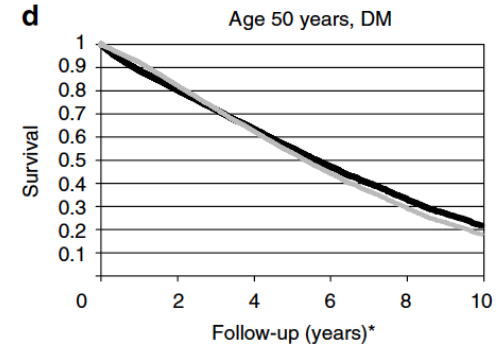
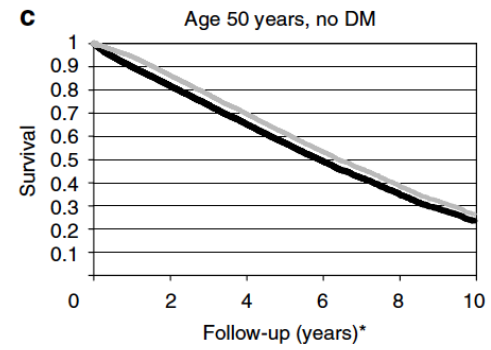
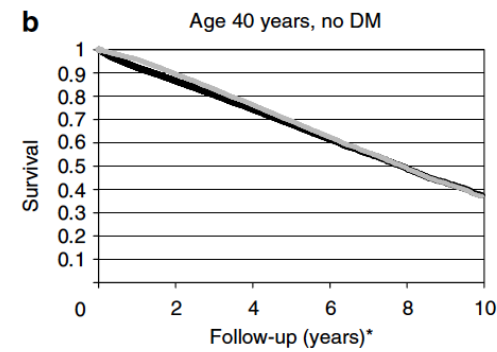
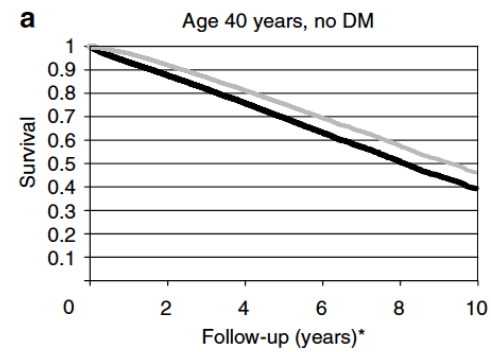
Karen Yeates¹, Naisu Zhu², Edward Vonesh³, Lilyanna Trpeski⁴, Peter Blake⁵ and Stanley Fenton⁶

ITT Adjusted Cumulative Hazard Ratios by Cohort Period



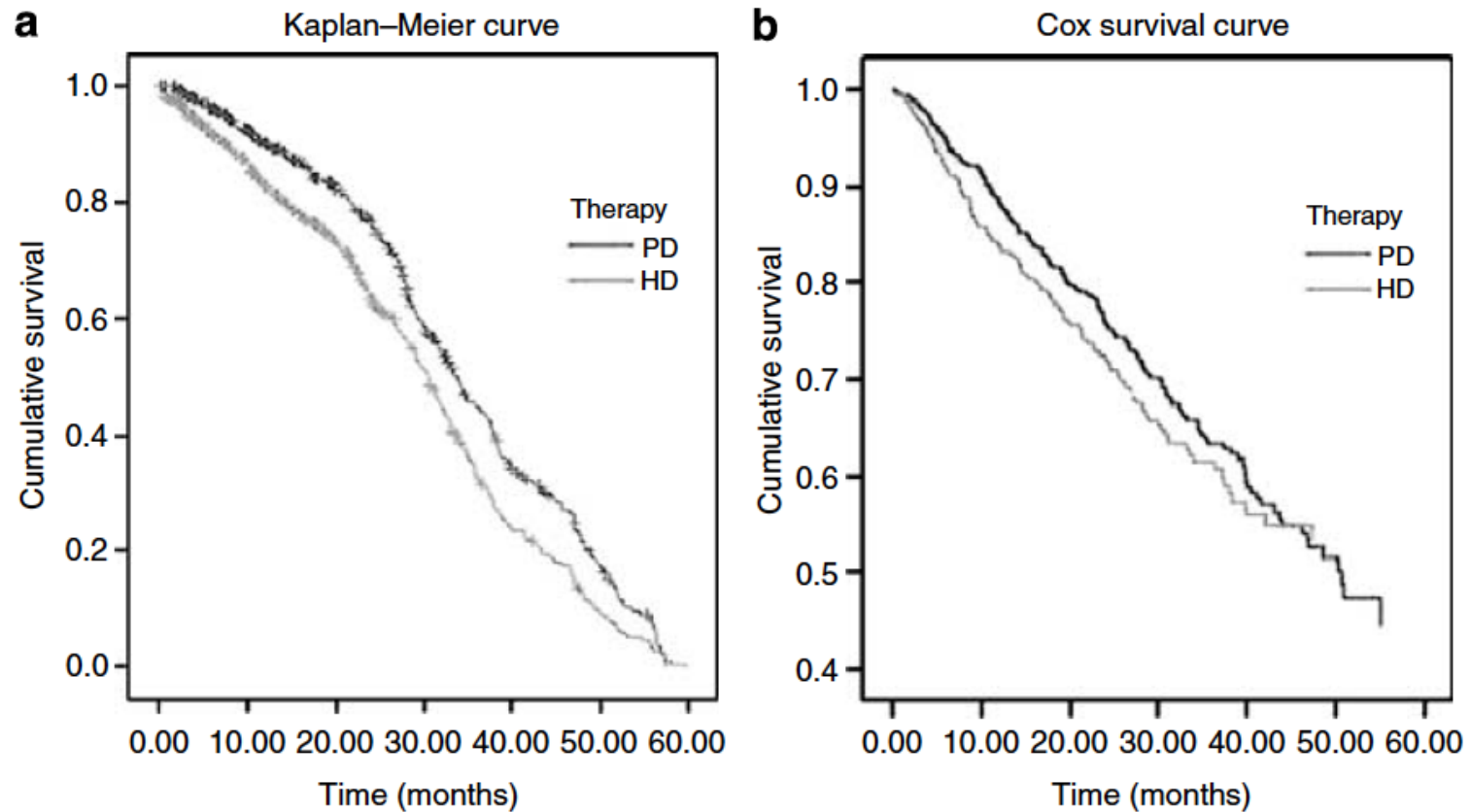


Liem Y KI 2007



Liem Y KI 2007

What about developing countries?



Australia New Zeal.	5 year FU	Better survival on PD in the 1 st year Better survival on HD after the 1 st year
CANADA	10 year FU	Better survival on PD
The Netherlands	10 year FU ITT; day 90	Better survival on PD Negative interaction of PD-age, PD-DM
ERA-EDTA registry (2010)	3 year FU ITT From day 90	Overall survival benefits on PD Males: Benefits indep. of comorbidity Females: increased risk if older and diabetic
Weinhandl ED, et al. (2010)	4 year FU ITT (day 0) ITT (day 90)	Better survival on PD Better survival if <65, no CVD, no DM Not significantly different survival Worse survival if >65, CVD, DM
Italian Registry (2009)	5 year FU ITT From day 90	PD= HD on the whole FU Advantage for PD in the 1 st year Advantage for HD: 2 nd and 3 rd year Similar results in the 4 th and 5 th year

Survival by Dialysis Modality—Who Cares?

Martin B. Lee and Joanne M. Bargman[†]*

Abstract

In light of the recent emphasis on patient-centered outcomes and quality of life for patients with kidney disease, we contend that the nephrology community should no longer fund, perform, or publish studies that compare survival by dialysis modality. These studies have become redundant; they are methodologically limited, unhelpful in practice, and therefore a waste of resources. More than two decades of these publications show similar survival between patients undergoing peritoneal dialysis and those receiving thrice-weekly conventional hemodialysis, with differences only for specific subgroups. In clinical practice, modality choice should be individualized with the aim of maximizing quality of life, patient-reported outcomes, and achieving patient-centered goals. Expected survival is often irrelevant to modality choice. Even for the younger and fitter home hemodialysis population, quality of life, not just duration of survival, is a major priority. On the other hand, increasing evidence suggests that patients with ESRD continue to experience poor quality of life because of high symptom burden, unsolved clinical problems, and unmet needs. Patients care more about how they will live instead of how long. It is our responsibility to align our research with their needs. Only by doing so can we meet the challenges of ESRD patient care in the coming decades.

Clin J Am Soc Nephrol 11: 1083–1087, 2016. doi: 10.2215/CJN.13261215

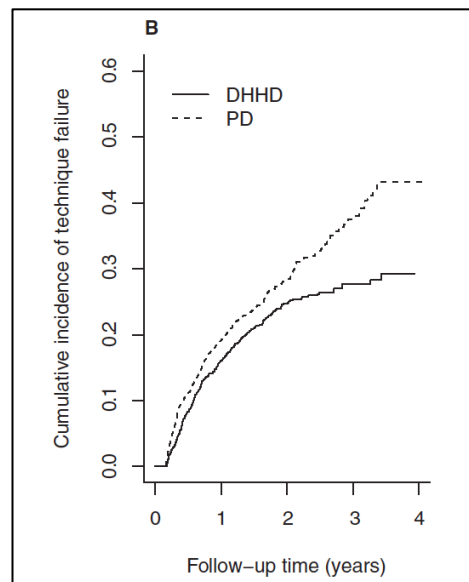


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Keeping patients on PD

Mortality, Hospitalization, and Technique Failure in Daily Home Hemodialysis and Matched Peritoneal Dialysis Patients: A Matched Cohort Study

Eric D. Weinhandl, PhD,¹ David T. Gilbertson, PhD,¹ and Allan J. Collins, MD^{1,2}



AJKD 2016

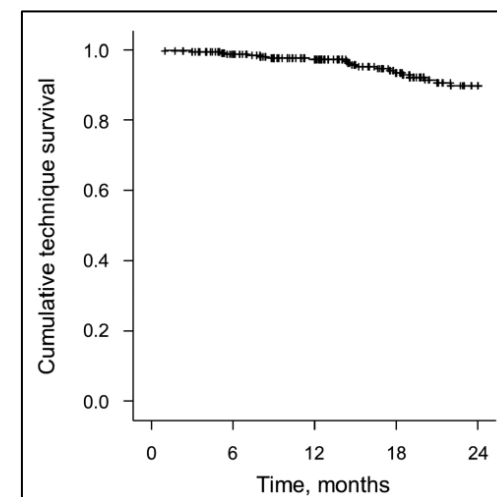
Patient-related and centre-related factors influencing technique survival of peritoneal dialysis in The Netherlands

Roel M. Huisman¹, Martin G. M. Nieuwenhuizen² and Frank Th. de Charro²

Neph Dial Transpl 2002

OUTCOMES OF A PERITONEAL DIALYSIS PROGRAM IN REMOTE COMMUNITIES WITHIN COLOMBIA

Mauricio Sanabria,¹ Martha Devia,¹ Gilma Hernández,² Kindar Astudillo,¹ Carlos Trillos,² Mauricio Uribe,^{1,3} Catalina Latorre,² Astrid Bernal,¹ and Angela Rivera,³ on behalf of the local investigators in the study



Perit Dial Int 2015

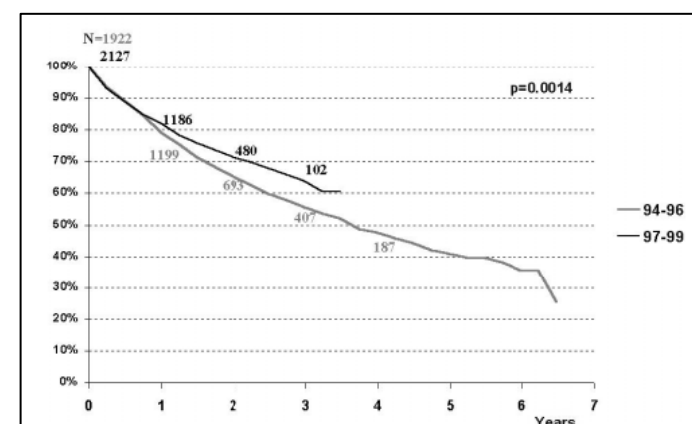
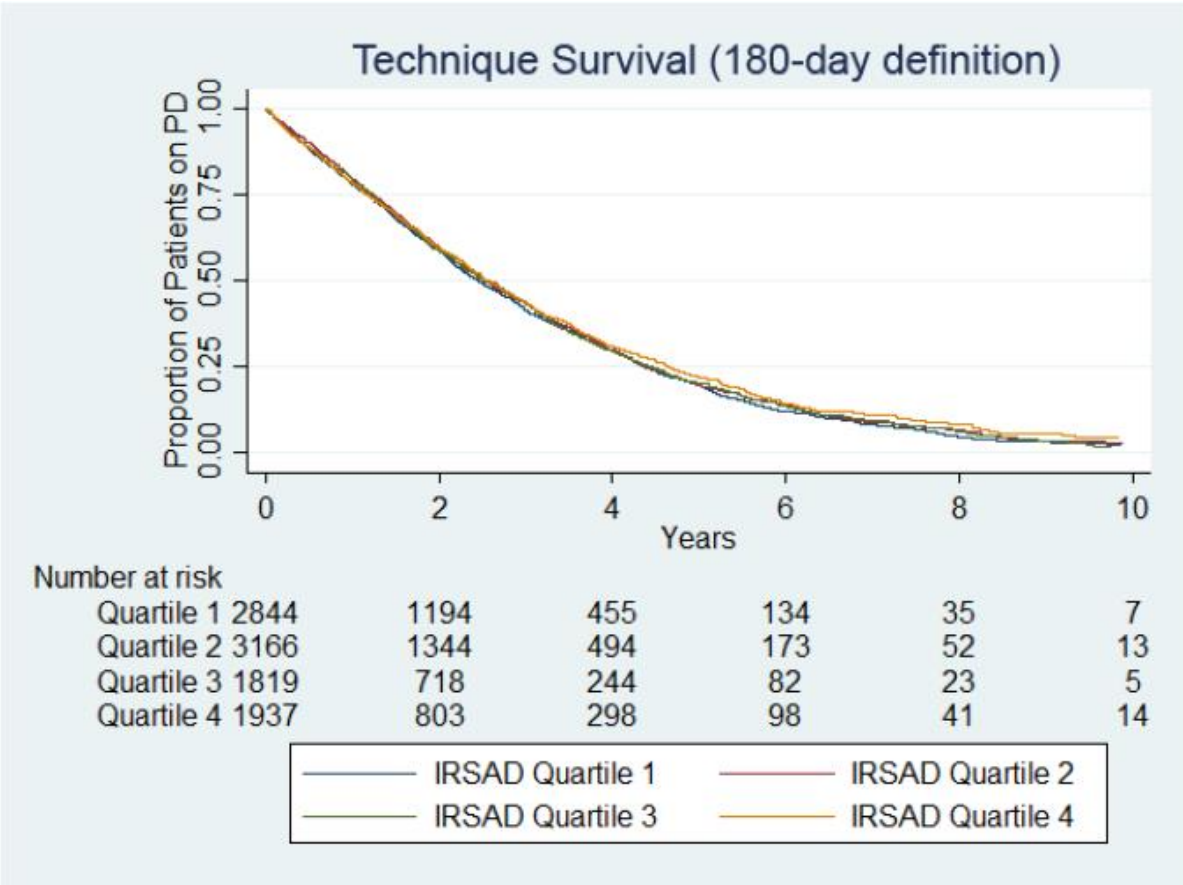


Fig. 4. Technique survival of PD, patients starting PD in period 1994-1999, by start date of PD.

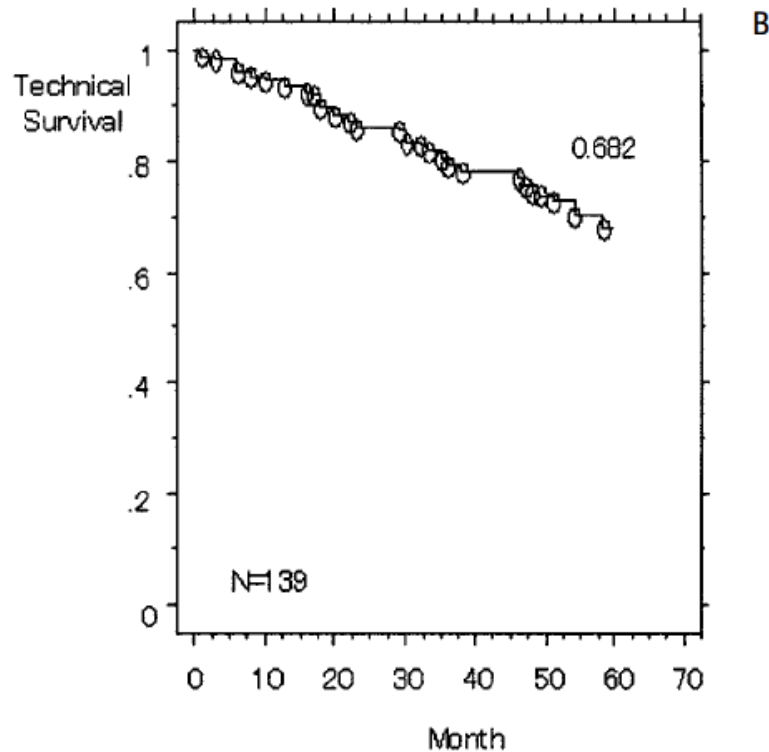
ASSOCIATION OF SOCIO-ECONOMIC POSITION WITH TECHNIQUE FAILURE AND MORTALITY IN AUSTRALIAN NON-INDIGENOUS PERITONEAL DIALYSIS PATIENTS

Samuel Chan,^{1,2,3} Yeoungjee Cho,^{1,2,3} Yung H. Koh,^{2,3} Neil C Boudville,^{1,4} Philip A. Clayton,^{1,5,6} Stephen P. McDonald,^{1,5,6} Elaine M. Pascoe,² Ross S. Francis,^{2,3} David W. Mudge,^{2,3} Monique Borlace,^{1,6} Sunil V. Badve,^{1,3,7} Kamal Sud,^{1,8,9} Carmel M. Hawley,^{1,2,3} and David W. Johnson^{1,2,3}



IS TECHNIQUE SURVIVAL ON PERITONEAL DIALYSIS BETTER IN JAPAN?

Hidetomo Nakamoto,¹ Yoshindo Kawaguchi,² and Hiromichi Suzuki¹



Causes of technique failure

- UF Failure 30.4%
- Peritonitis 30%
- Patient/physician preference – 8%

Original Article

**An African community-based chronic ambulatory
peritoneal dialysis programme**

Ivor J. Katz, Lana Sofianou and Mark Hopley

Division of Nephrology, Department of Medicine, Chris Hani Baragwanath Hospital Renal Unit,
University of the Witwatersrand, Soweto, South Africa

No relationship of peritonitis
to housing or education level
Peritonitis rate – 1:27 months

Table 2. Housing conditions, education, and employment

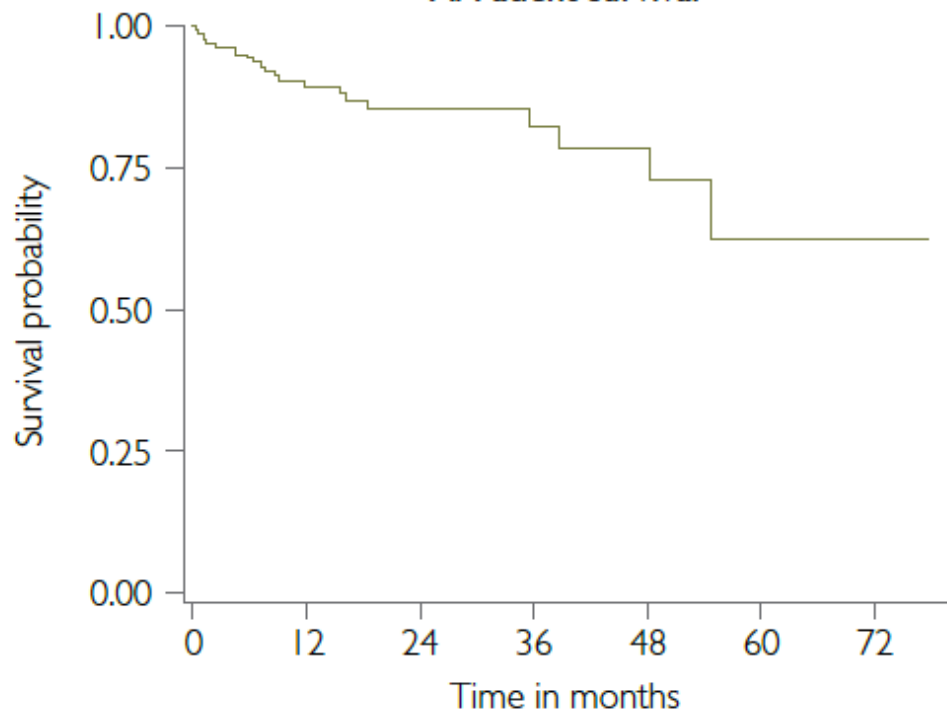
Category	Type	Per cent (%)
Housing conditions	Brick	63
	Shack	19
	Flat	5
	Room	8
	Other	5
	Unknown	5
Level of education	Primary	25
	Secondary	62
	Tertiary	8
	Unknown	5
Employment	Unemployed	49
	Employed	43
	Students	8

ORIGINAL ARTICLE

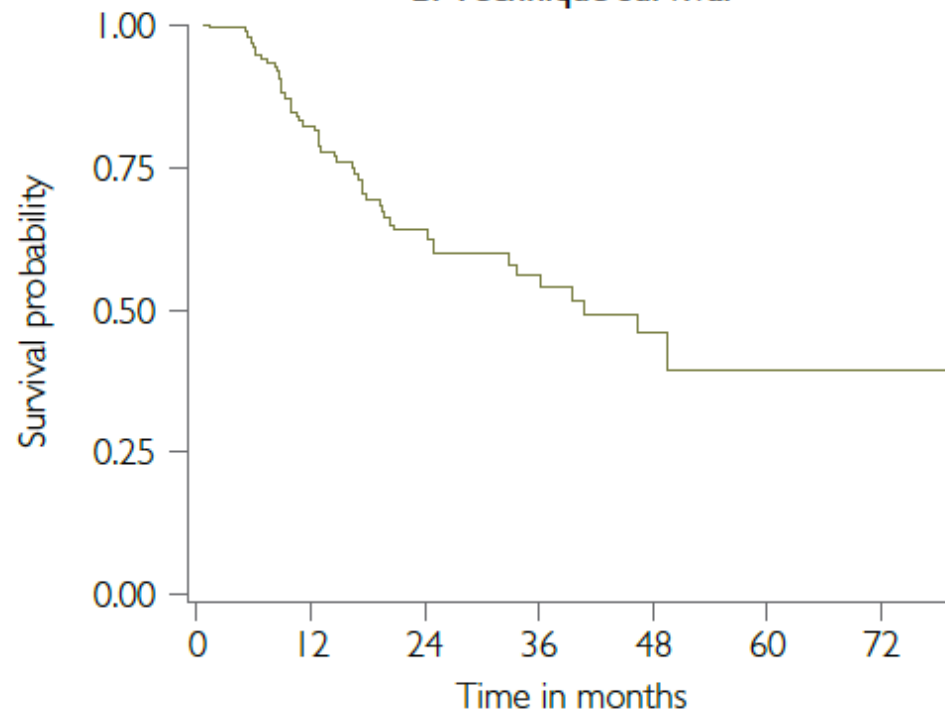
Peritoneal dialysis technique survival at Tygerberg Hospital in Cape Town, South Africa

Kenneth C Kapembwa^{1,2}, Nabeel A Bapoo¹, Elliot K Tannor¹, M Razeen Davids¹

A. Patient survival



B. Technique survival



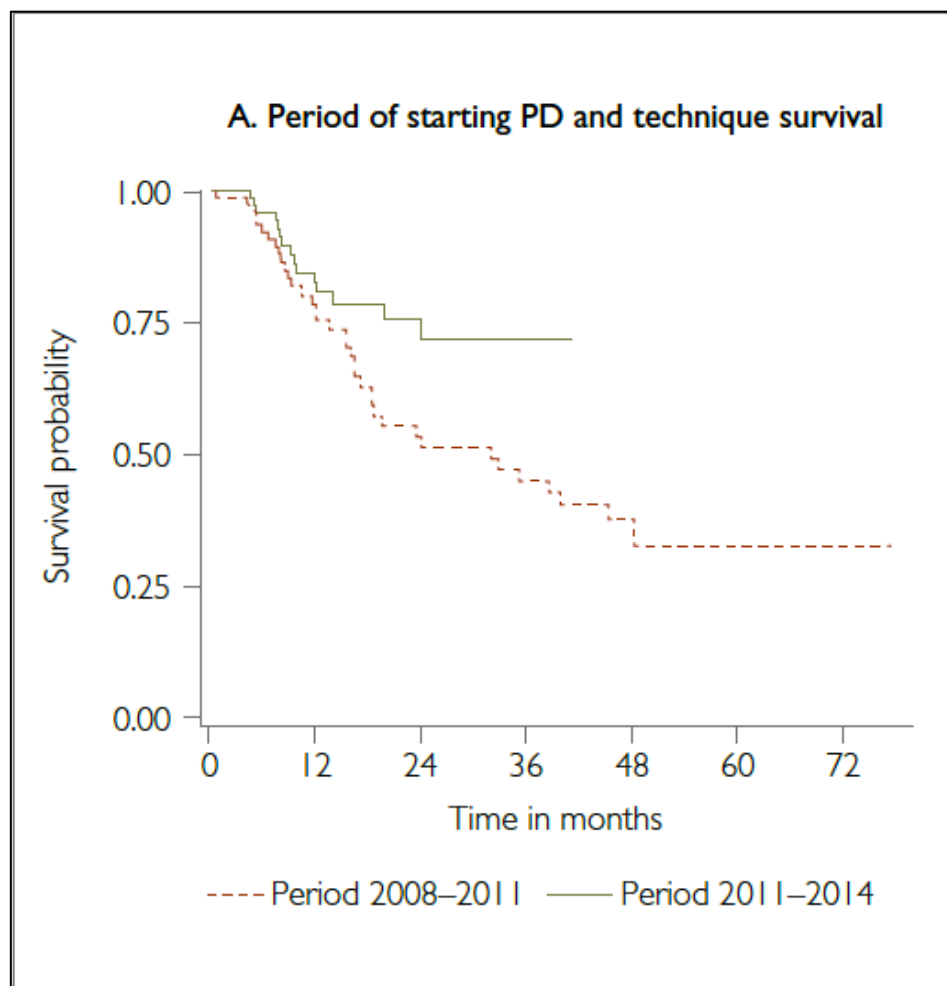
Technique Failure

- Unit related factors
- Patient related factors

ORIGINAL ARTICLE

Peritoneal dialysis technique survival at Tygerberg Hospital in Cape Town, South Africa

Kenneth C Kapembwa^{1,2}, Nabeel A Bapoo¹, Elliot K Tannor¹, M Razeen Davids¹



Nurse Led PD Program

- 95 prevalent patients on PD (>50%)
- PD First policy
- Nursing : Patient 1:32
- Peritonitis rate 1:25.3 patient months¹
- Training site for peripheral hospitals
- ISPD fellows in September 2018



¹Cullis B ISPD Madrid 2014

Technique Failure

- Unit related factors
- Patient related factors

Causes of Technique Failure 1-Jan-2007 to 31-Dec-2008
Excluding Death, Transplantation, Recovery of Renal Function

Causes of Technique Failure	Australia	New Zealand
Recurrent/persistent peritonitis	194	65
Acute peritonitis	305	78
Tunnel/exit site infection	44	10
Total Infective Causes	543 (26%)	153 (27%)
Inadequate solute clearance	223	92
Inadequate fluid ultrafiltration	83	51
Excessive fluid ultrafiltration	3	1
Total Dialysis Failure	309 (15%)	144 (25%)
Dialysate leak	55	21
Hydrothorax	10	3
Scrotal oedema	15	-
Catheter block	30	7
Catheter fell out	3	-
Hernia	67	19
Abdominal pain	10	4
Abdominal surgery	32	12
Other surgery	25	2
Haemoperitoneum	-	1
Sclerosing Peritonitis	2	4
Miscellaneous	40	10
Multiple Adhesions	3	4
Total Technical Failure	292 (14%)	87 (15%)
Unable to manage self care	135	37
Patient preference	782	147
Transfer outside Australia/NZ	2	2
Total Social Reasons	919 (45%)	186 (33%)

**OUTCOMES AND CHALLENGES OF A PD-FIRST PROGRAM,
A SOUTH-AFRICAN PERSPECTIVE**

Bianca Davidson,^{1,2} Kenneth Crombie,³ Kathryn Manning,⁴ Brian Rayner,^{1,2} and Nicola Wearne^{1,2}

Cause of Technique Failure	
Peritonitis	47.1%
Catheter malfunction	29.7%
Inadequate dialysis	20.8%
Leak	8.3%

Causes of technique failure

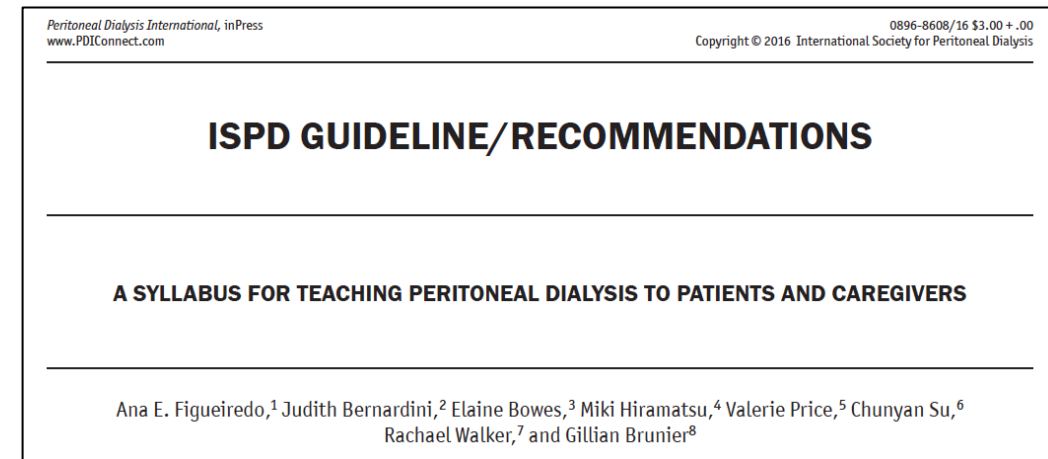
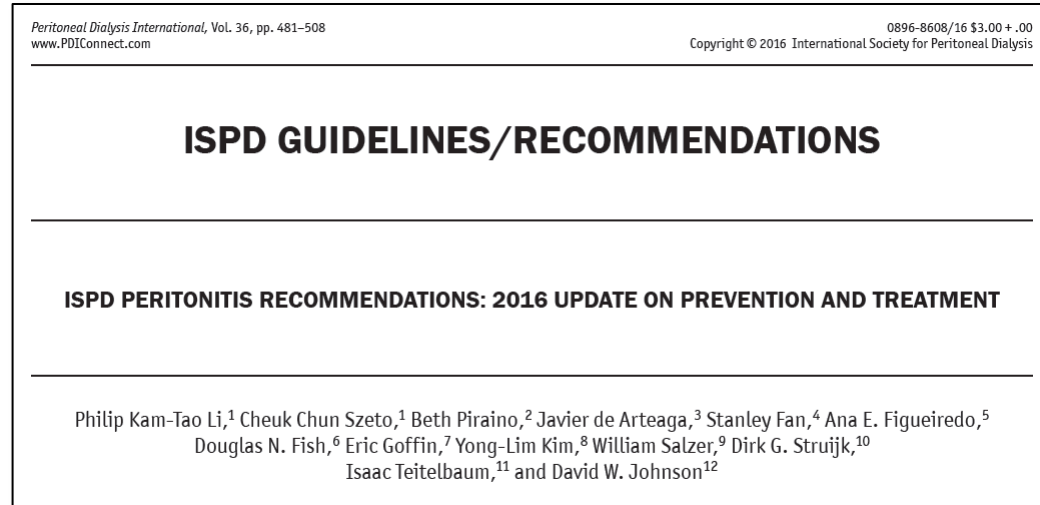
- Infectious complications
- Inadequate dialysis
 - Inadequate ultrafiltration
 - Inadequate clearance
- Mechanical complications
- Social factors

Causes of technique failure

- Infectious complications
- Inadequate dialysis
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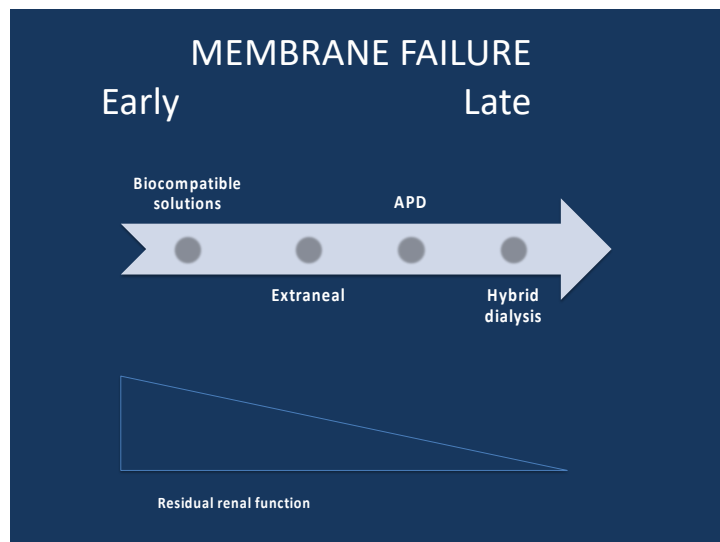
USING A MULTIDISCIPLINARY TRAINING PROGRAM TO REDUCE PERITONITIS IN PERITONEAL DIALYSIS PATIENTS

Liliana Gadola,^{1,2} Carla Poggi,² María Poggio,² Lucía Sáez,¹ Alejandra Ferrari,¹ Jorge Romero,¹ Soledad Fumero,¹ Gianella Ghelfi,¹ Liliana Chifflet,¹ and Patricia Larre Borges¹



Causes of technique failure

- Infectious complications
- Inadequate dialysis
 - Inadequate ultrafiltration
 - Inadequate clearance
- Mechanical complications
- Social factors



Causes of technique failure

- Infectious complications
- Inadequate dialysis
 - Inadequate ultrafiltration
 - Inadequate clearance
- Mechanical complications
- Social factors

Selected best demonstrated practices in peritoneal dialysis access

CLINICAL PRACTICE GUIDELINES FOR PERITONEAL ACCESS

Ana Figueiredo,¹ Bak-Leong Goh,² Sarah Jenkins,³ David W. Johnson,⁴ Robert Mactier,⁵
Santhanam Ramalakshmi,⁶ Badri Shrestha,³ Dirk Struijk,⁷ and Martin Wilkie³

ISPD GUIDELINES/RECOMMENDATIONS

ISPD CATHETER-RELATED INFECTION RECOMMENDATIONS: 2017 UPDATE

Causes of technique failure

- Infectious complications
- Inadequate dialysis
 - Inadequate ultrafiltration
 - Inadequate clearance
- Mechanical complications
- Social factors

Quality of Life and Physical Function in Older Patients on Dialysis: A Comparison of Assisted Peritoneal Dialysis with Hemodialysis

Osasuyi U. Iyasere, Edwina A. Brown,* Lina Johansson,* Les Huson,[†] Joanna Smee,[‡] Alexander P. Maxwell,[§] Ken Farrington,^{||} and Andrew Davenport[¶]*

Clin J Am Soc Nephrol 6: 1676–1683, 2011. doi: 10.2215/CJN.09041010

Family Income and Survival in Brazilian Peritoneal Dialysis Multicenter Study Patients (BRAZPD): Time to Revisit a Myth?

Kleyton de Andrade Bastos,^{†} Abdul Rashid Qureshi,[‡] Antonio Alberto Lopes,[†] Natália Fernandes,[§] Luciana Mendonça M. Barbosa,^{*} Roberto Pecoits-Filho,^{||} and José Carolino Divino-Filho[‡], on behalf of the Brazilian Peritoneal Dialysis Multicenter Study (BRAZPD) Group*

^{*}Department of Medicine, Federal University of Sergipe, Aracaju, Brazil;

[†]Department of Medicine, Federal University of Bahia, Salvador, Brazil;

[‡]Division of Baxter Novum and Renal Medicine, CLINTEC, Karolinska Institutet, Stockholm, Sweden;

[§]Instituto Mineiro de Estudo Pesquisa Em Nefrologia (IMEPEN) and Federal University of Juiz de Fora, Juiz de Fora, Brazil; and

^{||}Center of Health and Biologic Sciences, Catholic University of Paraná, Curitiba, Brazil

Objectives

Although low socioeconomic status has been considered a contraindication to PD, no published data clearly links it to poor outcomes.

The goal of this study was to assess the impact of income on survival in the Brazilian Peritoneal Dialysis Multicenter Study (BRAZPD).

General characteristics

Table 1. Demographics and clinical characteristics of the 1952 incident peritoneal-dialysis patients included in the BRAZPD study according to economic status (ES) distribution at baseline

Characteristics	Low ES (<i>n</i> = 705)	Middle ES (<i>n</i> = 855)	High ES (<i>n</i> = 392)	<i>P</i> ^a
Median age (range), years	56 (31 to 78)	60 (38 to 78)	62 (42 to 80)	<0.01
Women, %	62%	52%	42%	<0.01
Race, Caucasian, %	50%	67%	73%	<0.01
Educational level, >4 years, %	15%	32%	67%	<0.01
Dialysis modality, APD, %	45%	48%	57%	0.01
Distance to clinic, >50 km, %	28%	32%	27%	0.13
Referral to nephrologist, late, % ^b	65%	55%	49%	<0.01
Hemodialysis as first RRT, %	71%	68%	61%	<0.01
Cardiovascular disease, %	20%	25%	28%	<0.01
Diabetes mellitus, %	36%	44%	46%	<0.01
Davies comorbidity score, %				
no risk	22%	17%	18%	
middle risk	63%	69%	62%	<0.01
severe risk	14%	14%	20%	
Body mass index (kg/m ²) ^c	23.2 (18.3 to 29.1)	24.2 (19.1 to 31.2)	24.2 (19.4 to 31.2)	<0.01
S-albumin (g/dl) ^c	3.8 (2.9 to 6.0)	3.9 (3.1 to 6.0)	4.0 (3.0 to 6.0)	0.03
Hemoglobin (g/dl) ^c	10.3 (7.5 to 13.1)	10.5 (8 to 13.5)	10.9 (7.8 to 13.8)	<0.01
Phosphate (mg/dl) ^c	4.8 (3.0 to 7.6)	5.1 (3.3 to 7.6)	4.9 (3.1 to 7.3)	0.03
Potassium (mEq/L) ^c	4.6 (3.5 to 5.9)	4.7 (3.5 to 6.0)	4.5 (3.5 to 5.6)	0.06

The family income in minimum wage/month was scored as follows: low ES, <2; middle ES, 2 to 5; and high ES, >5. BRAZPD, Brazilian Peritoneal Dialysis Multicenter Study; APD, automated peritoneal dialysis; RRT, renal replacement therapy.

^aThe significance level was *P* <0.05.

^bReferral to nephrologist, late: <6 months prior to dialysis.

^cMedian values.

Kaplan-Meier

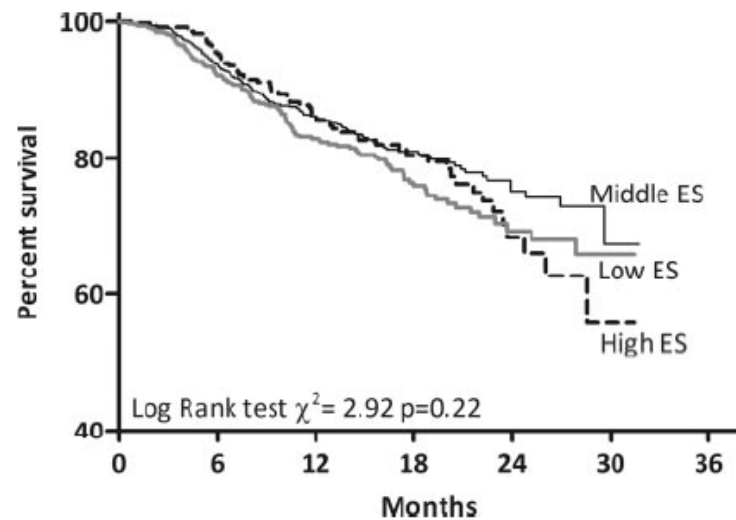


Figure 1. | Kaplan-Meier curves for the probability of patient survival according to income level. Death is the event; transplantation and recovery of renal function are censored observations. ES, economic status.

Deaths: 307(16%) - CVD 42%
2 years Survival: 70%

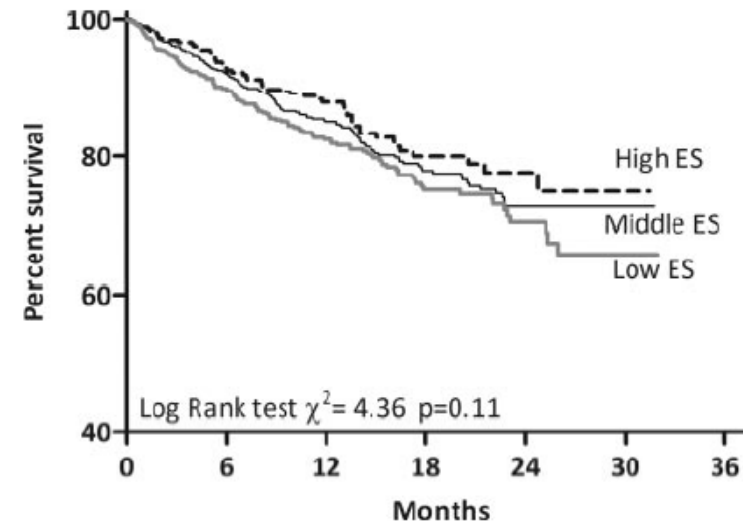
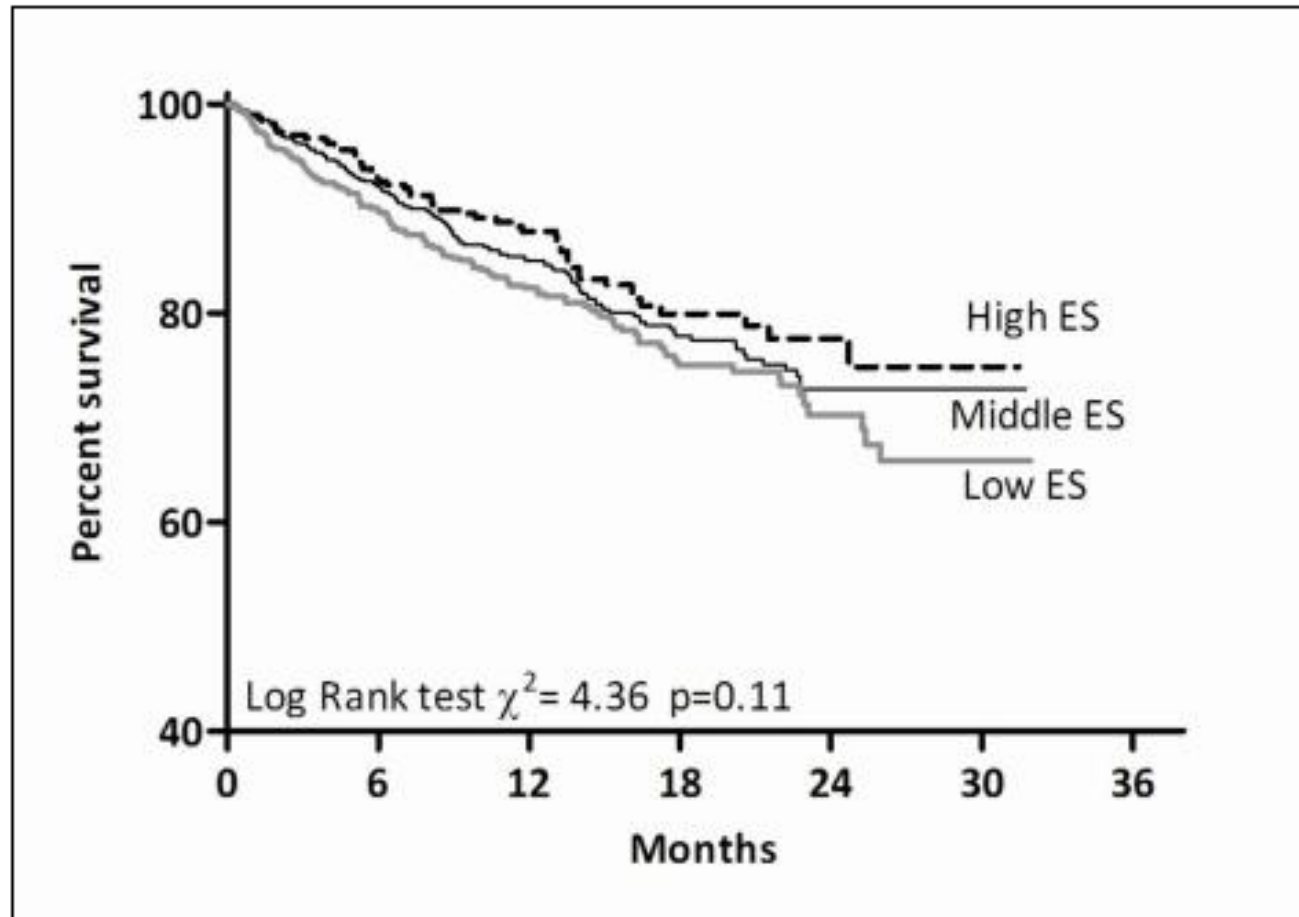


Figure 2. | Kaplan-Meier curves for the probability of technique survival. Transfer to hemodialysis is the event; death, transplantation, and recovery of renal function are censored observations. ES, economic status.

Dropout: 270 (14%) - HD as option 32%
2 years Survival : 73%

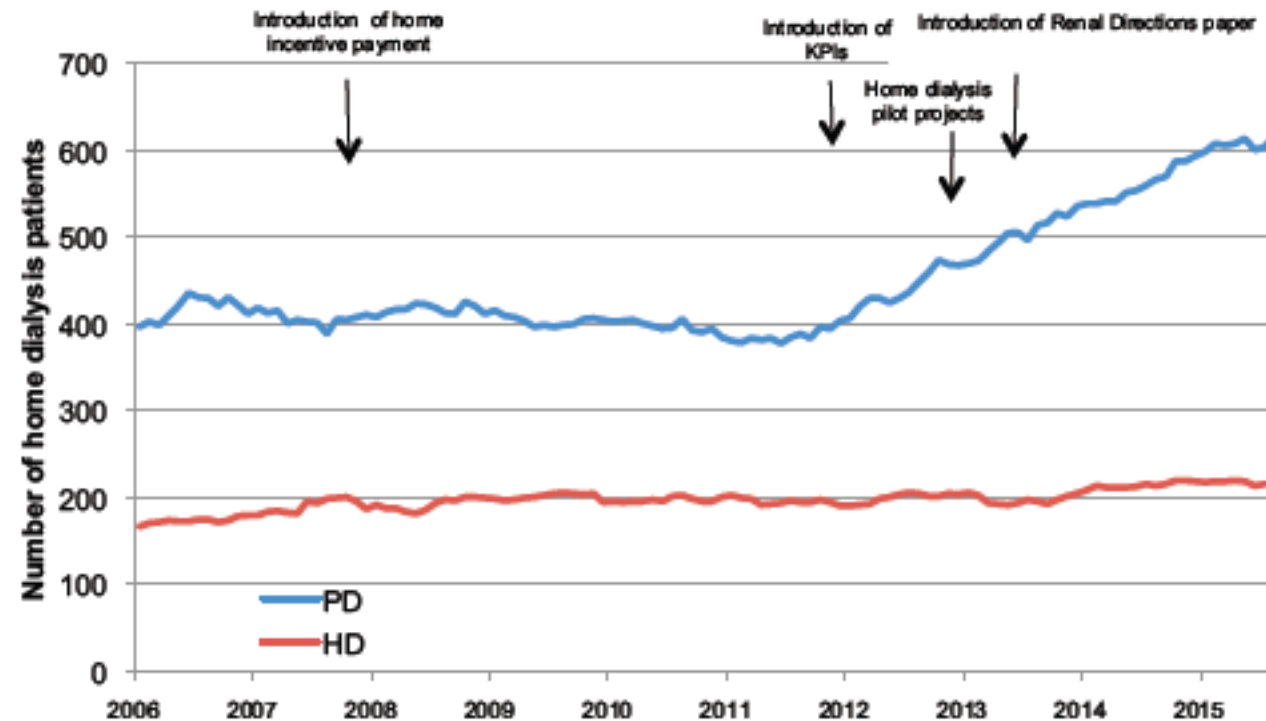


Conclusion

- In a time with an increasing demand on dialysis capacity in combination with a limited amount of financial resource, obstacles for choosing PD therapy must be removed in order to respect future end stage renal disease patients' preference on dialysis modality selection.
- According to the results presented here, the concept of poverty as a barrier to the choice of PD as RRT should be revisited wherever it is still applied and **for patients wishing to do PD, poverty should not be a reason to deny such therapy.**

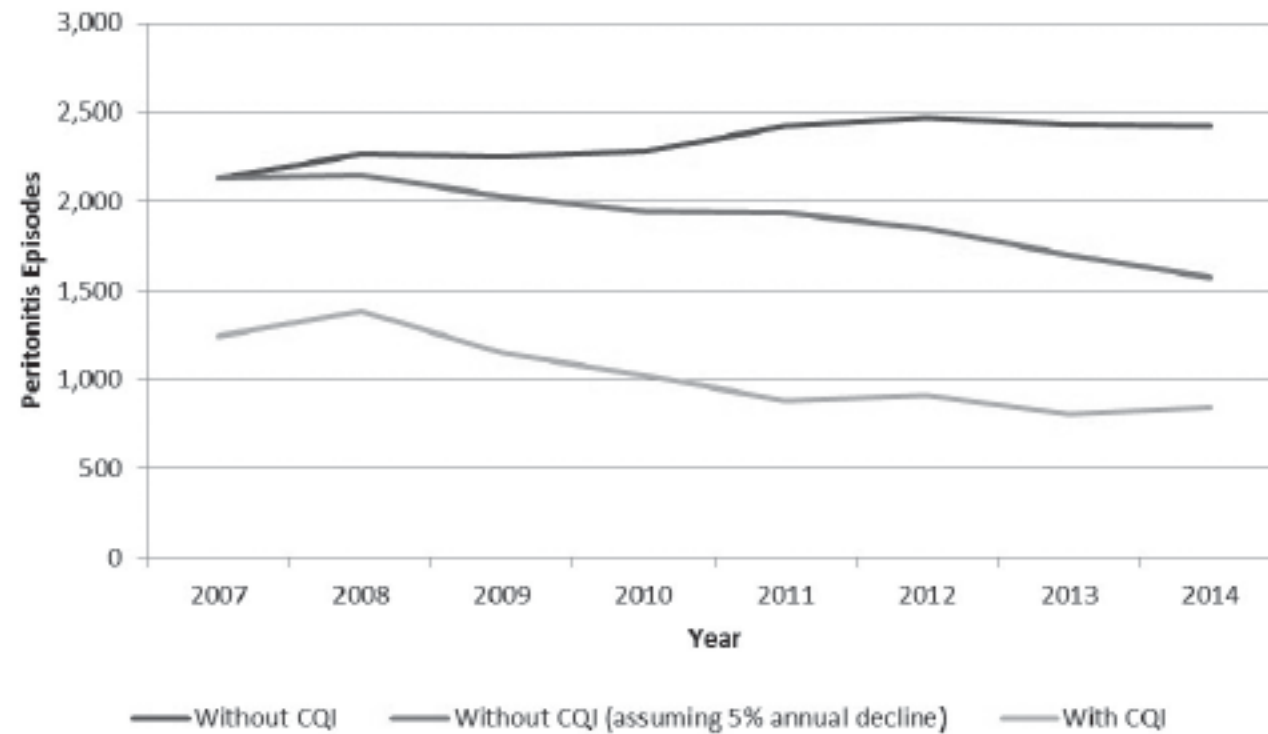
INTRODUCTION OF RENAL KEY PERFORMANCE INDICATORS ASSOCIATED WITH INCREASED UPTAKE OF PERITONEAL DIALYSIS IN A PUBLICLY FUNDED HEALTH SERVICE

Nigel D. Toussaint,^{1,2} Lawrence P. McMahon,^{3,4} Gregory Dowling,⁵ Stephen G. Holt,^{1,2} Gillian Smith,⁵ Maria Safe,¹ Richard Knight,⁶ Kathleen Fair,⁷ Leanne Linehan,⁸ Rowan G. Walker,⁹ and David A. Power^{2,10}



ECONOMIC IMPACT OF A PERITONEAL DIALYSIS CONTINUOUS QUALITY IMPROVEMENT PROGRAM IN COLOMBIA

Dilip U. Makhija,¹ Surrey M. Walton,² Juan P. Mora,³ and Rafael M. Sanabria⁴



Estimated savings of \$100,734 pa - ROI – 89%

Perit Dial Int 2017



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PD First should be standard of
care in developing countries ?

SUCCESSFUL PD FIRST PROGRAMS

- “A number of healthcare systems have developed successful PD – first programs, where usually for reasons of health economics, PD is strategically offered as the initial dialysis modality for those whom it is not contraindicated.” ¹

SUCCESSFUL PD -FIRST PROGRAMS

Nephrol Dial Transplant (2008) 23: 1475–1478

doi: 10.1093/ndt/gfn068

Advanced Access publication 26 February 2008

Success of the peritoneal dialysis programme in Hong Kong


Philip Kam-Tao Li and Cheuk-Chun Szeto

Departments of Medicine and Therapeutics, Prince of Wales Hospital, The Chinese University of Hong Kong, Shatin, Hong Kong, China

PDI - 2018

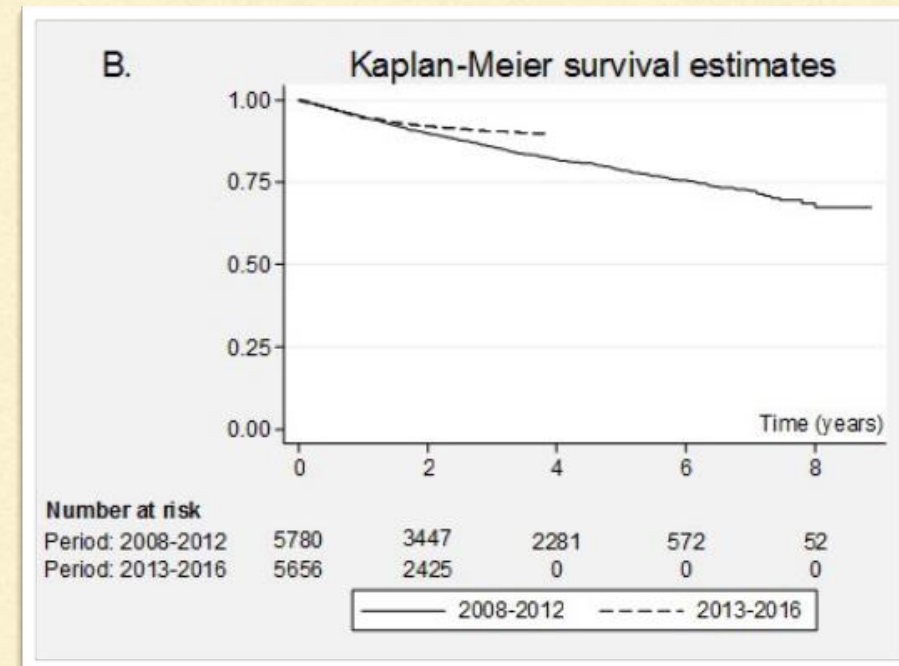
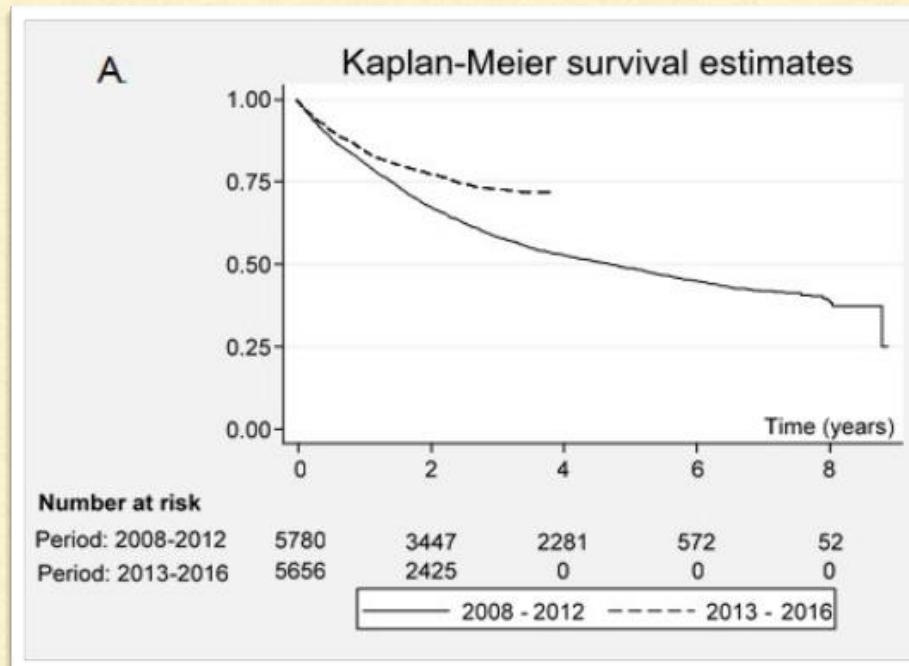
Survival Analysis and Associated Factors in Thai Patients on Peritoneal Dialysis Under the PD-First Policy



Siribha Changsirikulchai¹ , Suwannee Sriprach²,
Nintita Sripaiboonkij Thokanit³, Jirayut Janma¹, Piyatida Chuengsaman⁴ and
Dhavee Sirivongs⁵

SURVIVAL ANALYSIS AND ASSOCIATED FACTORS IN THAI PATIENTS ON PERITONEAL DIALYSIS UNDER THE PD-FIRST POLICY

Siribha Changsirikulchai,¹ Suwannee Sriprach,² Nintita Sripaiboonkij Thokanit,³ Jirayut Janma,¹ Piyatida Chuengsaman,⁴ and Dhavée Sirivongs⁵

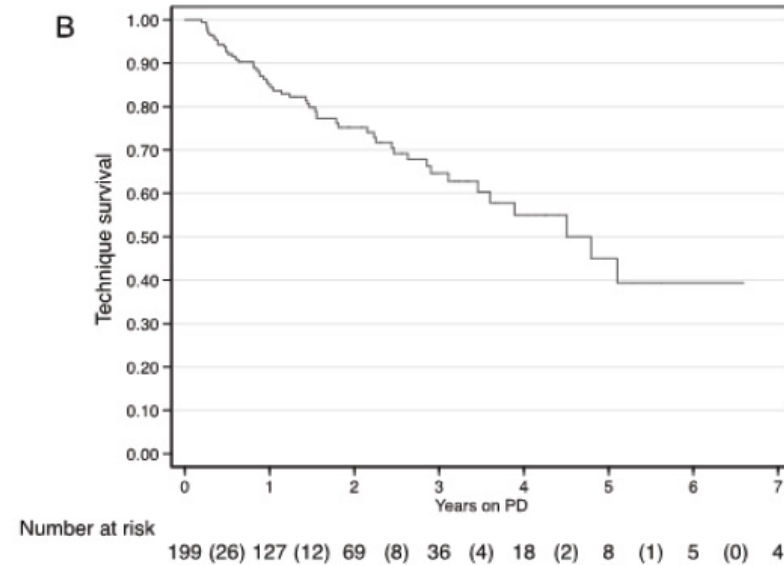
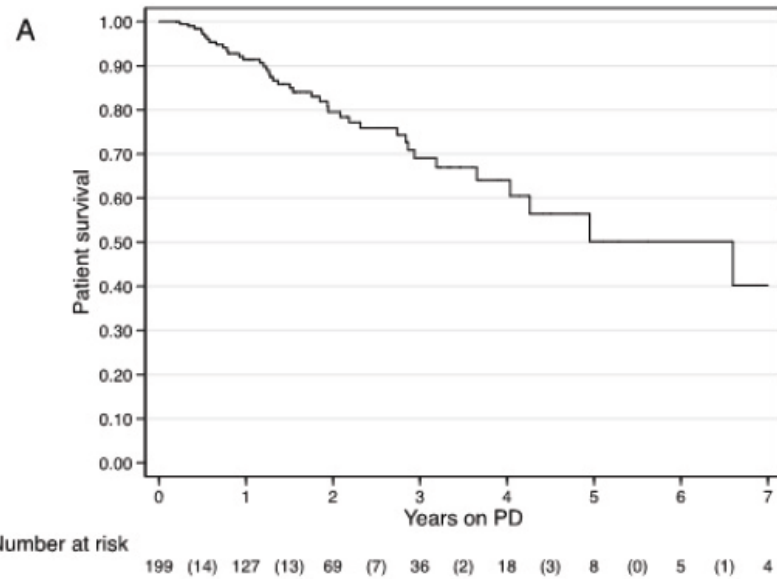


OUTCOMES AND CHALLENGES OF A PD-FIRST PROGRAM, A SOUTH-AFRICAN PERSPECTIVE

Bianca Davidson,^{1,2} Kenneth Crombie,³ Kathryn Manning,⁴ Brian Rayner,^{1,2} and Nicola Wearne^{1,2}

OUTCOMES AND CHALLENGES OF A PD-FIRST PROGRAM, A SOUTH-AFRICAN PERSPECTIVE

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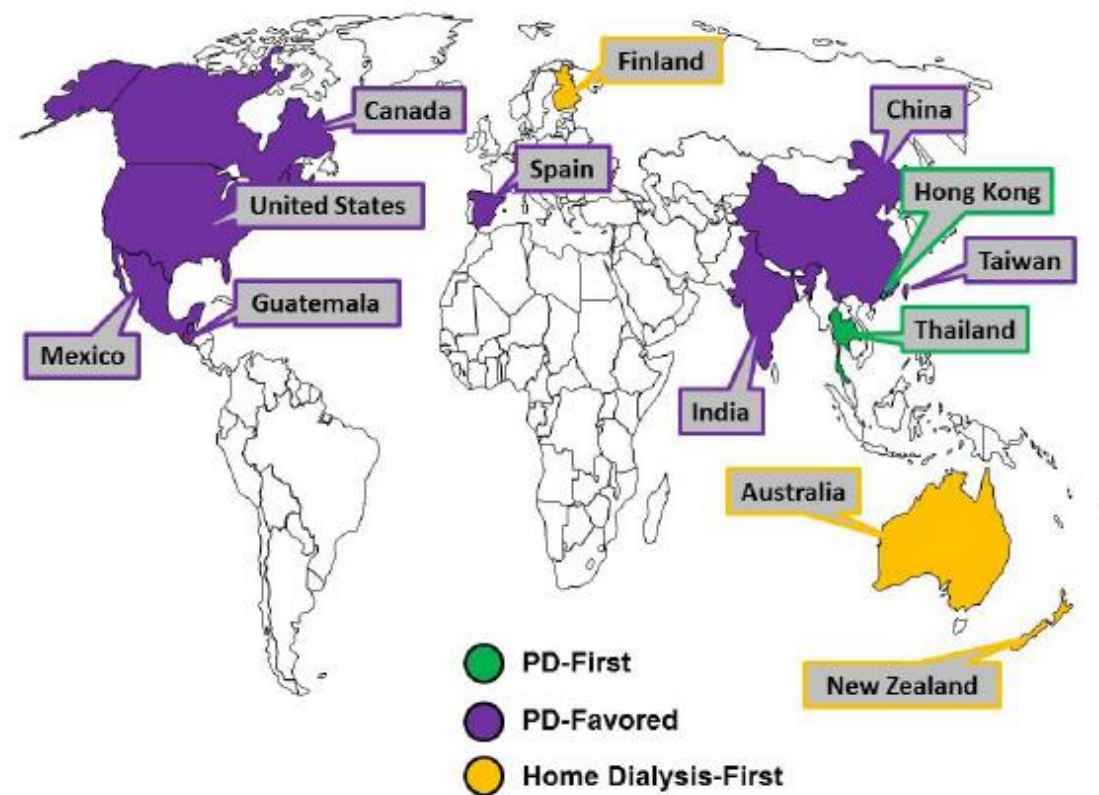
A GLOBAL OVERVIEW OF THE IMPACT OF PERITONEAL DIALYSIS FIRST OR FAVORED POLICIES: AN OPINION

Frank Xiaoqing Liu,¹ Xin Gao,² Gary Inglese,³ Piyatida Chuengsamarn,⁴
Roberto Pecoits-Filho,⁵ and Alex Yu⁶

LIU *et al.*

JULY 2015 • VOL. 35, NO. 4

PDI





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A Touch of Freedom

Du sel, de l'Eau, et un peu de rein restant...



<http://www.jeanlouisclemendot.fr>





Lifestyle



- Most flexible, adaptable treatment
- Fits around work & family life
- Tony Ward-2002, highest dialysis exchange, Mont Blanc (>4000m)



Living with PD





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A Touch of Humanity

Presidente Derqui city

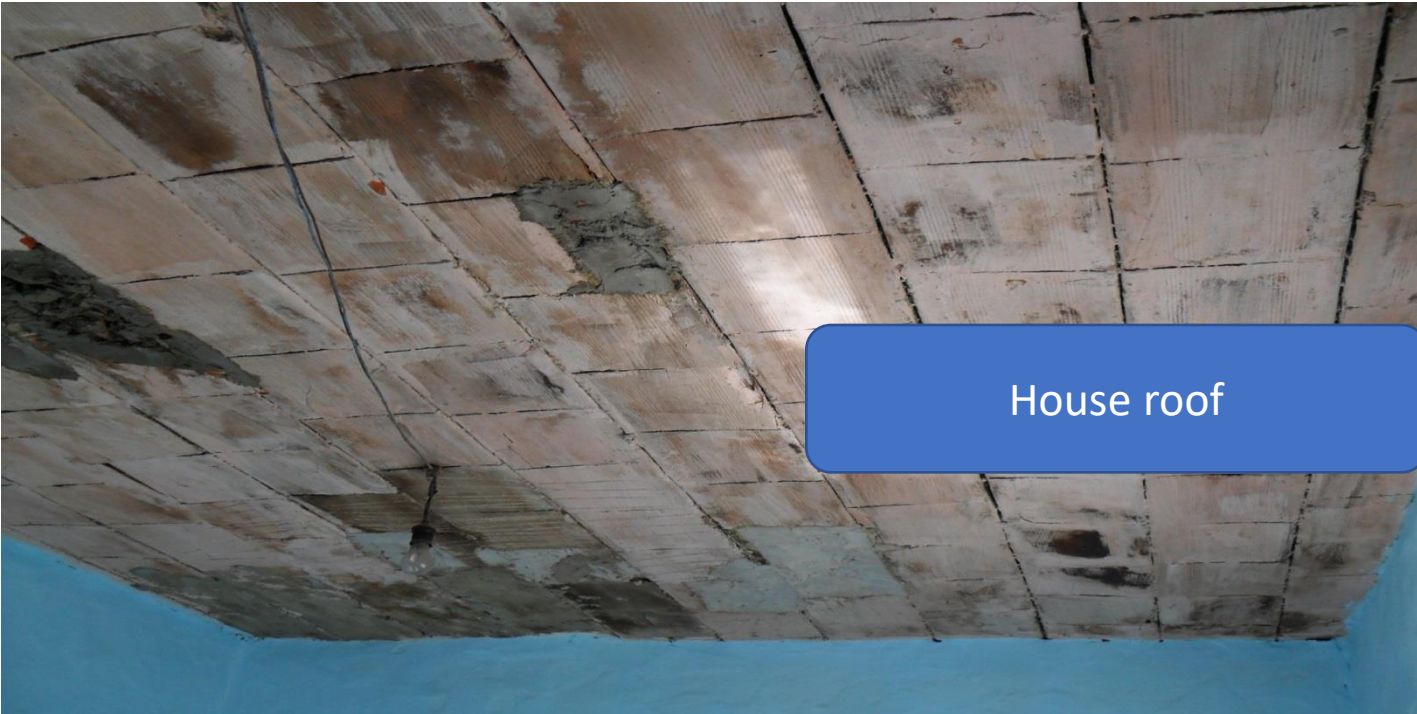




Water hose, only water inflow source



Heater





Water heater place

Getting to work !



Andrés
Janitor

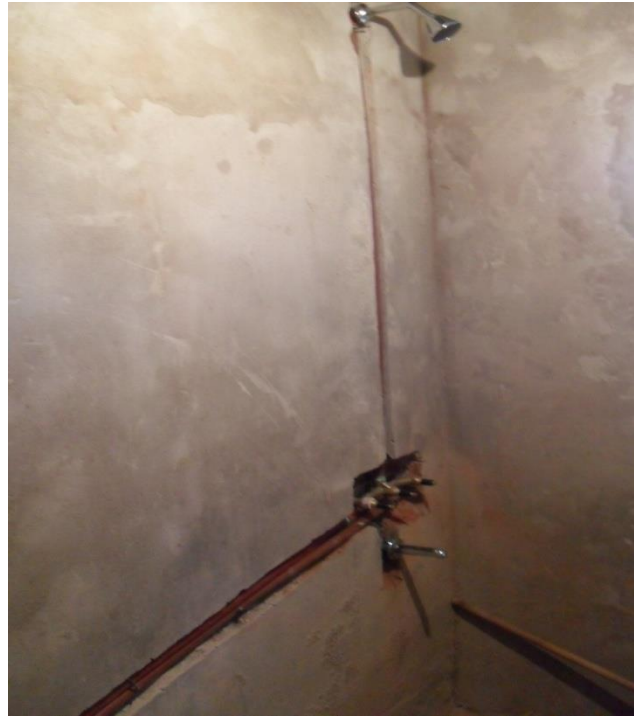




Let's get started with the work !



Hot and cold water installation



For handwashing....





Difficult task– but not impossible



Installing electric water heater



Is housing a constraint for PD ?



To educate the patient/family

Room designed for PD....painted by the daughters



The change began with the whole family being informed/educated on the therapy.....



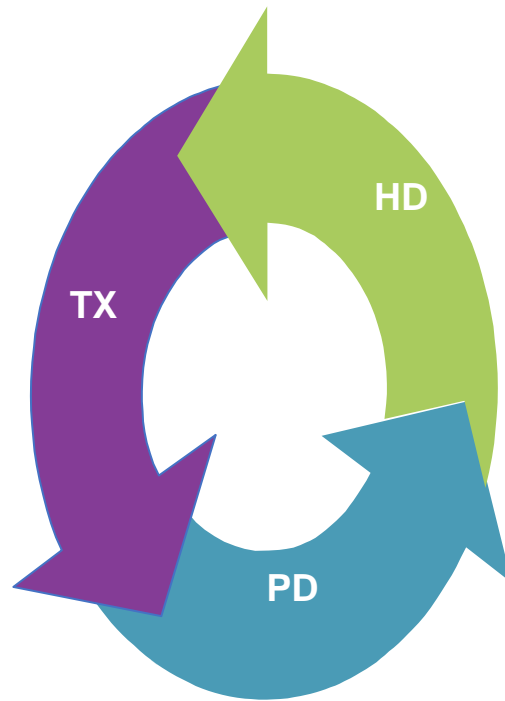
Argentina



Diálisis Peritoneal

Total survival is more important than survival on each therapy

- “What patients want to know is which sequence of RR modalities will increase their survival as long as possible & this with the best Quality of Life”



Van Biesen 2000

Conclusions

- Problems exist everywhere
- Problems exist to be solved
- Peritoneal Dialysis has the beauty of allowing patients and the multi-professional nephrology Team to prevent many of them and overcome others.
- PD has a solution for every problem !