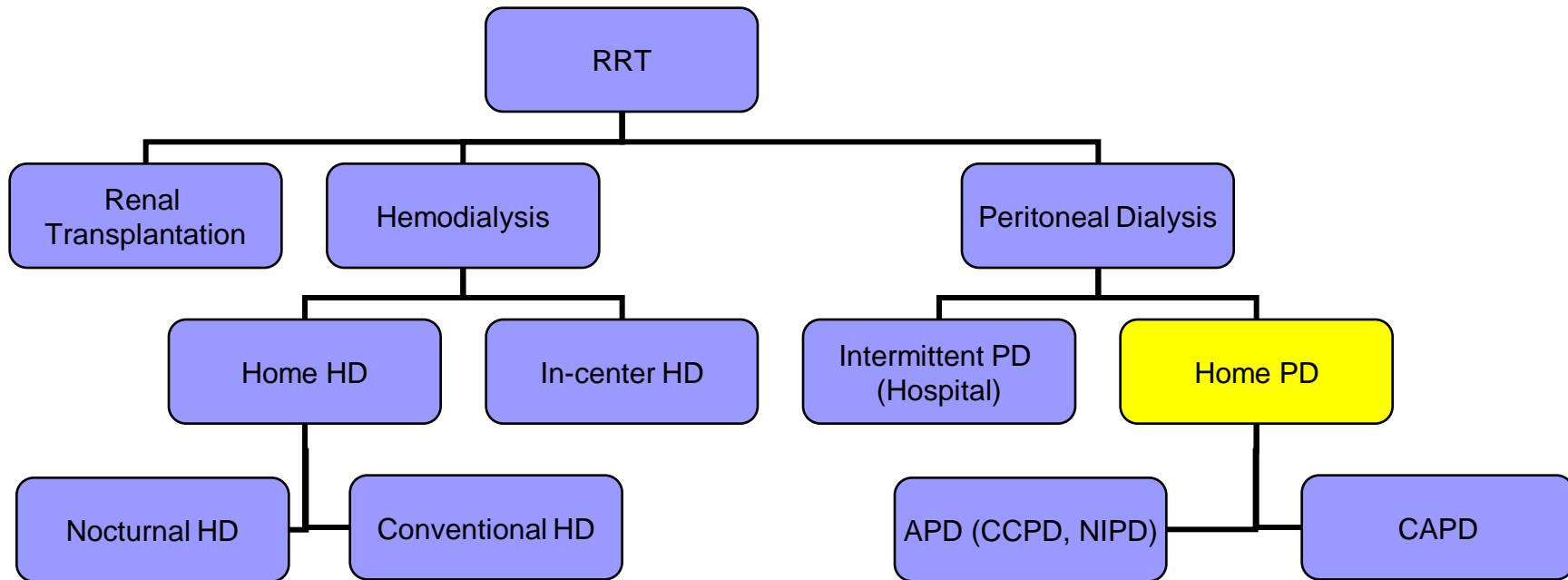


Peritoneal dialysis should be the main dialysis modality

Wai Kei Lo
Tung Wah Hospital
Hong Kong

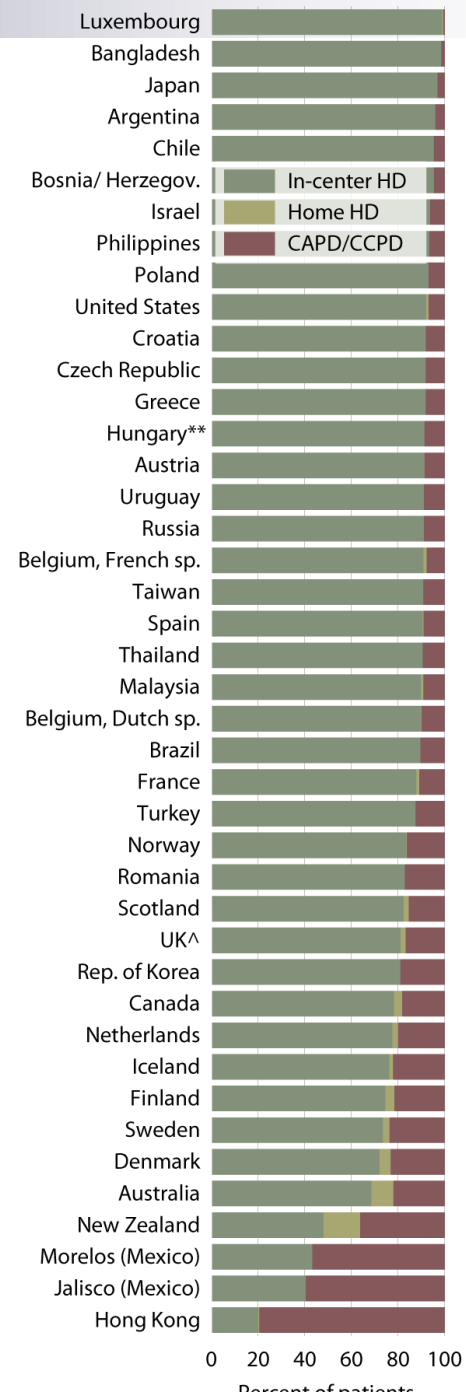
ISBP Beijing 2011

Available Renal Replacement Therapy



Percent distribution of prevalent dialysis patients, by modality, 2008

Reality reflecting the right choice?



The preferred dialysis therapy

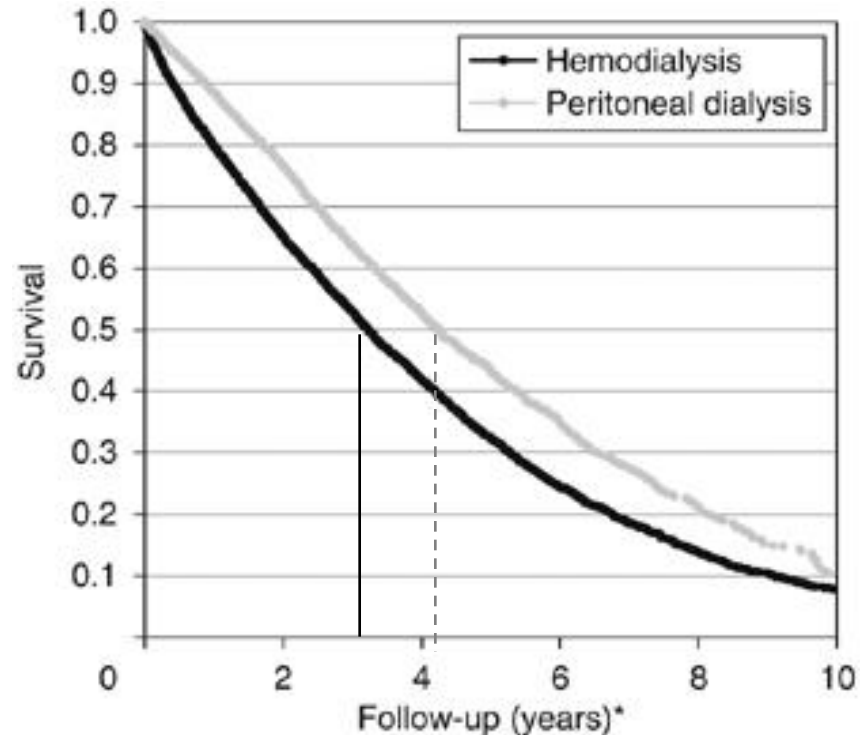
- Provide the best survival chance
- Well tolerated by patients
- Provide a good quality of life
 - Disturb patient's life less
- As little complications as possible
- Economically more affordable
 - To patients
 - To health authorities
- Home therapy
- Applicable to majority of patients
- No disadvantageous effect on success of renal transplantation

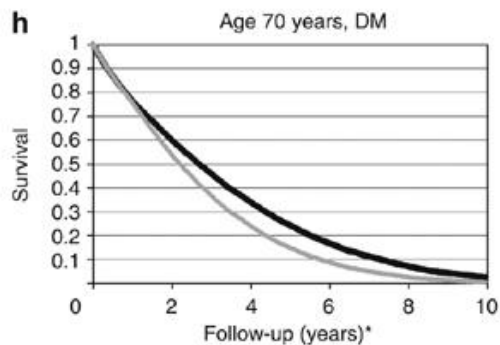
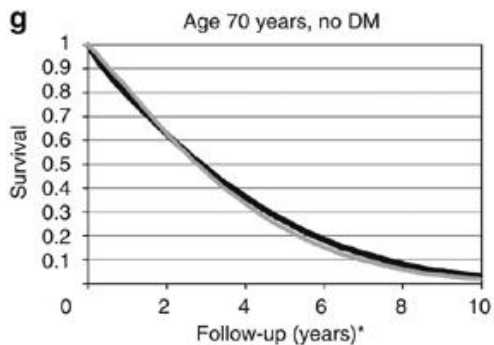
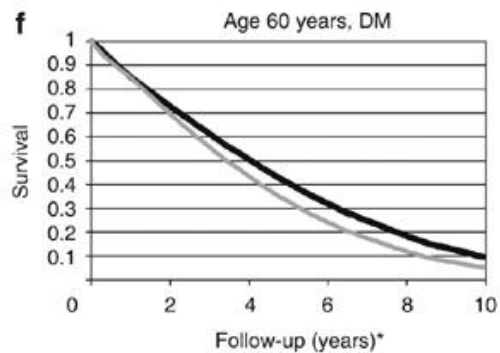
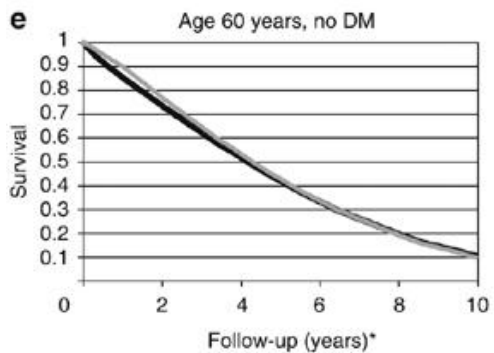
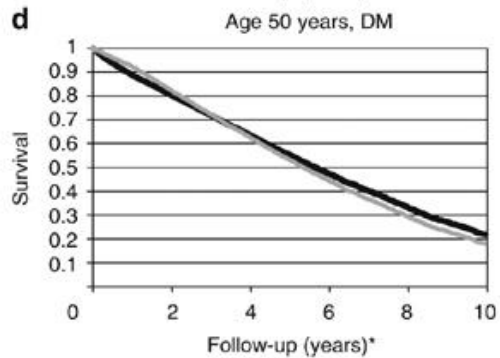
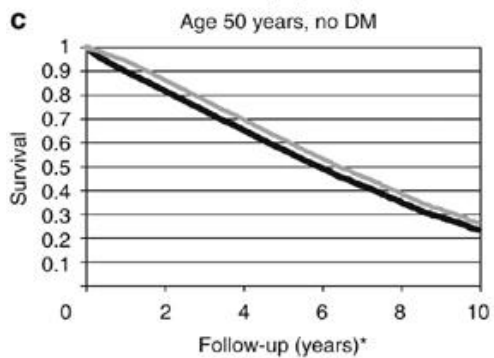
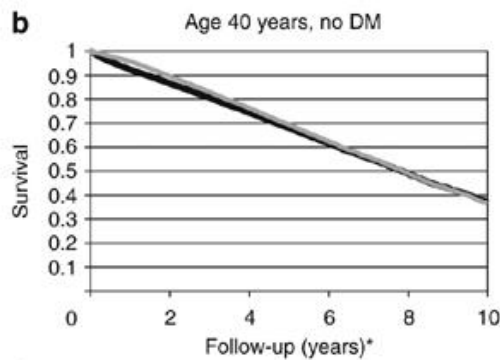
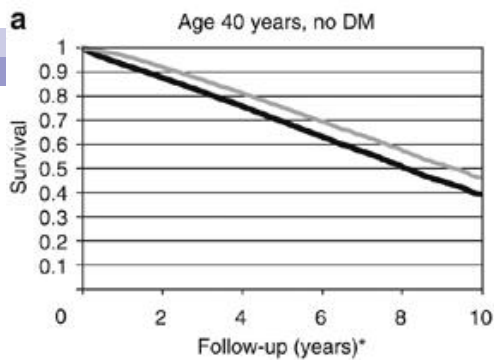
Survival

- Controversies of survival comparison between HD and PD
 - No published large scale RCT yet
- Largely comparable with apparent advantage of a certain mode in certain subgroups of patients
 - Elderly female diabetics, yet the difference is small
 - Less favorable survival in long term PD (?)

PD vs HD survival in Netherlands

- 20687 registry patients from 1987-2002
- PD vs HD RR=0.43 after adjusted to age and gender, $p < 0.001$
- Advantage less in older diabetics and time on dialysis
- No evidence that long term PD is worse than HD





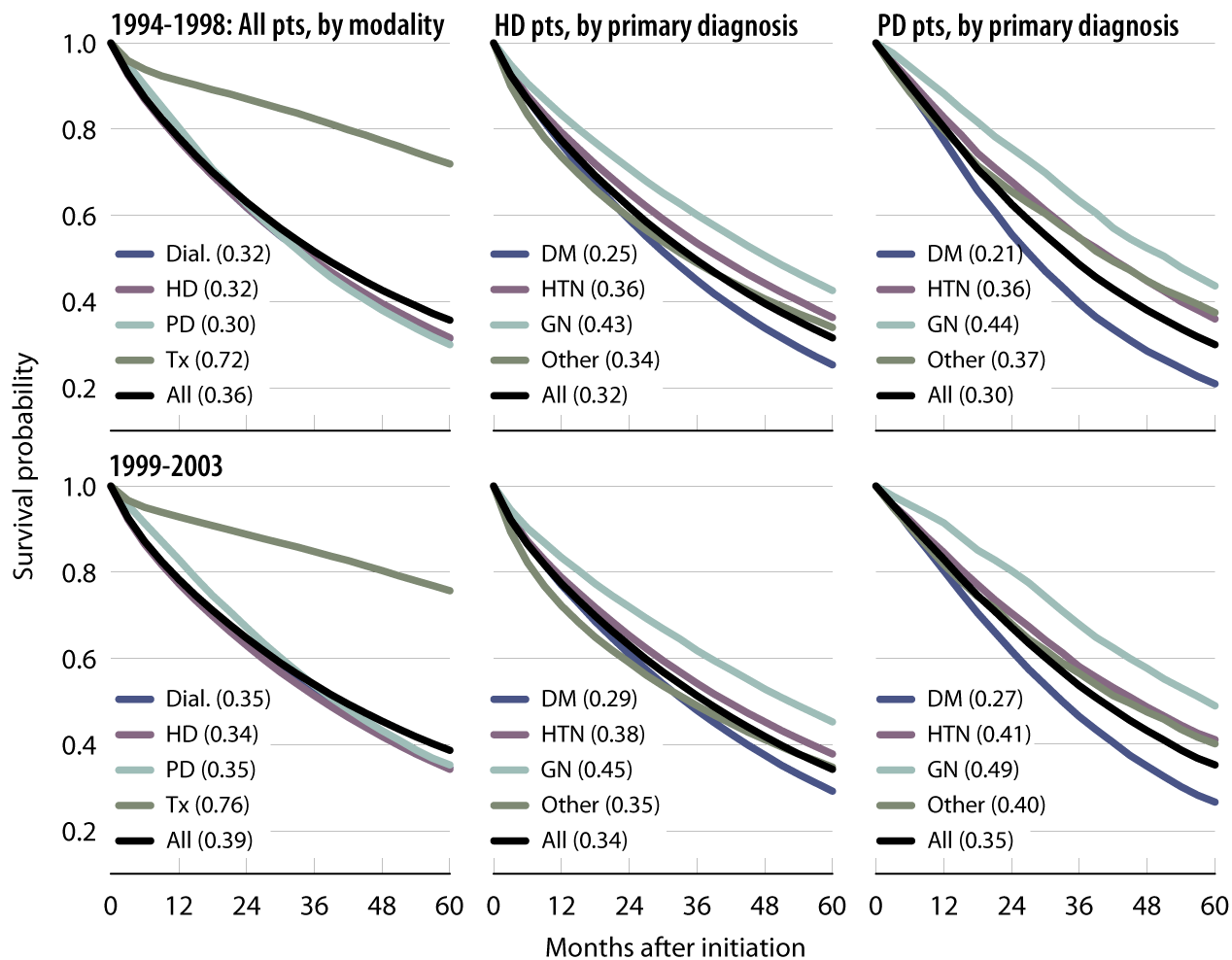
Young non-diabetics better on PD

old diabetics not so well on PD

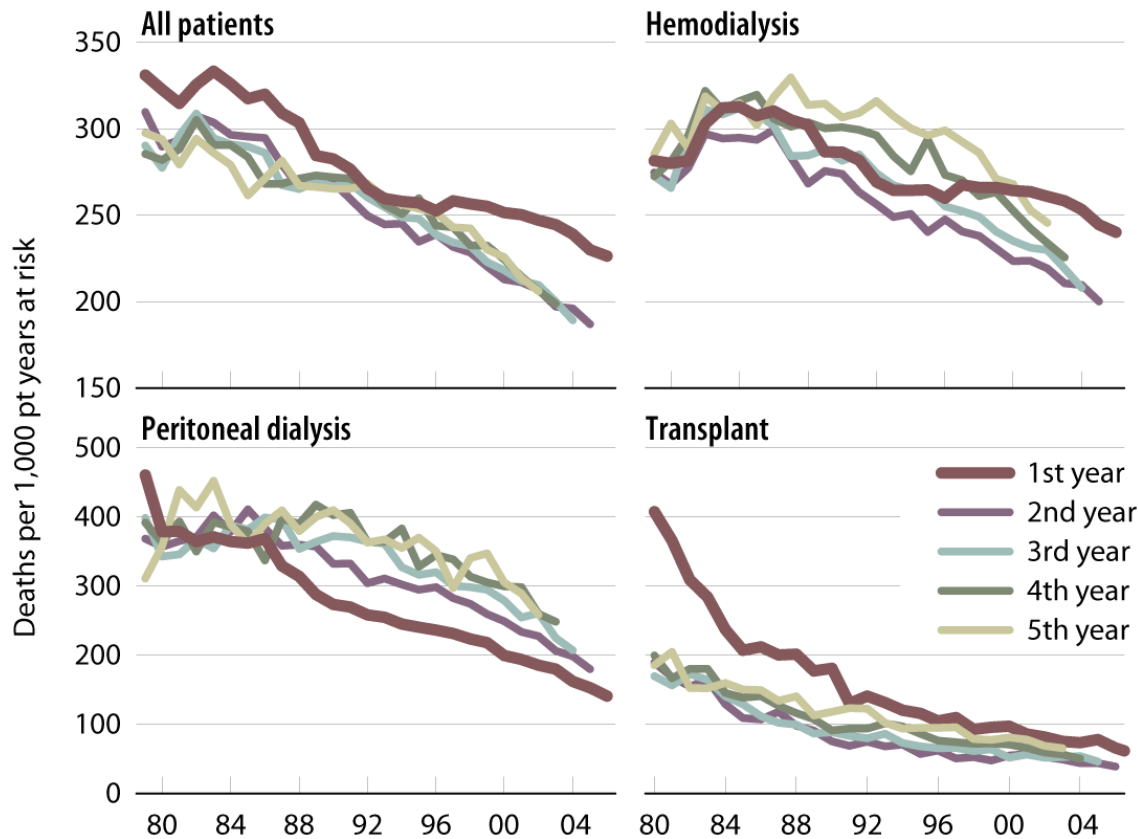
yet difference was small

Liem YS. KI 2007; 71:153-8

Adjusted five-year survival: PD vs HD



PD survival improvement > HD





The preferable dialysis therapy

- Provide the best survival chance
- Well tolerated by patients
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Well tolerated by patients

- PD as a continuous dialysis therapy, homeostatis is better than HD
 - Hemodynamically more stable
 - Headache, muscle cramps, chest discomfort, arrhythmia, post-dialysis fatigue which are common during HD much less frequent found in PD
 - Reflected by lower pain scores in QOL studies

The preferable dialysis therapy

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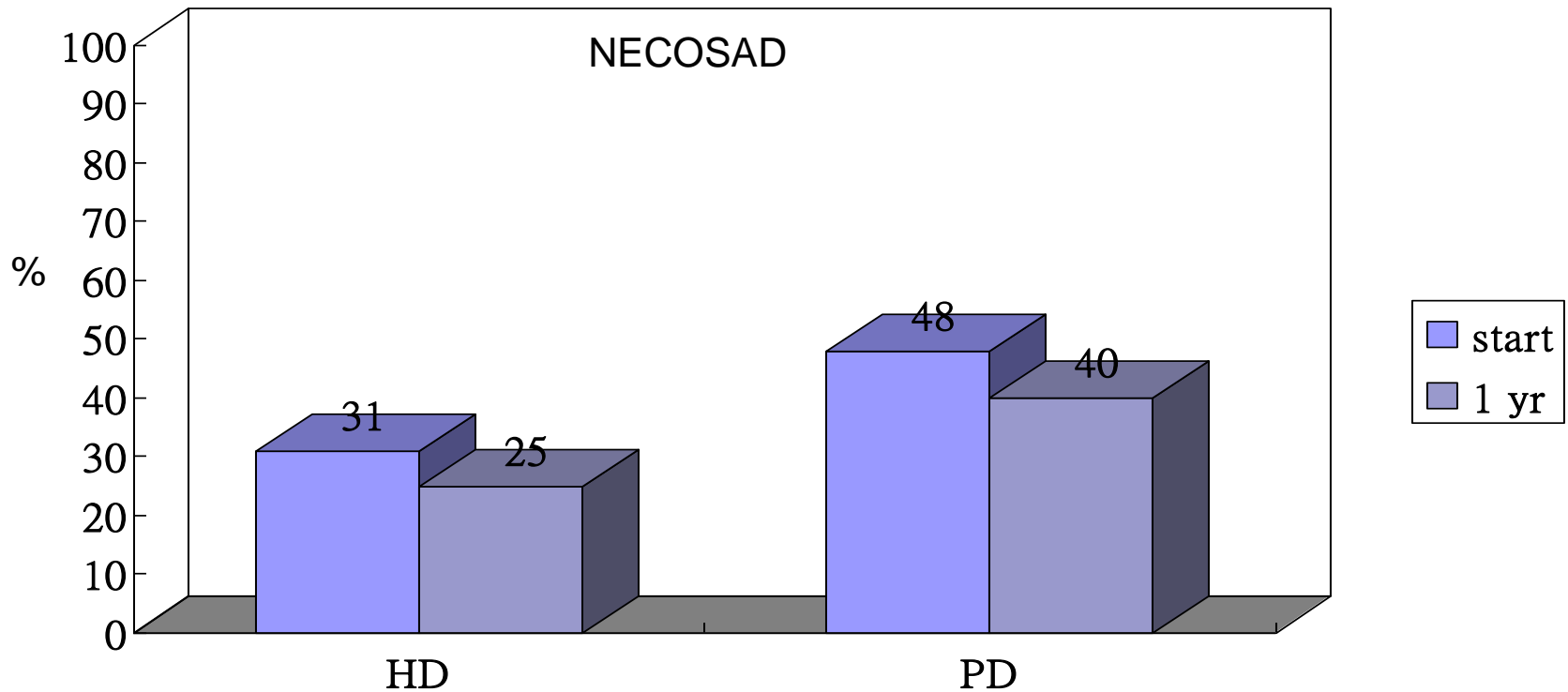
Quality of life

- Employment
- QOL studies

Employment

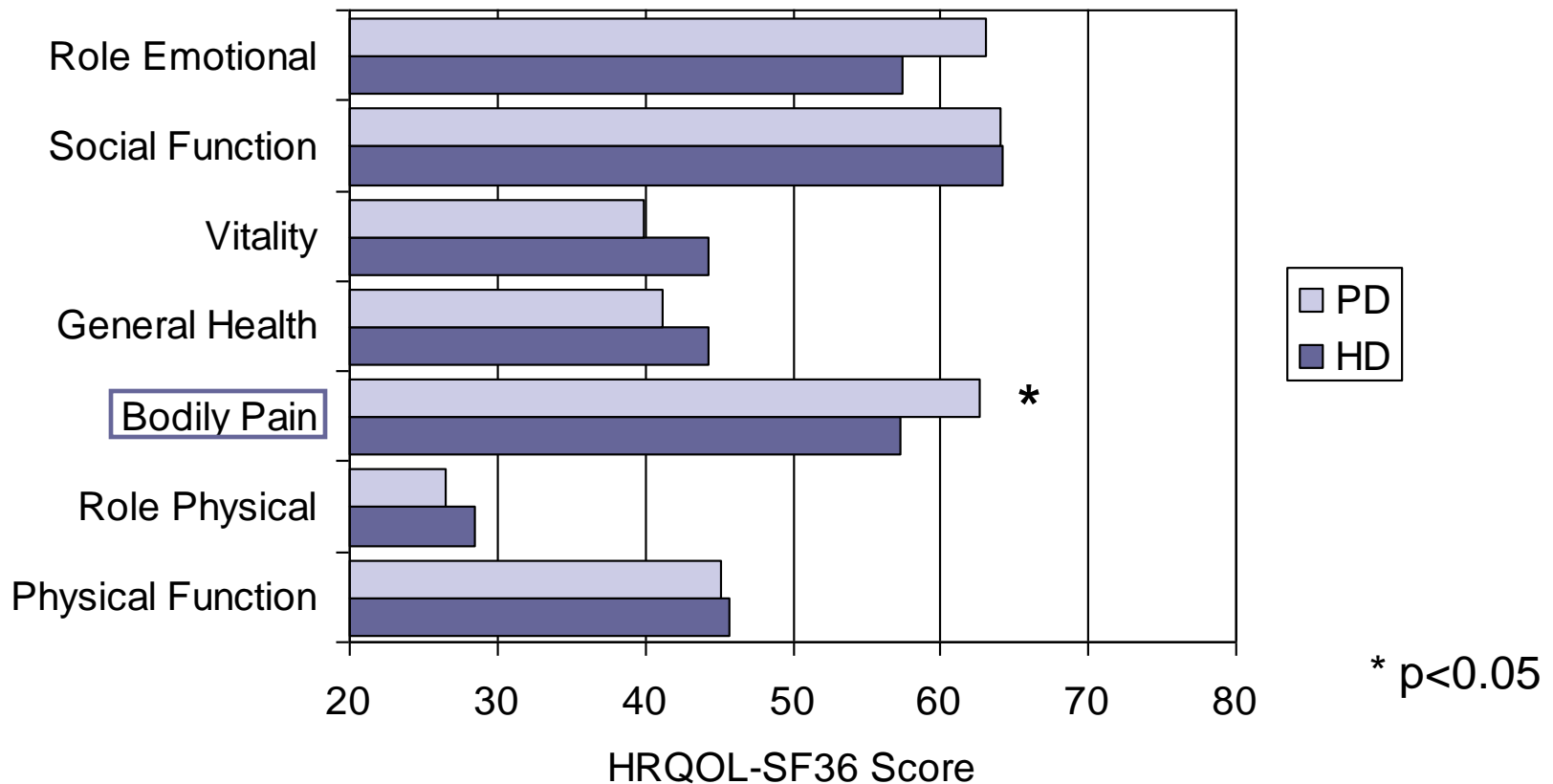
- Due to its home therapy in nature, less hospital visits, more flexibility in adjusting dialysis time towards working, more stable homeostasis, PD allows patient to be employed easier
- PD:HD working - 28% vs 10%
 - CAPD still significantly associated with employment after adjusting to age, gender etc
 - Julius M. Arch Int Med. 149(4):839-42, 1989
- With APD, even more freedom for employment

Employment

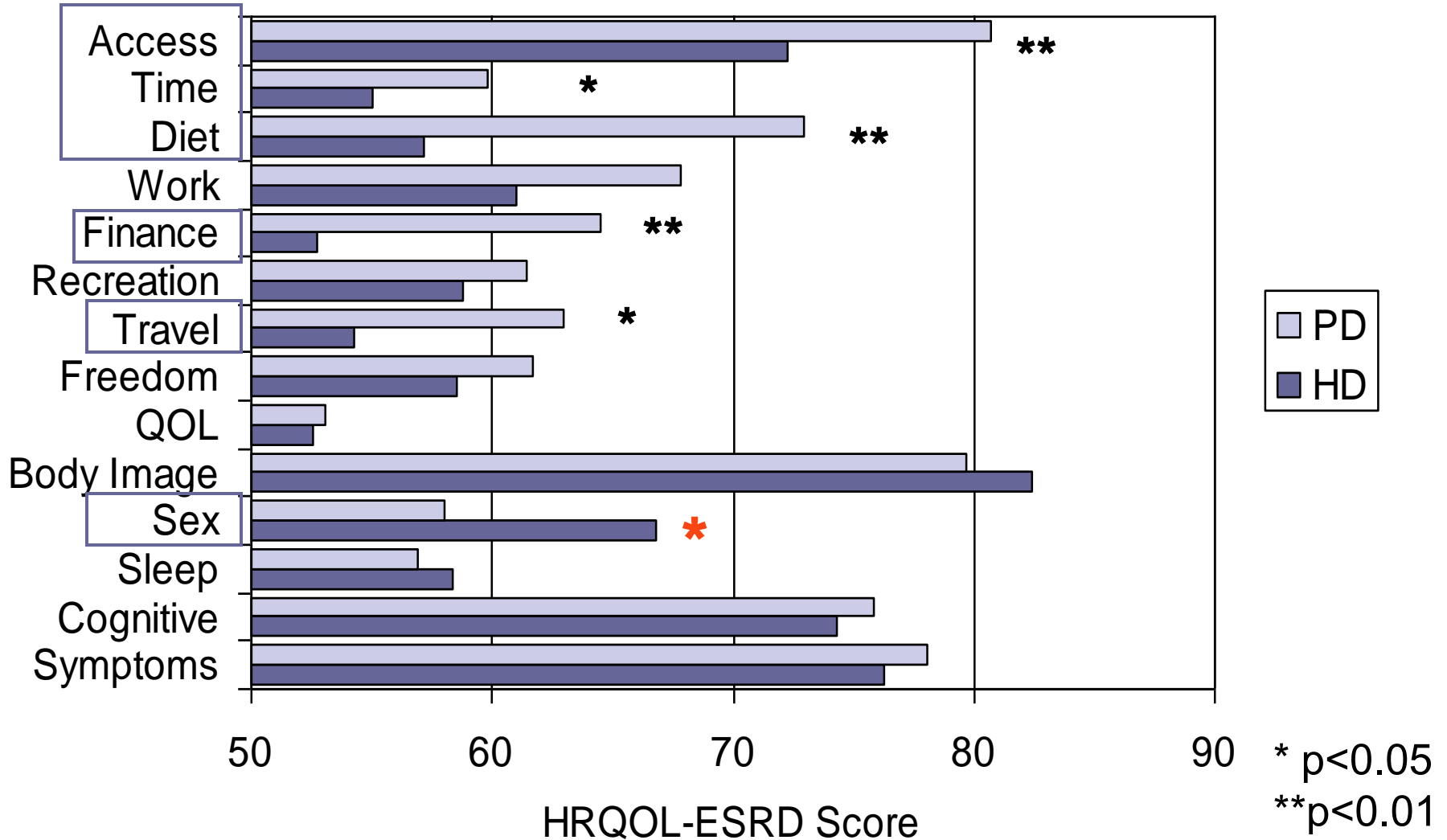


Wu: QOL after 1 Year (1)

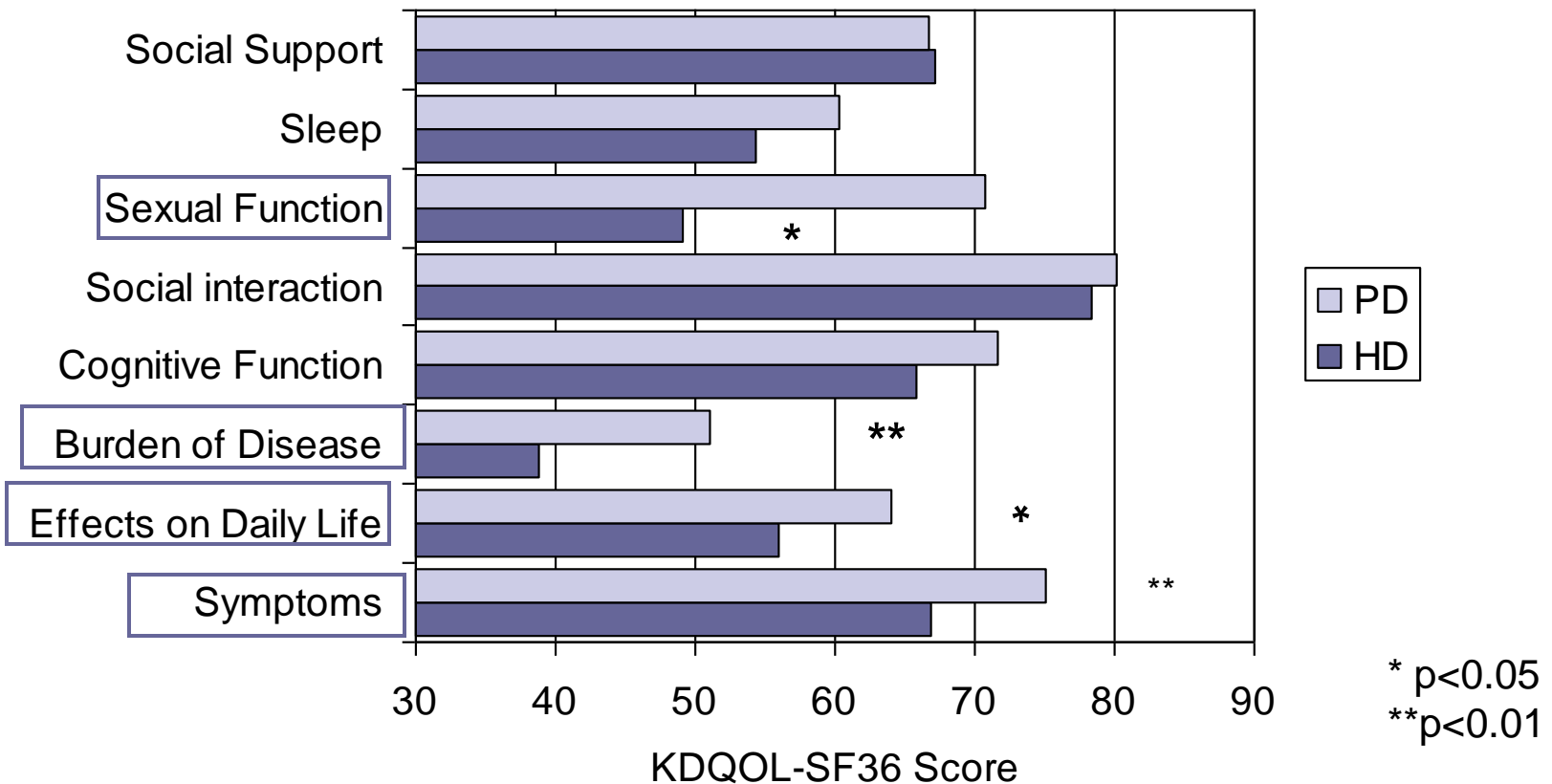
Wu JASN 15,743 2004



Wu: QOL after 1 Year (2)



QOL after 1 Year



A summary of QOL studies in last 4 years

■ PD better

- | | | |
|---|------|--------|
| <input type="checkbox"/> Brown EA | 2010 | UK |
| <input type="checkbox"/> Russo FE | 2010 | Italy |
| <input type="checkbox"/> Noshad H | 2009 | Iran |
| <input type="checkbox"/> Ginieri-Coccosis M | 2008 | Greece |
| <input type="checkbox"/> Bohlke M | 2008 | Brazil |
| <input type="checkbox"/> Mau LW | 2008 | Taiwan |
| <input type="checkbox"/> Lausevic M | 2007 | Serbia |
| <input type="checkbox"/> Zhang AH | 2007 | China |

■ Similar

- | | | |
|----------------------------------|------|--------|
| <input type="checkbox"/> Peng YS | 2011 | Taiwan |
|----------------------------------|------|--------|

■ HD better

- none



APD provides even better QOL

- APD patients has better mental health, less anxious and depressed
 - de Wit GA. PDI 2001; 21:306-12

QOL of home PD (APD) vs Home NHD

- 36 NHD vs 57 PD (mostly APD) in Toronto
- Mean age: 49 vs 61
- KDQOL scores similar in most domains but
 - PD patients - Higher social support scores in PD patients
 - Borderline higher in burden of kidney disease
 - NHD patients :
 - Borderline higher sexual function scores
- Also similar 'illness intrusiveness scores'

Secretary for Education, HKSAR government 香港特別行政區教育局局長

- 孫明揚腎病需「洗肚」 2011-04-27 (09:20) 港府高官患病潮未了，**教育局局長孫明揚**繼年初動小腸氣手術後，證實患有腎病需要進行俗稱「洗肚」的腹膜透析。但孫明揚強調，「洗肚」不影響日常工作，會繼續餘下任期。預計孫明揚將於稍後會見傳媒交代事件。

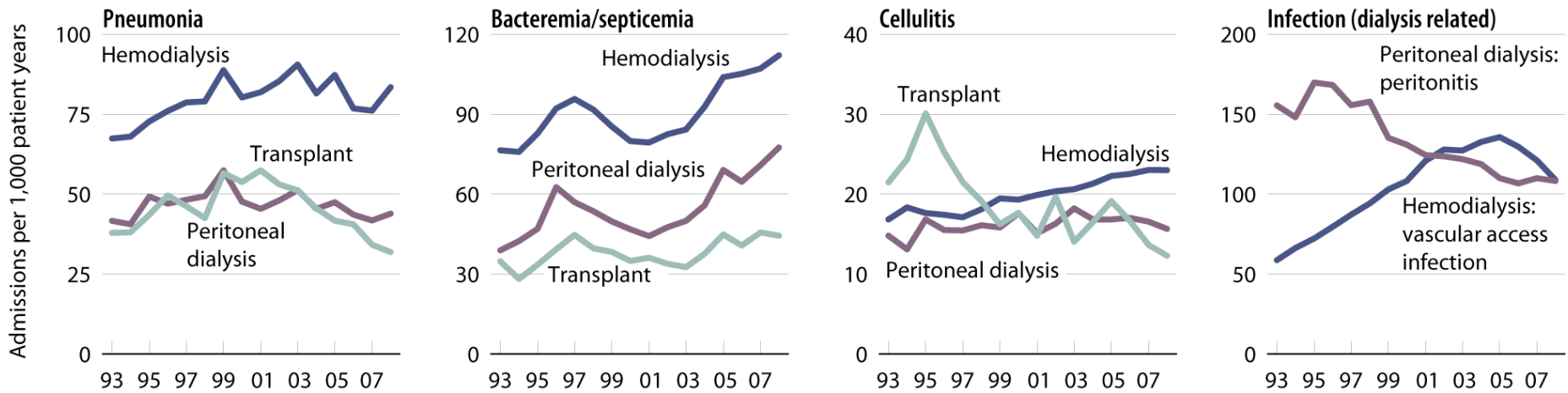
孫明揚新聞秘書27日證實事件，指**現年67歲的孫明揚**，去年底起按醫生指示，在家中「洗肚」。孫明揚認為，「洗肚」不影響日常工作，每日可如常上班，會繼續餘下任期。



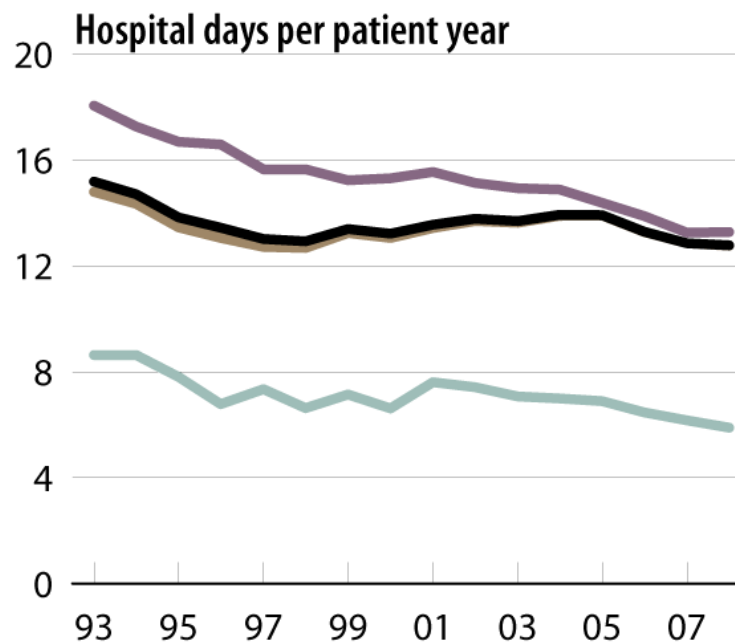
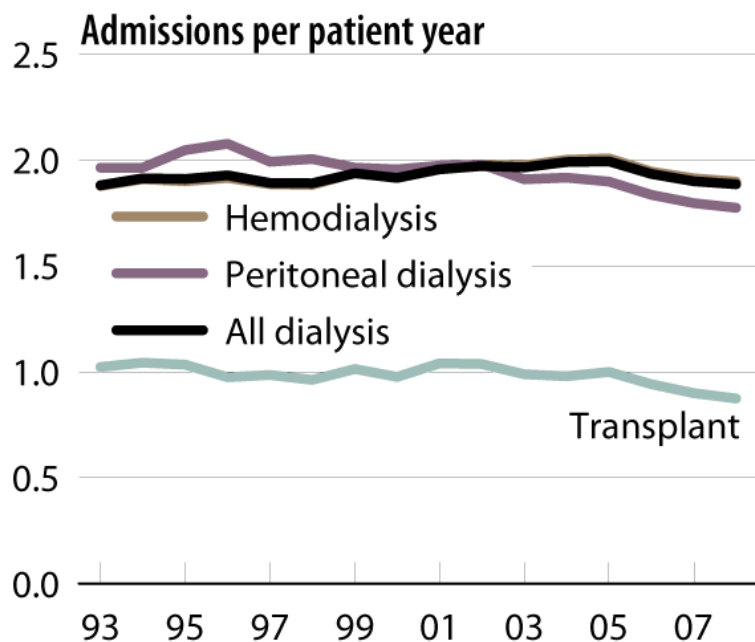
The preferable dialysis therapy

- Provide the best survival chance
- Well tolerated by patients
- Provide a good quality of life
 - Disturb patient's life less
- **As little complications as possible**
- Economically more affordable
 - To patients
 - To health authorities
- Home therapy
- Applicable to majority of patients
- No disadvantageous effect on success of renal transplantation

PD has less infection than HD !

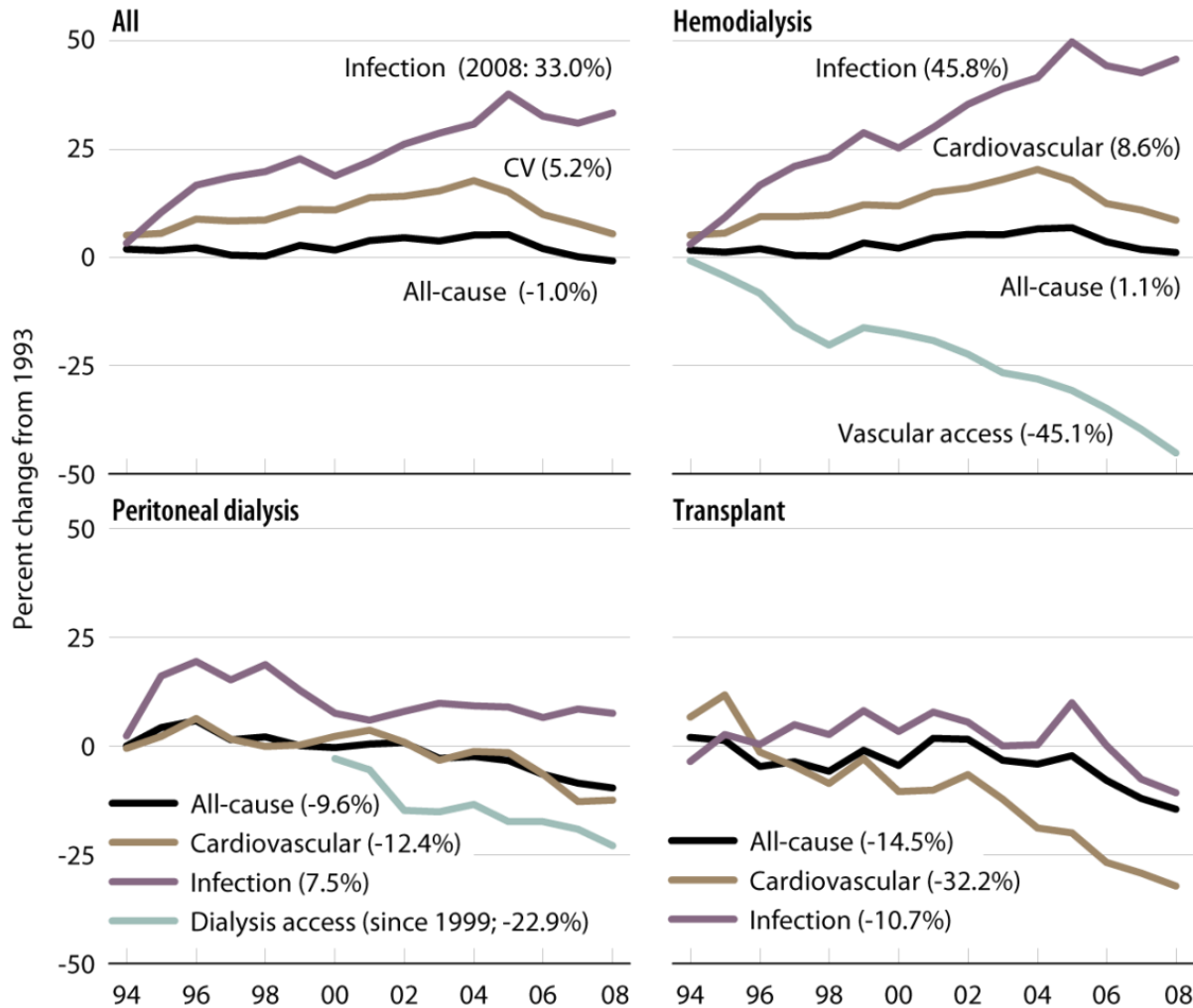


Adjusted admissions : PD ~ HD



Period prevalent ESRD patients; rates adjusted for age, gender, race, & primary diagnosis. ESRD patients, 2005, used as reference cohort.

Hospitalization: PD improvement > HD



The preferable dialysis therapy

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Cost of dialysis

- Dialysis is expensive and unaffordable in many developing countries
- In developed countries, HD is usually more expensive than PD. Heavy health expenditure is a common problem in many wealthy countries

Cost perspective

- PD is cheaper than HD in most affluent countries

	HK	US	UK
Average annual cost per patient			
Hemodialysis	\$239,288	\$377,137	\$283,195
Peritoneal dialysis	\$100,176	\$283,195	\$206,996
Transplant operation	\$153,868		
Transplant maintenance	\$60,490		

2000 data

APD is still cheaper than HD

Costs in Canada – CAD\$/yr

HD (in-center) 42,202

IPD 79,318

CAPD 27,263

CCPD 29,763



Cost to patients

- Very variable – depending on the reimbursement structure



The preferable dialysis therapy

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Home dialysis therapy

■ Advantages

- More flexible
- Sense of self-control
- More economical
- Require less healthcare worker
- Require less space

Home dialysis therapy

Increasing home-based dialysis therapies to tackle dialysis burden around the world: A position statement on dialysis economics from the 2nd Congress of the International Society for Hemodialysis

Philip Kam-Tao LI,¹ Wai Lun CHEUNG,² Sing Leung LUI,³ Christopher BLAGG,⁴ Alan CASS,⁵ Lai Seong HOOI,⁶ Ho Yung LEE,⁷ Francesco LOCATELLI,⁸ Tao WANG,⁹ Chih-Wei YANG,¹⁰ Bernard CANAUD,¹¹ Yuk Lun CHENG,¹² Hui Lin CHOONG,¹³ Angel L. de FRANCISCO,¹⁴ Victor GURA,¹⁵ Kazuo KAIZU,¹⁶ Peter G. KERR,¹⁷ Un I. KUOK,¹⁸ Chi Bon LEUNG,¹ Wai-Kei LO,³ Madhukar MISRA,¹⁹ Cheuk Chun SZETO,¹ Kwok Lung TONG,²⁰ Kriang TUNGSANGA,²¹ Robert WALKER,²² Andrew Kui-Man WONG,²³ Alex Wai-Yin YU,¹² On Behalf of the participants of the Roundtable Discussion on Dialysis Economics in the 2nd Congress of the International Society for Hemodialysis held in Hong Kong in August 2009



Home Therapy

- Home HD is technically much more demanding than CAPD / APD
 - Limited to a small subset of patients with high intelligence and good family support



The preferable dialysis therapy

- Provide the best survival chance
- Well tolerated by patients
- Provide a good quality of life
 - Disturb patient's life less
- As little complications as possible
- Economically more affordable
 - To patients
 - To health authorities
- Home therapy
- **Applicable to majority of patients**
- No disadvantageous effect on success of renal transplantation



Applicability of PD

- Contraindication to PD exists, and > HD
 - Medical contraindication
 - Social contraindication / barriers
 - These can be overcome

Contraindications for PD – Netherlands

- NECOSAD – 1347 patients, mean age 58
 - 28.6% contraindicated for PD (medical: 16.7%)
 - 8.6% incapable of performing PD themselves
 - 7.2% contraindicated for HD

difference
9.5%

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

Medical contraindications to HD (n = 46)

- Poor cardiac condition (n = 24)
- Acute start (n = 3)
- Other (n = 19)

Social contraindications to HD (n = 4)

- Other (n = 4)

Medical contraindications to PD (n = 225)*

- Previous major abdominal surgery (n = 85)
- Cystic kidneys (n = 15)
- Poor lung function (n = 13)
- Chronic inflammatory bowel disease (n = 10)
- Poor cardiac condition (n = 10)
- Obesity (n = 5)
- Other (n = 67)

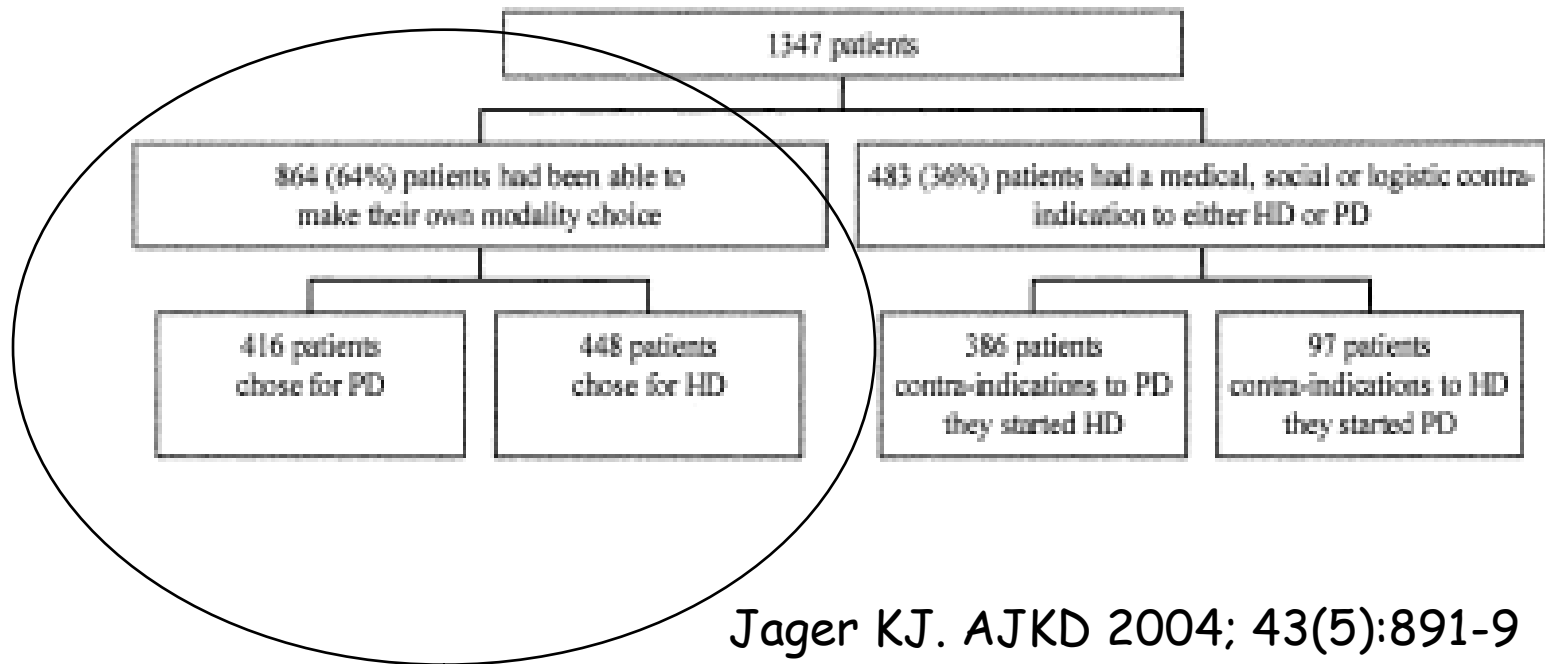
Social contraindications to PD (n = 150)*

- Incapable of performing PD exchanges themselves (n = 116)
 - Other (n = 34)
-

These can be overcome by assisted PD

Acceptability - NECOSAD

- 48% of those without contraindications / barriers chose PD



Jager KJ. AJKD 2004; 43(5):891-9

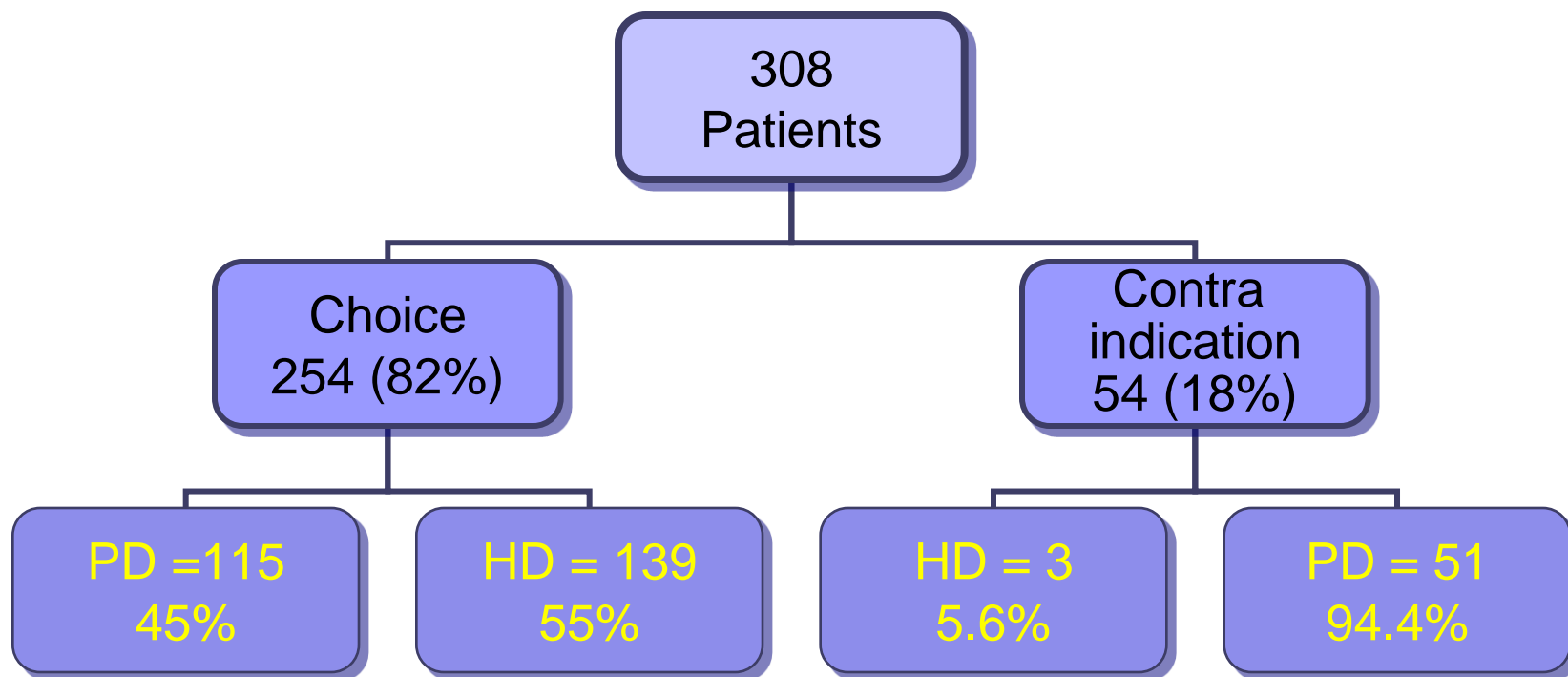
Contraindication in UK

- 17% contraindicated for PD
- 1% contraindicated for HD
 - Severe LV dysfunction in 2 patients and bleeding diathesis in 1 patient

Table 1. Contraindications to CAPD

Contraindication	No. of Patients
Major abdominal surgery	15
Severe frailty and disability	11
Cognitive impairment/cerebrovascular disease	6
Psychosocial reasons	4
Terminal illness	10
Severe obesity	2
Respiratory limitation	2
Previous diaphragmatic leak on acute PD	1

Acceptability of PD - UK



Among those without contraindications,
45% chose PD, if given adequate explanation

Contraindications and barriers to PD in Canada – an older population

- A prospective cohort study of incident ESRD patients in 4 Canadian regional dialysis programs from 2004-8
- 497 patients
- Mean age 66

What are the contraindications and barriers to PD?

- Contraindications 22%
 - Medical 19.8%
 - Social 2.8%
- Remaining:
 - Barrier in self-care PD 63%
- Only 29% no contraindication/barrier

Medical Contra-indications

<input type="checkbox"/> Obesity	4.8%	
<input type="checkbox"/> Abdominal scarring	4.4%	
<input type="checkbox"/> Ileostomy, colostomy, ileal conduit		1.6%
<input type="checkbox"/> Ascites	1.2%	
<input type="checkbox"/> Diverticulitis	1%	
<input type="checkbox"/> Abdominal hernia	1%	
<input type="checkbox"/> Abd aortic aneurysm	0.6%	
<input type="checkbox"/> Planned abd surgery	0.6%	
<input type="checkbox"/> Bowel cancer	0.6%	
<input type="checkbox"/> Gastric tube	0.4%	
<input type="checkbox"/> Polycystic kidneys	0.4%	
<input type="checkbox"/> Ischemic gut	0.4%	
<input type="checkbox"/> Others	1.4%	
<input type="checkbox"/> Total	19.2%	

- If excluded these relative contraindications: 11% only

Barriers to self-care PD


- Factors that interfere performing PD procedures
- Physical barriers to self-care:
 - Decreased strength
 - Decreased manual dexterity
 - Decreased vision
 - Decreased hearing
 - Immobility
 - Poor health/frailty
 - Poor hygiene
- Cognitive barriers
 - Language barrier
 - History of non-compliance
 - Psychiatric condition
 - Dementia / poor memory

Results - % chose PD

- Of those without barriers: 54%
- Of those with barriers to self care
 - With family support 46%
 - Without family support 25%
- Of all without contraindications 44%

Assisted PD can help overcome barriers

- By 2000s, government funding for community nurses for home PD increases
- 2004 – 5/2005, in Sunnybrook, Toronto
- 81% of incident dialysis patients (mean age 73) had 1 or more barriers to self-care PD
 - Decreased strength 43%
 - Decreased dexterity 37%
 - Decreased vision 25%
 - Immobility 20%
 - Anxiety 25%
 - Decreased cognition 8%
 - Psychiatric condition 7%

- 
- Among these patients, ultimately started PD in
 - Area with home assistance: 47%
 - Area without home assistance: 37%

Cost of aPD in Canada – CAD\$/yr

IC – HD	42,202	
IPD	79,318	
CAPD	27,263	
1 visit / day		40,768
2 visits		54,273
3 visits		67,778
4 visits		81,283
CCPD	29,763	
1 visit		43,468
2 visits		56,773

–Costs/ visit ~ CAD \$37

Brunier G. PDI 1996; S(1): S479-82

Cost of transportation for IC-HD not calculated

The preferable dialysis therapy

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 - Disturb patient's life less
- As little complications as possible
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 - To patients
 - To health authorities
- Home therapy
- Applicable to majority of patients
- No disadvantageous effect on success of renal transplantation

PD and HD on Txp outcome

- PD – less delayed graft function repeatedly reported,
 - Sezer S. Transpl Proc 2011; 43:485-7
- some also reported fewer graft failure up to 5 years
 - Freitas C. Transpl Proc 2011; 43:113-6
- More convenient in emergency cadaveric txp
 - Not necessary to arrange emergency dialysis

The preferred dialysis therapy: PD

- Provide the best survival chance PD ~ HD
- Well tolerated by patients PD
- Provide a good quality of life PD
 - Disturb patient's life less
- As little complications as possible PD
- Economically more affordable PD
 - To patients
 - To health authorities
- Home therapy PD
- Applicable to majority of patients HD (PD)
- No disadvantageous effect on success of renal transplantation PD

Conclusion

- PD is more superior than HD in most aspects
- The mainstay of dialysis therapy should therefore be PD !
 - HD should be a back up dialysis therapy