

Comparative survival of transplant-listed hemodialysis and peritoneal dialysis patients in the United States, 2005-2009.

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Introduction

- Although markedly different in terms of dialysis technique, many studies have shown similar survival expectations with hemodialysis (HD) and peritoneal dialysis (PD). Concern remains, however, that unmeasured comorbidity threatens the validity of existing survival comparisons.
- As exclusion of serious ongoing medical issues is a prerequisite for transplant listing, survival comparisons by mode of dialysis in listed patients has the potential to mitigate these concerns.
- Hence, we compared annual dialysis mortality estimates by mode of dialysis at the time of first listing for transplantation in the United States between 2005 and 2009.

Objectives

- To compare on-dialysis survival by mode of dialysis among patients first placed on the renal transplant waiting list between 2005 and 2009.

Methods

- USRDS standard analytical files were used to select dialysis patients first placed on the renal transplant list.
- Follow-up began at first listing, and ended at the earliest occurrence of death, renal transplantation or June 30th, 2010.
- An intention-to-treat approach was used, based on the mode of dialysis at the time of transplant listing.
- Poisson, Kaplan-Meier, and Cox models were used to generate on-dialysis mortality rates, survival curves and mortality hazards ratios.
- Covariates in adjusted models were age, sex, race-ethnicity, cause of ESRD, and time elapsed since beginning dialysis.

Results

- Compared to patients on HD at listing, those on PD were younger, more likely to be female, white and to be on dialysis for 1 year or less. (Table 1).
- The mean follow-up on dialysis was 1.8 years and a mortality rate of 6.7 per 100 person-years was observed.
- Survival on dialysis was longer with HD than PD, especially after 2 years (Figure 1).
- In unadjusted models, mortality hazards ratios favored HD in the following subgroups: age 45-64, age 65+, males, diabetic ESRD and dialysis >1 year.
- In adjusted models, mortality hazards ratios favored HD in the following groups: the overall population, age 45-64, age 65+, males, African Americans, diabetic ESRD, and in those on dialysis >1 year.

Table 1

Patient characteristics at listing for transplant (N = 87,542)	Mode of Dialysis at Listing	
	HD (86.6%) Col %	PD (1.4%) Col%
Age, yrs		
< 15	0.8	6.9
15-44	29.9	34.6
45-64	54.4	47.3
65+	14.9	11.2
Female	37.6	44.0
White	41.5	54.5
Diabetic ESRD	42.1	33.3
Initial PD	2.7	75.4
> 1 yr on dialysis	53.4	43.4

P < 0.001 for all (HD Vs. PD)

Figure 1
Kaplan-Meier survival estimates

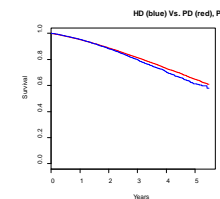


Table 2

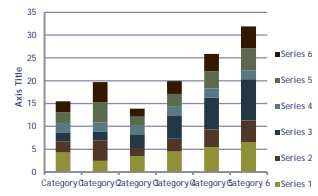
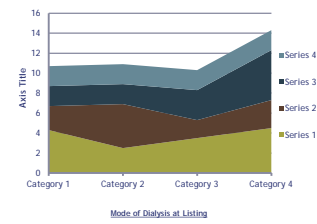
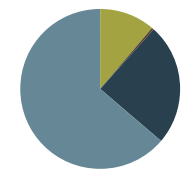
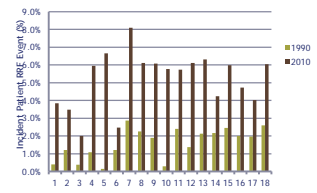
PD/HD mortality hazards ratios within subgroups (unadjusted)	Hazards Ratio (95% CI)	P-Value
All	1.07 (1.02-1.13)	0.01
Age, yrs		
< 15	0.81 (0.37-1.80)	0.6
15-44	1.01 (0.89-1.14)	0.9
45-64	1.17 (1.09-1.25)	<0.001
65+	1.22 (1.08-1.38)	0.001
Male	1.15 (1.07-1.23)	<0.001
Female	0.99 (0.91-1.08)	0.8
White	0.93 (0.87-1.01)	0.07
Black	1.07 (0.96-1.20)	0.2
Diabetic ESRD	1.39 (1.29-1.49)	<0.001
≤ 1 yr on dialysis	1.00 (0.92-1.09)	> 0.9
> 1 yr on dialysis	1.20 (1.11-1.29)	<0.001

Table 2

PD/HD mortality hazards ratios within subgroups (adjusted)	Hazards Ratio (95% CI)	P-Value
All	1.13 (1.07-1.20)	<0.001
Age, yrs		
< 15	0.82 (0.34-1.99)	0.7
15-44	1.02 (0.89-1.16)	0.8
45-64	1.14 (1.06-1.23)	<0.001
65+	1.22 (1.07-1.38)	0.003
Male	1.19 (1.10-1.28)	<0.001
Female	1.06 (0.97-1.16)	0.2
White	1.05 (0.97-1.13)	0.2
Black	1.19 (1.07-1.33)	0.002
Diabetic ESRD	1.32 (1.23-1.43)	<0.001
≤ 1 yr on dialysis	1.02 (0.94-1.12)	0.6
> 1 yr on dialysis	1.23 (1.14-1.32)	<0.001

Conclusions

- Transplant-listing in dialysis populations is usually predicated on the absence of severe uncontrolled comorbid illness. Hence, unmeasured comorbidity is likely to be less of a potential confounder than in typical observational comparisons.
- On-dialysis survival is similar for about two years and diverges thereafter, with higher mortality rates in PD patients.
- Mortality differences were most apparent in males, patients over 65, those with diabetic ESRD and those on dialysis for one year or more.



yrs_on_rtt_1 HD (85.6%) PD (14.4%)

	Col %	Col%
Age: yrs		
< 15	0.7	6.7
15-44	30.0	35.0
45-64	54.5	47.3
65+	14.8	11.1
Female	37.6	44.2
Diabetic: ESRD	41.9	33.0
Initial PD	2.6	75.4
> 1 yr on dialysis	55.3	45.9

P < 0.001 for all HD Vs. PD comparisons

TABLES: Please do not use the space bar to align numbers in columns; the numbers will not print properly. If you aren't sure how to set the tabs to create columns, just ask Ed or Sue; we'll be happy to show you.