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Death Risks over Time from 2001 to 2015 in Incident Peritoneal Dialysis Patients : A Retrospective Cohort Study with 15-Year Follow-Up

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BACKGROUND

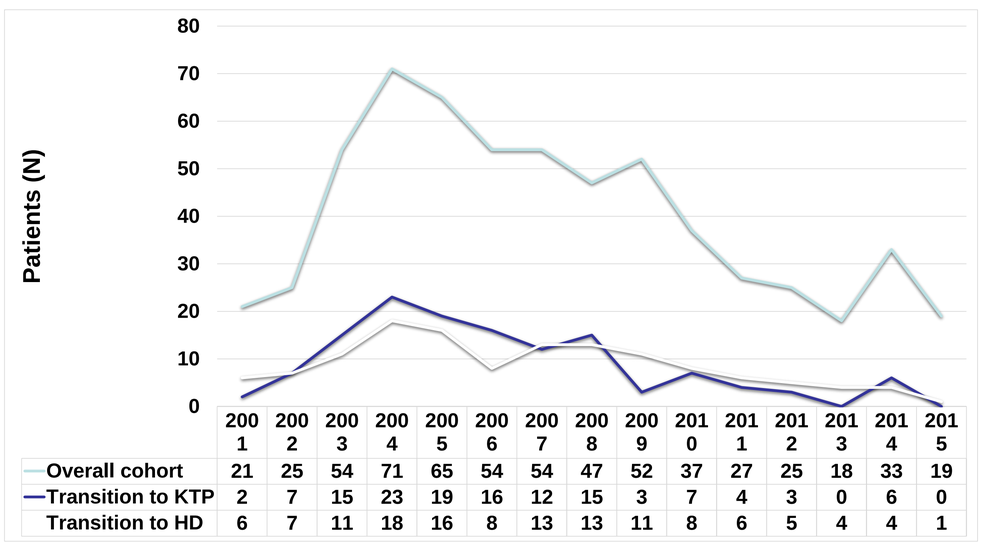
- Even though previous study has shown that there was no difference for survival between hemodialysis and peritoneal dialysis (PD) since 2002, the incident rate to initiate PD in patients with end-stage renal disease has decreased in developed countries.
- Hence, we investigated the change in trends and death risk in incident PD patients followed over up to 15 years

METHOD

- We examined trends and transition to other modality in peritoneal dialysis between 2001 through 2015.
- We evaluated death risks across the year of PD initiation from 2001 to 2015 using Cox proportional hazard models in a 15-year (1/2001-12/2015) cohort of 671 incident peritoneal dialysis patients in our dialysis center.
- To account for the competing risk of transplantation or transition to hemodialysis across the year of PD initiation, we conducted the competing risk regression to estimate sub—hazard ratios of death risk. Models were adjusted for age, female, diabetes, and serum albumin.

RESULTS

- After excluding patients who received less than 30 days and who were initiated peritoneal dialysis before 2001, the final study population consisted of 602 peritoneal dialysis patients. Patients were 50±13 years old, 45% female, and 50% diabetics.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Overall cohort	21	25	54	71	65	54	54	47	52	37	27	25	18	33	19
Transition to KTP	2	7	15	23	19	16	12	15	3	7	4	3	0	6	0
Transition to HD	6	7	11	18	16	8	13	13	11	8	6	5	4	4	1

Figure 1. The number of patients received kidney transplantation, and transferred to hemodialysis among overall cohort

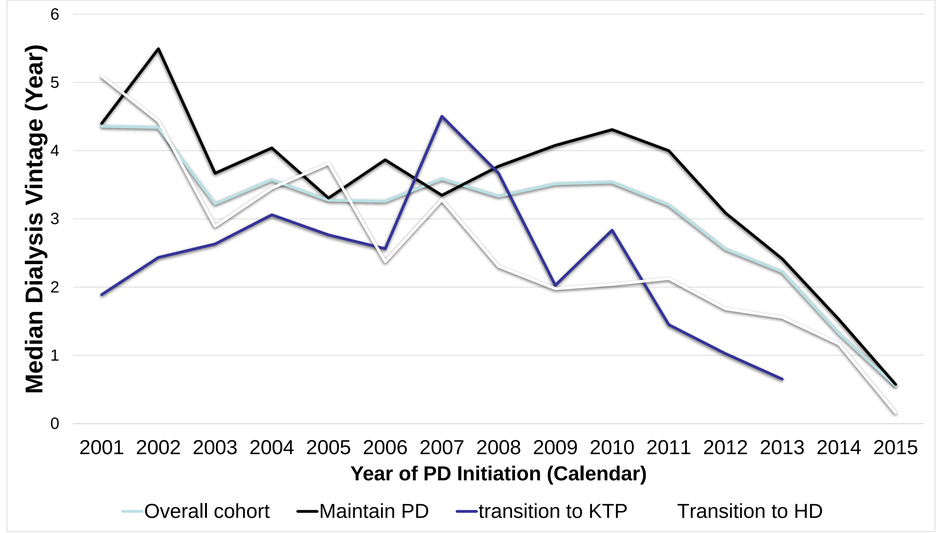


Figure 2. Median dialysis vintage

- A total of 179 (30%) all-deaths were reported. In 2013 and 2015, death was not reported. 131 (22%) and 132(22%) among 602 patients received kidney transplantation and transferred to hemodialysis, respectively (Figure 1).
- Median dialysis vintage was 2.6 years (IQR 1.3, 4.7 years) but it showed diversity every year (Figure 2).
- Compared with the patients who started PD in 2001, death risk tends to decrease with each subsequent year of PD initiation since 2010, but there was no statistically significant difference across the year of PD initiation (Figure 3).
- Using year as continuous variable, the hazard ratio for all-cause mortality was 0.95 for each subsequent year (95% CI, 0.90-1.00; p=0.036) (Table). After taking into consideration the impact of kidney transplantation as a competing event, sub-hazard ratio for all-cause mortality was 0.95 for each subsequent year (95% CI, 0.91-0.99; p=0.007). Moreover death risks were significantly decreased since 2001 in multivariate adjusted models.

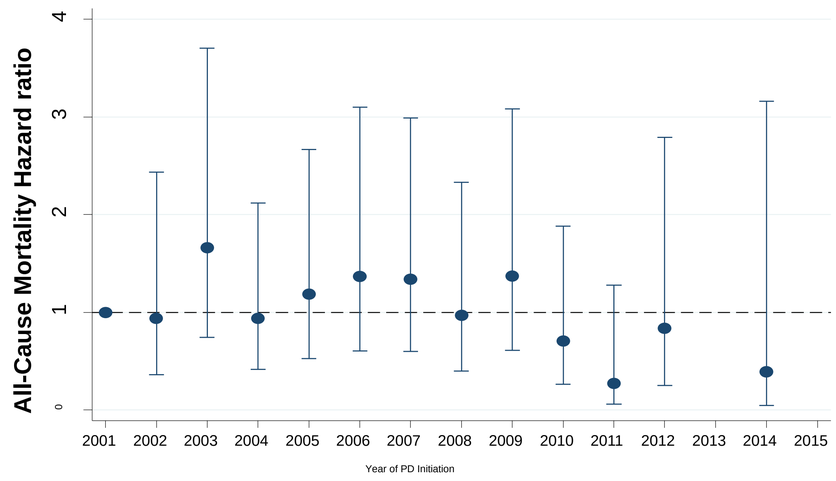


Figure 3. All-cause mortality across the year of peritoneal dialysis initiation (Unadjusted model)
***No death in 2013 and 2015**

	Overall				KTP as a competing event				HD as a competing event			
	HR	95% CI		*P*	SHR	95% CI		*P*	SHR	95% CI		*P*
Unadjusted	0.95	(0.90,	1.00)	0.036	0.95	(0.91,	0.99)	0.007	0.93	(0.89,	0.97)	0.000
Model 1	0.96	(0.91,	1.01)	0.093	0.95	(0.91,	0.99)	0.021	0.93	(0.89,	0.97)	0.001
Model 2	0.94	(0.88,	1.01)	0.072	0.95	(0.89,	1.00)	0.029	0.91	(0.86,	0.97)	0.002

Table. The association between year as continuous variable and all-cause mortality. Model 1 was adjusted age, female, and diabetes. Model 2 was adjusted age, female, diabetes, and serum albumin.
KTP, kidney transplantation; HD, hemodialysis; HR, Hazard ratio; CI, Confidence interval; SHR, sub-hazard ratio

CONCLUSION

- Incident peritoneal dialysis patients tended to decrease over time from 2001 to 2015. The death risks in PD patients were improved with the year of PD initiation over up to 15-year follow-up period since 2001.
- Even though kidney transplantation or transition to hemodialysis from PD were considered, survival improvement maintained over 15-year follow-up period.
- Further studies to understand the conditions influencing these death risks are needed.

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