

Incidence of Kidney Transplant in Daily Home Hemodialysis, Peritoneal Dialysis, and In-Center Hemodialysis Patients

Eric Weinhandl, MS and Allan Collins, MD
Chronic Disease Research Group, Minneapolis, Minnesota

Introduction

- ◆ A kidney transplant is generally regarded as the best treatment for end-stage renal disease (ESRD).
- ◆ However, pre-emptive kidney transplants occur relatively infrequently (*i.e.*, in between 2% and 3% of new ESRD cases).
- ◆ Most new ESRD cases are prescribed chronic dialysis treatment and many are placed on the kidney transplant wait list.
- ◆ In a patient-centered environment, the selection of a dialytic modality might be made to maximize the likelihood of receiving a kidney transplant.
- ◆ Frequent hemodialysis improves some parameters of cardiovascular function, including blood pressure.
- ◆ As cardiovascular health is an important consideration in kidney transplantation, the prescription of frequent hemodialysis may plausibly increase the likelihood of receiving a kidney transplant.
- ◆ We assessed the incidence of kidney transplant in daily home hemodialysis (DHHD), peritoneal dialysis (PD), and in-center hemodialysis (IHD) patients.

Methods

- ◆ Data were ascertained from the United States Renal Data System (USRDS) database and linked records from NxStage Medical, Inc. (Lawrence, Massachusetts).
- ◆ DHHD patients initiated use of the NxStage System One between January 1, 2007, and June 30, 2010, and within 6 months of ESRD diagnosis.
- ◆ Matched PD and IHD patients were selected from the USRDS database at ratios of 1-to-1 and 5-to-1, respectively, and according to the propensity score (PS) of DHHD initiation.
- ◆ All PD and IHD candidates were likewise within 6 months of ESRD diagnosis.
- ◆ The PS included demographic factors, comorbidity factors, and biochemistry ascertained from the CMS ESRD Medical Evidence Report (form CMS-2728).
- ◆ Patients were followed from the home dialysis initiation date or matched index date (in IHD patients) until the earliest of kidney transplant, change in dialytic modality, death, or December 31, 2010.
- ◆ The relative incidence of kidney transplant was estimated with Fine-Gray (FG) regression, with change in dialytic modality and death classified as competing events.

Results

- ◆ We identified 1368 DHHD patients, 1368 matched PD patients, and 6840 matched IHD patients.
- ◆ We observed the following numbers of kidney transplants in each treatment group:
 - ◆ DHHD, $N = 231$ (16.9%)
 - ◆ PD, $N = 172$ (12.6%)
 - ◆ IHD, $N = 949$ (13.9%)
- ◆ The cumulative incidence of kidney transplant for DHHD versus PD was 25.2% versus 17.9% after 3 years of follow-up (*Figure 1*).
 - ◆ The relative incidence of transplant for DHHD versus PD was 1.37 (95% CI, 1.13-1.66; $P < 0.01$).
- ◆ The cumulative incidence of kidney transplant for DHHD versus IHD was 25.2% versus 19.6% after 3 years of follow-up (*Figure 2*).
 - ◆ The relative incidence of transplant for DHHD versus IHD was 1.22 (95% CI, 1.06-1.41; $P < 0.01$).
- ◆ Among patients not on the wait list at the start of follow-up, the cumulative incidence of kidney transplant for DHHD versus PD was 17.0% versus 9.0% after 3 years of follow-up (*Figure 3*).
 - ◆ The relative incidence of transplant for DHHD versus PD was 2.01 (95% CI, 1.47-2.46; $P < 0.01$).
- ◆ Among patients not on the wait list at the start of follow-up, the cumulative incidence of kidney transplant for DHHD versus IHD was 17.0% versus 8.0% after 3 years of follow-up (*Figure 4*).
 - ◆ The relative incidence of transplant for DHHD versus IHD was 2.27 (95% CI, 1.82-2.82; $P < 0.01$).

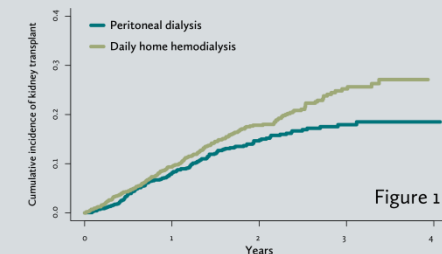


Figure 1

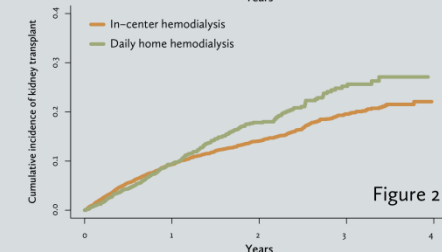


Figure 2

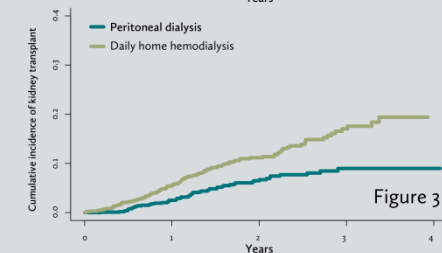


Figure 3

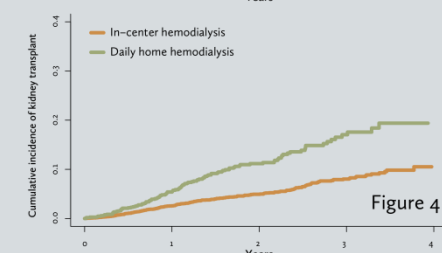


Figure 4

Conclusions

- ◆ Among patients that initiated home dialysis within 6 months of ESRD diagnosis, patients who began daily home hemodialysis were significantly more likely to receive a kidney transplant than matched patients who began peritoneal dialysis.
- ◆ Similarly, patients who began daily home hemodialysis within 6 months of ESRD diagnosis were significantly more likely to receive a kidney transplant than matched in-center hemodialysis patients.
- ◆ The reasons for these differences in transplant incidence remain unclear.
- ◆ Better cardiovascular health with frequent hemodialysis may improve the candidacy of DHHD patients for receipt of a transplant.
- ◆ DHHD patients may simply be more likely to seek transplant wait list registration.
- ◆ Conversations about dialytic modalities in chronic kidney disease patients not yet on dialysis should include discussion about the probability of kidney transplantation and the possible influence of modality on that probability.
- ◆ Future studies should assess whether outcomes differ among DHHD, PD, and IHD patients that receive a kidney transplant.



funded by a grant from
NxStage

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