

# Lower Risk of Technique Failure in Daily Home Hemodialysis versus Peritoneal Dialysis Patients

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## Introduction

- ♦ Patient losses due to technique failure are an important impediment to the growth of home dialysis programs.
- ♦ Regarding home hemodialysis:
  - ♦ Training is time consuming and resource-intensive.
  - ♦ Because home hemodialysis tends to be prescribed to existing patients, Medicare reimburses training with an add-on payment of \$50.16 for a maximum of 25 sessions.
  - ♦ Psychosocial challenges, including patient and caregiver burnout, are important causes of technique failure.
  - ♦ High rates of technique failure may preclude recovery of training costs absorbed by home dialysis programs.
- ♦ Regarding peritoneal dialysis:
  - ♦ Training tends to be less time consuming and resource-intensive.
  - ♦ Because peritoneal dialysis tends to be prescribed to new patients, training is indirectly reimbursed by the +51% inflator for *onset of dialysis*.
  - ♦ However, technique failure due to medical complications, peritonitis, and ultrafiltration failure, is common.
- ♦ We aimed to compare the risk of technique failure in US patients initiating daily home hemodialysis (DHH) or peritoneal dialysis (PD).

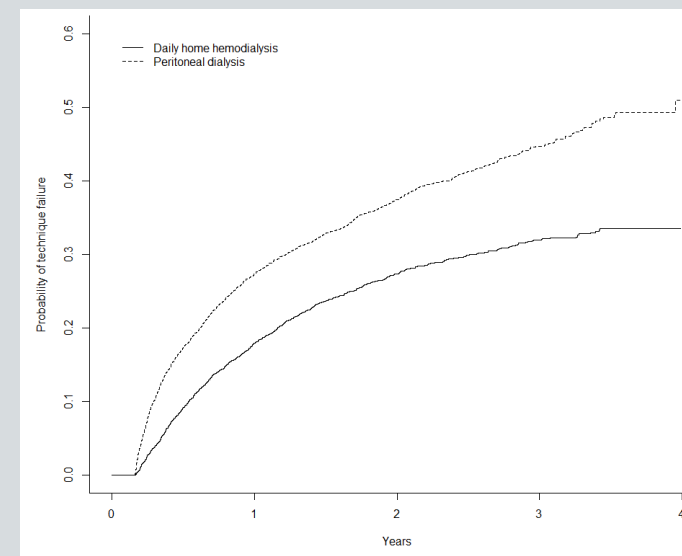
## Methods

- ♦ NxStage Medical, Inc., records and United States Renal Data System (USRDS) standard analysis files were linked.
- ♦ From NxStage records, we identified patients who initiated DHH between January 1, 2007, and June 30, 2010.
- ♦ From USRDS standard analysis files, we identified patients who initiated PD (for the first time) between October 1, 2006, and September 30, 2010.
- ♦ For each DHH patient, we selected 1 matched PD patient according to the date of home dialysis initiation, 4 blocking factors, and a 33-factor propensity score of DHH initiation.
  - ♦ Blocking factors were duration of ESRD ( $\leq 6$ ,  $>6$  months), Medicare Part D enrollment, hospital before home dialysis initiation (0,  $\geq 1$  admission during prior 3 months), and dialysis provider (DaVita, other).
- ♦ We followed patients from home dialysis initiation to the earliest of home dialysis cessation, kidney transplant, death, or December 31, 2010.
- ♦ For DHH, technique failure was identified from NxStage records.
- ♦ For PD, technique failure was identified from USRDS data, with the additional requirement of no re-initiation of PD within 2 subsequent months.

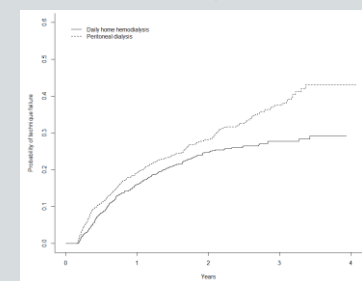
## Results

- ♦ We identified 4460 DHH and 4460 matched PD patients.
- ♦ All baseline characteristics were balanced (absolute standardized differences  $< 10\%$ ).
- ♦ The cumulative incidence of technique failure for DHH versus PD was:
  - ♦ At 6 months, 9.1% versus 17.3%.
  - ♦ At 12 months, 17.9% versus 27.3%.
  - ♦ At 24 months, 27.3% versus 37.5%.
  - ♦ At 36 months, 31.9% versus 44.7%.
- ♦ From Fine-Gray regression of cumulative incidence, the technique failure hazard ratio (HR) for DHH versus PD was 0.62 (95% confidence interval, 0.58-0.67).
- ♦ In patients ( $n = 1368$  per group) initiating home dialysis  $\leq 6$  months after the onset of ESRD, the cumulative incidence of technique failure for DHH versus PD was:
  - ♦ At 6 months, 8.3% versus 11.1%.
  - ♦ At 12 months, 16.0% versus 19.1%.
  - ♦ At 24 months, 24.7% versus 28.2%.
  - ♦ At 36 months, 27.7% versus 37.5%.
- ♦ In patients initiating home dialysis  $\leq 6$  months after the onset of ESRD, the technique failure HR for DHH versus PD was 0.70 (0.60-0.82).
- ♦ In contrast, in patients initiating home dialysis  $>6$  months after the onset of ESRD, the technique failure HR for DHH versus PD was 0.60 (0.55-0.65).

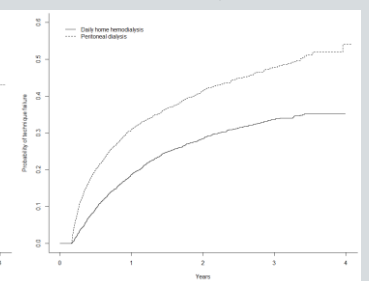
Cumulative incidence of technique failure for DHH and matched PD patients



Cumulative incidence of technique failure for DHH and matched PD patients  
ESRD duration  $\leq 6$  months at home dialysis initiation



Cumulative incidence of technique failure for DHH and matched PD patients  
ESRD duration  $>6$  months at home dialysis initiation



## Conclusions

- ♦ DHH was associated with lower risk of technique failure than PD.
- ♦ Even among patients who initiated home dialysis within 6 months of the onset of ESRD, the risk of technique failure was 30% lower for DHH than for PD patients, resulting in a 3% difference in absolute risk at 1 year after home dialysis initiation.
- ♦ Among patients who initiated home dialysis after  $>6$  months following the onset of ESRD, the risk of technique failure was 40% lower for DHH than for PD patients.
- ♦ Further study is needed to identify key differences in the distribution of causes of technique failure for each of the home dialysis modalities.
- ♦ Further study is also needed to assess whether relative risks of technique failure vary by dialysis provider, particularly since the advent of the Medicare ESRD Prospective Payment System.
- ♦ Although this study is limited by the possibility of residual confounding, these data suggest that marginal upfront costs of training for home hemodialysis versus PD are at least partially compensated by increased persistence on home dialysis.