Lower Risk of Hospitalization in Daily Home Hemodialysis versus Peritoneal Dialysis Patients

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Introduction
• Both frequent hemodialysis (HD) and peritoneal dialysis (PD) offer benefits and risks regarding cardiovascular morbidity and infection.

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 DHHD between January 1, 2007, and June 30, 2010.
• From USRDS standard analysis files, we identified patients who initiated PD (the first time) between October 1, 2006, and September 30, 2010.
• We retained the subset of these patients with Medicare coverage for ≥3 months before home dialysis initiation.
• For each DHHD 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 DHHD initiation.
• Blocking factors were duration of ESRD (≤6, >6 months), Medicare Part D enrollment, hospital before home dialysis initiation (0, ≥1 admission during 3 preceding months), and dialysis provider (DaVita, other).
• In intention-to-treat (ITT) analysis, we followed patients from home dialysis initiation to the earlier of death or December 31, 2010.
• In on-treatment (OT) analysis, we also censored patients at the cessation of home dialysis.
• Admissions were ascertained from Medicare Part A claims and causes of admission from principal diagnoses.

Results
• We identified 3560 DHHD and 3560 matched PD patients. Standard baseline characteristics were balanced (absolute standardized differences <10%).
• In ITT analysis, all-cause hospitalization rates per patient-year were:
  - For admissions, 1.71 versus 1.96 for DHHD versus PD, respectively.
  - For hospitalized days, 10.2 versus 12.2 for DHHD versus PD, respectively.
• The ITT all-cause admission hazard ratio (HR) was 0.92 (95% confidence interval, 0.89–0.95) for DHHD versus PD.
• For heart failure, 0.80 (0.71–0.89) and 0.89 (0.85–0.94), respectively.
• For heart failure, 0.80 (0.71–0.91).
• For hypertension, 0.77 (0.69–0.87).
• For bacteremia and sepsis, 1.25 (0.74–2.14).
• For access infection (including peritonitis), 0.88 (0.79–0.98).
• For cardiovascular disease, 0.89 (0.75–1.06).
• For infection, 1.01 (0.87–1.18).

Conclusions
• DHHD was associated with lower risk of hospitalization than PD in multiple dimensions, including:
  - All-cause admission.
  - Hospitalized days.
  - Specific admissions.
• Subsequent admissions.
• Admissions due to cardiovascular disease.
• Admissions due to infection.
• Admissions due to infection, and specifically access infection.
• Hospitalization shortly after initiation of dialysis treatment (OT) was statistically similar for DHHD versus PD, but admissions due to cardiovascular disease were less likely in DHHD.
• All observational studies are limited by the possibility of residual confounding. Missing from this study are data regarding the rationale for initiating PD in existing dialysis patients who had undergone in-center HD for years beforehand.
• Updated studies are needed to assess relative risks of hospitalization for DHHD versus PD in patients who initiated home dialysis after the advent of the Medicare ESRD Prospective Payment System.
• Studies are also needed to assess relative Medicare costs due to hospitalization for DHHD versus PD.