

Evaluation of Short Daily Home Dialysis with NxStage System One

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Background: Complexity of traditional dialysis equipment has limited widespread adoption of home dialysis. We prospectively studied center-based versus home-based daily hemodialysis (SDHD) with the NxStage System One portable device.

Methods: We conducted a prospective, 2-treatment, 2-period, open label, cross-over study of In-Center (IC) SDHD versus Home SDHD in 32 patients at 6 centers: an 8-week IC SDHD phase, a 2-week washout period, and an 8-week home SDHD phase. We retrospectively collected baseline data on conventional HD treatments in 26 patients.

Results: The primary efficacy endpoint, delivery of at least 90% of prescribed fluid volume, was achieved in 98.5% of treatments in the IC and 97.3% at home. The primary safety endpoint, the composite rate of adverse events, was significantly higher for the IC phase (5.31 per 100 treatments) compared with the home phase (2.14 per 100 treatments; $P=0.007$). We compared retrospective data for the 26 patients who completed the home phase previously treated with thrice-weekly dialysis; one patient previously on daily dialysis was excluded. Systolic BP was 150 +/- 22.5 on thrice-weekly dialysis compared to 133 +/- 20.5 and 127 +/- 21.2 avg IC and avg home daily, a change of -17.6 and -23.9 mmHg respectively ($p<0.0001$). Diastolic BP fell -6.9 mmHg home vs thrice-weekly, $p=0.01$. Number of meds fell in 14 patients and rose in one; relative dose of medication had a significant decline from 2.1 to 0.73 overall.

Conclusions: Daily home hemodialysis with a small, easy-to-use, HD device utilizing premixed, prepackaged dialysate is a safe and effective dialysis option for ESRD patients. Number of medications and overall anti-hypertensive dose decreased on SDHD and was associated with a significant lowering of systolic blood pressure. SDHD holds promise for the future and this technology enables patients to perform dialysis at home