NxSTAGE® Home Therapies

Clinical Evidence

More frequent and longer hemodialysis treatments are associated with significant improvements in cardiovascular outcomes.[1]

Culleton B, Walsh M, Klarenbach SW, et al. Effect of frequent nocturnal hemodialysis vs conventional hemodialysis on left ventricular mass and quality of life: a randomized controlled trial. *Journal of the American Medical Association*. 2007;298(11):1291-1299.

Left ventricular (LV) hypertrophy is common among incident dialysis patients and has been shown as an independent predictor of cardiovascular disease and death.

The effects of frequent nocturnal hemodialysis vs. conventional hemodialysis on change in LV mass and health-related quality of life over 6 months were compared.

Significant Reductions in Left Ventricular Mass

P <0.05 and >0.01

Characteristic	Nocturnal Hemodialysis (n = 26)		Conventional Hemodialysis (n = 25)		Between-Group Comparison (95% CI)
LV mass, mean (SD), g					
Baseline	177.4 (51.1)		181.5 (92.3)		–4.1 (–49.5 to 41.3)
Exit	163.6 (45.2)		183.0 (84.2)		–19.4 (–60.5 to 21.7)
Change	**–13.8 (23.0)**	**7.8%**	**1.5 (24.0)**	**-0.8%**	**–15.3 (–29.6 to –1.0)**
LV mass, mean (SD), g/m²					
Baseline	92.4 (26.6)		101.8 (50.6)		–9.4 (–34.0 to 15.2)
Exit	85.3 (23.2)		102.8 (46.1)		–17.5 (–39.8 to 4.6)
Change	**–7.1 (12.4)**	**7.7%**	**1.0 (14.1)**	**-0.9%**	**–8.1 (–16.2 to –0.1)**

Primary results associated more frequent nocturnal hemodialysis with significant reductions in LV mass by a mean of 13.8 g. Findings showed LV mass increased by 1.5 g in the conventional hemodialysis group.

Secondary outcomes showcased a reduction or discontinuation of prescribed antihypertensive medications and oral phosphate binders.

▼ **62%**
of nocturnal patients reduced or discontinued antihypertensive medications vs. 12% of patients in the control arm.

▼ **73%**
of nocturnal patients reduced or discontinued oral phosphate binders vs. 12% of patients in the control arm.

P < 0.001

Regression of LV mass, with more frequent or longer duration treatments may help to improve outcomes and serve as a target to modify the risk of major cardiovascular events and survival.

Additional positive findings in the nocturnal arm were noted in the Kidney Disease Quality of Life questionnaire, from baseline to 6 months, in the domains in the effects of kidney disease and burden of kidney disease. There was an improved perceived effect and burden of therapy with mean changes of 8.6 and 9.4 respectively.

Part of this explanation may relate to the reported decrease in medications.

Study Design: This study was a 2-group, parallel, randomized controlled trial of 52 patients age 18 or older from 10 hemodialysis units at 2 Canadian universities between August 2004 and December 2006. Those patients meeting the inclusion and exclusion criteria were randomized to either nocturnal hemodialysis 6 times per week or conventional hemodialysis 3 times per week. The primary outcome measured was change in LV mass as measured with cardiovascular magnetic resonance imaging over a 6-month period. Secondary outcomes included health-related quality of life, blood pressure, mineral metabolism, and use of medications.

Important Information: The reported benefits of home hemodialysis (HHD) may not be experienced by all patients. The NxStage System is a prescription device. All forms of hemodialysis involve some risks. When vascular access is exposed to more frequent use, infection of the site, and other access related complications may also be potential risks. Certain risks associated with hemodialysis treatment are increased when performing nocturnal therapy due to the length of treatment time and because the patient and care partner are sleeping

References: 1. Culleton BF, Walsh M, Klarenbach SW, et al. Effect of frequent nocturnal hemodialysis vs conventional hemodialysis on left ventricular mass and quality of life: a randomized controlled trial. *JAMA*. 2007;298(11):1291-1299.

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