

Patients receiving frequent hemodialysis have better health-related quality of life compared to patients receiving conventional hemodialysis

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Most patients with end-stage kidney disease value their health-related quality of life (HRQoL) and want to know how it will be affected by their dialysis modality. We extended the findings of two prior clinical trial reports to estimate the effects of frequent compared to conventional hemodialysis on additional measures of HRQoL. The Daily Trial randomly assigned 245 patients to receive frequent (six times per week) or conventional (three times per week) in-center hemodialysis. The Nocturnal Trial randomly assigned 87 patients to receive frequent nocturnal (six times per week) or conventional (three times per week) home hemodialysis. All patients were on conventional hemodialysis prior to randomization, with an average feeling thermometer score of 70 to 75 (a visual analog scale from 0 to 100 where 100 is perfect health), an average general health scale score of 40 to 47 (a score from 0 to 100 where 100 is perfect health), and an average dialysis session recovery time of 2 to 3 hours. Outcomes are reported as the between-treatment group differences in one-year change in HRQoL measures and analyzed using linear mixed effects models. After one year in the Daily Trial, patients assigned to frequent in-center hemodialysis reported a higher feeling thermometer score, better general health, and a shorter recovery time after a dialysis session compared to standard thrice-weekly dialysis. After one year in the Nocturnal Trial, patients assigned to frequent home hemodialysis also reported a shorter recovery time after a dialysis session, but no statistical

difference in their feeling thermometer or general health scores compared to standard home dialysis schedules. Thus, patients receiving day or nocturnal hemodialysis on average recovered approximately one hour earlier from a frequent compared to conventional hemodialysis session. Patients treated in an in-center dialysis facility reported better HRQoL with frequent compared to conventional hemodialysis.

Kidney International (2017) ■, ■-■; <http://dx.doi.org/10.1016/j.kint.2016.10.033>

KEYWORDS: clinical trial; daily hemodialysis; health-related quality of life; nocturnal hemodialysis

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There is a growing effort to make health care and health policies more patient-centered. This requires greater knowledge of how a treatment affects patient-reported outcomes, where information comes directly from a patient without interpretation of their treatment response by a clinician.¹ Most patients with end-stage kidney disease place enormous value on their health-related quality of life (HRQoL), even over survival, and want to know how their HRQoL will be affected by their choice of dialysis modality.² More than 2 million people worldwide receive conventional hemodialysis 3 sessions per week to sustain life.³ More frequent hemodialysis (5 or 6 sessions per week) results in greater weekly solute and fluid removal, and may be associated with better HRQoL (as observed in small studies^{4,5}). We previously reported the primary results of 2 parallel 12-month follow-up randomized controlled trials of frequent hemodialysis (Frequent Hemodialysis Network [FHN] Daily and Nocturnal Trials).^{6,7} One of 2 coprimary outcomes reported in the primary results of these trials was the baseline

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Received 4 August 2015; revised 19 October 2016; accepted 27 October 2016

to 12-month change in a commonly used patient-reported physical health survey score (the Physical Health Composite from the RAND Short-Form 36-item survey⁸). After 1 year in the Daily Trial, patients assigned to frequent versus conventional in-center hemodialysis reported a better score.⁶ After 1 year in the Nocturnal Trial, we could not reliably determine whether patients assigned to frequent nocturnal versus conventional hemodialysis truly differed in this score, as the trial did not meet its recruitment target, resulting in estimates with wide confidence intervals.⁷ Several additional patient-reported measures of general well-being were collected in the FHN trials to better assess the multidimensional concept of HRQoL. These measures have not been reported elsewhere. In this article, we investigated whether frequent hemodialysis compared with conventional hemodialysis affects 4 measures of HRQoL collected in the 2 FHN trials.

RESULTS

Patient selection from both trials is presented in Figure 1a and 1b. Baseline characteristics of patients in each trial are summarized in Tables 1 and 2. As confirmed in previous

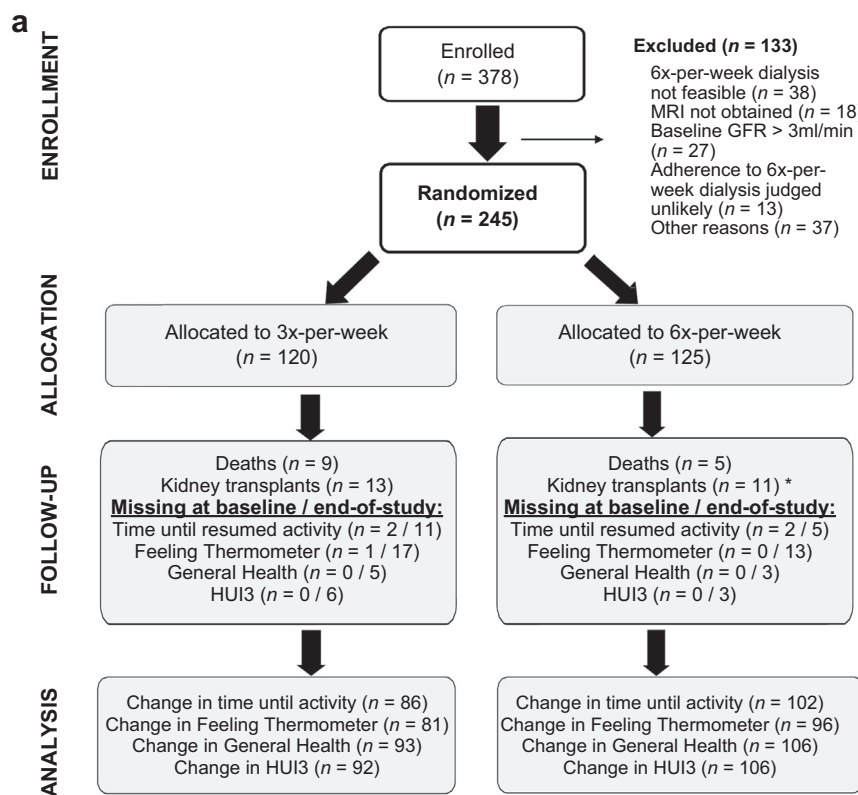
reports, the baseline characteristics of patients assigned to frequent versus conventional hemodialysis were similar in each trial.

The baseline and follow-up HRQoL measures for patients assigned to frequent versus conventional hemodialysis in each trial are presented in Table 3. The values of the baseline HRQoL measures were similar in patients assigned to frequent compared with conventional hemodialysis in both trials, with the exception of slight differences in the health utilities index and general health scale scores in the Nocturnal Trial.

The completeness of each HRQoL measure in follow-up is also presented in Table 3. Each measure was completed by more than 80% of eligible patients, after patients who died or received a kidney transplant in follow-up were excluded from consideration (14 patients in the Daily Trial and 3 patients in the Nocturnal Trial, and 24 patients in the Daily Trial and 5 patients in the Nocturnal Trial, respectively).

Daily Trial

Feeling thermometer. The baseline mean (SD) score was 74 (19) in patients assigned to frequent hemodialysis and



*Two patients received transplants late during follow-up and were included in the analyses for 12-month changes for the HUI3, General Health subscore and the Health Thermometer. One of the two transplanted patients also contributed to the analysis for 12-month changes in postdialysis recovery time.

Figure 1 | Flow diagram for Daily Trial and Nocturnal Trial. (a) Flow diagram for Daily Trial showing the number of patients enrolled and assigned to each study arm (intervention/control), and number of patients who completed the baseline and 12-month HRQoL measures, including reasons for dropout. (continued)

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