

# Switching to thrice weekly in-centre nocturnal haemodialysis was associated with improvements in patient outcomes compared to standard treatment

Graham-Brown, M.P.M.<sup>1,2</sup>, Churchward, D.R.<sup>1,2</sup>, Smith, A.C.<sup>1,2</sup>, Baines, R.J.<sup>1,2</sup>, Burton, J.O.<sup>1,2</sup>

<sup>1</sup>John Walls Renal Unit, Leicester General Hospital, <sup>2</sup>Dept of Infection, Immunity and Inflammation, University of Leicester

## Background

- There are currently large numbers of patients undertaking unit based HD programs in the UK;
- Rigid programmes of four hours three times a week in designated time slots are usual;
- Flexibility in dialysis schedules is rare, which has significant implications for patient quality of life and satisfaction;
- In-centre nocturnal HD (INHD) offers the opportunity to dialyse overnight whilst asleep for extended duration;
- Previous studies have shown that INHD improves clinical parameters, quality of life, cognition and sleep quality.
- Moreover, the benefits of increasing dialysis duration are indicated by the reduced rates of mortality seen in Tassin, France where eight hour sessions thrice weekly are common.

## Aim

In response to patient feedback, we set up a pilot project to explore the feasibility of delivering an INHD programme at the Leicester General Hospital Outpatient Dialysis Unit. Currently we are the only NHS centre to run an INHD program in the UK. This service evaluation aimed to explore cost-effectiveness, deliverability, sustainability, safety, patient satisfaction and patient and staff acceptability.

## Methods

In the summer of 2014, ten prevalent (>3 months) HD patients switched from standard day time in centre HD of four hours three times per week to in-centre nocturnal HD (INHD).

At the time of switching to INHD, patient reported quality of life outcomes were recorded using three validated questionnaires:

- 1.The EQ-5D
- 2.The Hospital Anxiety and Depression Scores (HADS)
- 3.The short form-12 (SF12)

Patients completed the same questionnaires after four months on INHD.

Biochemical and haematological data, dialysis duration and adequacy, pre-dialysis blood pressures, medications and demographic information were collected at baseline and 4 months.

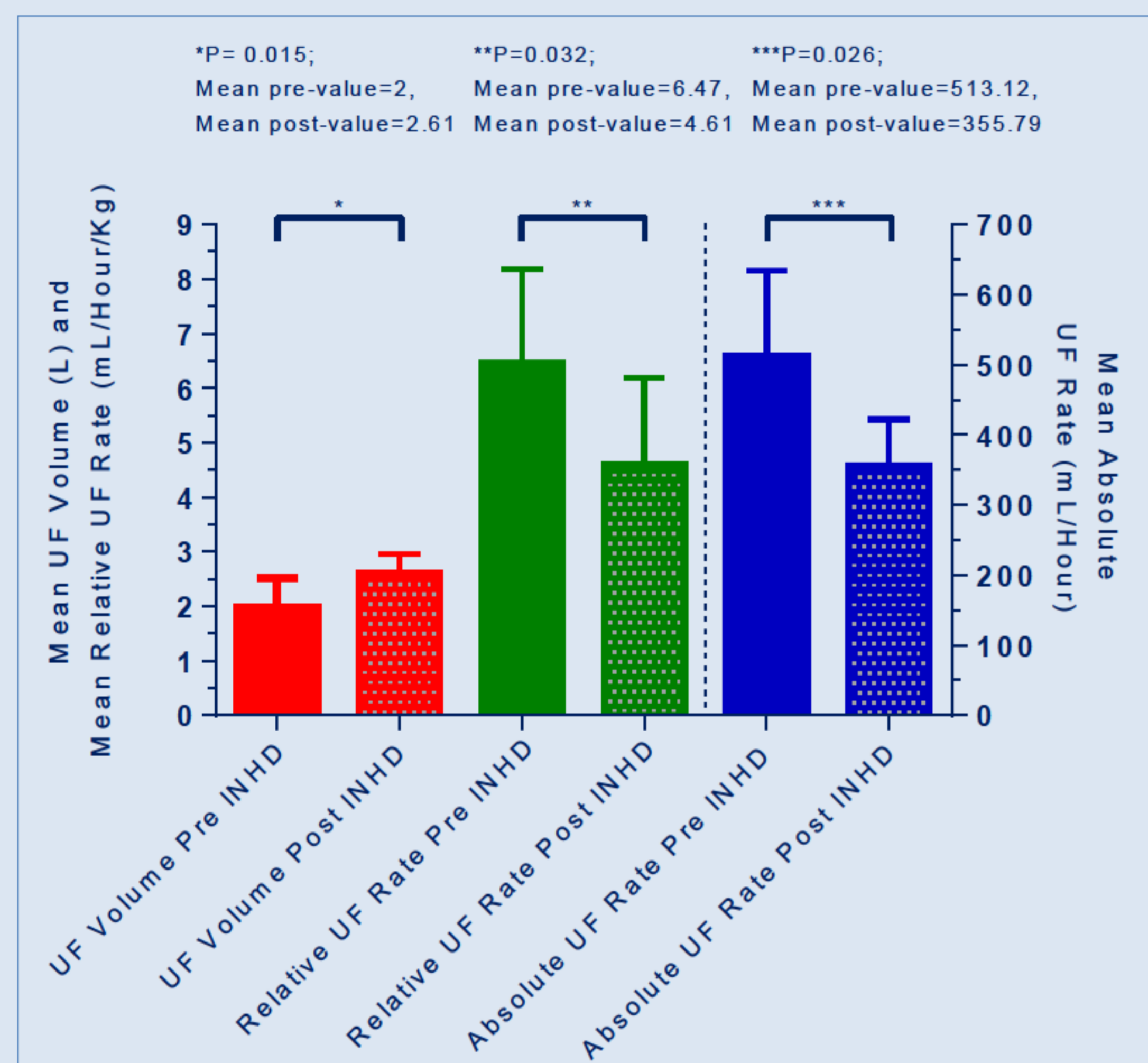


Figure 1. Graph of mean UF data for the group. Individual values were averaged over the month preceding INHD and the fourth month whilst on INHD.

Table 1. Changes in non-significant QOL measures, biochemical and haematological parameters measured prior to starting INHD and 4 months after starting INHD.

Variable	Pre-INHD (mean +/- SD)	After 4 months INHD (mean +/- SD)	P-Value (Paired t-test)
EQ-5D descriptive score	0.473 (±0.397)	0.763 (±0.152)	0.096
SF-12 Mental component score	41.1 (±14.85)	50.9 (±8.09)	0.152
URR	71.57% (±2.3)	80.43% (±3.1)	<0.001*
PO <sub>4</sub> (mmol/L)	1.73 (±0.6)	1.2 (±0.2)	0.08
Adjusted Ca (mmol/L)	2.33 (±0.1)	2.30 (±0.1)	0.637
Hb (g/dL)	104.7 (±20.9)	108.0 (±16.6)	0.582
Pre-HD SBP (mmHg)	143.3 (±22.2)	140.0 (±11.5)	0.644
Pre-HD DBP (mmHg)	73.6 (±11.4)	74.3 (±9.3)	0.875

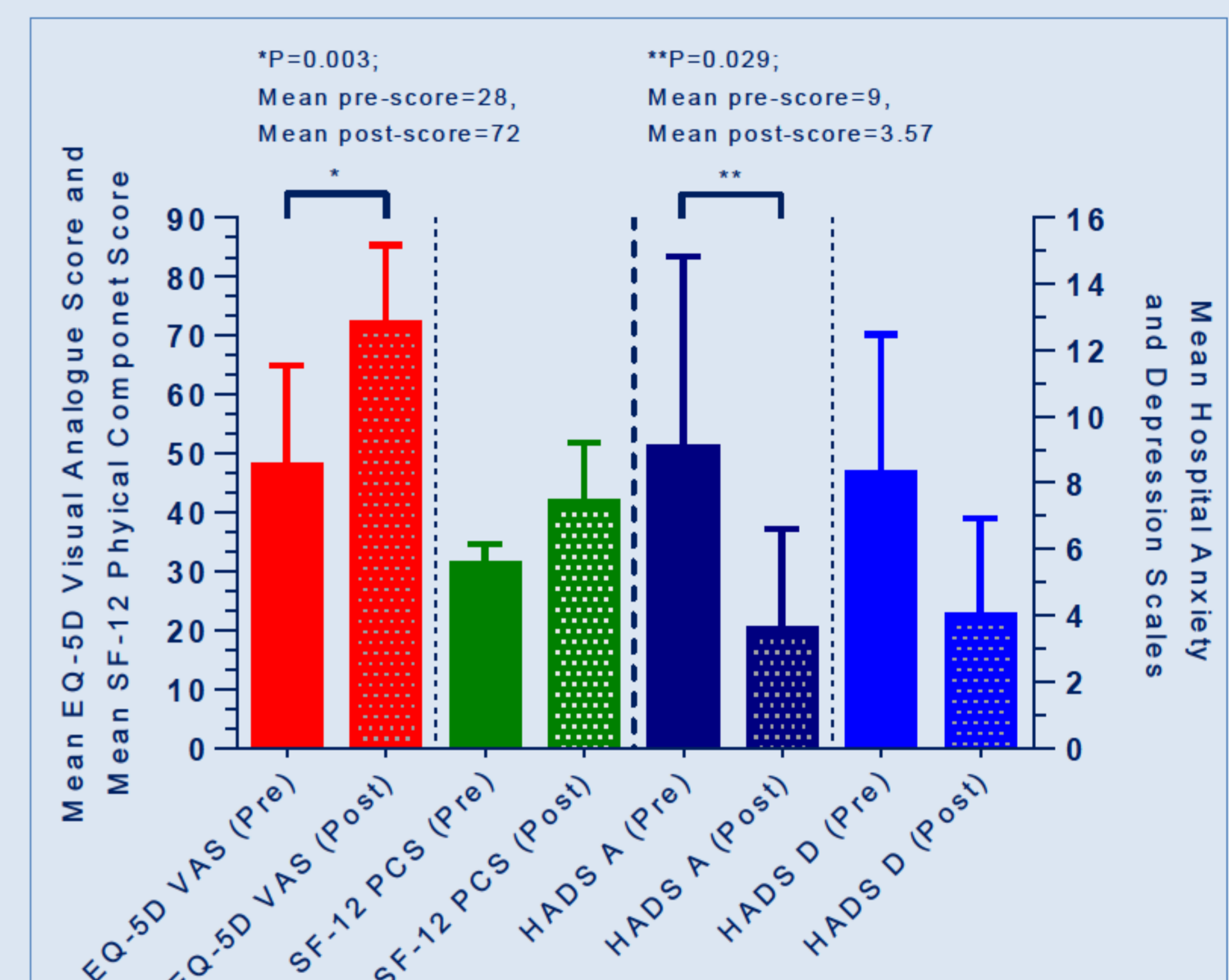


Figure 2. Graph showing significant and near significant quality of life measures pre INHD and one month following INHD. Mean SF-12 physical component scores were pre= 31.31, post=41.69 (P=0.052); Mean HADS Depression score were pre=8.29, post=4 (0.065).



Figure 3. Word cloud showing feedback from patients describing their experience of undergoing INHD.

## Results

### After changing to INHD :

- Patients had significantly lower UF rates despite significantly larger interdialytic gains, (fig. 1).
- Patients reported significantly improved quality of life (fig.2).
- We saw a trend to improved phosphate control (Table 1).

Three of the ten patients failed to complete the two-week run-in period and reverted to their daytime dialysis slots. The reasons given were: Poor quality of sleep, anxiety around needle displacement and concerns about being away from family members. The remaining seven patients all completed four months of INHD and gave universally positive feedback of their experiences that are summarized in (fig. 3).

## Conclusions

INHD offers many potential medical benefits for patients that need further investigation with clinical trials, but even if the medical benefits are only small this is a service that should be developed on the basis that it enhances patient satisfaction alone.