

# EXTENDED HOURS IN-CENTRE NOCTURNAL HAEMODIALYSIS, A REGIONAL AUSTRALIAN PERSPECTIVE

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## Background

There is an increasing need for renal replacement therapy in regional parts of Australia. The benefits of home based nocturnal haemodialysis compared to conventional (which involves three sessions of four hours per week) have been well established.<sup>1</sup> However, home based therapies may not be achievable due to patient or residential factors. This is particularly relevant to the regional and remote Australian population, which has a high prevalence of end stage kidney disease.<sup>2</sup>

There is evidence that extended session (approximately 8 hours duration) thrice weekly in-centre nocturnal haemodialysis is associated with better patient outcomes than conventional haemodialysis, including mortality, hospitalisations and biochemical parameters.<sup>3</sup>

We propose that there are benefits of extended hours nocturnal in-centre haemodialysis compared to conventional haemodialysis in a regional Australian population.

## Aim

To compare the quality of life of patients whilst on a conventional haemodialysis regime with the quality of life on an extended hours in-centre nocturnal haemodialysis.

## Method

We conducted a prospective longitudinal study. Current patients on haemodialysis at Ballarat Health Services who elected to change to the nocturnal haemodialysis regime independently of the study were consented to participate (n=13). Data was collected pre and post the commencement of extended hours in-centre nocturnal haemodialysis.

The primary outcome was quality of life measured by the validated Palliative Care Outcome Scale (POS).<sup>4</sup> Secondary outcome measures included haemoglobin (Hb), phosphate, calcium, urea reduction ratio (URR), albumin, alkaline phosphatase (ALP) and withdrawal.

Analysis was performed using paired t-tests.

Average Age (years)	61.84 ± 12.51
Gender Female %	30.77%
Vascular access AV fistula %	100%

**Table 1: Patient baseline characteristics**

## References

1. Agar J, Nocturnal haemodialysis in Australia and New Zealand (Review Article) *Nephrology* 2005, 10 (3), 222–230
2. ANZDATA Registry. 39th Report, Chapter 4: Haemodialysis Australia and New Zealand Dialysis and Transplant Registry, Adelaide, Australia. 2017. Available at: <http://www.anzdata.org.au>
3. Chazot C, Ok E, Lacson E Jr, Kerr PG, Jean G, Misra M Thrice-weekly nocturnal hemodialysis: the overlooked alternative to improve patient outcomes. *Nephrology Dialysis Transplant* 2013 28:2447–2455
4. Raj R, Ahuja K, Frandsen M, Murtagh F, Jose M Validation of the IPOS-Renal Symptom Survey in Advanced Kidney Disease: A Cross-sectional Study. *Journal Pain Symptom Management* 2018, 56(2), 281-287

## Results

The initial cohort (n=13) was reduced in the first six months of the nocturnal program due to one withdrawal (patient preference), one death (unrelated to dialysis) and two renal transplants. In addition, three patients had initiated haemodialysis within the 6 months prior to the nocturnal haemodialysis program and consequently lacked data on the conventional regime. There was no difference in average POS score on conventional haemodialysis (n=7; 11.85±3.5) compared to extended hours nocturnal haemodialysis (n=7; 14.28±4.03) at 6 months (p=0.198).

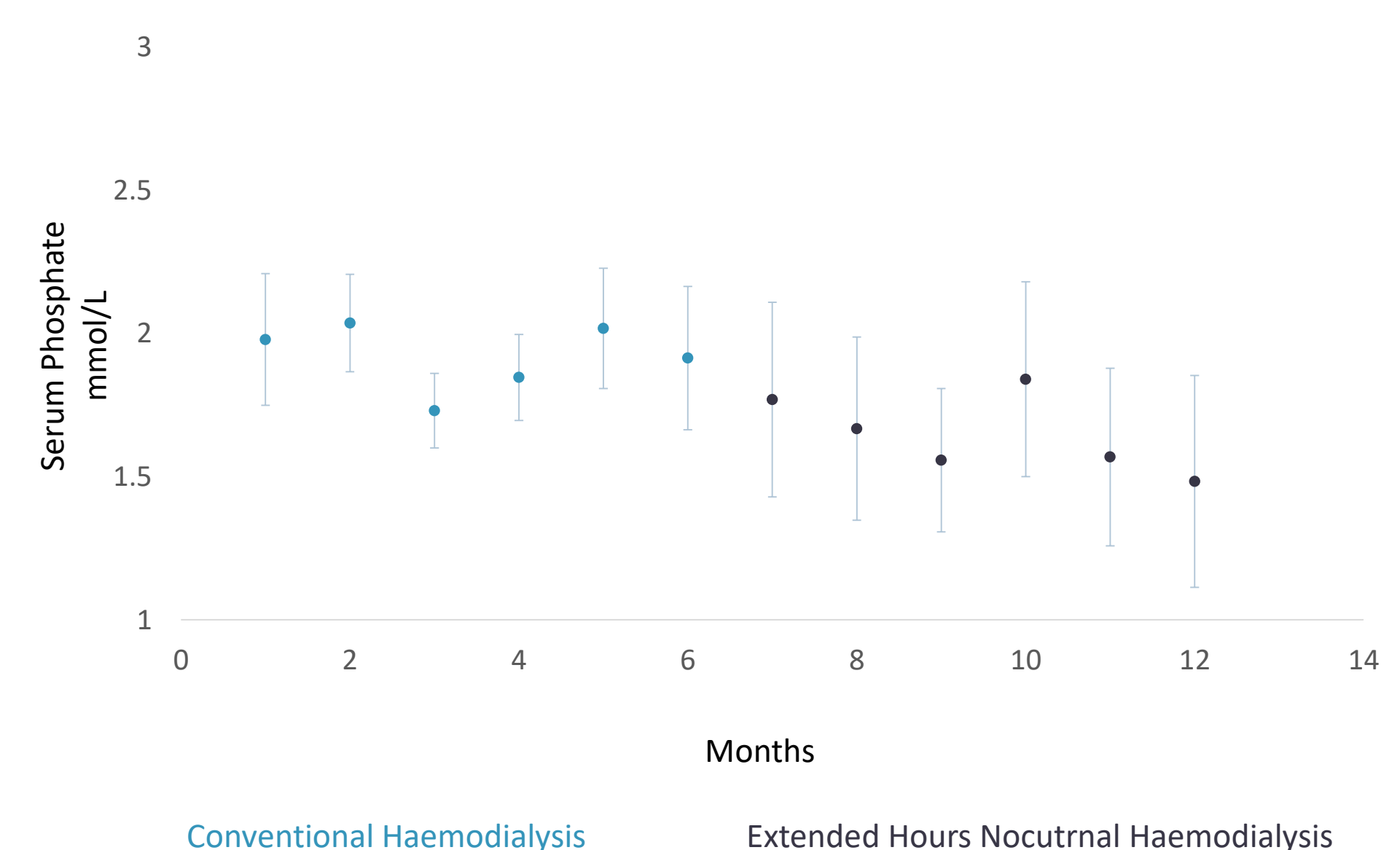
Serum phosphate was lower on extended hours nocturnal haemodialysis (n=8; 1.66±0.29) compared to conventional haemodialysis (n=8; 1.92±0.18) at 6 months (p=0.036). The URR was higher on the nocturnal regime (n=7; 76.65%) than on conventional (n=7; 66.18%) when comparing 3 monthly URR during the 6 month period (p=.031). There was no difference in average Hb or calcium between the regimes.

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	Conventional n=8	Nocturnal n=8	p value
Haemoglobin	108.52±10.20	99.67±8.87	p=0.234
Phosphate	1.92±0.50	1.66±0.82	p=0.036
Calcium	2.34±0.16	2.38±0.12	p=0.177
Albumin	36.21±0.91	35.29±2.22	p=0.122
ALP	119.38±42.43	146.89±51.05	p=0.003

**Table 2 Secondary outcome results**

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**Figure 1: Average Serum Phosphate**

## Conclusion

Extended hours in-centre nocturnal haemodialysis appears to be an alternative dialysis regime with potential health benefits, warranting further study. The choice of regime is dependent on patient preference. Study limitations include the small size and observational nature.

