

# Serum Albumin and Phosphorus Control are Superior in Patients on Nocturnal, In-Center Hemodialysis Compared to Those on Conventional, In-Center Hemodialysis

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## INTRODUCTION

Protein intake is important to dialysis patients but may contribute to hyperphosphatemia due to the phosphate content of protein. Efforts to improve the nutritional status of patients must be balanced with strategies to reduce the resultant phosphate load. In addition to dietary counseling and binders, modality choice may also assist with this. Conventional, in-center hemodialysis (ICHD) is typically performed 3x/week for 3-4 hours/session while nocturnal, in-center hemodialysis (NHD) is performed 3x/week for a minimum of 6 hours/session.

Objective: To evaluate if the time-on-dialysis differences between NHD and ICHD patients affect nutrition and phosphorus status.

## METHODOLOGY

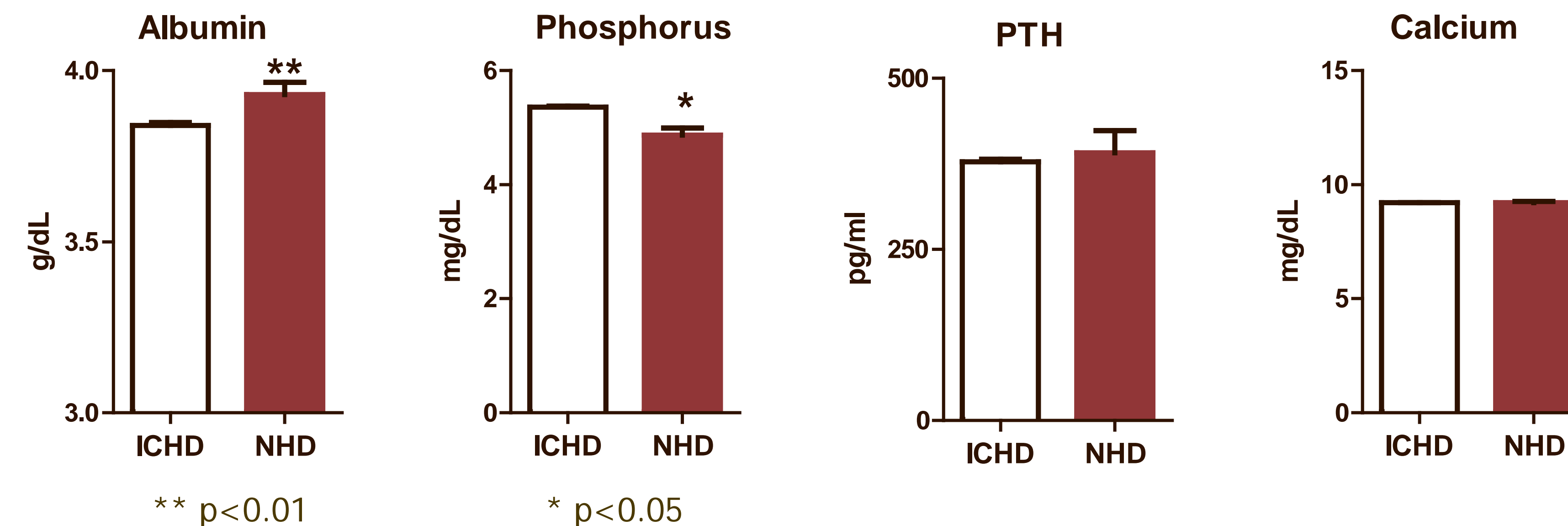
- Using an observational, cross-sectional design, we compared markers of nutritional and mineral bone disorder status between 2 dialysis modalities, NHD and ICHD.
- Patients were classified according to dialysis modality between January 2008 and August 2008 and laboratory values were based on monthly lab draws collected in August 2008.
- Demographics for the two groups are described in Table 1.

## RESULTS

Table 1. Demographics by modality

	Conventional, in-center hemodialysis	Nocturnal, in-center hemodialysis	p-value
<i>n</i>	87,711	572	
Age (yrs)	61.4 ± 0.05	50.4 ± 0.55	< 0.001
% male	55	72	< 0.001
% African American	39	44	< 0.01
Vintage (yrs)	3.8 ± 0.01	4.4 ± 0.16	< 0.05
% Diabetics	69	70	NS

Figure 1. Serum albumin and mineral bone disorder marker levels



## CONCLUSIONS

- NHD patients were younger, on hemodialysis longer, and more likely to be male or African American than ICHD patients (Table 1).
- Serum albumin levels were significantly higher in NHD compared to ICHD patients (Figure 1).
- A significantly higher percent of NHD patients achieved albumin levels of  $\geq 3.5$  g/dL ( $91 \pm 14\%$ ) compared to ICHD ( $82 \pm 1\%$ ,  $p<0.05$ ).
- Significantly more NHD patients achieved adequate serum  $PO_4$  ( $\leq 5.5$  mg/dL) ( $65 \pm 8\%$ ) compared to ICHD ( $63 \pm 1\%$ ,  $p<0.05$ ).
- Serum calcium levels did not differ significantly between the two populations.

## KEY LEARNINGS

- Our findings in a large population of patients are consistent with the hypothesis that NHD, unlike ICHD, permits adequate protein intake without exacerbating hyperphosphatemia.
- Given the known relationship between malnutrition, hyperphosphatemia and mortality, our results lend support to prospective clinical trials to assess whether NHD affords direct survival benefits to patients.
- The advantages of protein and phosphorus status in NHD patients are associative. Whether this benefit can be realized by conversion to NHD needs to be confirmed with a matched cohort or prospective randomized, controlled trial.

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