

# Supplementary materials

**Table S1. Dialysate compositions and the numbers of users**

Dialysate	Na <sup>+</sup> mEq/L	K <sup>+</sup> mEq/L	Ca <sup>++</sup> mEq/L	Mg <sup>++</sup> mEq/L	Cl <sup>-</sup> mEq/L	HCO <sub>3</sub> <sup>-</sup> mEq/L	CH <sub>3</sub> COO <sup>-</sup> mEq/L	Citrate <sup>3+</sup> mEq/L	Glucose mg/dL	Users N (%)
A	140	2.0	2.5	1.0	114.5	25	8	0	150	86 (5.1%)
B	138	2.0	2.5	1.0	110	28	8	0	100	249 (14.7%)
C	140	2.0	2.75	1.0	112.25	27.5	8	0	125	360 (21.2%)
D	140	2.0	3.0	1.0	110	30	8	0	100	735 (43.3%)
E	140	2.0	3.0	1.0	113	25	10	0	100	102 (6.0%)
F	140	2.0	3.0	1.0	113	25	10.2	0	100	66 (3.9%)
G	140	2.0	3.0	1.0	111	35	0	2.0	150	98 (5.8%)

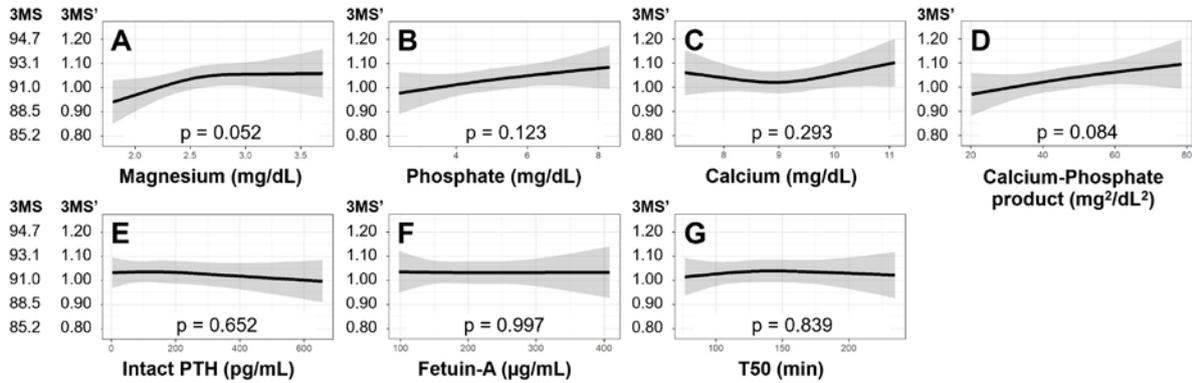
The table gives seven different dialysate compositions used for patients in this study and the numbers (proportions) of patients. Note that no dialysate contained phosphate.

**Table S2. Proportions of patients with low serum magnesium and low serum phosphate levels by 3MS quartile**

Low serum levels	Q1 (N = 309)	Q2 (N = 299)	Q3 (N = 356)	Q4 (N = 243)	p-value	Missing, N (%)
Serum magnesium < 1.8 mg/dL	2 (0.7%)	1 (0.3%)	1 (0.3%)	1 (0.4%)	0.895	0 (0%)
Serum phosphate < 4.0 mg/dL	76 (24.6%)	44 (14.7%)	51 (14.3%)	39 (16.0%)	0.002	0 (0%)
Serum phosphate < 3.5 mg/dL	33 (10.7%)	18 (6.0%)	22 (6.2%)	18 (7.4%)	0.097	0 (0%)
Serum phosphate < 3.0 mg/dL	16 (5.2%)	6 (2.0%)	9 (2.5%)	6 (2.5%)	0.094	0 (0%)

The table gives numbers (percentages) of patients with lower levels of serum magnesium and phosphate by quartile of 3MS. P-values by  $\chi^2$  test. Reference range of serum magnesium is between 1.8 and 2.6 mg/dL. The recommended range of serum phosphate is between 3.5 and 6.0 mg/dL according to the 2013 version of the clinical practice guideline for the management of chronic kidney disease-mineral and bone disorder by the Japanese Society for Dialysis Therapy.

Abbreviations: Q, quartile; 3MS, Modified Mini-Mental State examination.



**Figure S1. Associations of 3MS with seven MBD-related serum parameters by multivariable-adjusted nonlinear regression models (sensitivity analysis).**

Associations of 3MS and MBD-related serum parameters were examined by multivariable-adjusted nonlinear regression analysis using restricted cubic spline function. Solid lines and shaded area are regression lines and 95% confidence intervals. 3MS was mathematically transformed before entering the model:  $3MS' = 2 - \text{Log}_{10}(101 - 3MS)$ . Panels A through G show the results for serum magnesium, phosphate, calcium, calcium-phosphate product, intact PTH, magnesium, fetuin-A, and T50, respectively.

Abbreviations: 3MS, Modified Mini-Mental State examination; PTH, parathyroid hormone; T50, T50 calciprotein crystallization test.