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| **Supplementary Table 1**. Joint modeling results – longitudinal response is serum creatinine levels (n = 415) |
| **Longitudinal part (Linear mixed effects)\*** |
| Variable | Estimate (95% CI) |  | p value |
| Serum albumin a | 0.597 (0.211, 1.005) |  | 0.002 |
| Serum calcium a | 0.463 (0.088, 0.829) |  | 0.017 |
| BUN a | 0.049 (0.034, 0.065) |  | < 0.001 |
| HD history (Yes) † | 0.179 (-0.565, 0.905) |  | 0.630 |
| BMI | 0.067 (0.011, 0.126) |  | 0.013 |
| log(PTH) | 0.126 (-0.076, 0.332) |  | 0.221 |
| log(GFR) | -0.397 (-0.503, -0.287) |  | < 0.001 |
| Number of diseases b | -0.293 (-0.536, -0.053) |  | 0.018 |
| Transportation characteristic (High) † | -0.478 (-0.896, -0.058) |  | 0.019 |
| Age at PD initiation | -0.065 (-0.082, -0.049) |  | < 0.001 |
| **Survival part (Cox proportional hazard)\*\*** |
| Variable | Estimate (95% CI) | HR (95% CI) | p value |
| HD history (Yes) † | 1.219 (0.634, 1.735) | 3.38 (1.88, 5.67) | < 0.001 |
| Age at PD initiation | 0.027 (0.003, 0.046) | 1.027 (1.003, 1.05) | 0.011 |
| Number of diseases b | 0.457 (0.219, 0.685) | 1.58 (1.24, 1.98) | < 0.001 |
| BMI | 0.076 (0.012, 0.144) | 1.08 (1.01, 1.15) | 0.029 |
| BUN a | 0.001 (-0.026, 0.023) | 1.001 (0.97, 1.02) | 0.970 |
| Serum albumin a | -0.348 (-0.867, 0.416) | 1.42 (0.66, 2.38) ††† | 0.340 |
| WBC | 0.022 (-0.083, 0.136) | 1.02 (0.92, 1.14) | 0.718 |
| Peritonitis rate | 0.669 (0.376, 1.009) | 1.95 (1.46, 2.74) | < 0.001 |
| Transportation characteristic (High) † | 0.1175 (-0.327, 0.434) | 1.12 (0.72, 1.54) | 0.449 |
| HD history (Yes) † | 1.186 (0.678, 1.809) | 3.28 (1.97, 6.10) | < 0.001 |
| Creatinine ($α$) †† | -0.071 (-0.174, 0.021) | 1.07 (0.98, 1.19) ††† | **0.136** |
| **HR**: Hazard ratio; **BUN**: Blood urea nitrogen (mg/dL); **BMI**: Body mass index (kg/m2);**WBC**: White blood cell counts; **PTH**: Parathyroid hormone; **GFR**: Glomerular filtration rate† Model parameters were obtained for the group given in parenthesis.†† Serum creatinine levels are estimated from longitudinal part of the joint model.††† Hazard ratios were estimated for 1-unit decrease in corresponding predictors. a Averaged over follow-up period.b Total number of comorbid and renal diseases observed in a patient. |

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| **Supplementary Table 2**. Joint modeling results – longitudinal response is blood urea nitrogen levels (n = 415) |
| **Longitudinal part (Linear mixed effects)\*** |
| Variable | Estimate (95% CI) |  | p value |
| Serum creatinine a | 1.631 (1.602, 1.662) |  | < 0.001 |
| Serum albumin a | 0.176 (0.009, 0.330) |  | 0.047 |
| Age at PD initiation | 0.007 (-0.013, 0.001) |  | 0.071 |
| Number of diseases b | -0.615 (-0.693, -0.532) |  | < 0.001 |
| Transportation characteristic (High) † | -1.22 (-1.362, -1.071) |  | < 0.001 |
| log(GFR) | -0.331 (-0.364, -0.297) |  | < 0.001 |
| BMI | 0.763 (0.745, 0.782) |  | < 0.001 |
| **Survival part (Cox proportional hazard)\*\*** |
| Variable | Estimate (95% CI) | HR (95% CI) | p value |
| Serum creatinine a | -0.180 (-0.280, -0.084) | 1.20 (1.09, 1.32) ††† | < 0.001 |
| Serum albumin a | -0.651 (-1.631, -0.098) | 1.92 (1.10, 5.11) ††† | 0.040 |
| Age at PD initiation | 0.016 (-0.002, 0.033) | 1.02 (0.99, 1.03) | 0.090 |
| HD history (Yes) † | 1.026 (0.526, 1.480) | 1.69 (2.79, 4.39) | < 0.001 |
| Number of diseases b | 0.179 (-0.037, 0.405) | 1.19 (0.96, 1.50) | 0.103 |
| BMI | 0.088 (0.038, 0.146) | 1.09 (1.04, 1.16) | < 0.001 |
| WBC | 0.062 (-0.051, 0.202) | 1.06 (0.95, 1.22) | 0.304 |
| Peritonitis rate | 0.548 (0.254, 0.798) | 1.73 (1.29, 2.22) | < 0.001 |
| Transportation characteristic (High) † | -0.086 (-0.625, 0.481) | 0.92 (0.54, 1.62) | 0.723 |
| BUN ($α$) †† | -0.015 (-0.035, 0.006) | 1.02 (0.99, 1.04) | **0.168** |
| **HR**: Hazard ratio; **BUN**: Blood urea nitrogen (mg/dL); **BMI**: Body mass index (kg/m2);**WBC**: White blood cell counts; **GFR**: Glomerular filtration rate† Model parameters were obtained for the group given in parenthesis.†† Blood urea nitrogen levels are estimated from longitudinal part of joint model.††† Hazard ratios were estimated for 1-unit decrease in corresponding predictors. a Averaged over follow-up period.b Total number of comorbid and renal diseases observed in a patient. |