

# A PREDICTION RULE FOR LOSS OF PHYSICAL FUNCTION IN HEMODIALYSIS PATIENTS: A COHORT STUDY



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## INTRODUCTION AND AIMS

- Among Japan's aging hemodialysis population, loss of physical function (PF), which leads to loss of independence, has become a major issue.
- We aimed to develop a validated prediction rule to identify patients who were likely to lose PF while receiving chronic hemodialysis therapy.

Table1 Patient characteristics

	Derivation cohort	Validation cohort
	Early phase (1997-2008) N=3,411	Late phase (2009-2012) N=978
Age, years	58.0 (11.9)	62.6 (11.5)
Female, %	38.2	36.6
Vintage, years	8.1 (6.7)	8.9 (7.3)
Serum albumin, g/dl	3.9 (0.4)	3.8 (0.3)
Diabetes (%)	22.3	29.2
CVD (%)	9.4	12.1
PVD(%)	9.6	14.2
Dementia (%)	1.1	0.7
<b>Moderate activities</b>		
little difficult (%)	41.6	46.4
very difficult (%)	4.1	4.8
<b>Climbing stairs</b>		
little difficult (%)	47.7	52.6
very difficult (%)	10.5	6.7

CVD: cerebrovascular disease, PVD: peripheral vascular disease. Count data are expressed as a percentage, and continuous variables, as mean (standard deviation).

Table2 Predictors by logistic regression model

Variables	beta	OR (95% CI)	Points assigned
Age >75 years	0.82	2.26 (1.51-3.40)	2
Female	0.35	1.41 (1.03-1.94)	1
albumin < 3.0 g/dl	1.43	4.20 (1.76-10.01)	3
Cerebrovascular disease	0.67	1.95 (1.29-2.96)	1
Peripheral vascular disease	0.46	1.69 (1.05-2.40)	1
Dementia	1.03	2.79 (1.17-6.64)	2
<b>Moderate activities</b>			
little difficult	1.06	2.90 (1.86-4.52)	2
very difficult	2.34	10.41 (5.77-18.78)	5
<b>Climbing stairs</b>			
little difficult	0.93	2.53 (1.50-4.26)	2
very difficult	1.50	4.50 (2.47-8.20)	3

## RESULTS

- The proportions of patients with loss of PF were 6.7% and 6.3% in the derivation and validation cohort, respectively.
- We developed the prediction rule including 8 variables listed in Table2. AUC were 0.81 and 0.82 in the derivation and validation cohort, respectively.
- Figure1 shows that calibration varied in both cohorts.
- Figure2 shows that the worst PS level was associated with the highest mortality rate.

## CONCLUSIONS

- Loss of PF can be predicted by baseline 8 variables.
- Our prediction rule can help physicians to identify patients who may need some interventions to keep their PF.

## METHODS

**Study Design:** Cohort study

**Data source:** The Dialysis Outcomes and Practice Pattern Study (DOPPS) in Japan

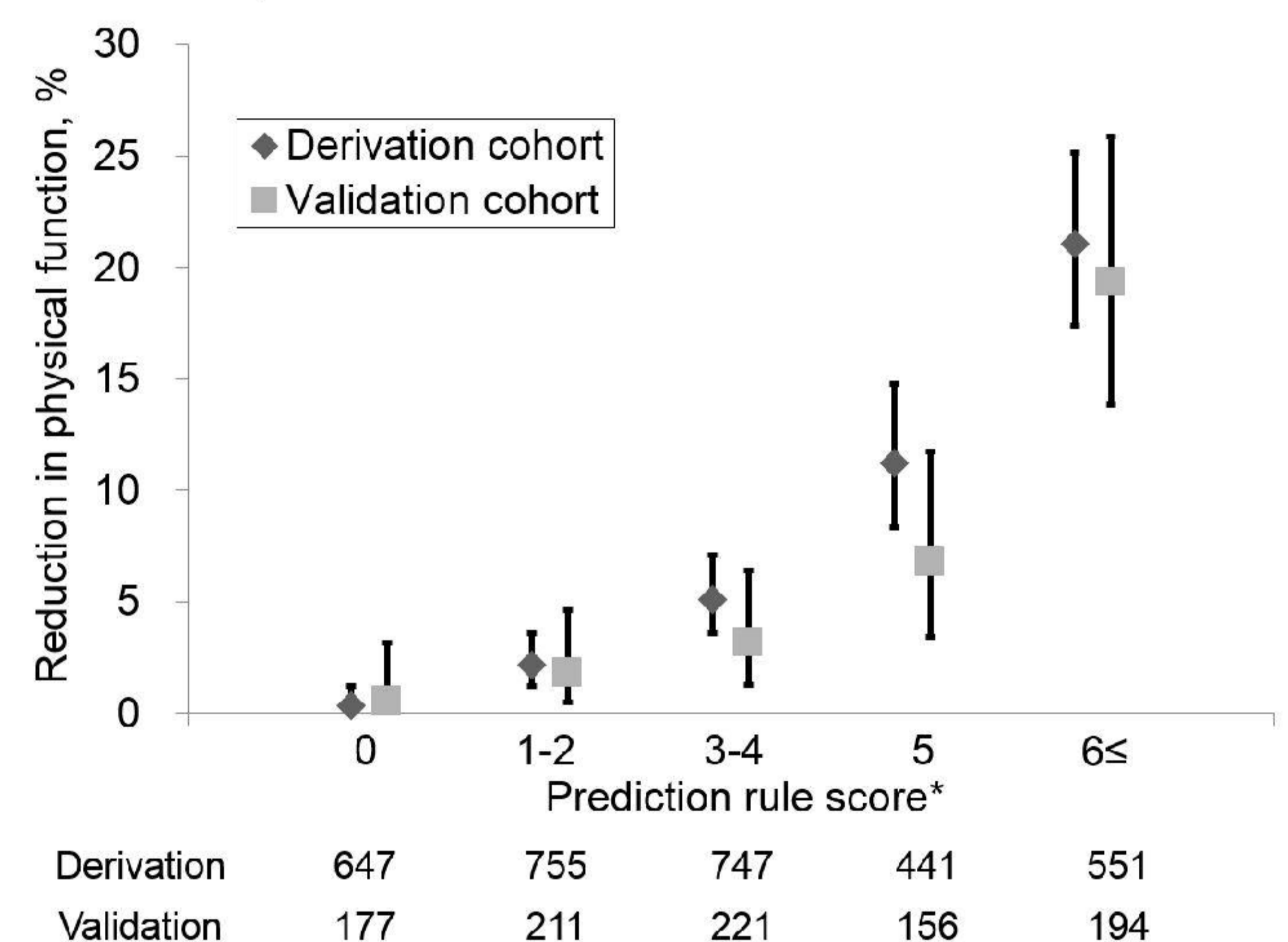
**Patients:** Adult hemodialysis patients with dialysis duration ≥6 months

**Predictors:** Age, gender, serum albumin, cerebrovascular disease, peripheral vascular disease, dementia, physical activities

**Outcomes:** Reduction in physical function score (measured by Short Form 12 Health Survey) to the worst level after one year follow-up

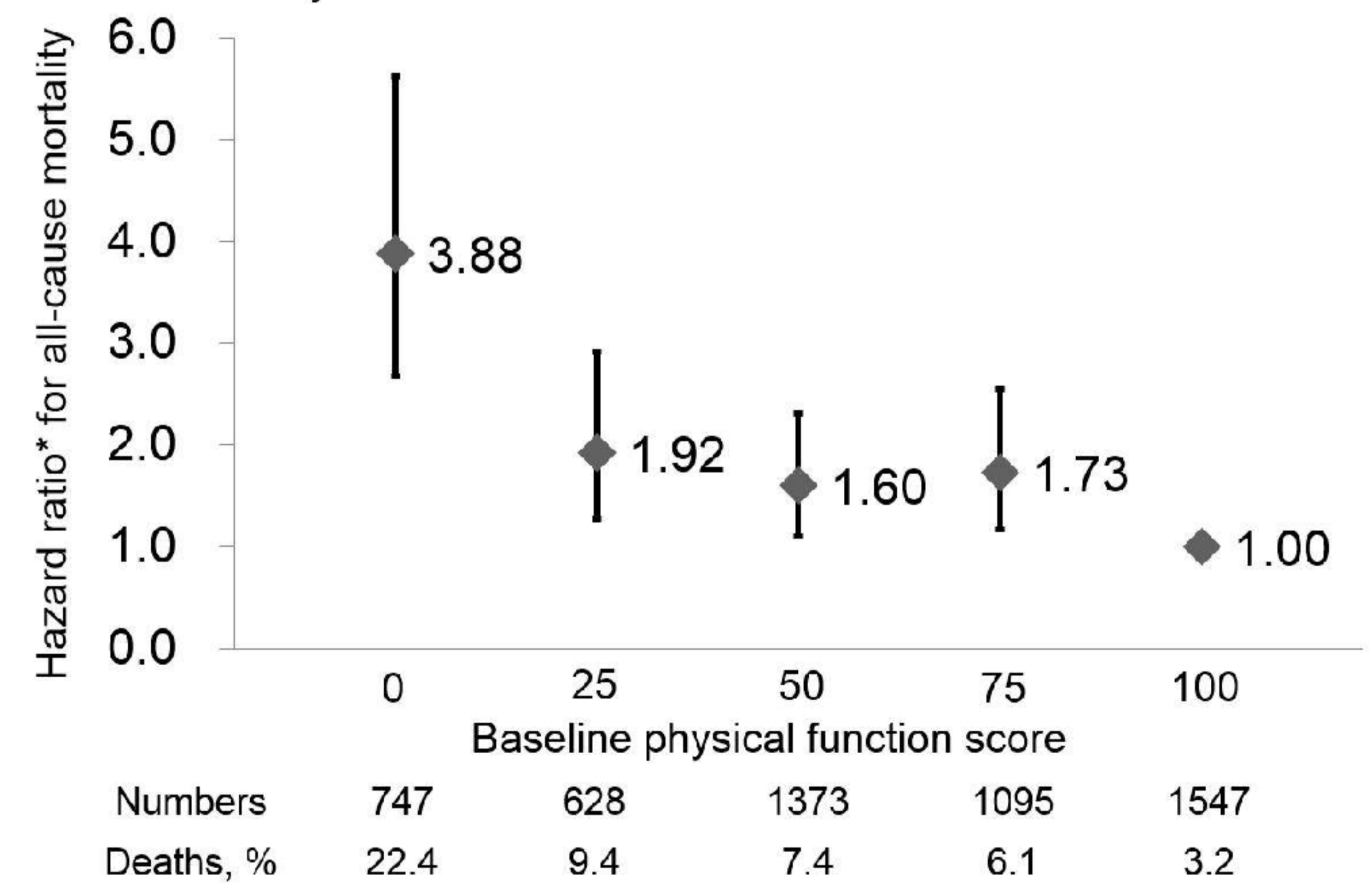
**Statistical analysis:** The derivation cohort consisted of 3,411 patients from early phase (1997-2008) and the temporal validation cohort consisted of 978 patients from late phase (2009-2012). A prediction rule was developed by multivariate logistic regression model. To clarify the clinical importance of PF score, we also examined the association between baseline PF score and all-cause mortality with Cox model after adjusting for potential confounders.

Figure1. Proportion of patients with reduction in physical function within strata of the prediction rule score



\*Prediction rule score were calculated based on assigned points in Table2.

Figure2. Association between baseline physical function score and all-cause mortality



\*Adjusted for age, gender, dialysis duration, serum albumin concentration, comorbidities (dementia, diabetes, cerebrovascular disease, chronic heart failure, peripheral vascular disease, neurologic disease)

## References

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