

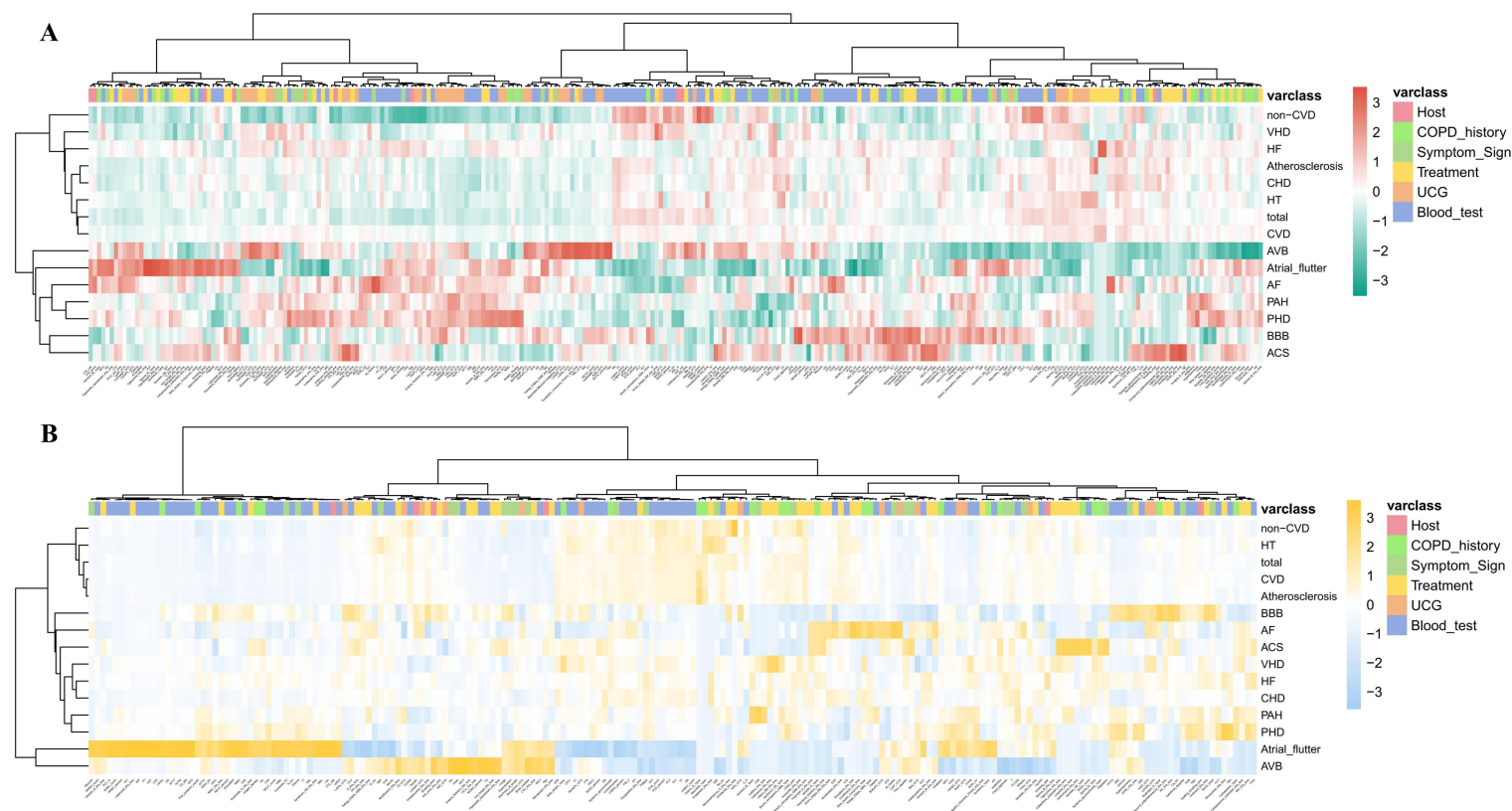


Figure S1 Clinical characterization of AECOPD patients.

A. Beijing cohort. B. Jilin cohort. Heatmap depicting the mean normalized value of clinical variables across the total cohort and subgroups with specific CVDs. Patient groups were clustered using the ward.D hierarchical method. The annotation bar on top indicates the variable category. Variable clustering is shown on the left.

ACS, acute coronary syndrome; AECOPD, acute exacerbations of chronic obstructive pulmonary disease; AF, atrial fibrillation; AVB, atrioventricular block; BBB, bundle branch block; CHD, coronary heart disease; CVD, cardiovascular disease; HF, heart failure; PAH, pulmonary arterial hypertension; PHD, pulmonary heart disease; VHD, valvular heart disease.

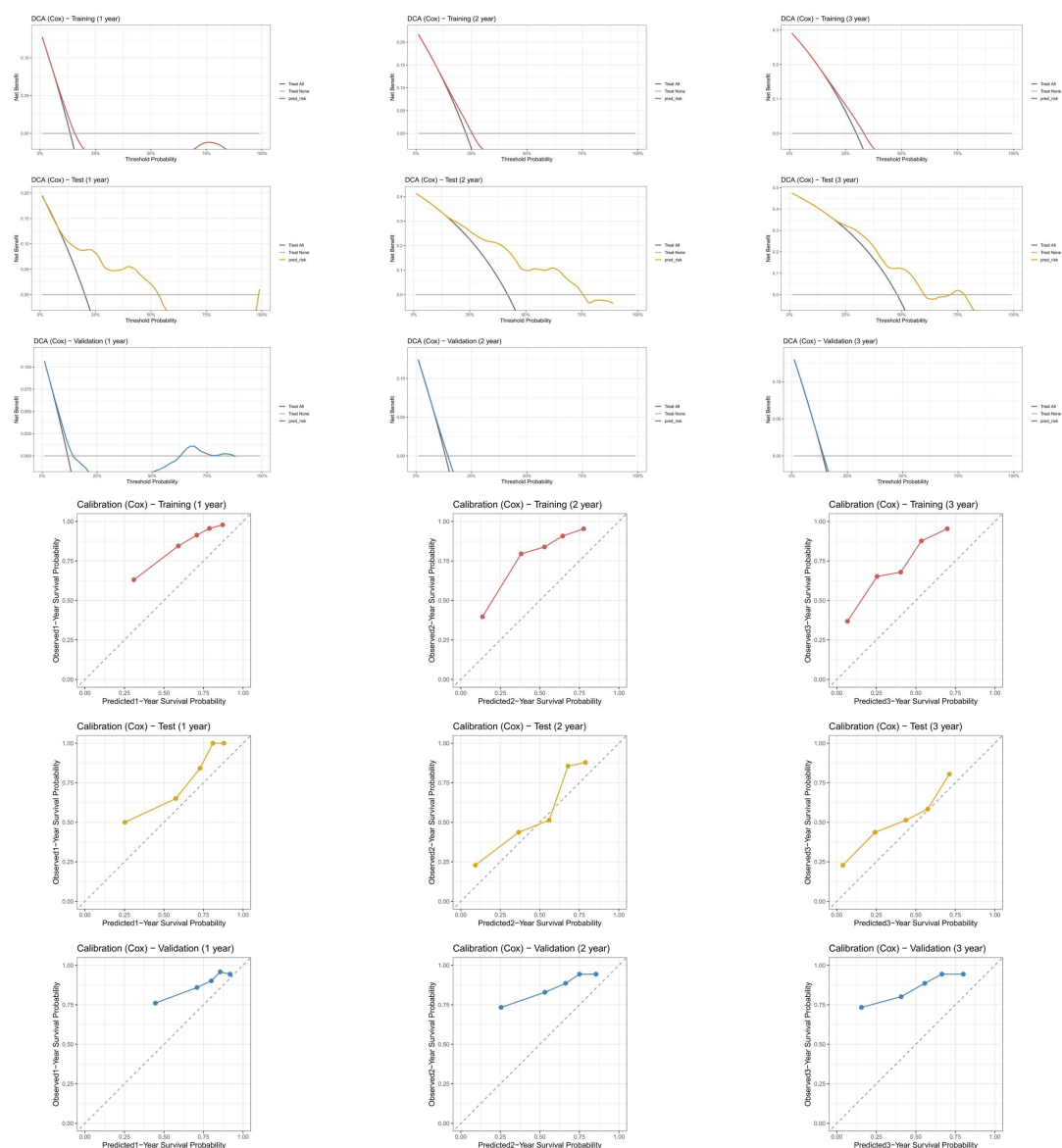


Figure S2 Calibration analysis and decision curve analysis of the OS1 model in the CVD group.

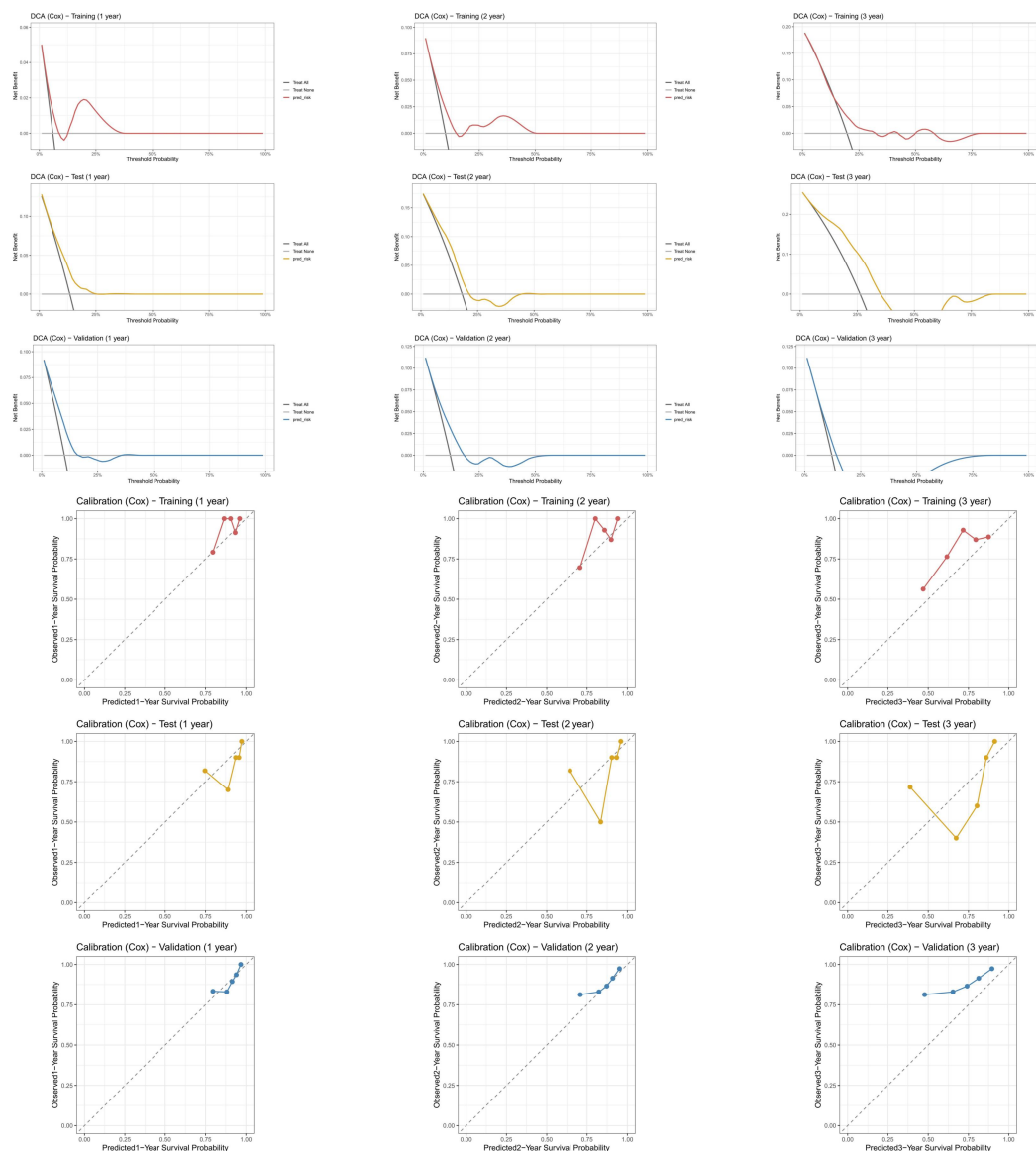


Figure S3 Calibration analysis and decision curve analysis of the OS1 model in the non-CVD group.

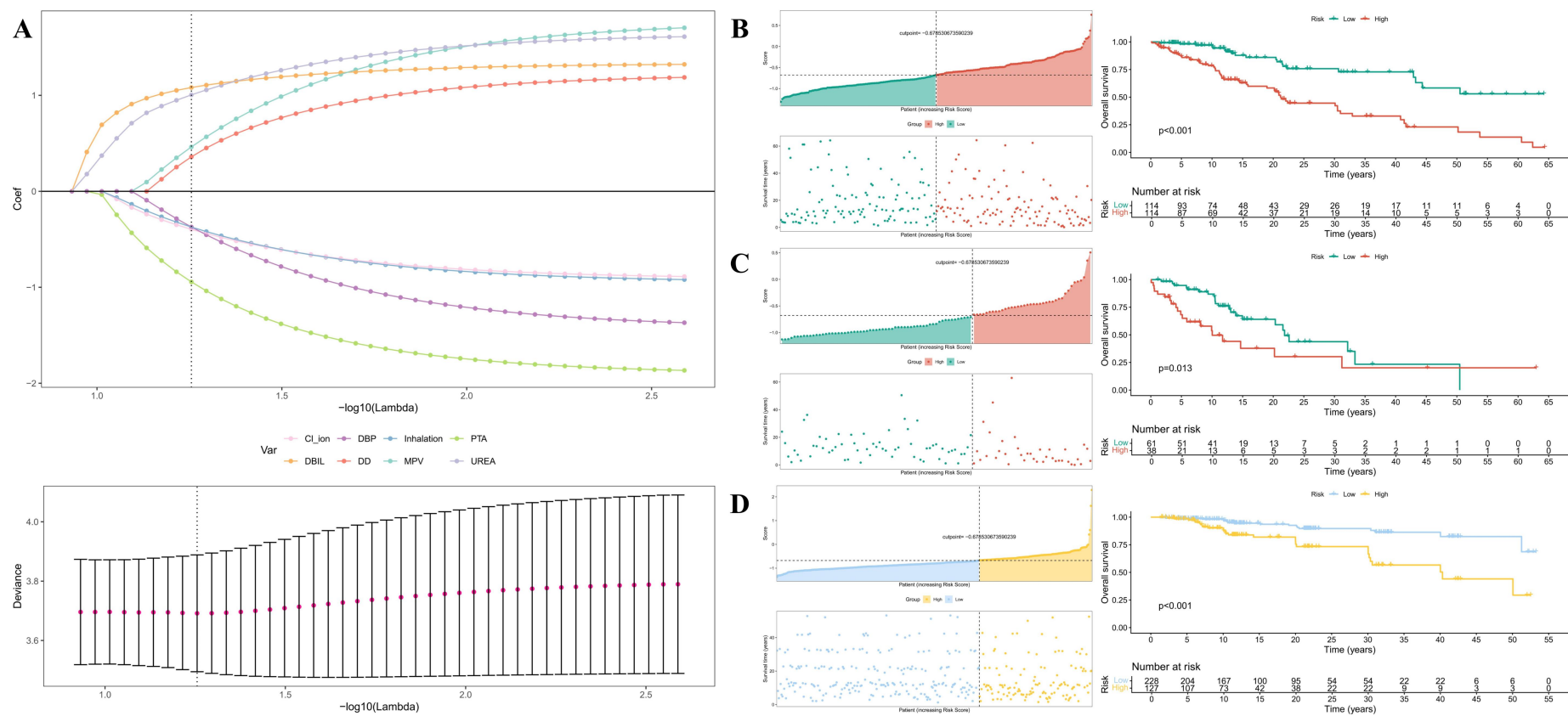


Figure S4 Prognostic model for overall survival 2 (OS2) in the CVD group.

A. Coefficient plot from the final LASSO-Cox model. Risk score distribution (left) and Kaplan-Meier curves (right) for the Beijing training cohort (B), Beijing test cohort (C), and Jilin validation cohort (D), log-rank P values are shown.

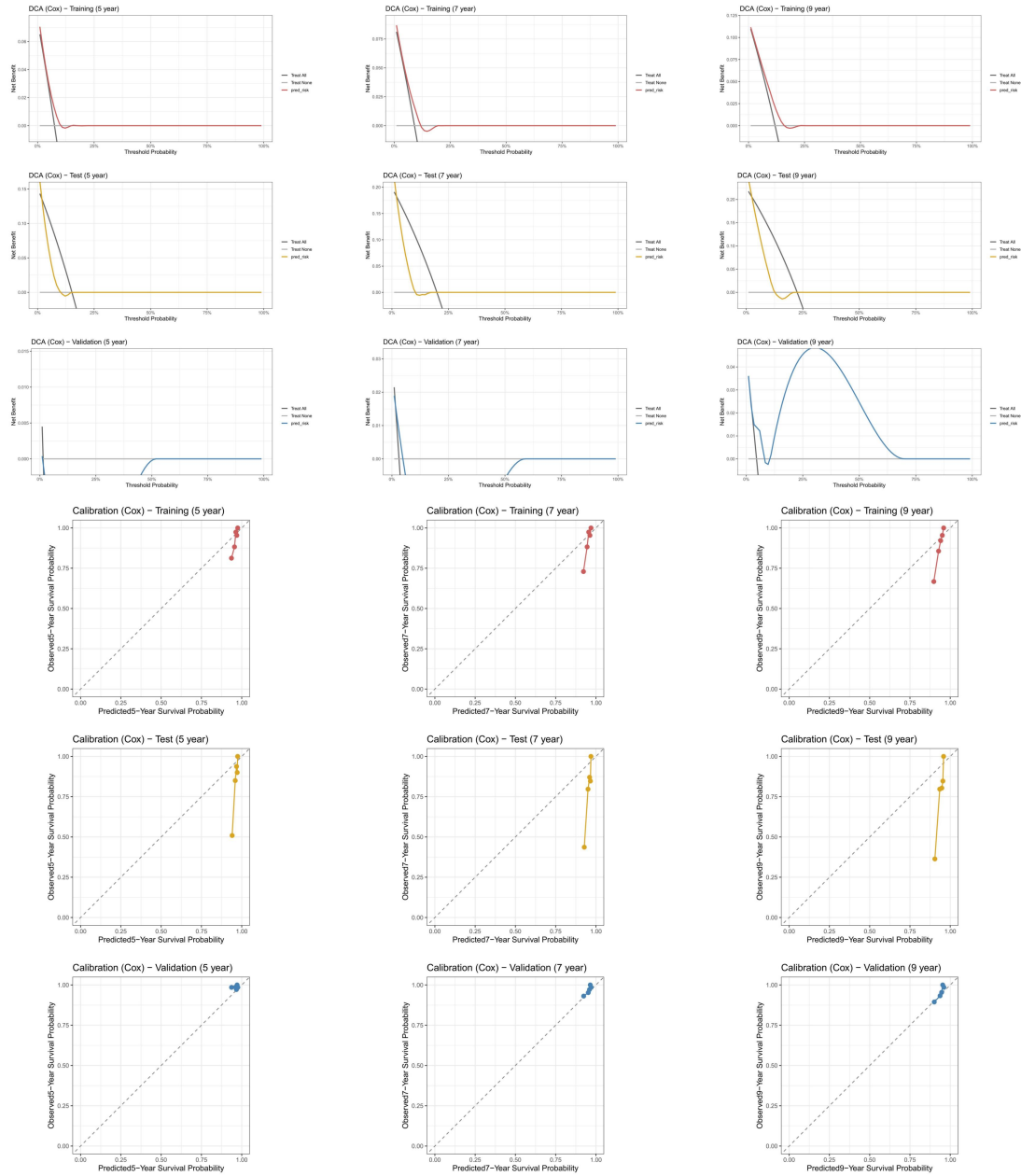


Figure S5 Calibration analysis and decision curve analysis of the OS2 model in the CVD group.

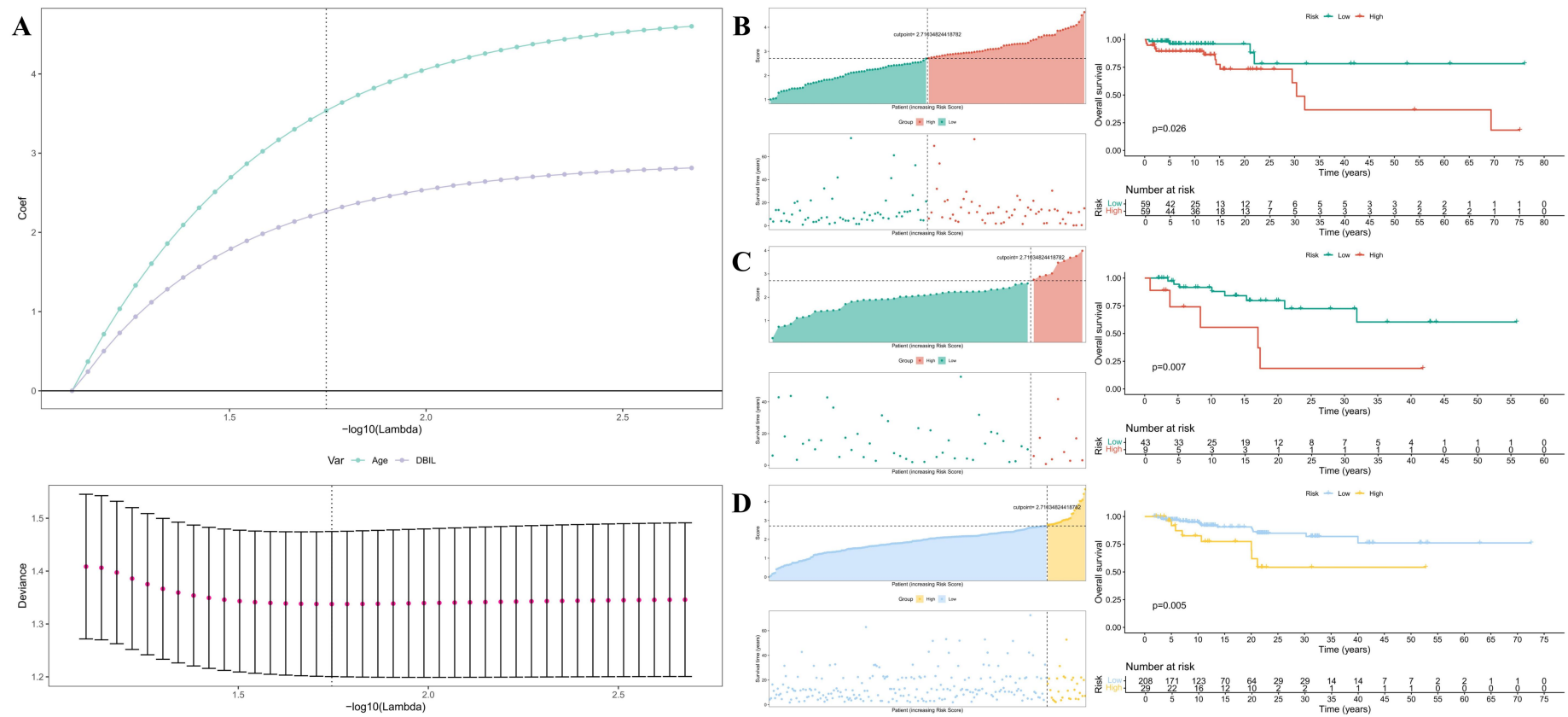


Figure S6 Prognostic model for overall survival 2 (OS2) in the non-CVD group.

A. Coefficient plot from the final LASSO-Cox model. Risk score distribution (left) and Kaplan-Meier curves (right) for the Beijing training cohort (B), Beijing test cohort (C), and Jilin validation cohort (D), log-rank P values are shown.

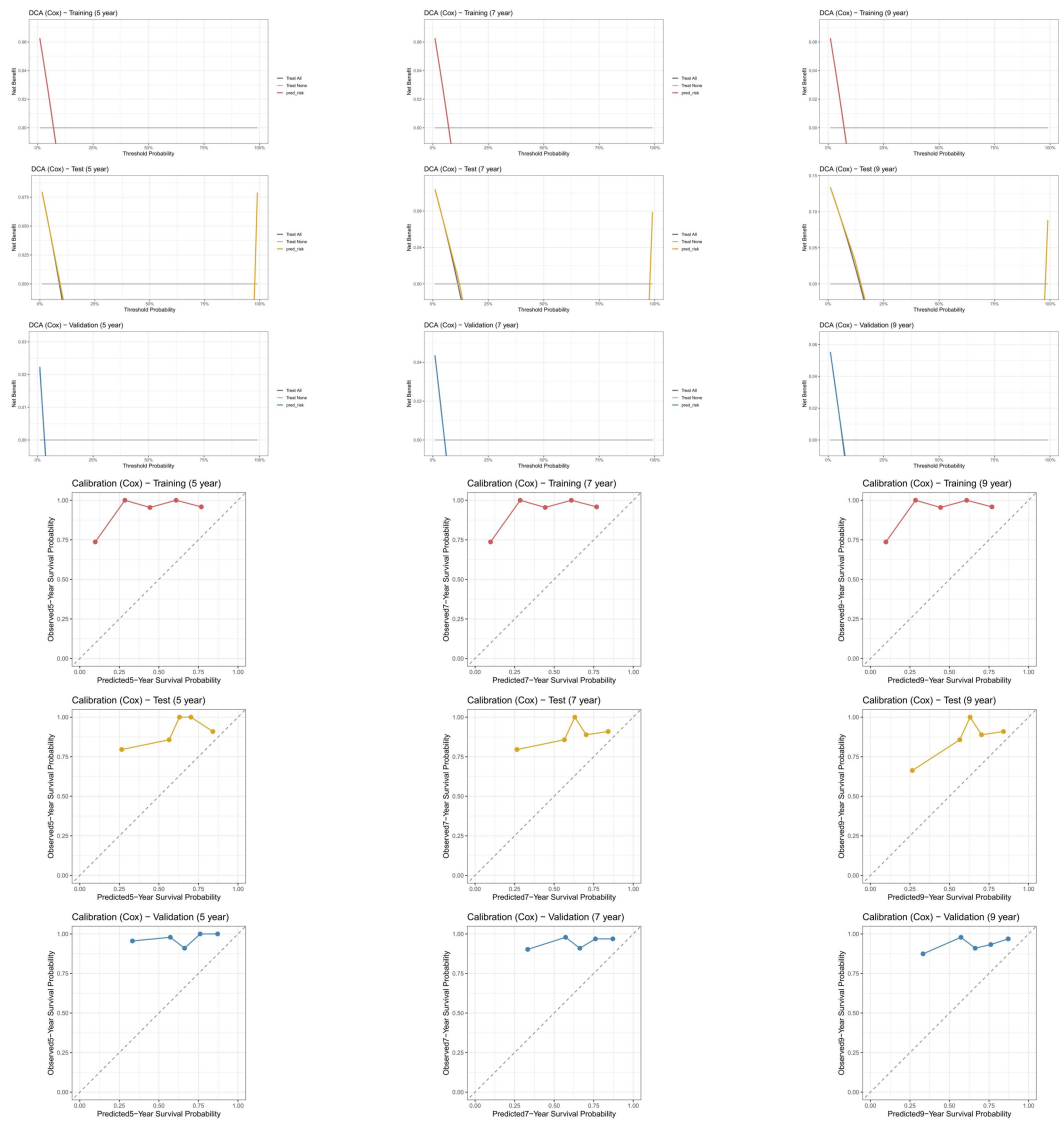


Figure S7 Calibration analysis and decision curve analysis of the OS2 model in the non-CVD group.

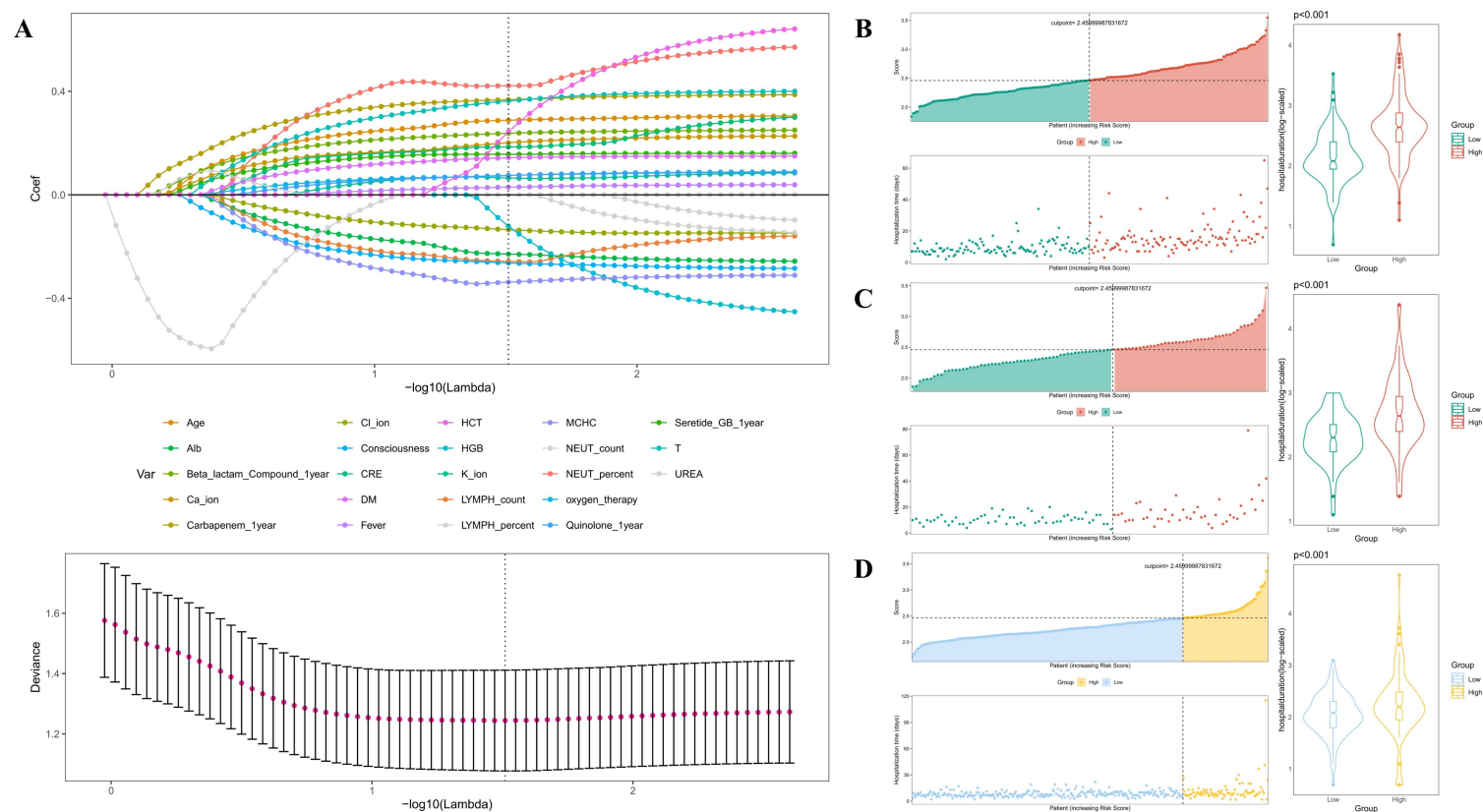


Figure S8 Prognostic model for Hospitalization Duration in the CVD group.

A. Coefficient plot from the final LASSO-negative binomial regression model. Risk score (left) and hospitalization duration (right) distribution for the Beijing training cohort (B), Beijing test cohort (C), and Jilin validation cohort (D), Wilcoxon rank-sum test P values are shown.

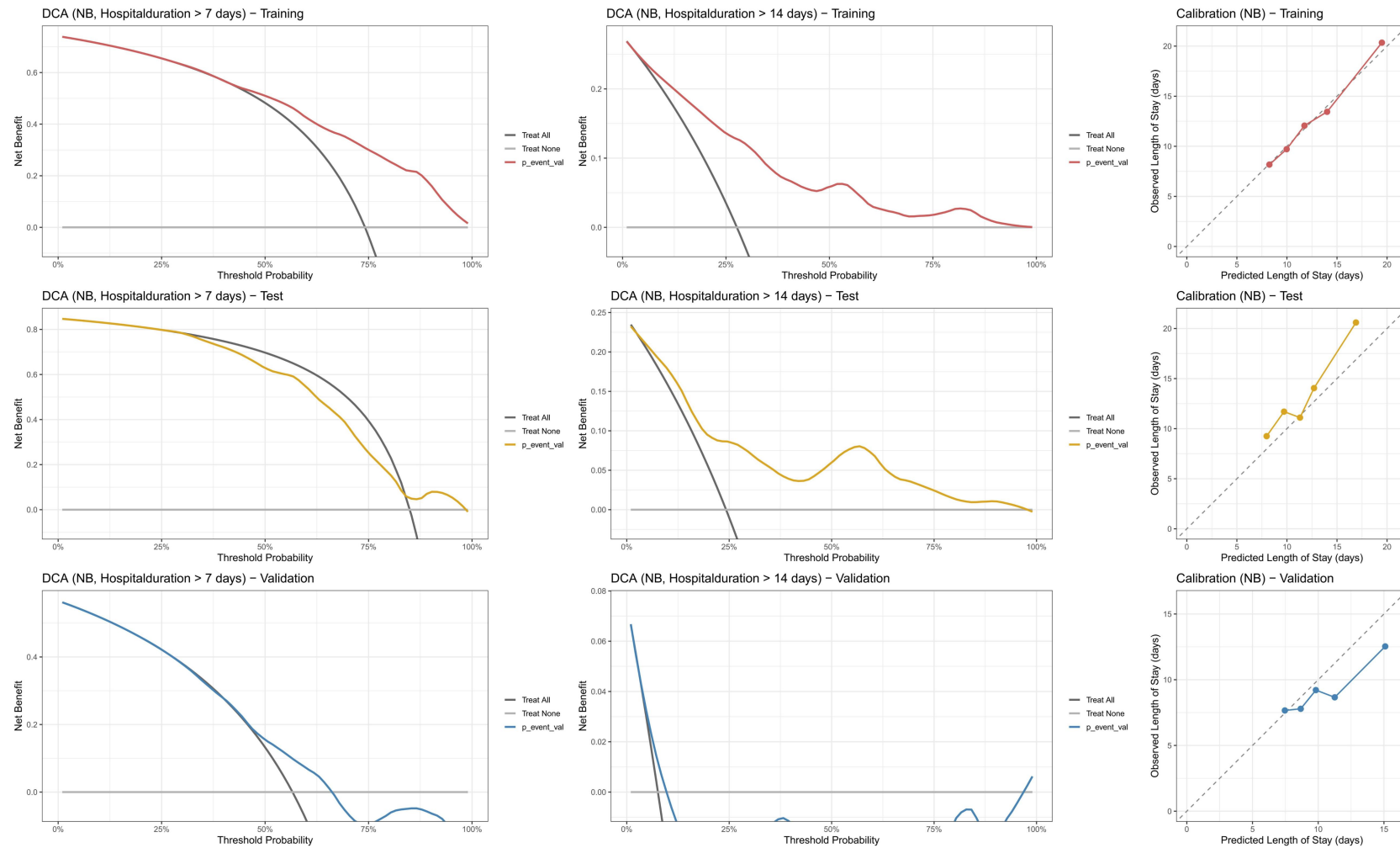


Figure S9 Calibration analysis and decision curve analysis of Hospitalization Duration in the CVD group.

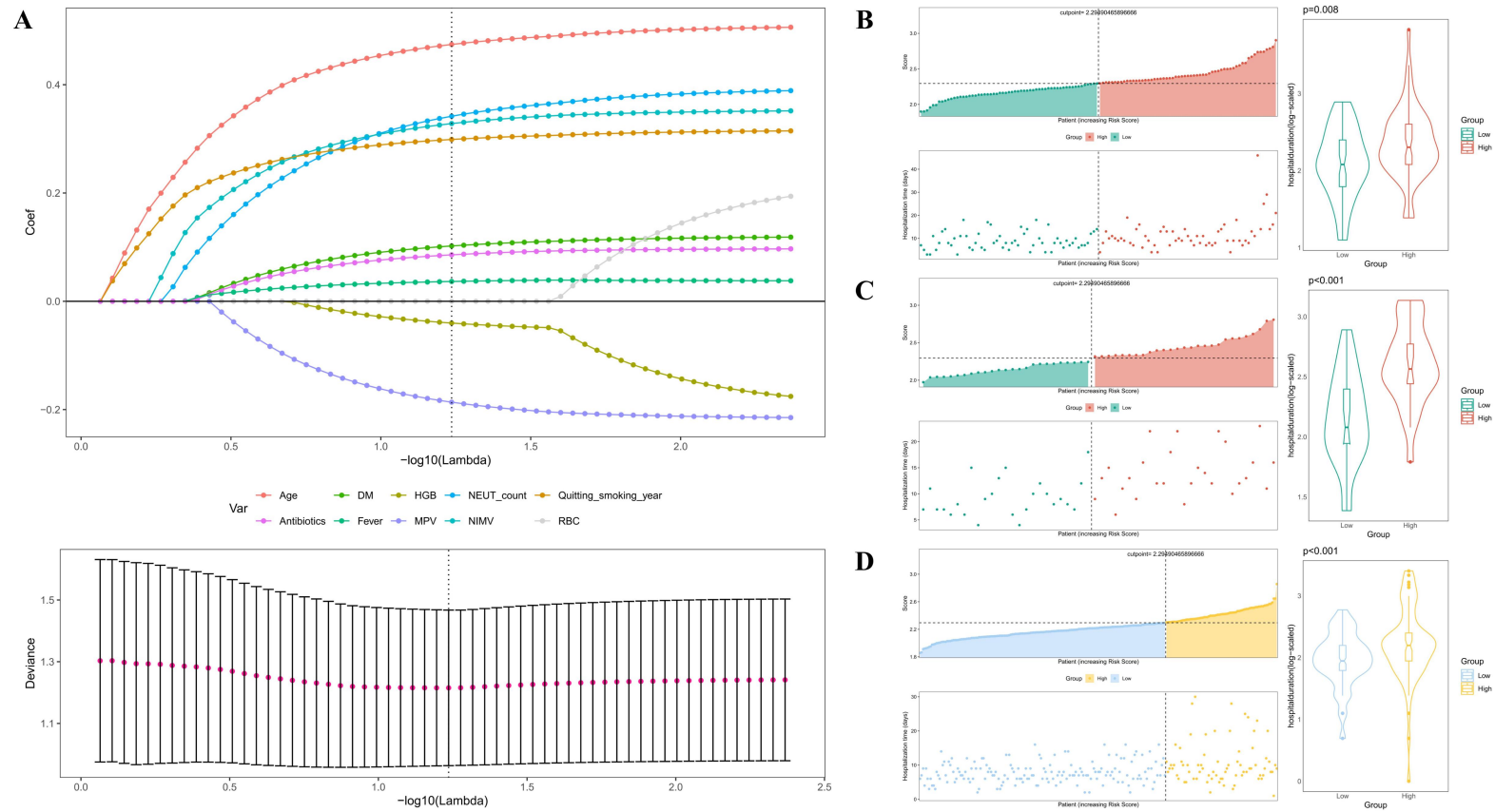


Figure S10 Prognostic model for Hospitalization Duration in the non-CVD group.

A. Coefficient plot from the final LASSO-negative binomial regression model. Risk score (left) and hospitalization duration (right) distribution for the Beijing training cohort (B), Beijing test cohort (C), and Jilin validation cohort (D), Wilcoxon rank-sum test P values are shown.

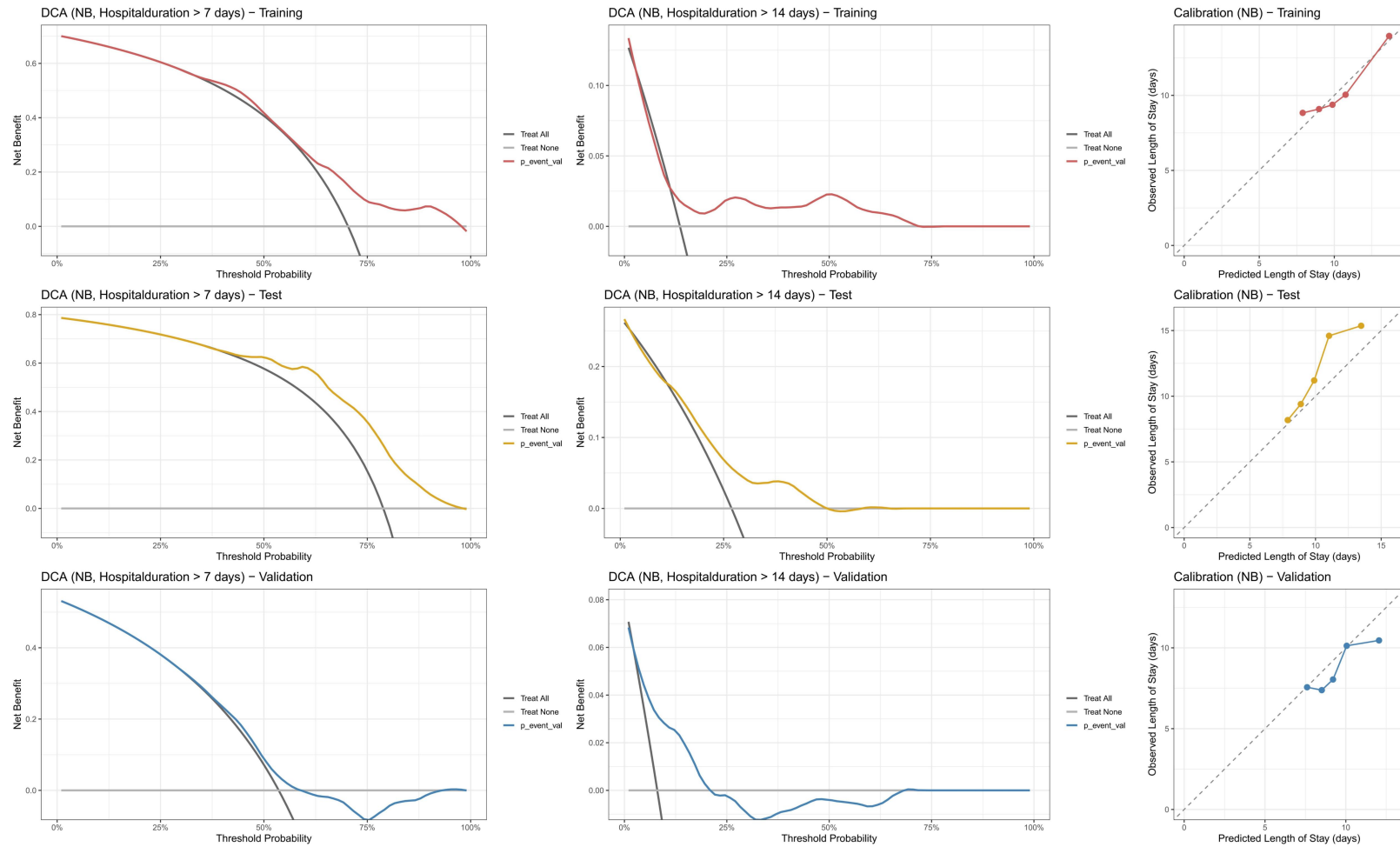


Figure S11 Calibration analysis and decision curve analysis of Hospitalization Duration in the non-CVD group