CRP

Pt No	% Total	Events	Rate	Rank	Range
426	60.77	192	45.07	0 to 418	0.00 thru 0.12
275	39.23	218	79.27	419 to 693	0.12 thru 4.56
701	100.00	410	58.49	0 to 693	0.00 thru 4.56

Miller-Seigmund P	<0.0001	Max: <0.0001
Chi-sq Hi/Lo	118.0097	Max: 118.00.
Relative Risk 1 vs 2	1.00 / 1.76	

LYM

Pt No	% Total	Events	Rate	Rank	Range
133	18.97	113	84.96	0 to 114	0.04 thru 1.22
568	81.03	297	52.29	115 to 544	1.22 thru 5.44
701	100.00	410	58.49	0 to 544	0.04 thru 5.44

Miller-Seigmund P	<0.0001	Max: <0.0001
Chi-sq Hi/Lo	66.6111	Max: 66.6111
Relative Risk 1 vs 2	1.62 / 1.00	

ALB

Pt No	% Total	Events	Rate	Rank	Range
238	33.95	173	72.69	0 to 74	12.30 thru 37.50
463	66.05	237	51.19	75 to 185	37.60 thru 53.10
701	100.00	410	58.49	0 to 185	12.30 thru 53.10

Miller-Seigmund P	<0.0001	Max: <0.000
Chi-sq Hi/Lo	45.9301	Max: 45.930
Relative Risk 1 vs 2	1.42 / 1.00	

IBI

Pt No	% Total	Events	Rate	Rank	Range
368	52.50	156	42.39	0 to 367	0.07 thru 7.20
333	47.50	254	76.28	368 to 700	7.21 thru 771.76
701	100.00	410	58.49	0 to 700	0.07 thru 771.76

Miller-Seigmund P	<0.0001	Max: <0.000
Chi-sq Hi/Lo	110.2259	Max: 110.22
Relative Risk 1 vs 2	1.00 / 1.80	

CAR

Pt No	% Total	Events	Rate	Rank	Range
426	60.77	192	45.07	0 to 418	0.00 thru 0.12
275	39.23	218	79.27	419 to 693	0.12 thru 4.56
701	100.00	410	58.49	0 to 693	0.00 thru 4.56

Miller-Seigmund P	<0.0001	Max: <0.0001
Chi-sq Hi/Lo	118.0097	Max: 118.00.
Relative Risk 1 vs 2	1.00 / 1.76	

PLR

Pt No	% Total	Events	Rate	Rank	Range
477	68.05	254	53.25	0 to 475	24.32 thru 148.43
224	31.95	156	69.64	476 to 699	148.77 thru 5147.14
701	100.00	410	58.49	0 to 699	24.32 thru 5147.14

Miller-Seigmund P	<0.0001	Max: <0.0001
Chi-sq Hi/Lo	24.6236	Max: 24.6236
Relative Risk 1 vs 2	1.00 / 1.31	

SII

Pt No	% Total	Events	Rate	Rank	Range
615	87.73	341	55.45	0 to 614	19.94 thru 1038.54
86	12.27	69	80.23	615 to 700	1039.74 thru 4002.03
701	100.00	410	58.49	0 to 700	19.94 thru 4002.03

Miller-Seigmund P	<0.0001	Max: <0.0001
Chi-sq Hi/Lo	34.3891	Max: 34.3891
Relative Risk 1 vs 2	1.00 / 1.45	

NLR

Pt No	% Total	Events	Rate	Rank	Range
479	68.33	238	49.69	0 to 473	0.16 thru 2.58
222	31.67	172	77.48	474 to 694	2.61 thru 16.54
701	100.00	410	58.49	0 to 694	0.16 thru 16.54

Miller-Seigmund P	<0.0001	Max: <0.0001
Chi-sq Hi/Lo	67.8641	Max: 67.8641
Relative Risk 1 vs 2	1.00 / 1.56	

PNI

Pt No	% Total	Events	Rate	Rank	Range		Miller-Seigmund P	<0.0001	Max: <0.0001
176	25.11	138	78.41	0 to 153	19.55 thru 43.95		Chi-sq Hi/Lo	61.0865	Max: 61.0865
525	74.89	272	51.81	154 to 598	44.00 thru 68.60		Relative Risk 1 vs 2	1.51 / 1.00	
701	100.00	410	58.49	0 to 598	19.55 thru 68.60				

Supplemental Figure 1 Schematic of the method used to determine the optimal cut-off points of CRP, LYM, ALB, IINS, IBI, CAR, PLR, SII, NLR and PNI using X-tile software for survival prediction. The x-axis represents the optimal cut-off value, the blue bars represent the distribution of people with less than the optimal cut-off value and the bars represent the number of people with more than the optimal cut-off value.

Abbreviations: CRP, C-reactive protein; LYM, lymphocyte; ALB, albumin; IINS, Inflammation-immunity-nutrition score; IBI, Inflammatory burden index; CAR, C-reactive protein/albumin ratio; PLR, platelet- lymphocyte ratio; SII, systemic immune inflammation index; NLR, neutrophil-to-lymphocyte ratio; PNI, prognostic nutritional index

Supplemental Figure 2 Receiver operating characteristic curves of following indices for disease-free survival in patients with hepatocellular carcinoma: (**A**) IINS, (**B**) IBI, (**C**) CAR, (**D**) PLR, (**E**) SII, (**F**) NLR, (**G**) PNI, (**H**) PI, (**I**) GPS, and (**J**) mGPS.

Abbreviations: IINS, Inflammation-immunity-nutrition score; IBI, Inflammatory burden index; CAR, C-reactive protein/albumin ratio; PLR, platelet-lymphocyte ratio; SII, systemic immune inflammation index; NLR, neutrophil-to-lymphocyte ratio; PNI, prognostic nutritional index; PI, prognostic index; GPS, Glasgow Prognostic Score; mGPS, modified Glasgow Prognostic Score; ROC, receiver operating characteristic curves; AUC, area under the curve; HCC, hepatocellular carcinoma; DFS, disease-free survival
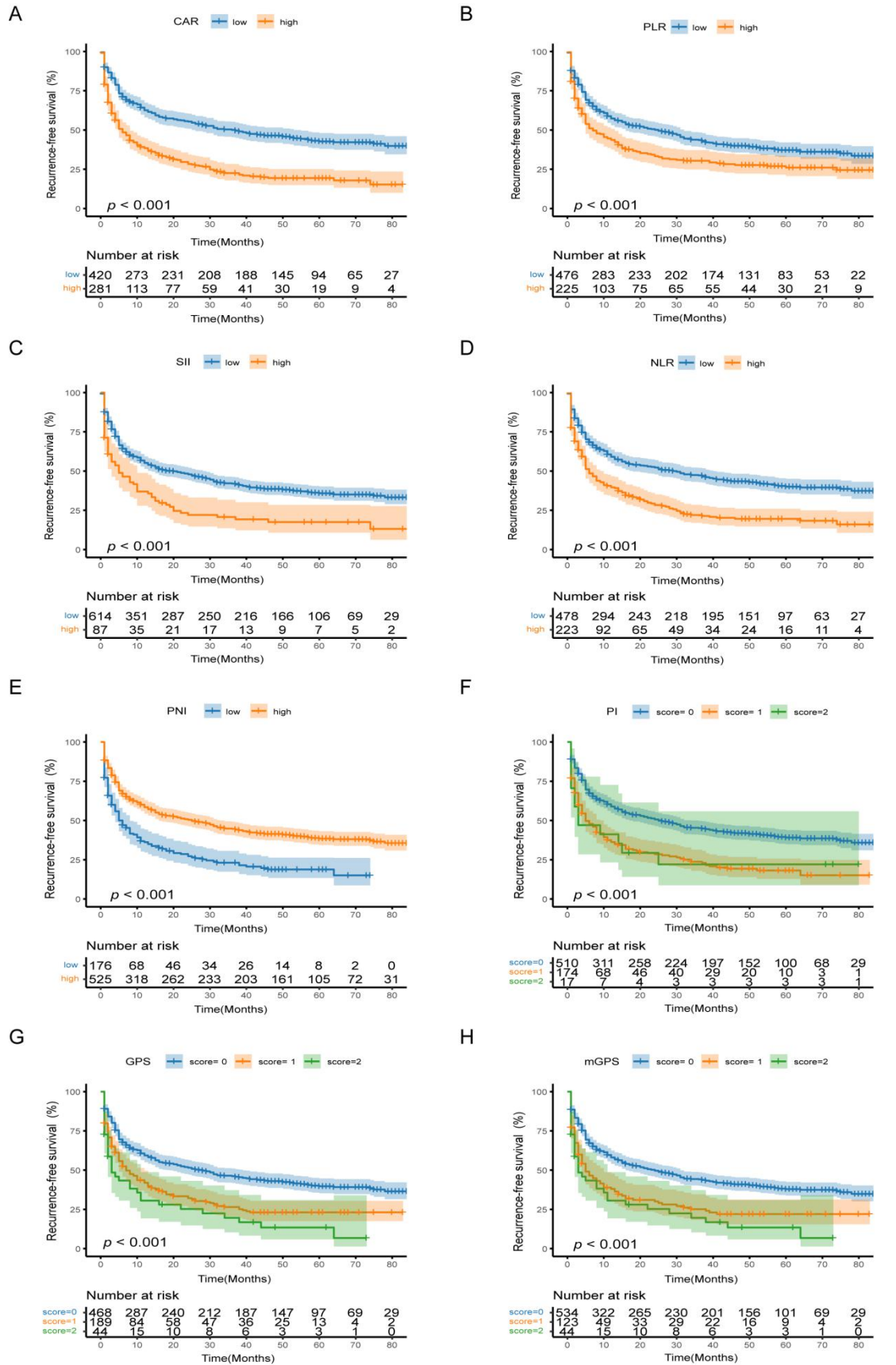
Supplemental Figure 3 Kaplan–Meier DFS curves of **(A)** CAR, **(B)** PLR, **(C)** SII, **(D)** NLR,

(E) PNI, **(F)** PI, **(G)** GPS and **(H)** mGPS.

Abbreviations: CAR, C-reactive protein/albumin ratio; PLR, platelet- lymphocyte ratio; SII, systemic immune inflammation index; NLR, neutrophil-to-lymphocyte ratio; PNI,prognostic nutritional index; PI, prognostic index; GPS, Glasgow Prognostic Score; mGPS, modified Glasgow Prognostic Score; DFS, disease-free survival
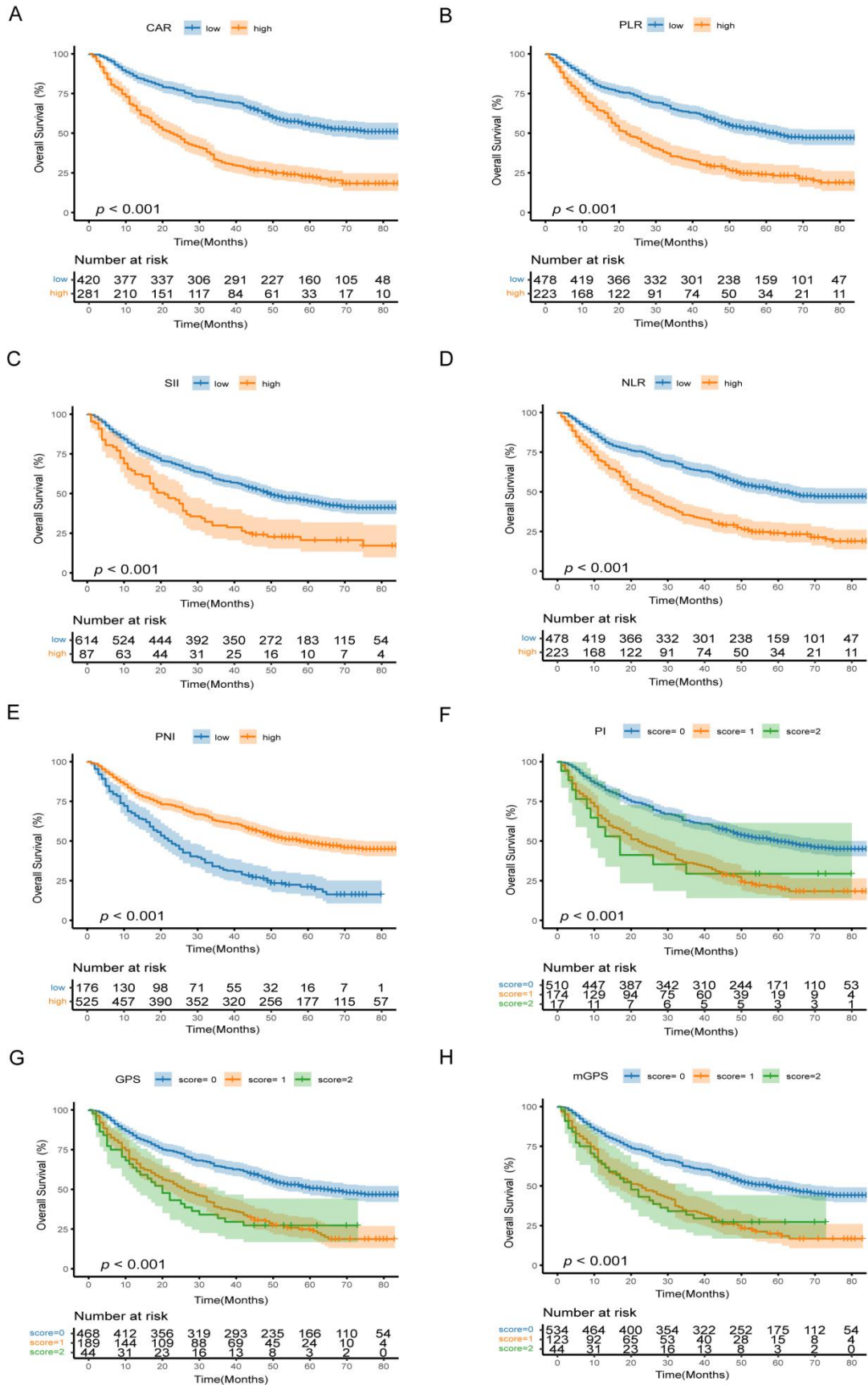
Supplemental Figure 4 Kaplan–Meier OS curves of **(A)** CAR, **(B)** PLR, **(C)** SII, **(D)** NLR, **(E)** PNI, **(F)** PI, **(G)** GPS and **(H)** mGPS.

Abbreviations: CAR, C-reactive protein/albumin ratio; PLR, platelet- lymphocyte ratio; SII, systemic immune inflammation index; NLR, neutrophil-to-lymphocyte ratio; PNI, prognostic nutritional index; PI, prognostic index; GPS, Glasgow Prognostic Score; mGPS, modified Glasgow Prognostic Score; OS, overall survival
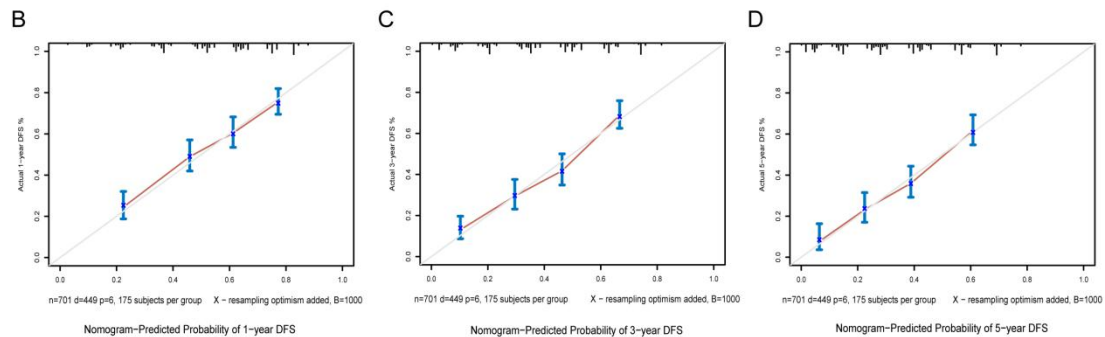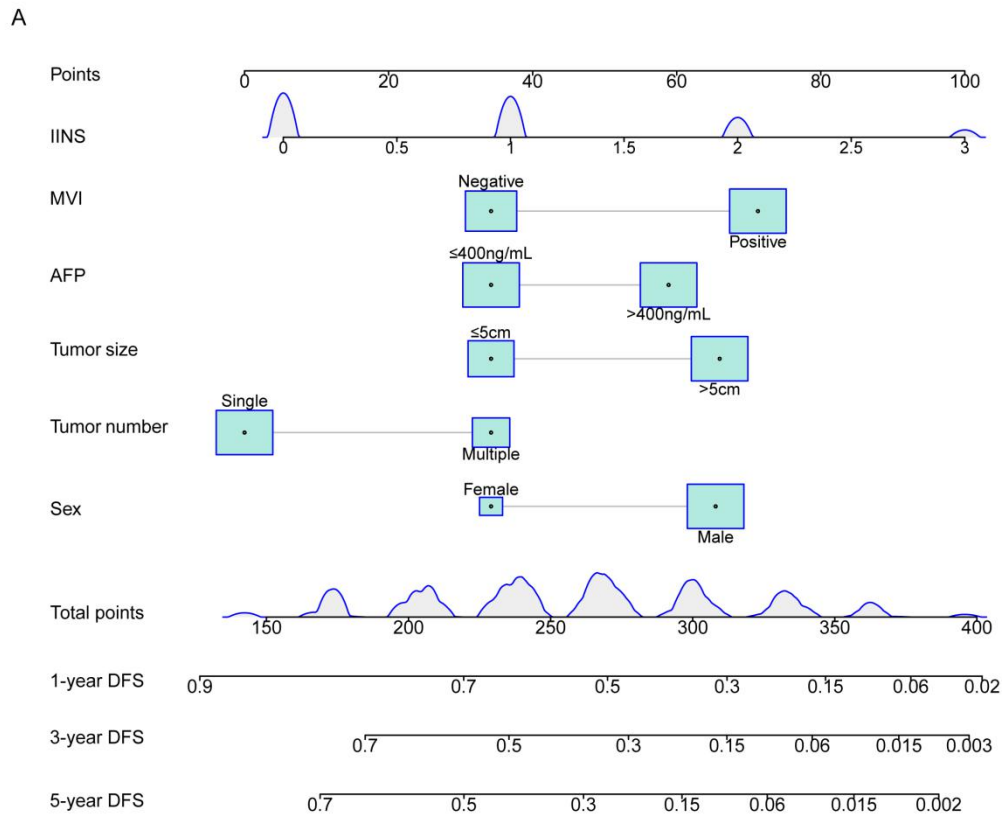
Supplemental Figure 5 Model 1 for predicting DFS of HCC patients after hepatectomy. (**A**) Nomogram of the model. (**B-D**) Calibration curves for (B) 1 year, (C) 3 years and (D) 5 years DFS.

Note：Model 1, prognostic model based on IINS

Abbreviations: IINS, Inflammation-immunity-nutrition score; MVI, microvascular invasion; AFP, alpha-fetoprotein; BCLC, Barcelona Clinic Liver Cancer, DFS, disease-free survival
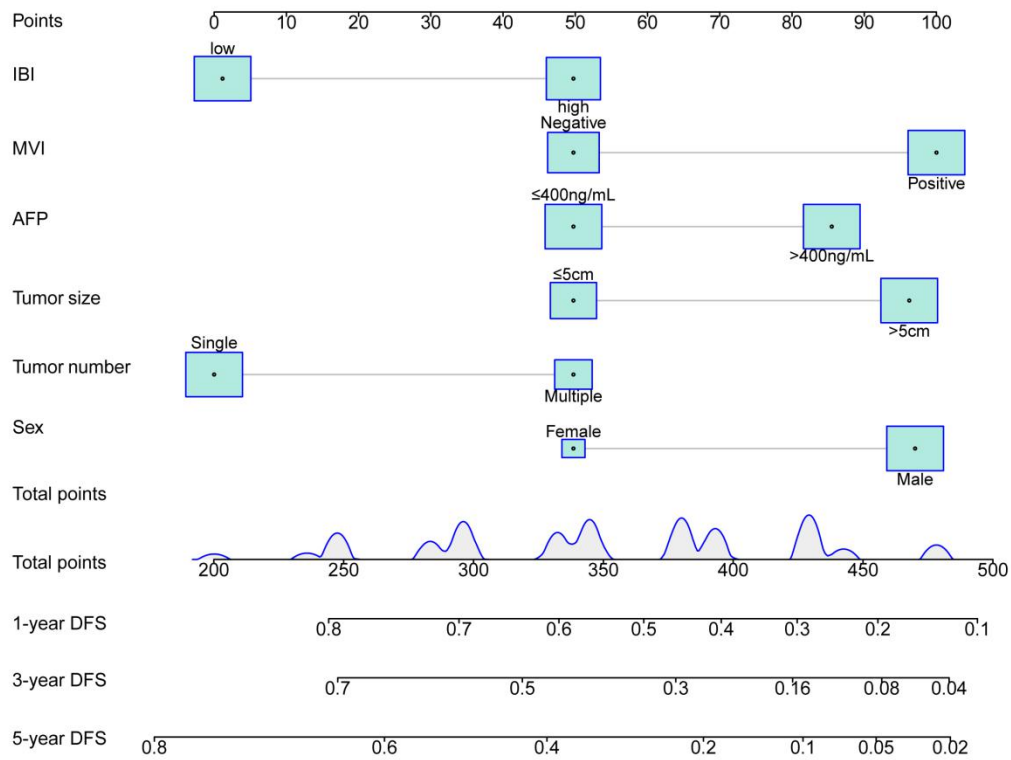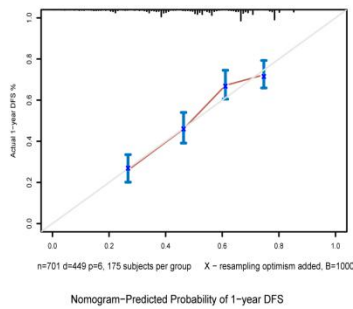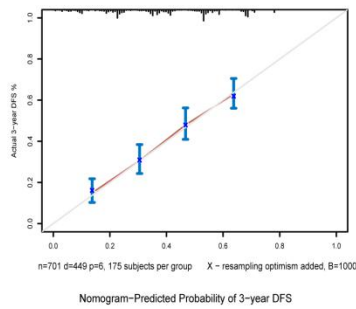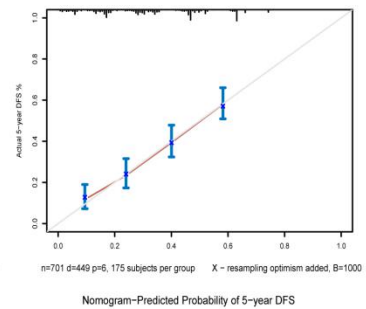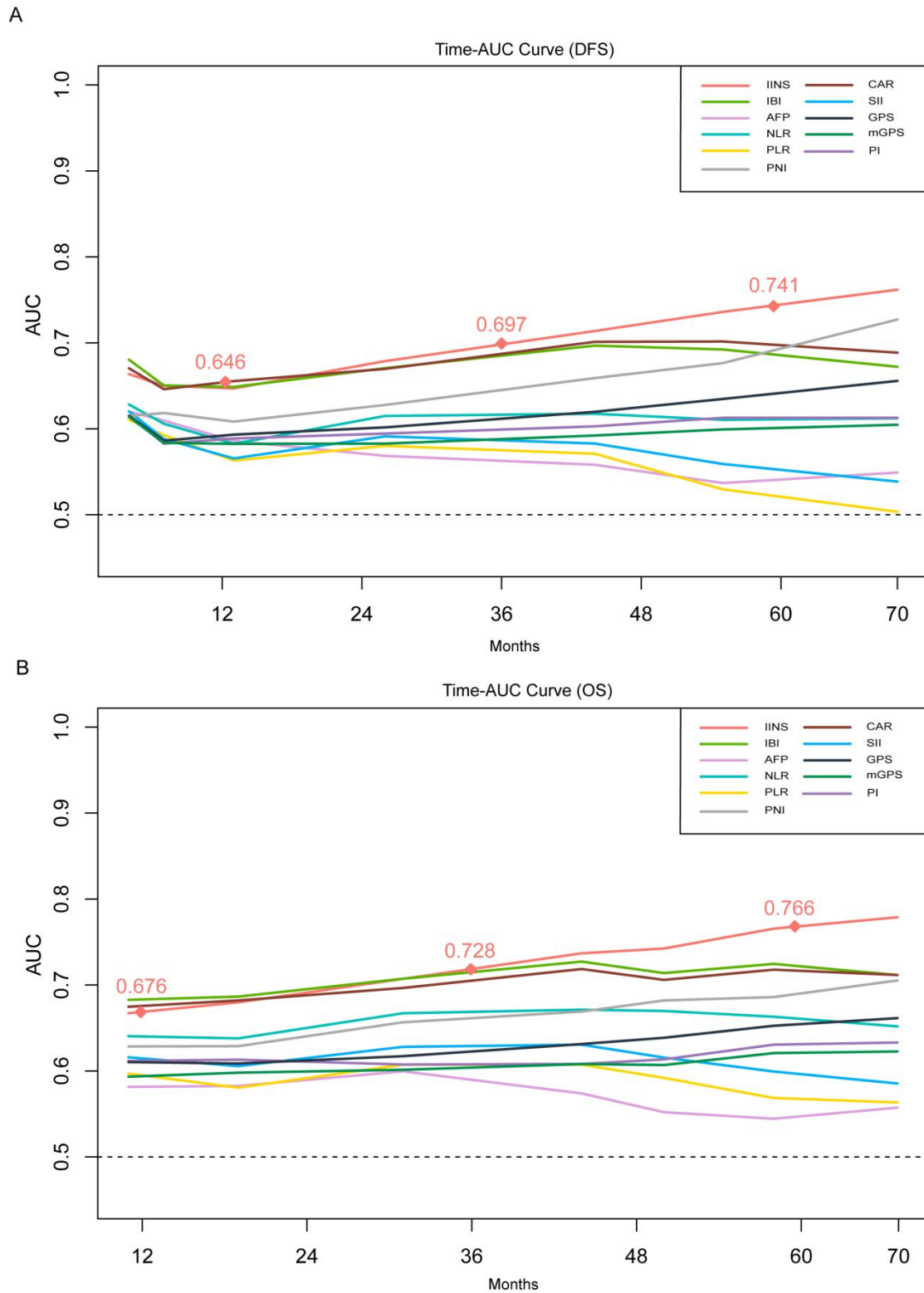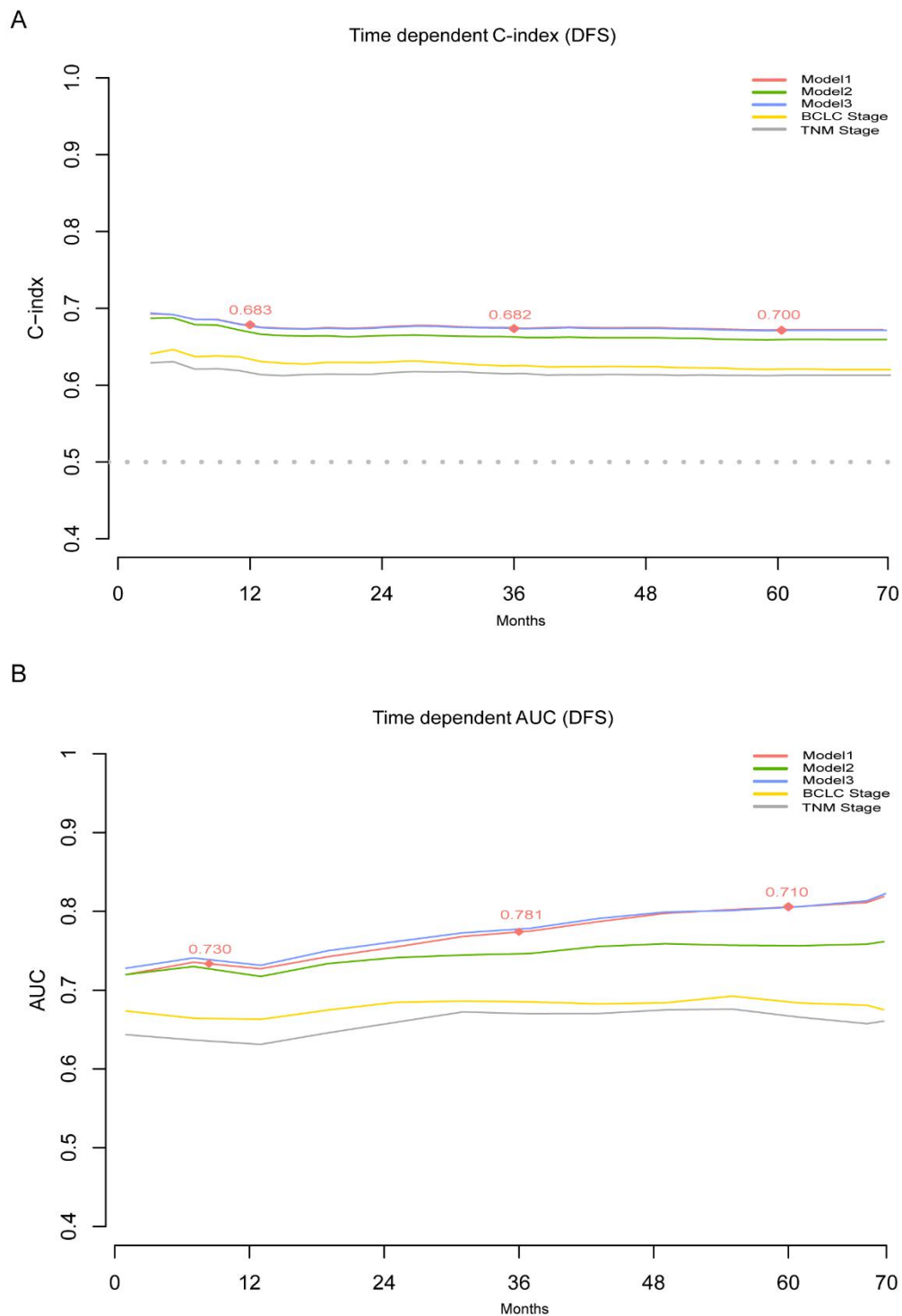
Supplemental Figure 6 Model 2 for predicting DFS of HCC patients after hepatectomy. (**A**) Nomogram of the model. (**B-D**) Calibration curves for (B) 1 year, (C) 3 years and (D) 5 years DFS

Note： Model 2, prognostic model based on IBI

Abbreviations: IBI, Inflammation-immunity-nutrition score; MVI, microvascular invasion; AFP, alpha-fetoprotein; BCLC, Barcelona Clinic Liver Cancer; DFS, disease-free survival

A
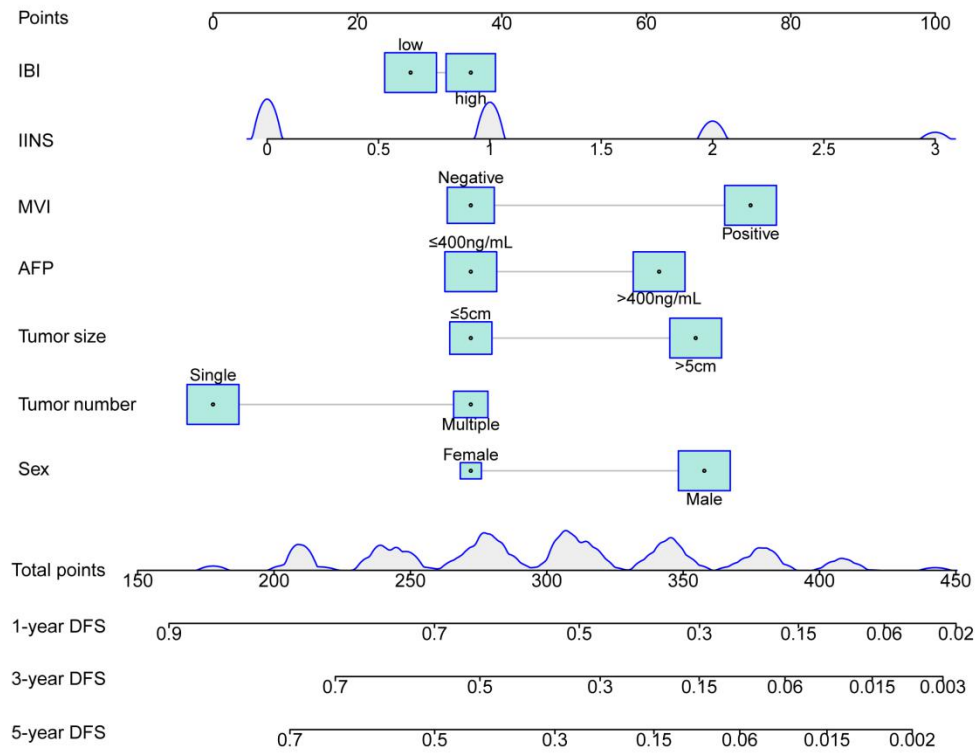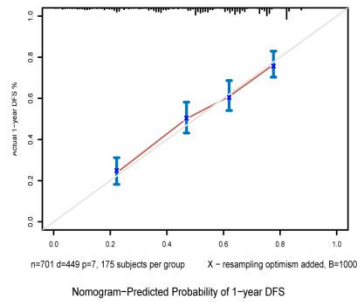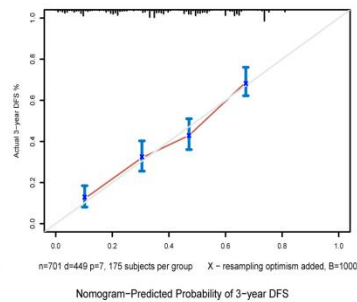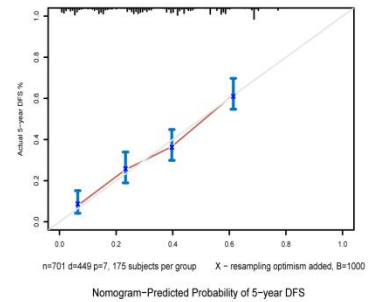
Supplemental Figure 7 Model 3 for predicting DFS of HCC patients after hepatectomy. (**A**) Nomogram of the model. (**B-D**) Calibration curves for (B) 1 year, (C) 3 years and (D) 5 years DFS.

Note：Model 3, prognostic model based on IINS and IBI

Abbreviations: IBI, Inflammation-immunity-nutrition score; IINS Inflammation- immunity -nutrition score; MVI, microvascular invasion; AFP, alpha-fetoprotein; BCLC, Barcelona Clinic Liver Cancer; DFS, disease-free survival

A

B

Supplemental Figure 8 Time-dependent AUCs for predicting (A) DFS and (B) OS of inflammatory and nutritional indicators. The red nodes represent AUC values for 1 year, 3 years and 5 years respectively.
Abbreviations: AUCs area under the curves; IBI, Inflammation-immunity-nutrition score; IINS Inflammation-immunity-nutrition score; AFP, alpha-fetoprotein; NLR, neutrophil-to-lymphocyte ratio; CAR C-reactive protein/albumin ratio; PLR, platelet-lymphocyte ratio; PNI, prognostic nutritional index; PI, prognostic index; SII, systemic immune inflammation index; GPS, Glasgow Prognostic Score; mGPS, modified

Glasgow Prognostic Score; DFS, disease-free survival; OS, overall survival

A

Time dependent C-index (DFS)

B

Time dependent AUC (DFS)

Supplemental Figure 9 Comparison of models and traditional clinical staging systems for predicting prognosis. (A) Time-dependent C-index (B) Time-dependent AUCs. The red nodes represent C-index or AUC values of Model 1 for 1 year, 3 years and 5 years respectively.

Note：Model 1, prognostic model based on IINS; Model 2 prognostic model based on IBI;

Model 3, prognostic model based on IINS and IBI

Abbreviations: BCLC, Barcelona Clinic Liver Cancer; AJCC TNM, American Joint Committee on Cancer/Tumor-Node-Metastasis; AUC, area under the time-dependent receiver operating characteristic curve; IINS Inflammation-immunity-nutrition score; IBI, Inflammation-immunity-nutrition score; DFS, disease-free survival.

Table S1 Inflammatory and nutritional indicator scores

Indicators	Score
PI	
CRP ≤10 mg/L and WBC count ≤10 × 10 9 /L	0
CRP ≤10 mg/L and WBC count >10 × 10 9 /L	1
CRP >10 mg/L and WBC count ≤10 × 10 9 /L	1
CRP >10 mg/L and WBC count >10 × 10 9 /L	2
GPS	
CRP ≤10 mg/L and albumin ≥ 35 g/L	0
CRP ≤10 mg/L and albumin < 35 g/L	1
CRP >10 mg/L and albumin ≥ 35 g/L	1
CRP >10 mg/L and albumin < 35 g/L	2
mGPS	
CRP ≤10 mg/L and albumin ≥ 35 g/L	0
CRP ≤10 mg/L and albumin < 35 g/L	0
CRP >10 mg/L and albumin ≥ 35 g/L	1
CRP >10 mg/L and albumin < 35 g/L	2

Abbreviations: PI, Prognostic Index; GPS, Glasgow Prognostic Score; mGPS Modified Glasgow Prognostic Score; CRP, C-reactive protein; WBC, white blood cell.

Table S2 Comparison of inflammatory indicators prognostic efficacy for disease-free survival and overall survival

Variable	DFS						OS					
	1-year		3-year		5-year		1-year		3-year		5-year	
	AUC	95CI%	AUC	95CI%	AUC	95CI%	AUC	95CI%	AUC	95CI%	AUC	95CI%
IINS	0.646	0.607-0.685	0.697	0.661-0.734	0.741	0.700-0.782	0.676	0.629-0.723	0.728	0.693-0.764	0.766	0.730-0.802
IBI	0.650	0.608-0.691	0.684	0.644-0.726	0.682	0.629-0.735	0.691	0.643-0.739	0.725	0.687-0.763	0.727	0.684-0.769
AFP	0.590	0.553-0.628	0.566	0.526-0.605	0.548	0.495-0.601	0.584	0.539-0.629	0.579	0.542-0.616	0.557	0.513-0.601
NLR	0.586	0.542-0.629	0.629	0.586-0.671	0.613	0.560-0.667	0.638	0.584-0.688	0.668	0.628-0.709	0.663	0.518-0.592
PLR	0.563	0.520-0.607	0.574	0.530-0.618	0.512	0.457-0.568	0.588	0.536-0.641	0.608	0.566-0.650	0.565	0.517-0.615
CAR	0.655	0.613-0.696	0.683	0.642-0.725	0.690	0.637-0.743	0.686	0.638-0.735	0.716	0.678-0.755	0.719	0.676-0.762
SII	0.566	0.523-0.610	0.592	0.548-0.635	0.546	0.489-0.602	0.615	0.563-0.667	0.629	0.587-0.671	0.600	0.552-0.648
PNI	0.610	0.567-0.653	0.638	0.595-0.680	0.682	0.629-0.734	0.621	0.569-0.673	0.663	0.623-0.703	0.683	0.637-0.727
PI	0.590	0.557-0.624	0.594	0.562-0.627	0.607	0.569-0.646	0.625	0.580-0.670	0.610	0.576-0.643	0.631	0.598-0.664
GPS	0.592	0.557-0.628	0.608	0.574-0.643	0.630	0.590-0.670	0.618	0.571-0.664	0.626	0.591-0.661	0.651	0.616-0.686
mGPS	0.585	0.553-0.617	0.584	0.553-0.614	0.592	0.557-0.628	0.608	0.564-0.653	0.606	0.574-0.638	0.619	0.588-0.650

Abbreviations: IINS, inflammation -immunity-nutrition score; IBI, Inflammatory burden index; AFP, alpha-fetoprotein; NLR, neutrophil-to-lymphocyte ratio; PLR, platelet- lymphocyte ratio; CAR, C-reactive protein/albumin ratio; SII, systemic immune inflammation index; PNI, prognostic nutritional index; PI, prognostic index; GPS, Glasgow Prognostic Score; mGPS, modified Glasgow Prognostic Score

Table S3 Comparison of models with conventional clinical staging systems to predict disease-free survival and overall survival

Variable	DFS						OS					
	1-year		3-year		5-year		1-year		3-year		5-year	
	C-index	AUC	C-index	AUC	C-index	AUC	C-index	AUC	C-index	AUC	C-index	AUC
Model1	0.683	0.730	0.682	0.781	0.700	0.810	0.728	0.750	0.729	0.794	0.712	0.804
Model2	0.675	0.720	0.670	0.754	0.666	0.767	0.723	0.745	0.700	0.748	0.682	0.725
Model3	0.683	0.729	0.682	0.780	0.679	0.806	0.727	0.749	0.727	0.792	0.710	0.802
BCLC Stage	0.639	0.666	0.631	0.685	0.625	0.688	0.662	0.678	0.657	0.699	0.646	0.703
AJCC TNM (8th)	0.618	0.635	0.617	0.670	0.615	0.671	0.627	0.635	0.618	0.649	0.611	0.634

Note：Model 1, prognostic model based on IINS; Model 2 prognostic model based on IBI; Model 3, prognostic model based on IINS and IBI

Abbreviations: IINS Inflammation-immunity-nutrition score; IBI, Inflammation-immunity-nutrition score; BCLC, Barcelona Clinic Liver Cancer; AJCC TNM, American Joint Committee on Cancer/Tumor-Node-Metastasis