

Table S1 Logistic regression analysis for in-hospital mortality

Predictors	Univariate analysis			Multivariate analysis		
	OR	95% CI	P	OR	95% CI	P
Cardiac arrest	19.03	15.91–22.76	<0.0001	6.36	5.05–8.02	<0.0001
History of heart failure	4.14	3.16–5.42	<0.0001	1.61	1.18–2.20	0.003
ITDM	2.06	1.66–2.56	<0.0001	1.98	1.56–2.52	<0.0001
ST-segment deviation	2.34	1.95–2.80	<0.0001	1.85	1.53–2.24	<0.0001
Clinical conditions at admission						
No AHF or CS (reference)	–	–	–	–	–	–
AHF without CS	5.06	4.21–6.08	<0.0001	2.85	2.33–3.48	<0.0001
CS	21.5	18.22–25.38	<0.0001	6.86	5.46–8.61	<0.0001
Systolic blood pressure						
≥140 (reference)	–	–	–	–	–	–
100–139	1.31	1.10–1.56	0.002	1.38	1.15–1.65	<0.001
80–99	4.05	3.26–5.03	<0.0001	2.22	1.73–2.85	<0.0001
<80	15.89	11.62–21.73	<0.0001	3.01	2.03–4.45	<0.0001
Age (years)						
<60 (reference)	–	–	–	–	–	–
60–69	1.93	1.53–2.43	<0.0001	1.84	1.44–2.35	<0.0001
70–79	4.25	3.43–5.26	<0.0001	3.89	3.09–4.89	<0.0001
80–89	7.13	5.68–8.94	<0.0001	6.37	4.98–8.16	<0.0001
≥90	14.43	9.33–22.30	<0.0001	12.36	7.69–19.85	<0.0001

AHF, acute heart failure; CS, cardiogenic shock; ITDM, insulin-treated diabetes

Table S2 Model performance in subgroups

Subgroup	Sample size	AUC
Sex		
Female	15,678 (25.1%)	0.81
Male	46,868 (74.9%)	0.85
Age		
≥75 years	12,983 (20.8%)	0.77
<75 years	49,563 (79.2%)	0.82
Smoking		
Yes	27,052 (43.3%)	0.82
No	35,494 (56.7%)	0.84
Hypertension		
Yes	33,094 (52.9%)	0.84
No	29,452 (47.1%)	0.84
eGFR, mL/min/1.73 m ²		
≥60	51,517 (84.9%)	0.81
<60	9,193 (15.1%)	0.79
ACS type		
STEMI	38,387 (61.4%)	0.84
NSTE-ACS	24,159 (38.6%)	0.84
Cardiac arrest		
Yes	1,198 (1.9%)	0.72
No	61,348 (98.1%)	0.81
PCI		
Yes	45,198 (72.3%)	0.84
No	17,348 (27.7%)	0.81

ACS, acute coronary syndrome; AHF, acute heart failure; AUC, area under the curve; CS, cardiogenic shock; eGFR, estimated glomerular filtration rate; NSTE-ACS, non-ST-segment elevation acute coronary syndromes; STEMI, ST-segment elevation myocardial infarction.

Table S3 Investigators of CCC-ACS project

Hospitals	Territory	Province	City	Investigator
Hospitals for Phase I				
Shanxi Cardiovascular Hospital	Northern China	Shanxi	Taiyuan	Bao Li
Nanjing Drum Tower Hospital, The Affiliated Hospital of Nanjing University Medical School	Eastern China	Jiangsu	Nanjing	Biao Xu, Guangshu Han
Hainan General Hospital	Southern China	Hainan	Haikou	Bin Li
The Second Hospital of Jilin University	Northeast China	Jilin	Changchun	Bin Liu
The 2 nd Affiliated Hospital of Harbin Medical University	Northeast China	Heilongjiang	Harbin	Bo Yu
The Ninth Hospital Affiliated to Shanghai Jiaotong University School of Medicine	Eastern China	Shanghai	Shanghai	Changqian Wang
Henan Provincial People's Hospital	Central China	Henan	Zhengzhou	Chuanyu Gao
Shanxi Provincial People's Hospital	Northern China	Shanxi	Taiyuan	Chunlin Lai
Xinqiao Hospital, Third Military Medical University	Southwest China	Chongqing	Chongqing	Cui Bin, Lan Huang
China Meitan General Hospital	Northern China	Beijing	Beijing	Di Wu
The 309 th Hospital of Chinese People's Liberation Army	Northern China	Beijing	Beijing	Fakuan Tang, Jun Xiao
Zhongda Hospital, Southeast University	Eastern China	Jiangsu	Nanjing	Genshan Ma
The First Affiliated Hospital of Liaoning Medical University	Northeast China	Liaoning	Jinzhou	Guizhou Tao
Xinjiang Uygur Autonomous Region People's Hospital	Northwest China	Xinjiang	Urumchi	Guoqing Li
Sir Run Run Shaw Hospital, College of Medicine, Zhejiang University	Eastern China	Zhejiang	Hangzhou	Guosheng Fu
Beijing Friendship Hospital, Capital Medical University	Northern China	Beijing	Beijing	Hongwei Li
The First Affiliated Hospital of Bengbu Medical College	Eastern China	Anhui	Bengbu	Honhju Wang
General Hospital of TISCO	Northern China	Shanxi	Taiyuan	Huifeng Wang
Dongguan People's Hospital	Southern China	Guangdong	Dongguan	Jianfeng Ye
Panyu Hospital of Chinese Medicine	Southern China	Guangdong	Guangzhou	Jianhao Li
Peking University First Hospital	Northern China	Beijing	Beijing	Jie Jiang
Sun Yat-sen Memorial Hospital, Sun Yat-sen University	Southern China	Guangdong	Guangzhou	Jingfeng Wang
Guangdong General Hospital	Southern China	Guangdong	Guangzhou	Jiyan Chen
Hospital of Xinjiang Production & Construction Corps	Northwest China	Xinjiang	Urumchi	Junming Liu
The Military General Hospital of Beijing PLA	Northern China	Beijing	Beijing	Junxia Li
The First Affiliated Hospital of Guangxi Medical University	Southern China	Guangxi	Nanning	Lang Li
Tongren Hospital Affiliated to Shanghai Jiaotong University School of Medicine	Eastern China	Shanghai	Shanghai	Li Jiang
Binzhou City Center Hospital	Eastern China	Shandong	Binzhou	Lijun Meng
The First Affiliated Hospital of Zhengzhou University	Central China	Henan	Zhengzhou	Ling Li
Xijing Hospital	Northwest China	Shaanxi	Xi'an	Ling Tao
The Affiliated Hospital of Guizhou Medical University	Southwest China	Guizhou	Guiyang	Lirong Wu

Table S3 (continued)

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Hospitals	Territory	Province	City	Investigator
First Affiliated Hospital of the People's Liberation Army General Hospital	Northern China	Beijing	Beijing	Miao Tian
The Second People's Hospital of Yunnan Province	Southwest China	Yunnan	Kunming	Minghua Han
Haikou People's Hospital	Southern China	Hainan	Haikou	Moshui Chen
Gansu Provincial Hospital	Northwest China	Gansu	Lanzhou	Ping Xie
The First Affiliated Hospital of Henan University of Science and Technology	Central China	Henan	Luoyang	Pingshuan Dong
Chenzhou First People's Hospital	Central China	Hunan	Chenzhou	Qiaoqing Zhong
People's Hospital of Qinghai Province	Northwest China	Qinghai	Xining	Rong Chang
Affiliated Hospital of Ningxia Medical University	Northwest China	Ningxia	Yinchuan	Shaobin Jia
Beijing Anzhen Hospital, Capital Medical University	Northern China	Beijing	Beijing	Shaoping Nie, Xiaohui Liu
North Jiangsu People's Hospital	Eastern China	Jiangsu	Yangzhou	Shenghu He
Shanghai Sixth People's Hospital	Eastern China	Shanghai	Shanghai	Shixin Ma
The First Hospital of Handan	Northern China	Hebei	Handan	Shuanli Xin
Huai'an First People's Hospital	Eastern China	Jiangsu	Huai'an	Shuren Ma
The First Affiliated Hospital of Chongqing Medical University	Southwest China	Chongqing	Chongqing	Suxin Luo
Navy General Hospital	Northern China	Beijing	Beijing	Tianchang Li
Zhejiang Provincial Hospital of TCM	Eastern China	Zhejiang	Hangzhou	Wei Mao
The Third Xiangya Hospital of Central South University	Central China	Hunan	Changsha	Weihong Jiang
Affiliated Hospital of Qinghai University	Northwest China	Qinghai	Xining	Weijun Liu
Teda International Cardiovascular Hospital	Northern China	Tianjin	Tianjin	Wenhua Lin
The Second Hospital of Hebei Medical University	Northern China	Hebei	Shijiazhuang	Xianghua Fu
Changhai Hospital of Shanghai	Eastern China	Shanghai	Shanghai	Xianxian Zhao
The Second Affiliated Hospital to Nanchang University	Eastern China	Jiangxi	Nanchang	Xiaoshu Cheng
Hebei General Hospital	Northern China	Hebei	Shijiazhuang	Xiaoyong Qi
Inner Mongolia People's Hospital	Northern China	Inner Mongolia	Hohhot	Xingsheng Zhao
The General Hospital of Shenyang Military Region	Northeast China	Liaoning	Shenyang	Yaling Han
The First Hospital of Jilin University	Northeast China	Jilin	Changchun	Yang Zheng
Tianjin Chest Hospital	Northern China	Tianjin	Tianjin	Yin Liu
Hunan Provincial People's Hospital	Central China	Hunan	Changsha	Ying Guo
People's Hospital of Yuxi City	Southwest China	Yunnan	Yuxi	Yinglu Hao
The People's Hospital of Guangxi Zhuang Autonomous Region	Southern China	Guangxi	Nanning	Yingzhong Lin
The First Teaching Hospital of Xinjiang Medical University	Northwest China	Xinjiang	Urumchi	Yitong Ma
Baogang Hospital	Northern China	Inner Mongolia	Baotou	Yongdong Li
Tianjin Medical University General Hospital	Northern China	Tianjin	Tianjin	Yuemin Sun

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Hospitals	Territory	Province	City	Investigator
The Second Affiliated Hospital of Zhengzhou University	Central China	Henan	Zhengzhou	Yulan Zhao
Nanfang Hospital of Southern Medical University	Southern China	Guangdong	Guangzhou	Yuqing Hou
The First Affiliated Hospital to Nanchang University	Eastern China	Jiangxi	Nanchang	Zeqi Zheng
The First Affiliated Hospital of Lanzhou University	Northwest China	Gansu	Lanzhou	Zheng Zhang
The Third Hospital of Shijiazhuang	Northern China	Hebei	Shijiazhuang	Zhenguo Ji
Wuxi People's Hospital	Eastern China	Jiangsu	Wuxi	Zhenyu Yang
Jiangsu Province Hospital	Eastern China	Jiangsu	Nanjing	Zhijian Yang
The Second Hospital of Shanxi Medical University	Northern China	Shanxi	Taiyuan	Zhiming Yang
The Affiliated Hospital of Xuzhou Medical College	Eastern China	Jiangsu	Xuzhou	Zhirong Wang
Southwest Hospital, Third Military Medical University	Southwest China	Chongqing	Chongqing	Zhiyuan Song
The First Affiliated Hospital of Xi'an Jiaotong University	Northwest China	Shaanxi	Xi'an	Zuyi Yuan
Hospitals for Phase II				
Yangzhou First People's Hospital	Eastern China	Jiangsu	Yangzhou	Aihua Li
Hospital 463 of Chinese People's Liberation Army	Northeast China	Liaoning	Shenyang	Bosong Yang
The Central Hospital of Mianyang	Northwest China	Sichuan	Mianyang	Caidong Luo
Liaocheng People's Hospital	Eastern China	Shandong	Liaocheng	Chunyan Zhang
Yancheng Third People's Hospital	Eastern China	Jiangsu	Yancheng	Chunyang Wu
The Second Xiangya Hospital of Central South University	Central China	Hunan	Changsha	Daoquan Peng
The Central Hospital of Panzhihua	Northwest China	Sichuan	Panzhihua	Dawen Xu
The First Hospital of Qiqihaer City	Northeast China	Heilongjiang	Qiqihaer	Gang Xu
The Third the People's Hospital of Bengbu	Eastern China	Anhui	Bengbu	Gengsheng Sang
The First Hospital of Jiamusi	Northeast China	Heilongjiang	Jiamusi	Guixia Zhang
Zhoushan People's Hospital	Eastern China	Zhejiang	Zhoushan	Guoxiong Chen
Dalian Municipal Central Hospital	Northeast China	Liaoning	Dalian	Hailong Lin
Renmin Hospital of Wuhan University	Central China	Hubei	Wuhan	Hong Jiang
Ningxia People's Hospital	Northwest China	Ningxia	Yinchuan	Hong Luan
The First People's Hospital of Yunnan Province (Kunhua Hospital)	Northwest China	Yunnan	Kunming	Hong Zhang
The Central Hospital of Zhoukou	Central China	Henan	Zhoukou	Hualing Liu
Anyang District Hospital	Central China	Henan	Anyang	Hui Liu
Sichuan Provincial People's Hospital	Northwest China	Sichuan	Chengdu	Jianhong Tao
Mudanjiang Cardiovascular Disease Hospital	Northeast China	Heilongjiang	Mudanjiang	Jianwen Liu
Yichang Central Hospital	Central China	Hubei	Yichang	Jiawang Ding
Qilu Hospital of Shandong University	Eastern China	Shandong	Jinan	Jifu Li
Affiliated Hospital of Jiangsu University	Eastern China	Jiangsu	Zhenjiang	Jinchuan Yan

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Hospitals	Territory	Province	City	Investigator
The First People's Hospital of Nanning City	Southern China	Guangxi	Nanning	Jinru Wei
The First Affiliated Hospital of Fujian Medical University	Eastern China	Fujian	Fuzhou	Jinzi Su
Chengdu Third People's Hospital	Northwest China	Sichuan	Chengdu	Jiong Tang
Yantaishan Hospital	Eastern China	Shandong	Yantai	Juexin Fan
Qingdao Municipal Hospital	Eastern China	Shandong	Qingdao	Jun Guan
Zhongshan Hospital Affiliated to Fudan University	Eastern China	Shanghai	Shanghai	Junbo Ge
Longyan First Hospital	Eastern China	Fujian	Longyan	Kaihong Chen
Affiliated Hospital of Guangdong Medical College	Southern China	Guangdong	Guangzhou	Keng Wu
Jiangxi Provincial People's Hospital	Eastern China	Jiangxi	Nanchang	Lang Ji
Anhui Provincial Hospital	Eastern China	Anhui	Hefei	Likun Ma
Xiangtan City Central Hospital	Central China	Hunan	Xiangtan	Lilong Tang
The First Hospital of Haerbin City	Northeast China	Heilongjiang	Harbin	Lin Wei
Central Hospital Affiliated to Shenyang Medical College	Northeast China	Liaoning	Shenyang	Man Zhang, Kaiming Chen
The Central Hospital of Wuhan	Central China	Hubei	Wuhan	Manhua Chen
Hangzhou First People's Hospital	Eastern China	Zhejiang	Hangzhou	Ningfu Wang
The Central Hospital of Xuzhou	Eastern China	Jiangsu	Xuzhou	Peiyang Zhang
The Second Hospital of Dalian Medical University	Northeast China	Liaoning	Dalian	Peng Qu
The First Affiliated Hospital of Liaoning University of Traditional Chinese Medicine	Northeast China	Liaoning	Shenyang	Ping Hou
Beijing Tsinghua Changgung Hospital	Northern China	Beijing	Beijing	Ping Zhang
Guizhou Provincial People's Hospital	Northwest China	Guizhou	Guiyang	Qiang Wu
The First Affiliated Hospital of Xiamen University	Eastern China	Fujian	Xiamen	Qiang Xie
Quanzhou First Hospital	Eastern China	Fujian	Quanzhou	Rong Lin
Wuzhou People's Hospital	Southern China	Guangxi	Wuzhou	Shaowu Ye
The Central Hospital of Jilin	Northeast China	Jilin	Changchun	Shuangbin Li
Xiangya Hospital Central South University	Central China	Hunan	Changsha	Tianlun Yang
Guangzhou Red Cross Hospital	Southern China	Guangdong	Guangzhou	Tongguo Wu
The First Affiliated Hospital of Guangzhou Medical College	Southern China	Guangdong	Guangzhou	Wei Wang
The First Affiliated Hospital of Wenzhou Medical University	Eastern China	Zhejiang	Wenzhou	Weijian Huang
The Second Affiliated Hospital of Soochow University	Eastern China	Jiangsu	Suzhou	Weiting Xu
Wuhan Asia Heart Hospital	Central China	Hubei	Wuhan	Xi Su
The First Affiliated Hospital of Soochow University	Eastern China	Jiangsu	Suzhou	Xiangjun Yang
Affiliated Hospital of Yan'an University	Northwest China	Shaanxi	Yan'an	Xiaochuan Ma
The First People's Hospital of Jining	Eastern China	Shandong	Jining	Xiaofei Sun

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Hospitals	Territory	Province	City	Investigator
The Central Hospital of Taiyuan	Northern China	Shanxi	Taiyuan	Xiaoping Chen
West China Hospital of Sichuan University	Northwest China	Sichuan	Chengdu	Xiaoping Chen
The Third Affiliated Hospital of Guangzhou Medical College	Southern China	Guangdong	Guangzhou	Ximing Chen
The First Affiliated Hospital of Wannan Medical College	Eastern China	Anhui	Wuhu	Xingsheng Tang
Tangdu Hospital of The Fourth Military Medical University	Northwest China	Shaanxi	Xi'an	Xue Li
Shanghai East Hospital Affiliated to Tongji University	Eastern China	Shanghai	Shanghai	Xuebo Liu
Xiamen Cardiovascular Disease Hospital	Eastern China	Fujian	Xiamen	Yan Wang
Zhongnan Hospital of Wuhan University	Central China	Hubei	Wuhan	Yanggan Wang
Fujian Provincial Hospital	Eastern China	Fujian	Fuzhou	Yansong Guo
The First Affiliated hospital of Dalian Medical University	Northeast China	Liaoning	Dalian	Yanzong Yang
The First People's Hospital of Changde	Central China	Hunan	Changde	Yi Huang
The First Affiliated Hospital of China Medical University	Northeast China	Liaoning	Shenyang	Yingxian Sun
The Fourth Affiliated Hospital of China Medical University	Northeast China	Liaoning	Shenyang	Yuanzhe Jin
Cangzhou Central Hospital	Northern China	Hebei	Cangzhou	Zesheng Xu
The Central Hospital of Shaoyang	Central China	Hunan	Shaoyang	Zewei Ouyang
The People's Hospital of Liaoning Province	Northeast China	Liaoning	Shenyang	Zhanquan Li
The First Affiliated Hospital of Jiamusi University	Northeast China	Heilongjiang	Jiamusi	Zhaofa He
Tangshan Gongren Hospital	Northern China	Hebei	Tangshan	Zheng Ji
Huaibei Miners' General Hospital	Eastern China	Anhui	Huaibei	Zhenqi Su
Linyi People's Hospital	Eastern China	Shandong	Linyi	Zhihong Ou