

SUPPLEMENTAL MATERIAL

Table S1. Baseline patient, angiographic and procedural characteristics according to number of SMuRFs.

Variable	Overall (n=10486)	0~1 SMuRF (n=2277)	2~3 SMuRFs (n=6945)	4 SMuRFs (n=1264)	P value
Age, years	59 (51-65)	59 (50-65)	59 (51-66)	58 (50-65)	0.129
Male, n (%)	8094 (77.2)	1558 (68.4)	5341 (76.9)	1195 (94.5)	< 0.001
Body mass index, kg/m ²	25.9 (23.9-27.8)	25.1 (23.2-27.2)	26.0 (24.0-27.9)	26.6 (24.7-28.7)	< 0.001
Current smoker, n (%)	5990 (57.1)	633 (27.8)	4093 (58.9)	1264 (100)	< 0.001
Diabetes mellitus, n (%)	4430 (42.2)	217 (9.5)	2949 (42.5)	1264 (100)	< 0.001
Hypertension, n (%)	6755 (64.4)	511 (22.4)	4980 (71.7)	1264 (100)	< 0.001
Dyslipidemia, n (%)	7068 (67.4)	496 (21.8)	5308 (76.4)	1264 (100)	< 0.001
Previous myocardial infarction, n (%)	1965 (18.7)	358 (15.7)	1307 (18.8)	300 (23.7)	< 0.001
Previous PCI, n (%)	2553 (24.3)	426 (18.7)	1717 (24.7)	410 (32.4)	< 0.001
Previous CABG, n (%)	423 (4.0)	73 (3.2)	261 (3.8)	89 (7.0)	< 0.001
Previous stroke, n (%)	1120 (10.7)	117 (5.1)	811 (11.7)	192 (15.2)	< 0.001
Peripheral vascular disease, n (%)	282 (2.7)	30 (1.3)	186 (2.7)	66 (5.2)	< 0.001
eGFR < 60ml/min/1.73m ² , n (%)	309 (3.1)	50 (2.3)	208 (3.1)	51 (4.2)	0.009
COPD, n (%)	241 (2.3)	40 (1.8)	170 (2.4)	31 (2.5)	0.150
LVEF < 50%, n (%)	410 (4.0)	92 (4.1)	264 (3.9)	54 (4.4)	0.713
Acute coronary syndrome, n (%)	6272 (59.8)	1443 (63.4)	4078 (58.7)	751 (59.4)	< 0.001

Systolic blood pressure, mmHg	125 (120-140)	120 (110-130)	129 (120-140)	130 (120-140)	< 0.001
Laboratory data					
Triglyceride, mmol/L	1.53 (1.14-2.10)	1.40 (1.07-1.90)	1.55 (1.15-2.13)	1.66 (1.25-2.34)	< 0.001
Total cholesterol, mmol/L	4.05 (3.44-4.81)	4.10 (3.46-4.85)	4.05 (3.45-4.81)	3.95 (3.36-4.71)	0.002
LDL-C, mmol/L	2.35 (1.86-3.01)	2.42 (1.87-3.07)	2.35 (1.86-3.01)	2.26 (1.82-2.90)	< 0.001
HDL-C, mmol/L	0.99 (0.84-1.18)	1.04 (0.88-1.25)	0.99 (0.84-1.17)	0.93 (0.80-1.09)	< 0.001
Hemoglobin A1c, %	6.2 (5.8-7.0)	5.9 (5.7-6.2)	6.2 (5.8-7.0)	7.1 (6.6-8.2)	< 0.001
Uric acid, mg/dl	5.64 (4.78-6.58)	5.43 (4.58-6.33)	5.69 (4.82-6.63)	5.68 (4.86-6.73)	< 0.001
Radial artery access, n (%)	8853 (91.4)	1872 (91.2)	5921 (91.6)	1060 (90.3)	0.315
Three-vessel disease, n (%)	4539 (43.3)	860 (37.8)	3013 (43.4)	666 (52.7)	< 0.001
SYNTAX score	10 (6-17)	10 (6-17)	10 (6-17)	11 (6-17)	0.116
Type B2 or C lesion, n (%)	8063 (76.9)	1708 (75.0)	5348 (77.0)	1007 (79.7)	0.007
No. lesions treated ≥ 3 , n (%)	714 (6.8)	113 (5.0)	489 (7.0)	112 (8.9)	< 0.001
No. stents ≥ 3 , n (%)	2327 (22.2)	453 (19.9)	1554 (22.4)	320 (25.3)	0.001
Use of EES/ZES, n (%)	5477 (52.2)	1223 (53.7)	3605 (51.9)	649 (51.2)	0.261
Minimum stent diameter, mm	2.75 (2.50-3.00)	3.00 (2.50-3.50)	2.75 (2.50-3.00)	2.75 (2.50-3.00)	< 0.001
Total stent length, mm	36 (23-55)	33 (23-52)	36 (23-55)	39 (24-59)	< 0.001
Medications at discharge					
Aspirin, n (%)	10348 (98.7)	2248 (98.7)	6847 (98.6)	1253 (99.1)	0.294

P2Y ₁₂ receptor inhibitor, n (%)	10326 (98.5)	2231 (98.0)	6847 (98.6)	1248 (98.7)	0.087
β-blockers, n (%)	9447 (90.1)	2011 (88.3)	6262 (90.2)	1174 (92.9)	< 0.001
Statins, n (%)	10056 (95.9)	2196 (96.4)	6650 (95.8)	1210 (95.7)	0.335
Calcium channel blockers, n (%)	5138 (49.0)	940 (41.3)	3485 (50.2)	713 (56.4)	< 0.001

CABG, coronary artery bypass grafting; COPD, chronic obstructive pulmonary disease; EES, everolimus-eluting stent; eGFR, estimated glomerular filtration rate; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; LVEF, left ventricular ejection fraction; PCI, percutaneous coronary intervention; SMuRFs, standard modifiable cardiovascular risk factors; SYNTAX, synergy between percutaneous coronary intervention with TAXUS and cardiac surgery; ZES, zotarolimus-eluting stent.

Table S2. Clinical outcomes according to serum uric acid tertiles in the overall population.

Clinical outcomes	Group	Event, n (%)	HR (95%CI)	
			Unadjusted model	Adjusted model
MACCE	Low uric acid	374 (10.7)	1 (reference)	1 (reference)
	Medium uric acid	402 (11.5)	1.086 (0.943, 1.250)	1.039 (0.888, 1.217)
	High uric acid	457 (13.1)	1.123 (1.048, 1.202)	1.103 (1.016, 1.198)
	Per 1mg/dl increase	1233 (11.8)	1.067 (1.027, 1.109)	1.057 (1.011, 1.106)
All-cause death	Low uric acid	31 (0.9)	1 (reference)	1 (reference)
	Medium uric acid	45 (1.3)	1.458 (0.923, 2.304)	1.492 (0.904, 2.462)
	High uric acid	45 (1.3)	1.214 (0.966, 1.526)	1.254 (0.962, 1.636)
	Per 1mg/dl increase	121 (1.2)	1.120 (0.994, 1.262)	1.141 (0.997, 1.305)
Cardiac death	Low uric acid	10 (0.3)	1 (reference)	1 (reference)
	Medium uric acid	24 (0.7)	2.404 (1.149, 5.026)	2.336 (1.020, 5.349)
	High uric acid	26 (0.7)	1.620 (1.125, 2.333)	1.661 (1.083, 2.546)
	Per 1mg/dl increase	60 (0.6)	1.266 (1.080, 1.485)	1.249 (1.042, 1.496)
Nonfatal MI	Low uric acid	23 (0.7)	1 (reference)	1 (reference)
	Medium uric acid	29 (0.8)	1.270 (0.735, 2.196)	1.358 (0.737, 2.502)
	High uric acid	43 (1.2)	1.387 (1.077, 1.787)	1.477 (1.091, 1.999)
	Per 1mg/dl increase	95 (0.9)	1.161 (1.016, 1.326)	1.171 (1.009, 1.358)
Stroke	Low uric acid	59 (1.7)	1 (reference)	1 (reference)
	Medium uric acid	56 (1.6)	0.954 (0.662, 1.375)	0.883 (0.590, 1.323)
	High uric acid	56 (1.6)	0.987 (0.822, 1.186)	0.977 (0.791, 1.206)
	Per 1mg/dl increase	171 (1.6)	0.988 (0.889, 1.099)	0.970 (0.859, 1.096)
Unplanned revascularization	Low uric acid	284 (8.1)	1 (reference)	1 (reference)
	Medium uric acid	309 (8.8)	1.099 (0.935, 1.291)	1.066 (0.888, 1.279)
	High uric acid	355 (10.2)	1.133 (1.048, 1.224)	1.114 (1.014, 1.223)
	Per 1mg/dl increase	948 (9.0)	1.073 (1.027, 1.121)	1.064 (1.011, 1.120)

Adjusted for age, sex, body mass index, current smoking, diabetes, hypertension, dyslipidemia, previous myocardial infarction, previous stroke, acute coronary syndrome, systolic blood pressure, triglyceride, low-density lipoprotein cholesterol, minimum stent diameter, total stent length, and use of statin at discharge. CI, confidence interval; HR, hazard ratio; MACCE, major adverse cardiovascular and cerebrovascular event; MI, myocardial infarction.

Table S3. 2.4-year major adverse cardiovascular and cerebrovascular events in patients with and without diabetes according to acid tertiles.

Group	Diabetes (n=4430)			No diabetes (n=6056)		
	Event, n (%)	Unadjusted HR (95%CI)	Adjusted HR (95%CI)	Event, n (%)	Unadjusted HR (95%CI)	Adjusted HR (95%CI)
Low uric acid	207 (12.2)	1 (reference)	1 (reference)	167 (9.3)	1 (reference)	1 (reference)
Medium uric acid	184 (12.8)	1.053 (0.863, 1.284)	1.027 (0.829, 1.272)	218 (10.6)	1.159 (0.947, 1.417)	1.101 (0.882, 1.373)
High uric acid	186 (14.4)	1.102 (0.998, 1.217)	1.073 (0.958, 1.201)	271 (12.3)	1.171 (1.063, 1.289)	1.122 (1.001, 1.257)
Per 1mg/dl increase	577 (13.0)	1.056 (0.999, 1.116)	1.047 (0.983, 1.114)	656 (10.8)	1.090 (1.034, 1.150)	1.071 (1.005, 1.140)

Adjusted for age, sex, body mass index, current smoking, diabetes, hypertension, dyslipidemia, previous myocardial infarction, previous stroke, acute

coronary syndrome, systolic blood pressure, triglyceride, low-density lipoprotein cholesterol, minimum stent diameter, total stent length, and use of statin at

discharge. CI, confidence interval; HR, hazard ratio.

Table S4. 2.4-year major adverse cardiovascular and cerebrovascular events in patients with and without hypertension according to uric acid tertiles.

Group	Hypertension (n=6755)			No hypertension (n=3731)		
	Event, n (%)	Unadjusted HR (95%CI)	Adjusted HR (95%CI)	Event, n (%)	Unadjusted HR (95%CI)	Adjusted HR (95%CI)
Low uric acid	246 (11.3)	1 (reference)	1 (reference)	128 (9.8)	1 (reference)	1 (reference)
Medium uric acid	266 (12.0)	1.079 (0.907, 1.283)	0.996 (0.822, 1.206)	136 (10.6)	1.096 (0.861, 1.395)	1.171 (0.884, 1.553)
High uric acid	312 (13.2)	1.098 (1.010, 1.194)	1.069 (0.968, 1.180)	145 (12.8)	1.167 (1.036, 1.314)	1.190 (1.025, 1.381)
Per 1mg/dl increase	824 (12.2)	1.053 (1.005, 1.103)	1.036 (0.982, 1.094)	409 (11.0)	1.094 (1.020, 1.173)	1.124 (1.034, 1.222)

Adjusted for age, sex, body mass index, current smoking, diabetes, hypertension, dyslipidemia, previous myocardial infarction, previous stroke, acute coronary syndrome, systolic blood pressure, triglyceride, low-density lipoprotein cholesterol, minimum stent diameter, total stent length, and use of statin at discharge. CI, confidence interval; HR, hazard ratio.

Table S5. 2.4-year major adverse cardiovascular and cerebrovascular events in patients with and without dyslipidemia according to uric acid tertiles.

Group	Dyslipidemia (n=7068)			No dyslipidemia (n=3418)		
	Event, n (%)	Unadjusted HR (95%CI)	Adjusted HR (95%CI)	Event, n (%)	Unadjusted HR (95%CI)	Adjusted HR (95%CI)
Low uric acid	263 (11.5)	1 (reference)	1 (reference)	111 (9.2)	1 (reference)	1 (reference)
Medium uric acid	287 (12.3)	1.076 (0.910, 1.272)	1.074 (0.801, 1.442)	115 (9.9)	1.099 (0.846, 1.426)	1.035 (0.858, 1.250)
High uric acid	315 (12.9)	1.069 (0.985, 1.160)	1.022 (0.926, 1.129)	142 (13.6)	1.251 (1.105, 1.416)	1.307 (1.127, 1.516)
Per 1mg/dl increase	865 (12.2)	1.047 (1.000, 1.097)	1.036 (0.981, 1.094)	368 (10.8)	1.111 (1.035, 1.191)	1.124 (1.036, 1.219)

Adjusted for age, sex, body mass index, current smoking, diabetes, hypertension, dyslipidemia, previous myocardial infarction, previous stroke, acute coronary syndrome, systolic blood pressure, triglyceride, low-density lipoprotein cholesterol, minimum stent diameter, total stent length, and use of statin at discharge. CI, confidence interval; HR, hazard ratio.

Table S6. 2.4-year major adverse cardiovascular and cerebrovascular events in patients with and without current smoking according to uric acid tertiles.

Group	Current smoking (n=5990)			No current smoking (n=4496)		
	Event, n (%)	Unadjusted HR (95%CI)	Adjusted HR (95%CI)	Event, n (%)	Unadjusted HR (95%CI)	Adjusted HR (95%CI)
Low uric acid	194 (11.9)	1 (reference)	1 (reference)	180 (9.6)	1 (reference)	1 (reference)
Medium uric acid	238 (11.5)	0.972 (0.804, 1.175)	0.982 (0.795, 1.213)	164 (11.5)	1.207 (0.977, 1.491)	1.137 (0.896, 1.444)
High uric acid	295 (12.8)	1.051 (0.960, 1.151)	1.054 (0.949, 1.170)	162 (13.5)	1.205 (1.084, 1.340)	1.188 (1.042, 1.354)
Per 1mg/dl increase	727 (12.1)	1.037 (0.985, 1.093)	1.036 (0.977, 1.099)	506 (11.3)	1.101 (1.038, 1.167)	1.097 (1.021, 1.178)

Adjusted for age, sex, body mass index, current smoking, diabetes, hypertension, dyslipidemia, previous myocardial infarction, previous stroke, acute coronary syndrome, systolic blood pressure, triglyceride, low-density lipoprotein cholesterol, minimum stent diameter, total stent length, and use of statin at discharge. CI, confidence interval; HR, hazard ratio.

Table S7. 2.4-year major adverse cardiovascular and cerebrovascular events in patients with and without metabolic syndrome according to uric acid tertiles.

Group	Metabolic syndrome (n=5457)			No metabolic syndrome (n=5029)		
	Event, n (%)	Unadjusted HR (95%CI)	Adjusted HR (95%CI)	Event, n (%)	Unadjusted HR (95%CI)	Adjusted HR (95%CI)
Low uric acid	203 (12.3)	1 (reference)	1 (reference)	171 (9.3)	1 (reference)	1 (reference)
Medium uric acid	204 (11.8)	0.962 (0.792, 1.168)	0.915 (0.740, 1.133)	198 (11.2)	1.230 (1.002, 1.509)	1.245 (0.982, 1.579)
High uric acid	279 (13.5)	1.063 (0.971, 1.164)	1.035 (0.930, 1.151)	178 (12.5)	1.179 (1.061, 1.309)	1.208 (1.060, 1.377)
Per 1mg/dl increase	686 (12.6)	1.041 (0.991, 1.095)	1.029 (0.972, 1.090)	547 (10.9)	1.094 (1.029, 1.163)	1.112 (1.032, 1.199)

Adjusted for age, sex, body mass index, current smoking, diabetes, hypertension, dyslipidemia, previous myocardial infarction, previous stroke, acute coronary syndrome, systolic blood pressure, triglyceride, low-density lipoprotein cholesterol, minimum stent diameter, total stent length, and use of statin at discharge. CI, confidence interval; HR, hazard ratio. A definite diagnosis of metabolic syndrome was assigned in the presence of ≥ 3 of the following 5 cardiovascular risk factors: (1) body mass index $> 30\text{kg/m}^2$; (2) triglycerides $\geq 150\text{ mg/dL}$; (3) high-density lipoprotein cholesterol $< 40\text{ mg/dL}$ in male or $< 50\text{ mg/dL}$ in female; (4) systemic hypertension ($\geq 130/\geq 85\text{ mmHg}$); and (5) diabetes or hemoglobin A1c $\geq 6.0\text{mmol/L}$.

Table S8. 2.4-year major adverse cardiovascular and cerebrovascular events in male and female according to uric acid tertiles.

Group	Male (n=8094)			Female (n=2392)		
	Event, n (%)	Unadjusted HR (95%CI)	Adjusted HR (95%CI)	Event, n (%)	Unadjusted HR (95%CI)	Adjusted HR (95%CI)
Low uric acid	248 (11.5)	1 (reference)	1 (reference)	126 (9.4)	1 (reference)	1 (reference)
Medium uric acid	332 (11.7)	1.031 (0.874, 1.215)	1.064 (0.887, 1.277)	70 (10.4)	1.121 (0.837, 1.501)	1.032 (0.745, 1.428)
High uric acid	402 (12.9)	1.073 (0.991, 1.161)	1.080 (0.986, 1.183)	55 (14.6)	1.276 (1.089, 1.495)	1.217 (1.012, 1.464)
Per 1mg/dl increase	982 (12.1)	1.043 (0.998, 1.091)	1.050 (0.998, 1.104)	251 (10.5)	1.131 (1.034, 1.238)	1.099 (0.990, 1.220)

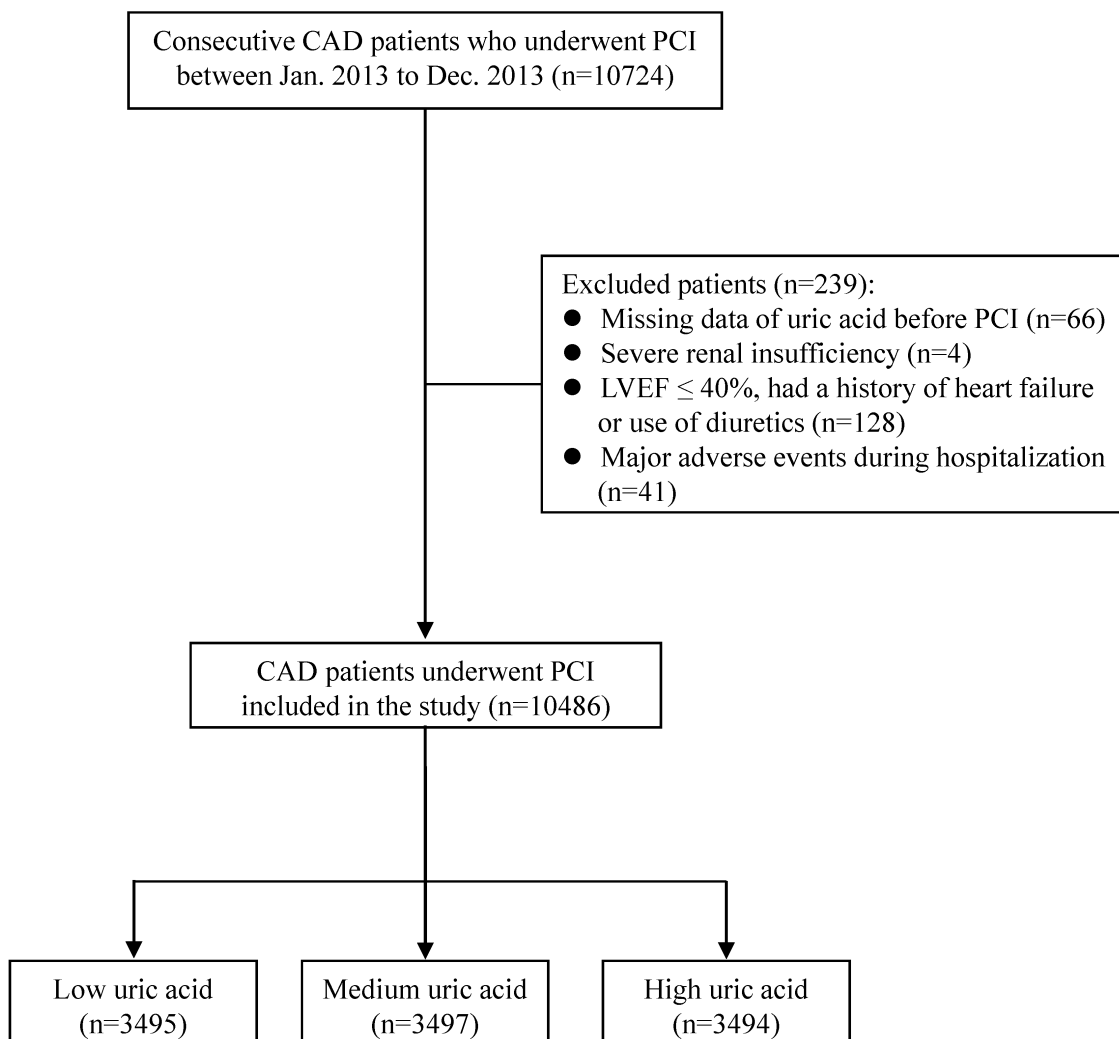
Adjusted for age, sex, body mass index, current smoking, diabetes, hypertension, dyslipidemia, previous myocardial infarction, previous stroke, acute coronary syndrome, systolic blood pressure, triglyceride, low-density lipoprotein cholesterol, minimum stent diameter, total stent length, and use of statin at discharge. CI, confidence interval; HR, hazard ratio.

Table S9. Clinical outcomes according to number of standard modifiable cardiovascular risk factors.

Clinical outcomes	No. risk factor	Event, n (%)	Crude HR (95%CI)	Adjusted HR (95%CI)
MACCE	0~1	221 (9.7)	1 (reference)	1 (reference)
	2~3	830 (12.0)	1.237 (1.066, 1.434)	1.182 (1.001, 1.395)
	4	182 (14.4)	1.227 (1.112, 1.353)	1.159 (1.027, 1.308)
All-cause death	0~1	20 (0.9)	1 (reference)	1 (reference)
	2~3	84 (1.2)	1.371 (0.842, 2.233)	1.479 (0.852, 2.568)
	4	17 (1.3)	1.232 (0.892, 1.702)	1.037 (0.692, 1.553)
Cardiac death	0~1	8 (0.4)	1 (reference)	1 (reference)
	2~3	40 (0.6)	1.634 (0.765, 3.491)	1.740 (0.721, 4.202)
	4	12 (0.9)	1.634 (1.045, 2.555)	1.411 (0.797, 2.498)
Nonfatal MI	0~1	20 (0.9)	1 (reference)	1 (reference)
	2~3	55 (0.8)	0.893 (0.535, 1.490)	0.859 (0.481, 1.534)
	4	20 (1.6)	1.336 (0.980, 1.821)	1.275 (0.864, 1.882)
Stroke	0~1	25 (1.1)	1 (reference)	1 (reference)
	2~3	131 (1.9)	1.708 (1.114, 2.620)	1.584 (0.992, 2.529)
	4	15 (1.2)	1.031 (0.749, 1.420)	0.911 (0.620, 1.339)
Unplanned revascularization	0~1	176 (7.7)	1 (reference)	1 (reference)
	2~3	628 (9.0)	1.173 (0.992, 1.386)	1.118 (0.927, 1.348)
	4	144 (11.4)	1.220 (1.093, 1.362)	1.176 (1.026, 1.348)

Adjusted for age, sex, body mass index, previous myocardial infarction, previous stroke, acute coronary syndrome, systolic blood pressure, triglyceride, low-density lipoprotein cholesterol, minimum stent diameter, total stent length, and use of statin at discharge. CI, confidence interval; HR, hazard ratio; MACCE, major adverse cardiovascular and cerebrovascular event; MI, myocardial infarction.

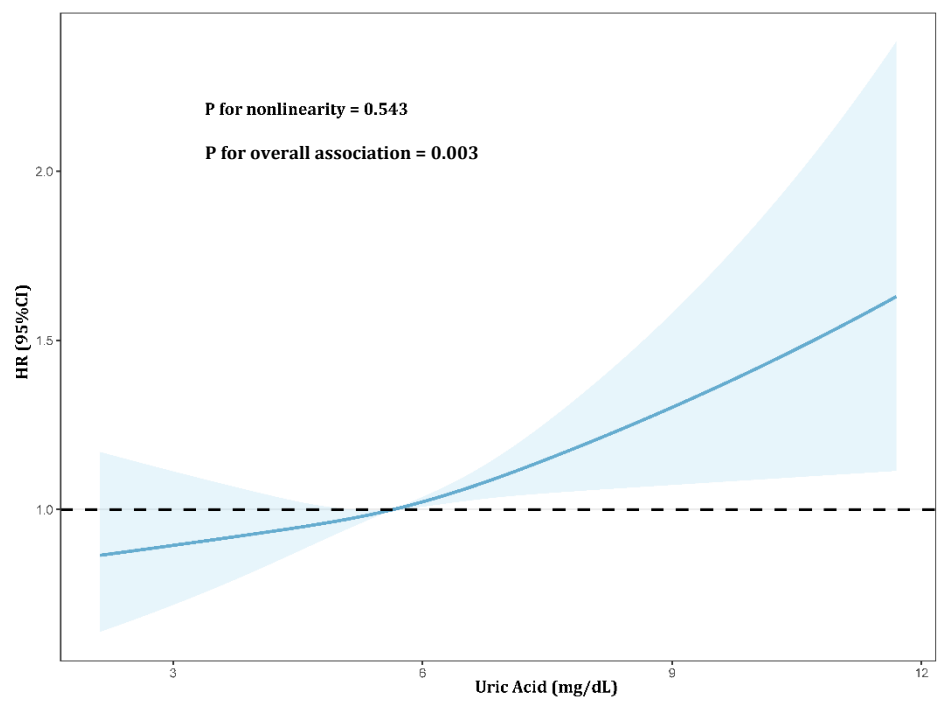
Figure S1. Flowchart of the study.



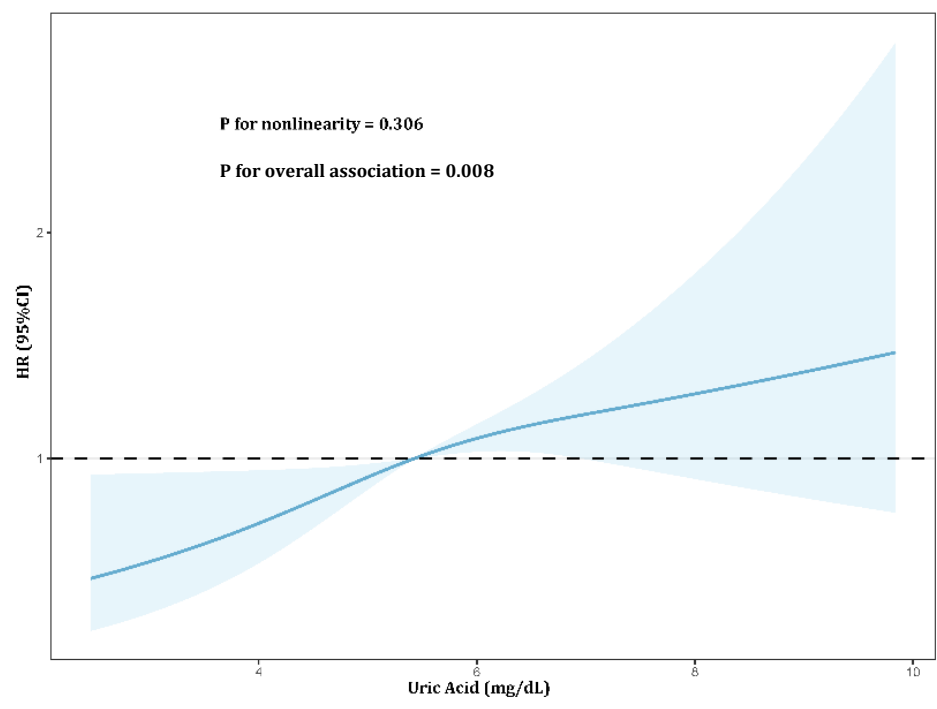
CAD, coronary artery disease; LVEF, left ventricular ejection fraction; PCI, percutaneous coronary intervention.

Figure S2 Restricted cubic spline plots of the association between uric acid levels and major adverse cardiovascular and cerebrovascular events.

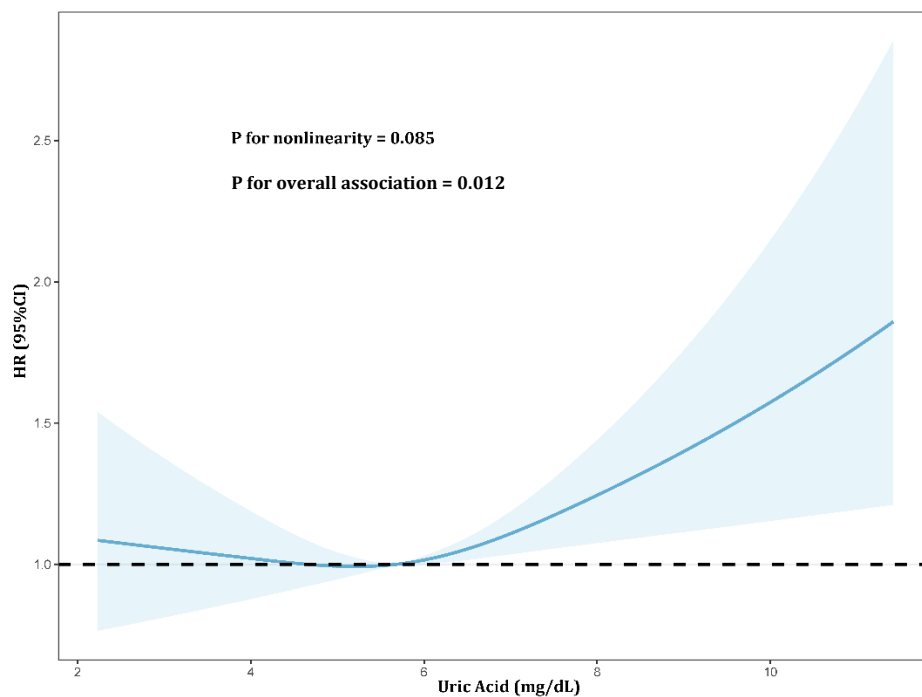
(A) Overall population



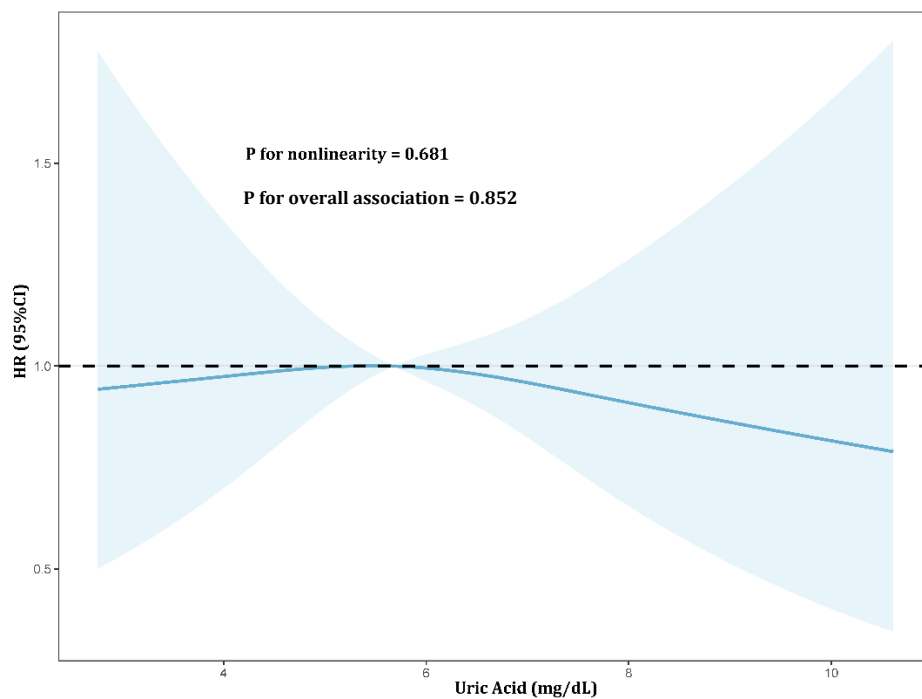
(B) 0~1 standard modifiable cardiovascular risk factor



(C) 2~3 standard modifiable cardiovascular risk factors

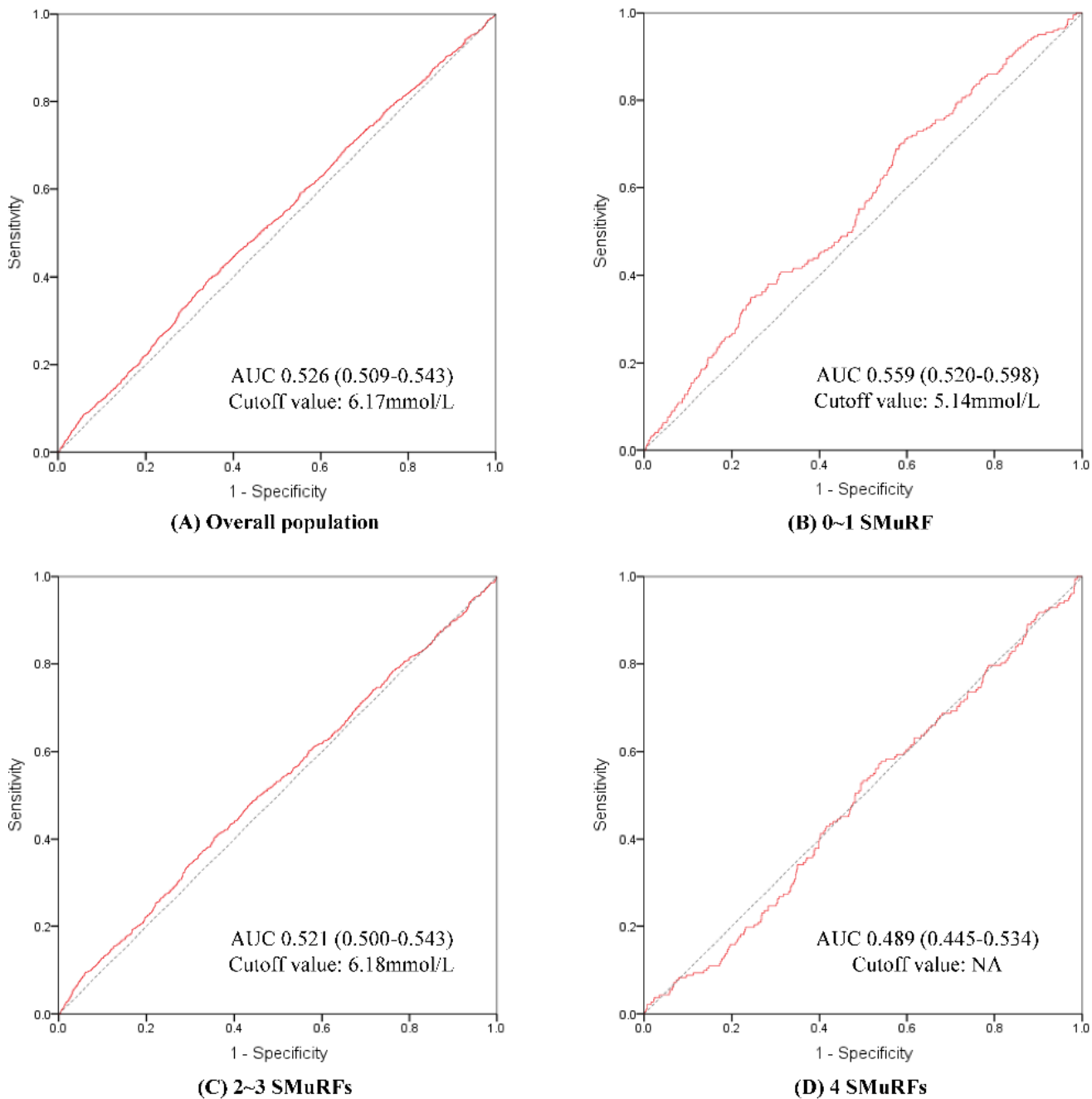


(D) 4 standard modifiable cardiovascular risk factors



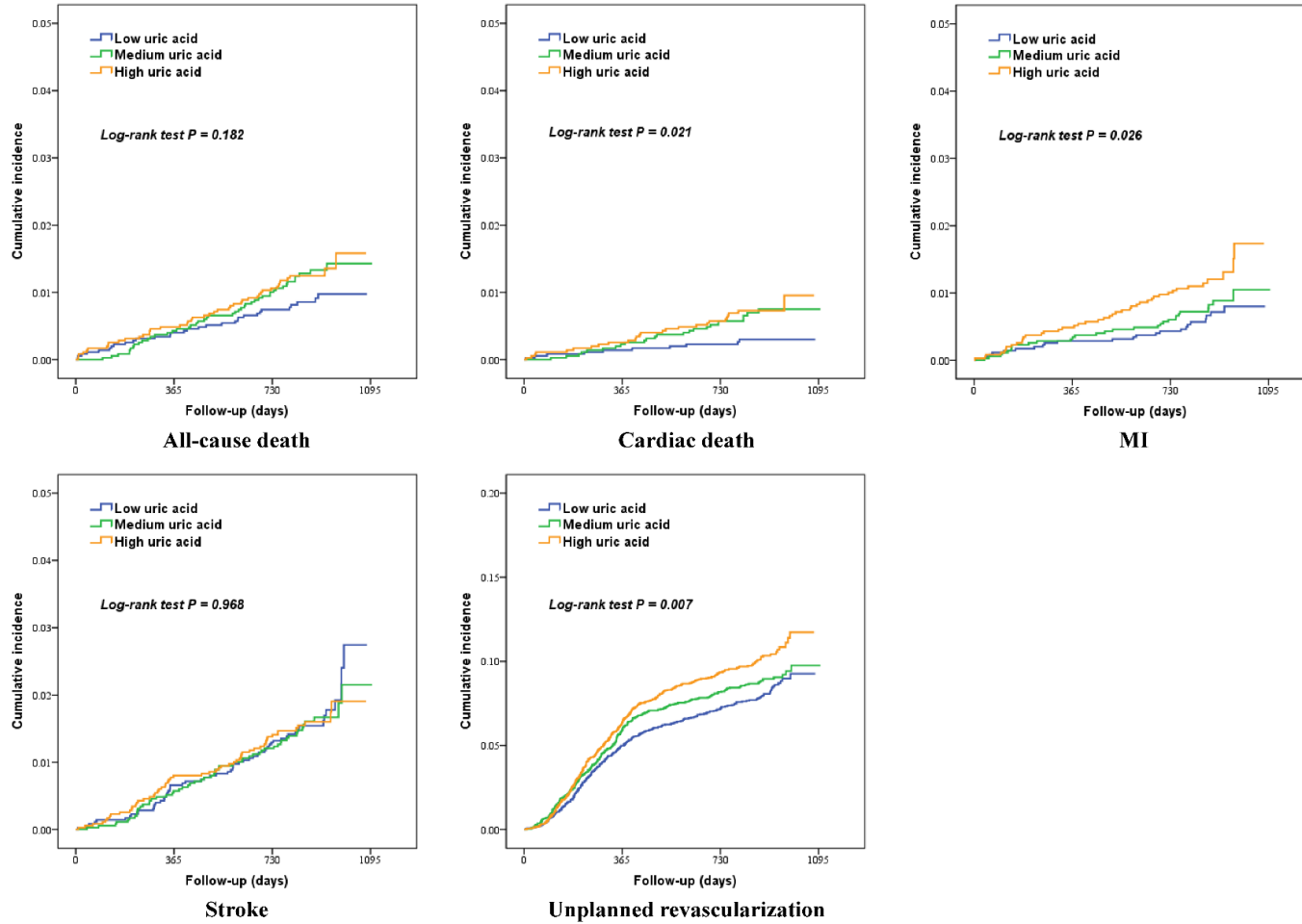
CI, confidence interval; HR, hazard ratio.

Figure S3 The receiver operating characteristic curve of uric acid to predict major adverse cardiovascular and cerebrovascular event.



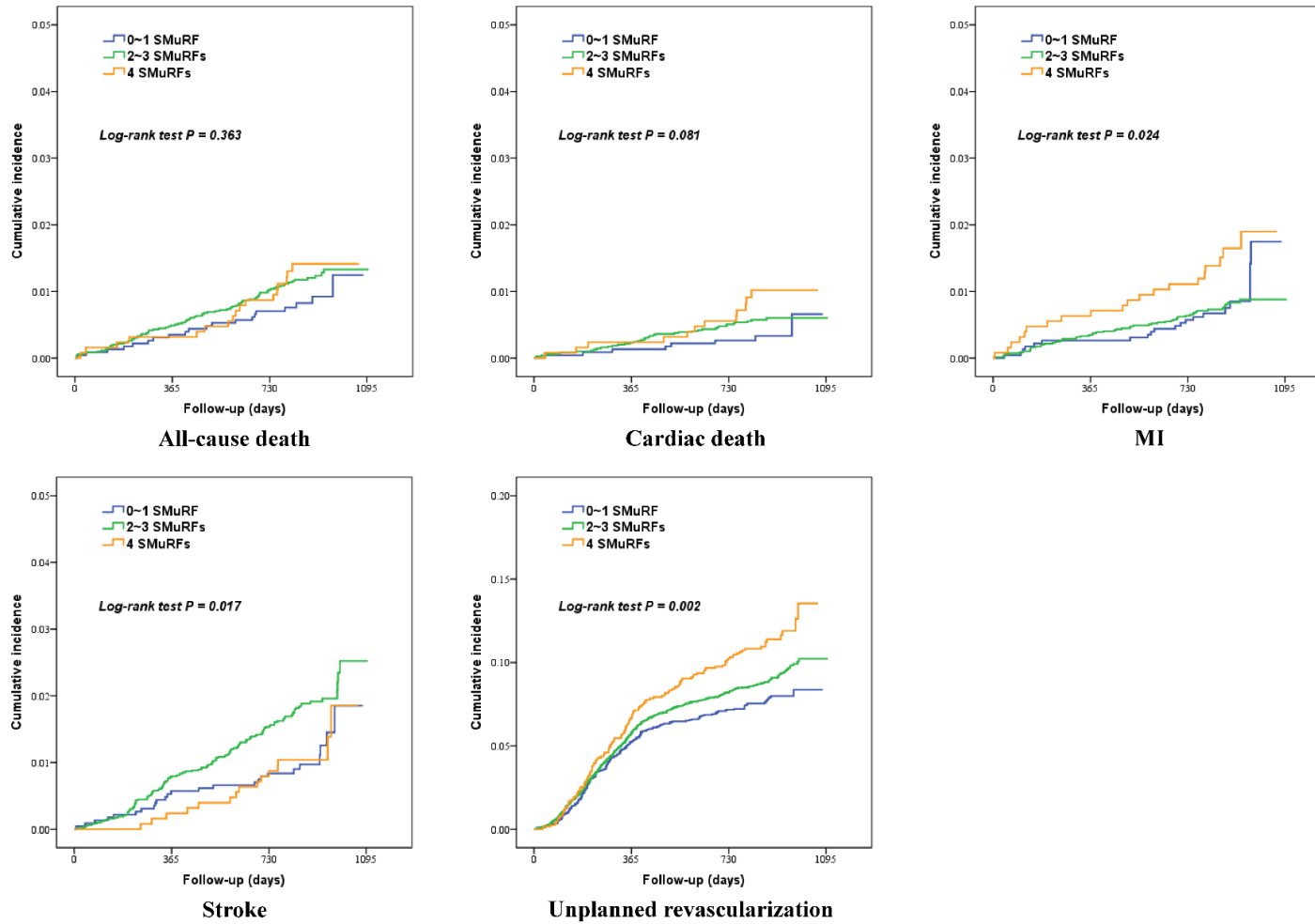
AUC, area under curve; NA, not applicable; SMuRF, standard modifiable cardiovascular risk factor.

Figure S4. Kaplan-Meier survival curves for secondary endpoints according to uric acid tertiles.



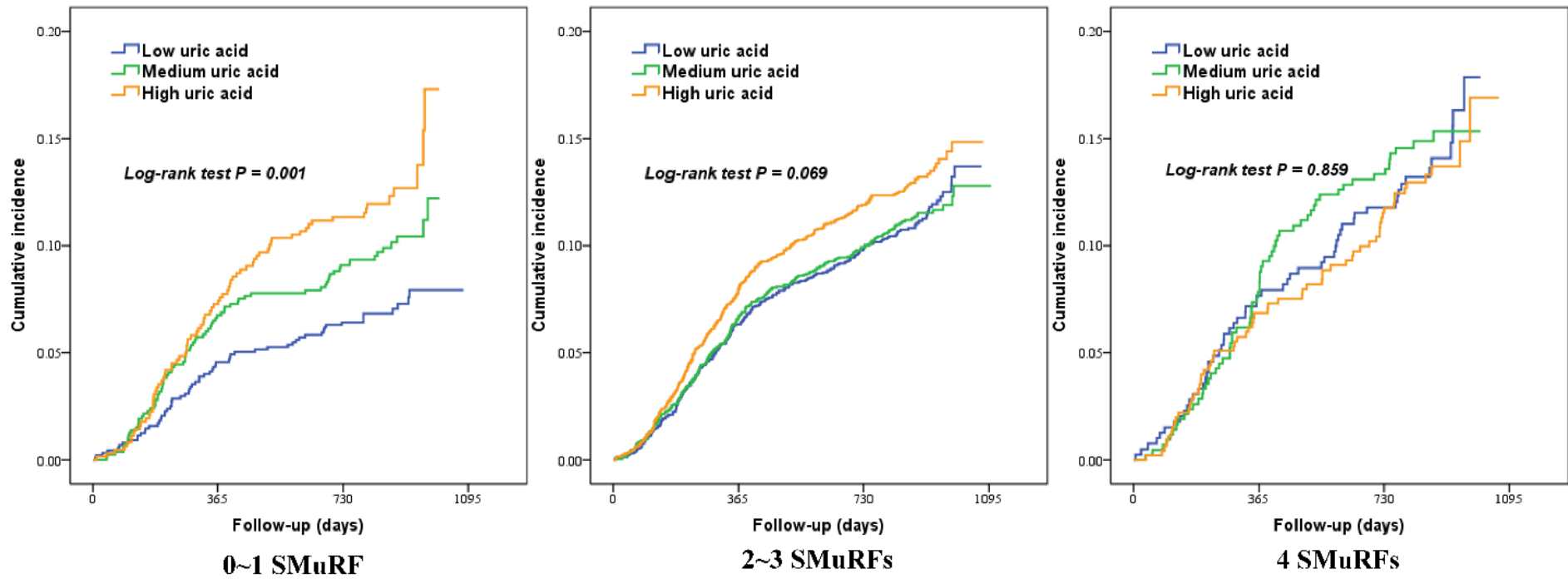
MI, myocardial infarction.

Figure S5. Kaplan-Meier survival curves for secondary endpoints according to different number of SMuRFs.



MI, myocardial infarction; SMuRFs, standard modifiable cardiovascular risk factors.

Figure S6. Kaplan-Meier survival curves for major adverse cardiovascular and cerebrovascular events according to serum uric acid tertiles in patients with different number of SMuRFs.



SMuRFs, standard modifiable cardiovascular risk factors.