

Table S1 Definition of outcome and covariables

Category	Definition
Outcome (ICD-10 code)	
Pneumonia	J13.x-J18.x
Comorbidity (ICD-10 code)	
Alcohol-related disease	F10.x; G31.2; G62.1; G72.1; I42.6; K29.2; K70.x; K86.0; R78.0; T51.x; Z50.2; Z71.4; Z72.1
Hypertension	I10.x; I11.x; I12.x; I13.x; I15.x
Colon disease	K50.x; K51.x; K52.x
Traumatic brain injury	S02.x; S06.x; S08.x
Traumatic spinal cord injury	S12.x; S13.0; S14.1; S22.0; S22.1; S23.0; S24.1; S32.0; S32.7; S32.8; S33.0; S34.1; T06.0; T06.1; T08.x; T09.3
Burn	T20.x-T25.x; T29.x-T32.x
Sepsis	A40.x; A41.x; A02.1; A20.7; A22.7; A26.7; A32.7; A39.401; B37.7; A28.001; A42.701; R65.201
Mental disorder	Fxx.x
Neuromuscular disorder	I69.x; G20.x-G26.x; G35.x-G37.x; G30.x-G32.x; G40.x; G41.x; G12.x
Gastrointestinal bleeding	K92.2; K25.0; K25.2; K25.4; K25.6; K26.0; K26.2; K26.4; K26.7; K27.0; K27.2; K27.4; K27.8; K28.0; K28.2; K28.4; K28.9
Abdominal symptoms	R10.x-R19.x
Medication (ATC classification)	
Vitamin K antagonists	B01AA
Platelet aggregation inhibitors	B01AC
Heparin group	B01AB
Other antithrombotic agents	B01AD; B01AE; B01AF; B01AX
Non-selective NSAIDs	M01AA; M01AB; M01AC; M01AE; M01AG; M01AX;
Antidepressants	N06A
Bisphosphonates	M05BB
Antineoplastic agents	L01
Coxibs	M01AH
Sedatives	N01A; N02A; N05
Muscle relaxants	M03A

ICD-10, 10th revision of the International Classification of Diseases; ATC, Anatomical Therapeutic Chemical; NSAIDs, non-steroidal anti-inflammatory drugs.

Table S2 Population characteristics between the PPIs exposure group and the unexposed group: before propensity score matching

Variables	PPIs exposure group (n=217,460)	Unexposed group (n=90,162)	Absolute standardized difference
Male, n (%)	119,860 (55.1)	47,675 (52.9)	0.184
Age, median (IQR), years	52 (41–63)	49 (35–61)	0.045
Age, mean (SD), years	51.9 (15.5)	49.0 (16.4)	
Admission season, n (%)			
Spring	58,427 (26.9)	23,346 (25.9)	0.022
Summer	50,884 (23.4)	20,949 (23.2)	0.004
Autumn	49,975 (23.0)	21,165 (23.5)	–0.012
Winter	58,174 (26.8)	24,702 (27.4)	–0.015
LOS, median (IQR), days	9 (6–14)	7 (5–10)	0.372
Comorbidity, n (%)			
Myocardial infarction	7,091 (3.3)	1,226 (1.4)	0.127
Congestive heart failure	9,425 (4.3)	1,987 (2.2)	0.120
Peripheral vascular disease	3,557 (1.6)	1,490 (1.7)	–0.001
Cerebrovascular disease	18,238 (8.4)	5,471 (6.1)	0.090
Dementia	168 (0.1)	70 (0.1)	0.000
Chronic pulmonary disease	11,455 (5.3)	4,452 (4.9)	0.015
Rheumatic disease	5,402 (2.5)	1,541 (1.7)	0.054
Peptic ulcer disease	2,748 (1.3)	154 (0.2)	0.130
Mild liver disease	15,325 (7.0)	4,677 (5.2)	0.078
Diabetes without chronic complication	16,535 (7.6)	6,264 (6.9)	0.025
Hemiplegia or paraplegia	1,895 (0.9)	189 (0.2)	0.090
Renal disease	5,644 (2.6)	2,086 (2.3)	0.018
Diabetes with chronic complication	724 (0.3)	699 (0.8)	–0.060
Malignancy	41,707 (19.2)	8,140 (9.0)	0.295
Moderate or severe liver disease	2,265 (1.0)	355 (0.4)	0.077
Metastatic solid tumor	7,460 (3.4)	2,238 (2.5)	0.056
AIDS	105 (0.0)	56 (0.1)	–0.006
High stress ulcer risk	32,259 (14.8)	7,484 (8.3)	0.205
Alcohol-related disease	240 (0.1)	54 (0.1)	0.017
Colon disease	1,160 (0.5)	288 (0.3)	0.033
Hypertension	43,106 (19.8)	14,668 (16.3)	0.093
Mental disorder	1,317 (0.6)	551 (0.6)	–0.001
Neuromuscular disorder	4,727 (2.2)	1,432 (1.6)	0.043
Gastrointestinal bleeding	2,058 (0.9)	57 (0.1)	0.125
Abdominal symptoms	2,796 (1.3)	583 (0.6)	0.065
Medication, n (%)			
Vitamin K antagonists	1,585 (0.7)	258 (0.3)	0.062
Heparin group	35,638 (16.4)	9,029 (10.0)	0.189
Platelet aggregation inhibitors	23,143 (10.6)	7,217 (8.0)	0.091
Other antithrombotic agents	11,694 (5.4)	3,460 (3.8)	0.074
Non-selective NSAIDs	76,133 (35.0)	23,781 (26.4)	0.188
Antidepressants	1,611 (0.7)	624 (0.7)	0.006
Bisphosphonates	5,739 (2.6)	1,473 (1.6)	0.070
Antineoplastic agents	23,017 (10.6)	3,292 (3.7)	0.272
Coxibs	53,936 (24.8)	15,363 (17)	0.192
Sedatives	112,630 (51.8)	33,004 (36.6)	0.309
Muscle relaxants	124,528 (57.3)	32,856 (36.4)	0.427
Antibiotic therapy in the 48 hours after admission, n (%)	130,298 (59.9)	46,426 (51.5)	0.170
GC therapy dose >250 mg hydrocortisone or equivalence	178,126 (81.9)	71,605 (79.4)	0.010
Transient mechanical ventilation*, n (%)	666 (0.3)	15 (0.0)	0.072

*, total duration of mechanical ventilation \leq 48 h. PPIs, proton pump inhibitors; AIDS, acquired immune deficiency syndrome; NSAIDs, non-steroidal anti-inflammatory drugs; GC, glucocorticoid.