**Additional Table S1.** ICD-9-CM code used for diagnosis in the current study

| Variable | Code |
| --- | --- |
| Ischemic stroke | 433.xx–435.xx, excluding 433.00, 433.10, 433.20, 433.30, 433.80, 433.90, 434.00, 434.10, 434.90 |
| Hypertension | 401.xx–405.xx and any antihypertension drugs |
| Diabetes mellitus | 250.xx and any oral hypoglycemic drugs and insulin |
| Heart failure | 428.xx |
| Any stroke | 430.xx–437.xx |
| Previous myocardial infarction | 410.xx, 412.xx |
| Coronary artery disease | 410.xx–414.xx |
| Chronic kidney disease | 580.xx–589.xx, 403.xx–404.xx, 016.0x, 095.4x, 236.9x, 250.4x, 274.1x, 442.1x, 447.3x, 440.1x, 572.4x, 642.1x, 646.2x, 753.1x, 283.11, 403.01, 404.02, 446.21 |
| Dialysis | 585.xx (Catastrophic illness certificate) |
| Chronic obstructive pulmonary disease | 491.xx, 492.xx, 496.xx |
| Atrial fibrillation | 427.31 |
| Dyslipidemia | 272.xx and any lipid-lowing agents |
| Malignancy | 140.xx–208.xx (Catastrophic illness certificate) |
| Cirrhosis | 571.2, 571.5, 571.6 |
| Cardiovascular death | 390.xx–459.xx, 785.5x |
| Acute myocardial infarction | 410.xx |
| Bladder cancer | 188.xx (Catastrophic illness certificate) |

ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification.

**Additional Table S2.** Anatomical Therapeutic Chemical (ATC) codes used for drugs in the current study

|  |  |
| --- | --- |
| Medications | ATC code |
| **Study drugs** |  |
| ARB | C09 |
| Pioglitazone | A10BG03, A10BD05 |
| **Antihypertensive drugs** |  |
| Telmisartan | C09CA07, C09DB04, C09DA07 |
| Alpha-blocker | C02 |
| Diuretics(Thiazide/Loop diuretics/Spironolactone) | C03AA03, 03AA06, C03AA91, C03AA07, C03CA01, C03CA02, C03DA01, C03EA01 |
| Beta-blocker | C07 |
| CCB | C08 |
| **Antidiabetic drugs** |  |
| Insulin | A10A |
| DPP4i | A10BH |
| Secretagogue (Glinide) | A10BX02, A10BX03 |
| Alpha glucosidase | A10BF |
| Biguanide (Metformin) | A10BA |
| Sulfonylurea | A10BB |
| **Other medications** |  |
| Anticoagulant | B01AA02, B01AA03, B01AE07, B01AF01, B01AF02, B01AF03 |
| Fibrate | C10AB01, C10AB02, C10AB03, C10AB04, C10AB05, C10AB06, C10AB09 |
| Clopidogrel | B01AC04, B01AC30 |
| Statin | C10AA |
| Aspirin | B01AC06 |

ARB, angiotensin II receptor blockers; CCB, calcium channel blockers; DPP4i,dipeptidyl peptidase-4 inhibitor.

**Additional Table S3.** Characteristics of the study patients with and without use of pioglitazone before propensity score matching

| Characteristics | Pioglitazone(*n* = 3,190) | Non-pioglitazone(*n* = 32,645) | STD |
| --- | --- | --- | --- |
| Age, years | 67.0±10.0 | 68.7±10.4 | -0.166 |
| Age group, n (%) |  |  |  |
| <65years | 1,303 (40.8) | 11,325 (34.7) | 0.127 |
| 65-74years | 1,151 (36.1) | 11,530 (35.3) | 0.016 |
| ≥75years | 736 (23.1) | 9,790 (30.0) | -0.157 |
| Male, n (%) | 1,581 (49.6) | 16,069 (49.2) | 0.007 |
| Admitted in medical center, n (%) | 957 (30.0) | 10,423 (31.9) | -0.042 |
| DM duration, years | 8.6±3.4 | 7.2±3.8 | 0.379 |
| Comorbidity, n (%) |  |  |  |
| Atrial fibrillation | 89 (2.8) | 1,532 (4.7) | -0.100 |
| Myocardial infarction | 90 (2.8) | 1,060 (3.2) | -0.025 |
| Malignancy | 138 (4.3) | 1,652 (5.1) | -0.035 |
| Chronic obstructive pulmonary disease | 197 (6.2) | 2,583 (7.9) | -0.068 |
| Chronic kidney disease  | 222 (7.0) | 2,229 (6.8) | 0.005 |
| Dialysis | 27 (0.8) | 504 (1.5) | -0.064 |
| Old Stroke | 282 (8.8) | 3,439 (10.5) | -0.057 |
| Coronary artery disease | 787 (24.7) | 8,389 (25.7) | -0.024 |
| Dyslipidemia | 1,674 (52.5) | 14,214 (43.5) | 0.180 |
| CCI total score | 3.6±1.6 | 3.6±1.6 | 0.005 |
| Estimated NIHSS | 5.3±3.3 | 5.9±4.1 | -0.165 |
| Estimated NIHSS group, n (%) |  |  |  |
| ≤5 | 2,481 (77.8) | 23,676 (72.5) | 0.122 |
| 6-13 | 556 (17.4) | 6,462 (19.8) | -0.061 |
| >13 | 153 (4.8) | 2,507 (7.7) | -0.119 |
| Anti-hypertensive agent, n (%) |  |  |  |
| Telmisartan | 246 (7.7) | 2,259 (6.9) | 0.030 |
| Alpha-blocker | 288 (9.0) | 3,452 (10.6) | -0.052 |
| Diuretics(Thiazide/Loop diuretics/Spironolactone) | 831 (26.1) | 7,955 (24.4) | 0.039 |
| Beta-blocker | 1,276 (40.0) | 13,213 (40.5) | -0.010 |
| CCB | 1,929 (60.5) | 20,395 (62.5) | -0.041 |
| Average number of anti-hypertension drugs | 2.4±1.1 | 2.5±1.1 | -0.025 |
| Antidiabetic agent, n (%) |  |  |  |
| Insulin | 560 (17.6) | 5,918 (18.1) | -0.015 |
| DPP4i | 577 (18.1) | 3,794 (11.6) | 0.183 |
| Secretagogue (Glinide) | 579 (18.2) | 4,209 (12.9) | 0.146 |
| Alpha glucosidase | 829 (26.0) | 5,182 (15.9) | 0.251 |
| Biguanide (Metformin) | 2,186 (68.5) | 20,299 (62.2) | 0.134 |
| Sulfonylurea | 2,409 (75.5) | 20,329 (62.3) | 0.289 |
| Other medications, n (%) |  |  |  |
| Anticoagulant | 102 (3.2) | 1,817 (5.6) | -0.116 |
| Fibrate | 445 (13.9) | 3,709 (11.4) | 0.078 |
| Clopidogrel | 532 (16.7) | 5,628 (17.2) | -0.015 |
| Statin | 1,617 (50.7) | 13,304 (40.8) | 0.200 |
| Aspirin | 2,432 (76.2) | 24,187 (74.1) | 0.050 |
| Follow-up years | 4.0±2.4 | 4.2±2.7 | -0.104 |
| Propensity score | 0.128±0.070 | 0.085±0.057 | 0.666 |

DM, diabetes mellitus; CCI, Charlson Comorbidity Index; NIHSS, National Institutes of Health Stroke Scale; CCB, calcium channel blockers; DPP4i, dipeptidyl peptidase-4 inhibitor; STD, standardized difference.

An absolute STD <0.1 was considered as a non-substantially difference between the groups.