**Supplementary material**

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# **eTable 1. International Classification of Diseases, Tenth Revision (ICD-10) codes**

|  |  |
| --- | --- |
| Condition | ICD-10 codes |
| Intracerebral hemorrhage | I61.0-I61.6, I61.8, I61.9 |
| Ischemic stroke | I63.0-I63.6, I63.8, I63.9 |
| Atrial fibrillation | I48 |
| Hyperlipidemia | E78 |
| Obesity | E66 |
| Depression | F32-F33 |
| Psychotic disorders | F20-F29 |
| Alcohol related disorders | F10, K70.1-K70.4, K70.9, K74.0 |
| Drug abuse | F11, F12, F14-F16, F19, T40.0-T40.7, T43.6 |
| Cerebrovascular disease | I60-I69, G45.9, G45.3 |
| Coronary heart disease | I21-I22, 125.2 |
| Heart failure | I42, I11.0, I13.0, I13.2, I50, I25.5 |
| Pulmonary disease | J40-J47, J60-J67 |
| Peripheral vascular disease | I70-I74, I77, I73.9, I79.0 |
| Dementia | F00-F03, F05.1 |
| Diabetes | E10.1, E10.5, E10.9, E11.1, E11.5, E11.9, E13.1, E13.5, E13.9, E14.1, E14.5, E14.9 |
| Diabetes with end organ damage | E10.2-E10.4, E11.2-E11.4, E13.2-E13.4, E14.2-E14.4 |
| Mild liver disease | K70.2, K70.3, K71.7, K73, k74.0, K74.2-K74.6 |
| Severe liver disease | K72.1, K72.9, K76.6, K76.7 |
| Renal disease | N01-N08, N11, N14-N19, N25 |
| Peptic ulcer disease | K25-K28 |
| Cancer (solid tumors) | C00-C76, C90, C97 |
| Metastatic cancer | C77-C80 |
| Leukemia | C91-C95 |
| Lymphoma | C81-C86, C88 |
| HIV/AIDS | B20-B24 |
| Paraplegia/Hemiplegia | G80.0, G80.2, G81, G82 |

Abbreviations: ICD-10, International Classification of Diseases, Tenth Revision; HIV, Human immunodeficiency virus; AIDS=Acquired immunodeficiency syndrome.

# **eTable 2. Anatomical Therapeutic Chemical (ATC) classification codes**

|  |  |
| --- | --- |
| Pre-stroke medications | ACT codes |
| Lipid-lowering drugs | HMG CoA reductase inhibitors (C10AA) |
| Antiplatelet drugs | Platelet aggregation inhibitors excluding heparin (B01AC) |
| Anticoagulant drugs | Warfarin (B01AA03), direct factor Xa inhibitors (B01AF) and direct thrombin inhibitors (B01AE) |
| Antihypertensive drugs | All types of antihypertensive drugs, regardless of indication (C02, C03, C07, C08, C09) |

Abbreviations: ACT codes, Anatomical Therapeutic Chemical codes.

# **eTable 3. Descriptive statistics for patients with observed and missing data**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | SGPALS | | Education | | Income | | Medications | | Living situation | | Dependency | |
| Covariates No. (%) | **Missing (n=370)** | **Observed (n=4818)** | **Missing (n=133)** | **Observed (n=5055)** | **Missing (n=27)** | **Observed (n=5161)** | **Missing (n=45)** | **Observed (n=5143)** | **Missing (n=87)** | **Observed (n=5101)** | **Missing (n=134)** | **Observed (n=5054)** |
| SGPALS level 1 | .. | .. | 64 (48) | 2678 (53) | 12 (44) | 2730 (53) | 22 (49) | 2720 (53) | 43 (49) | 2699 (53) | 86 (64) | 2656 (53) |
| SGPALS level 2 | .. | .. | 47 (35) | 1756 (35) | 10 (37) | 1793 (35) | 11 (24) | 1792 (35) | 19 (22) | 1784 (35) | 17 (13) | 1786 (35) |
| SGPALS level 3 | .. | .. | 3 (2) | 261 (5) | 2 (7) | 262 (5) | 1 (2) | 263 (5) | 7 (8) | 257 (5) | 1 (1) | 263 (5) |
| SGPALS level 4 | .. | .. | 0 | 9 (0.2) | 0 | 9 (0.2) | 0 | 9 (0.2) | 0 | 9 (0.2) | 0 | 9 (0.2) |
| Education <10 years | 124 (34) | 1658 (34) | .. | .. | 1 (4) | 1781 (35) | 14 (31) | 1768 (34) | 26 (30) | 1756 (34) | 58 (43) | 1724 (34) |
| Education 10-12 years | 142 (38) | 1871 (39) | .. | .. | 5 (19) | 2008 (39) | 18 (40) | 1995 (39) | 30 (35) | 1983 (39) | 47 (35) | 1966 (39) |
| Education >12 years | 85 (23) | 1175 (24) | .. | .. | 7 (26) | 1253 (24) | 11 (24) | 1249 (24) | 24 (28) | 1236 (24) | 25 (19) | 1235 (24) |
| Low income | 141 (38) | 1579 (33) | 88 (66) | 1632 (32) | .. | .. | 16 (36) | 1704 (33) | 31 (36) | 1689 (33) | 50 (37) | 1670 (33) |
| Medium income | 116 (31) | 1605 (33) | 20 (15) | 1701 (34) | .. | .. | 14 (31) | 1707 (33) | 24 (28) | 1697 (33) | 57 (43) | 1664 (33) |
| High income | 110 (30) | 1610 (33) | 11 (8) | 1709 (34) | .. | .. | 14 (31) | 1706 (33) | 30 (35) | 1690 (33) | 25 (19) | 1695 (34) |
| Lipid-lowering drugs | 104 (28) | 1211 (25) | 29 (22) | 1286 (25) | 3 (11) | 1312 (25) | .. | .. | 9 (10) | 1306 (26) | 27 (20) | 1288 (26) |
| Antiplatelet drugs | 96 (26) | 1158 (24) | 31 (23) | 1223 (24) | 1 (4) | 1253 (24) | .. | .. | 12 (14) | 1242 (24) | 32 (24) | 1222 (24) |
| Anticoagulant drugs | 38 (10) | 604(13) | 20 (15) | 622 (12) | 3 (11) | 639 (12) | .. | .. | 4 (5) | 638 (13) | 25 (19) | 617 (12) |
| Antihypertensive drugs | 223 (60) | 3110 (65) | 83 (62) | 2250 (64) | 10 (37) | 3323 (64) | .. | .. | 23 (26) | 3310 (65) | 69 (52) | 3264 (65) |
| Living alone | 163 (44) | 2391 (50) | 58 (44) | 2496 (49) | 10 (37) | 2544 (49) | 4 (9) | 2550 (50) | .. | .. | 37 (28) | 2517 (50) |
| Being independent | 282 (76) | 3672 (76) | 83 (62) | 3871 (77) | 23 (85) | 3931 (76) | 7 (16) | 3947 (77) | 34 (39) | 3920 (77) | .. | .. |
| Female sex | 170 (46) | 2293 (48) | 73 (55) | 2390 (47) | 11 (41) | 2452 (48) | 20 (44) | 2443 (48) | 45 (52) | 2418 (47) | 66 (49) | 2397 (47) |
| Age < 70 years | 122 (33) | 1547 (32) | 41(31) | 1628 (32) | 17 (63) | 1652 (32) | 16 (36) | 1653 (32) | 35 (40) | 1634 (32) | 23 (17) | 1646 (33) |
| Age 70-80 years | 129 (35) | 1507 (31) | 36 (27) | 1600 (32) | 7 (26) | 1629 (32) | 14 (31) | 1622 (32) | 28 (32) | 1608 (32) | 42 (31) | 1594 (32) |
| Age > 80 years | 119 (32) | 1764 (37) | 56 (42) | 1827 (36) | 3 (11) | 1880 (36) | 15 (33) | 1868 (36) | 24 (28) | 1859 (36) | 69 (52) | 1814 (36) |

**eTable 3. Descriptive statistics for patients with observed and missing data (continued)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | SGPALS | | Education | | Income | | Medications | | Living situation | | Dependency | |
| Covariates No. (%) | **Missing (n=370)** | **Observed (n=4818)** | **Missing (n=133)** | **Observed (n=5055)** | **Missing (n=27)** | **Observed (n=5161)** | **Missing (n=45)** | **Observed (n=5143)** | **Observed (n=4818)** | **Missing (n=133)** | **Observed (n=5055)** | **Missing (n=27)** |
| Born in Sweden | 291 (79) | 3843 (80) | 44 (33) | 4090 (81) | 15 (56) | 4119 (80) | 35 (78) | 4099 (80) | 66 (76) | 4068 (80) | 105 (78) | 4029 (80) |
| Born in Europe | 46 (12) | 700 (15) | 45 (34) | 701 (14) | 7 (26) | 739 (14) | 5 (11) | 741 (14) | 11 (13) | 735 (14) | 20 (15) | 726 (14) |
| Born outside of Europe | 33 (10) | 275 (6) | 44 (33) | 264 (5) | 5 (19) | 303 (6) | 5 (11) | 303 (6) | 10 (12) | 298 (6) | 9 (7) | 299 (6) |
| Hyperlipidemia | 48 (13.0) | 761 (16) | 15 (11) | 794 (16) | 1 (4) | 808 (16) | 5 (11) | 804 (16) | 10 (12) | 799 (16) | 24 (18) | 785 (16) |
| Prior stroke/TIA | 103 (28) | 809 (17) | 14 (11) | 898 (18) | 1 (4) | 911 (18) | 8 (18) | 904 (18) | 14 (16) | 898 (18) | 28 (21) | 884 (18) |
| Atrial fibrillation | 88 (24) | 1286 (27) | 45 (34) | 1329 (26) | 5 (19) | 1369 (27) | 9 (20) | 1365 (27) | 15 (17) | 1359 (27) | 48 (36) | 1326 (26) |
| Diabetes | 62 (17) | 1037 (22) | 41 (31) | 1058 (21) | 6 (22) | 1093 (21) | 11 (25) | 1088 (21) | 19 (22) | 1080 (21) | 35 (26) | 1064 (21) |
| Coronary heart disease | 36 (10) | 551 (11) | 16 (12) | 571 (11) | 0 | 587 (11) | 2 (4) | 585 (11) | 10 (12) | 577 (11) | 13 (10) | 574 (11) |
| Heart failure | 33 (9) | 535 (11) | 14 (11) | 554 (11) | 1 (4) | 567 (11) | 4 (9) | 564 (11) | 6 (7) | 562 (11) | 13 (10) | 555 (11) |
| Dementia | 10 (3) | 205 (4) | 5 (4) | 210 (4) | 4 (15) | 211 (4) | 2 (4) | 213 (4) | 3 (3) | 212 (4) | 6 (5) | 209 (4) |
| Cancer | 37 (10) | 548 (11) | 11 (8) | 574 (11) | 0 | 585 (11) | 3 (7) | 582 (11) | 5 (6) | 580 (11) | 17 (13) | 568 (11) |
| Depression | 15 (4) | 263 (6) | 9 (7) | 269 (5) | 1 (4) | 277 (5) | 4 (9) | 274 (5) | 7 (8) | 271 (5) | 9 (7) | 269 (5) |
| Psychotic disorders | 3 (1) | 46 (1) | 1 (1) | 48 (1) | 1 (4) | 48 (1) | 0 | 49 (1) | 1 (1) | 48 (1) | 4 (3) | 45 (1) |
| Alcohol disorders | 18 (5) | 125 (3) | 2 (2) | 141 (3) | 0 | 143 (3) | 2 (4) | 141 (3) | 3 (3) | 140 (3) | 3 (2) | 140 (3) |
| Drug abuse | 11 (3) | 38 (1) | 0 | 49 (1) | 0 | 49 (1) | 1 (2) | 48 (1) | 1 (1) | 48 (1) | 0 | 49 (1) |
| Smoking | 41 (11) | 633 (13) | 10 (8) | 664 (13) | 4 (15) | 670 (13) | 6 (13) | 668 (13) | 10 (12) | 664 (13) | 15 (11) | 659 (13) |

Abbreviations: SGPALS, Saltin-Grimby Physical Activity Level Scale; TIA, transient ischemic attack.

matrix of Spearman´s rank correlation for ordinal variables, and Phi coefficient for nominal variables for patients with intracerebral hemorrhage (red), and ischemic stroke (blue).

# **eTable 4. Localization of intracerebral hemorrhages**

|  |  |  |
| --- | --- | --- |
| No. (%) | No physical activity  (n=475) | Physical activity  (n=288) |
| Lobar supratentorial | 171 (36.0) | 97 (33.7) |
| Deep supratentorial | 220 (46.3) | 137 (47.6) |
| Cerebellum | 38 (8.0) | 31 (10.8) |
| Brain stem | 23 (4.8) | 15 (5.2) |
| Primary Intraventricular | 11 (2.3) | 0 |
| Multifocal | 12 (2.5) | 8 (2.8) |

The localization of intracerebral hemorrhages was classified based on the first available Computed Tomography scan or Magnetic Resonance Imaging after admission. Intracerebral hemorrhages originating from the thalamus, basal ganglia, internal capsule or periventricular white matter were classified as deep. Intracerebral hemorrhages in the cortical or subcortical areas were classified as lobar. Multiple simultaneous intracerebral hemorrhages were classified as multifocal.

# **eTable 5. Pre-stroke conditions included in the Charlson comorbidity index according to the physical activity level for patients with intracerebral hemorrhage and ischemic stroke**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No. (%)** | **Intracerebral hemorrhage** | | **Ischemic stroke** | |
| **Pre-stroke physical activity** | **No physical activity**  **(n=475)** | **Physical activity (n=288)** | **No physical activity**  **(n=2514)** | **Physical activity (n=1991)** |
| Cerebrovascular disease | 127 (26.7) | 47 (16.3) | 467 (18.6) | 271 (14.2) |
| Coronary heart disease | 42 (8.8) | 16 (5.6) | 353 (14.0) | 176 (9.2) |
| Heart failure | 57 (12.0) | 14 (4.9) | 353 (14.0) | 144 (7.5) |
| Peripheral vascular disease | 25 (5.3) | 8 (2.8) | 216 (8.6) | 124 (6.5) |
| Dementia | 25 (5.3) | 5 (1.7) | 152 (6.0) | 33 (1.7) |
| Chronic pulmonary disease | 38 (8.0) | 8 (2.8) | 289 (11.5) | 93 (4.9) |
| Connective tissue disease | 9 (1.9) | 5 (1.7) | 120 (4.8) | 44 (2.3) |
| Diabetes without end organ damage | 80 (16.8) | 24 (8.3) | 563 (22.4) | 269 (14.1) |
| Diabetes with end organ damage | 10 (2.1) | 2 (0.7) | 102 (4.1) | 49 (2.6) |
| Mild liver disease | 5 (1.1) | 4 (1.4) | 15 (0.6) | 8 (0.4) |
| Severe liver disease | 2 (0.4) | 0 | 16 (0.6) | 2 (0.1) |
| Renal disease | 30 (6.3) | 16 (5.6) | 259 (10.3) | 103 (5.4) |
| Peptic ulcer disease | 9 (1.9) | 1 (0.3) | 78 (3.1) | 27 (1.4) |
| Solid tumors | 35 (7.4) | 9 (3.1) | 224 (8.9) | 118 (6.2) |
| Metastatic cancer | 10 (2.1) | 8 (2.8) | 88 (3.5) | 61 (3.2) |
| Leukemia/Lymphoma | 3 (0.6) | 5 (1.7) | 28 (1.1) | 21 (1.1) |
| HIV/AIDS | 0 | 0 | 1 (0.1) | 4 (0.2) |
| Paraplegia/Hemiplegia | 27 (5.7) | 12 (4.2) | 181 (7.2) | 64 (3.3) |

Abbreviations: HIV, Human immunodeficiency virus; AIDS=Acquired immunodeficiency syndrome.

# **eTable 6. Associations between covariates and long-term all-cause mortality, adjusted for admission stroke severity (NIHSS)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Intracerebral hemorrhage**  **(n=580)** | | **Ischemic stroke**  **(n=4096)** | |
|  | **aHR (99% CI)** | ***p*** | **aHR (99% CI)** | ***p*** |
| Physical activity | 0.48 (0.25-0.96) | 0.007 | 0.52 (0.41-0.67) | <0.001 |
| Sex, Female | 0.71 (0.41-1.22) | 0.101 | 1.26 (1.03-1.55) | 0.004 |
| Age <80 years | 1.00 [Reference] |  | 1.00 [Reference] |  |
| Age 70-80 years | 1.68 (0.78-3.65) | 0.083 | 1.86 (1.30-2.64) | <0.001 |
| Age >80 years | 2.96 (1.33-6.57) | <0.001 | 3.62 (2.56-5.12) | <0.001 |
| Born in Sweden | 1.00 [Reference] |  | 1.00 [Reference] |  |
| Born in Europe | 0.92 (0.40-2.13) | 0.794 | 0.89 (0.68-1.17) | 0.259 |
| Born outside of Europe | 0.57 (0.16-2.04) | 0.259 | 0.79 (0.46-1.35) | 0.256 |
| Education <10 years | 1.00 [Reference] |  | 1.00 [Reference] |  |
| Education 10-12 years | 0.89 (0.48-1.65) | 0.624 | 0.89 (0.72-1.10) | 0.151 |
| Education >12 years | 1.24 (0.60-2.55) | 0.443 | 0.78 (0.59-1.04) | 0.027 |
| Low income | 1.00 [Reference] |  | 1.00 [Reference] |  |
| Medium income | 0.94 (0.49-1.80) | 0.806 | 1.03 (0.82-1.29) | 0.764 |
| High income | 1.08 (0.52-2.25) | 0.789 | 1.16 (0.87-1.54) | 0.174 |
| Living alone | 1.23 (0.69-2.17) | 0.355 | 1.20 (0.97-1.49) | 0.026 |
| Independent in ADL | 0.54 (0.30-0.98) | 0.008 | 0.51 (0.42-0.63) | <0.001 |
| Hyperlipidemia | 0.79 (0.33-1.87) | 0.481 | 0.86 (0.65-1.12) | 0.134 |
| Prior stroke/TIA | 0.97 (0.51-1.88) | 0.920 | 1.07 (0.84-1.36) | 0.491 |
| Atrial fibrillation | 0.83 (0.37-1.83) | 0.539 | 1.50 (1.20-1.87) | <0.001 |
| Diabetes | 0.79 (0.37-1.71) | 0.438 | 1.01 (0.80-1.28) | 0.874 |
| Coronary heart disease | 1.11 (0.46-2.67) | 0.764 | 1.37 (1.05-1.78) | 0.003 |
| Heart failure | 0.88 (0.37-2.06) | 0.694 | 1.48 (1.14-1.91) | <0.001 |
| Cancer | 3.15 (1.57-6.30) | <0.001 | 2.09 (1.66-2.62) | <0.001 |
| Smoking | 0.97 (0.42-2.25) | 0.937 | 0.93 (0.66-1.31) | 0.571 |
| Lipid-lowering drugs | 1.33 (0.70-2.50) | 0.252 | 0.79 (0.62-1.00) | 0.011 |
| Antiplatelet drugs | 1.59 (0.76-3.36) | 0.107 | 1.03 (0.82-1.30) | 0.705 |
| Anticoagulant drugs | 1.66 (0.74-3.75) | 0.108 | 0.79 (0.59-1.07) | 0.047 |
| Antihypertensive drugs | 0.96 (0.50-1.85) | 0.872 | 1.12 (0.89-1.42) | 0.206 |

Multivariate Cox proportional-hazards models predicting long-term mortality for patients with intracerebral hemorrhage and ischemic stroke. Abbreviations: aHR, adjusted hazard ratio; CI, Confidence interval; ADL, Activities in Daily Living; TIA, transient ischemic attack; NIHSS, National Institutes of Health Stroke Scale. a=adjusted associations from models including pre-stroke physical activity, sex, age, country of birth, education, income, living situation, dependency, hyperlipidemia, prior stroke/TIA, atrial fibrillation, diabetes, coronary heart disease, heart failure, cancer, smoking, lipid-lowering drugs, antiplatelet drugs, anticoagulant drugs, antihypertensive drugs and NIHSS scores.