**Supplemental Digital Content**

**Immigration in Denmark**

Denmark has observed an increase in immigration over the past 40 years. Due to economic boom in the late 1960s, migrants started to arrive in Denmark and majority were from Turkey and Pakistan as “guest workers”. The number of Turkish and Pakistani immigrants has been steadily increasing over the years. In 1973, the Danish government put a stop to labor migration and the only way possible to enter the country was through a refugee status or a worker with special skills or through family reunification. In 1980s and 1990s most migrants who arrived in Denmark were refugees from Iraq, Afghanistan, Iran, and Somalia. From 2003 onward, most migrants who arrived in Denmark were from Poland as labor migrants. Currently, the Polish group is the largest immigrant group in Denmark after Turkish immigrants. Between 2015 and 2016, there was large influx of migrants from Syria as refugees. Up to date statistics show that Polish, Turkish, German, Iraqi, Pakistani, and Iranian are among the top 10 largest immigrant groups in Denmark.

**Between Jan 2005 and Dec 2018**

**129 724** people with ischemic and hemorrhagic stroke, ≥18 years old, and were registered as immigrants or Danish-born

Western N=3443

Immigrants N=**5796** (4.5%)

Danish-born N=**123 928** (95.5%)

Non-Western N=2353

Polish N=254

Others N=4745

Pakistani N=258

Iraqi N=179

Turkish N=360

**Supplemental Digital Content 1.** Flowchart

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| **Supplemental Digital Content 2.** Baseline Characteristics of Patients Admitted With Ischemic and Hemorrhagic Stroke between 2005 and 2018 by Region of Origin | | | |
|  | **Danish-born**  **N=123 928** | **Western**  **N=3443** | **Non-Western**  **N=2353** |
| Age at stroke diagnosis, y median (IQR) | 73 (63–82) | 72 (62–81) | 62 (52–73) |
| Duration of residence, y median (IQR) | NA | 22 (12–32) | 22 (14–29) |
| Sex (female) | 66 492 (53.7) | 1665 (48.4) | 1388 (59.0) |
| Ischemic stroke, n (%) | 108 736 (87.7) | 3029 (88.0) | 2010 (85.4) |
| Hemorrhagic stroke, n (%) | 15 192 (12.3) | 414 (12.0) | 343 (14.6) |
| SSS score, median (IQR) | 49 (35–56) | 49 (32–56) | 50 (36–56) |
| Missing, n (%) | 8496 (6.9) | 294 (8.5) | 252 (10.7) |
| Comorbidities, n (%) |  |  |  |
| Current smoking | 35 943 (29.0) | 940 (27.3) | 605 (25.7) |
| Missing | 19 949 (16.1) | 653 (18.9) | 404 (17.2) |
| Hypertension | 66 493 (53.7) | 1845 (53.6) | 1284 (54.6) |
| Missing | 4247 (3.4) | 115 (3.3) | 61 (2.6) |
| Diabetes | 17 398 (14.0) | 569 (16.5) | 797 (33.9) |
| Missing | 3018 (2.4) | 96 (2.8) | 44 (1.8) |
| Myocardial infarction | 10 558 (8.5) | 299 (8.7) | 208 (8.8) |
| Missing | 4522 (3.6) | 145 (4.2) | 82 (3.4) |
| Atrial fibrillation | 22 370 (18.1) | 686 (19.9) | 230 (9.8) |
| Missing | 3319 (2.7) | 90 (2.6) | 70 (2.9) |
| Previous stroke or TIA | 28 084 (22.7) | 751 (21.8) | 477 (20.3) |
| Missing | 40 062 (32.3) | 1065 (30.9) | 658 (28.0) |
| Education\*, n (%) |  |  |  |
| Low | 52 452 (42.3) | 810 (23.5) | 671 (28.5) |
| Medium | 13 790 (11.1) | 923 (26.8) | 624 (26.5) |
| High | 14 614 (11.8) | 587 (17.1) | 293 (12.5) |
| Missing | 43 072 (34.8) | 1123 (32.6) | 765 (32.5) |
| Family income†, n (%) |  |  |  |
| Low | 42 472 (34.2) | 1477 (42.9) | 1035 (44.0) |
| Middle | 40 589 (32.8) | 1021 (29.7) | 760 (32.3) |
| High | 40 867 (33.0) | 945 (27.4) | 558 (23.7) |
| Occupation, n (%) |  |  |  |
| Employed | 33 182 (26.8) | 749 (21.8) | 596 (25.3) |
| Pensioner/Retired | 69 508 (56.1) | 1903 (55.3) | 783 (33.3) |
| Unemployed | 11 634 (9.4) | 425 (12.3) | 754 (32.0) |
| Missing | 9604 (7.7) | 366 (10.6) | 220 (9.4) |
| Marital status, n (%) |  |  |  |
| Cohabiting | 65 815 (53.1) | 1732 (50.3) | 1646 (70.0) |
| Living alone | 50 990 (41.1) | 1472 (42.8) | 570 (24.2) |
| Other | 3904 (3.2) | 118 (3.4) | 61 (2.6) |
| Missing | 3219 (2.6) | 121 (3.5) | 76 (3.2) |
| Western immigrants comprised all immigrants originating from 28 European Union countries and Andorra, Iceland, Liechtenstein, Monaco, Norway, San Marino, Switzerland, Vatican State, Australia, New Zealand, Canada, and United States. Immigrants from other countries constituted the Non-Western group. \*According to the International Standard Classification of Education. †Tertiles. SSS, Scandinavian Stroke Scale; IQR, interquartile range; TIA, transient ischemic attack; NA, not applicable. TIA data were available from 2013 onward. | | | |

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| **Supplemental Digital Content 3.** Processes of Stroke Care by Region of Origin | | | | | | | |
| **Processes of Care** | **Danish-born** | | **Western** | | **Non-Western** | |  |
| **Eligible**  **N** | **Received care N (%)** | **Eligible**  **N** | **Received care N (%)** | **Eligible**  **N** | **Received care N (%)** | **P value** |
| 1. Admission at a stroke unit within 24 hours | 123 928 | 103 941 (83.9) | 3443 | 2820 (81.9) | 2353 | 1904 (80.9) | <0.001 |
| 1. CT/MR scan on the day of admission | 121 547 | 97 250 (80.0) | 3364 | 2674 (79.5) | 2300 | 1868 (81.2) | 0.262 |
| 1. Dysphagia screening on the day of admission (direct swallowing test) | 82 643 | 61 004 (73.8) | 2282 | 1614 (70.7) | 1603 | 1127 (70.3) | <0.001 |
| 1. Dysphagia screening on the day of admission (indirect swallowing test) | 62 418 | 52 022 (83.3) | 1751 | 1444 (82.5) | 1347 | 1075 (79.8) | 0.002 |
| 1. Mobilization on the day of admission | 64 336 | 50 258 (78.1) | 1849 | 1431 (77.4) | 1434 | 1100 (76.7) | 0.344 |
| 1. Physiotherapy within 2 days of admission | 97 660 | 79 371 (81.3) | 2594 | 2051 (79.1) | 1713 | 1359 (79.3) | 0.002 |
| 1. Occupational therapy within 2 days of admission | 98 775 | 78 424 (79.4) | 2656 | 2059 (77.5) | 1717 | 1334 (77.7) | 0.015 |
| 1. Nutritional risk assessment within 2 days of admission | 97 473 | 81 358 (83.5) | 2665 | 2185 (82.0) | 1801 | 1478 (82.1) | 0.041 |
| 1. CT angiography/ultrasound within 4 days of admission | 69 596 | 57 062 (82.0) | 1993 | 1660 (83.2) | 1513 | 1296 (85.7) | <0.001 |
| 1. Antiplatelet therapy within 2 days of admission | 81 472 | 74 272 (91.2) | 2202 | 2002 (90.9) | 1636 | 1520 (92.9) | 0.051 |
| 1. Anticoagulant therapy within 14 days of admission | 11 952 | 10 118 (84.7) | 379 | 308 (81.3) | 115 | 101 (87.8) | 0.124 |
| 1. Opportunity-based composite score, reported as percentage, mean (95% CI) | 123 928 | 79.9 (79.8–80.1) | 3443 | 78.9 (78.0–79.8) | 2353 | 78.9 (77.9– 80.0) | 0.014 |
| 1. All-or-none score, reported as percentage, mean (95% CI) | 123 928 | 45.7 (45.5–46.0) | 3443 | 43.6 (42.0–45.3) | 2353 | 44.5 (42.5–46.5) | 0.023 |
| Western immigrants comprised all immigrants originating from 28 European Union countries and Andorra, Iceland, Liechtenstein, Monaco, Norway, San Marino, Switzerland, Vatican State, Australia, New Zealand, Canada, and United States. Immigrants from other countries constituted the Non-Western group. CI, confidence interval. | | | | | | | |

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| **Supplemental Digital Content 4.** Unadjusted odds ratios of performance measures in patients with stroke by region and country of origin | | | | | | | | | | | | |
|  |  | **Stroke unit admission**  **(by 24 hours)** | **CT/MR scan**  **(by day 1)** | **Direct swallowing**  **test**  **(by day 1)** | **Indirect swallowing**  **test**  **(by day 1)** | **Mobilization**  **(by day 1)** | **Physiotherapy**  **(by day 2)** | **Occupational**  **therapy**  **(by day 2)** | **Nutritional**  **assessment**  **(by day 2)** | **CT**  **angiography/**  **Ultrasound**  **(by day 4)** | **Antiplatelet**  **therapy**  **(by day 2)** | **Anticoagulant**  **therapy**  **(by day 14)** |
|  | **n** | **OR (95% CI)** | **OR (95%CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** |
| Danish-born | 123 928 | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference |
| Immigrants | 5796 | 0.98 (0.97–1.00) | 1.00 (0.99–1.01) | 0.96 (0.95–0.98) | 0.97 (0.96–0.99) | 0.98 (0.97–1.00) | 0.97 (0.96–0.99) | 0.98 (0.97–0.99) | 0.98 (0.97–0.99) | 1.02 (1.01–1.03) | 1.00 (0.99–1.01) | 0.98 (0.95–1.01) |
| Western | 3443 | 0.98 (0.96–0.99) | 0.99 (0.98–1.00) | 0.96 (0.95–0.98) | 0.99 (0.97–1.00) | 0.99 (0.97–1.01) | 0.97 (0.96–0.99) | 0.98 (0.96–0.99) | 0.98 (0.97–1.00) | 1.01 (0.99–1.03) | 0.99 (0.98–1.00) | 0.96 (0.93–1.00) |
| Non-Western | 2353 | 0.97 (0.95–0.98) | 1.01 (0.99–1.02) | 0.96 (0.94–0.98) | 0.96 (0.94–0.98) | 0.98 (0.96–1.00) | 0.98 (0.96–0.99) | 0.98 (0.96–1.00) | 0.98 (0.96–1.00) | 1.03 (1.01–1.05) | 1.01 (1.00–1.03) | 1.03 (0.96–1.10) |
| Polish | 254 | 0.96 (0.91–1.00) | 0.97 (0.92–1.02) | 0.93 (0.87–0.99) | 0.97 (0.92–1.03) | 0.93 (0.87–1.00) | 0.96 (0.91–1.02) | 0.93 (0.88–0.99) | 0.98 (0.93–1.03) | 1.05 (0.99–1.11) | 1.00 (0.96–1.05) | 1.05 (0.92–1.19) |
| Turkish | 360 | 0.99 (0.95–1.02) | 0.96 (0.92–1.00) | 0.96 (0.91–1.01) | 0.93 (0.88–0.98) | 0.99 (0.93–1.05) | 0.97 (0.92–1.02) | 0.98 (0.94–1.03) | 0.97 (0.93–1.01) | 1.03 (0.99–1.09) | 1.00 (0.96–1.03) | 0.98 (0.86–1.12) |
| Iraqi | 179 | 0.93 (0.88–0.98) | 1.03 (0.97–1.09) | 0.95 (0.88–1.03) | 0.98 (0.91–1.06) | 1.01 (0.93–1.09) | 0.99 (0.92–1.05) | 0.99 (0.93–1.07) | 1.00 (0.94–1.07) | 1.06 (0.99–1.13) | 1.03 (0.98–1.08) | † |
| Pakistani | 258 | 0.95 (0.91–1.00) | 0.97 (0.92–1.02) | 0.91 (0.85–0.97) | 0.95 (0.90–1.01) | 0.97 (0.91–1.03) | 0.91 (0.86–0.97) | 0.93 (0.88–0.99) | 1.02 (0.97–1.07) | 1.05 (0.99–1.10) | 1.02 (0.98–1.06) | † |
| Others | 4745 | 0.97 (0.96–0.98) | 1.00 (0.99–1.01) | 0.97 (0.95–0.99) | 0.98 (0.96–1.00) | 0.98 (0.97–1.00) | 0.98 (0.97–0.99) | 0.98 (0.97–0.99) | 0.98 (0.97–0.99) | 1.01 (1.00–1.03) | 1.00 (0.99–1.01) | 0.97 (0.94–1.01) |
| The first model contained immigration status (two levels): overall immigrants and Danish-born residents. The second model contained region of origin (three levels): Western, Non-Western immigrants, and Danish-born residents. The third model consisted of country of origin: Polish, Turkish, Iraqi, Pakistani, Others, and Danish-born residents. Western immigrants comprised all immigrants originating from 28 European Union countries and Andorra, Iceland, Liechtenstein, Monaco, Norway, San Marino, Switzerland, Vatican State, Australia, New Zealand, Canada, and United States. Immigrants from the rest of the countries constituted the Non-Western group. †Estimates not presented due to few observations. CI, confidence interval. | | | | | | | | | | | | |

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| **Supplemental Digital Content 5.** Fully adjusted odds ratios of performance measures in patients with stroke by region and country of origin | | | | | | | | | | | | |
|  |  | **Stroke unit admission**  **(by 24 hours)** | **CT/MR scan**  **(by day 1)** | **Direct swallowing test**  **(by day 1)** | **Indirect swallowing test**  **(by day 1)** | **Mobilization**  **(by day 1)** | **Physiotherapy**  **(by day 2)** | **Occupational**  **therapy**  **(by day 2)** | **Nutritional**  **assessment**  **(by day 2)** | **CT angiography/**  **Ultrasound (by day 4)** | **Antiplatelet therapy (by day 2)** | **Anticoagulant**  **therapy (by day 14)** |
|  | **n** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** | **OR (95% CI)** |
| Danish-born | 123 928 | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference | Reference |
| Immigrants | 5796 | 0.97 (0.94–0.99) | 0.99 (0.96–1.01) | 0.95 (0.92–0.98) | 0.96 (0.93–0.99) | 1.00 (0.98–1.03) | 0.96 (0.94–0.99) | 0.96 (0.93–0.98) | 0.98 (0.95–1.00) | 0.99 (0.96–1.01) | 1.01 (0.99–1.03) | 0.93 (0.86–1.01) |
| Western | 3443 | 0.97 (0.94–0.99) | 0.98 (0.95–1.01) | 0.97 (0.93–1.01) | 0.98 (0.94–1.01) | 1.01 (0.98–1.05) | 0.96 (0.93–1.00) | 0.95 (0.92–0.99) | 0.98 (0.96–1.01) | 0.98 (0.95–1.01) | 1.00 (0.98–1.03) | 0.91 (0.83–1.00) |
| Non-Western | 2353 | 0.96 (0.94–0.99) | 0.98 (0.96–1.01) | 0.94 (0.90–0.97) | 0.94 (0.91–0.97) | 0.99 (0.96–1.03) | 0.96 (0.93–0.99) | 0.96 (0.93–0.99) | 0.97 (0.94–0.99) | 0.99 (0.96–1.02) | 1.02 (1.00–1.05) | 0.97 (0.86–1.10) |
| Polish | 254 | 0.97 (0.89–1.05) | 0.98 (0.90–1.06) | 1.01 (0.90–1.14) | 1.00 (0.90–1.11) | 1.02 (0.93–1.13) | 1.04 (0.94–1.14) | 0.98 (0.89–1.08) | 1.04 (0.95–1.13) | 1.05 (0.97–1.15) | 1.07 (1.00–1.15) | 1.07 (0.85–1.01) |
| Turkish | 360 | 0.96 (0.90–1.02) | 0.93 (0.88–1.00) | 0.90 (0.82–0.99) | 0.88 (0.81–0.95) | 0.98 (0.90–1.06) | 0.92 (0.85–0.99) | 0.92 (0.85–1.00) | 0.89 (0.83–0.95) | 0.95 (0.89–1.02) | 0.98 (0.93–1.04) | 0.93 (0.71–1.20) |
| Iraqi | 179 | 0.94 (0.87–1.01) | 0.96 (0.89–1.04) | 0.93 (0.83–1.04) | 0.93 (0.85–1.02) | 1.02 (0.94–1.12) | 0.88 (0.80–0.96) | 0.95 (0.86–1.04) | 0.98 (0.91–1.06) | 1.03 (0.95–1.12) | 1.02 (0.96–1.08) | † |
| Pakistani | 258 | 0.98 (0.92–1.05) | 0.98 (0.91–1.05) | 0.87 (0.79–0.96) | 0.91 (0.83–0.99) | 1-05 (0.97–1.14) | 0.96 (0.88–1.05) | 0.95 (0.87–1.03) | 0.99 (0.92–1.06) | 0.98 (0.92–1.06) | 1.01 (0.96–1.07) | † |
| Others | 4745 | 0.97 (0.94–0.99) | 0.99 (0.97–1.02) | 0.96 (0.93–1-00) | 0.97 (0.94–1.00) | 1.00 (0.97–1.03) | 0.97 (0.94–1.00) | 0.96 (0.93–0.99) | 0.98 (0.95–1.00) | 0.98 (0.96–1.01) | 1.01 (0.99–1.03) | 0.93 (0.85–1.01) |
| The fully adjusted model comprised age at stroke, sex, stroke severity, previous stroke or transient ischemic attack, smoking, myocardial infarction, atrial fibrillation, diabetes, hypertension, income, occupation, education, marital status, and duration of residence. The first model contained immigration status (two levels): overall immigrants and Danish-born residents. The second model contained region of origin (three levels): Western, Non-Western immigrants, and Danish-born residents. The third model consisted of country of origin: Polish, Turkish, Iraqi, Pakistani, Others, and Danish-born residents. Western immigrants comprised all immigrants originating from 28 European Union countries and Andorra, Iceland, Liechtenstein, Monaco, Norway, San Marino, Switzerland, Vatican State, Australia, New Zealand, Canada, and United States. Immigrants from the rest of the countries constituted the Non-Western group. †Estimates not presented due to few observations. CI, confidence interval. | | | | | | | | | | | | |

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| **Supplemental Digital Content 6.** Mean absolute differences in overall stroke care using composite scores among immigrants compared with Danish-born residents by stroke type | | | |
|  |  | **Opportunity-based composite score**  **in percentages** | **All-or-none composite score**  **in percentages** |
|  | **n** | **Mean difference (95% CI)** | **Mean difference (95% CI)** |
| **Combined stroke** |  |  |  |
| Danish-born | 123 928 | Reference | Reference |
| Immigrants | 5796 | -1.0 (-1.7 to -0.3) | -1.7 (-3.1 to -0.4) |
| Western | 3443 | -1.0 (-1.9 to -0.1) | -2.1 (-3.8 to -0.4) |
| Non-Western | 2353 | -0.9 (-2.0 to 0.1) | -1.2 (-3.3 to 0.7) |
| Polish | 254 | -2.2 (-5.4 to 0.9) | -2.1 (-8.2 to 4.0) |
| Turkish | 360 | -1.7 (-4.4 to 0.9) | -3.6 (-8.7 to 1.5) |
| Iraqi | 179 | 0.4 (-3.3 to 4.1) | -4.4 (-11.7 to 2.8) |
| Pakistani | 258 | -2.9 (-6.0 to 0.2) | -1.6 (-7.7 to 4.4) |
| Others | 4745 | -0.8 (-1.6 to -0.1) | -1.5 (-2.9 to -0.1) |
| **Ischemic stroke** |  |  |  |
| Danish-born | 108 736 | Reference | Reference |
| Immigrants | 5039 | -1.1 (-1.8 to -0.4) | -2.1 (-3.5 to -0.7) |
| Western | 3029 | -1.3 (-2.2 to -0.4) | -2.9 (-4.7 to -1.1) |
| Non-Western | 2010 | -0.8 (-1.9 to 0.3) | -1.1 (-3.2 to 1.1) |
| Polish | 227 | -2.9 (-6.2 to 0.3) | -2.8 (-9.3 to 3.6) |
| Turkish | 324 | -1.5 (-4.2 to 1.2) | -3.6 (-9.0 to 1.8) |
| Iraqi | 157 | 1.0 (-2.9 to 4.9) | -2.2 (-10.0 to 5.5) |
| Pakistani | 232 | -2.6 (-5.8 to 0.6) | -1.6 (-8.0 to 4.8) |
| Others | 4099 | -1.0 (-1.8 to -0.2) | -2.0 (-3.5 to -0.5) |
| **Hemorrhagic stroke** |  |  |  |
| Danish-born | 15 192 | Reference | Reference |
| Immigrants | 757 | 0.1 (-2.0 to 2.2) | 0.5 (-3.1 to 4.1) |
| Western | 414 | 1.2 (-1.6 to 4.0) | 3.4 (-1.4 to 8.2) |
| Non-Western | 343 | -1.3 (-4.4 to 1.8) | -3.0 (-8.3 to 2.3) |
| Polish | 27 | 2.7 (-8.2 to 13.7) | 4.2 (-14.6 to 23.1) |
| Turkish | 36 | -4.4 (-13.9 to 5.1) | -3.1 (-19.4 to 13.2) |
| Iraqi | 22 | -4.0 (-16.2 to 8.1) | † |
| Pakistani | 26 | -6.5 (-17.7 to 4.7) | -1.4 (-20.6 to 17.8) |
| Others | 646 | 0.6 (-1.6 to 2.9) | 1.3 (-2.6 to 5.2) |
| The opportunity-based composite score for each person was calculated by counting total number of care processes received (numerator), divided by total number of times that care processes were eligible for that person (denominator). The all-or-none composite score for a person was defined as 1 if all eligible care processes were received by the patient and 0 otherwise. Both composite scores were based on 11 care processes across all patients with acute stroke. The first model contained immigration status (two levels): overall immigrants and Danish-born residents. The second model contained region of origin (three levels): Western, Non-Western immigrants, and Danish-born residents. The third model consisted of country of origin: Polish, Turkish, Iraqi, Pakistani, Others, and Danish-born residents. †Estimates not presented due to few observations. CI, confidence interval. | | | |

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| **Supplemental Digital Content 7.** Opportunity-based composite score and all-or-none composite score by sociodemographic factors and duration of residence | | | | | |
|  |  | **Opportunity-based composite score,**  **reported as percentage** | | **All-or-none composite score,**  **reported as percentage** | |
|  | **n** | **Mean (95% CI)** | **Mean difference (95% CI)** | **Mean (95% CI)** | **Mean difference (95% CI)** |
| Education level |  |  |  |  |  |
| Danish-born low education level | 52 452 | 79.1 (78.9–79.3) | Reference | 44.2 (43.8–44.6) | Reference |
| Immigrants low education level | 1481 | 77.3 (76.0–78.7) | -1.7 (-3.0 to -0.4) | 41.3 (38.8–43.8) | -2.9 (-5.5 to -0.3) |
| Danish-born high education level | 14 614 | 82.8 (82.4–83.2) | 3.6 (3.2 to 4.1) | 50.8 (50.0–51.6) | 6.5 (5.6 to 7.4) |
| Immigrants high education level | 880 | 82.4 (80.7–84.0) | 3.2 (1.5 to 4.9) | 49.8 (46.5–53.1) | 5.5 (2.2 to 8.8) |
| Income level |  |  |  |  |  |
| Danish-born low income | 42 472 | 76.2 (75.9–76.4) | Reference | 39.1 (38.5–39.5) | Reference |
| Immigrants low income | 2512 | 76.1 (74.9–77.3) | -0.1 (-1.2 to 1.0) | 39.2 (37.1–41.3) | 0.1 (-2.0 to 2.2) |
| Danish-born high income | 40 867 | 84.1 (83.8–84.3) | 7.8 (7.5 to 8.1) | 53.1 (52.6–53.6) | 14.0 (13.3 to 14.7) |
| Immigrants high income | 1503 | 82.4 (81.1–83.6) | 6.2 (4.9 to 7.5) | 51.1 (48.6–53.3) | 12.0 (9.5 to 14.5) |
| Marital status |  |  |  |  |  |
| Danish-born living alone | 50 990 | 77.9 (77.7–78.2) | Reference | 42.5 (42.1–42.9) | Reference |
| Immigrants living alone | 2042 | 76.8 (75.6–78.0) | -1.1 (-2.3 to 0.1) | 40.7 (38.5–42.8) | -1.8 (-4.0 to 0.4) |
| Danish-born cohabiting | 65 815 | 82.1 (81.9–82.3) | 4.1 (3.8 to 4.4) | 49.1 (48.7–49.5) | 6.5 (6.0 to 7.0) |
| Immigrants cohabiting | 3378 | 80.6 (79.8–81.5) | 2.6 (1.7 to 3.5) | 46.8 (45.1–48.5) | 4.2 (2.5 to 6.0) |
| Duration of residence |  |  |  |  |  |
| Danish-born | 123 928 | 80.0 (79.8–80.1) | Reference | 45.8 (45.5–46.1) | Reference |
| <10 y of immigrants residence | 558 | 77.4 (75.2–79.6) | -2.5 (-4.7 to -0.4) | 41.0 (36.9–45.1) | -4.7 (-8.9 to -0.5) |
| 10–20 y of immigrants residence | 896 | 79.4 (77.6–81.1) | -0.5 (-2.2 to 1.1) | 44.4 (41.2–47.7) | -1.4 (-4.6 to 1.8) |
| >20 y of immigrants residence | 1974 | 80.2 (79.1–81.4) | 0.3 (-0.8 to 1.4) | 46.1 (43.8–48.3) | 0.2 (-1.9 to 2.4) |
| The opportunity-based composite score for each person was calculated by counting total number of care processes received (numerator), divided by total number of times that care processes were eligible for that person (denominator). The all-or-none composite score for a person was defined as 1 if all eligible care processes were received by the patient and 0 otherwise. Both composite scores were based on 11 care processes across all patients with acute stroke. CI, confidence interval. | | | | | |

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| **Supplemental Digital Content 8.** Interaction analysis showing quality of care across hospitals treating patients with acute stroke | | | | | |
|  |  | **Opportunity-based composite score,**  **reported as percentage** | | **All-or-none composite score,**  **reported as percentage** | |
| **Interaction term** | **n** | **Mean difference (95% CI)** | **P value for interaction** | **Mean difference (95% CI)** | **P value for interaction** |
| Immigration status\* Bispebjerg Hospital | 8494 | -1.1 (-7.4 to 5.1) | 0.716 | -5.4 (-17.7 to 6.9) | 0.384 |
| Immigration status\*Amager Hospital | 1385 | 3.0 (-4.8 to 10.9) | 0.450 | -2.2 (-17.7 to 13.3) | 0.777 |
| Immigration status\*Gentofte Hospital | 1063 | 3.4 (-5.2 to 11.9) | 0.443 | -0.9 (-17.7 to 15.8) | 0.913 |
| Immigration status\*Glostrup Hospital | 10 037 | -2.9 (-9.1 to 3.3) | 0.367 | -5.0 (-17.3 to 7.3) | 0.417 |
| Immigration status\*Herlev Hospital | 7183 | -1.9 (-8.3 to 4.5) | 0.571 | -4.8 (-17.4 to 7.8) | 0.453 |
| Immigration status\*Nordsjælland Hospital | 8163 | -1.9 (-8.3 to 4.6) | 0.574 | -5.2 (-18.0 to 7.5) | 0.419 |
| Immigration status\*Sjælland Hospital | 19 638 | -1.5 (-7.8 to 4.8) | 0.639 | -5.1 (-17.6 to 7.4) | 0.420 |
| Immigration status\*Bornholm Hospital | 1288 | -0.1 (-10.4 to 10.2) | 0.999 | -3.2 (-23.7 to 17.2) | 0.756 |
| Immigration status\*Odense University Hospital | 9227 | -1.2 (-7.7 to 5.3) | 0.713 | -4.0 (-16.9 to 8.9) | 0.532 |
| Immigration status\*Sønderjylland Hospital | 4974 | -1.5 (-8.3 to 5.2) | 0.653 | -4.1 (-17.4 to 9.2) | 0.543 |
| Immigration status\*Sydvestjysk Hospital | 5217 | -0.1 (-7.3 to 7.1) | 0.996 | -1.9 (-16.1 to 12.2) | 0.787 |
| Immigration status\*Horsens Hospital | 1241 | -5.8 (-17.7 to 6.0) | 0.337 | -6.8 (-30.2 to 16.6) | 0.566 |
| Immigration status\*Kolding Hospital | 1818 | -1.4 (-10.1 to 7.2) | 0.738 | -3.7 (-20.7 to 13.2) | 0.662 |
| Immigration status\*Vejle Hospital | 3842 | -3.2 (-10.8 to 4.4) | 0.404 | -1.3 (-16.3 to 13.7) | 0.862 |
| Immigration status\*Aarhus University Hospital | 13 273 | -4.8 (-11.2 to 1.5) | 0.135 | -8.2 (-20.7 to 4.3) | 0.198 |
| Immigration status\*Hospital Unit Midt | 2809 | -2.9 (-11.6 to 5.8) | 0.515 | -6.3 (-23.5 to 10.8) | 0.466 |
| Immigration status\*Hospital Unit Vest | 8617 | -3.3 (-10.3 to 3.6) | 0.340 | -6.1 (-19.7 to 7.5) | 0.375 |
| Immigration status\*Randers Hospital | 1999 | 5.1 (-4.2 to 14.4) | 0.288 | -1.1 (-19.6 to 17.3) | 0.903 |
| Immigration status\*Aalborg University Hospital | 9616 | -4.1 (-10.9 to 2.7) | 0.238 | -6.3 (-19.7 to 7.0) | 0.347 |
| The opportunity-based composite score for each person was calculated by counting total number of care processes received (numerator), divided by total number of times that care processes were eligible for that person (denominator). The all-or-none composite score for a person was defined as 1 if all eligible care processes were received by the patient and 0 otherwise. Both composite scores were based on 11 care processes across all patients with acute stroke. Hospitals with few observations were excluded. CI, confidence interval. | | | | | |

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| **Supplemental Digital Content 9.** Processes of care (Performance measures) included in the scores | **Availability Period** |
| Admission within 24 hours  Ischemic stroke patient without atrial fibrillation receiving platelet-inhibitor therapy within 2 days of admission (≥95% as standard)  Ischemic stroke patient with atrial fibrillation receiving oral anticoagulation therapy within 14 days after admission (≥95% as standard)  Stroke patient is examined with a CT/MRI scan on the day of admission (≥80% as standard)  Stroke patient is assessed by a physiotherapist about the need for rehabilitation (including type and extent) within the second day of admission (≥90% as standard)  Stroke patient is assessed by an occupational therapist about the need for rehabilitation (including type and extent) within the second day of admission (≥90% as standard)  Stroke patient is mobilized on the day of admission (≥80% as standard)  Stroke patient receives a nutritional risk assessment within the second day of admission (≥90% as standard)  Ischemic stroke patient is examined with Ultrasound or CT/MR angiography of the carotid arteries within 4 days of admission (≥90% as standard)  Stroke patient receives indirect swallowing test on the day of admission before receiving food or fluids to assess swallowing function and risk of aspiration (≥80% as standard)  Stroke patient receives direct swallowing test on the day of admission before receiving food or fluids to assess swallowing function and risk of aspiration (≥80% as standard) | 2004–2018  2004–2018  2004–2018  2004–2018  2004–2018  2004–2018  2004–2018  2004–2018  2007–2018  2011–2018  2011–2018 |