

RIKSSTROKE

QUALITY OF THE SWEDISH STROKE CARE 2019



A BRIEF SUMMARY OF DATA FOR THE FULL YEAR 2019



RIKSSTROKE
The Swedish Stroke Register

A brief summary of data for the full year 2019

TIA

Number of recordings and coverage

- During 2019 there were **8 430 TIA events** registered at 70 out of the 72 hospitals that register TIA.
- The **coverage** of the register for TIA was 86 % in 2019 (register entries compared with official administrative data).
- From the number of registered TIAs in Riksstroke, the **total number** of patients with TIA in Sweden 2019 can be approximated to 10 000.
- The ratio between the number of TIAs and ischemic stroke is about 1:2.

Demographics, risk factors, type of care and length of stay

- Slightly more men than women were registered. The **mean age** was 74 years (73 among men and 75 among women), about one year younger than patients with stroke.
- Sixty percent of the patients with TIA had **high blood pressure**, 21 % **atrial fibrillation**, 18 % **diabetes** and 10 % were **smokers**.
- Eighty-eight percent of the TIA patients sought health care at the emergency room as a first instance, 11 % at primary care and 1 % at some other health care facility.
- Forty-seven percent of the registered TIA patients arrived at the hospital within three hours from onset and 91 % within 24 hours. More than half (51 %) of the patients **arrived by ambulance**.
- Eighty-three percent of the TIA patients were directly admitted to a stroke care unit. The median length of stay was three days.

Diagnostics

- Practically all patients had a **CT scan examination**, while 15 % had an **MRI scan**. The most common vascular examination method was **ultra-sonography** (48 %), followed by **CT angiography** (38 %) and **MR angiography** (2 %). There was an increasing trend for the use of CT angiography.
- For cardiac arrhythmia detection, 72 % of the patients without known atrial fibrillation had a long-term follow-up with long term **ECG recording**. Further 15 % had a planned long-term recording after discharge.

Secondary prevention

- Eighty-eight percent of TIA patients, all ages, with atrial fibrillation were prescribed **oral anticoagulants** at discharge. This is a marginal decrease compared to the previous year, especially among the elderly patients. There was no significant geographical variation in receiving the treatment.

- **Antihypertensive medicine** was prescribed for 72 % of the patients (unchanged compared to 2018) and 86 % with statins, which is an increase with 2 %. There was still a considerable regional variation in usage.
- More than half of the smokers (52 %) received **advice about smoking cessation** and 62 % of those with a driver's license received **advice about driving after stroke**. Information about smoking cessation and/or driving was missing for every third respectively every seventh TIA patient.
- Almost all TIA-patients, 94 %, had a planned **follow-up visit** at the hospital or in primary care.

STROKE

Number of registrations and coverage

- During 2019 there were **21 090 stroke events** registered in Riksstroke, which is 34 stroke events less compared to 2018. The slightly declining trend in registered stroke events during the past years continues although not as evident as between 2016-2017 (Figure 1). Recurrent strokes have remained at 21 %, which is the lowest proportion in the history of Riksstroke.
- The **coverage** of the register was 89 %, unchanged from previous year (calculated as register entries compared with official administrative data, first ever strokes for both sources).
-

Demography, risk factors, type of care and length of stay

- **Mean age** and the distribution in terms of gender was unchanged compared to previous years. Slightly more men than women had a stroke, and the mean age was 75 years (73 years among men and 77 years among women).
- Eighty-four percent of the patients were **fully conscious at arrival**. The proportion of patients in whom NIHSS was registered was 61 %, which is 9 % higher than the year before. There was a considerable variation in proportion of NIHSS registrations among the hospitals.
- Sixty-four percent of the stroke patients had **high blood pressure**, 29 % **atrial fibrillation**, 23 % **diabetes** and 14 % were **smokers**.
- Thirteen percent of all stroke events were **intracerebral hemorrhages**. Among these, the proportion related to anticoagulant treatment has gradually increased during the past few years (in line with an increased usage of the treatment overall) and was now 24 % (Figure 2). Reversal of anticoagulation was given to 68 % of the patients with anticoagulant-related intracerebral hemorrhage.
- A third of the stroke patients arrived at hospital within three hours from onset and 38 % arrived as a thrombolysis/thrombectomy alarm.
- The proportion of acute stroke patients receiving **care at a stroke care unit** at some point during their hospital stay was remained high, 94 % (Figure 3). The variation between the hospitals is small.

- Still, many of the stroke patients, 17 %, received treatment at an observation- or other care unit other than a stroke care unit during the first critical day (Figure 4).
- The **median length of stay** at the hospital was 7 days. There was a considerable variation in length of stay between the hospitals; a partial explanation could be various usage of **early supported discharge with stroke rehabilitation at home**.

Diagnosics

- The use of computer tomography for **diagnostic imaging** was at a very high level at all hospitals.
- The average usage of **MRI** examinations of the brain was 30 % with large variations between hospitals.
- CT-angiography in association to the initial computer tomography was performed in 42 % of the patients with ischemic stroke, with great variation between hospitals.
- For patients with ischemic stroke, **CT-angiography** was the most common method for vascular examination (50 %), followed by **ultra-sonography** (32 %) and **MR-angiography** (3 %). The usage of CT-angiography is increasing.
- The proportion of patients with ischemic stroke examined with **long-term ECG** with the purpose to discover atrial fibrillation was 79 % but varied between the hospitals.
- **Swallowing assessment** was performed for 88 % of the stroke patients.

Reperfusion therapy (to restore the blood flow with thrombolysis and thrombectomy)

- The proportion of patients who received **reperfusion therapy** continued to increase and was 17 % in 2019 (Figure 5). A third of the treated patients were 80 years or older.
- The differences in the proportion of patients who received **thrombolysis** between the hospitals decreased, but the treatment still seems under-used at several of the hospitals.
- The time from arrival at the hospital to the start of thrombolysis treatment (door-to-needle time) has decreased compared to 2018 and median time was now 32 minutes. There are still large variations between the hospitals.
- The number of **thrombectomies** (mechanical removal of a clot in arteries in the brain using a catheter) had further increased in 2019. 932 treatments were carried out in 2019 (compared to 847 treatments in 2018), of which the majority were carried out in four regions: Stockholm, Västra Götaland, Södra Sjukvårdsregionen and Uppsala/Örebro. The implementation was very low in the other regions. Usage of the treatment corresponds to 5 % of all ischemic strokes.
- There were in total 2 804 contacts with hospitals with a thrombectomy center from other hospitals. A third of these resulted in a thrombectomy treatment.

Neurosurgical operation performed for patients with intracerebral hemorrhages

- Eight percent of patients with intracerebral hemorrhages received **neurosurgical operation**.

Physical therapy and occupational therapy

- About 85 % of the patients were evaluated by a **physical therapist or occupational therapist**, about half of them within 24 hours after arrival at the hospital.

Speech therapist

- Two out of five of the patients had their speech- or swallow function evaluated by a **speech therapist** during the hospital stay.

Secondary prevention

- Data on information about **smoking cessation** were missing in every third patient and the efforts to encourage patients to not smoke seems to be insufficient at many hospitals. Half of the smokers received information about smoking cessation.
- The proportion of patients with an embolic stroke (defined as ischemic stroke associated with atrial fibrillation) that received secondary prevention with **oral anticoagulants** continued to increase and was now 80 % (Figure 6). Seven out of eight of the patients had a prescription with one of the new anticoagulants (NOAC) at discharge.
- The proportion of patients with **antihypertensive medicine** at discharge remained on a high level with relatively small variation between the hospitals.
- The use of **statins** after an ischemic stroke increased further during 2019 and is now given to four out of five patients. The variation between the hospitals was large.

Driving

- For patients with a driver's license a majority had received **information about driving** after stroke. Data was missing for 21 % of the patients, a small improvement compared to the previous year.

Accommodation after discharge and planned rehabilitation

- 76 % returned to their own home after discharge while 22 % were discharged to an assisted living facility.
- **Early supported discharge with rehabilitation at home** from a multidisciplinary team associated to the stroke unit was planned for 16 % of the patients who were discharged to their own home. There were large variations in the proportions with rehabilitation at home and in a hospital-based day rehabilitation clinic (Figure 7).
- Eighty-four percent of the stroke patients had a planned **follow-up visit** at the hospital or in primary care.

3-MONTH FOLLOW-UP

Follow-up

- Out of the 21 090 stroke events in 2019, 83 % answered a **follow-up** survey or were deceased 3 months after their stroke.
- The proportion of patients followed up 3 months after stroke increased in 2019 compared to 2018, as well as the proportion of hospitals reaching high and moderate target levels.

Survival

- Sixteen percent of the patients were **deceased within 90 days** after their stroke and 27 % were **deceased or ADL dependent** at the 3 months follow up after stroke.
- The proportion of deceased and deceased or ADL-dependent varied significantly between the hospitals, but the differences were small between the regions after statistical adjustment for age, sex, and level of consciousness.

Function

- The proportion of patients who were **dependent in ADL 3 months after stroke** was similar to the previous year, and a slow decreasing trend has been seen over a 10-year period (Figure 8).
- Patient characteristics can partly explain the differences in proportion of ADL-dependent patients between the hospitals but there are still considerable differences between the hospitals even after statistical adjustment. Data might be affected by transfers between hospitals for thrombolysis and thrombectomy in the acute phase.

Accommodation

- Three months after stroke, 67 % of the patients lived in their own home without community service, 20 % in their own home with community service, 12 % in assisted living and 1 % in some other living facility.

Hospital achievements

- The proportion of patients who were satisfied or very satisfied with the **rehabilitation during the hospital stay** (among those who received rehabilitation) was high (91 %) for the whole nation, with a moderate variation between the regions. The proportion of patients who were satisfied or very satisfied with the **rehabilitation after hospitalization** was a bit lower, 85 %.
- The proportion who stated that they had received **rehabilitation at home** (early supported discharge) had increased, from 33 % to 36 % compared to previous year. There are still large variations across regions.
- More than 63 % of the stroke patients with self-reported speech problems had seen a **speech therapist** for evaluation or treatment. The variations between the regions were large.
- The proportion of stroke patients who quit **smoking** was unchanged at 45 %. Nearly half the patients reported to have received advice on smoke cessation.
- Patient compliance in **blood pressure lowering drug therapy** seems to be at a very high level.

Symptoms and quality of life

- Seventy-eight percent of the patients reported their **general health** to be very good or good 3 months after stroke, with moderate variation between the hospitals.
- Thirty- one percent stated that they had gone back to the life and activities they had before their stroke, 36 % percent answered “yes, but not quite like before” and 33 % answered “no”.

- Fatigue, depression, pain, speech difficulties and memory difficulties are common after a stroke. About a third of the patients had three or more of these symptoms (Figure 9).

Acute care satisfaction

- Most of the stroke patients were satisfied with the acute care, and the differences in satisfaction between the hospitals were moderate.

Need of support

- Fifty-four percent of the patients were satisfied with the support from the hospitals and the municipality after discharge, this proportion is lower than the previous year. The proportion of patients who were **satisfied with the support** varied substantially between the hospitals, and more than half of the hospitals did not reach moderate target level.
- Three months after stroke, more than half of the stroke patients who lived at home stated that they were **fully or partly dependent on the help from a relative** (this proportion is unchanged compared to the previous year). Even among the patients living in a nursing home, the proportion in need of help from a relative was very high.

Figures

NUMBER OF STROKE EVENTS IN RIKSSTROKE 1994-2019

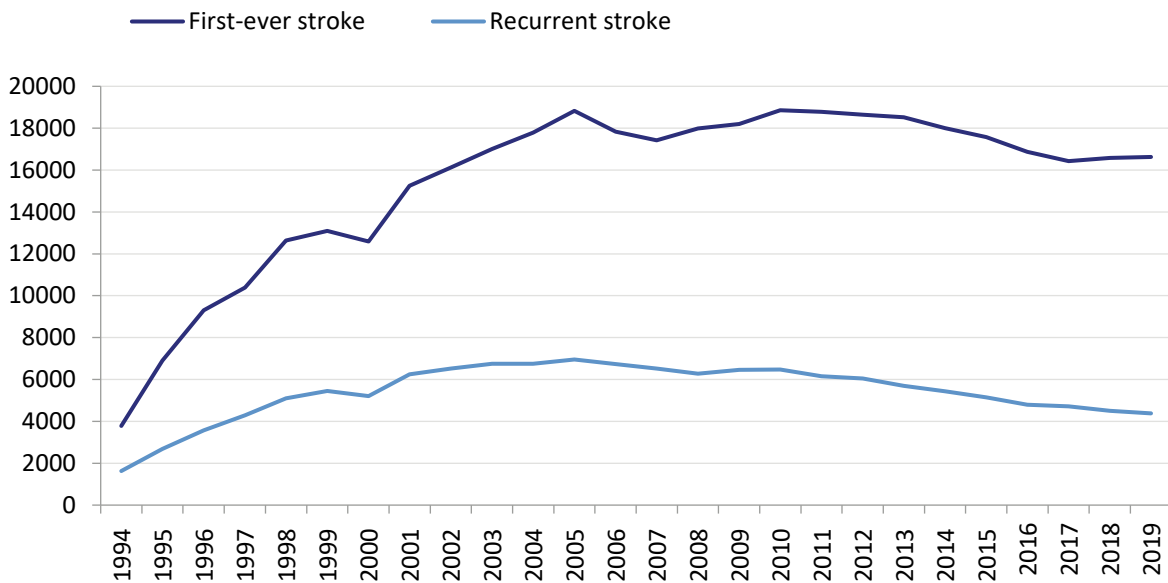


Figure 1. Number of stroke events registered in Riksstroke from 1994 to 2019. Separate lines for first-time events and recurrent stroke events.

ANTICOAGULANTS AT ADMISSION AMONG INTRACEREBRAL HEMORRHAGES

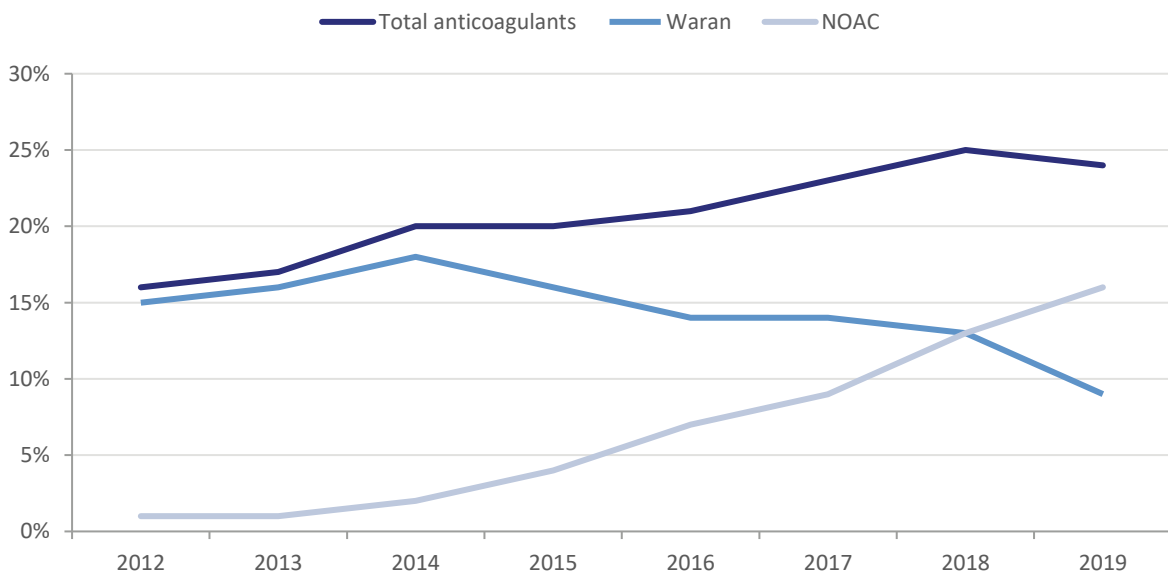


Figure 2. The proportion of patients with anticoagulant treatment at admission among intracerebral hemorrhages, 2012-2019.

CARE AT A STROKE CARE UNIT, INTENSIVE CARE UNIT OR NEUROSURGICAL UNIT (AT SOME PERIOD DURING THE ACUTE PHASE)

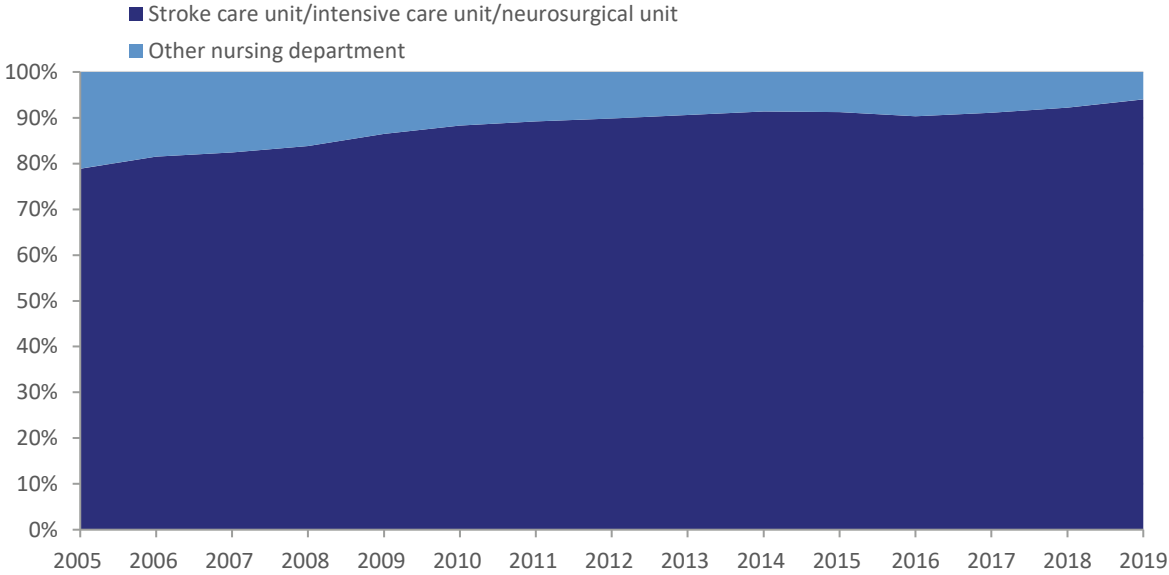


Figure 3. The proportion of patients with acute stroke receiving care at a stroke care unit/intensive care unit/neurosurgical unit or other nursing department, 2005-2019.

DIRECT ADMISSION TO STROKE CARE UNIT (AS FIRST LEVEL OF CARE)

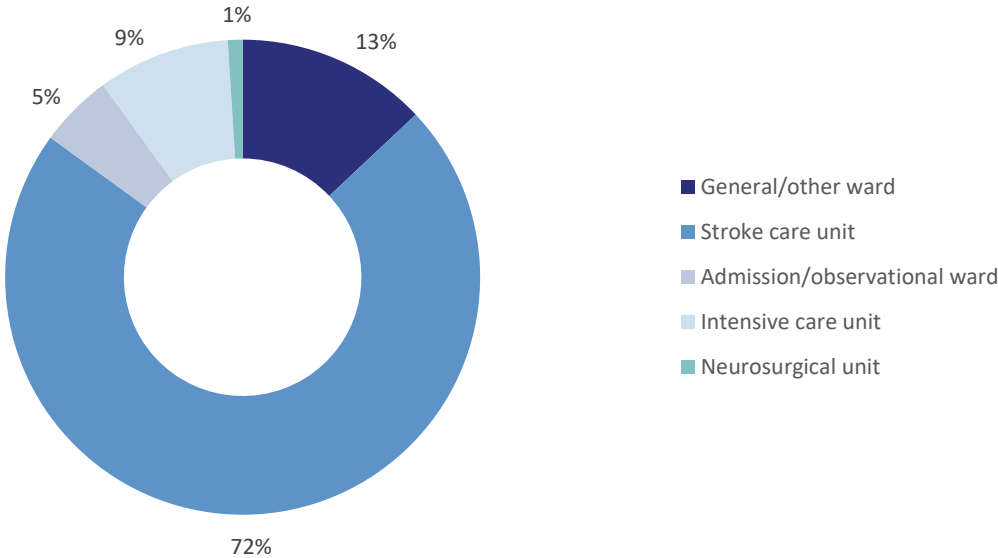


Figure 4. Proportion of acute stroke patients directly admitted to stroke unit, intensive care unit, neurosurgical unit or other type of ward, 2019.

REPERFUSION THERAPY

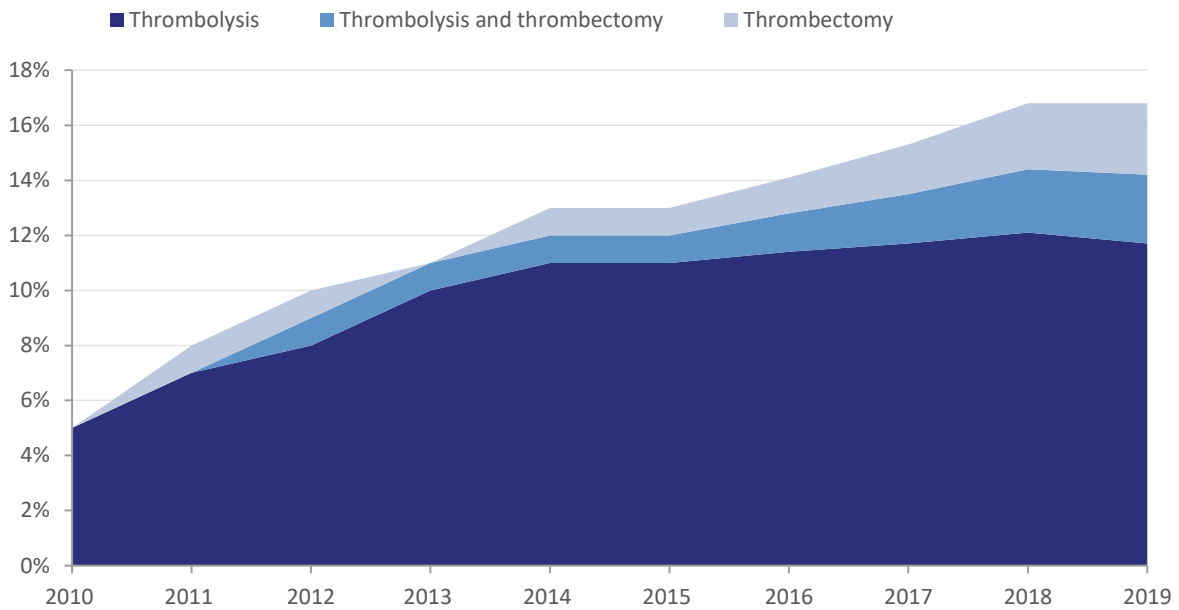
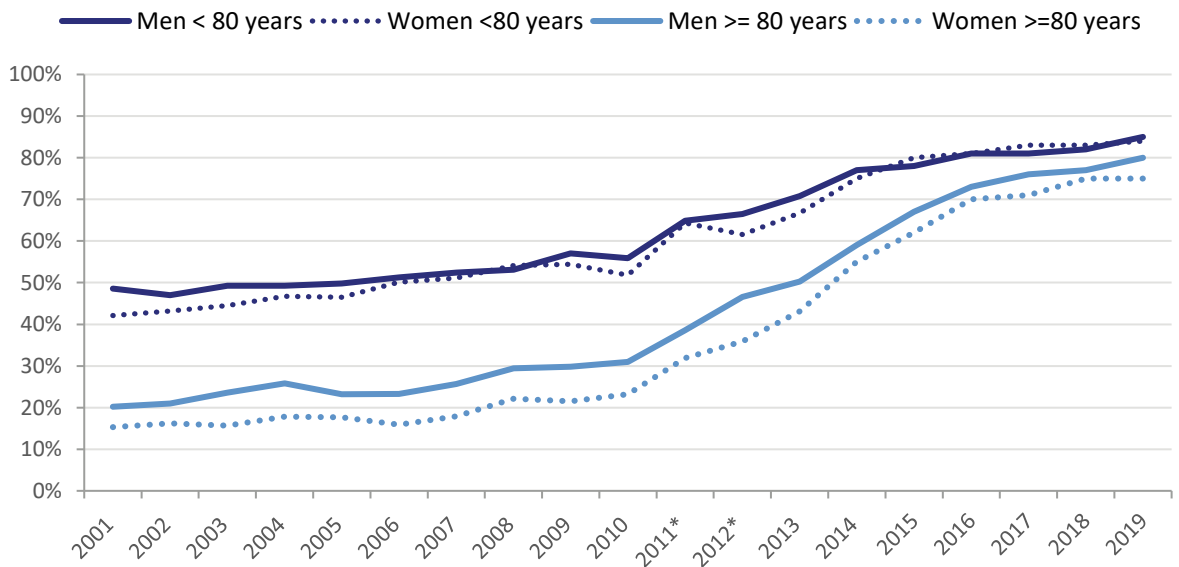


Figure 5. The proportion of patients with ischemic stroke receiving reperfusion therapy, 2010-2019.

ANTICOAGULANTS AMONG PATIENTS WITH ISCHEMIC STROKE AND ATRIAL FIBRILLATION



*The wording of the question was changed in 2011 and 2012, which may have affected the comparison over time.

Figure 6. Proportion of patients with ischemic stroke and atrial fibrillation who were prescribed anticoagulant treatment at discharge, 2001-2019.

PLANNED REHABILITATION AMONG PATIENTS DISCHARGED TO THEIR OWN HOME

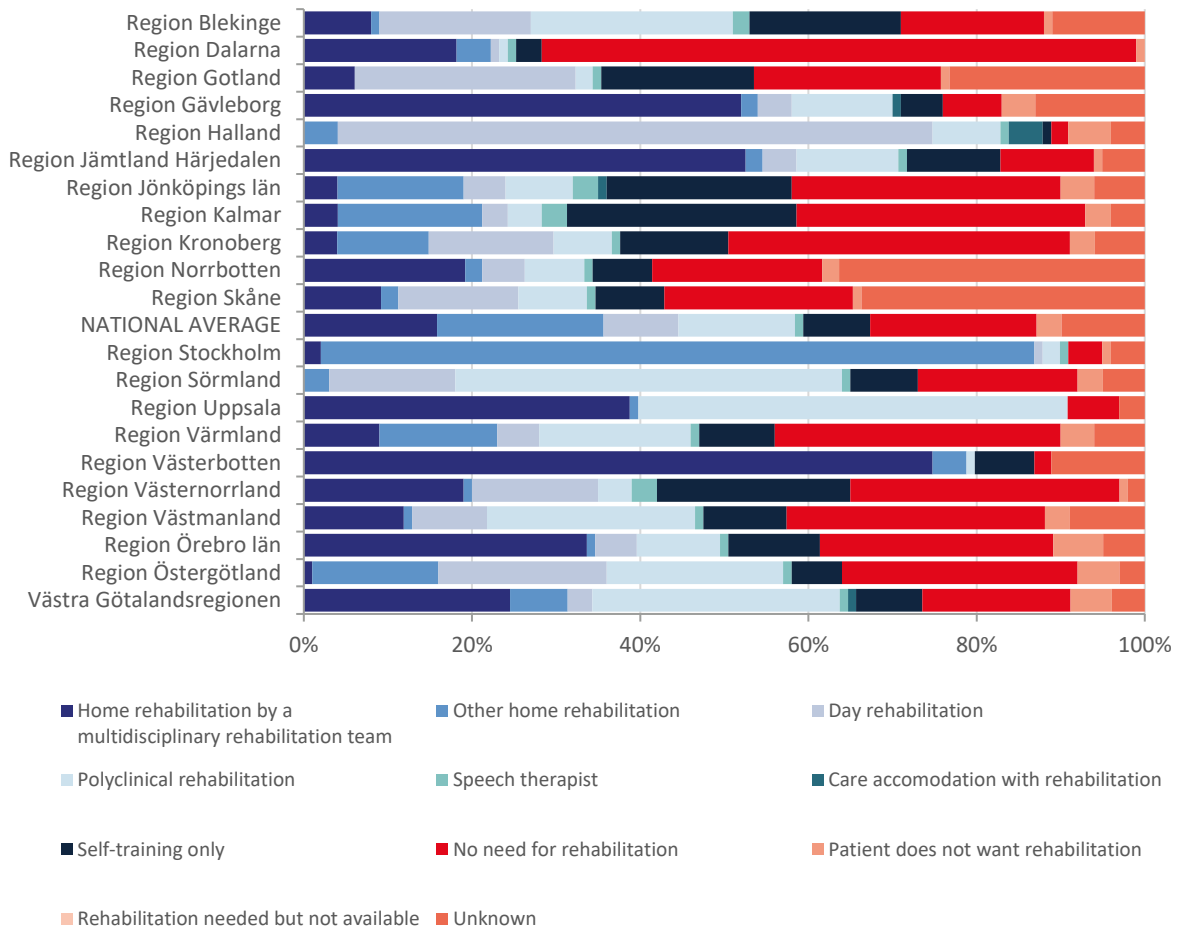


Figure 7. The proportion of patients with planned rehabilitation among those discharged to their own home, by region 2019.

ADL-DEPENDENCY 3 MONTHS AFTER STROKE

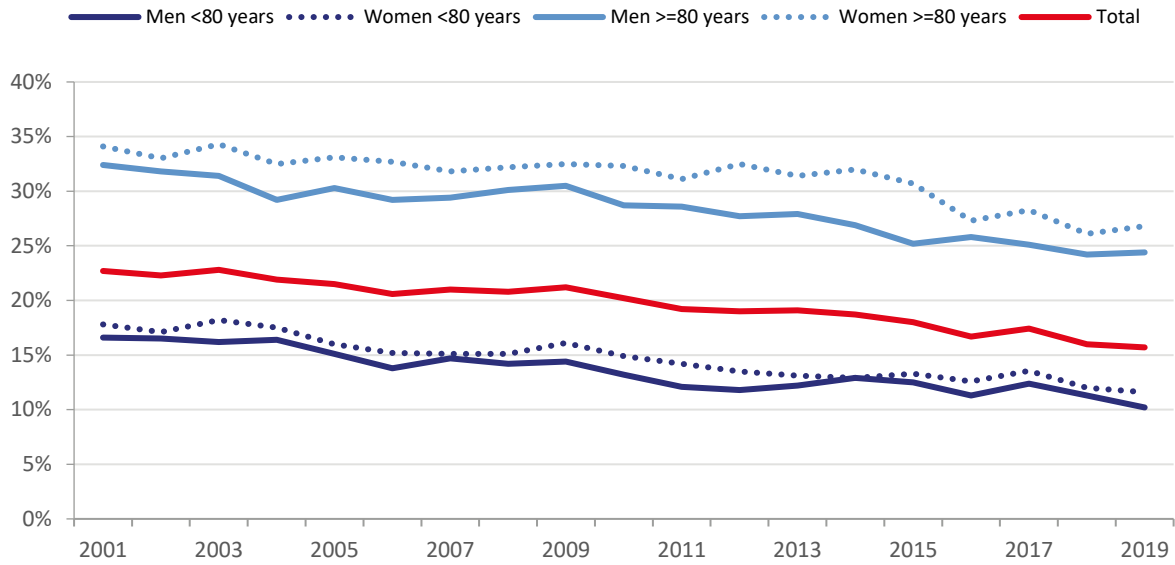


Figure 8. The proportion of patients who were ADL-dependent three months after stroke, 2001-2019. Patients who already were ADL-dependent before their stroke are excluded from the calculations.

NUMBER OF DIFFICULTIES 3 MONTHS AFTER STROKE

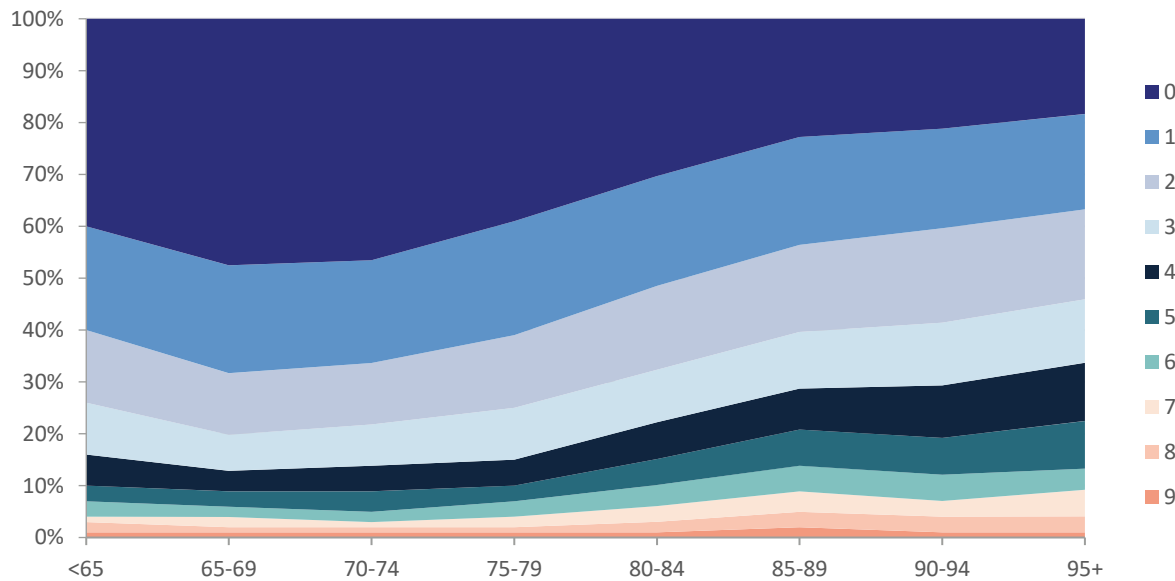


Figure 9. Number of difficulties 3 months after stroke divided into different age groups, 2019.