

RIKSSTROKE

QUALITY OF THE SWEDISH STROKE CARE 2017



A BRIEF SUMMARY OF DATA FOR THE FULL YEAR 2017



RIKSSTROKE
The Swedish Stroke Register

A BRIEF SUMMARY OF DATA FOR THE FULL YEAR 2017

TIA

Number of recordings and coverage

- During 2017 there were **8 708 TIA events** registered at 70 out of 72 hospitals that register TIA. Compared to 2016 two additional hospital are now registering TIA.
- From the number of registered TIA's in Riksstroke, the **total number** of patients with TIA in Sweden 2017 can be approximated to 10 000.
- The ratio between the number of TIA's and ischemic stroke is now 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 (72 among men and 75 among women), about one year younger than patients with stroke.
- Fifty-nine per cent of the patients with TIA had **high blood pressure**, 19 % **atrial fibrillation**, 17 % **diabetes** and 11 % were **smokers**.
- Eighty-five per cent of the TIA patients sought health care at the emergency room as a first instance, 12 % at primary care and 3 % at some other health care facility.
- Forty-five per cent of the registered TIA patients arrived at the hospital within three hours from onset and 88 % within 24 hours. More than half (54 %) of the patients **arrived by ambulance**.
- Seventy-eight per cent of the TIA patients were directly admitted to a stroke unit. The median length of stay was three days.

Diagnostics

- Practically all patients had a **CT scan examination**, while 12 % had an **MRI scan**. The most common vascular examination method was **ultra-sonography** (52 %), followed by **CT angiography** (29 %) and **MR angiography** (1 %). There was an increasing trend for the use of CT angiography.
- For cardiac arrhythmia detection, 73 % of the patients without known atrial fibrillation had a long-term follow-up with long term **ECG recording**. Further 11 % had a planned long term recording after discharge.

Secondary prevention

- Eighty-seven per cent of TIA patients, all ages, with atrial fibrillation were prescribed **oral anticoagulants** at discharge. This is a continuous increase compared to previous years, especially among the elderly patients. There was no significant geographical variation in

receiving the treatment. The proportion of patients receiving some of the new oral anticoagulants (NOAC's) continuously increased.

- **Antihypertensive medicine** was prescribed for 72 % of the patients (unchanged compared to 2016) and 82 % with statins, which is an increase with 2 %. There was still a considerable regional variation in usage.
- Most of the smokers (77 %) received **advice about smoking cessation** and 64 % of those with a driver's license received **advice about driving after stroke**. Information about smoking cessation and/or driving was missing for every forth to fifth TIA patient.
- Almost all TIA-patients, 91 %, had a planned **follow-up visit** at the hospital or in primary care.

STROKE

Number of registrations and coverage

- During 2017 there were **21 216 stroke events** registered in Riksstroke, which is 579 stroke events less compared to 2016. The slightly declining trend in registered stroke events during the past years continues (*figure 1*). Recurrent strokes have further decreased.
- The **coverage** was 89 %, unchanged from previous year. The number of hospitals not reaching any target level for coverage had slightly increased.

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 old (73 years among men and 78 years among women).
- Eighty-four per cent were **fully conscious at arrival**. The registration of severity with NIHSS has increased marginally and is now 56 %. There was a considerable variation in proportion of NIHSS registrations among the hospitals.
- Sixty-four per cent of the stroke patients had **high blood pressure**, 29 % **atrial fibrillation**, 22 % **diabetes** and 14 % were **smokers**.
- Thirteen per cent 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 is now 23 % (*figure 2*). Reversal of anticoagulation was given to 57 % of the patients with anticoagulant-related intracerebral hemorrhage.
- A third of the stroke patients arrived at hospital within three hours from onset. A third also arrived as a thrombolysis alarm.
- The proportion of acute stroke patients receiving **care at a stroke unit** at some point during their hospital stay was continuously high, 91 % (*figure 3*). The variation between the hospitals is notably decreasing.

- Still many of the stroke patients, 21 %, receives treatment at an observation- or other care unit other than a stroke unit during the first critical day (*figure 4*).
- The **median length of stay** at hospital was 8 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**.

Diagnostics

- The use of computer tomography for **diagnostic imaging** was at a satisfactory level at all hospitals.
- The average usage of **MRI** examinations of the brain was 25 % with large variations between hospitals.
- For patients with ischemic stroke, **ultra-sonography** was the most common method for vascular examination (38 %), followed by **CT-angiography** (37 %) 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 69 % but varied between the hospitals.
- **Swallowing assessment** was performed in 85 % 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 15 % in 2017 (*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 declined, but the treatment still seems under-used at several of the hospitals.
- The increasing frequency of thrombolysis have been reached without an increasing rate of intracranial bleeding with clinical deterioration.
- The time from arrival at hospital to the start of thrombolysis treatment (door-to-needle time) has decreased compared to 2016 and is now 39 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) has further increased in 2017. This is related to the new strong evidence for the treatment. 645 treatments were carried out in 2017 (compared to 499 treatments in 2016), of which the majority were carried out in three regions: Stockholm, Västra Götaland and Södra Sjukvårdsregionen. The implementation was very low in the other regions. Usage of the treatment corresponds to 3.6 % of all ischemic strokes.
- There were in total 2 149 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

- Seven per cent 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**, in two thirds of the cases within 24 hours after arrival at the hospital.

Speech therapist

- Over a third 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** is missing in every fourth patient and the efforts to encourage patients to not smoke seems to be inadequate at many hospitals.
- The proportion of patients with an embolic stroke (a combination of atrial fibrillation and ischemic stroke) that receives secondary prevention with **oral anticoagulants** continue to increase, especially for patients 80 years or older (*figure 6*). For patients under 80, the proportion with anticoagulant treatment is 81 %. Almost two thirds of the patients had a prescription with one of the new anticoagulants (NOAC's) at discharge.
- The proportion of patients with **antihypertensive medicine** at discharge remains on a high level with relatively small variation between the hospitals.
- The use of **statins** after an ischemic stroke increased further during 2017 and is now given to four out of five patients. The variation between the hospitals were large.

Driving

- For patients with a driver's licence a majority had received **information about driving** after stroke. Data was missing for over a fifth of the patients, but this was still an improvement compared to previous year.

Accommodation after discharge and planned rehabilitation

- Three fourths returned to their own home after discharge while 23 % were discharged to a special accommodation.
- **Early supported discharge with rehabilitation at home** from a multidisciplinary team associated to the stroke unit was planned for 18 % of the patients who were discharged to their own home, while some other type of home rehabilitation was planned for 18 % of the patients. There were large variations in the proportion with rehabilitation at home and in a hospital-based day rehabilitation clinic (*figure 7*).
- A fourth of the patients, discharged to their own home were judged to have no need of any rehabilitation according to the hospital team, although these proportions varied significantly between the different regions.

- Eighty-two per cent of the stroke patients had a planned **follow-up visit** at hospital or in primary care.

3-MONTH FOLLOW-UP

Follow-up

- Out of the 21 797 stroke events in 2016, 85 % answered a **follow-up survey** or were deceased at 3 months after their stroke.
- The proportion of patients followed up 3 months after stroke decreased in 2017 compared to 2016, as well as the proportion of hospitals reaching high and moderate target levels.

Survival

- Seventeen per cent of the patients were **deceased within 90 days** after their stroke and 33 % were **deceased or ADL dependent** at follow up 3 months after stroke. These proportions are unchanged since previous year.
- 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 consciousness level.

Function

- The proportion of patients who are **dependent in ADL** 3 months after stroke has further decreased (with 1 % compared 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.

Accommodation

- Three months after stroke, 64 % of the patients lived in their own home without community service, 21 % in their own home with community service, 14 % in assisted living and 2 % 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) were high (91 %) for the whole nation, with a moderate variation between the counties/regions.
- The proportion who stated that they had received **rehabilitation at home** (early supported discharge) had increased, from 27 % to 30 % compared to previous year. There are still large variations across regions.
- More than 60 % of the stroke patients with self-reported speech problems had seen a **speech therapist** for evaluation or treatment. The variations between the counties/regions were large.

- The proportion of stroke patients who quit **smoking** are 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-seven per cent of the patients reported their **general health** to be very good or good 3 months after stroke, with moderate variation between the hospitals.
- 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-eight per cent of the patients were satisfied with the support from the hospitals and the municipality after discharge, this proportion is the same as previous year. The proportion 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 of the help from a relative** (this proportion is unchanged compared to previous year). Even among the patients living in a nursing home, the proportion in need of help from a relative was very high.

1 YEAR FOLLOW UP AFTER STROKE

Participation

- A survey was sent to all stroke patients registered in Riksstroke who was still alive one year after their stroke. The **response rate** for the 2017 follow up was 77 %. This is a 2 % lower response rate than previous year.
- Two thirds of the respondents answered the survey themselves, 22 % answered with the help of a next of kin or hospital staff and for 11 % the survey was completed solely by next of kin or hospital staff.

Function and accommodation

- About 14 % had such a substantial disability that he or she was dependent of others for **toilet visits and dressing** one year after stroke.
- The proportion of **ADL-dependency** was twice as common among patients who were 75 years or older compared to those under 75 years. It was also more common among women than men. ADL-dependency variations one year after stroke are small among the county councils.

- More than a third of the respondents needed **help with the household**. The need of help was more common among those over 75 years old. Women more often than men needed help with the household.
- There is a high **need of support from a next of kin** one year after stroke, especially among women over 75. These proportions have been the same over the last four years.
- The proportion of patients living in an assisted living facility is the same as previous year (10 %).

Quality of life

- Two thirds of the respondents stated that they still experienced some sort of residual symptoms one year after stroke.
- One third reported they had been able to **fully return to the life and activities** they had before their stroke.
- Despite the stroke most respondents (four out of five) reported their **general health** to be very good or good, with moderate variations between counties/regions.
- Almost half of the patient experienced **fatigue** often or all the time.
- A fourth of the patients experienced **pain** often or all the time one year after stroke and for 20 % of these the need of **pain killers** was not at all satisfied.
- 15 % felt depressed often or all the time, this proportion was higher among women than men.
- More than one fifth of the patients experienced **difficulties speaking, reading and/or writing**. A third experienced **trouble remembering**. Almost half of the respondents experienced **balance difficulties**.

Efforts in health and dental care

- About a third of the respondents had not had a **revisit at a physician** within the last six months. It has been shown though that self-reported data on health care visits are unreliable.
- Four out of five were taking **blood pressure medication** one year after stroke.
- One year after stroke about 20 % had an **ongoing rehabilitation** and the majority (86 %) were satisfied or much satisfied with the training. Dissatisfaction with rehabilitation were more common amongst elderly.
- Six per cent did not receive rehabilitation despite the need.

- There was only a small proportion (5 %) whose **need of daily living aids and adaptions** had not been met.
- Three out of four stated that their need of **home care service** was fully met, while a fifth answered that their need was only partly met. For six per cent the need of home care service was not at all met. Variations between counties/regions were moderate.
- 58 % of the patients who were **smokers** at the time of their stroke was still smoking one year later. This is a slightly increase since previous year. 47 % stated having received information from the hospital regarding smoke cessation. There were large variations between the counties/regions regarding both smoke cessation and information from the hospital about smoke cessation.
- Stroke often causes dental problems. One third stated not having been to a **dentist** during the last year.

[Support from social service](#)

- 69 % reported that their needs from **home care service** were fully met.
- There were large variations among counties/regions in satisfaction with personal care (0 to 10 %) and home care service (1 to 15 %).
- The need of **safety alarm, attendant and support from health care and community care** were in whole at a satisfactory level. The knowledge of where to turn in case of need of support were also on a satisfactory level.

[Going back to work](#)

- For those who worked before their stroke 61 % had fully or partly **returned to work** one year later. This is two per cent higher than last year. Another 11 % had plans of returning to work.

3 AND 5 YEAR FOLLOW UP AFTER STROKE

Participation

- A survey was sent to 5 881 people who was still alive **five years after their stroke**. The number of people who answered was 4 198 which is a **response rate** of 71 %.
- Another survey was sent to 5 930 people who was still alive **three years after their stroke**. The number of people who answered was 4 258 which is a **response rate** of 72 %.
- 65 % of the patients **answered the survey themselves**. Further 12-13 % answered together with someone else, next of kin or staff at the hospital.

Function and accommodation

- Five and three years after stroke every sixth person still has such a substantial disability that he or she is **dependent of help** from another person for toilet visits and dressing/undressing.
- Five and three years after stroke most of the respondents under 75 years were able to get around both indoors and outdoors without the help of another person. In ages above 75 the need of **help from another to get around** is substantial, especially among women.
- More than half of people above the age of 75 are dependent of others to **manage grocery shopping, cleaning and laundry**.
- More than half of the patients are independent of both **personal and household ADL** five and three years after stroke, with moderate variations among counties.
- Five and three years after a stroke, the **need of support from next of kin** is substantial, especially among people over 75.
- Women more than men were partly dependent of help from next of kin. This could of course be related to the fact that women more often than men are ADL-dependent after a stroke which in turn is correlated with women's higher mean age at the time of their stroke (*figure 10*).
- Five years after the stroke 77 % of the patients were **living in their own home** without community support, 15 % in their own home with community support and 8 % were living in an assisted living facility. These numbers were similar for those who had their stroke three years ago.

Quality of life

- Despite the stroke most respondents (four out of five) reported their **general health** to be very good or good, with moderate variations between counties.
- About a third reported they had been able to **fully return to the life and activities** they had before their stroke.
- About a fourth of the patients **experienced pain** five and three years after their stroke. Every fifth person who experienced pain stated not having their **need of pain reliefs** fulfilled. There is room for quality improvements through better treatment of the pain for these patients.
- 15 % declared that they often or all the time felt **depressed**. About 60 % of those who stated they were depressed all the time received medical treatment for their depression.

- 58–61 % declared still experiencing **discomfort** of some sort five and three years after their stroke while 31-32 % stated all discomfort had passed.

Efforts in health and dental care

- 46 % of all patients participating in the 3- and 5-year survey had not had a visit at a physician within the last six months. There were large variation between the counties.
- 84-85 % reported having their **blood pressure checked** since the time of their stroke.
- 76 % of the respondents were taking **blood pressure medication**, 84 % **anticoagulants** while about two thirds were on **statin medication**.
- More than half of the patients stated no **need of rehabilitation** when answering the survey 3 and five years after their stroke.
- A fourth declared a need of rehabilitation but had not received any.
- The need for **daily living aids and adaptions** in the home was satisfactory for most of the patients. About 3 % stated that their needs had not at all been met regarding daily living aids and adaptions in the home.
- Half of the patients who were **smokers** at the time of their stroke was still smoking 3 and 5 years later. About 40 % stated having received information from the hospital regarding smoke cessation.
- Stroke often causes dental problems. About a fourth stated not having visited a **dentist** during the last year.

Support from social service

- Two out of three believed their need of **home care service** were fully met. Dissatisfaction with having their need met regarding home care service were more common among those under 75 years old.

Going back to work

- Three fourths who answered the survey 3 and 5 years after their stroke were **retired**.
- Among those who worked before their stroke 12 % had **returned to work** 3 and 5 years later.

Figures

Number of stroke events in Riksstroke 1994-2017

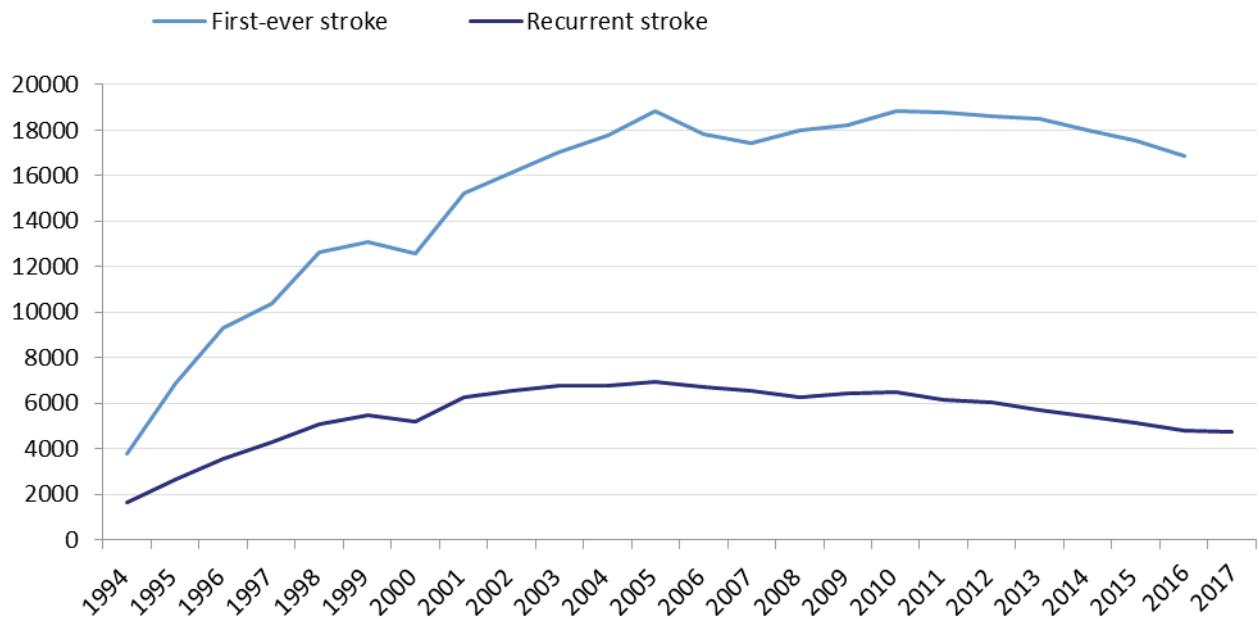


Figure 1. Cumulative number of stroke events registered in Riksstroke from 1994 to 2017. Separate lines for first-time events and recurrent stroke events.

Anticoagulants at admission among intracerebral hemorrhages

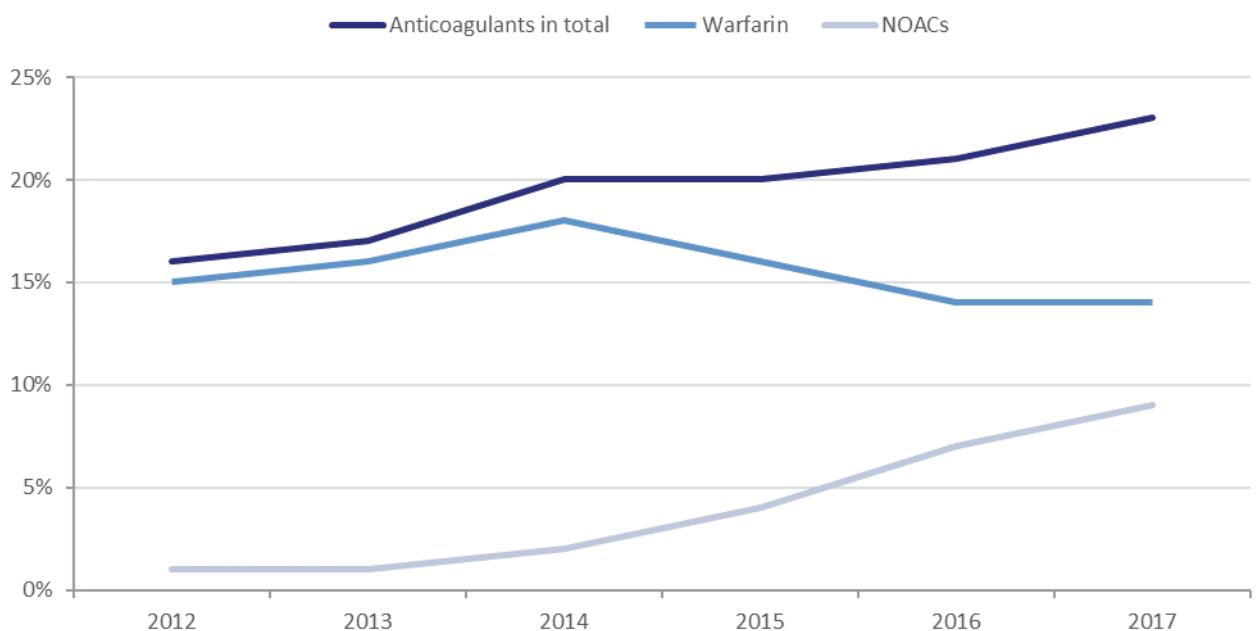


Figure 2. The proportion of patients with anticoagulant treatment at admission among intracerebral hemorrhages, 2012-2017.

Care at a stroke unit, intensive care unit or department of Neurosurgery (at some period during the acute phase)

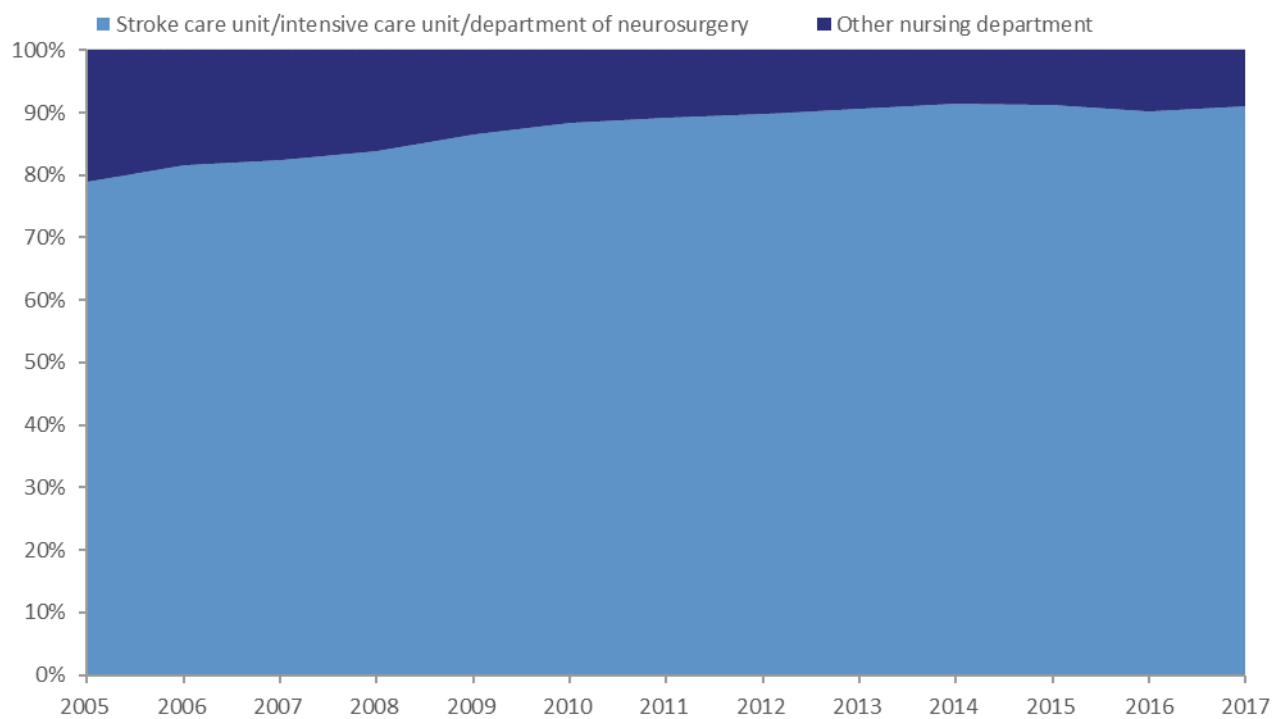


Figure 3. The proportion (%) of patients with acute stroke receiving care at a stroke unit/intensive care unit/department of neurosurgery and other nursing department, 2005-2017.

Direct admission to stroke unit (as first level of care)

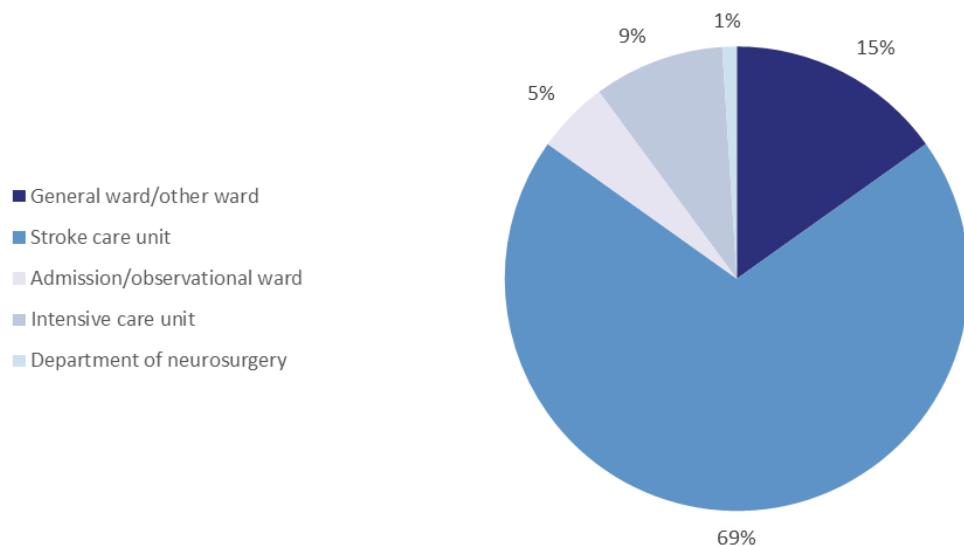


Figure 4. Proportion (%) of acute stroke patients directly admitted to stroke unit, intensive care unit, department of neurosurgery or other type of ward, 2017.

Reperfusion therapy

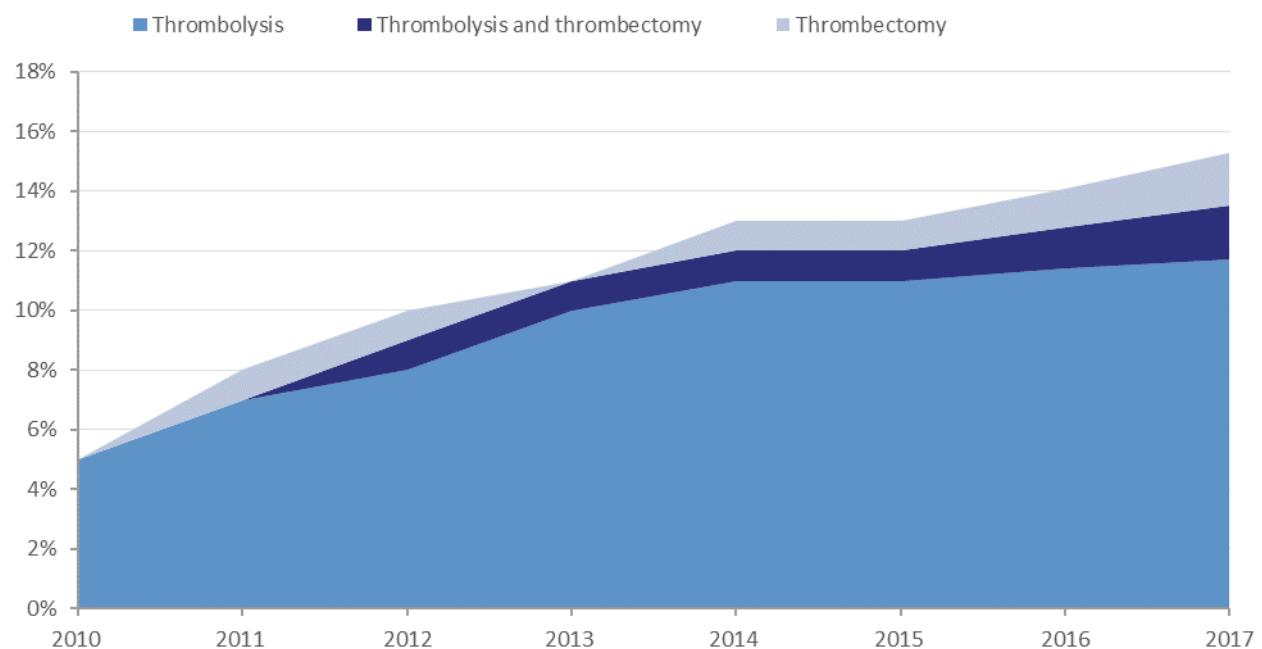


Figure 5. The proportion (%) of patients with ischemic stroke receiving reperfusion therapy, 2010-2017.

Anticoagulants among patients with ischemic stroke and atrial fibrillation

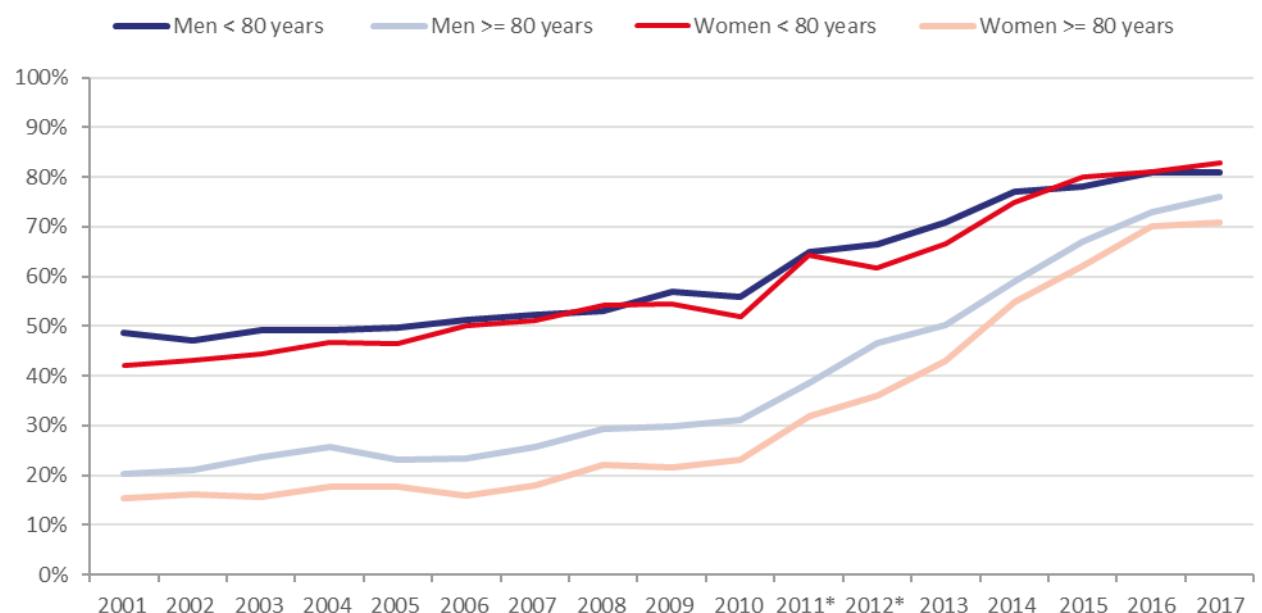


Figure 6. Proportion (%) of patients with ischemic stroke and atrial fibrillation who were prescribed anticoagulant treatment at discharge, 2001-2017.

Planned rehabilitation among patients discharged to their own home

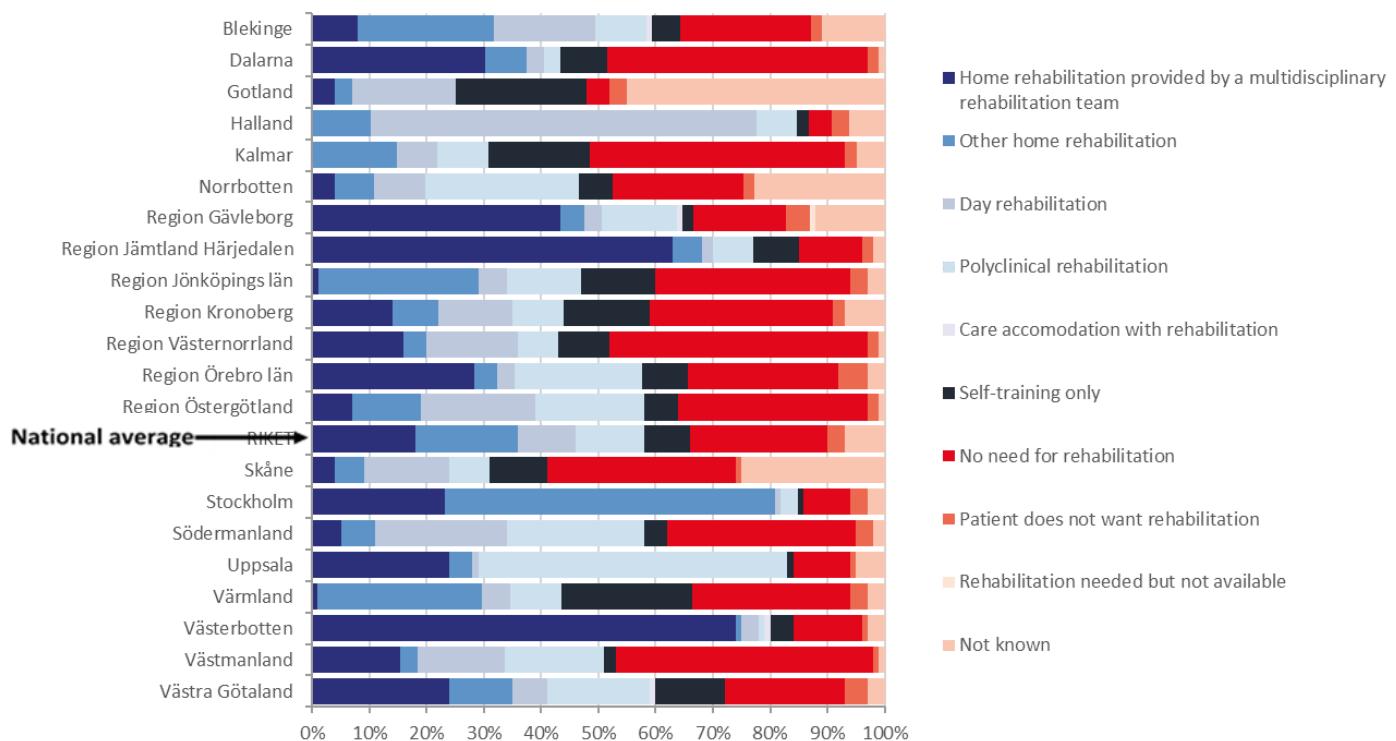


Figure 7. The proportion (%) of patients with planned rehabilitation among those discharged to their own home, by county 2017.

ADL-dependency 3 months after stroke

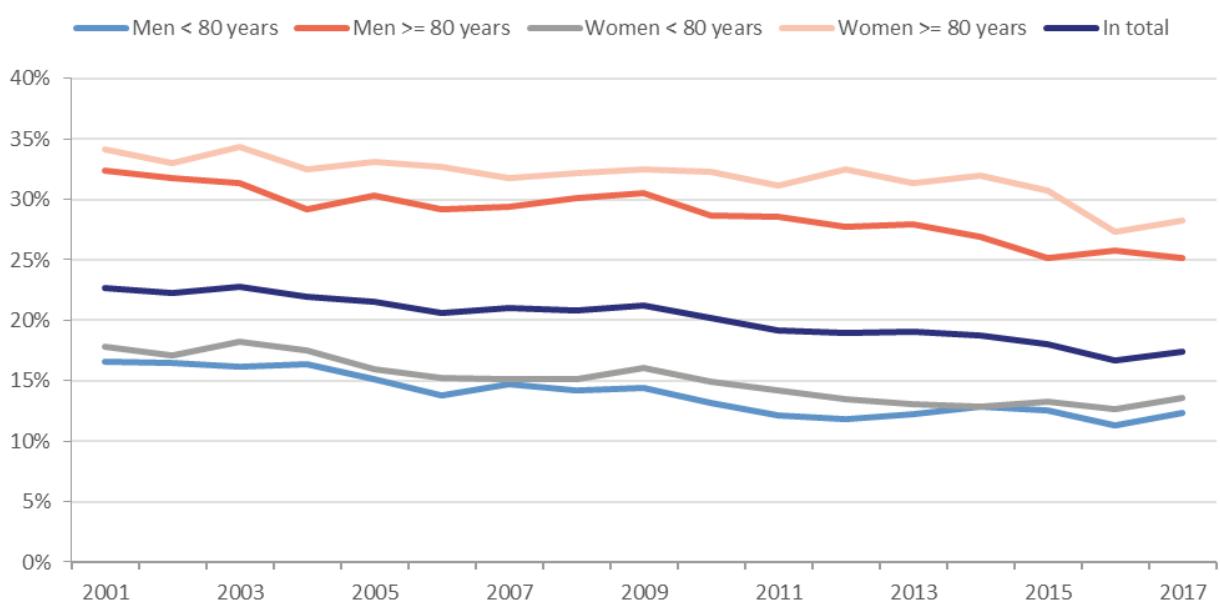


Figure 8. The proportion (%) of patients who were ADL-dependent three months after stroke, 2001-2017. Patients who already were ADL-dependent before their stroke are excluded from the calculations.

Number of difficulties 3 months after stroke

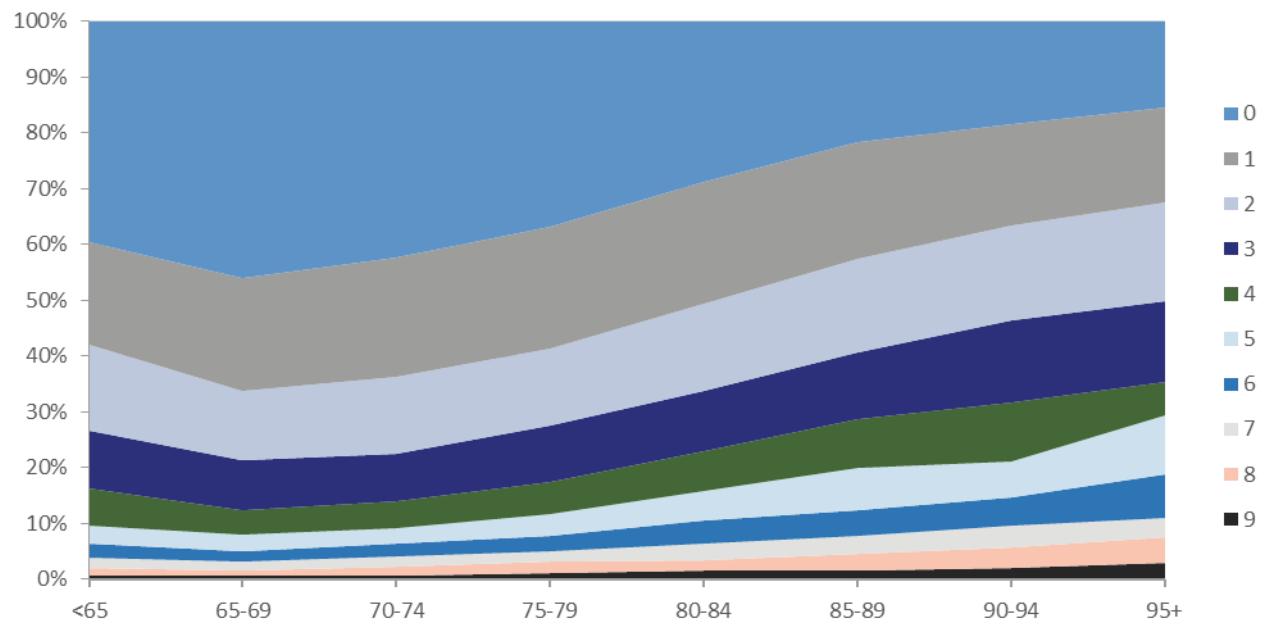


Figure 9. Number of difficulties 3 months after stroke divided into different age groups, 2017.