SSNAP Annual Report 2023

Stroke care received between April 2022 to March 2023

KING'S College LONDON

SSNAP
Sentinel Stroke National Audit Programme

Commissioned by

HQIP
Healthcare Quality Improvement Partnership

The Sentinel Stroke National Audit Programme (SSNAP) is led by the School of Life Course and Population Sciences at King's College London.

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The Sentinel Stroke National Audit Programme (SSNAP) is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP). HQIP is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing, and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage, and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies. www.hqip.org.uk/national-programmes

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Sentinel Stroke National Audit Programme (SSNAP)

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Introduction

SSNAP measures the quality and organisation of stroke care across England, Wales and Northern Ireland. The overall aim of SSNAP is to provide timely information to clinicians, commissioners, patients, and the public on how well stroke care is being delivered. Processes of care are measured against evidence-based quality standards referring to the interventions that any patient may be expected to receive. These standards are laid out in the latest clinical guidelines including the National Clinical Guideline for Stroke (2023) and NICE guidelines (Stroke and TIA, NG128; Stroke rehabilitation, CG162; and Quality standard for stroke), as well as national policy documents including the NHS Long Term Plan, the National Stroke Service Model, the National service model for an integrated community stroke service and the Quality statement for stroke.

Further information on the programme including data analysis and methodology, full datasets, and reports produced are available on the SSNAP website: www.strokeaudit.org. The full annual results portfolio can be accessed by going to: www.strokeaudit.org > Results > Clinical audit > National > Annual.

This report presents data from more than 91,000 patients admitted to hospitals between April 2022 and March 2023 and submitted to the audit, representing over 90% of all admitted strokes in England, Wales and Northern Ireland. This data is summarised in key messages for both those who provide and those who commission stroke care in hospitals and the community, and presented in tables and charts.

10 years of SSNAP

2022 marked 10 years since the inception of SSNAP as the national clinical audit for stroke and this year (2022/23) marks the tenth complete year of data collection. Many graphs in this report include all 10 years of data to show how key measures have changed since inception of the audit. Key messages and national recommendations focus on the current performance of stroke care.

Figures 1 and 2 show the continued and increasing participation in SSNAP over the past 10 years.

Changes in inpatient SSNAP scores over time (2014-2023)

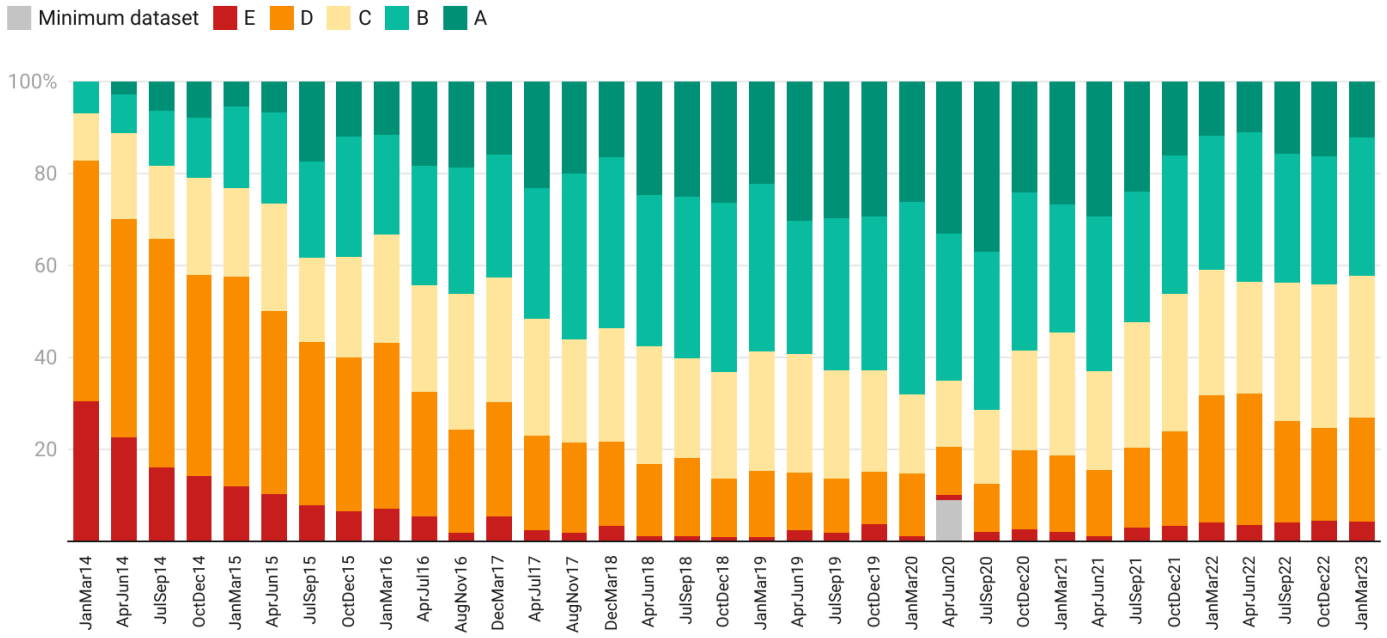


Figure 1: Proportion of inpatient teams achieving the ratings of A-E based on a summary of their performance. The grey bar shows the proportion of teams that entered data onto the minimum dataset during the first COVID-19 wave and received a report but did not receive a score for that period.

Number of records submitted to SSNAP by community teams (2013-2023)

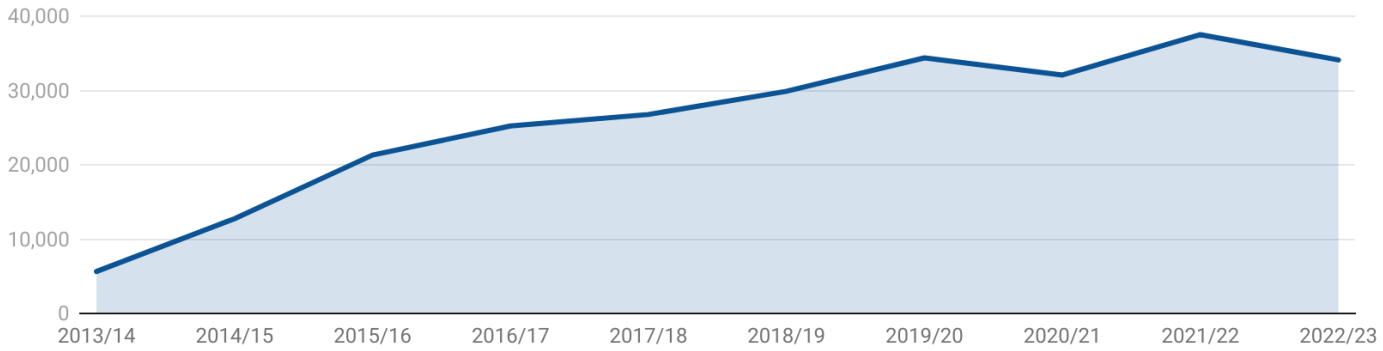


Figure 2: The number of records submitted and locked by community teams between 2013 and 2023.

Key messages from 2022/23

1. The proportion of patients accessing timely specialist stroke care continues to decline: 40.2% patients directly admitted to a stroke unit within 4 hours in 2022/23 compared to 44.4% in 2021/22, and 72.9% patients spending at least 90% of their stay on a stroke unit in 2022/23 compared to 76.5% in 2021/22. These figures compare to 54.9% and 83.2% respectively for 2019/20.
2. Reperfusion treatment rates have improved: the proportion of all patients receiving thrombolysis has increased from 10.4% in 2021/22 to 10.7% in 2022/23, and 3.1% of all patients received thrombectomy in 2022/23 compared to 2.5% in 2021/22.
3. Intracerebral haemorrhage patients now have better access to specialist care (76% patients directly admitted to a stroke unit in 2022 compared to 66% in 2013), which is associated with reduced in-hospital mortality rates compared with 10 years ago (29% in 2022 compared to 33% in 2013).
4. The transition to integrated community stroke services has begun with 49% of community providers now identifying as a combined ESD-CRT service. 61% of patients were discharged to an ESD (Early Supported Discharge) and/or CRT (Community Rehabilitation Team) service in 2022/23 compared to 40.7% in 2013/14.
5. SSNAP now collects data on return to work at 6 months after a stroke. The proportion of patients working full-time 6 months after stroke is 6.1% compared to 14.5% working full-time before stroke.

National recommendations

1. Reverse the recent decline in hyperacute specialist access for stroke. *For action by: Acute trusts, Local Health Boards (LHBs), Regional Medical Directors (RMDs) and Integrated Stroke Delivery Networks (ISDNs).*
2. Increase the proportion of patients receiving the appropriate imaging immediately on arrival at hospital, to accelerate the identification of patients eligible for reperfusion treatments. *For action by: Acute trusts, LHBs, RMDs, Radiology Networks and ISDNs.*
3. Increase the proportion of days on which people recovering from stroke receive rehabilitation therapy, both inside and outside hospital. *For action by: Acute and community trusts and LHBs.*
4. Increase the proportion of patients accessing stroke/neuro ESD and/or CRT. *For action by: LHBs, acute and community trusts, supported by ISDNs and regional SQuIRe (Stroke Quality Improvement Rehabilitation) leads.*
5. Reverse the recent decline in the proportion of stroke survivors who receive formal follow-up 6 months after their stroke. *For action by: Acute and community trusts and Integrated Care Board (ICB) and LHB commissioners, supported by ISDNs and regional SQuIRe leads.*

A full line of sight table, linking national recommendations to report findings, is available online.

Summary of results for people admitted to hospital with stroke

High Quality Specialist Stroke Care

73% of patients spent at least 90% of hospital stay on a specialist stroke unit ***↓ (77% 2021/22)***	**89%** of patients received stroke specialist nursing assessment within 24hrs of admission ***↓ (90% 2021/22)***	**72%** of applicable patients received swallow screening within 4hrs of admission ***= (72% 2021/22)***

Seven Day Priority Clinical Standards of Stroke Care

40% of patients were directly admitted to a stroke unit within 4hrs of hospital arrival ***↓ (44% 2021/22)***	**83%** of patients were assessed by a stroke specialist within 24hrs of admission ***↓ (84% 2021/22)***	**57%** of patients received brain imaging within 1hr of hospital arrival ***↑ (55% 2021/22)***

Reperfusion Treatment

54 minutes median time from arrival at hospital to thrombolysis treatment ***↑ (53 minutes 2021/22)***	**10.7%** of all stroke patients received thrombolysis ***↑ (10.4% 2021/22)***	**3.1%** of all stroke patients underwent a thrombectomy ***↑ (2.5% 2021/22)***

Delivery of Inpatient Rehabilitation

% of applicable patients receiving the equivalent of 45 minutes of therapy 5 days a week

25% physiotherapy ***↓ (27% 2021/22)***	**30%** occupational therapy ***↓ (32% 2021/22)***	**14%** speech and language therapy ***↓ (15% 2021/22)***

Community Rehabilitation

61% of patients discharged to a stroke/neurology specific community rehabilitation service ***↑ (60% 2021/22)***	**49%** of community rehabilitation services registered as a combined ESD-CRT services ***↑ (26% 2021/22)***	**6%** of patients were working full-time 6 months after stroke compared with 15% prior to stroke ***= (6% and 14% 2021/22)***

Longer Term Outcomes

37% of applicable patients received a 6 month follow-up ***↓ (41% 2021/22)***	**17%** of patients at 6 months reported moderate or severe anxiety or depression ***↓ (18% 2021/22)***	**3%** of patients had a recurrent stroke within 6 months ***↑ (2.8% 2021/22)***

Patient characteristics

91,162 patients were admitted to hospital with a stroke in 2022/23, compared to 92,054 in 2021/22 and 85,480 in 2020/21. Table 1 summarises the key characteristics of those patients admitted in 2022/23, highlighting the complex nature of this disease requiring a skilled multidisciplinary specialist team across the patient's entire journey.

Total stroke admissions	91,162	**Ethnicity**	
Infarction	79,161 *(86.8%)*	*White*	76,194 *(83.6%)*
Intracerebral haemorrhage	11,604 *(12.7%)*	*Black*	1,761 *(1.9%)*
Not known	397 *(0.4%)*	*Asian*	3,495 *(3.8%)*
Age (median, IQR)	*76 [65-85]*	*Mixed*	456 *(0.5%)*
Age (over 80 years)	32,827 *(36.0%)*	*Other*	1,503 *(1.6%)*
Gender (female)	42,596 *(46.7%)*	*Not stated/Not known*	7,753 *(8.5%)*

Comorbidities before stroke		**IMD quintile** (England only)	
Congestive heart failure	5,295 *(5.8%)*	*1 - most deprived*	15,848 *(19.5%)*
Hypertension	51,331 *(56.3%)*	*2*	15,781 *(19.4%)*
Diabetes	22,220 *(24.4%)*	*3*	16,988 *(20.9%)*
Previous stroke/TIA	21,884 *(24.0%)*	*4*	16,989 *(20.9%)*
Atrial fibrillation (AF)	17,109 *(18.8%)*	*5 - least deprived*	15,557 *(19.2%)*
Dementia	6,385 *(7.0%)*		

Table 1: Casemix of patients admitted with stroke in England, Wales and Northern Ireland. *IMD = Index of Multiple Deprivation, English patients only.*

Reperfusion treatment

Proportion of all patients receiving thrombolysis (2019-2023)

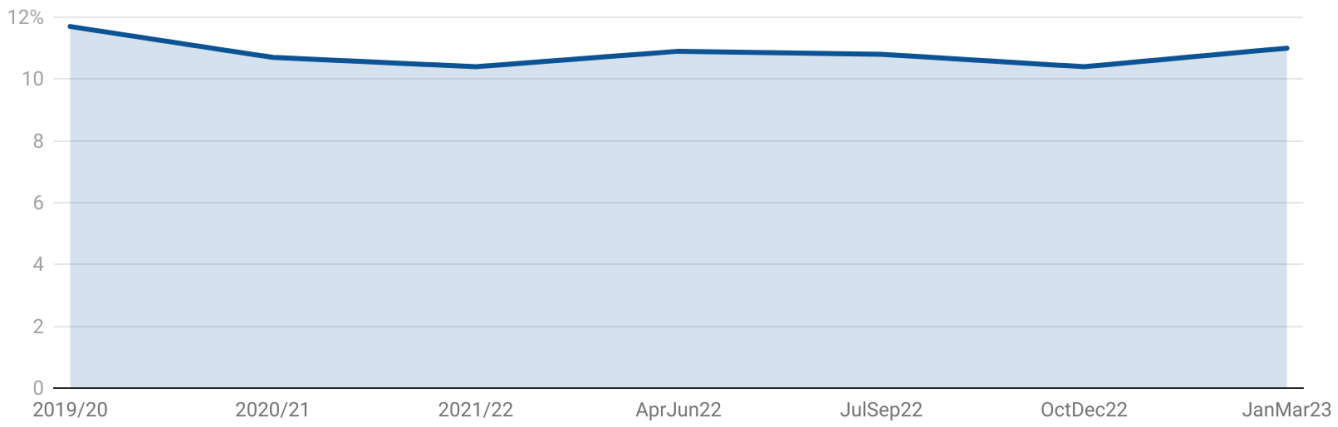


Figure 3: Proportion of patients (out of all strokes) receiving thrombolysis, comparing 2019/20, 2020/21, 2021/22 annual data with 2022/23 quarterly data.

The proportion of patients receiving thrombolysis has increased from 10.4% in 2021/22 to 10.7% in 2022/23 (fig. 3), however this is still below pre-pandemic levels of 11.7% in 2019/20. Innovative methods using machine learning can help identify locally-important means of improving thrombolysis rates (Allen et al., 2022; Pearn et al., 2023) and as evidence for increasing eligibility for thrombolysis grows, the measurement of these metrics will become even more significant.

Proportion of all patients receiving thrombectomy (2015-2023)

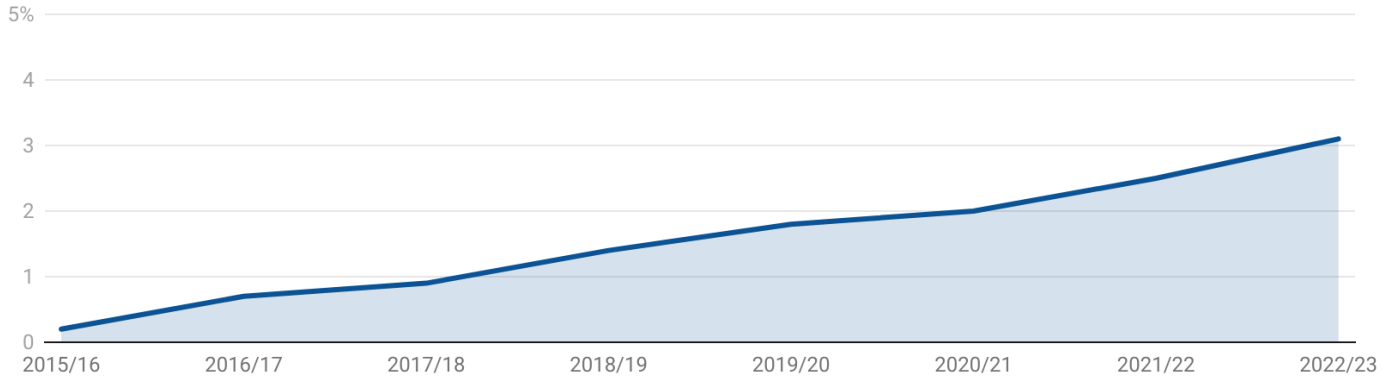


Figure 4: Proportion of patients (out of all strokes) receiving thrombectomy between 2015 and 2023.

The proportion of patients undergoing treatment with mechanical thrombectomy (MT) has increased to 3.1% in 2022/23 (fig. 4) however the growth and trajectory is still slow. Increasing the number of thrombectomy centres operating 24 hours a day, seven days per week with the appropriate workforce will improve the number of patients undergoing this procedure. As some centres of excellence achieve treatment levels for local patients similar to those seen elsewhere in Europe, eradicating geographical variation in access to MT has become all the more important.

A full annual thrombectomy portfolio can be accessed by going to: www.strokeaudit.org > Results > Clinical audit > National > Annual.

Thrombolysis		Thrombectomy	
National	*10.7%*	*National*	*3.1%*
England	*10.5%*	*England*	*3.2%*
Wales	*13.7%*	*Wales*	*0.5%*
Northern Ireland	*13.9%*	*Northern Ireland*	*3.9%*

Table 2: Proportion of patients receiving reperfusion treatment nationally and in England, Wales and Northern Ireland. Thrombectomy proportions based on location of thrombectomy centre.

Intracerebral haemorrhage

Outcomes for intracerebral haemorrhage patients (2013-2022)

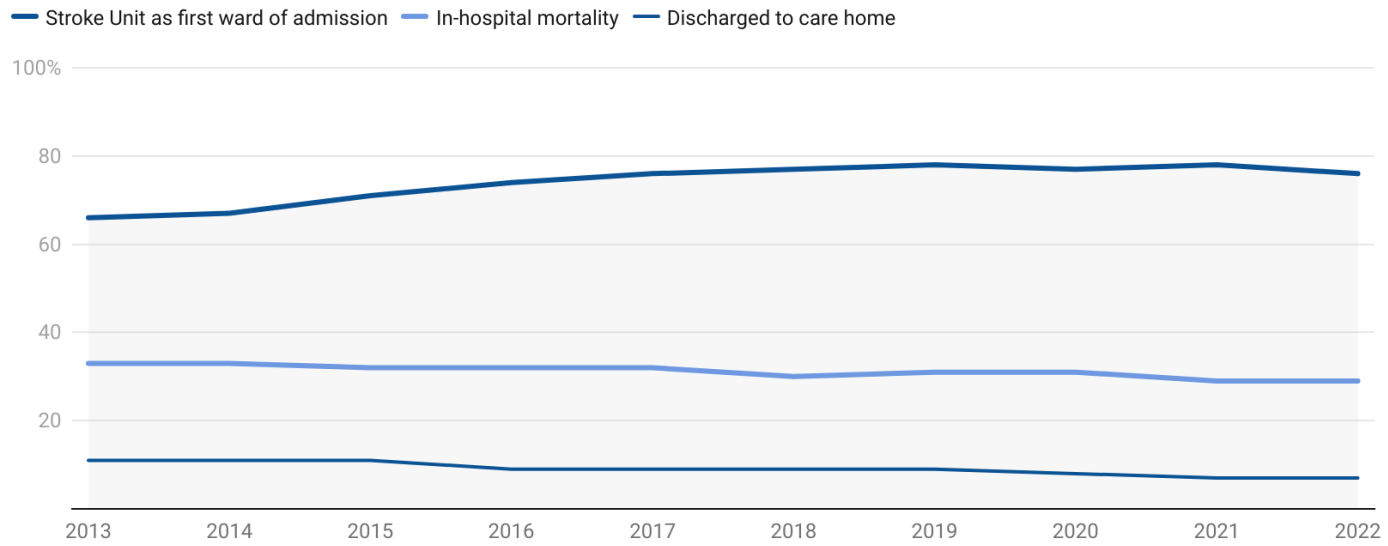


Figure 5: Changes in outcomes for patients admitted with intracerebral haemorrhage between 2013 and 2022.

Outcomes for patients with intracerebral haemorrhage (12% of all stroke admissions) have improved over the past 10 years, including a fall in in-hospital mortality from 33% in 2013 to 29% in 2022 (fig. 5), occurring in parallel with an increase in the proportion of these patients directly admitted to a stroke unit from 66% in 2013 to 76% in 2022 (ESOC 2023: Have outcomes for intracerebral haemorrhage in the UK improved?).

Access to interventions to control physiological parameters such as blood pressure, temperature, glucose and anticoagulant reversal are important to improve survival and recovery (Ma et al., 2023) and SSNAP has shown small improvements in the implementation of blood pressure lowering in the UK over the last 5 years (Holloway et al., 2023).

Access to specialist stroke care

Proportion of patients receiving brain imaging within 1 hour of arrival (2013-2023)

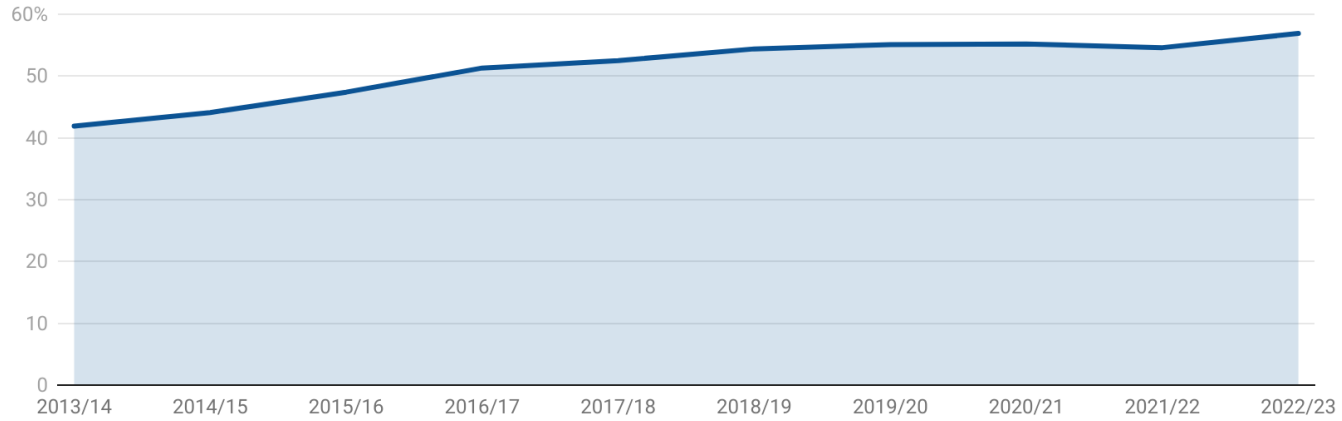


Figure 6: Proportion of patients receiving brain imaging within 1 hour of arrival between 2013 and 2023.

The proportion of patients receiving brain imaging within 1 hour of arrival has increased to 56.9% in 2022/23 (fig. 6). A key priority is to ensure that the appropriate sequence of brain imaging is undertaken at the first sitting, with adoption of artificial intelligence to expedite decision making for acute treatments (National optimal stroke imaging pathway [NOSIP]). Following publication of new evidence extending eligibility of late

presenting patients for MT, it is anticipated that more patients will require advanced imaging in a timely fashion to accommodate the new guidance.

Proportion of patients directly admitted to a specialist stroke unit within 4 hours of arrival (2013-2023)

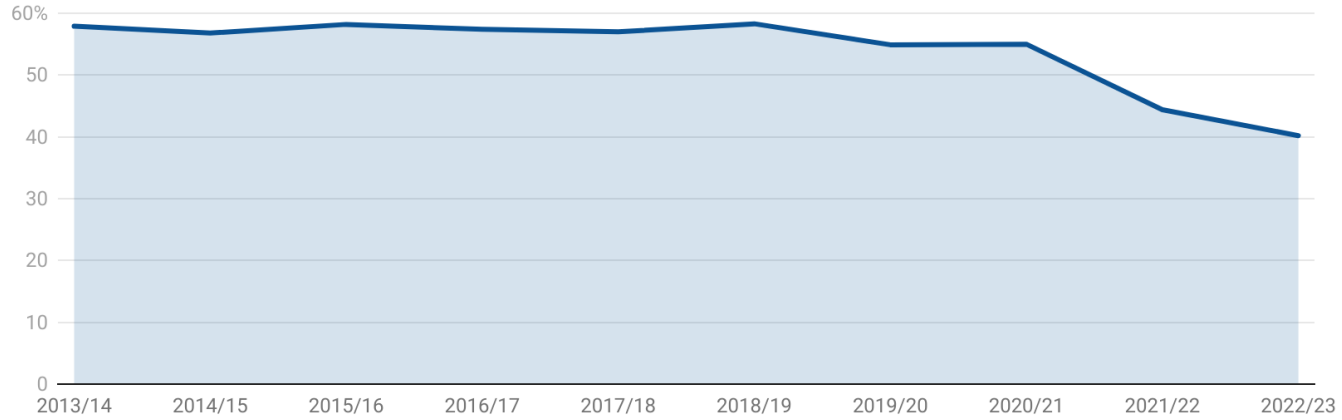


Figure 7: Proportion of patients directly admitted to a stroke unit within 4 hours of arrival between 2013 and 2023.

The proportion of patients directly admitted to a stroke unit within 4 hours of admission has declined from 44.4% in 2021/22 to 40.2% in 2022/23 (fig. 7), well below the pre-pandemic level of 54.9% in 2019/20. A renewed approach to optimising inpatient flow through the hospital is critical to preserve stroke unit capacity commencing at the front door and facilitating early supported discharge, particularly at weekends with prompt access to integrated community stroke rehabilitation services and enhanced social care.

Proportion of patients spending at least 90% of their stay on a specialist stroke unit (2013-2023)

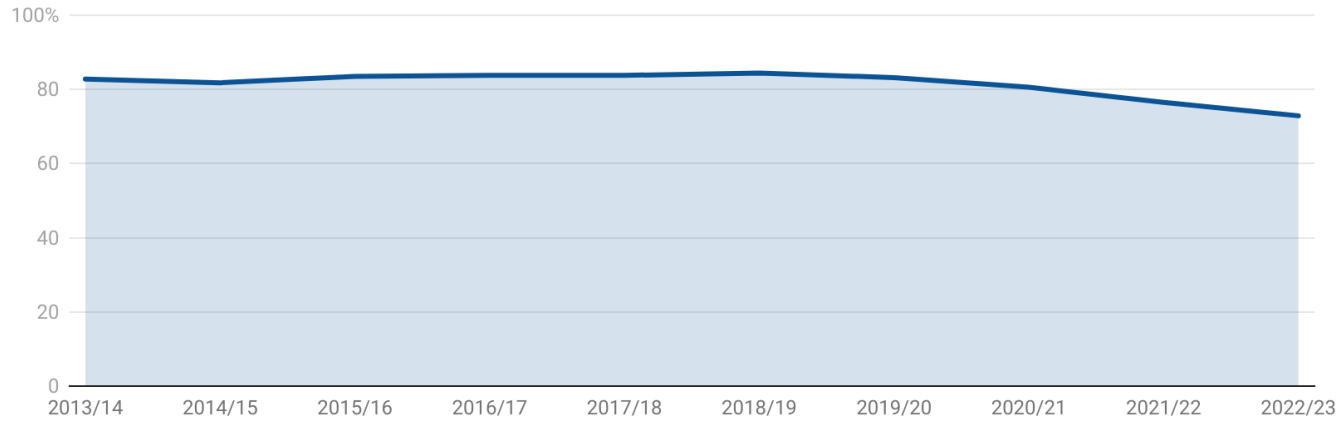


Figure 8: Proportion of patients spending at least 90% of their stay on a stroke unit between 2013 and 2023.

The proportion of patients spending at least 90% of their inpatient length of stay on a stroke unit has declined from 76.5% in 2021/22 to 72.9% in 2022/23 (fig. 8). This metric has highlighted that services are still challenged in optimising patient flow efficiently on stroke units and a whole system collective approach across the entire stroke pathway is required to improve access for patients to specialist care and stroke rehabilitation.

Inpatient rehabilitation

Percentage of days on which therapy is received (2013-2023)

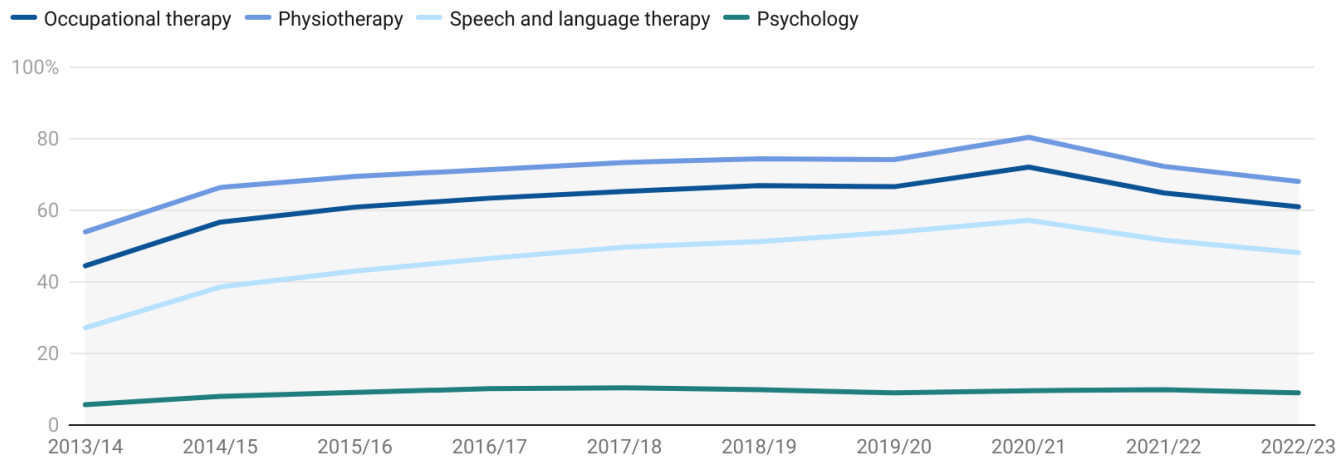


Figure 9: Proportion of days (out of total days therapy was required) on which therapy was received, per discipline, between 2013 and 2023.

There has been a fall in 2022/23 in the percentage of inpatient days a patient requires therapy on which therapy was received across each therapy discipline (fig. 9). This may be driven by a combination of workforce pressures and slow adoption of seven day working. In parallel, there has also been a reduction in the standards of receiving 45 minutes of therapy five days per week. Appropriately resourced seven day working across therapy disciplines will offer an opportunity to enhance the intensity of rehabilitation. The provision of psychology still remains low despite mood and cognitive issues being common, and further increasing the intensity and dose of rehabilitation inside and outside hospital is a priority.

Community rehabilitation

Proportion of patients discharged to a stroke/neurology specific service (2013-2023)

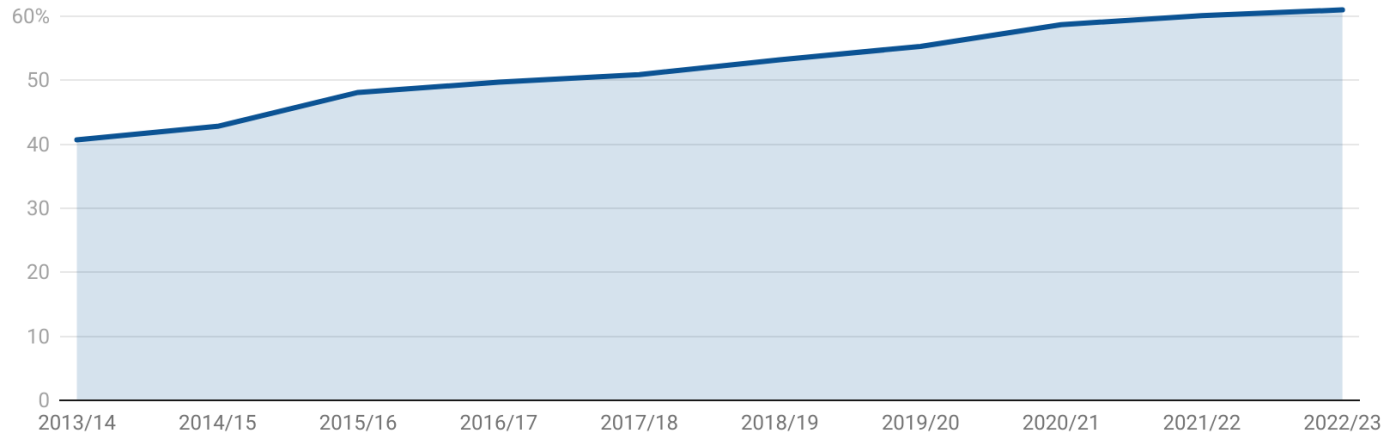


Figure 10: Proportion of patients discharged to a stroke-specific ESD and/or stroke-specific CRT service between 2013 and 2023.

In April 2023, 49% of community services were identified as a combined ESD-CRT service (table 3). This is in line with the National service model for an integrated community stroke service (ICSS), recognising that a wider group of stroke patients require ongoing rehabilitation, beyond ESD, in an integrated fashion according to need. The increase in complexity of patients discharged from hospital will require a responsive, appropriately resourced and flexible approach in delivering stroke rehabilitation at a similar intensity and dose to that which would be delivered in hospital. The NHS England National stroke rehabilitation pilots demonstrated implementation of the ICSS model in different geographical contexts.

April 2022		April 2023	
Standalone ESD	104 *(46%)*	*Standalone ESD*	64 *(31%)*
Standalone CRT	63 *(28%)*	*Standalone CRT*	42 *(20%)*
Combined ESD-CRT	59 *(26%)*	*Combined ESD-CRT*	102 *(49%)*

Table 3: Number and proportion of community teams registered per team type, before and after engagement with services in March 2023.

Employment status before and at 6 months after stroke (2021-2023)

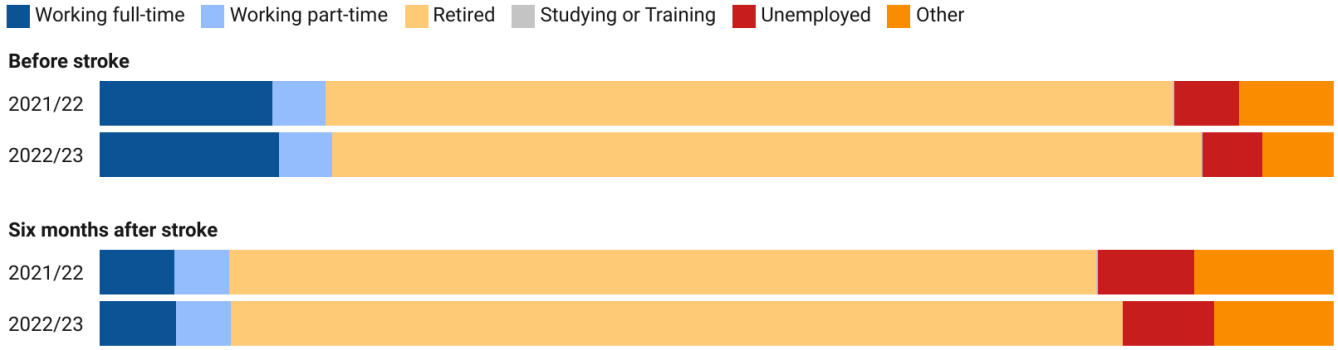


Figure 11: Comparison of employment status of stroke patients before stroke and at 6 months after stroke, between July 2021-March 2022 and April 2022-March 2023. This only includes those patients that had a 6 month review (36.9% of applicable patients in 2022/23).

10.6% of patients have been supported to continue working either full-time or part-time at 6 months after stroke compared to 18.8% of patients working before stroke in 2022/23 (fig. 11). Vocational rehabilitation is a key component of a comprehensive community stroke service to facilitate return to work, remain in work or leave in a supported way, and NHS England have developed a new vocational rehabilitation toolkit to support clinicians, commissioners and leaders to maximise the chances of people returning to work after a stroke.

6 month follow-up

Proportion of patients receiving a 6 month assessment (2013-2023)

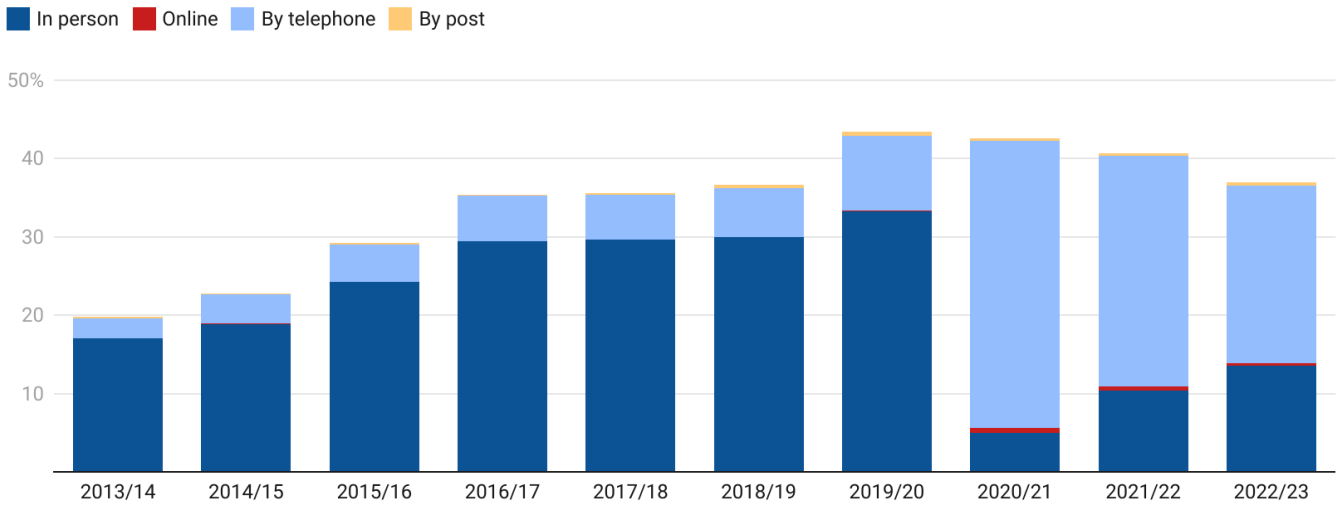


Figure 12: Proportion of patients receiving a 6 month assessment after stroke, by follow-up method, between 2013 and 2023.

There has been a reduction in the proportion of patents receiving a 6 month stroke review from 40.7% in 2021/22 to 36.9% in 2022/23, albeit with an increase in the proportion receiving face to face assessment (fig. 12). Commissioning stroke reviews are critical in assessing long term needs including secondary prevention, disability management and patient outcomes. For example, quality of life measures have highlighted that just under one fifth of patents have mood issues that require ongoing assessment and management (fig. 13). COVID-19 necessitated a move to telephone reviews, however the best approach to delivery of 6 month reviews must be reviewed with patients to ensure their needs and preferences are met.

EQ5D-5L at 6 months after stroke

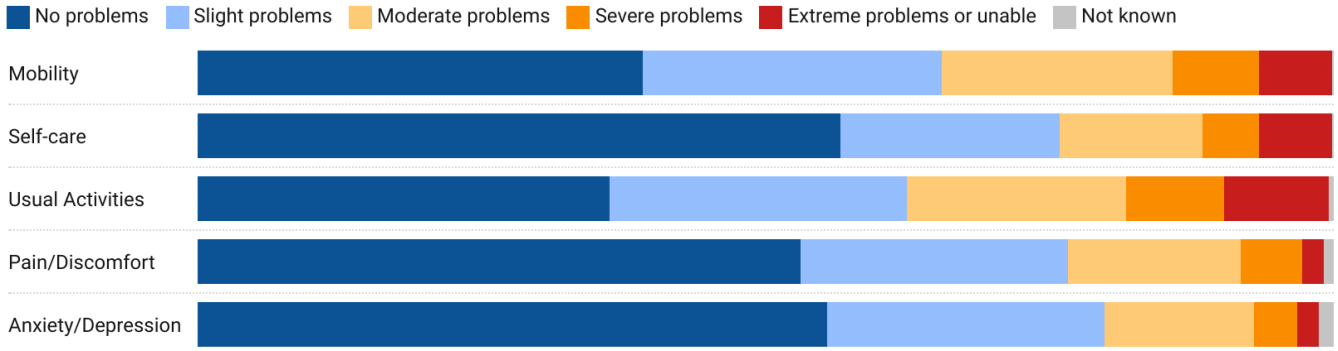


Figure 13: EQ5D-5L at 6 months after stroke for those having a follow-up assessment between April 2022 and March 2023. EQ5D-5L is a patient reported outcome measure.

Concluding thoughts

The delivery of specialist stroke care both in hospital and in the community is crucial to accelerate recovery from stroke and there are improvement opportunities for services through innovative and creative methods. This can range from pre-hospital video triage for timely diagnosis to methods for increasing the intensity of stroke rehabilitation in the patient's own home. The fundamental tenets of organised stroke care need to be retained including rapid transfer to specialist stroke units, coordinated transfers of care and provision of specialist stroke rehabilitation in hospital and in the community.

Although we are seeing incremental improvements in the delivery of reperfusion therapy, ongoing quality improvement will be required to maximise their benefit at a population level, particularly through eradicating geographical variation in access to treatments. Deploying an able, flexible, proactive multidisciplinary workforce is fundamental to delivering high quality specialist stroke rehabilitation inside and outside hospital, as well as meeting the longer term needs of patients at 6 months and beyond.

SSNAP provides an essential vehicle to monitor performance and drive quality improvement across the entire stroke pathway. Further developments to the national stroke audit over the next 12 months will increase our ability to understand how and where to deliver greater quality improvement and better outcomes for people with stroke.

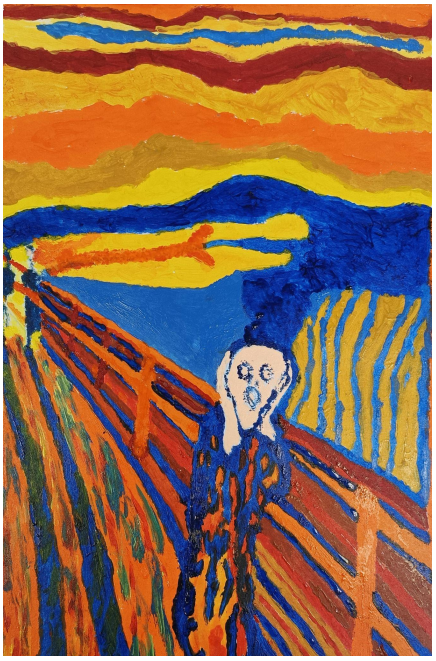
We would like to express our thanks to the following people and organisations for their invaluable contribution in producing this report:

SSNAP Clinical and Associate Directors: Dr Ajay Bhalla, Consultant Stroke Physician, Ms Louise Clark, Stroke Consultant Therapist, Dr Rebecca Fisher, Programme Manager - Stroke, NHS England, and Professor Martin James, Consultant Stroke Physician.

Sandra Aina, stroke survivor and artist, who has provided us with the artwork featured in this report.

Our patient representatives on the Intercollegiate Stroke Working Party (ICSWP), for their continued support of the programme: Marney Williams and Danny Lloyd, and our Patient and Public Voice Representation group. Their valuable contribution keeps the patient voice at the heart of what we do as a programme.

The hospitals and community teams for continuing to participate in SSNAP. Their participation and commitment to the audit ensures that quality, rich and robust data is available which can be used to improve stroke services.



Cover art provided by: Sandra Aina

My stroke happened in May 2015. I didn't know. In fact, if I had died, I wouldn't have known. I spent one month in Plymouth hospital, one month in Basildon Hospital and six weeks at Brentwood recovery service. I came out initially not using a wheelchair but then a dear friend who also had had a stroke, gave me hers, and it changed my life. I had good care, especially from Brentwood but I could not get over the devastation of losing my physical and mental being. I cried every day for 18 months and then one evening my in-law called from Nigeria. My hubby gave me the phone, and through my tears I explained to her how I felt. I don't really remember what she said to me, but I just felt better afterwards. I'm more or less back to my old self now. The painting you're looking at is my representation of the scream. That is how I felt. This represents just how I felt in those early days. I hope you like my copy.