

NICEimpact *stroke*



NICE impact stroke

There are more than [100,000 strokes](#) in the UK each year causing 38,000 deaths, making it a leading cause of death and disability. This report focuses on how NICE's evidence-based guidance contributes to improvements in care for people who are at risk of or who have had a stroke.

This report highlights progress made by the health and care system in implementing NICE guidance. We recognise that change can sometimes be challenging and may require pathway reconfiguration. Additional resources such as training and new equipment may also be required.

We work with partners including NHS England, Public Health England and NHS Improvement to support these changes, and we also look for opportunities to make savings by reducing ineffective practice.



Stroke prevention in atrial fibrillation p4

People with atrial fibrillation are 5 times more likely to have a stroke. We look at how NICE-recommended stroke risk assessment and anticoagulation for people with atrial fibrillation can help reduce the number of strokes.



Acute care p7

People who have had a stroke need access to high quality acute care as quickly as possible. We review how NICE's recommendations are contributing to people receiving quality acute care, which improves their outcomes.



Rehabilitation p11

As more people survive stroke there is a greater focus on rehabilitation. We consider how NICE's recommendations on therapies, early supported discharge and vocational rehabilitation are used to help people return to their homes and to work if they wish to do so. We also look at how reviewing rehabilitation goals and health and social care needs can improve the support people and their carers receive.



Spotlight on thrombectomy p15

Thrombectomy is a new development in ischaemic stroke treatment. It has been shown to improve outcomes in some stroke patients if it is performed promptly.



Commentary p16

Juliet Bouverie, Chief Executive of the Stroke Association, reviews recent achievements and considers NICE's role in contributing to improvements in stroke care.

Why focus on stroke?

NICE impact reports review how NICE recommendations for evidence-based and cost-effective care are being used in priority areas of the health and care system, helping to improve outcomes where this is needed most.

Stroke is a life-threatening medical condition that occurs when there is a blocked artery (ischaemic stroke) or burst blood vessel (haemorrhagic stroke). The damage this causes can affect the way your body works, as well as how you think, feel and communicate.

NICE provides evidence-based guidance and advice to help improve health and social care services. The uptake of NICE guidance is influenced by close relationships with partners in the system, such as NHS England, NHS Improvement and Public Health England (PHE).

In the UK there are over [1.2 million stroke survivors](#) with two thirds of survivors leaving hospital with a disability. This leads to an estimated cost of [£26 billion a year](#). [Public Health England](#) data suggest that the average age for someone having a stroke is decreasing, with over a third of strokes in adults between 40 and 69.

Survival rates have improved and the national focus is now on how stroke can be prevented, treated quickly, and how people can be supported after a stroke. To support this an [NHS RightCare stroke pathway](#), underpinned by NICE guidance, has been developed by NHS England, the Royal College of Physicians Intercollegiate Stroke Working Party, the Stroke Association and a range of other stakeholders. The [National Stroke Programme](#) has also been developed jointly by NHS England and the Stroke Association, to help deliver better prevention, treatment and care for people who have a stroke and meets the ambitions set out in the [NHS Long Term Plan](#).

NICE published its first guideline on the [diagnosis and initial management of stroke](#) in 2008, which was updated in May 2019. A [quality standard](#) has also been published and updated, indicators have been developed and a guideline has been published on [stroke rehabilitation](#), which is also planned for an update.

NICE routinely collects data which provide information about the uptake of its guidance. To produce this report, we have worked with national partners to select those data which tell us about how NICE guidance might be making a difference in priority areas of stroke care. They also highlight areas where there is still room for improvement.

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Stroke prevention in atrial fibrillation

It is estimated that [7,000 strokes](#) could be prevented and over 2,000 lives saved every year in England if people with atrial fibrillation were adequately treated.

Anticoagulants are medicines which prevent blood from clotting. This reduces the risk of stroke. The term covers warfarin (vitamin K antagonist) along with anticoagulants referred to as direct oral anticoagulants (DOACs), which are also known as non-vitamin k oral anticoagulants (NOACs).

DOACs recommended by NICE are apixaban, dabigatran etexilate, edoxaban and rivaroxaban.

People with atrial fibrillation are 5 times more likely to have a stroke, and more than [1.1 million people](#) have a diagnosis of atrial fibrillation in England. In 2014 NICE updated its recommendations for the prevention of stroke in people with atrial fibrillation, which required a change in practice.

The updated recommendations included the assessment of the risk of stroke using the CHA₂DS₂-VAS_c tool. These recommendations led to the development of [NICE menu indicators](#), which were adopted into the Quality and Outcomes Framework (QOF). Data from the QOF show that, in 2017/18, 94% of people with atrial fibrillation were risk assessed using this tool.



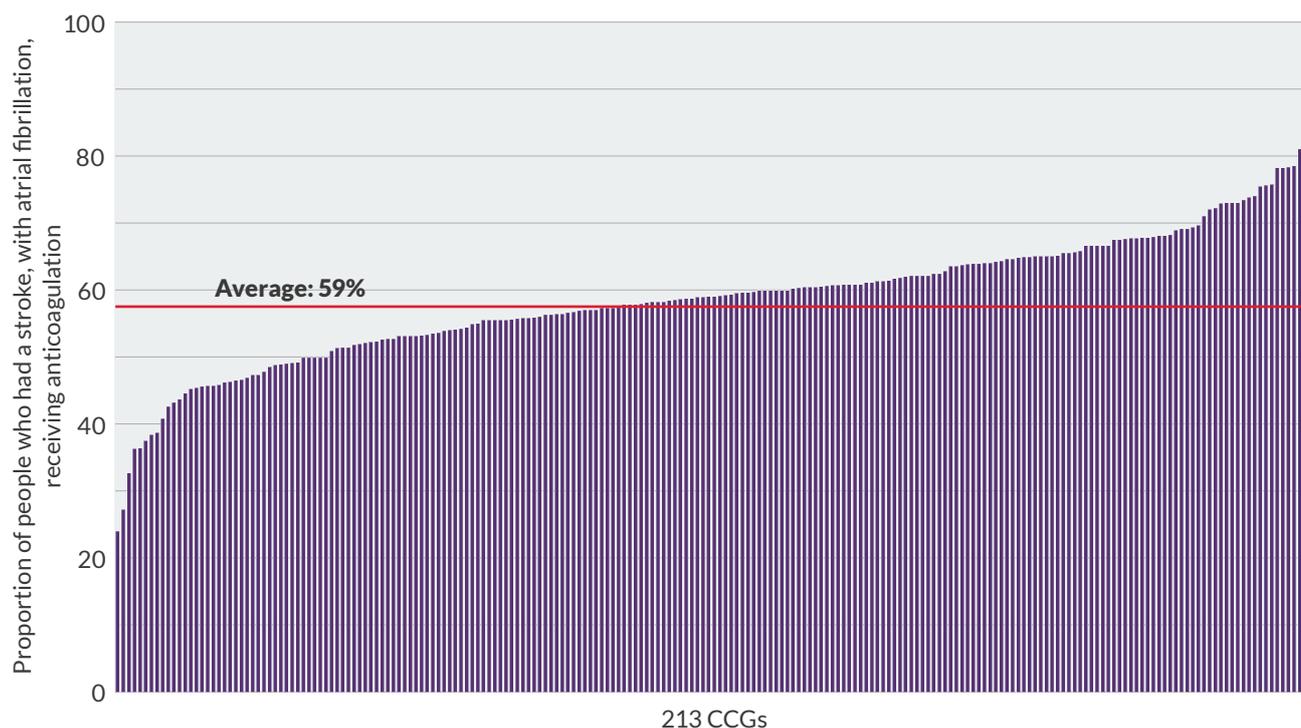
94% of people with atrial fibrillation were risk assessed using the NICE recommended CHA₂DS₂-VAS_c tool

For those who are assessed at being at risk of stroke (a CHA₂DS₂-VAS_c score of 2 or more) NICE guidance on [atrial fibrillation](#) recommends offering anticoagulants. While there has been an increase in the use of the CHA₂DS₂-VAS_c tool, around 15% of people assessed as being at higher risk of stroke are still not receiving anticoagulants in primary care. This may be due to patient choice with some people choosing not to take anticoagulants.

Anticoagulant prescribing rates in primary care for people with atrial fibrillation at risk of stroke



Proportion of people who had a stroke, with atrial fibrillation, receiving anticoagulation by CCG 2017/18



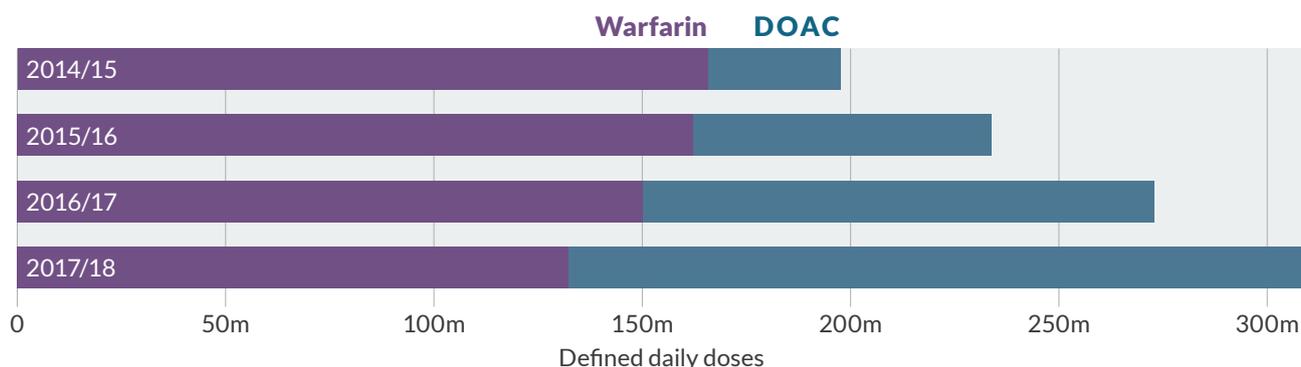
In secondary care the [Sentinel Stroke National Audit Programme](#) (SSNAP) found that the proportion of people presenting to hospital with a stroke, who had atrial fibrillation, and were receiving anticoagulation before they had a stroke increased, from 38% in 2013/14 to 59% in 2017/18. However this varied from 24% to 91% across CCGs in England. This wide variation means that some people at risk of stroke are not receiving treatment as recommended by NICE.

NICE has produced a [patient decision aid](#) to help people with atrial fibrillation reach a decision about whether to take an anticoagulant to reduce their risk of stroke, and which one to take if they decide to do so.

As well as helping to increase the use of anticoagulation NICE no longer recommends the use of antiplatelet medication (aspirin, clopidogrel, ticagrelor and prasugrel) as a single treatment for stroke prevention. SSNAP data show a decrease in antiplatelet prescribing in people who had atrial fibrillation before a stroke, from 42% before the NICE guidance in 2013/14 to 18% in 2017/18. To support this 'do not do' recommendation, antiplatelet use was removed as a treatment option from the QOF in 2015.

In order to improve adherence to anticoagulation, NICE guidance on atrial fibrillation recommends that people should have a choice of which anticoagulation to take. This includes direct oral anticoagulants (DOACs) or warfarin (vitamin K antagonist). Primary care prescribing data show that overall anticoagulation prescribing has increased over the last 4 years and the proportion of prescribing of DOACs has also increased.

Increase in DOAC prescribing and a decrease in warfarin prescribing over time



A decrease in the use of warfarin may allow for a reduction in the clinics needed to monitor dosage, since DOACs do not require therapeutic monitoring. Such monitoring is estimated to cost the NHS in England, Wales and Northern Ireland [£90 million](#) annually and represents a large proportion of the overall cost of warfarin use.



DOAC prescribing has increased 6 fold between 2014/15 and 2017/18

Following the updated NICE recommendations, NHS England and Public Health England launched several improvement initiatives to implement NICE guidance. These include:

- updates to the QOF
- setting Academic Health Science Networks atrial fibrillation as a priority to '[detect, protect and perfect](#)'
- publishing [Health matters: preventing cardiovascular disease](#) to improve the detection and management of high risk conditions including atrial fibrillation.

The [NICE Implementation Collaborative](#) produced a report on supporting local implementation of NICE guidance on the use of DOACs for reducing stroke risk in non-valvular atrial fibrillation. It focuses on how barriers might be overcome locally to facilitate appropriate use of the drugs.

Between 2011 and 2016 hospitalised atrial fibrillation related strokes reduced from 98 per 100,000 patients per week to 86 per week. [Research](#) carried out by Cowan et al. (2018) reported that this was linked to identifying more people with atrial fibrillation and increasing uptake of anticoagulation therapy. While it was not possible to attribute this increase to a single cause, guideline changes, quality improvement initiatives, and the advent of DOACs may have contributed.

Acute care

NICE recommends for people with sudden onset of neurological symptoms a validated tool, such as FAST (Face Arm Speech Test), should be used outside hospital to screen for a diagnosis of stroke or TIA.

Urgent care needs to be provided in an acute stroke unit with the right facilities and specialist staff available around the clock. This needs to be followed by rehabilitation and specialist support.

In the first 48 hours after the start of stroke symptoms, people need urgent access to high quality acute care to help improve their outcomes.

Brain imaging

How quickly people receive a brain scan after arriving at hospital is a key part of acute care and helps to determine which treatment will be most effective. All people with symptoms of acute stroke should have brain imaging as soon as possible to assess:

- if the stroke has been caused by a blocked artery (ischaemic stroke) or burst blood vessel (haemorrhagic stroke)
- which part of the brain has been affected
- how severe the stroke is.

'My wife recognised it immediately when I was having a stroke. She called an ambulance which arrived really quickly. I got to hospital and I was scanned straight away. They found a clot in my brain and gave me thrombolysis. The care I got in hospital was quick and efficient, but there are long waiting lists for rehab services. Getting physio and speech therapy has been an uphill struggle. I had my stroke more than six months ago and I'm still waiting to get a speech therapy appointment. But I am determined not to let my stroke stop me from getting back into my workshop.' Leslie, Gosport

The NICE [guideline on the diagnosis and initial management of stroke](#) recommends brain imaging should be performed immediately (defined as within 1 hour) for people with acute stroke if indicated. The [Sentinel Stroke National Audit Programme](#) (SSNAP) data show the proportion of people scanned within 1 hour is steadily improving, from 42% in 2013/14 to 53% in 2017/18. The proportion of people scanned

within 12 hours of arriving at hospital increased from 85% in 2013/14 to 94% in 2017/18.

Thrombolysis

Thrombolysis is administered to people who have had an ischaemic stroke to break down and disperse a clot that is preventing blood from reaching the brain. Breaking down a blood clot can restore blood flow to the brain, saving brain cells from damage and reducing disability after stroke. Receiving thrombolysis as quickly as possible is crucial to improving outcomes after an ischaemic stroke.

NICE recommends thrombolysis using the medicine alteplase within 4.5 hours for people who have had a stroke. SSNAP shows good uptake of this recommendation with 88% of eligible patients receiving thrombolysis in 2017/18; an improvement from 74% in 2013/14. Sixty four percent of patients received thrombolysis within 1 hour of arriving at hospital, which is encouraging that many people are receiving this treatment so quickly.

Stroke care pathway from the emergency department to CT scan and from CT scan to thrombolysis

Plymouth Hospitals NHS Trust reviewed their own SSNAP data on brain imaging within 1 hour, with the aim of improving target times.

The trust made these changes to their stroke service:

- implemented a 'thrombolysis bag' to reduce delays in patients receiving thrombolysis on the CT scanner
- routine tasks such as ECG and changing patients' clothes postponed until after thrombolysis
- weekly meetings to maximise review and feedback to all departments through clinical leads
- employment of 3 specialist stroke nurses (in-hours)

- stroke nurse presence extended to out-of-hours
- education and awareness of the urgency of strokes (treated as urgently as trauma patients, among the imaging and emergency team).

The trust has improved their brain imaging times, from a median time of 1 hour and 43 minutes in July to September 2013 to a reduced median time of 35 minutes between December 2016 and March 2017.

The trust has submitted more details on their improvements in a [NICE shared learning example](#).

Admission to a specialist acute stroke unit

Specialist acute stroke units are a discrete area in the hospital. Early admission to a stroke unit ensures that people who have had a stroke are cared for by a specialist stroke team, and are more likely to receive the necessary assessments and treatments they need.



Admission to a stroke unit within 4 hours has been around 58% for the last 5 years

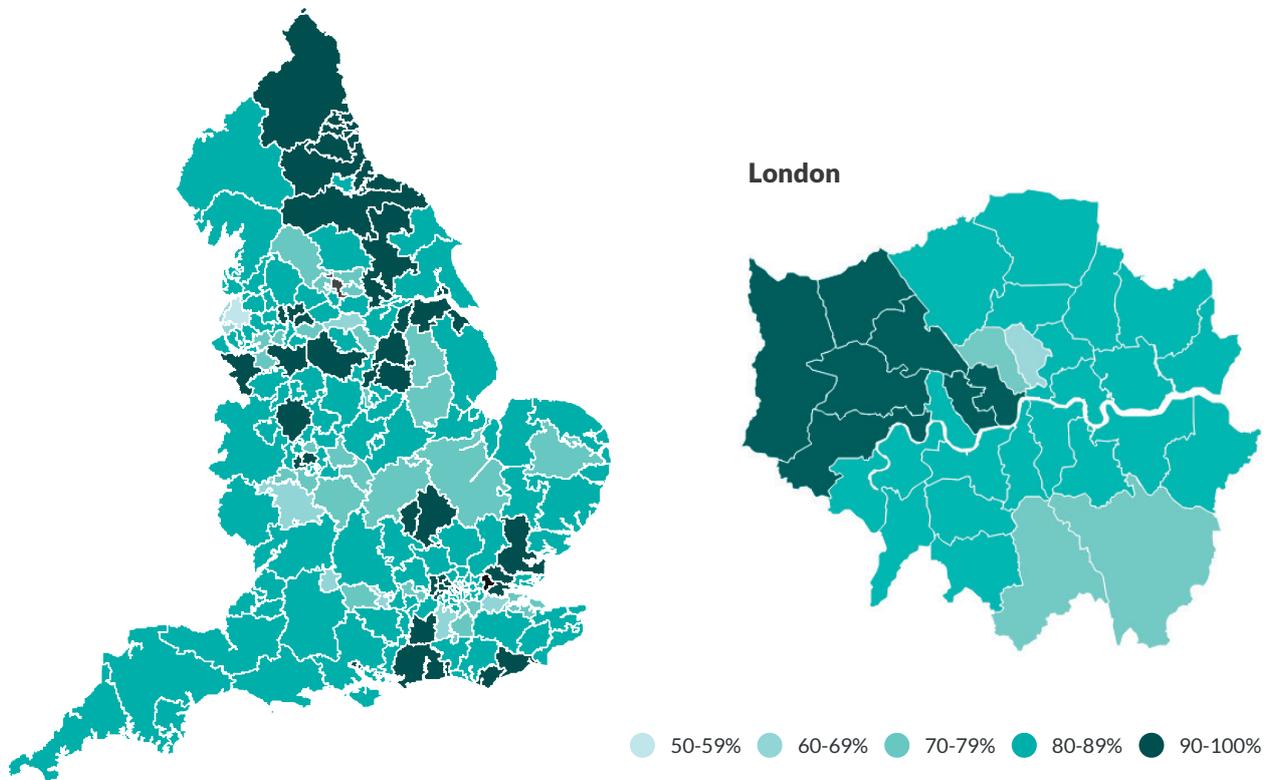
NICE recommends admission to specialist acute stroke units within 4 hours, so that treatment can begin as quickly as possible, and to help prevent complications. This is also highlighted in the [NHS RightCare stroke pathway](#) which includes admission to specialist acute stroke units within 4 hours as a key national priority for improving stroke care.

SSNAP collects data from all stroke units, specialist acute stroke units and hyper-acute stroke units and refers to them all together as 'stroke units'.

SSNAP data show that admission to a stroke unit within 4 hours still requires improvement. The data has remained stable at around 58% for the last 5 years. These results vary geographically and across the 7 day week. SSNAP suggest this may be due to waiting times in A&E and bed availability.

In addition to early treatment, stroke units offer the best quality of stroke care during the rest of a person's stay in hospital. The [CCG outcomes indicator set](#) records the proportion of people who have had an acute stroke who spend 90% or more of their stay on a stroke unit. The data ranges from 57% to 98% across CCGs, which suggests there is wide variation and there remains room for improvement in many areas.

Proportion of people achieving the SSNAP target of spending at least 90% of their inpatient stay on a stroke unit, by CCG 2017/18



The [NHS Long Term Plan](#) highlights the importance of centralising hyper-acute stroke care into a smaller number of well-equipped and staffed hospitals, which have seen the greatest improvements.

This builds on the [NHS Five Year Forward View](#) which highlighted the London stroke service reconfiguration. This consolidated 32 stroke units into 8 hyper-acute units and a further 24 units providing care after the first 72 hours.

Patients are assessed immediately by specialised stroke staff equipped to instantly perform brain imaging and give clot busting treatment where appropriate. The report highlights that this has achieved a 17% reduction in 30-day mortality and a 7% reduction in patient length of stay along with savings to the NHS of [£5.2 million per year](#).

Swallow screening

After a stroke many people are unable to swallow safely as the risk of inhaling food or drink is more common. These people may require food and fluids to be given by other methods.

NICE recommends that people with acute stroke have their swallowing screened by a specially trained healthcare professional within 4 hours of admission to hospital. This should happen before they are given any oral food, fluid or medication. If needed an ongoing management plan should be put in place for providing adequate nutrition. SSNAP data show swallow screening within 4 hours of admission has improved from 64% in 2013/14 to 75% in 2017/18.

NICE recommends that if the admission screen indicates problems with swallowing, the person should have a specialist assessment of swallowing, preferably within 24 hours of admission and not more than 72 hours afterwards. SSNAP data show specialist assessment of swallowing within 72 hours of admission has increased from 78% in 2013/14 to 88% in 2017/18.

88%

of people received a specialist assessment of swallowing within 72 hours

Rehabilitation

Following a change to the evidence base and limited implementation of some of the recommendations, NICE has decided to [update](#) the guideline on stroke rehabilitation in adults.

A greater focus on rehabilitation can improve the lives of people living with stroke by enabling them to return to their usual place of residence and to work if they wish to do so. NICE makes recommendations on speech and language therapy, physiotherapy and occupational therapy.

The [NHS Long Term Plan](#) suggests that the number of stroke survivors living with disability will increase by a third by 2035. In 2013 NICE produced guidance on [stroke rehabilitation in adults](#). It aims

to improve rehabilitation for people who have had a stroke by specifying how stroke units and multidisciplinary stroke teams are organised. It makes detailed recommendations on assessments and interventions for the functional difficulties caused by stroke. When the quality standard on stroke was updated in 2016, it shifted focus from acute care to rehabilitation, reflecting an increasing number of people surviving a stroke.

‘After my stroke I felt like I lost my independence, I was so much more reliant on others. I needed help washing and dressing and I could no longer do the things I used to with my grandchildren. I feel fortunate there is access to a lot of support in my area. I was supported by the Community Stroke Team and got physiotherapy, occupational therapy and psychological support. Then I was referred to the Stroke Association’s reablement Service in Sheffield. Having that long-term help has been essential in rebuilding my life.’ Donna, Sheffield

Therapies

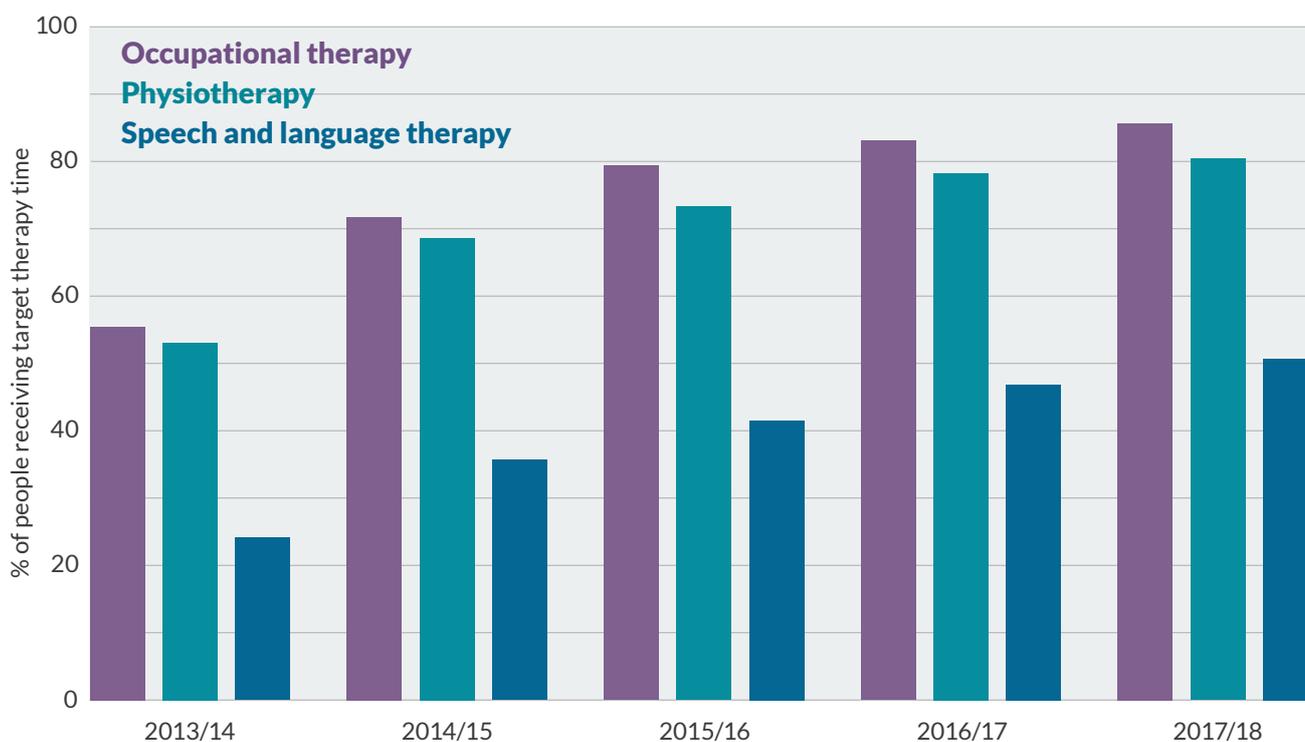
The NICE quality standard states that adults having stroke rehabilitation in hospital or in the community should be offered at least 45 minutes of each relevant therapy for a minimum of 5 days a week.



People receiving occupational therapy target times increased from 56% in 2013/14 to 86% in 2017/18

The percentage of people receiving NICE-recommended therapy has improved over the last 5 years. However there are still many people who do not receive the amount of

Improvements in people receiving SSNAP calculated target therapy time



rehabilitation therapy that they need, particularly speech and language therapy. The [Sentinel Stroke National Audit Programme](#) (SSNAP) calculates target therapy times for people who have had a stroke. These are based on estimates for the number of people who will require a particular therapy, so the target time is different for each.

Improving patient activity on the Stroke unit and efficiency of the workforce

Mid Cheshire NHS Foundation Trust assessed the implementation and perceived benefit of group therapy sessions on their stroke rehabilitation unit. The stroke rehabilitation therapy team introduced group therapy sessions in September 2017 and audited the results for 1 month against the NICE stroke rehabilitation guideline.

The team were able to successfully provide therapy over 5 days, improving from 4 days previously. All of the sessions ran for 45 minutes or longer,

therefore adhering to NICE guidance, and all patients saw benefit in group work. Improvements were made in patient contacts, a 24 hour approach to rehabilitation, and patients becoming more active. Additional and unexpected benefits were the importance of the groups on patients' moods and staff morale.

The trust has submitted more details on their improvements in a [NICE shared learning example](#).

Early supported discharge

Early supported discharge is an intervention that allows people's care to be transferred from a hospital environment to a community setting. It enables people to continue their rehabilitation therapy at home, with the same intensity and expertise that they would receive in hospital. NICE recommends that adults who have had a stroke are offered early supported discharge if the core multidisciplinary stroke team assess that it is suitable for them.

Return to work has been identified as an area for quality improvement in the updated [NICE quality standard on stroke](#), published in 2016.

SSNAP estimates that 34% of people who have had a stroke will be suitable for early supported discharge. In the last 5 years there has been an increase in the proportion of all people who have had a stroke receiving this intervention, from 25% in 2013/14 to 36% in 2017/18.

Vocational rehabilitation

After a stroke, adults may have significant disabilities that prevent them from returning to work. Working can contribute to a person's identity and perceived status, has financial benefits, and can improve their quality of life and reduce ill health. NICE recommends that adults who have had a stroke are offered active management to return to work if they wish to do so.

SSNAP carried out an organisational audit of post-acute stroke service providers in 2015. Only 27% of CCGs commissioned vocational rehabilitation services, which help someone with a health problem to return to or remain in work or volunteering.

Improving support for vocational rehabilitation

[Greater Manchester Stroke Operational Delivery Network](#) is working with [Greater Manchester Neuro Rehabilitation Operational Delivery Network](#) to improve support for vocational rehabilitation. An audit of clinical teams in 2017 highlighted a number of issues including the need for further training for professionals, new pathways and assessment tools, resource and time limitations and lack of resources for the voluntary sector.

The networks therefore aim to upskill local healthcare professionals in supporting people with neurological conditions in vocational rehabilitation, develop a pathway of best practice with access to specialist vocational rehabilitation support, and encourage better links and working with other agencies including the voluntary sector and job centres.

Review

Regular review allows a person with stroke to discuss with a trained professional how they are recovering, whether they need to make changes to their lifestyle or whether further therapy is needed. At this assessment patient outcomes should be measured to help improve stroke services.

NICE recommends that adults who have had a stroke have their rehabilitation goals reviewed at regular intervals and have a structured health and social care review at 6 months and 1 year after the stroke, and then annually. This review can help identify problems or difficulties the person who had the stroke and their family or carers may be experiencing.

Data from SSNAP show that, in 2017/18, 92% of people had their rehabilitation goals agreed within 5 days of arrival in hospital. However it does not record whether these goals were reviewed. The audit does record whether people had an assessment 6 months after a stroke. While the proportion of people having an assessment has increased, from 20% in 2013/14 to 30% in 2017/18, there is still room for improvement.

Developing and implementing outcome measures incorporating NICE guidance and quality standards

The Greater Manchester Stroke Operational Delivery Network collaboratively developed a single set of outcome measures for the whole stroke care pathway. The measures selected reflect NICE guidance on stroke and stroke rehabilitation, and include the updated NICE quality standard on stroke.

Final measures were agreed and approved in August 2016 and were provided to commissioners to incorporate into acute and community contracts for 2017/18. The project has been successful in

terms of reaching a collaborative agreement on a set of outcome measures involving two care settings that include all NICE quality standards for stroke. There was considerable involvement from NHS stakeholders, as well as the voluntary sector who helped ensure the measures selected focused on areas that mattered to patients and carers.

The network has submitted more details on their improvements in a [NICE shared learning example](#).

Spotlight on thrombectomy

Thrombectomy (intra-arterial intervention) is a new development in the care of ischaemic stroke (clots). It involves direct removal of a clot using a device passed into the blocked artery, usually from the femoral artery in the groin, to restore normal blood flow.

The [NHS Long Term Plan](#) aims to expand mechanical thrombectomy treatments from 1% to 10% of stroke patients, which will allow 1,600 more people to be independent after their stroke each year. During 2019 the plan commits to working with royal colleges to pilot a new programme for hospital consultants to be trained to offer mechanical thrombectomy.

In March 2018 NHS England [commissioned](#) mechanical thrombectomy for acute ischaemic stroke.

In 2016 NICE produced thrombectomy interventional procedure guidance on [mechanical clot retrieval for treating acute ischaemic stroke](#). Evidence on its safety and efficacy is adequate to support the use of the procedure by clinicians experienced in the use of thrombolysis for stroke and in interpretation of relevant imaging. The procedure should only be carried out by appropriately trained specialists with regular experience in intracranial endovascular interventions, with appropriate facilities and neuroscience support.

The [Sentinel Stroke National Audit Programme](#) (SSNAP) says the procedure has been shown in trials to improve outcomes in eligible patients if it is performed within a few hours of stroke. However, facilities for thrombectomy are only available in a small number of centres, and there is a shortage of trained staff to perform the procedure. In 2017/18, SSNAP reported that 781 thrombectomies took place in England, Wales and Northern Ireland across 26 centres; an increase from 594 in 2016/17.

The updated NICE stroke guideline, published in May 2019, includes recommendations on the use of thrombectomy.

Mechanical thrombectomy for large vessel occlusion stroke

University Hospitals of North Midlands NHS Trust has implemented a pathway to offer mechanical thrombectomy to treat large vessel occlusive strokes in suitable people. After implementing the pathway 94% of people with severe strokes due to large vessel occlusion, who received mechanical thrombectomy, were discharged to their own homes rather than to a nursing home; 23% were discharged home within 1 week.

Before implementing the treatment pathway, when only intravenous tissue alteplase was used, 70% of patients were discharged to inpatient rehabilitation, with significant annual costs. There has been £0.8 million savings from a reduction in the length of stay in hospital and £1.6 million savings from a reduction in social care costs. The trust have submitted more details on their improvements in a [NICE quality and productivity example](#).

Commentary

Juliet Bouverie, March 2019

Stroke
association

*Juliet Bouverie is the Chief Executive
of the Stroke Association*

The scale and impact of stroke is enormous and growing – if we do nothing, the cost of stroke to the health and care system is estimated to rise from £26bn to between £61bn and £91bn by 2035. Importantly, 90% of all strokes are preventable, and by working together, clinicians and decision-makers can lead the way in both reducing strokes and improving outcomes. Robust, well-observed clinical guidance right across the pathway is crucial to stroke survivors' recoveries.

As this report highlights, acute stroke care has seen some much needed improvements and developments in recent years. But there is still more to be done, especially in eradicating the 'postcode lottery' in access to recovery services, and providing support for people once they leave hospital. The number of stroke survivors who receive the recommended amount of rehabilitation, including speech and language therapy and vocational therapy, continues to lag behind improvements elsewhere in the pathway, while only one in three people have a follow-up review six months on from their stroke. It is no wonder that 45% of stroke survivors reported to us that they feel abandoned after they leave hospital. Behind these statistics there are countless personal stories. These are the stories that we hear every day at the Stroke Association, the real driving factors for improvement.

In addition to rehabilitation, large hyperacute stroke units are more likely to provide world class, evidence-based stroke treatment, and we want this to be the case across as much of the country as possible. Progress in reconfiguring acute services will save lives, improve outcomes, and reduce the overall cost of stroke, both to society and economically.

Improved outcomes are also linked to thrombectomy, a game-changing procedure that we want all eligible patients to have access to. Progress in rolling out this treatment has been limited. We welcome its inclusion in the recent draft NICE stroke and TIA guidance, as well as the procedure's inclusion in the NHS Long Term Plan for England.

Of course, key to reducing the burden of stroke is improving the way key risk factors such as hypertension and atrial fibrillation (AF) are identified and managed. The NHS Long Term Plan places prevention at the heart of the public health agenda.

However, more remains to be done to identify those with AF and take away reliance on GPs by supporting other health care professionals, such as pharmacists, to lead this work. NICE's guidance is an important driver in preventing strokes happening in the first place, alongside public health initiatives such as the One You campaign from Public Health England.

The Stroke Association has been working in partnership with NHS England and key Arm's Length Bodies, to develop the National Stroke Programme which is underpinned by the Long Term Plan. Part of the programme's work will be to work with health leaders to better embed clinical guidance such as the NICE-accredited National Clinical Guideline for Stroke into service delivery. Stroke remains one of the greatest health challenges of our time, but we have a real opportunity to transform people's outcomes and experiences. We know that with the right specialist support and a whole load of courage and determination, the brain can adapt, people can recover. We welcome the updates of the NICE guidelines on stroke and stroke rehabilitation and look forward to working together to support their implementation.

We would like to thank Professor Tony Rudd, National Clinical Director for Stroke. We would also like to thank the Stroke Association for their contributions to this report.

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Any enquiries regarding this publication or any other enquiries about NICE and its work should be made to:

National Institute for Health and Care Excellence
10 Spring Gardens
London SW1A 2BU
Telephone: +44 (0)300 323 0140

National Institute for Health and Care Excellence
Level 1A, City Tower
Piccadilly Plaza
Manchester M1 4BT
Telephone: +44 (0)300 323 0140

Email: impact@nice.org.uk
Website: www.nice.org.uk

