SSNAP | Sentinel Stroke National Audit Programme

KING'S College LONDON

Sentinel Stroke National Audit Programme (SSNAP)

Clinical audit

April 2013 – March 2018

Annual Public Report

National results

June 2019

Based on stroke patients admitted to and/or discharged from hospital between April 2013 – March 2018

Prepared by

SSNAP, School of Population Health and Environmental Sciences, King's College London on behalf of the Intercollegiate Stroke Working Party

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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Document purpose	To provide a visual summary and clinical commentary on the changes in stroke care provision as reported by SSNAP over a five year period April 2013 – March 2018
Title	SSNAP Annual Public Report 2018
Author	SSNAP, School of Population Health and Environmental Sciences, King's College London on behalf of the Intercollegiate Stroke Working Party
Publication	June 2019
Target audience	General public, stroke survivors and carers, health and social care professionals, stroke researchers
Description	This is a public report on the clinical component (process of care) of the national stroke audit, the Sentinel Stroke National Audit Programme (SSNAP). It publishes a summary of national results over five years April 2013 – March 2018 unless otherwise stated, and provides more detailed commentary on specific aspects of stroke care which are topical, pertinent and/or significantly variable in performance. It includes processes of care across the entire stroke pathway from acute interventions, assessments, rehabilitation and longer term domiciliary care, including comparisons with previous year's results. Where possible the national results are compared with national standards including the fifth edition of the National Clinical Guideline for Stroke (2016) published by the Intercollegiate Stroke Working Party, the NICE (National Institute for Health and Clinical Excellence) Clinical Guidelines, the National Stroke Strategy 2007 and the NICE Quality Standards for Stroke (2016). Links to these publications are provided below.
Supersedes	SSNAP Annual Report 2017
Related publications	National clinical guideline for stroke 5th edition (Royal College of Physicians, 2016): www.strokeaudit.org/guideline National clinical guideline for stroke 5th edition patient version (Royal College of Physicians, 2016) http://www.strokeaudit.org/Guideline/Patient-Guideline.aspx SSNAP Clinical audit public report December 2017 - March 2018 https://www.strokeaudit.org/Documents/National/Clinical/Apr2017Mar2018/Apr2017Mar2018-AnnualResultsPortfolio.aspx SSNAP Acute Organisational Audit Report – November 2016 https://www.strokeaudit.org/results/Organisational/National-Organisational.aspx SSNAP Post-Acute Stroke Service Provider Audit https://www.strokeaudit.org/results/PostAcute/National.aspx NICE Quality Standard for Stroke 2016: https://www.nice.org.uk/guidance/qs2 National Stroke Strategy (Department of Health, 2007): https://webarchive.nationalarchives.gov.uk/20130105121530/http:/www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyandguidance/dh_081062 Department of Health: Progress in improving stroke care (National Audit Office, 2010): http://www.nao.org.uk/publications/0910/stroke.aspx National Cardiovascular Outcomes Strategy: https://www.gov.uk/government/publications/improving-cardiovascular-disease-outcomes-strategy CCG Outcomes Indictor Set 2017-2018 https://digital.nhs.uk/data-and-information/publications/clinical-indicators/ccg-outcomes-indicator-set/current#resources
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This report is designed to be read electronically.

Additional links to relevant research publications, quality improvement case studies and SSNAP data are interspersed through the report.

Foreword

This report on the Sentinel Stroke National Audit Programme (SSNAP) uses data collected from April 2013 to March 2018. It includes national level results for each domain of care and highlights changes in key aspects of stroke care over time. Each of the 'Key areas in depth' sections provide a more detailed commentary of national performance in specific areas of stroke care management and covers both acute and post-acute care processes.

In recent years we have observed consistent and sustained quarter by quarter improvements in stroke service performance. In the latest reporting period included in this publication (December 2017-March 2018), 36 teams achieved an overall 'A' score in SSNAP, which indicates fantastic quality of care. Services are continually improving the stroke care provided to patients. This is evident from the fact that in the first reporting period which included SSNAP scoring, July-September 2013, zero teams achieved an A grade and only 8 achieved a B grade.

The improvement in results shows the continued efforts made by teams to use SSNAP data as a tool for improving the quality of the stroke services they provide to patients. It is encouraging to see that steady progress is being made across each domain of care. Patients are receiving acute interventions which include urgent scanning, thrombolysis, thrombectomy and swallow screening faster today than five years ago. This is very important as the sooner these interventions are provided the greater the likelihood is that the patient will benefit from them, reducing the impact of stroke. Stroke patients are being given more therapy to help their recovery, increasing proportions of patients are benefiting from assessments to identify possible issues relating to mood disturbance, malnutrition and continence before leaving hospital, and more patients are leaving hospital early with specialist Early Supported Discharge (ESD). The improvements in performance in the past five years has reinforced our belief that although SSNAP has set stringent, aspirational targets the top score is achievable and sustainable over time.

However, there is still unacceptable variation across the country. Rapid admission to a stroke unit for stroke patients and spending most if not all of inpatient hospital stay in a fully staffed, specialist stroke unit remains the most important early intervention we have in treating acute stroke. It is worrying therefore that less than 60% of patients are being admitted to a stroke unit (SU) within 4 hours and this indicator has stagnated over time. The time it takes for patients to be admitted to hospital after onset of stroke has increased in recent years which is a cause for concern. Six month assessments after stroke are not available to all patients and the number of cases completed to six months remains low when compared to the levels of case ascertainment in the acute phase of SSNAP. This is disappointing and something that should be rectified.

Congratulations to everyone who has contributed patient data to SSNAP over the past five years of data collection. Without your continued commitment to submitting timely and complete data each reporting period it would be impossible to have made such progress in stroke care in such a short time. It is a fantastic achievement that roughly 85,000 patient records are available for analysis this year. We estimate that this represents at least 90% of stroke patient hospital admissions so we are continuing to achieve very high levels of case ascertainment. Complete and high quality data will be extremely powerful in shaping the future developments in stroke care in England, Wales and Northern Ireland. They will enable a much stronger case to be made for improvements and greatly help patients, commissioners and clinicians alike get the best out of the services.

We have received numerous case studies from stroke care providers, which are interspersed within this report, outlining how they have used the data to improve their services. To access all of the available quality improvement case studies go to https://www.strokeaudit.org/qualityimprovement. It is motivating and encouraging to see that our reporting outputs are valued and we hope to see continued improvements in results in future reporting periods.

The NHS England (NHSE) long term plan published in January 2019 features stroke care as one of the key areas for development with acute care including thrombectomy, rehabilitation and prevention all having defined areas of work described. Recognition by NHSE that stroke is important is critical to ensure that complacency does not set in with a belief that 'stroke is sorted'. In England it is good that stroke is included in the Long Term Plan as one of the key priorities for development and we hope that stroke also remains a priority in the other nations.

Professor Anthony Rudd FRCP CBE

Clinical Director of King's College London Stroke Programme

Overview of SSNAP

The Sentinel Stroke National Audit Programme (SSNAP) is a major national healthcare quality improvement programme based in the School of Population Health and Environmental Studies at King's College London. SSNAP measures the quality and organisation of stroke care in the NHS and is the single source of stroke data in England, Wales, and Northern Ireland. SSNAP is commissioned by the Healthcare Quality Improvement Partnership (HQIP), as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP). Data from more than 85,000 patients were submitted to the audit webtool last year, representing over 90% of all strokes in England, Wales and Northern Ireland.

SSNAP measures both the processes of care (clinical audit) provided to stroke patients, as well as the structure of stroke services (organisational audit) against evidence based standards, including the 2016 National Clinical Guideline for Stroke. 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 so it can be used as a tool to improve the quality of care that is provided to patients. The main focus of this report is the routinely collected patient data on SSNAP i.e. the clinical audit.

Purpose of this report

The purpose of this Annual Report is to provide a detailed, accurate picture of the characteristics of people who have a stroke and the care that is provided to them in hospital and following discharge. As SSNAP data now covers five years, it is possible to look at changes over time, highlight those aspects of care which are improving, stagnating or deteriorating, and discuss what still needs to be done. The clinical commentary and in particular the 'future plans' sections provide an insight into how stroke care may be managed and organised in the years ahead in order to provide high quality care to everyone who suffers a stroke.

We have produced a number of data visualisations which are interspersed throughout the report to highlight performance in a succinct, engaging way and to reinforce important messages. There are also 12 'Key areas in depth' sections which provide additional context regarding aspects of stroke care where we have observed significant changes in SSNAP performance or which will be pertinent to how stroke care is managed in the future. There are also many links which will refer the reader to supplementary content relevant to each section of the report including research publications, quality improvement projects and additional SSNAP data relating to a specific topic area. Finally, a number of appendices are also available which include a detailed breakdown of results for each time period referenced in the main body of the report.

Though the data contained in this report spans five years of data collection, specific results will include different time periods due to changes in analysis or new data items being collected in the intervening years. Each time period will be clearly referenced throughout.

Section 1: Executive Summary

13/14	14/15	15/16	16/17	17/18
75305 records	81754 records	85025 records	85878 records	86651 records
Jan13 Data collection	**May14** Population-level reporting	**Mar16** Data first collected on thrombectomy	**Nov16** Executive summary reports	**Dec17** Stroke health economics research published
Dec13 DIY QI tool released Thrombolysis QI tool	**Dec14** First Annual Report Mortality results	**Jun15** Post-acute organisational audit	**Aug16** Online real-time indicators available	**Jan18** Dataset extended to pre-hospital
Jul-Sep13 A 0 (0%) B 8 (4%) C 19 (11%) D 74 (42%) E 77 (43%)	**Apr-Jun14** A 6 (3%) B 17 (8%) C 38 (19%) D 97 (48%) E 46 (23%)	**Jul-Sep15** A 36 (17%) B 43 (21%) C 38 (18%) D 73 (35%) E 16 (8%)	**Apr-Jul16** A 42 (18%) B 59 (26%) C 53 (23%) D 62 (27%) E 12 (5%)	**Dec17-Mar18** A 36 (17%) B 81 (37%) C 54 (25%) D 40 (18%) E 7 (3%)

A: First class service B: Good or excellent in many aspects C: Reasonable overall – some areas require improvement D: Several areas require improvement E: Substantial improvement required

Quality of stroke care in 2017/2018

Urgent Care

- 53% Patients scanned within 1hr of arrival at hospital
- 57% Patients directly admitted to a stroke unit within 4 hours of arriving at hospital.
- 722 Patients received intra-arterial intervention (thrombectomy) after stroke.

Assessments & Rehab

- 27% Patients have intermittent pneumatic compression (IPC) applied while in hospital.
- 88% Patients received formal swallow assessment within 72hrs of arriving at hospital if required.
- 95% Patients received physiotherapy assessment within 72hrs of arriving at hospital if required.

Longer term care

- 81% Patients screened for malnutrition and seen by a dietitian by discharge if required.
- 92% Patients received mood and cognition screening by discharge if required.
- 30% Applicable patients received a six month assessment after stroke.

Read the National clinical guideline for stroke 2016 here: https://www.strokeaudit.org/Guideline/Guideline-Home.aspx

Section 2: Key areas in depth

2(a) Atrial Fibrillation

Overview

Atrial fibrillation, or AF, is a heart condition that causes an irregular and often abnormally fast heartbeat. SSNAP reports on AF status upon admission to hospital, on leaving hospital, and at six months after stroke. The reason this is important is because AF causes about 20% of strokes and this can be reduced by about two thirds if people are anticoagulated. So, SSNAP also provides information on provision of anti-coagulation medication. These are medicines that help prevent blood clots by interrupting the process involved in their formation. Increasing the proportion of people with AF on anticoagulants will reduce the number of people having stroke.

Current Outlook

About 20% of patients have been reported as being in AF before their stroke and this has been largely consistent across the five years of SSNAP reporting. Increasingly fewer patients are being prescribed anti-platelet medication e.g. aspirin or clopidogrel, deemed ineffectual for patients with AF which is reassuring. Conversely nearly 60% of patients with AF known about prior to admission to hospital are now on anticoagulant medication, which does reduce the risk of stroke. This is a substantial increase from only 38% in the first year of SSNAP reporting but much work still needs to be done to ensure all patients who would benefit from anti-coagulant medication are prescribed them. Nearly 15% of stroke patients are taking the ineffective antiplatelet drugs only, though this is a vast reduction from 36**%** in the first year of SSNAP reporting. More than 20% of patients are recorded as being in AF upon leaving hospital and nearly all of these (98%) are prescribed anticoagulants to reduce the risk of further strokes which is reassuring. This also represents a 5% increase in anti-coagulation provision since the first year of SSNAP reporting in 2013/14.

SSNAP provides an opportunity to measure the number of patients identified as being in AF six months after admission, however these data are only reported on for approximately 30-35% of patients. Between 20-25% of patients are reported to be in AF at six months, with about 80% of these patients taking anti-coagulant medication. However about 20% of patients who were prescribed anti-coagulant medications upon leaving hospital were no longer taking them at six months. There will always be some people for whom it was appropriate to stop the medication but we suspect that a lot of patients who should remain on anticoagulants are stopping them without good reason. This is concerning particularly as the percentage has not improved over time. More details on medication at six months including anti-platelets, lipid lowering and anti-hypertensive is provided in the appendix of this report.

Future Plans

There is still much work to be done to ensure that people in AF are identified and provided with appropriate medication to reduce risk of stroke. As an irregular heartbeat becomes more common as people get older it is really important that people take their pulse from time to time, or ask a clinician to do so, to check the rhythm is regular. If the pulse feels irregular, heart tracing (an ECG) is needed to confirm AF. Some people may need an ECG over a longer continuous period (24 hours or longer).

There is a campaign called 'Know Your Pulse' which is trying to get the message across about the importance of early detection and treatment of AF. You can learn how to take your pulse and find out much more information about this important campaign by visiting www.knowyourpulse.org People with AF are at significantly higher risk of stroke and the strokes suffered by people in AF are often more severe. Taking blood thinning drugs can significantly reduce the risk of stroke and though some doctors have been reluctant to prescribe these drugs because of concerns about bleeding, for most people the benefit of the drugs (stroke risk reduction) greatly outweighs the risks.

Percentage of patients in AF receiving anticoagulation treatment

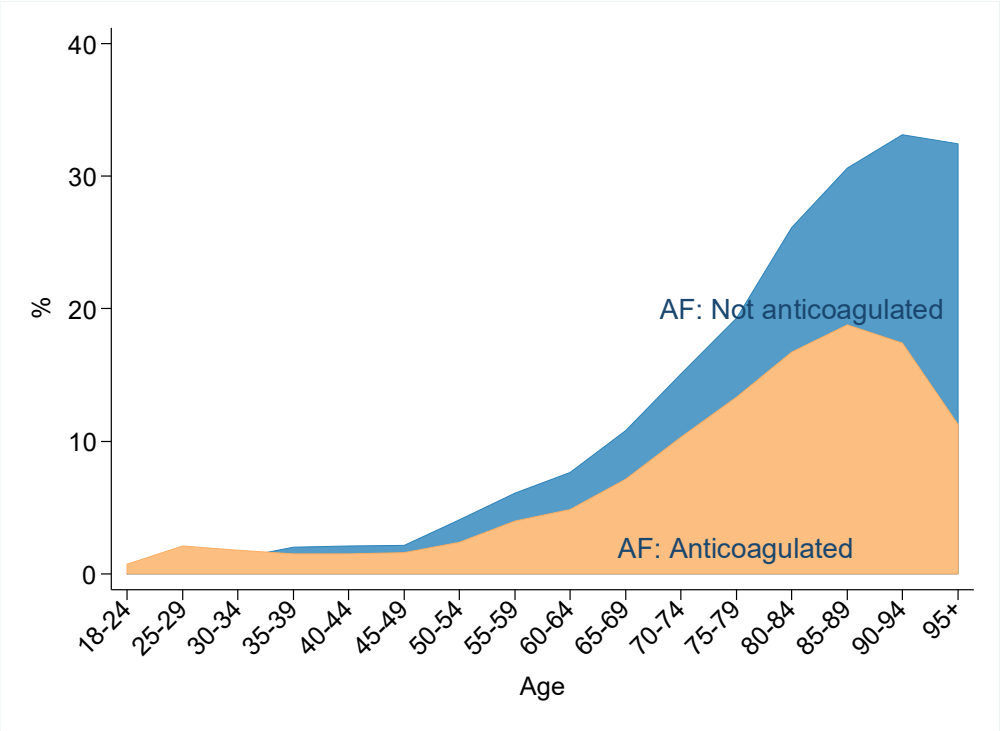


Figure 2.1: The percentage of patients with AF receiving anticoagulation treatment by age group for the period April 2017 to March 2018.

Further Reading

SSNAP data: For five year changes over time in AF results including AF status on admission, discharge and at six months please go to Appendix 1: Key Areas – in depth data tables

SSNAP data:

For 2015/16 outcome data at discharge for patients with prior Atrial Fibrillation (AF) who are not on anticoagulation at population level go to:
https://www.strokeaudit.org/Documents/National/Clinical/Apr2015Mar2016/Apr2015Mar2016-CCGAFReport.aspx

For 2016/17 outcome data at discharge for patients with prior Atrial Fibrillation (AF) who are not on anticoagulation at population level go to:
https://www.strokeaudit.org/Documents/National/Clinical/Apr2016Mar2017/Apr2016Mar2017-CCGAFReport.aspx

For 2017/18 outcome data at discharge for patients with prior Atrial Fibrillation (AF) who are not on anticoagulation at population level go to:
https://www.strokeaudit.org/Documents/National/Clinical/Apr2017Mar2018/Apr2017Mar2018-CCGAFReport.aspx

2(b) Getting to hospital for urgent treatment

Overview

It is important for patients to get to hospital as soon as possible following a stroke to ensure they receive the specialist care needed to reduce the impact of stroke both in terms of death and disability. The more quickly treatment is provided the more chance patients have of making a good recovery. SSNAP reports timings from onset of stroke to arrival at hospital as well as timings from onset to receiving key interventions such as thrombolysis and getting to a stroke unit.

Current Outlook

Since SSNAP started collecting data in April 2013, onset to arrival times at hospital have increased year on year (from 2:27 to 3:04) at national level which is a cause for concern and will need to be continuously monitored. We do not know the reason for this but it may be due to reorganisation of stroke services and loss of some stroke units. However, what has been shown is that when stroke care is centralised in larger units then the patients tend to be treated more quickly and effectively so what is lost in travel time can be more than made up by better process after arrival. The percentage of patients arriving at hospital by ambulance has been approximately 82% consistently over the five years of SSNAP reporting highlighting the importance of paramedics within the stroke team and patient pathway. Exact percentages are provided in the appendix of this report.

Median onset to arrival time for 2017/2018 was 3 hours and 04 minutes, an increase of 37 minutes from data reported in 2013/2014. For patients arriving in time to receive thrombolysis, longer onset to arrival times have largely negated the sustained year on year improvements observed in urgent scanning timings and door to needle times for thrombolysis. Thrombolysed patients are on average arriving later than they did five years ago (11 minutes). This is a worrying trend given the efforts that stroke teams are making to improve system processes and patient flows into hospital. One major factor in delay between onset of symptoms and arrival time is the time it takes for the ambulance service to be contacted. Continued work to improve public awareness of stroke as a medical emergency is vital.

It is also a concern that the time of stroke onset is not known for more than 30% of patients. There will be many reasons why it is not possible to determine an exact time including those people who have stroke during sleep, but it is important where possible to capture this important information as accurately as possible, and it should not vary significantly between different sites. A known time of onset is essential to determine whether patients are appropriate for interventions such as thrombolysis and intra-arterial treatment.

Future Plans

In order to increase the proportion of patients treated with thrombolysis and thrombectomy, a more collaborative approach across the stroke pathway is needed. We need to ensure ambulance and hospital trusts work together effectively to reduce prehospital delays, while continuing to improve the accuracy of initial prehospital stroke diagnosis and pre-alerts. Ambulance paramedics must be seen as an integral part of the stroke team and should be included in training, education and quality improvement.

The existing SSNAP dataset does not collect prehospital timings (with the exception of stroke onset) but it will be expanded next year to include the collection of important measures such as 'time of arrival and departure from patient location' and 'time of ambulance arrival at hospital'. This will enable the reporting of additional key metrics including ambulance '999 call time to scan time' and '999 call to SU admission time'. The expansion of the dataset in this way will allow SSNAP to more closely monitor data quality and ambulance trust performance while enabling those participating teams to work alongside admitting hospitals in improving their hyperacute stroke pathway. Finally, it is also important to continue increasing public understanding of stroke symptoms through campaigns such as the FAST initiative.

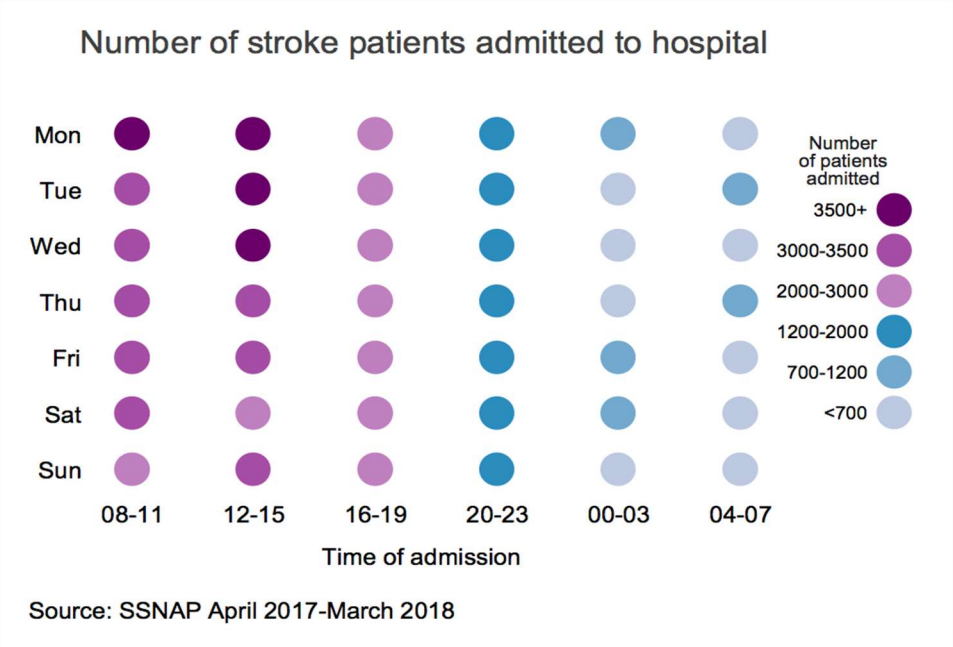


Figure 2.2: Volume of stroke patients admitted to hospital by time and day of the week for the period from April 2017 to March 2018.

Number of stroke patients by age and gender

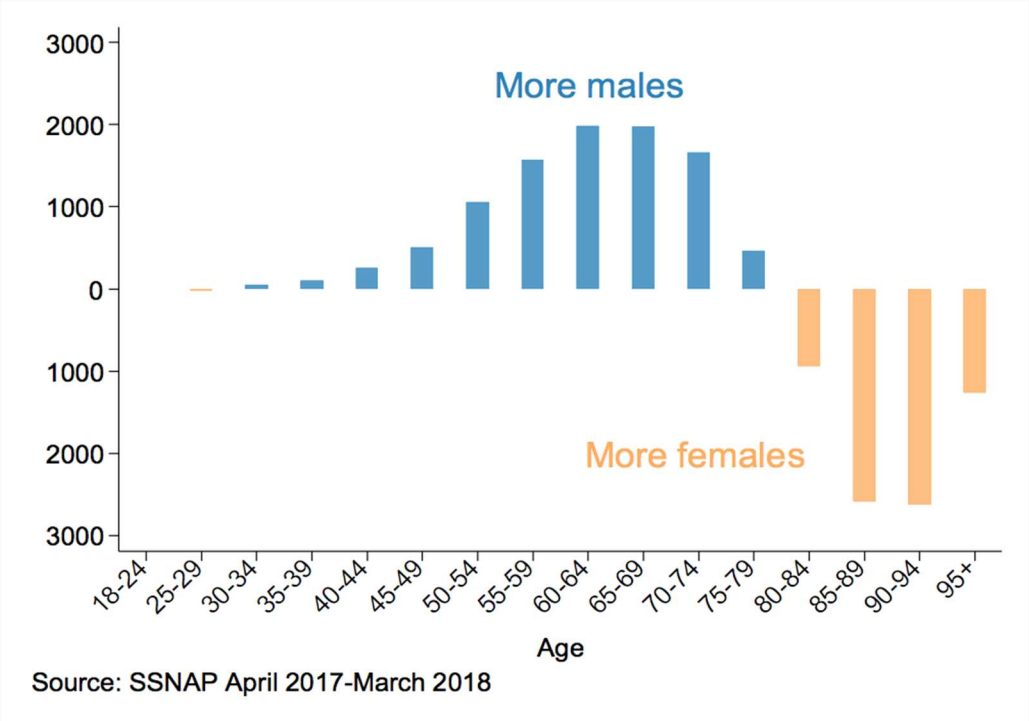


Figure 2.3: Variation in stroke patient numbers by age and gender for the period April 2017-March 2018.

Further Reading

SSNAP data: For five year changes over time in onset timings results go to Appendix 1: Key Areas in depth data tables

Resource: For more information regarding the SSNAP Ambulance Data Linkage Project please go to https://ssnap.zendesk.com/hc/en-us/articles/360015467034-Ambulance-linkage-project-update

2(c) Urgent scanning

Overview

Brain scans are essential to diagnose the type of stroke and to make sure that there is no other medical cause for the patient's symptoms. By determining the type of stroke a patient suffered it is possible to then manage subsequent care including the provision of thrombolysis, thrombectomy or urgent blood pressure lowering medication. There is no medical reason to delay a brain scan after admission with acute stroke, and research shows that it is most cost effective to scan immediately. One of the main drivers for faster scanning in recent years has been the increased availability of thrombolysis for acute stroke, where every minute counts, but there is increasing recognition now that early acute management is important for everyone presenting with stroke.

Current Outlook

Improved access to scanning has been one of the main successes in stroke care over recent years. In the past some patients would wait days after admission to have a CT scan but there has been a very significant change, with nearly all patients now being scanned within 24 hours and an increasing percentage (from 41.9% to 52.5%) being scanned within one hour of arrival at hospital. The 2016 RCP Guideline for Stroke recommends one hour scans for all stroke patients so it is encouraging to see continued improvements over time. Ensuring all patients are scanned within one hour will be a logistical and organisational challenge but it is hoped that with better organised services and increasingly specialist hyper-acute stroke centres across the country we will see continued improvements into the future.

Future Plans

Developing systems that enable very rapid imaging after stroke is going to become even more important over the coming years as services to provide thrombectomy grow. Identifying patients who may be suitable as quickly as possible will be vital. There may also be a need to provide more advanced types of brain scan to identify not just whether the patient has had a bleed or an infarct but also to show whether the blood vessels to the brain are blocked and whether the affected part of the brain is irreversibly damaged or still has the potential to recover if the blood flow is restored. These are complex processes and this is one of the reasons why there will be further centralisation of urgent stroke care in a smaller number of better equipped centres.

There is also a need to continue to monitor whether access to scanning facilities remains equitable whatever time or day of the week a patient presents with a stroke. In some hospitals this remains a significant problem.

Percentage of patients receiving brain scans within 12 hours

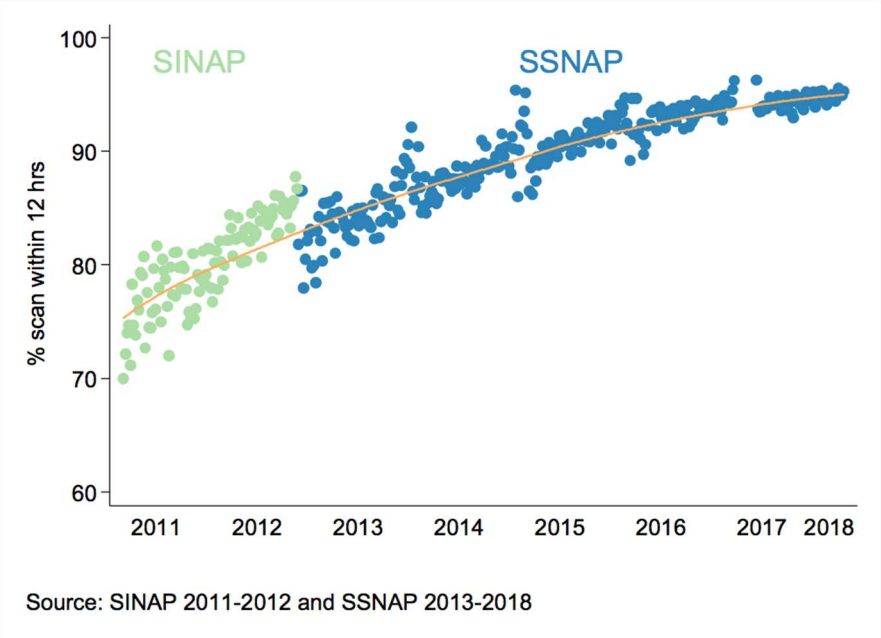


Figure 2.4: Increased percentage of patients receiving a brain scan within 12 hours of clock start between April 2011 and March 2018.

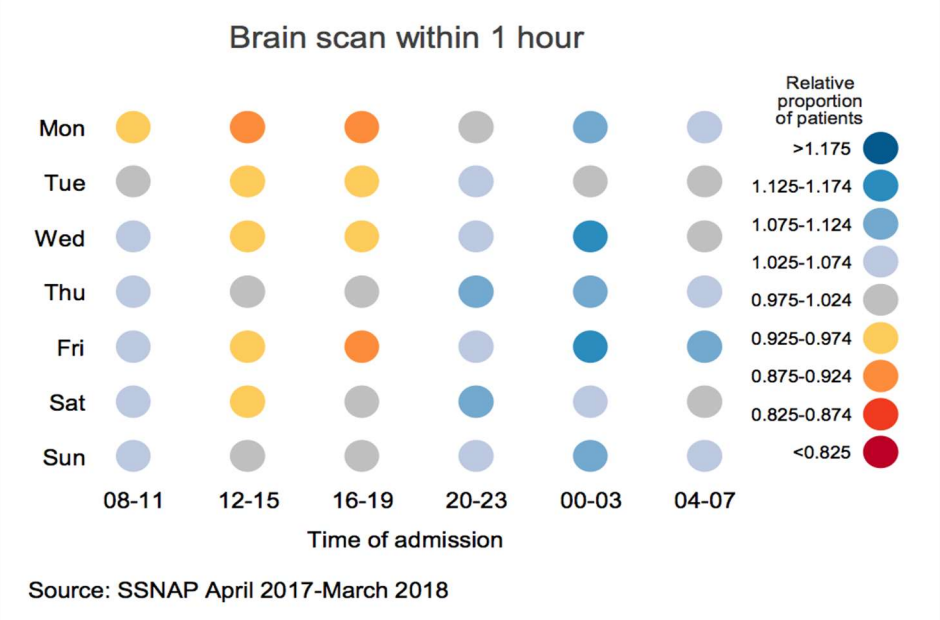


Figure 2.5: Variation across time of day and day of the week in the proportion of patients who are scanned within 12 hours of arrival at hospital. There is a daily pattern where patients who arrive in the morning are more likely to be scanned within 1 hour than patients arriving in the afternoon and evening.

Further reading

SSNAP data: For five year changes over time in onset timings results go to Appendix 1: Key Areas in depth data tables and Appendix 2: Key Indicators data tables. *QI Case Study:* Providing timely brain scans for stroke patients at Fairfield General Hospital https://www.strokeaudit.org/Annual-Report/2017/Full-Guideline/AcuteCare/Providing-timely-brain-scans-for-stroke-patients-a.aspx

2(d) Stroke unit admissions

Overview

Direct admission to a dedicated stroke unit remains the most important intervention we have for acute stroke. A major review, 'Organised inpatient (stroke unit) care for stroke', found that stroke patients who receive organised inpatient care in a stroke unit are more likely to be alive, independent, and living at home one year after the stroke. The benefits are most apparent in stroke units based in a dedicated stroke ward. Furthermore, there was no associated increase in the length of inpatient stay.

The essential components of care patients receive in the stroke unit include monitoring of body temperature, blood pressure, oxygen levels and blood sugars, attention to fluid intake and early mobilisation and physiotherapy. The other important features are the use of setting goals with patients, multidisciplinary meetings and information and education for both patients and staff. In addition, there are tried and tested methods of dealing with complications and other problems arising from strokes.

In the past 20 years there has been a dramatic increase in the number of dedicated stroke units in the country and in the number of patients spending most of their time in hospital on these units. Though many more people now go straight to dedicated stroke units from A&E, SSNAP has reported some stagnation and deterioration in key indicators within the stroke unit domain which are discussed below.

Current Outlook

Over 95% of applicable stroke patients now spend at least some of their time on a stroke unit at first admitting hospital. Timings for onset and arrival to stroke unit admission are provided in '2(b) Getting to hospital for urgent treatment' section.

Though the vast majority of patients are treated at some time during their stay on a stroke unit it is still of great concern that almost 20% of patients are admitted initially to a general ward or 'other' ward such as a medical admission unit. This is unacceptable and correcting this part of the pathway should be a major priority for all hospitals admitting stroke patients. Additionally, it is a growing concern that a lower proportion of patients are admitted to a stroke unit quickly (within 4 hours) as we know that early admission to a stroke unit ensures that patients have the best possible chance of receiving all the correct assessments and treatments to prevent complications such as pneumonia. The proportion of patients admitted to a stroke unit within 4 hours for 2017/2018 was 57% and over the five years of SSNAP reporting this percentage has always been less than 60%.

Emergency departments are dealing with ever increasing numbers of patients and there are sustained bed pressures due to increased demand that explains the stroke performance data. However, it will become increasingly important to form a joined up, service wide approach to better streamline patient admissions in order for more patients to receive more rapid acute care.

Future Plans

It must be a priority for all patients with stroke to be admitted to the most appropriate ward for their care. For the vast majority that will be a stroke unit. For a few it may be an intensive care unit, a neurosurgical ward or some other high dependency facility. Organising stroke care effectively across a whole network is one of the main priorities for the NHS as outlined in the NHS long term plan. This may mean that patients need to travel further to access the specialist care that they need but there is little point being admitted to a hospital that cannot provide the necessary treatments. To admit a patient to a stroke unit there must be an empty bed so it will be necessary to make sure that there are sufficient beds provided for the population and that patients do not stay in hospital any longer than they need. So, providing high quality services in the community, both in terms of continued stroke rehabilitation and social support will also be a priority for the NHS.

Percentage of patients admitted to a stroke unit within 4 hours of clock start: Breakdown by time and day of arrival

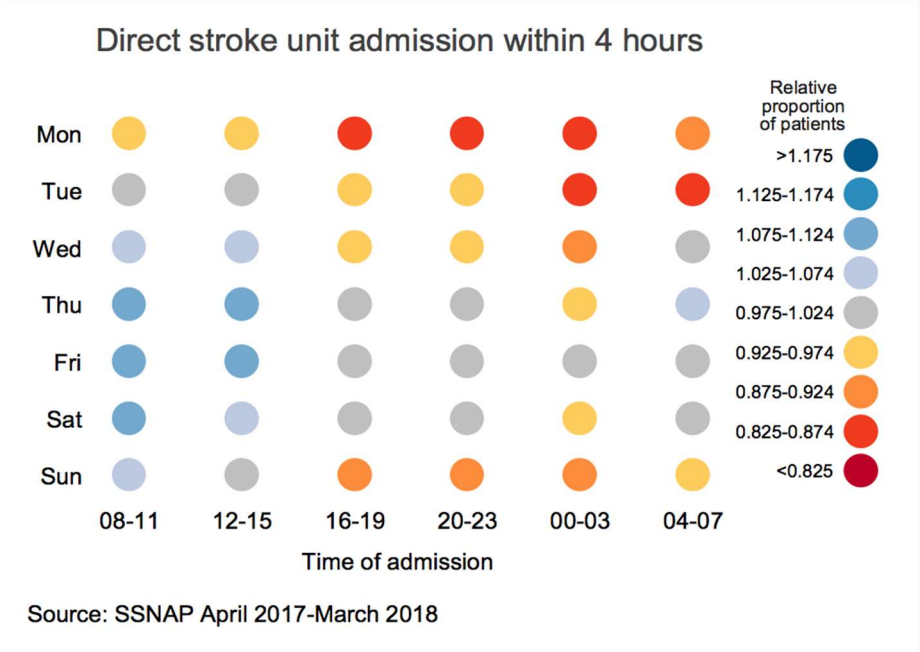


Figure 2.6: Variation across time of day and day of the week in the proportion of patients who are admitted to a stroke unit within 4 hours of arrival. Patients arriving in the morning and afternoon and on the later days in the week including Saturdays were most likely to be admitted to a stroke unit within 4 hours.

Percentage of patients directly admitted to a Stroke Unit within 4 hours

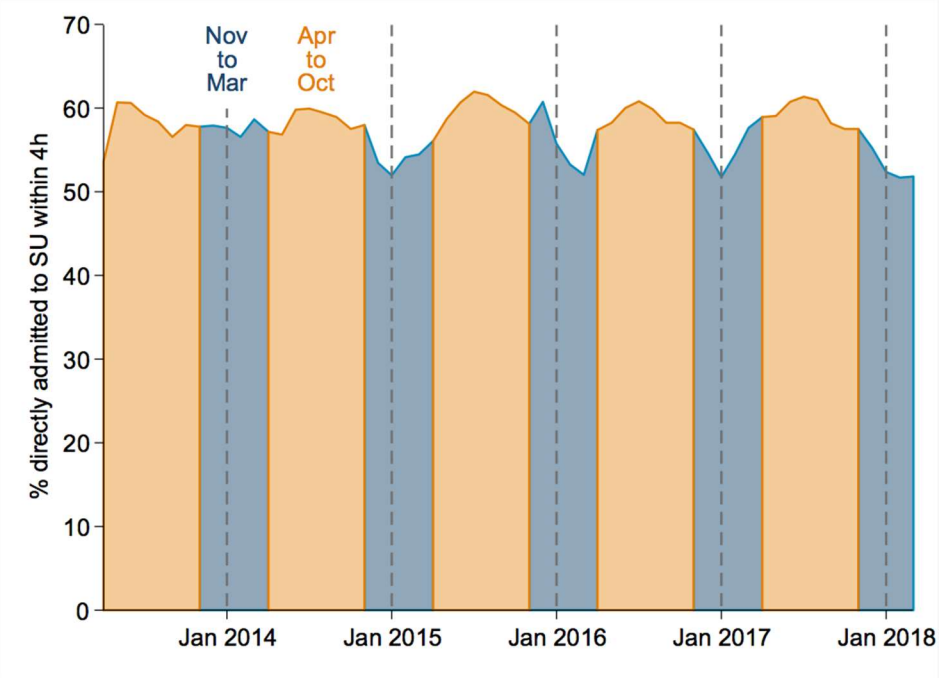


Figure 2.7: Variation in the percentage of patients being admitted quickly to a stroke unit depending on the time of the year for the period of April 2013–March 2018

Further reading

SSNAP data: For five year changes over time in domain 2 stroke unit results go to Appendix 1: Key areas in depth data tables and Appendix 2: Key indicators data tables

Quality Improvement Case Study: Improving bed usage and capacity planning in Whiston Hospital stroke unit without additional financial resource. https://www.strokeaudit.org/Quality-Improvement/Case-Studies/Acute-Care-Case-Studies/Using-SSNAP-data-to-improve-patient-flow-at-Whisto.aspx

Research Paper: 'Organised inpatient (stroke unit) care for stroke ('Stroke Unit Trialists' Collaboration 2013)' https://www.ncbi.nlm.nih.gov/pubmed/24026639

Research paper: 'Effects of Centralizing Acute Stroke Services on Stroke Care Provision in Two Large Metropolitan Areas in England' (Ramsey A 2015) https://www.ncbi.nlm.nih.gov/pubmed/26130092

Research paper: 'Impact of transition from a combined (acute and rehabilitation) stroke unit to a hyperacute model of stroke care' (Dutta D 2017) http://futurehospital.rcpjournal.org/content/4/2/99.abstract

2(e) Thrombolysis

Overview

Thrombolysis is a treatment administered to stroke patients which can 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, and, if given early enough, can save brain cells from damage and reduce disability. The percentage of stroke patient's thrombolysed has increased in the past 10-15 years and it has made a very significant change to the way stroke patients are being treated. The quicker thrombolysis is given following a stroke the more effective it is, so the time taken from the onset of symptoms to the time the treatment starts (onset to needle time) and the time taken from arrival in hospital to starting treatment (door to needle time) are both monitored by SSNAP. Ideally all thrombolysed patients would receive treatment within a maximum of 3 hours of onset as research shows that this will give the best results.

However not everyone with acute stroke is suitable for thrombolysis. Those patients with haemorrhagic stroke, those patients that arrive at hospital more than four and a half hours after stroke onset and people with abnormalities of blood clotting (including those taking anticoagulant medication) are not suitable for this treatment. At most about 20% of patients would be appropriate for treatment.

Current Outlook

The proportion of all people having a stroke who receive thrombolysis has remained relatively constant in the past 5 years (11-12% of all strokes) though it appears that more patients eligible for thrombolysis according to RCP Guideline criteria are receiving this intervention. Achieving higher rates than we are currently observing will largely depend on the public responding more quickly when symptoms of stroke develop by calling for emergency services, improving identification of stroke symptoms and shortening times from the call to emergency services to treatment. It is encouraging that door to needle times have improved year on year overall but, we are continuing to observe big variations in door to treatment times between units demonstrating that it is possible to set services up to operate more efficiently across the country.

Future Plans

Improving the quality of services delivering thrombolysis is a priority for the NHS. This is hoped to be achieved through encouraging public awareness of the symptoms of stroke and creating stroke networks in every part of the country that are designed to ensure that all patients regardless of where they live or when in the week, they have their stroke will be taken to a centre that is the best for them.

Some patients are currently not eligible for thrombolysis because they do not know when the stroke occurred. Early evidence suggests that maybe some stroke patients where the stroke occurs during sleep could still be treated if advanced brain scanning techniques show that there is still some brain that could recover. It seems likely that this will become an important investigation to have available. Some patients who do not immediately respond to thrombolysis will be suitable for thrombectomy, otherwise known at clot retrieval. This is discussed in more detail in the next section.

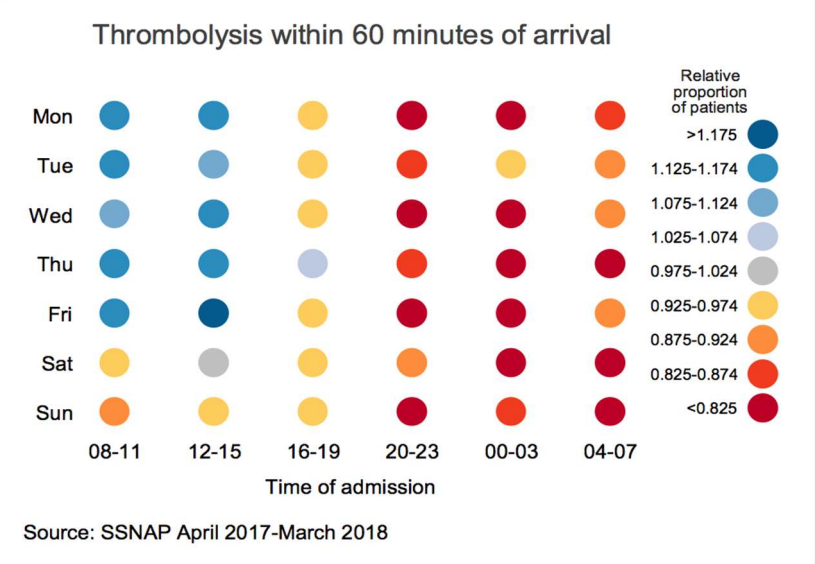


Figure 2.8: Variation across time of day and day of the week in the proportion of thrombolysed patients who are treated within 60 minutes of arrival. Patients arriving both overnight and at the weekend were less likely to be treated quickly than patients arriving during working hours.

Thrombolysis Provision Based on Eligibility Criteria

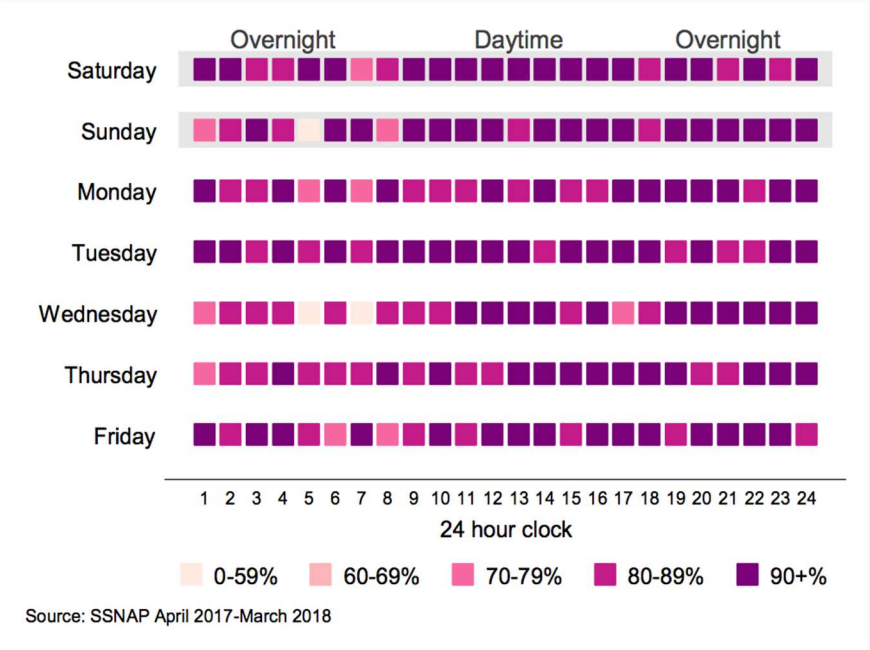


Figure 2.9: Differences in proportions of patients getting clot busting drugs when they are medically eligible depending on what time of day and what day of the week they arrived at hospital

Further reading

SSNAP data: For five year changes over time in domain 3 thrombolysis results go to Appendix 1: Key areas in depth data tables and see Appendix 2: Key indicators data tables

Research paper: Outcomes of Nonagenarians with Acute Ischemic Stroke Treated with Intravenous Thrombolytics (Behrouz R 2018) https://www.ncbi.nlm.nih.gov/pubmed/28935502

Research poster: For posters and oral presentations using thrombolysis SSNAP data go to https://www.strokeaudit.org/Research/Posters/Thrombolysis.aspx

QI Tool: The health economics thrombolysis tool illustrates the opportunity to save health and social care costs for your cohort of patients based on the percentage of patients thrombolysed. To download this tool and for more information on SSNAP's major project to derive and report patient-level estimates on the cost of stroke care go to https://www.strokeaudit.org/Health-Economics.aspx

2(f) Thrombectomy

Overview

Thrombectomy (intra-arterial clot retrieval) is a major development in ischaemic stroke. It involves insertion of a guidewire catheter tube into an artery in the groin, and feeding this up into the blocked artery in the brain. The clot is then removed using a mechanical device with the aim of restoring blood and oxygen flow to the brain. If technically successful and done within a few hours of stroke, thrombectomy can greatly improve the outcome of the brain injury due to stroke in selected patients.

The evidence for using thrombectomy in treating ischaemic stroke has expanded enormously in recent years but the implications for implementation in routine clinical practice are still emerging. For any service providing thrombectomy, ensuring that treatment is provided safely and effectively is of the highest clinical importance. Increasing the number of specialist centres providing this intervention and ensuring there are sufficient numbers of fully trained clinicians in post to offer this treatment 7 days a week and 24 hours a day is a logistical challenge requiring careful planning.

Current Outlook

Facilities for thrombectomy are still not universally available across the country, and there is a shortage of trained staff to perform the procedure. NHS England has agreed to fund the treatment and is supporting measures to increase the workforce needed to deliver it.

Between April 2017 and March 2018 thrombectomy was started in 781 patients out of 86,651 stroke patients in England, Wales and Northern Ireland. Thrombectomy was carried out by 26 teams across the UK with the median number of thrombectomies per team being 23 (IQR 13-31). Nationally, 75% of patients with a fully recorded NIHSS score on arrival (the NIHSS score is a measure of stroke severity following a thorough clinical assessment) had recorded an improved score 24 hours after thrombectomy, demonstrating that the treatment had made a positive impact on patient's condition after stroke, with a further 9.7% of patients showing no change. The results have been compared to those obtained in the research studies and reassuringly show that the treatments being given now in the 26 centres is comparable both in terms of the types of patients treated and the outcomes. As thrombectomy provision becomes more widely available to patients across the country, it is expected that the number of cases submitted to SSNAP will continue to increase making the data more robust.

Future Plans

Initially thrombectomy will be delivered in England just in the 24 neuroscience centres. Most of these centres are still not staffed well enough to provide the service 24 hours a day, seven days a week. The barrier to expanding the services is not money but the lack of an experienced workforce.

Thrombectomy has only been shown to be useful over the last 3 years. Until then there was no need to staff interventional neuroradiology units at night and at weekends. The thrombectomy trials have changed that and it will therefore take a few years to grow the workforce to the size we need. It is vital that we do not start offering services with inexperienced staff. It is a very difficult and in the wrong hands, a dangerous procedure. If implementation is rushed we could well be doing more harm than good. Work is going on to explore which other units need to be able to provide to ensure that the whole of the country has access to the treatment when necessary. The plans to expand the number of people able to do thrombectomy include offering intensive training in thrombectomy and developing programmes for training other types of specialist such as neurosurgeons and cardiologists.

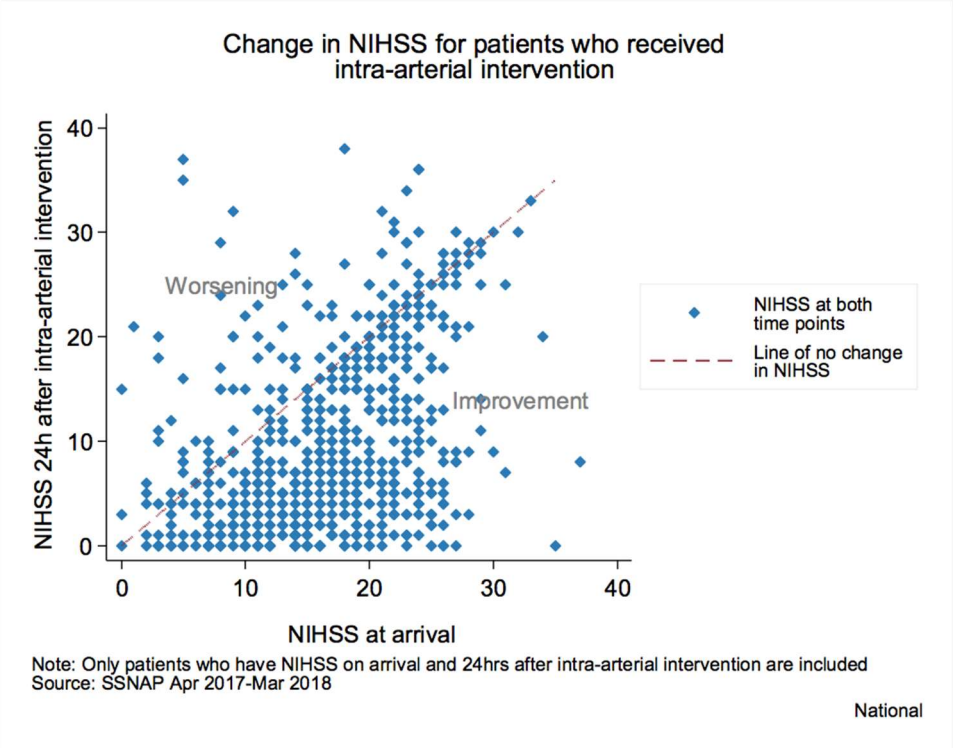


Figure 2.10: Changes in NIHSS scores after intra-arterial intervention for the period April 2017 to March 2018.

Further Reading

SSNAP data: For two year changes over time in thrombectomy results go to Appendix 1: Key areas in depth data tables

SSNAP data: For national comparisons of patients who receive thrombectomy and/or thrombolysis go to https://www.strokeaudit.org/Documents/National/Clinical/Apr2017Mar2018/Apr2017Mar2018-ThrombectomyThrombolysisComparison.aspx

SSNAP data: For in-depth timings and results for intra-arterial patients at a national and team level, compared to evidence from trials see the annual thrombectomy report go to https://www.strokeaudit.org/Documents/National/Clinical/Apr2017Mar2018/Apr2017Mar2018-ThrombectomyReport.aspx

Research posters: For posters and oral presentations using thrombectomy SSNAP data go to https://www.strokeaudit.org/Research/Posters/Thrombolysis.aspx

2(g) Managing haemorrhagic stroke

Overview

Intracerebral haemorrhage (ICH), which is bleeding within the brain, accounts for about 10-12% of all strokes. For many years ICH was seen as the type of stroke for which there was no acute treatment, and indeed death rates are higher for people with haemorrhage, and they have not changed significantly in 30 years. SSNAP data confirms that survival rates after ICH stroke are lower than ischaemic stroke. However, in recent years there has been a growing interest in ICH in the stroke research community and findings from recent studies suggest that a more active approach to ICH management could improve outcomes. Some of these findings are discussed further below.

Current Outlook

Recent research has shown benefits to patient outcomes if blood pressure is lowered acutely for patients with ICH. Additionally with an increasing number of people diagnosed with atrial fibrillation and receiving anticoagulant medication (blood thinning treatment), there has been a focus on rapid reversal of anticoagulation where possible (restoring blood clotting to normal after a haemorrhage). There are also some ongoing research studies of minimally invasive surgical treatments in haemorrhage which is another exciting development in stroke. Stroke teams now need to be aware of the evidence for acute interventions and acting on them. In 2018 SSNAP began collecting additional data items for ICH stroke in order to measure how clinical teams are implementing these research findings. The data have only been collected for the last few months, so numbers are small but they suggest an encouraging picture. People are receiving the right treatment in the majority of cases but there is a need to deliver the treatments with greater urgency in much the same way as ischaemic patients are managed where thrombolysis or thrombectomy is possible.

Future Plans

The research findings on improving patient outcomes after ICH stroke are very encouraging and the challenge now is to ensure these findings are put into practice across the country. It will be important to continue to monitor how blood pressure lowering and anti-coagulant reversal mechanisms are being adopted nationally. Since ICH patients have historically been deemed less applicable for acute interventions to reduce the impact of stroke, a cultural shift may be required to ensure equity of care provision regardless of stroke type. Indeed SSNAP data was used in the paper "Care-limiting decisions in acute stroke and association with survival: analyses of UK national quality register data" to investigate whether given similar baseline characteristics and stroke severity, intracerebral haemorrhage patients were less likely than ischaemic stroke patients to be admitted to higher level care and more likely to have end of life (palliative) care commenced. Whilst the decision to admit to higher level care was similar between stroke types, intracerebral haemorrhage patients

were far more likely to have palliative care commenced. The worry is that maybe clinicians are giving up on patients with ICH too soon because of a lack of awareness that recovery is possible.

Similar to acute interventions for ischaemic stroke it is crucial that all stroke care providers can provide necessary blood pressure lowering interventions and reversal of anticoagulants in a timely fashion to suitable patients regardless of time or day of arrival. However, unlike the specialist skillset required for providing intra-arterial intervention, acting on research into ICH management should be possible by making simple process improvements and adapting a 'can do' attitude that is shared across the multidisciplinary stroke team. Dr Adrian Parry Jones, stroke neurologist at Salford Royal NHS Trust has spearheaded much of the research into improving outcomes for ICH stroke in recent years. He has submitted a very useful quality improvement case study to SSNAP outlines that a step by step, practical approach for putting emerging evidence into practice at local level using an 'ABC care bundle' while ensuring impact can be measured. We encourage all clinicians working in stroke to read this case study and try to adapt similar best practices for managing patients with ICH. See links provided below.

Survival rates for stroke patients after 1 month.

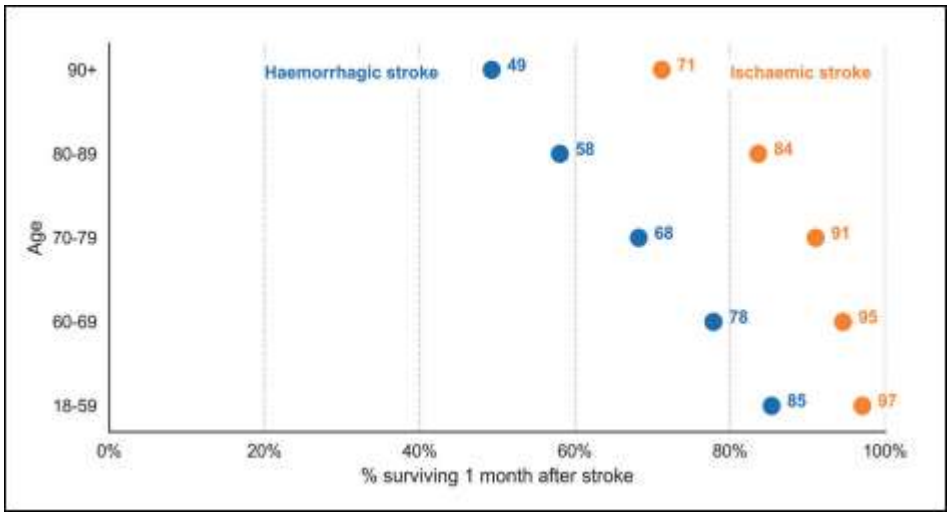


Figure 2.11: Percentage of people who are still alive 30 days after ischaemic and haemorrhagic stroke broken down by age. It is clear that likelihood of surviving ICH is lower than for ischaemic stroke for all age groups. Note this shows annual data for 2016/2017 only as 2017/2018 30 day mortality data has not been made available to SSNAP yet.

Further reading

SSNAP data: For preliminary results on ICH management including blood pressure lowering and reversal of anticoagulants go to Appendix 1: Key areas in depth data tables.

Research paper: 'Care-limiting decisions in acute stroke and association with survival: analyses of UK national quality register data' (Parry-Jones A 2016) http://www.ncbi.nlm.nih.gov/pubmed/26763918

Research paper: 'Delivering an acute bundle of care for intracerebral haemorrhage' in Greater Manchester (Parry-Jones A 2018) https://www.health.org.uk/programmes/innovating-improvement/projects/delivering-acute-bundle-care-intracerebral-haemorrhage

QI case study: Developing a bundle of care to measure impact of ICH intervention at Salford Royal Hospital https://www.strokeaudit.org/Annual-Report/2017/Full-Guideline/AcuteCare/Adrian-Parry-Jones_ICH-mgmt-at-Salford.aspx

2(h) Assessments after stroke

Overview

The best way to ensure acute stroke treatments are given in a timely way is for patients to be seen by the specialist stroke teams as quickly as possible. For example around 40% of people with acute stroke cannot swallow safely. Patients with swallowing difficulties (dysphagia) after they have been screened should have a more detailed swallowing assessment by a skilled speech and language therapist to ensure that these patients have a management plan in place for keeping hydrated and nourished, and treatment for the dysphagia is begun. Our research shows that people who do not have these assessments in a timely manner are at higher risk of developing pneumonia, which is an example of how better care (perhaps perceived as more expensive by providers of care) can not only lead to better outcomes for people but may also be cost saving.

Current Outlook

There have been substantial improvements in the proportion of patients being seen by a specialist stroke doctors and nurses within 24 hours of arrival in hospital over the past five years. Most people are being seen on the day of admission, or the next morning, by a stroke consultant, even at weekends. In 2013/2014 only 73.6% of patients were assessed by a stroke specialist consultant within 24 hours compared to 83.3% in 2017/2018. Similar improvements have been recorded for stroke nurse assessments in 24 hours (In 86.2% 2013/2014 to 90.5% in 2017/2018). These encouraging results show that hospitals are organising their services to ensure specialist staff see patients quickly after arrival in hospital. This allows much more rapid delivery of the important assessments and treatments that people need.

Through SSNAP research it is know that early swallow screening reduces the risk of stroke associated pneumonia (SAP) which is one of the leading causing of death for patients with stroke. Smith 2016 full paper on swallow screening and SAP is available here https://www.ncbi.nlm.nih.gov/pubmed/27298147. It is encouraging that an increasing proportion of patients are being screened within 4 hours (63.5 to 75.4%) over the past 5 years but the fact that almost 25% of patients who could benefit from swallow screening are not provided one within 4 hours remains troubling, particularly given the recent evidence referenced above.

Future Plans

Despite these substantial improvements in early acute assessments there are problems filling vacant posts both in medicine and nursing. The 2016 SSNAP Acute Organisational Audit revealed that there were many unfilled stroke consultant posts across the country. A paper published from SSNAP in 2018 “Associations Between 30-Day Mortality, Specialist Nursing, and Daily Physician Ward Rounds

in a National Stroke Registry" revealed that hospitals with higher ratios of nurses trained in swallow screening and daily physicians ward rounds was associated with a 10% reduction in death rates. Similarly there is a shortage of speech and language therapist availability particularly over the weekend periods as very few services have seven day staffing. This is likely to account for the many patients not receiving a timely swallow screen after hospital admission for stroke or receiving sufficient therapy while in hospital.

The 2019 Organisational Audit will run in mid 2019 and it will be intriguing to see whether staffing issues remain for stroke clinicians. Addressing staffing shortages is a major priority within the NHS to ensure safe and quality care is available to all patients at all times. There are obvious concerns that Brexit will exacerbate the difficulties with staffing. In the very long term, the increase in number of medical school places will help but it takes at least 13 years from entry into medical school to appointment as a consultant so this will not solve the immediate problem. There is a need to look at staffing in more flexible ways than has been traditional. Nurse and therapy specialists can take on some of the medical roles including leadership. What must not be lost is the assurance that a stroke patient will be seen by a team that has the necessary skills to deliver the highest level of stroke care.

Breakdown of acute stroke assessments by time of day and day of week

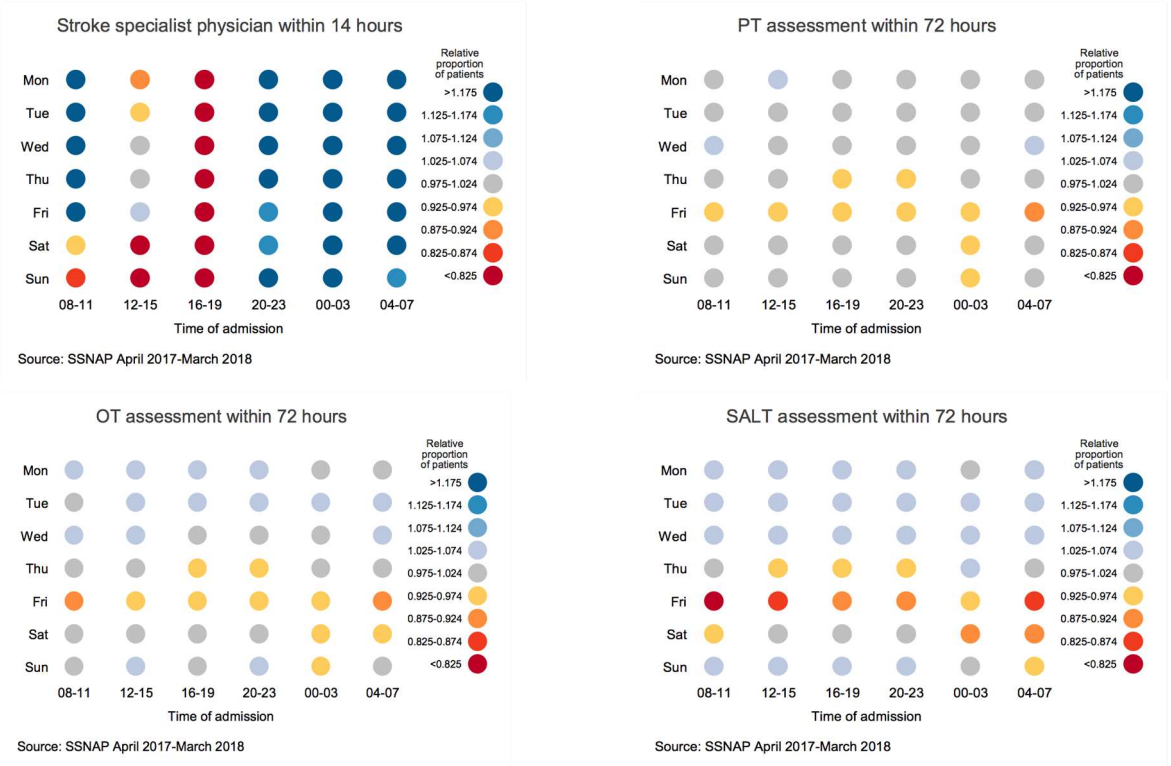


Figure 2.12: Variation across time of day and day of the week in the proportion of patients who assessed by stroke specialists within 14/72 hours of arrival.

Further Reading

SSNAP data: For five year changes over time in domain 4 specialist assessments key indicator results go to Appendix 1: Key areas in depth data tables and see Appendix 2: Key indicators data tables

Research paper: Can a Novel Clinical Risk Score Improve Pneumonia Prediction in Acute Stroke Care? https://www.strokeaudit.org/SupportFiles/Documents/Research/J-Am-Heart-Assoc-2015-Smith.aspx

Research paper: Weekly variation in health-care quality by day and time of admission: a nationwide, registry-based, prospective cohort study of acute stroke care (Bray B 2016) https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)30443-3/fulltext

Research paper: 'Associations Between 30-Day Mortality, Specialist Nursing, and Daily Physician Ward Rounds in a National Stroke Registry' https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6116797/

Research Paper: 'Associations between Stroke Mortality and Weekend Working by Stroke Specialist Physicians and Registered Nurses' https://www.strokeaudit.org/SupportFiles/Documents/Research/journal-pmed-1001705.aspx

Research poster: Between Centre Variation in the Diagnosis and Treatment of Stroke Associated Pneumonia (Bray B & Smith C) https://www.strokeaudit.org/Research/Posters/Pneumonia.aspx

2(i) Therapy and rehabilitation

Overview

Patients value therapy and the effect it can have on their recovery and they are right to do so. There is strong evidence to show that skilled therapy provided at the right intensity can greatly improve outcomes. Some people, especially soon after stroke, are not well enough for therapy, or get very tired, and cannot tolerate much. Many patients, though, feel they do not get enough therapy on the stroke unit that is productive, especially at the weekend. Though there are staffing concerns across all stroke disciplines, the lack of seven day therapy services in many hospitals is of concern. In 2016 it was reported in the acute organisational audit that there were still a small number of hospitals with no speech and language therapists and it will be interesting to see in the 2019 follow up audit whether this remains the case.

The aim of the therapy measures reported on by SSNAP is to get an overall picture of the timeliness and intensity of each therapy being provided to patients. SSNAP allows teams to reflect when a patient no longer requires one type of therapy but still requires another. This way the intensity of each therapy provided can be compared against what was required.

Current Outlook

There has been progress made over the last few years in terms of the intensity of therapy provided by all of the disciplines. Despite the improvements we have seen in recent years, providing sufficient therapy to all patients remains an organisational challenge for hospitals. Few services offer seven day occupational therapy, physiotherapy and speech and language therapy although an increasing number are providing one or two of the therapies six or seven days a week. The median number of minutes of therapy on the days that patients receive it is 40 minutes for OT, 35 minutes for PT and 32 minutes for SALT. However, there are days when patients should be undergoing therapy and yet they receive none. Patients requiring speech and language therapy still receive it on less than half of their days as an inpatient. It should be noted that the therapy domain calculations were amended on 01 April 2014 so a fair comparison in results is only possible across 4 rather than 5 years of data collection.

Future Plans

It is recognised by the NHS that stroke patients need to be offered greater intensity of rehabilitation after their stroke both in hospital and when their care is transferred to home. While it is unlikely that there will be a major increase in therapy workforce there are ways that should enable patients to get more treatment. Reducing the time therapists have to spend on administrative task to free up more time for providing treatments, greater use of technology such as telemedicine, using therapy

assistants where treatment plans have been decided and what is needed is repetitive task training and encouraging greater self-management through education and gadgets that enable a patient to monitor how they are progressing re all ideas that are being considered.

Percentage of patients receiving therapy assessment within 72 hours

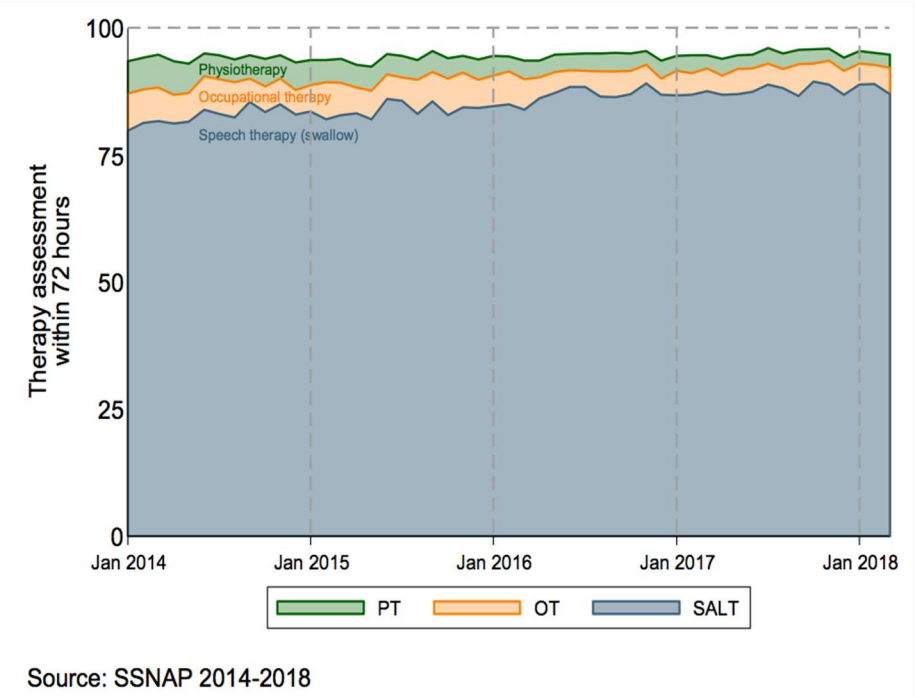


Figure 2.13: Increases in the percentage of patients receiving therapy assessment within 72 hours (by type of therapy) over time between January 2014 and March 2018.

Percentage of time in hospital spent receiving therapy

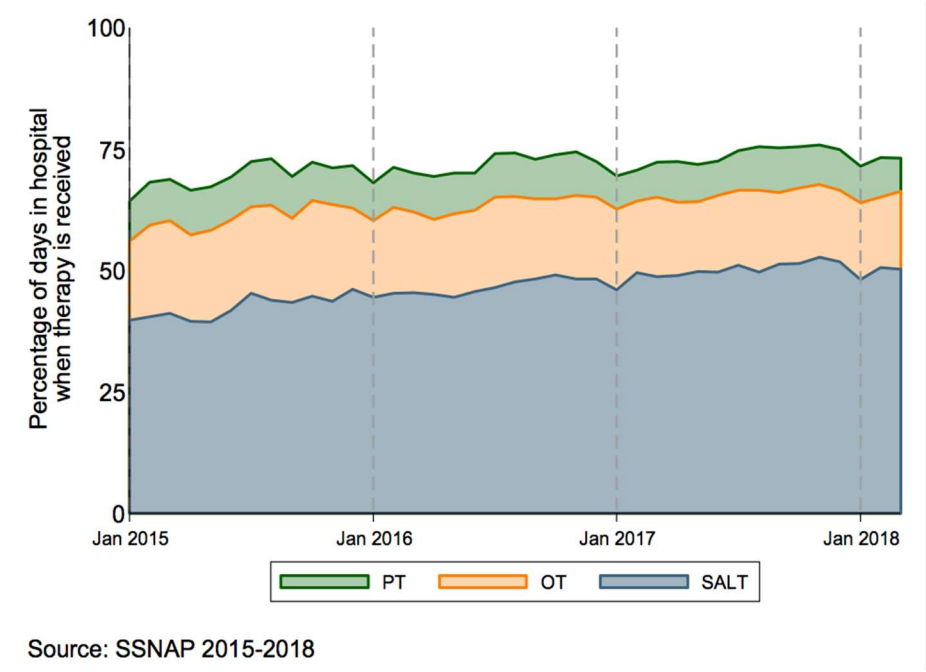


Figure 2.14: Percentage of time that stroke patients spend receiving therapy while in hospital between Jan 2015-March 2018.

n.b. Therapy intensity calculations were updated in 2014 so this graph shows results from 2015 onwards

Further Reading

SSNAP data: For five year changes over time in domain 5, 6 and 7 Occupational therapy, physiotherapy, and speech and language therapy go to Appendix 1: Key areas in depth data tables and see Appendix 2: Key indicators data tables

Research: REACT Study 'Why do stroke survivors not receive recommended amounts of active therapy?' (Clarke DJ 2018) https://journals.sagepub.com/doi/pdf/10.1177/0269215518765329

Research Paper: 'Which factors are associated with physiotherapy provision to hospitalised stroke patients?' (McGlinchey M 2018) https://journals.sagepub.com/doi/full/10.1177/2396987318800543

Research Paper: How is the audit of therapy intensity influencing rehabilitation in inpatient stroke units in the UK? (Taylor E 2018) https://www.ncbi.nlm.nih.gov/pubmed/30552266

Resource: A comprehensive therapy pack has been produced by the SSNAP team which provides a wealth of useful information on how therapy measures are collected, analysed, reported and interpreted on SSNAP. https://ssnap.zendesk.com/hc/en-us/articles/360001955854-Download-full-pack-of-Therapy-Report

QI Case study: 'Improving occupational therapy provision at St Thomas' hospital' https://www.strokeaudit.org/Annual-Report/2017/Full-Guideline/AssessmentsAndRehab/Ajay-Bhalla-and-Nicole-Walmsley-Case-Study.aspx

2(j) Care before leaving hospital

Overview

There are a number of important assessments which many patients require before leaving hospital to ensure they have the best possible chance of continuing their recovery in their home environment. This includes putting plans in place for managing continence for those patients who are incontinent following their stroke, assessing risks of malnutrition, and screening for mood disturbance which if found will require further intervention to reduce the likelihood of mental health problems for patients recovering for stroke which are very common.

Current Outlook

The improvements in each of the key indicators of care related to discharge planning should be celebrated and reflect the sustained efforts by clinical teams to work together to provide the best possible care to patients. Malnutrition can be an important problem after stroke, particularly for people who have swallowing difficulties and may be tube fed, so it is good to see an increase in the proportion of people who have an assessment of their nutritional status and are seen by a dietitian if they need to be. Similarly where in 2013/2014 nearly 5 in 20 people were being discharged without a continence plan, this is now only occurring in 1 out of every 20 cases. That being said this means that there are thousands of patients are being discharged incontinent without a plan. All patients requiring a plan for continence should receive one within 3 weeks of their stroke without exception.

Deep vein thrombosis (DVT) is a common complication of stroke caused by the formation of clots in the veins. This can be a very serious complication and even lead to death. Intermittent Pneumatic Compression (IPC) is a soft plastic sleeve placed on the patient's legs which provides gentle intermittent compression of the leg veins. Despite the evidence telling us that IPC is an effective and potentially lifesaving treatment for DVT, only 27.6% of patients were applied IPC this year. This is a lower percentage than we would expect given that around 50% of patients are immobile and can't walk independently after their stroke up from 8.6%. It should be noted that this still represents an improvement compared to earlier results (8.6% in 2014/2015)

Future Plans

A commonly cited complaint from patients is that the transition from hospital to home is traumatic and they are not given enough support when they do get home. Identifying potential problems and doing the best to mitigate them is essential. SSNAP records a few of these but they are by no means the only issues that need addressing. Being on a stroke unit for the whole of the hospital stay is the best way of ensuring that the multiple and often complex issues are addressed by a team skilled to deal with them. Careful patient and carer education and information provision and giving contact

details of someone who will be at the end of a telephone line if problems arise are all important measures to take.

The NHS long term plan is focussing particularly on addressing these issues that are of primary importance to stroke survivors. Development of patient reported outcome and experience measures will be central to identifying how well services are delivering on the standards set.

Percentage of teams treating patients with intermittent pneumatic compression (IPC)

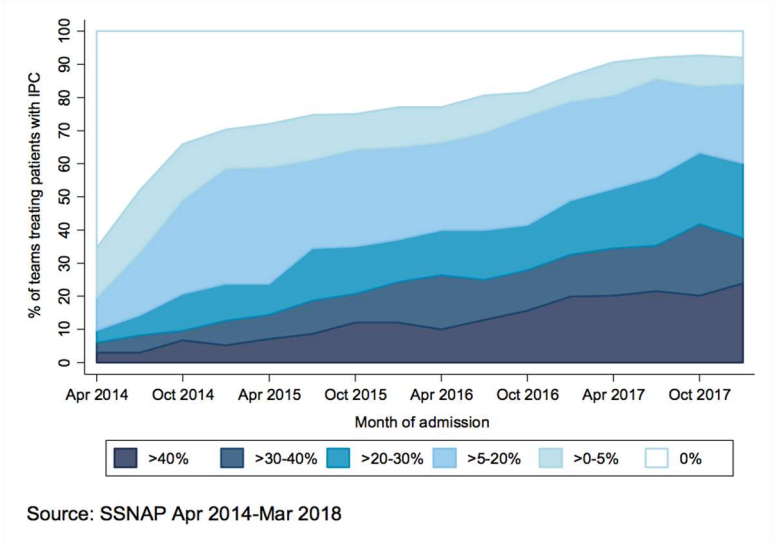


Figure 2.15: Uptake of IPC by acute teams between April 2014 and March 2018. More teams are now treating at least some patients with IPC, but we would hope for all teams to treat more than 40% of patients with IPC.

Further reading

SSNAP data: For five year changes over time in domain 9 Standards by Discharge go to Appendix 1: Key areas in depth data tables and see Appendix 2: Key indicators data tables.

Research paper: 'Effectiveness of intermittent pneumatic compression in reduction of risk of deep vein thrombosis in patients who have had a stroke (CLOTS 3)' https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)61050-8/fulltext

QI Case study: IPC training and implementation https://www.strokeaudit.org/Annual-Report/2017/Full-Guideline/AssessmentsAndRehab/Frances-Harrington_IPC-mgmt.aspx

QI Case study: Providing an excellent dietetic service to patients at St Thomas' Hospital https://www.strokeaudit.org/Annual-Report/2017/Full-Guideline/AssessmentsAndRehab/Alex-Lang_Providing-an-excellent-dietetic-service.aspx

QI case study: Identifying and supporting patients with mood disturbance after stroke at Charing Cross Hospitalhttps://www.strokeaudit.org/Annual-Report/2017/Full-Guideline/AssessmentsAndRehab/Ismalia-De-Sousa_Psychological-support.aspx

2(k) Outcomes after stroke

Overview

It is important to measure what happens to patients after stroke to see how well treatments are working, and what needs to be improved. SSNAP reports on levels of disability using the modified Rankin scale (mRS) score upon discharge from hospital and at six months after stroke. Data on mortality rates both in hospital deaths and 30 day mortality rates are reported quarterly and annually respectively. Death rates for different hospitals can be compared, carefully correcting for stroke severity and other factors, which provides useful information about what systems of care for stroke work best. Shorter term outcomes such as rates of pneumonia and urinary tract infections (UTIs) are also reported. Other important indicators relating to patient outcomes include how long they stay in hospital after stroke and whether they are discharged to a care home.

Current Outlook

SSNAP reports on in hospital mortality rates and they have remained consistent over the past 5 years. However this is not a particularly good indicator of the quality of care as it will be influenced by factors other than just the quality of care such as length of stay, the ability of hospitals to organise for patients who wish to move back home to receive end of life care there and access to hospice care. Owing to delays in receiving the required data it has not been possible to calculate 30 day mortality after stroke for 2017/2018 which is likely to be a much better indicator of quality of care. However data for previous years are available on the SSNAP website with the crude 30 day mortality rate of 13.7% reported for 2016/2017. Mortality calculations are adjusted for case mix including stroke severity and presented as a standardised mortality ratio. Though SSNAP data suggests more people are leaving hospital with moderate to severe disabilities after stroke this is likely accounted for by increased numbers of patients being recorded on SSNAP as discharged with stroke specialist Early Supported Discharge teams where they will continue intense rehabilitation in a home environment. Using longer term outcomes at 6 months to investigate levels of disability would be more a more valuable metric but despite much effort to improve case ascertainment only about 30% of patients had data submitted at 6 months in 2017/2018 meaning these data lack the robustness required to make meaningful conclusions.

Length of stay has dropped considerably since the first national stroke audits began with many patients being discharged after less than a week. This is encouraging in that it makes additional stroke beds available for new patients and we know that most patients would prefer to continue their care at home if possible. However this also means that early supported discharge services and wider community services need to be effectively organised to ensure smooth transitions of patient care from the hospital to the community. Community teams should be staffed with stroke specialist

professionals and available in every region which is not currently the case. Institutionalisation rates have dropped considerably in recent years too with the percentage of patients discharged to a care home for the first time after leaving hospital currently at less than 7%. In previous audits this percentage was closer to 12-15%.

Pneumonia is especially common in people with severe stroke, but careful monitoring of temperature and early treatment can help, and early swallow assessment and careful mouth care may help prevent it as discussed earlier. Rates of newly acquired pneumonia have remained constant at 8-9% over the past five years. We have seen small improvements in the rates of urinary tract infections (UTIs) possibly due to catheters being avoided where possible, 5% in 2013/2014 to 4.5% in 2017/2018.

Future Plans

The NHS is keen to measure meaningful outcomes for patients. Clearly death and disability are the most important measures but it must be remembered that many factors other than quality of care will influence mortality rates including stroke severity, how many other medical problems the patient has prior to the stroke and socio-economic group. These factors do make it difficult to interpret what the outcome measures mean and for this reason SSNAP does predominantly record processes of care that we know from research are important to deliver better outcomes. These process measures do not need to be adjusted for patient factors. For example all patients should be admitted to a stroke unit, all patients should have a rapid brain scan, have their mood and cognition assessed and have a continence assessment. There are other outcomes that should be collected, particularly patient reported outcome measures – how does the patient feel they have recovered, what is their quality of life etc.

One of the priorities for the NHS is to improve the collection of outcome and process measures six months after stroke. This will enable a much better assessment to be made of the whole stroke pathway and indicate where resources and support should be directed.

Mean length of stay (in days) for stroke patients

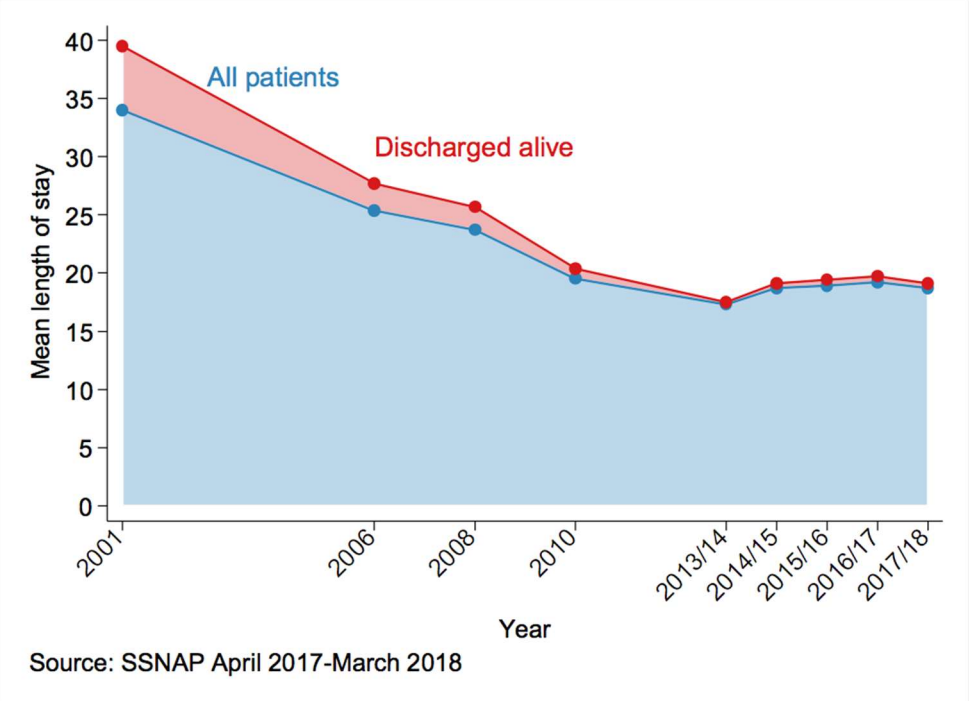


Figure 2.16: Breakdown of the mean length of stay (in days) for stroke patients over time from 2001 to 2018.

Further Reading

SSNAP data: For five year changes over time results please go to Appendix 1: Key areas in depth data tables Detailed 30-day mortality results at hospital and CCG/LHB level over four years up to 2016/2017 are available in the public tables of mortality. Go to https://www.strokeaudit.org/Documents/National/Clinical/Apr2016Mar2017/Apr2016Mar2017-MortalityResults.aspx

https://www.strokeaudit.org/Documents/National/Clinical/Apr2016Mar2017/Apr2016Mar2017-CCGMortality.aspx

Research Paper: Associations Between 30-Day Mortality, Specialist Nursing, and Daily Physician Ward Rounds https://www.ahajournals.org/doi/abs/10.1161/STROKEAHA.118.021518

Research Paper: Validation and comparison of two stroke prognostic models for in hospital, 30-day and 90-day mortality*https://journals.sagepub.com/doi/abs/10.1177/2396987317703581*

Research Paper: Associations between Stroke Mortality and Weekend Working by Stroke Specialist Physicians and Registered Nurses https://www.ncbi.nlm.nih.gov/pubmed/25137386

2(l) Longer term care

Overview

Stroke is a complex and devastating condition. The time needed for rehabilitation will vary between people but will often need to continue long after leaving hospital, ideally in a person's own home. For some people it can take months or even years to make a full recovery, while others have to live the rest of their lives with disability regardless of the quality of care provided.

Evidence shows that rehabilitation at home is cost effective but there need to be specialist teams in the community able to provide care as soon as someone returns home. Early supported discharge teams should provide the same expertise and intensity of therapy at home as in the stroke unit, allowing people to get home more quickly, but these services are not always available. Most people have some support from some sort of specialist team in the community, but access to specialist nursing, speech and language therapy or psychology varies considerably.

Current Outlook

The percentage of patients discharged from hospital with stroke/neurology specific early supported discharge (ESD) teams has increased steadily in recent years (24.7% in 2013/2014 to 35.5% in 2017/2018). Most people remain under the care of the community team for around 5 weeks after stroke, but this can be a much shorter time or much longer (25% are under the care of the team for more than 7 weeks). It is good to see that nearly all patients are having rehabilitation goals set with them (95% in 2017/2018) while they are under the care of the team, so they and their carers can participate in deciding what problems need to be addressed and how.

It is extremely important patient's six month follow up information is recorded on SSNAP as these data are vital for assessing the outcomes of stroke care and issues important for further stroke prevention but at the time of writing data it is only being reported on for 30% of applicable patients. It is disappointing that much valuable information about patient outcomes post stroke is still being missed after five years of data collection.

Future Plans

Longer term rehabilitation is a key area for improvement in the NHS long term plan. It is recognised that currently patients are unable to access sufficient therapy to maximise recovery and it is particularly difficult to obtain vocational rehabilitation to help people get back to work. Not all longer term rehabilitation needs to be delivered by teams only treating stroke patients and not all patients will benefit from long periods of rehabilitation but there needs to be greater flexibility in provision, able to meet the needs of individuals and there needs to be a standardised approach to the provision of care such that it is not influenced by where a patient lives.

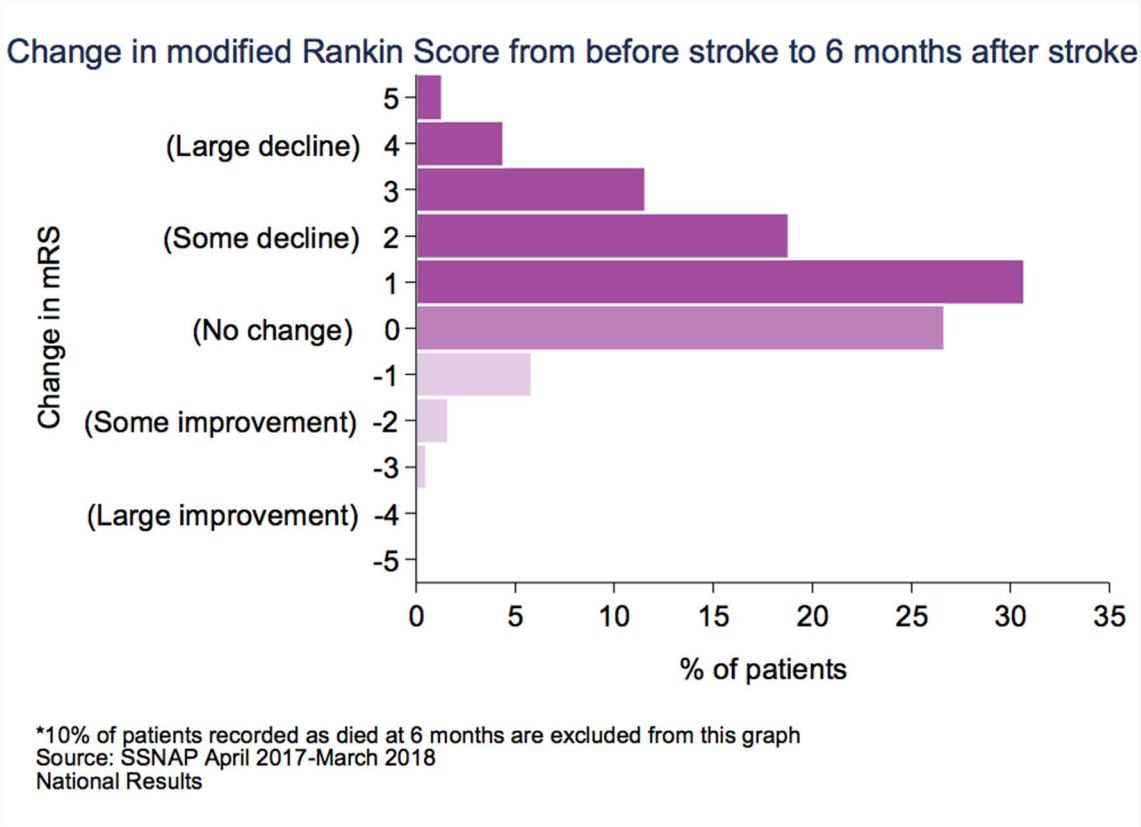


Figure 2.17: Indicates the changes in the modified Rankin Score for stroke patients from prior to onset to 6 months for the period April 2017-March 2018.

Further Reading

SSNAP data: For five year changes over time results for domain 10 discharge processes please go to Appendix 1: Key areas in depth data tables and see Appendix 2: Key indicators data table.

QI Tool: The health economics ESD tool illustrates the opportunity to save health and social care costs for your cohort of patients based on the on the number of patients discharged with ESD care. To download this tool and for more information on SSNAP's major project to derive and report patient-level estimates on the cost of stroke care go to https://www.strokeaudit.org/Health-Economics.aspx

QI case study: 'Developing a high quality ESD service in Hampshire' https://www.strokeaudit.org/Annual-Report/2017/Full-Guideline/LongerTermCare/Louise-Darrah_Developing-a-high-quality-ESD-servic.aspx

QI case study: 'Providing comprehensive six month assessment service to patients at Chesterfield' Royal Hospital' https://www.strokeaudit.org/Annual-Report/2017/Full-Guideline/LongerTermCare/Tina-Potter_Providing-comprehensive-six-month-asse.aspx

Section 3: Methods and domain overview

Overview

This section provides a high level summary of national level performance including changes over time across five years of SSNAP data collection. Relevant text from clinical guidelines on stroke management is also provided for each domain to reinforce why these measures are collected and reported on by SSNAP. Stacked bar charts are used to highlight the variation in SSNAP scoring levels over time and maps are provided which can be used to identify hospital performance for the latest round of reporting.

SSNAP Scoring

SSNAP scores hospitals from (A-E) based on performance across 44 key indicators of care. These key indicators are grouped into 10 domains each covering an important aspect of stroke care. The 10 domains are listed below and a full list of key indicators is available on the SSNAP website www.strokeaudit.org.

List of domains

- Domain 1: Scanning
- Domain 2: Stroke Unit
- Domain 3: Thrombolysis
- Domain 4: Specialist Assessments
- Domain 5: Occupational Therapy
- Domain 6: Physiotherapy
- Domain 7: Speech And Language Therapy
- Domain 8: Multidisciplinary Team Working
- Domain 9: Standards By Discharge
- Domain 10: Discharge Processes

Explanation of grading

- A = First class service
- B = Good or excellent in many aspects
- C = Reasonable overall - some areas require improvement
- D = Several areas require improvement
- E = Substantial improvement required
- X = Insufficient records submitted

Calculating an overall SSNAP score

Performance in each domain of care is combined into a total key indicator score which is then adjusted for data quality (audit compliance) and data completeness (case ascertainment) to provide an overall SSNAP score. Unless otherwise stated, 100% is the optimal performance. For timings, the shorter the median time to intervention the better. This section starts with an overview of how SSNAP scores have changed over time.

Team centred and patient centred reporting

SSNAP reports the processes of care and patient outcomes in two ways; 'patient centred' and 'team centred'. 'Patient centred' attribute the results to every team which treated the patient at any point in their care. It is patient centred, because it describes the care and outcomes from the patient perspective, regardless of which team treated the patient. 'Team centred' attribute the results to the team considered to be most appropriate to assign the responsibility for the measure to. As this is a national level report both team centred and patient centred results will be the same for all domains except those relating to therapy (5, 6, 7). For these domains 'patient centred' results are provided.

SSNAP levels over time

Distribution of SSNAP levels across inpatient teams 2014-2018

SSNAP levels:	Jan- Mar 2014	Jan-Mar 2015	Jan-Mar 2016	Dec 2016-Mar 2017	Dec 2017-Mar 2018
	178 teams	**201 teams**	**213 teams**	**225 teams**	**218 teams**
A	0 (0%)	11 (5%)	25 (12%)	36 (16%)	36 (17%)
B	14 (7%)	36 (18%)	46 (22%)	60 (27%)	81 (37%)
C	20 (10%)	39 (19%)	50 (23%)	61 (27%)	54 (25%)
D	104 (53%)	92 (46%)	77 (36%)	56 (25%)	40 (18%)
E	60 (30%)	24 (12%)	15 (7%)	12 (5%)	7 (3%)

Table 3.1: n.b as SSNAP does not score teams in annual cohort reporting, comparable year on year periodic scoring is provided above.

National expectation

Teams are expected to achieve an A or B SSNAP grade, such scores are indicative of fantastic quality of care and a good or excellent service in many aspects respectively. A SSNAP score of a C or less would suggest that some or several areas of care require improvement.

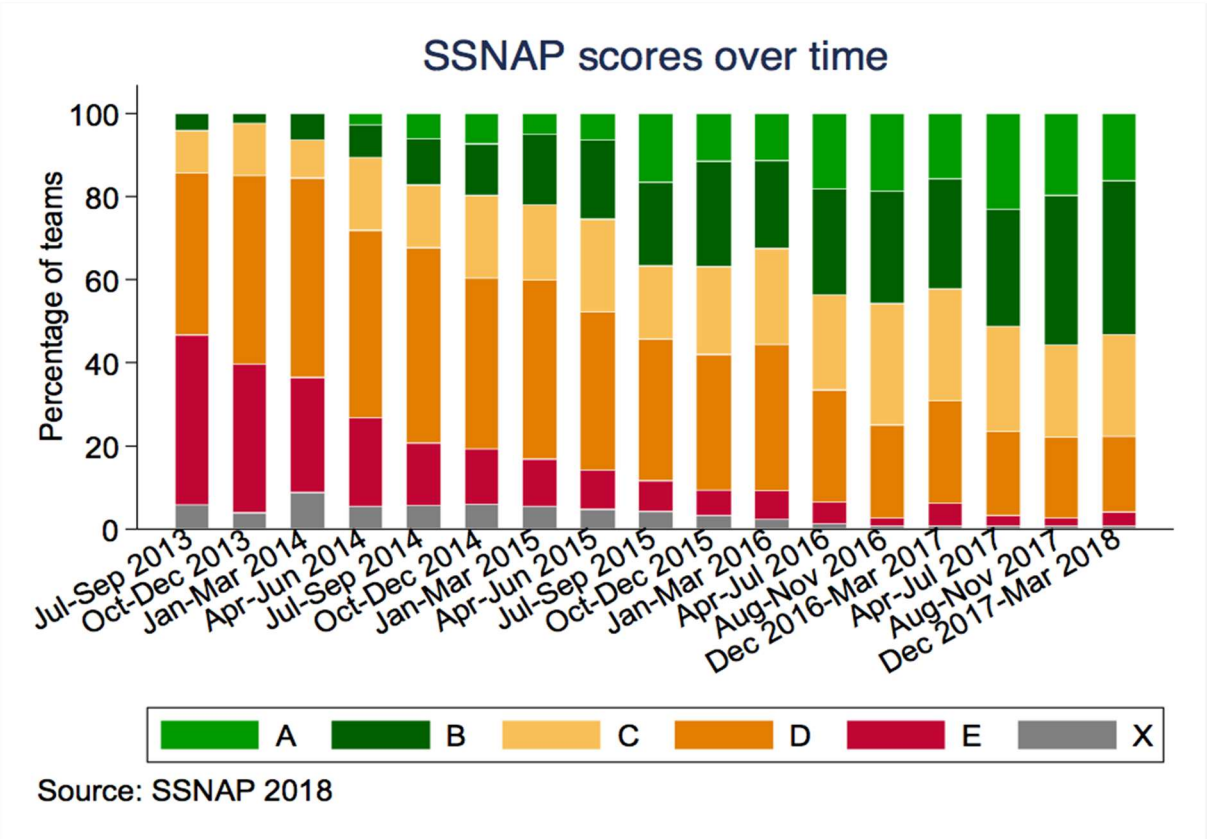


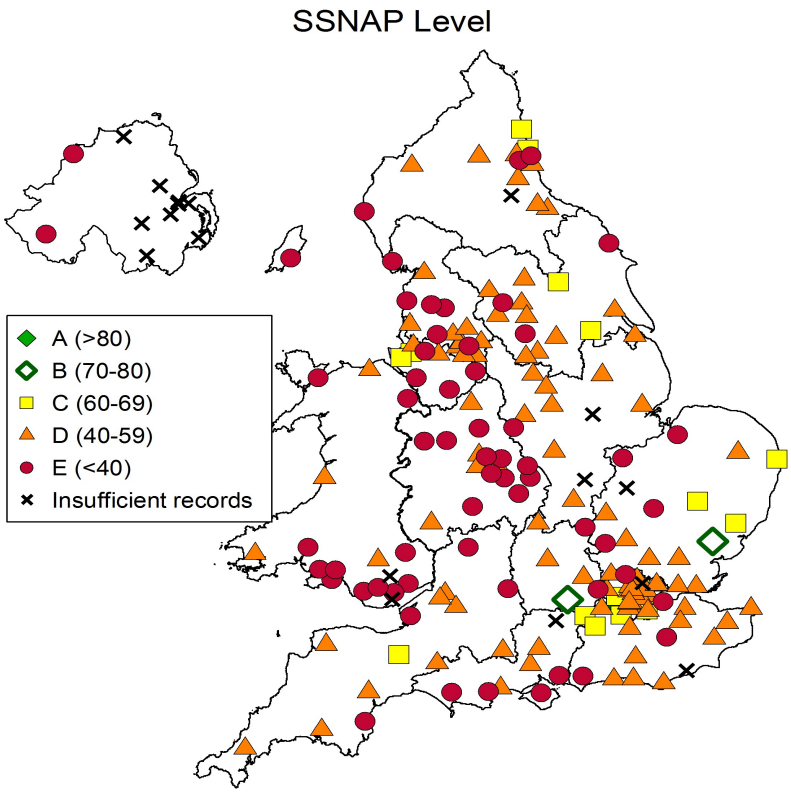
Figure 3.1: This graph demonstrates the continued improvements achieved by stroke services between July 2013, when SSNAP (A-E) scoring was introduced, and March 2018.

Further Reading

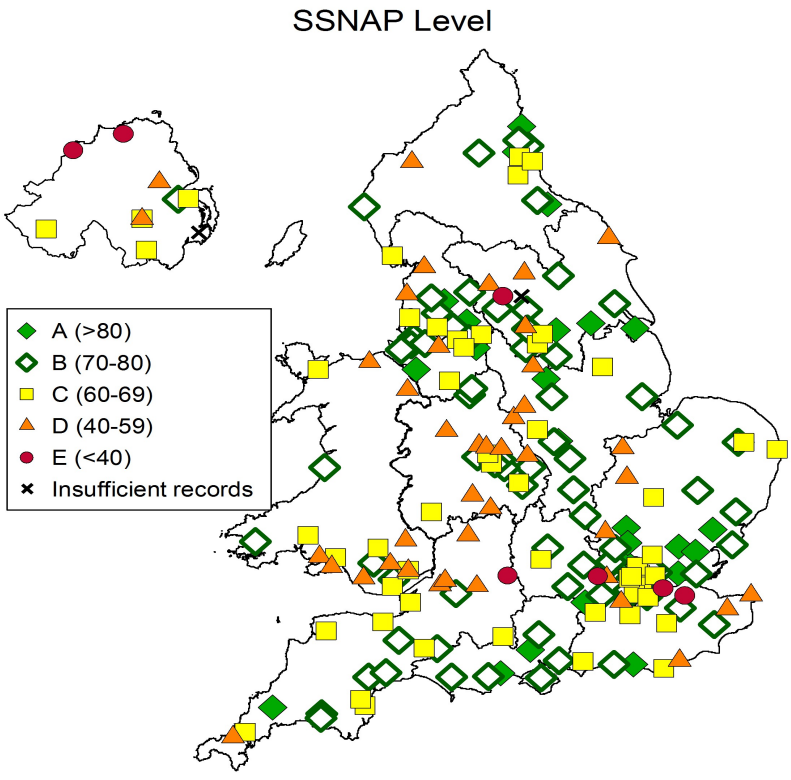
More information on both SSNAP scoring and 'patient centred' and 'team centred' reporting is available in the 'technical annex' and 'further details of report' tabs of the full results portfolio, available on the SSNAP webtool.

SSNAP Scores over time – geographical variation

The two maps below show overall SSNAP score team centred results for all *inpatient teams* in both Jan-Mar 2014 and Dec 2017-Mar 2018. Each symbol represents a team, colour coded by the overall score achieved.



Source: SSNAP Jan-Mar 2014



Source: SSNAP Dec 2017-Mar 2018

Domain 1: Scanning

What should be done?

RCP National Clinical Guideline for Stroke, 5th Edition

2.3.1

E Acute stroke services should have continuous access to brain imaging including CT angiography and should be capable of undertaking immediate brain imaging when clinically indicated.

3.4.1

B Patients with suspected acute stroke should receive brain imaging urgently and at most within 1 hour of arrival at hospital.

Distribution of scores across all routinely admitting teams for Domain 1 (138 teams)

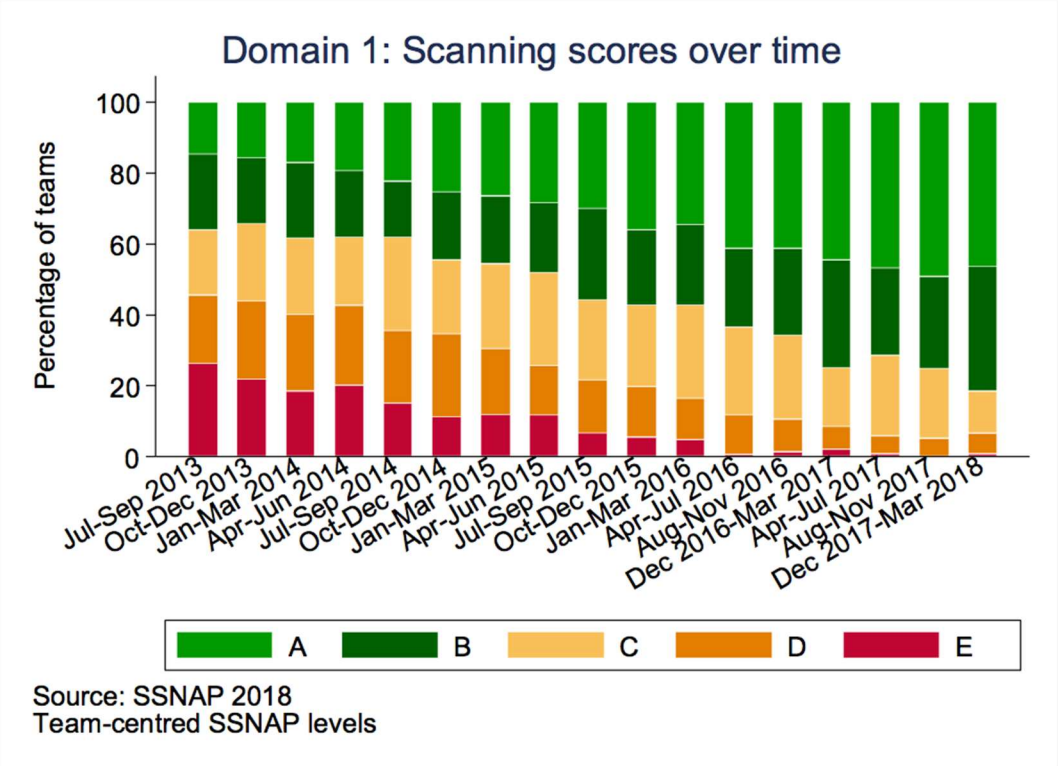
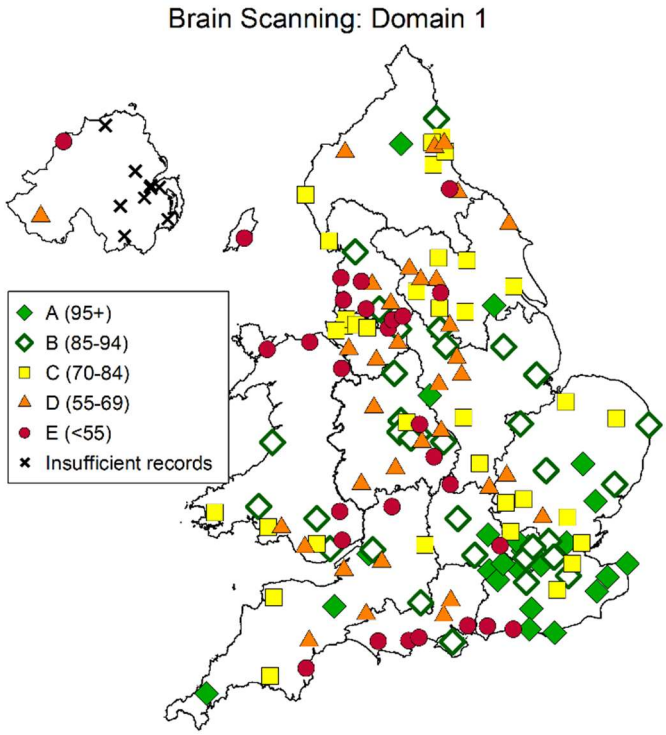


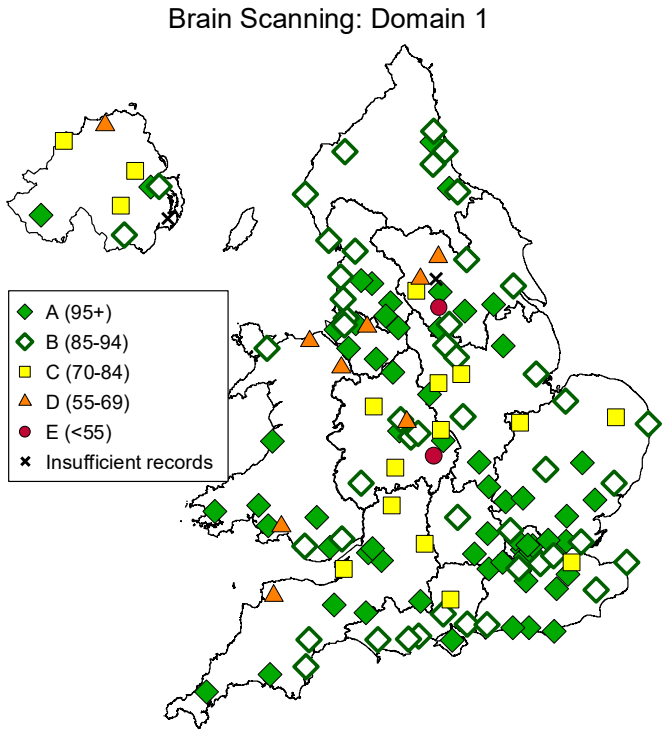
Figure 3.2: This graph shows the distribution of scanning scores over time between July 2013 and March 2018.

Mapping hospital level performance for Domain 1 over time

The two maps below show Domain 1 Stroke Unit team centred results for all *inpatient teams* in both Jan-Mar 2014 and Dec 2017-Mar 2018. Each symbol represents a team, colour coded by the overall score achieved.



Source: SSNAP Jan-Mar 2014 (Team Centred)



Source: SSNAP Dec 2017-Mar 2018 (Team Centred)

Domain 2: Stroke Unit

What should be done?

RCP National Clinical Guideline for Stroke, 5th Edition

2.2.1

B People with an acute neurological presentation suspected to be a stroke should be admitted directly to a hyperacute stroke unit which cares predominantly for stroke patients.

C Acute hospitals receiving medical admissions that include people with suspected stroke should have arrangements to admit them directly to a hyperacute stroke unit on site or at a neighbouring hospital, to monitor and regulate basic physiological functions such as neurological status, blood glucose, oxygenation, and blood pressure.
D Acute hospitals that admit people with stroke should have immediate access to a specialist stroke rehabilitation unit on site or at a neighbouring hospital.

2.3.1

B People with suspected acute stroke (including when occurring in people already in hospital) should be admitted directly to a hyperacute stroke unit and be assessed for emergency stroke treatments by a specialist physician without delay.

2.4.1

A People with stroke should be treated on a specialist stroke unit throughout their hospital stay unless their stroke is not the predominant clinical problem.

K A facility that provides treatment for in-patients with stroke should include:

- a geographically-defined unit;
- a coordinated multi-disciplinary team that meets at least once a week for the exchange of information about in-patients with stroke;
- information, advice and support for people with stroke and their family/carers;
- management protocols for common problems, based upon the best available evidence;
- close links and protocols for the transfer of care with other in-patient stroke services, early supported discharge teams and community services;
- training for healthcare professionals in the specialty of stroke.

NICE Quality Standard

Statement 1: Adults presenting at an accident and emergency (A&E) department with suspected stroke are admitted to a specialist acute stroke unit within 4 hours of arrival. [2010, updated 2016]

Distribution of scores across all inpatient teams for Domain 2 (221 teams)

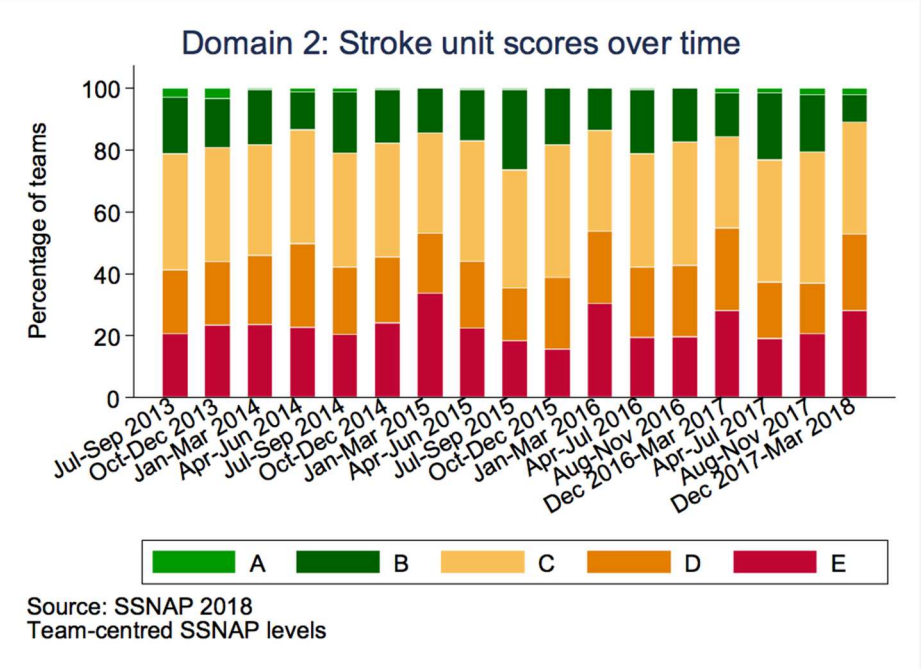
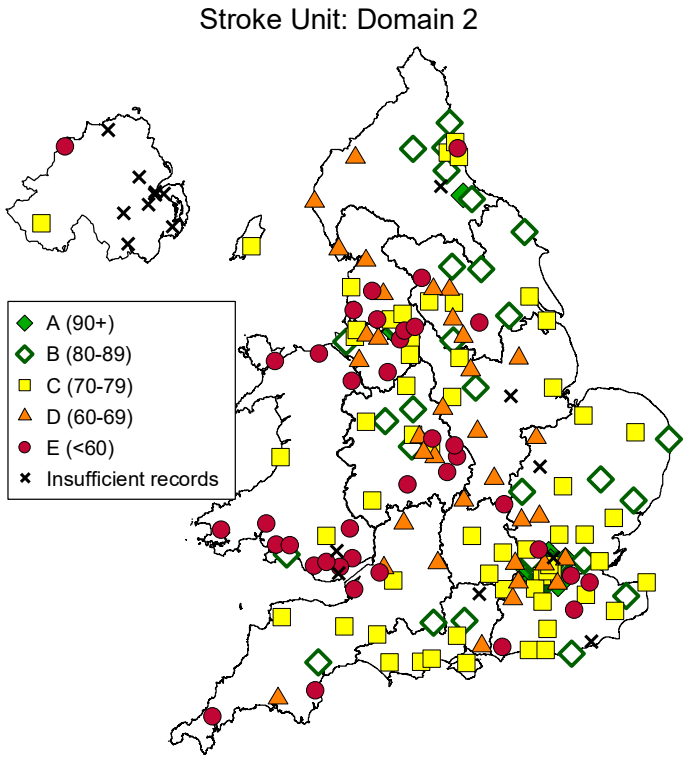


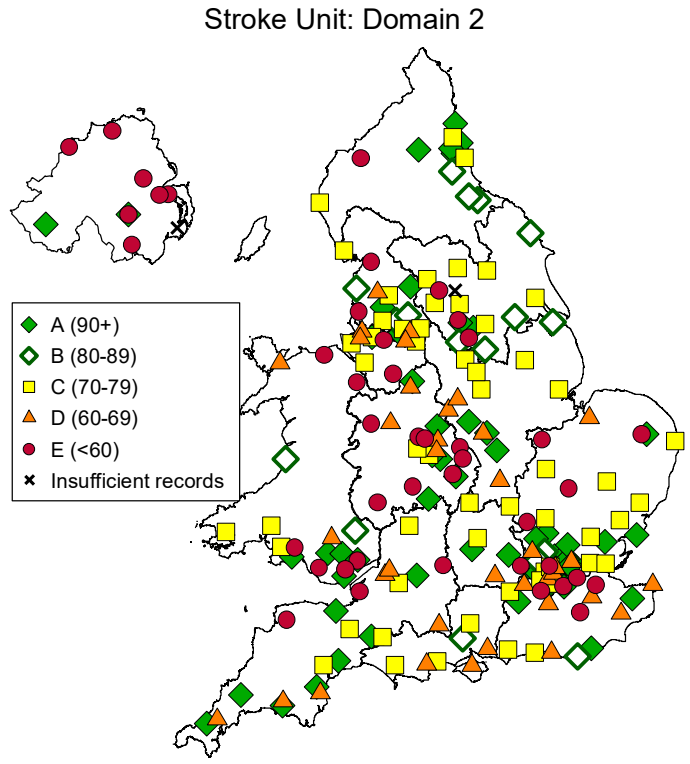
Figure 3.3: This graph shows Stroke Unit domain scores over time from July 2013 to March 2018.

Mapping latest hospital level performance for Domain 2

The two maps below show Domain 2 Stroke Unit team centred results for all *inpatient teams* in both Jan-Mar 2014 and Dec 2017-Mar 2018. Each symbol represents a team, colour coded by the overall score achieved. Teams with insufficient or too few records submitted are highlighted with an X symbol.



Source: SSNAP Jan-Mar 2014 (Team Centred)



Source: SSNAP Dec 2017-Mar 2018 (Team Centred)

Domain 3: Thrombolysis

What should be done?

RCP National Clinical Guideline for Stroke, 5th Edition

3.5.1A Patients with acute ischaemic stroke, regardless of age or stroke severity, in home treatment can be started within 3 hours of known onset should be considered for treatment with alteplase.

- **3.5.1E** Alteplase should only be administered within a well-organised stroke service with: processes throughout the emergency pathway to minimise delays to treatment, to ensure that thrombolysis is administered as soon as possible after stroke onset;
- staff trained in the delivery of thrombolysis and monitoring for post-thrombolysis complications;
- nurse staffing levels equivalent to those required in level 1 or level 2 nursing care with training in acute stroke and thrombolysis;
- immediate access to imaging and re-imaging, and staff appropriately trained to interpret the images;
- protocols in place for the management of post-thrombolysis complications.

Distribution of scores across all routinely admitting teams for Domain 3 (136 teams)

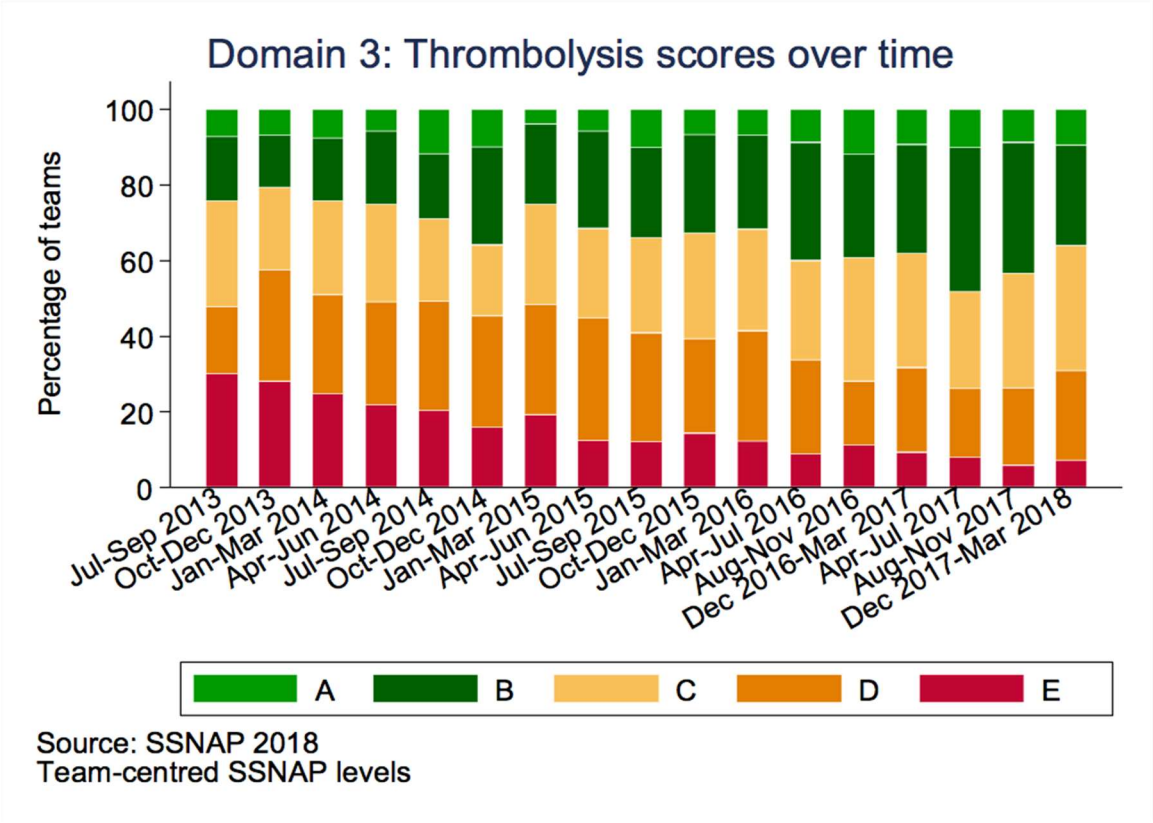
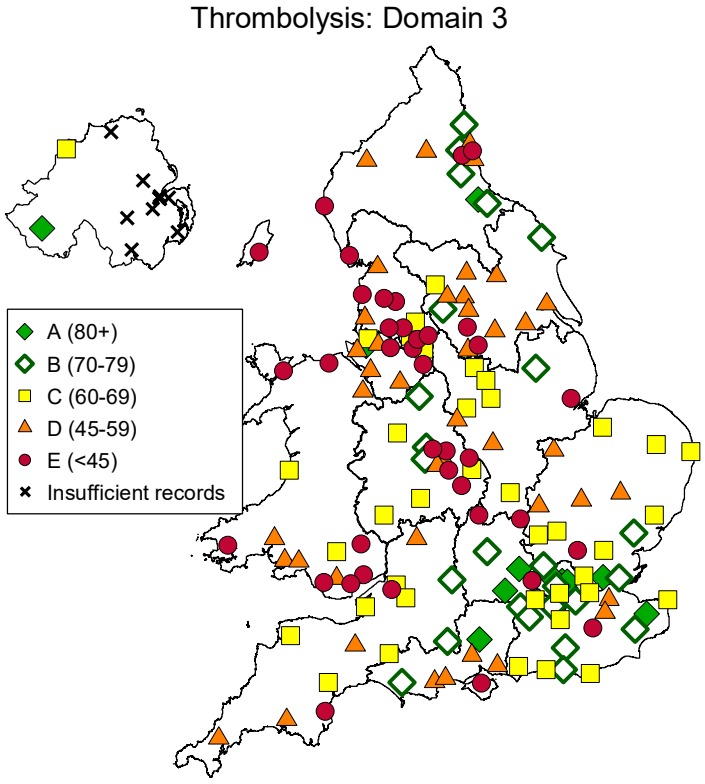


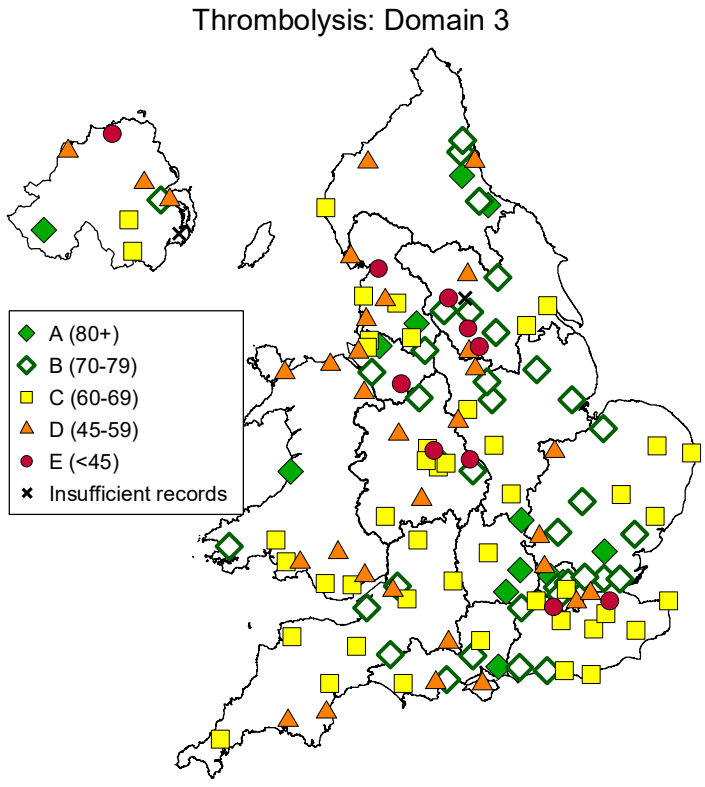
Figure 3.4: This graph shows Thrombolysis scores over time from July 2013 to March 2018

Mapping latest hospital level performance for Domain 3

The two maps below show Domain 3 Stroke Unit team centred results for all *inpatient teams* in both Jan-Mar 2014 and Dec 2017-Mar 2018. Each symbol represents a team, colour coded by the overall score achieved. Teams with insufficient or too few records submitted are highlighted with an X symbol.



Source: SSNAP Jan-Mar 2014 (Team Centred)



Source: SSNAP Dec 2017-Mar 2018 (Team Centred)

Domain 4: Specialist Assessments

What should be done?

RCP National Clinical Guideline for Stroke, 5th Edition

2.3.1B People with suspected acute stroke (including when occurring in people already in hospital) should be admitted directly to a hyperacute stroke unit and be assessed for emergency stroke treatments by a specialist physician without delay.

3.10.1E Patients with acute stroke should have their swallowing screened, using a validated screening tool, by a trained healthcare professional within four hours of arrival at hospital and before being given any oral food, fluid or medication.

Distribution of scores across all routinely admitting teams for Domain 4 (138 teams)

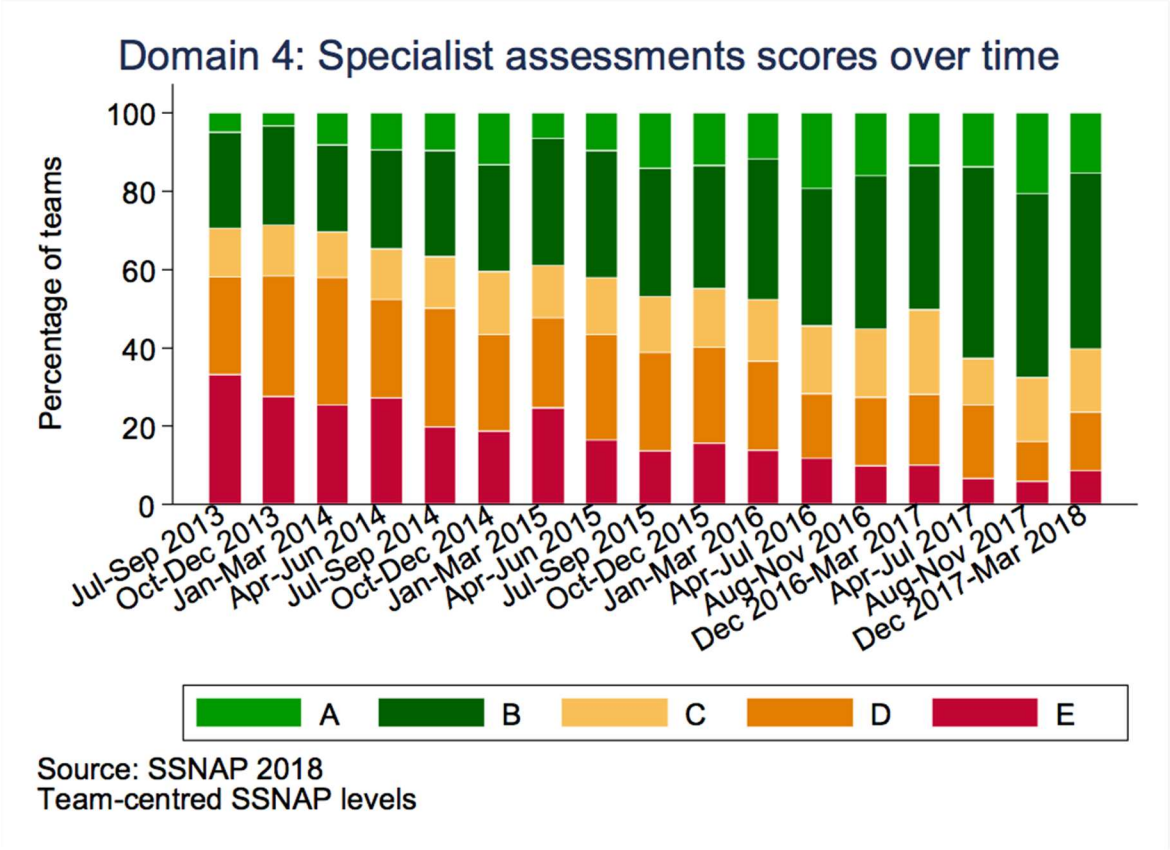
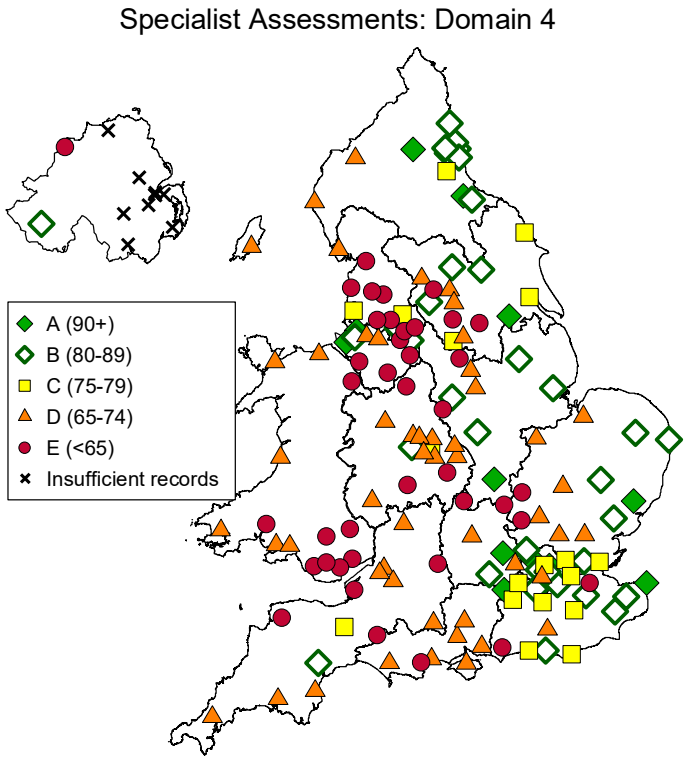


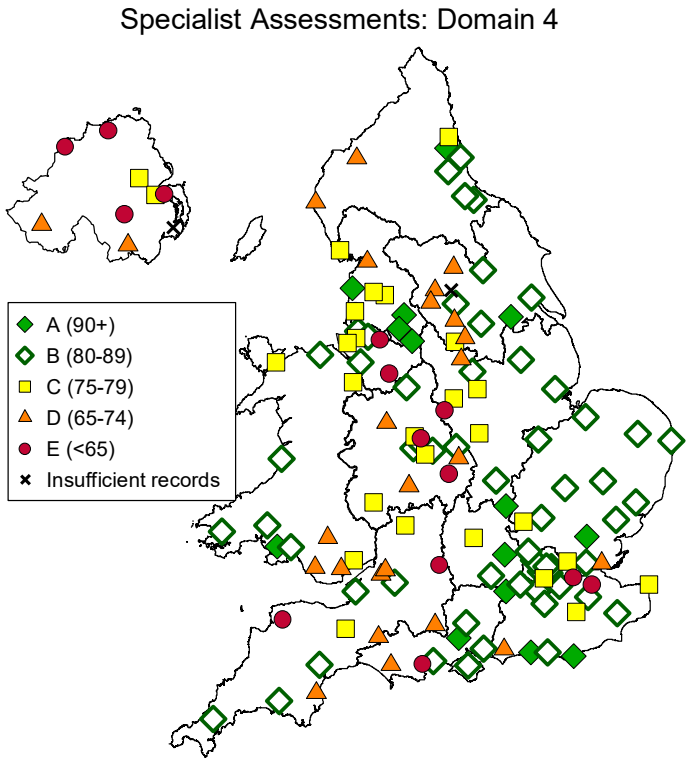
Figure 3.5: This graph demonstrates the continued improvements in specialist assessment scores over time between July 2013 and March 2018.

Mapping latest hospital level performance for Domain 4

The two maps below show Domain 4 Stroke Unit team centred results for all *inpatient teams* in both Jan-Mar 2014 and Dec 2017-Mar 2018. Each symbol represents a team, colour coded by the overall score achieved. Teams with insufficient or too few records submitted are highlighted with an X symbol



Source: SSNAP Jan-Mar 2014 (Team Centred)



Source: SSNAP Dec 2017-Mar 2018 (Team Centred)

Domain 5: Occupational Therapy

What should be done?

RCP National Clinical Guideline for Stroke, 5th Edition

2.11.1A People with stroke should accumulate at least 45 minutes of each appropriate therapy every day, at a frequency that enables them to meet their rehabilitation goals, and for as long as they are willing and capable of participating and showing measurable benefit from treatment.

NICE Quality Standards

Statement 2: Adults having stroke rehabilitation in hospital or in the community are offered at least 45 minutes of each relevant therapy for a minimum of 5 days a week.

[2010, updated 2016]

Distribution of scores across all inpatient teams for Domain 5 (220 teams)

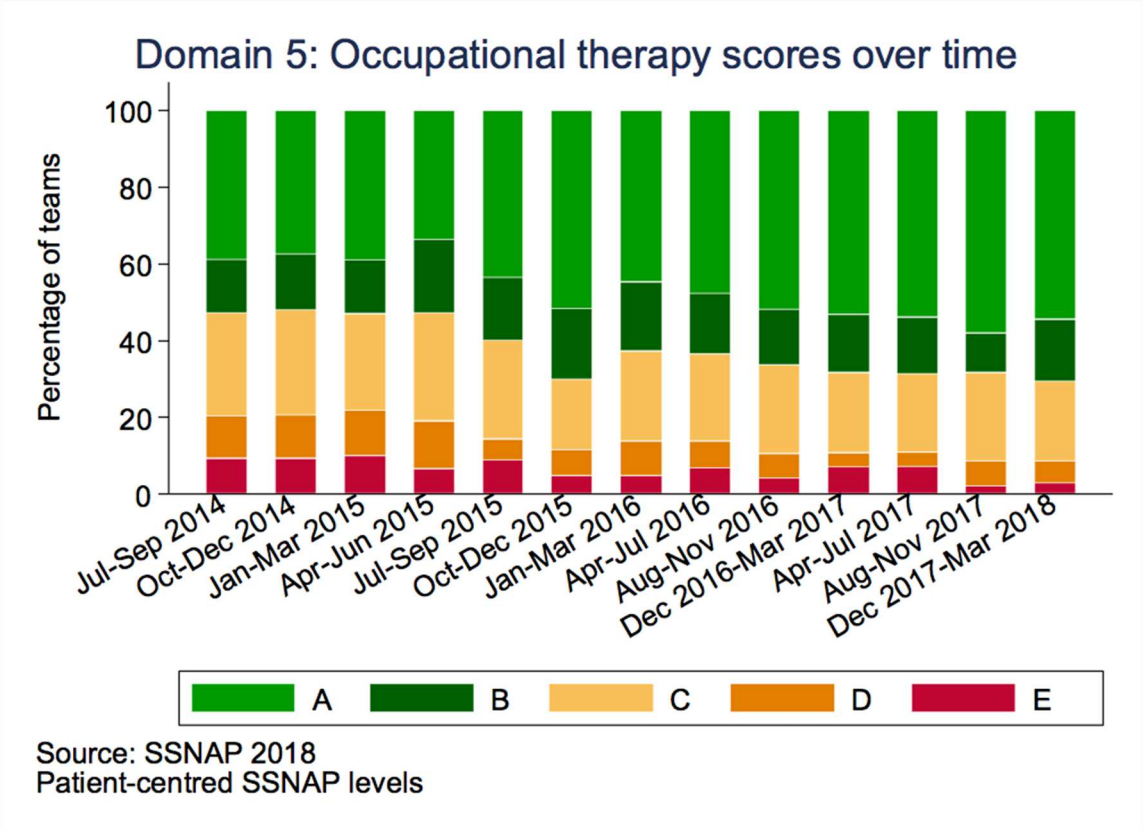
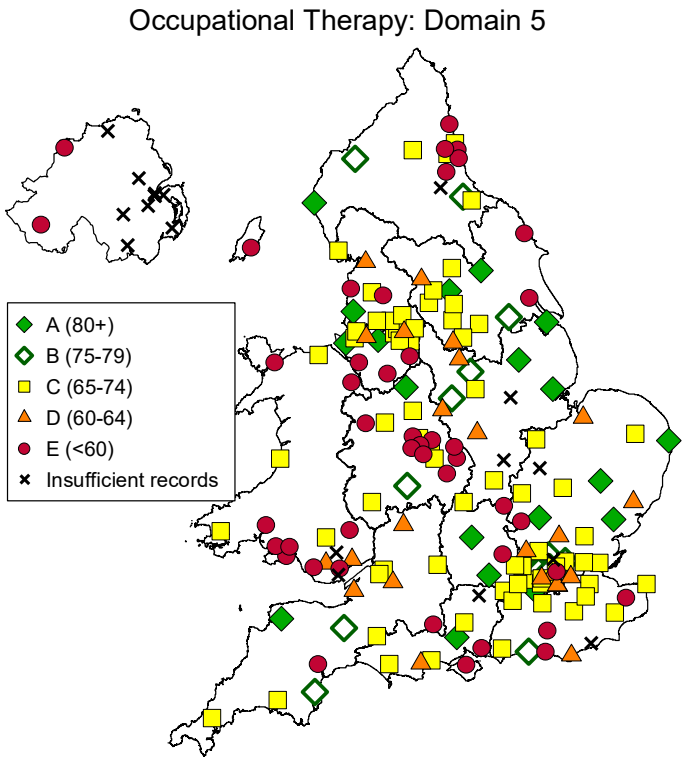


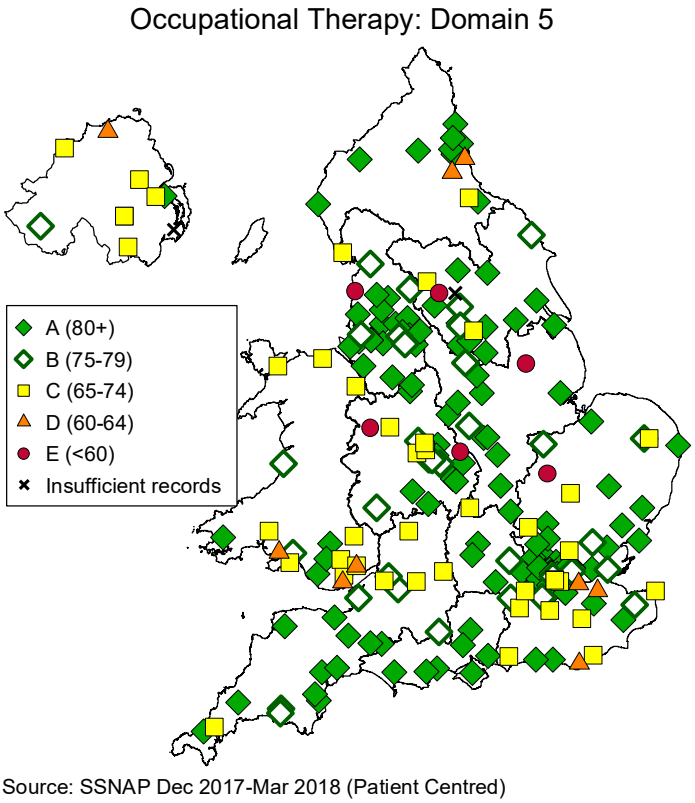
Figure 3.6: This graph shows changes in Occupational therapy scores over time between July 2014 and March 2018.

Mapping latest hospital level performance for Domain 5

The two maps below show Domain 5 Stroke Unit team centred results for all *inpatient teams* in both Jan-Mar 2014 and Dec 2017-Mar 2018. Each symbol represents a team, colour coded by the overall score achieved. Teams with insufficient or too few records submitted are highlighted with an X symbol.



Source: SSNAP Jan-Mar 2014 (Patient Centred)



Source: SSNAP Dec 2017-Mar 2018 (Patient Centred)

Domain 6: Physiotherapy

What should be done?

RCP National Clinical Guideline for Stroke, 5th Edition

2.11.1A People with stroke should accumulate at least 45 minutes of each appropriate therapy every day, at a frequency that enables them to meet their rehabilitation goals, and for as long as they are willing and capable of participating and showing measurable benefit from treatment.

NICE Quality Standards

Statement 2: Adults having stroke rehabilitation in hospital or in the community are offered at least 45 minutes of each relevant therapy for a minimum of 5 days a week.

[2010, updated 2016]

Distribution of scores across all inpatient teams for Domain 6 (220 teams)

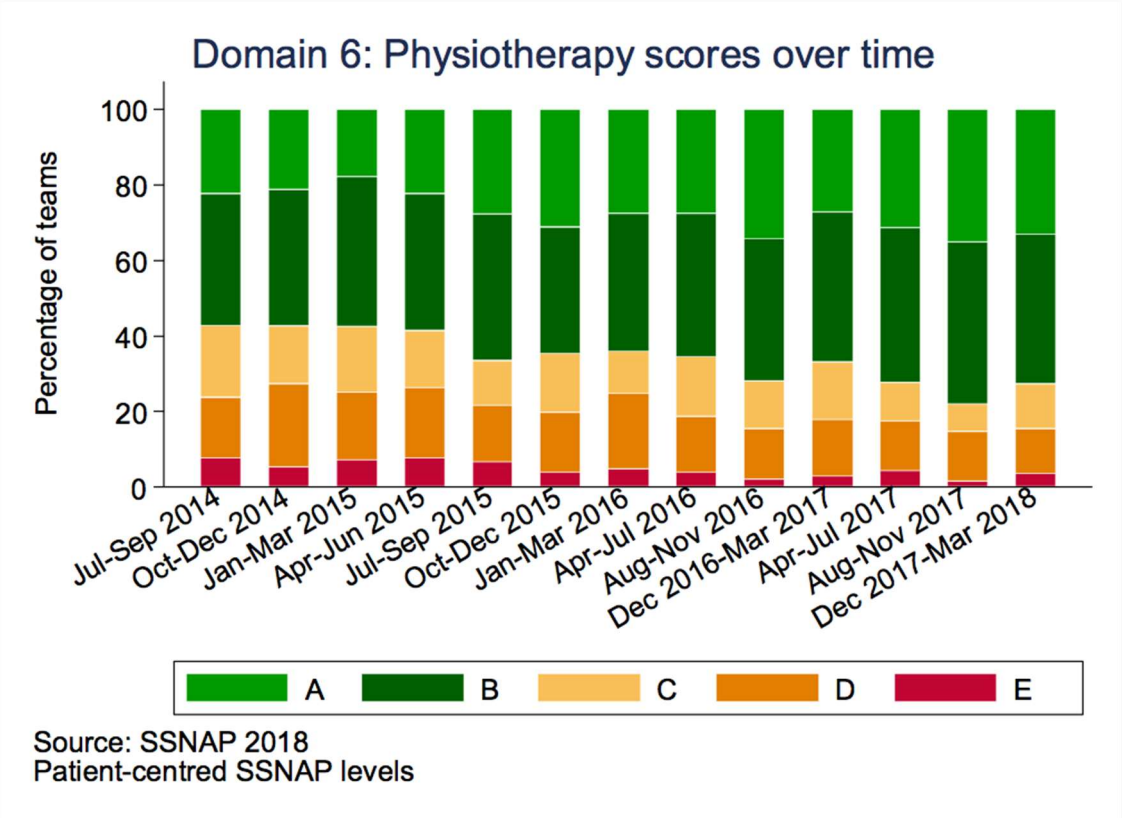
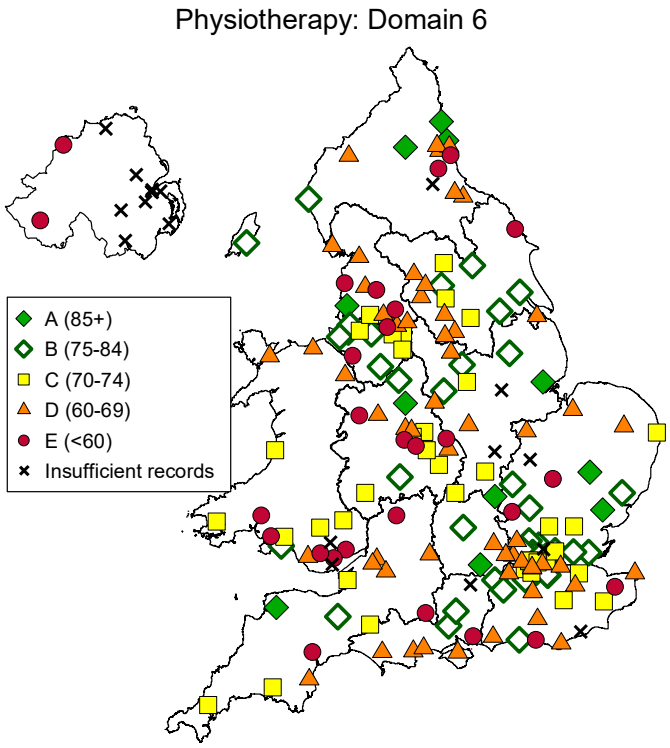


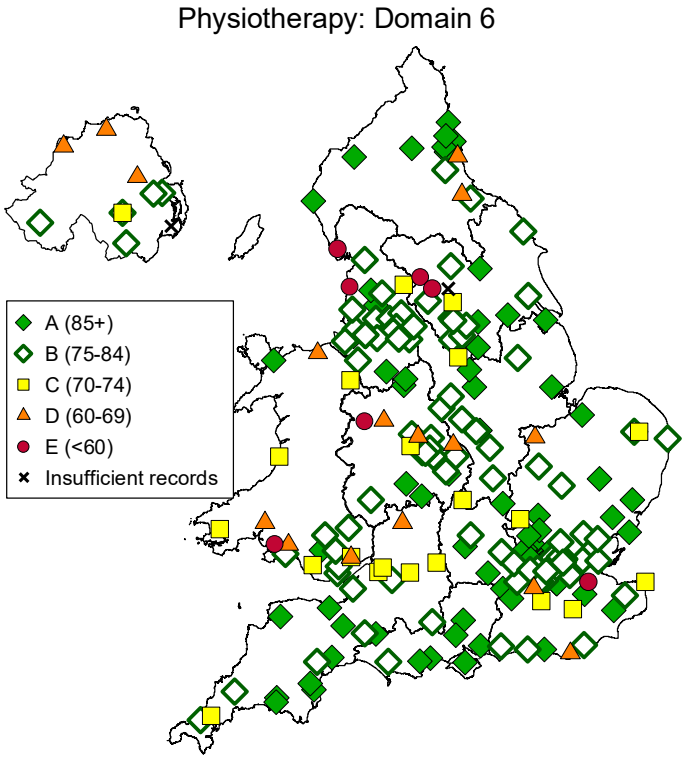
Figure3.7: This graph shows changes in Physiotherapy scores over time between July 2014 and March 2018.

Mapping latest hospital level performance for Domain 6

The two maps below show Domain 6 Stroke Unit team centred results for all *inpatient teams* in both Jan-Mar 2014 and Dec 2017-Mar 2018. Each symbol represents a team, colour coded by the overall score achieved. Teams with insufficient or too few records submitted are highlighted with an X symbol.



Source: SSNAP Jan-Mar 2014 (Patient Centred)



Source: SSNAP Dec 2017-Mar 2018 (Patient Centred)

Domain 7: Speech And Language Therapy

What should be done?

RCP National Clinical Guideline for Stroke, 5th Edition

2.11.1A People with stroke should accumulate at least 45 minutes of each appropriate therapy every day, at a frequency that enables them to meet their rehabilitation goals, and for as long as they are willing and capable of participating and showing measurable benefit from treatment.

NICE Quality Standards

Statement 2: Adults having stroke rehabilitation in hospital or in the community are offered at least 45 minutes of each relevant therapy for a minimum of 5 days a week.

[2010, updated 2016]

Distribution of scores across all inpatient teams for Domain 7 (220 teams)

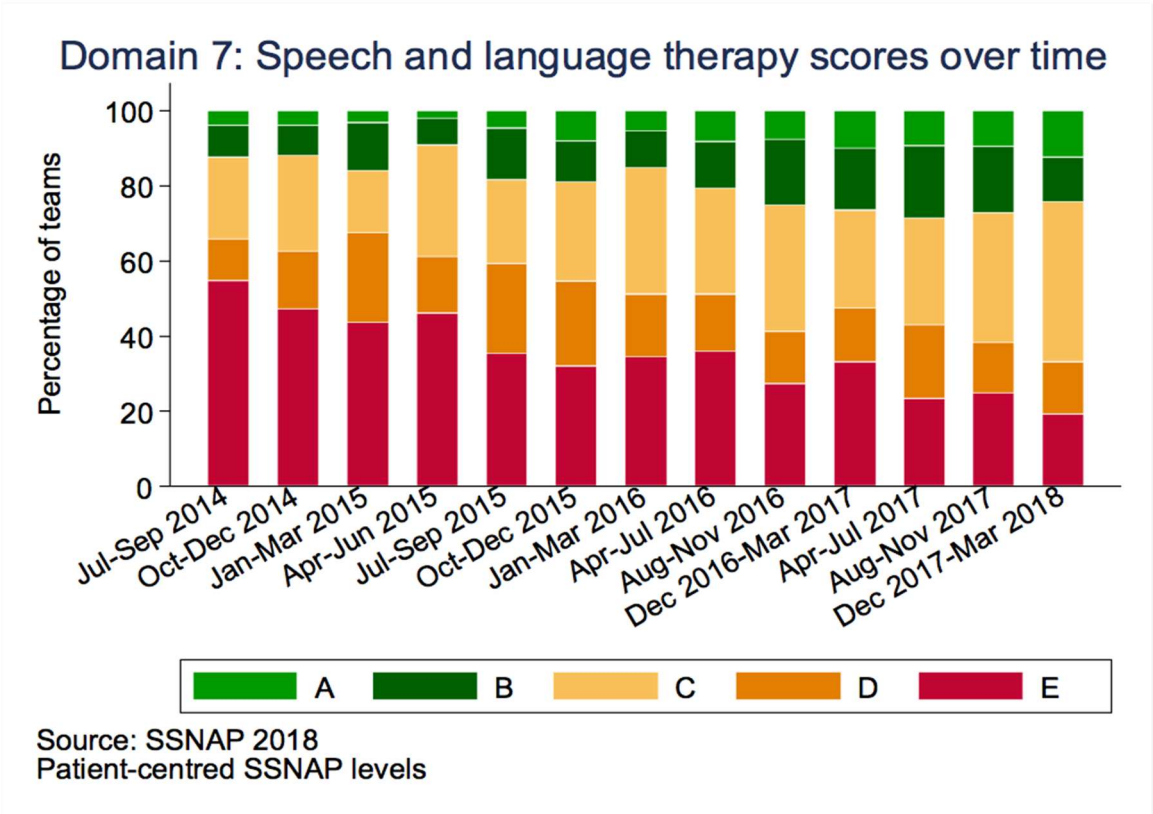
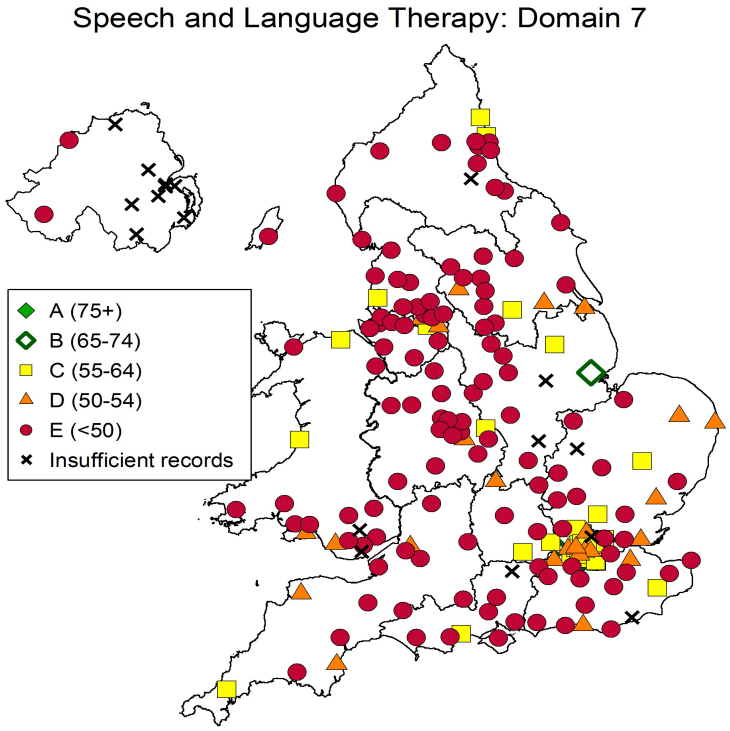


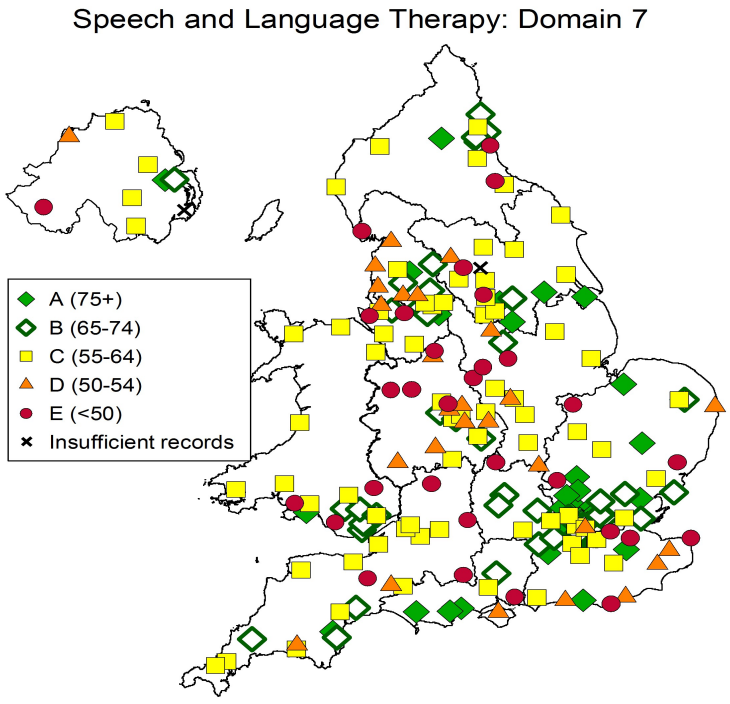
Figure 3.8: This graph indicates changes in Speech and language therapy scores over time between July 2014 and March 2018.

Mapping latest hospital level performance for Domain 7

The two maps below show Domain 7 Stroke Unit team centred results for all *inpatient teams* in both Jan-Mar 2014 and Dec 2017-Mar 2018. Each symbol represents a team, colour coded by the overall score achieved. Teams with insufficient or too few records submitted are highlighted with an X symbol.



Source: SSNAP Jan-Mar 2014 (Patient Centred)



Source: SSNAP Dec 2017-Mar 2018 (Patient Centred)

Domain 8: Multidisciplinary Team Working

What should be done?

RCP National Clinical Guideline for Stroke, 5th Edition

4.4.1.1A People with communication problems after stroke should be assessed by a speech and language therapist to diagnose the problem and to explain the nature and implications to the person, their family/carers and the multidisciplinary team. Reassessment in the first four months should only be undertaken if the results will affect decision making or are required for mental capacity assessment.

Distribution of scores across all routinely admitting teams for Domain 8 (138 teams)

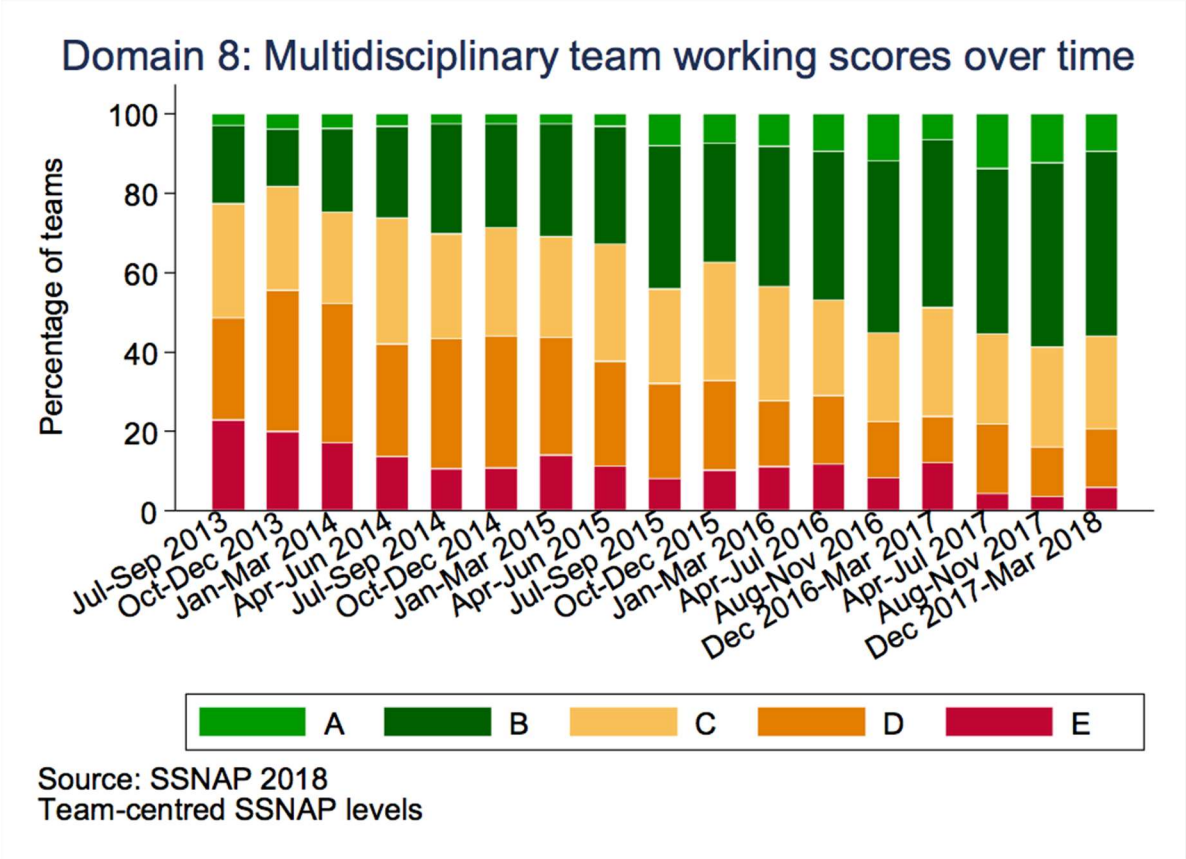
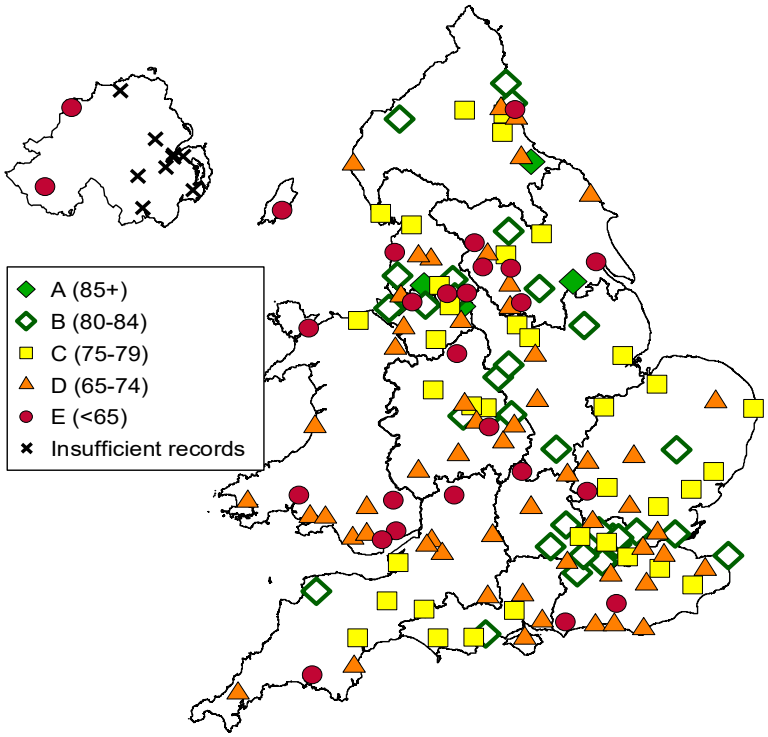


Figure 3.9: This graph shows variation in Multidisciplinary team working scores over time from July 2013 to March 2018.

Mapping latest hospital level performance for Domain 8

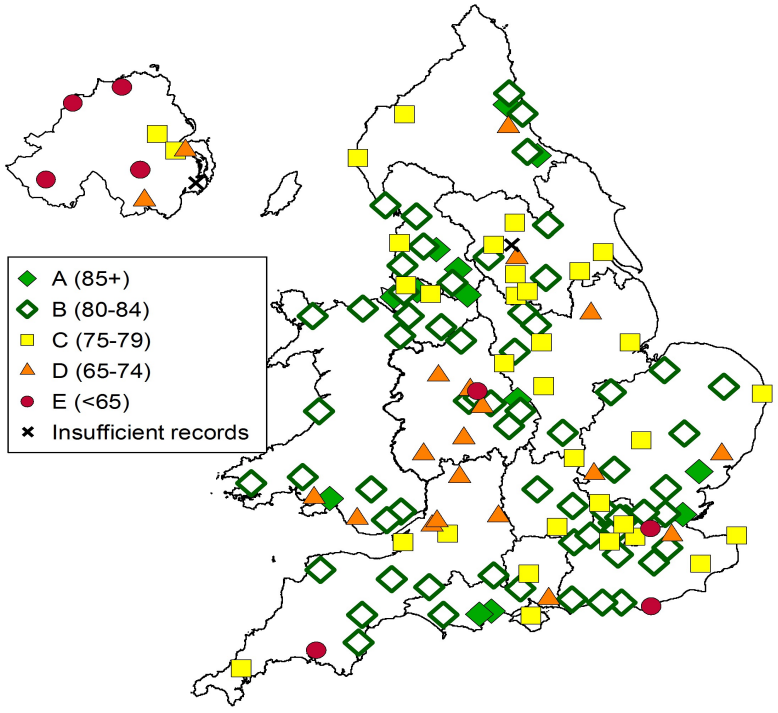
The two maps below show Domain 8 Stroke Unit team centred results for all *inpatient teams* in both Jan-Mar 2014 and Dec 2017-Mar 2018. Each symbol represents a team, colour coded by the overall score achieved.

Multidisciplinary Team Work: Domain 8



Source: SSNAP Jan-Mar 2014 (Team Centred)

Multidisciplinary Team Work: Domain 8



Source: SSNAP Dec 2017-Mar 2018 (Team Centred)

Domain 9: Standards By Discharge

What should be done?

RCP National Clinical Guideline for Stroke, 5th Edition

2.12.1F Services for people with stroke should include specialist clinical neuropsychology/clinical psychology provision for severe or persistent symptoms of emotional disturbance, mood or cognition.

4.7.1F Patients with stroke who are unable to maintain adequate nutrition and fluids orally should be:

- referred to a dietitian for specialist nutritional assessment, advice and monitoring;
- considered for nasogastric tube feeding within 24 hours of admission;
- assessed for a nasal bridle if the nasogastric tube needs frequent replacement, using locally agreed protocols;
- assessed for gastrostomy if they are unable to tolerate a nasogastric tube with nasal bridle.

Distribution of scores across all inpatient teams for Domain 9 (219 teams)

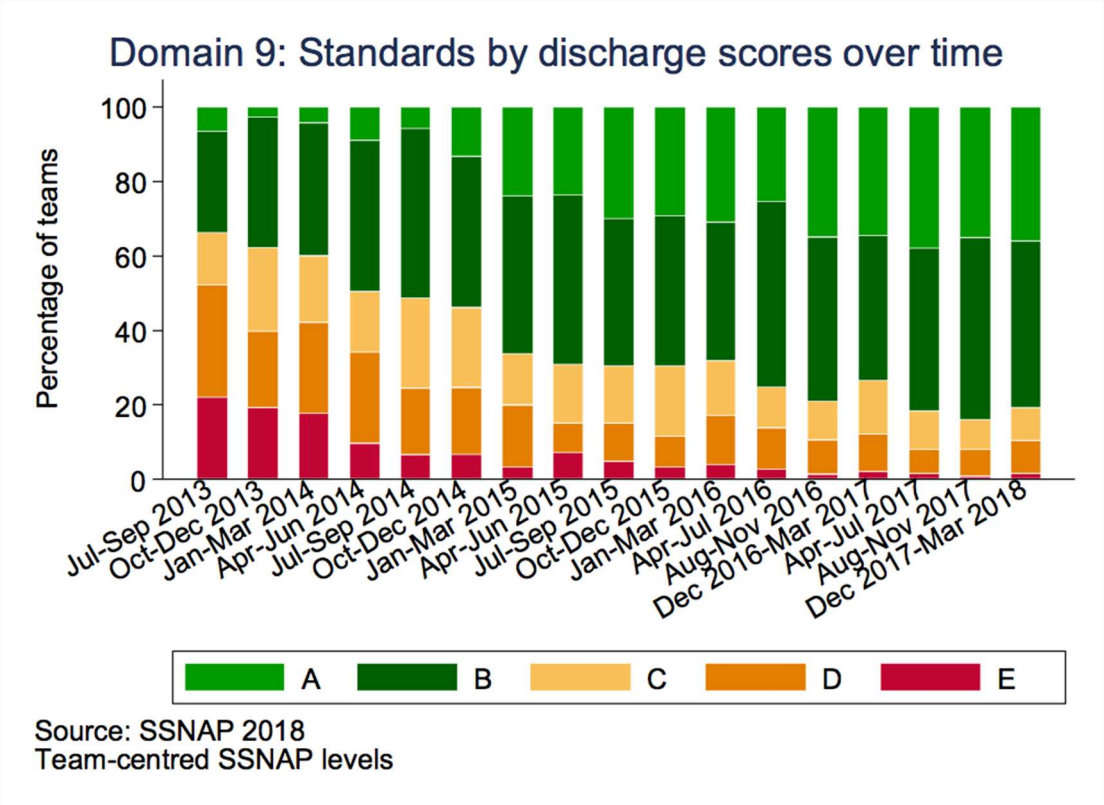
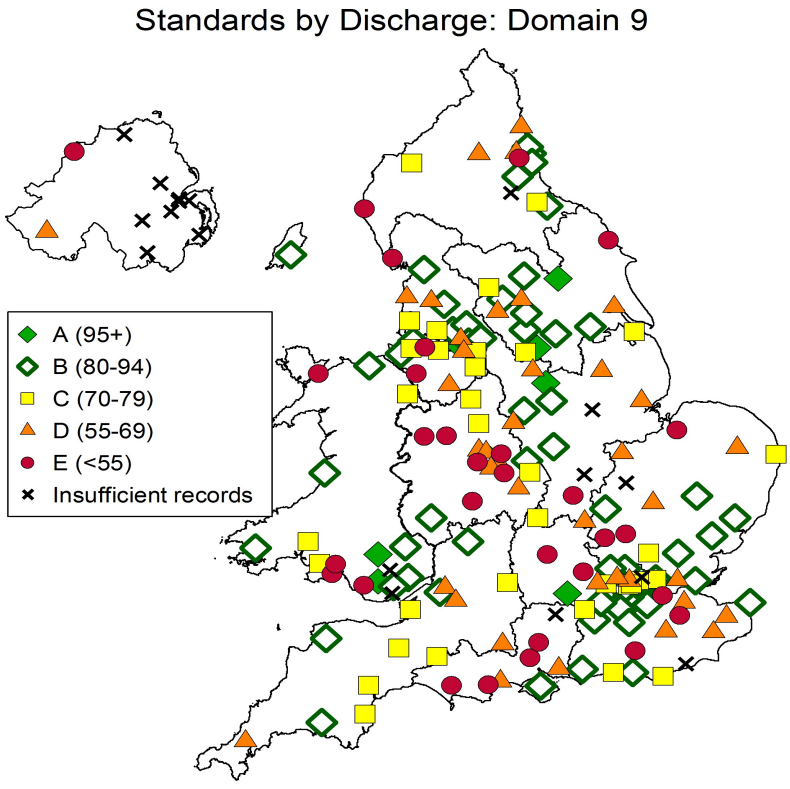


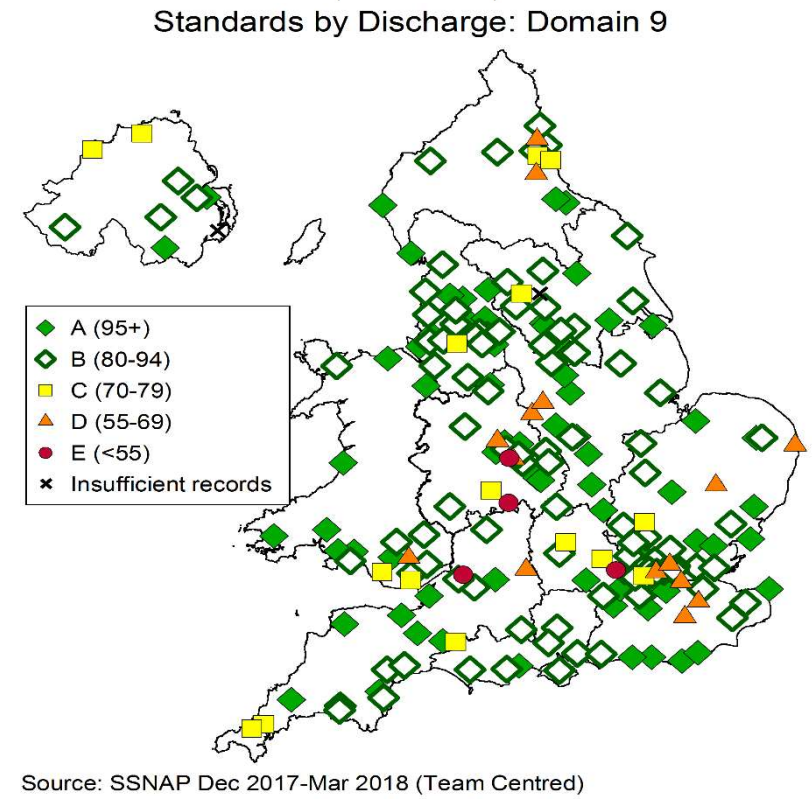
Figure 3.10: This graph indicates changes in Standards by discharge scores over time between July 2013 and March 2018.

Mapping latest hospital level performance for Domain 9

The two maps below show Domain 9 Stroke Unit team centred results for all *inpatient teams* in both Jan-Mar 2014 and Dec 2017-Mar 2018. Each symbol represents a team, colour coded by the overall score achieved. Teams with insufficient or too few records submitted are highlighted with an X symbol.



Source: SSNAP Jan-Mar 2014 (Team Centred)



Source: SSNAP Dec 2017-Mar 2018 (Team Centred)

Domain 10: Discharge Processes

What should be done?

RCP National Clinical Guideline for Stroke, 5th Edition

2.7.1A Hospital in-patients with stroke who have mild to moderate disability should be offered early supported discharge, with treatment at home beginning within 24 hours of discharge

NICE Quality Standards

Statement 4: Adults who have had a stroke are offered early supported discharge if the core multidisciplinary stroke team assess that it is suitable for them.

[2016]

Distribution of scores across all inpatient teams for Domain 10 (218 teams)

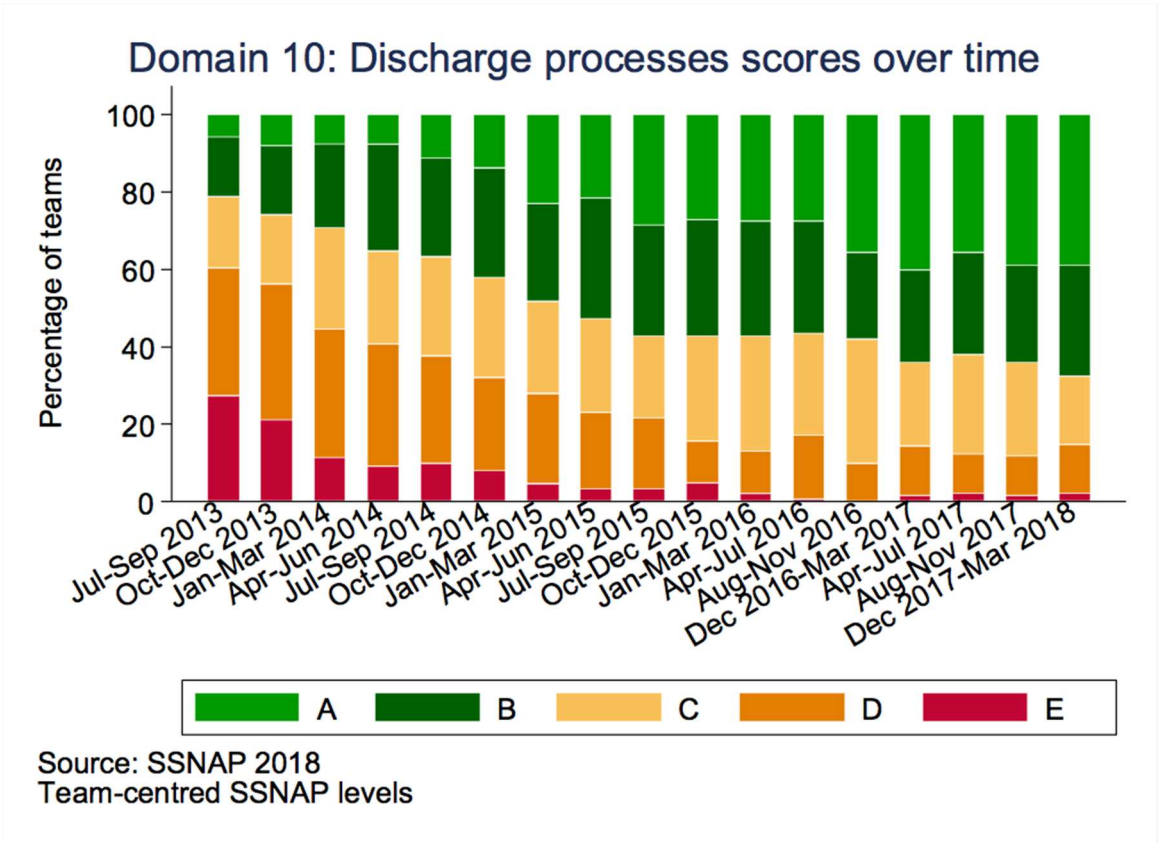
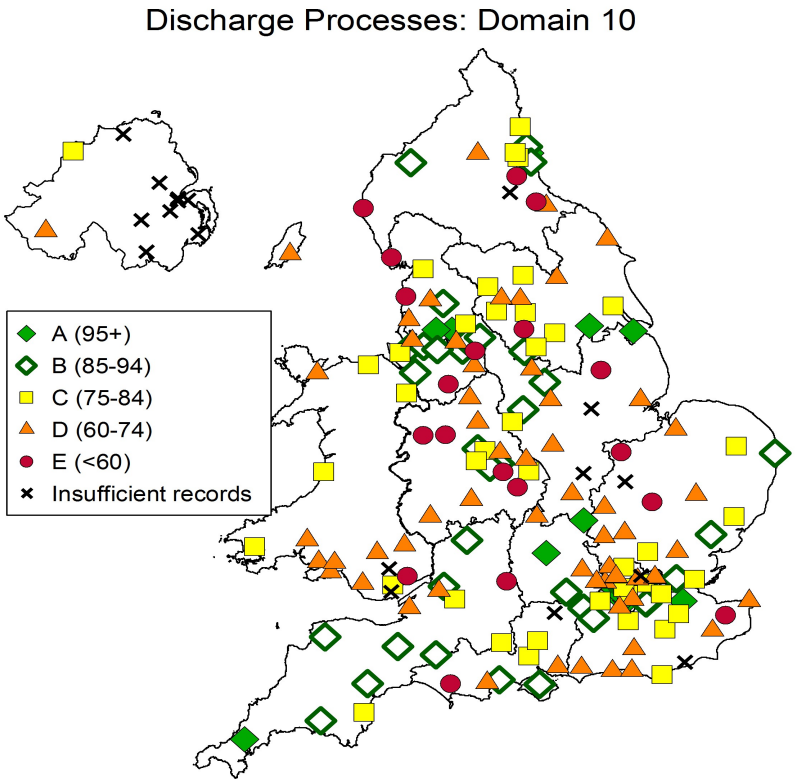


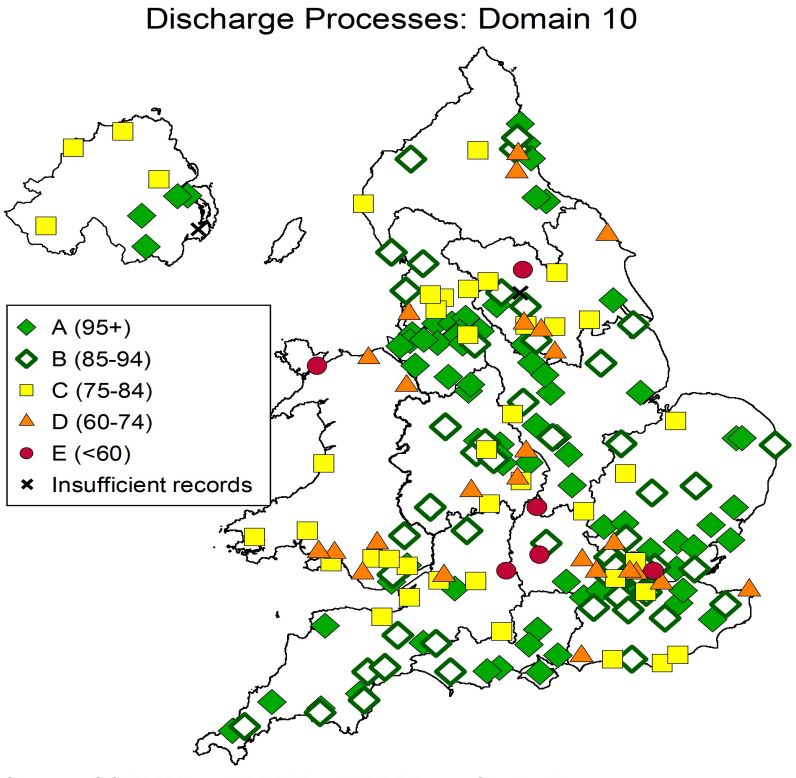
Figure 3.11: This graph displays variation in Discharge processes scores over time between July 2013 and March 2018.

Mapping latest hospital level performance for Domain 10

The two maps below show Domain 10 Stroke Unit team centred results for all *inpatient teams* in both Jan-Mar 2014 and Dec 2017-Mar 2018. Each symbol represents a team, colour coded by the overall score achieved. Teams with insufficient or too few records submitted are highlighted with an X symbol.



Source: SSNAP Jan-Mar 2014 (Team Centred)



Source: SSNAP Dec 2017-Mar 2018 (Team Centred)

Section 4: Looking Forward

We are extremely proud of what we have achieved over the past five years. It has been heartening to see the sustained improvements in stroke care as evidenced in SSNAP reports. We hope to continue building on this success in the years ahead and have a number of exciting projects currently in development which are outlined below.

SSNAP/Ambulance linkage project

From Spring 2019 the stroke pathway collected and reported on by SSNAP will be extended to include prehospital care processes. In collaboration with NHS England, 11 Ambulance Trusts in England will enter key data onto SSNAP, including time of call for help, time of ambulance arrival at patient location and travel time to hospital complementing the current dataset.

By reporting on call-to-care process measures, such as 999 call time to arrival at stroke unit and call-to-hospital door times for different patients characteristics, ambulance services will be able to identify areas for Quality Improvement (QI), similar to how existing SSNAP participants now use their data. This may include identifying reasons why patients arriving within thrombolysis or thrombectomy time windows were are not given these treatments. This is an exciting new project for SSNAP which will create a much richer dataset and offer many opportunities for training and QI. We expect that by reporting system-wide indicators further collaboration across all providers involved in stroke care will be encouraged.

Acute Organisational Audit 2019

As part of a joint initiative with the Getting It Right First Time (GIRFT) programme for stroke in England, an expanded acute organisational audit will be running in 2019. This audit provides a snapshot of the quality of the stroke service organisation in acute settings, including availability of 24/7 acute interventions, number of stroke beds available and nurse and consultant staffing levels, among other measures. Many of the questions posed will be consistent with those included in the 2016 which will enable services to compare results over time. However there will be a number of new questions added for this latest round as agreed with GIRFT. We will report the English results to GIRFT but are confident that they will be useful additions for Wales and Northern Ireland. These additional questions will be in line with wider NHS priorities for stroke, including the 2018 National Stroke Plan for England. More information on timelines for the audit will be provided in due course.

The last three rounds were completed in 2012, 2014 and 2016, with 100% participation from sites in England, Wales and Northern Ireland. Results for previous rounds are available here https://www.strokeaudit.org/results/Organisational.aspx

Improving data collection processes

a) Patients receiving thrombectomy

We appreciate that there are rare occasions when it is not possible to fully reflect the care pathway followed by stroke patients on SSNAP, particularly for those patients on the thrombectomy care pathway. We are aware of these limitations and working to find an acceptable solution which will enable services to better capture these patients. Though this has proved a challenging project to date we are confident we are now making good progress developing the technical, analytical and system level updates required. Again we may require some support from clinical teams in piloting these changes as they are developed.

b) Patients receiving post-acute care

Similarly there are times when it is not possible to capture complete post-acute data in a timely way on SSNAP, limiting the impact and robustness of the data available to community providers. The SSNAP team is currently reviewing data entry and reporting processes for community stroke services and recently conducted a user survey to ascertain the most common issues relating to data submission and subsequent data use faced by these providers. We will endeavour to address these concerns as fully as possibly in the year ahead to ensure that community stroke data and reports are as conducive to quality improvement as those available for acute care providers. Further stakeholder engagement regarding these developments will continue throughout 2019.

Using cutting edge software for SSNAP analysis and reporting

The SSNAP team are reviewing current analysis and reporting processes and investigating the use of increasingly sophisticated statistical software to present audit results. Transitioning from fixed point to dynamic methods for analysis could enable: real time reporting capabilities outside clinical reporting cycles; bespoke report generation at selected time points; increasingly interactive outputs being produced; and even faster, more streamlined dissemination of quarterly reports. We will keep you updated on how this work progresses.

Enhancing results display

We are keen to make our reporting outputs as accessible and easy to locate as possible. Last year we redesigned our hosting website, providing more succinct information and resources to site visitors.

Next year we will continue this work as part of our engagement strategy, focusing primarily on the results area on SSNAP. Given there have now been more than 20 different time periods reported on (not including 5 annual reports) and many thousands of reports available online it is becoming increasingly important that each output type for every time period can be quickly found. We will plan to seek feedback from users and stakeholders on how to achieve this in the coming months.

SSNAP research

The wealth of robust data available through SSNAP is remarkable and we are continually seeking to maximise its use to aid essential research into stroke care. The routine, longitudinal data available through SSNAP has enabled important studies to be undertaken which would not have been possible using other research methods such as clinical trials for logistical, moral or financial reasons. Many of the associations that have been identified from SSNAP research thus far need to be investigated further, and there is still an abundance of important topics yet to be addressed. Examples of research publications from 2018 include: “Socioeconomic disparities in first stroke incidence, quality of care, and survival” by Dr Ben Bray which reported wide socioeconomic disparities in first stroke hospitalisation and to a lesser extent in quality of health care; “Associations Between 30-Day Mortality, Specialist Nursing, and Daily Physician Ward Rounds in a National Stroke Registry” by Lizz Paley which demonstrated that nurses with specialist stroke skills are essential for the delivery of good quality stroke care and; “Equity of access to acute care processes for men and women” by George Dunn which suggests that women were less likely to receive thrombolysis therapy, have considerably longer door-to-needle times and receive less physiotherapy assessments within 72hrs. We encourage readers to visit the research section of the SSNAP website to read these publications and many more. Please see the ‘further reading’ section below for the relevant web links.

We plan to continue building on SSNAP as a powerful research platform in the years ahead and take advantage of the opportunities available to us by being based at a world leading academic institution like King’s College London. If you are interested in conducting your own research project using SSNAP data follow the link listed below for information on how to apply.

Further Reading

Resource: SSNAP research platform containing publications, posters and presentations is available here: www.strokeaudit.org/research

Resource: For information on how to apply for SSNAP please go to: https://www.strokeaudit.org/Research/Data-requests.aspx

Research paper: 20 years of researching stroke through audit (Rudd AG 2018) https://www.ncbi.nlm.nih.gov/pubmed/29932011

Research posters: For poster on SSNAP methodology go to: https://www.strokeaudit.org/Research/Posters/Methodology.aspx

Section 5: Conclusion

The purpose of collecting and reporting audit data is to support clinicians, healthcare planners and commissioners to identify where improvements are needed and where additional support needs to be given. It is not intended to be used negatively to criticise and shame. It is also vital that patients and the public who pay for the services and are dependent on them know what is provided. SSNAP continues to provide vital data describing how stroke care is delivered in England, Wales and Northern Ireland.

It has shown that over the last five years there have been major improvements in many areas of care but there are a few where progress has not been made. Prime amongst these is getting patients onto a stroke unit within four hours of arrival at the hospital. Without the data, issues such as this could easily be overlooked. It must be an aspect of the pathway that we focus on in the coming year.

The future of stroke medicine is exciting and the next year will be an important one for SSNAP. New treatments such as thrombectomy will transform the lives of many and the NHS are committed to ensuring that it is delivered to as many patients as possible as quickly as possible but in a safe way. The NHS has recognised how vital it is that stroke care is of high quality and has the ambition that England will be at the forefront of delivering integrated stroke care.

Additional data are already being collected on prehospital care which will provide information which should enable improvements to be made in measures such as call to treatment time. The publication of the NHS long term plan with a focus on development of stroke networks and integrated care, increasing use of technology and measures to eradicate inequalities in healthcare will require additional data collection particularly in the phase of care after discharge from hospital.

Glossary

Anticoagulant

A type of drug that reduces blood clotting; examples include warfarin.

Aspiration pneumonia

An infection in the lungs partly caused by stomach contents inhaled into the lungs, usually because of dysphagia.

Atrial fibrillation (AF)

An abnormal heart beat which can result in the formation of blood clots.

Blood pressure

The pressure of circulating blood on the walls of blood vessels.

Carer

A person (commonly the patient's spouse, a close relative or friend) who provides on-going, unpaid support and personal care at home.

Clinician

A professional delivering clinical care who has direct contact with patients rather than being involved solely in research and teaching.

Commissioners

Funding bodies of NHS services.

Continence plan

A plan to help a patient increase their control over bowel and bladder function.

CT scan

Computed tomography scan. Detailed images of internal organs are obtained by this type of sophisticated X-ray device.

Deep vein thrombosis (DVT)

A blood clot that develops in the large veins usually in the leg.

Dietitian

An expert in dietetics; that is, human nutrition and the regulation of diet.

Door-to-needle time

Term that refers to the time from arrival at hospital or onset of stroke (for inpatient strokes) to the time a patient is thrombolysed.

Dysphagia

Difficulty swallowing.

Early supported discharge (ESD)

A system in which rehabilitation is provided to stroke patients at home instead of at hospital at the same intensity as inpatient care.

Haemorrhagic stroke

A type of stroke caused when a blood vessel bursts, resulting in bleeding into the brain.

Incidence

The number of new events (ie stroke) that occurs in a given time period.

Intermittent pneumatic compression (IPC) device

A medical device designed to improve venous circulation in the limbs of patients who are risk of deep vein thrombosis (DVT) or pulmonary embolism (PE) after stroke.

Ischaemic stroke

A type of stroke that happens when a clot blocks an artery that carries blood to the brain.

Malnutrition

A condition that develops when the body does not get the right amount of the vitamins, minerals, and other nutrients it needs.

Median

The median is the middle point of a data set; half of the values are below this point, and half are above this point.

Mortality rate

The number of deaths in a given area or period, or from a particular cause.

Multidisciplinary team

Refers to several types of health professionals working together (physiotherapists, occupational therapists, speech and language therapists, nurses and doctors).

National Institutes of Health Stroke Scale (NIHSS)

A validated international tool used by healthcare professionals to objectively quantify (measure) the impairment caused by stroke.

Organisational Audit

Audit of the service organisation, particularly relevant in stroke audit due to the evidence supporting organised stroke services.

Palliative care

Treating symptoms for end of life care.

Service centralisation

The reorganisation of many stroke services into fewer, highly specialised hospitals that focuses on acute stroke care. For example London and Greater Manchester have a centralised stroke service which means a stroke patient will be taken to a dedicated specialist stroke unit rather than their nearest hospital.

Six month assessment

A review of a stroke patient's progress 6 months after their stroke. This review provides the opportunity to assess whether a patient's needs have been met, to have their progress reviewed and future goals set if further support is needed. By collecting this information about patient outcomes at six months SSNAP can look at:

- Changes in disability compared to discharge

- Where people have been discharged to (usual home or care home or change in place of residence)
- Unmet needs
- Mood and cognition, in particular identification of areas (sometimes called “silent symptoms”) such as fatigue, concentration and mood disturbance which can affect adversely quality of life and return to work and normal activities
- Secondary prevention issues, for example blood pressure management and appropriate management of atrial fibrillation.

Social care costs

Costs associated with the provision of services such as social work, personal care, protection or social support services.

Swallow screening

Swallow screening refers to a process which broadly identifies the safety of patient's swallow ability. This screening process, which maybe performed by any member of the team trained to do this, acts to establish whether the patient requires further formal assessment regarding the patient’s ability to swallow (either fluids or solid foods).

Thrombectomy

Also referred to as intra-arterial therapy. The surgical removal of a blood clot. Thrombectomy is a very new treatment that isn’t available in many parts of the country.

Thrombolysis

Treatment with a drug that breaks down blood clots.

Urinary tract infection (UTI)

An infection of the kidney, ureter, bladder, or urethra.

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