Royal College of Physicians | Sentinel Stroke National Audit Programme (SSNAP)

Sentinel Stroke National Audit Programme (SSNAP)

Acute organisational audit

Acute organisational audit report

November 2016

National Report
England, Wales and Northern Ireland

Prepared by

Royal College of Physicians, Care Quality Improvement Department (CQID) on behalf of the Intercollegiate Stroke Working Party

2016

Document purpose	To disseminate the results of the SSNAP 2016 acute organisational audit of stroke services in acute trusts.
Title	SSNAP 2016 Acute Organisational Audit report
Author	On behalf of the Intercollegiate Stroke Working Party
Publication	November 2016
Target audience	Multi-disciplinary stroke teams, managers, medical directors and trust executives of sites that participated in the 2016 acute organisational audit. Health and social care professionals and healthcare management organisations including commissioners. General public and stroke survivors and their carers.
Description	This is the third acute organisational audit report published under the auspices of the Sentinel Stroke National Audit Programme (SSNAP). It provides continuity from the previous 7 biennial rounds of the National Sentinel Stroke Organisational Audit and the 2012 and 2014 SSNAP acute organisational audits. It publishes national level findings on the organisation of stroke services, including acute care organisation, staffing and pathway at discharge. It reflects the organisation of stroke services as of **1 July 2016**. Trusts can use this report to benchmark their performance against national level findings and compare themselves with national standards. This report is addressed to everyone who is interested in stroke services. It gives a comprehensive picture of current services and the style of the report should allow lay people as well as experts to read it and extract relevant information. In section 2 results focus on key areas of acute stroke service organisation. The report also includes changes over time and country comparisons. A new section, called 'Looking forward', has also been introduced in preparation for the launch of the new RCP National Clinical Guideline for Stroke, 5th edition and the NHS England Urgent and Emergency Care review and includes a sense of what will need to be done to achieve the standards laid out in this report in the coming years. The aspects of service organisation are presented in tables, graphs and maps, along with clinical commentary. A full results portfolio (excel file) which presents all data items by named hospital is available.
Superseded	SSNAP Acute Organisational Audit 2012 and 2014 National Sentinel Stroke Audit – Organisational Report (2010, 2009, 2008, 2007, 2006, 2004 and every 2 years since 1998)
Related publications	National clinical guideline for stroke 4th edition (Royal College of Physicians, 2012). http://www.rcplondon.ac.uk/resources/stroke-guidelines. SSNAP Clinical Audit Quarterly reports: Jan – March 2016 https://www.strokeaudit.org/results/national-results.aspx National clinical guidelines for diagnosis and initial management of acute stroke and transient ischaemic attack (NICE, 2008) www.nice.org.uk/CG68

	NICE Quality Standard for Stroke 2010 qs2 https://www.nice.org.uk/Guidance/QS2 National Stroke Strategy (Department of Health, 2007) http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_081062 (please copy and paste this link into your browser) Department of Health: Progress in improving stroke care (National Audit Office, 2010) http://www.nao.org.uk/publications/0910/stroke.aspx Clinical Commissioning Group (CCG) Outcome Indicator Sets (OIS) https://www.england.nhs.uk/wp-content/uploads/2012/12/ccg-ois-2015-glance.pdf **New guidance/reports published 2016** NHS England Urgent and Emergency Care Review https://www.england.nhs.uk/wp-content/uploads/2015/06/trans-uec.pdf National clinical guideline for stroke 5th edition (Royal College of Physicians, 2016). Published early October 2016 https://www.strokeaudit.org/Guideline/Full-Guideline.aspx SSNAP 3rd annual report: April 2015 – March 2016 (to be published November 2016) https://www.rcplondon.ac.uk/projects/sentinel-stroke-national-audit-programme
Contact	ssnap@rcplondon.ac.uk

Contents

Appendices

Report prepared by

Mrs Rachael Andrews
SSNAP Post-acute Project Manager, Care Quality Improvement Department (CQID), Royal College of Physicians

Ms Lizz Paley BA
Stroke Programme Intelligence Manager – Data, CQID, Royal College of Physicians

Ms Charissa Bhasi MSc
SSNAP Project Co-ordinator, CQID, Royal College of Physicians

Mrs Alex Hoffman MSc
Stroke Programme Manager, CQID, Royal College of Physicians

Mr Mark Kavanagh BA
SSNAP Programme Manager, CQID Royal College of Physicians

Ms Emma Vestesson MSc
SSNAP Data Analyst, CQID, Royal College of Physicians

Professor Anthony Rudd FRCP CBE
Chair of the Intercollegiate Stroke Working Party, Associate Director for Stroke (CQID), Consultant Stroke Physician, Guy's and St Thomas' NHS Foundation Trust, London, Professor of Stroke Medicine, King's College, London

Professor Pippa Tyrrell FRCP
Associate Director for Stroke (CQID), Professor / Honorary Stroke Physician, University of Manchester and Salford Royal NHS Foundation Trust

Acknowledgements

The Royal College of Physicians and the Intercollegiate Stroke Working Party (Appendix 2) thank all who have participated in the piloting and development of the audit since the first round in 1998.

The web-based data collection tool was developed by Netsolving Ltd (www.netsolving.com).

Thanks are due to the many people who have participated in the SSNAP 2016 acute organisational audit. It is recognised that this has involved many individuals spending time over and above an already heavy workload with no financial recompense.

Thanks are due to many team members who contributed to organising the collection and retrieval of data including audit staff, IT and coding staff in addition to members of the clinical teams.

Foreword

Looking back over the last twenty years of stroke care in the NHS, there is an enormous amount to celebrate. Where in 1998, when we first audited stroke services, they were provided mainly in general and geriatric wards by non-specialists, we now see patients almost routinely being admitted to specialist stroke units directly from Accident and Emergency (A&E). We have hyperacute units providing thrombolysis and other acute interventions, we expect people with high risk transient ischaemic attack (TIA) to be seen and investigated within 24 hours, and patients to be seen and treated whatever the time of day or day of the week. Length of stay has dropped precipitously, with rapid transfer to early supported discharge (ESD), the intensity of stroke interventions has increased beyond recognition, and outcomes in terms of 30 day mortality and disability have improved, certainly for ischaemic stroke. However, we still have marked variation of services and patient outcomes across the UK. Some patients cannot access acute stroke units rapidly, and are therefore denied some of the treatments that are time-limited, such as thrombolysis or thrombectomy. Seven-day working is improving significantly, but is not comprehensive, and access to speech and language therapy at weekends remains extremely low. Some metrics have either not improved or deteriorated over the years; it is a concern that fewer patients and carers are involved in decisions about service provision, and some trusts do not even have a stroke strategy group to provide leadership and quality assurance.

It is only by measuring the quality of our services that we know how well we are providing them, and we congratulate all of those dedicated staff who have worked so hard over the years to provide and check data, both in the organisational audits and also in the on-going prospective SSNAP audit, which provides so much very detailed information about individuals who have strokes, the processes of care they receive and their eventual outcome. For the first time, and almost uniquely among national health economies, we have detailed information about the structure and process of stroke care, and the outcomes of those people who go through it, for all sites and all patients.

SSNAP clinical and organisational audits together provide a wealth of data. Nearly half of acute services tell us they are being asked for information by commissioners that is not in SSNAP. This will add work load to already stretched clinical services, and will lead to proxy measures being used that have no national benchmark. These measures will therefore be of little value. SSNAP should be the single source of stroke data.

This report should be read alongside the SSNAP audit reports and the 2016 RCP National Clinical Guideline for stroke. Together these documents provide a very detailed and accurate picture of the state of NHS stroke services in 2016, and provide information for providers and commissioners as to where they need to concentrate their efforts to achieve continued improvement in the outcome for people with stroke.

Professor Pippa Tyrrell
Associate Director for Stroke (CQID), Professor / Honorary Stroke Physician, University of Manchester and Salford Royal NHS Foundation Trust

Key Recommendations

1. All acute stroke centres should ensure that their services are well enough organised, or that they have the necessary local arrangements in place, to ensure that every patient with acute stroke is directly admitted to a dedicated stroke unit within 4 hours of arrival in hospital.
2. All units which treat patients in the first 72 hours following stroke should achieve a standard of 3 nurses per 10 beds on duty during the day at weekends.
3. All trusts need to make strenuous efforts to fill vacant consultant posts, by ensuring adequate training (if necessary out of programme), reviewing workload and involving other specialties (e.g. neurologists) in acute stroke rotas. All acute stroke hospitals are now expected to make sure that all patients admitted with acute stroke are seen by a specialist stroke consultant within 14 hours of admission (NHS England Urgent and Emergency Care review). In order to ensure this standard is met this consultant workforce issue must be addressed.
4. Seven day working should be available for at least 2 types of (qualified) therapy (includes occupational therapy, physiotherapy and speech and language therapy).
5. Protocols should be in place to ensure that intermittent pneumatic compression (IPC) devices are used as the first line prophylaxis for venous thromboembolism (VTE) following acute stroke.
6. Acute stroke sites should ensure that all patients have access to specialist rehabilitation at home (starting with early supported discharge) as soon as they are ready for discharge and for as long as they need it.
7. All patients with stroke should be offered a structured health and social care review at 6 months and annually as per the NICE Quality Standards and National Stroke Strategy.
8. All units should have a formal stroke strategy group that includes patients and carers as well as managers, clinicians and commissioners and should undertake a formal review of patient and carer views at least once a year.
9. All acute stroke units should achieve a standard of at least 1 whole time equivalent (WTE) qualified clinical psychologist per 30 stroke unit beds.
10. To ensure that all patients receive a swallow screen within 4 hours of arrival at hospital all acute stroke sites should ensure to have at least 1 nurse trained in swallow screening on duty weekdays, Saturdays and Sundays (including Bank Holidays). There should be sufficient speech and language therapist cover to ensure that all patients whose swallow is not deemed to be safe receive a formal swallow assessment within 72h of arrival at hospital.
11. Protocols should be in place to ensure all stroke patients are scanned within appropriate time frames, and that access to skilled radiological and clinical interpretation must be available 24 hours a day, 7 days a week to provide timely reporting of brain imaging.

Following the publication of the RCP National Clinical Guidelines for Stroke, 5th edition in early October 2016 and the incorporation of the 'Looking forward' section two additional recommendations are outlined below:

12. All acute stroke units should have a recommended minimum nurse staffing level of 2.9 (WTE) nurses per hyperacute stroke (type 1 and type 3) bed with the ratio of registered to unregistered nurses being 80:20. Nurse staffing levels for beds for patients beyond the first 72 hours of stroke only (type 2 beds) should be 1.35 (WTE) nurses per bed with a ratio of 65:35 registered to unregistered nurses.
13. All health economies should have plans in place for the 24 hour provision of intra-arterial (thrombectomy) treatment in appropriate patients with acute ischaemic stroke.

Executive Summary

This report provides you with an overview of the organisation of acute stroke services and information on national performance against the 10 key indicators of acute stroke care organisation. It describes services as at **1 July 2016**.

Introduction and Methodology

All (178) eligible acute stroke services are included in this report with 155 in England, 12 in Wales, 10 in Northern Ireland and 1 in the Isle of Man. Data were collected via a web-based audit proforma, with inbuilt validations to ensure data accuracy.

Organisation of the audit

The Healthcare Quality Improvement Partnership (HQIP) commissions the audit on behalf of NHS England, as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP) and is run by the Care Quality Improvement Department (CQID) of the Royal College of Physicians. The audit is guided by a multi-disciplinary steering group responsible for the RCP Stroke Programme (see Appendix 2).

Availability of this report in the public domain

Participating hospitals (sites) received individual results portfolios in September 2016. A full national results portfolio and national report were made available to the wider NHS, including NHS England and the Care Quality Commission in England, NHS Wales (Welsh Assembly Government) and the Department of Health, Social Services and Public Safety in Northern Ireland in October 2016. All named site results were published in November 2016 in line with the transparency agenda subject to HQIP's standard reporting process.

The Sentinel Stroke National Audit Programme (SSNAP) is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit Programme (NCA). 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, and in particular to increase the impact that clinical audit has on healthcare quality in England and Wales. HQIP holds the contract to manage and develop the NCA Programme, comprising more than 30 clinical audits that cover 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 audits, also funded by the Health Department of the Scottish Government, DHSSPS Northern Ireland and the Channel Islands.

Executive summary of audit results

This section presents an executive summary of the findings from the audit. It brings together the clinical commentary from sections 2 – 4 of this report as well as a summary of national performance against the new 10 key indicators of acute stroke organisation. For ease of reading it does not contain the full findings which are presented in the tables in the relevant sections of the report.

Acute stroke services

Care in the first 72 hours after stroke

People presenting with acute stroke need urgent specialist care in a stroke unit. Services may be organised around a traditional model, where a patient is taken by ambulance to a local hospital for admission, or, where services have been reconfigured across a health economy, to designated stroke centres. These may take patients for the entire inpatient pathway, or more commonly, admit patients for the first 72 hours and then repatriate them to their local hospital (if they cannot be discharged home) for further inpatient rehabilitation. 12% of sites now only provide care after the first 72 hours, with hyperacute care being provided elsewhere. It is important that sites provide the care that people need, with enough hyperacute (type 1 and 3 beds, where appropriate) and "post-72 hour" (type 2) beds to ensure rapid access to specialist care.

Staff/Workforce planning

Stroke consultant physician workforce planning

While the overall amount of consultant time in stroke has increased since 2014, with an increased number of stroke consultants in post and more consultant time (measured in Programmed Activities (PAs)), the percentage of sites which had an unfilled post has increased from 26% in 2014 to 40% in 2016.This perceived need by providers for more stroke consultants probably reflects the demands of an increasingly complex service and the challenges of providing timely and frequent consultant input 24/7 in hyperacute and acute services, and suggests a shortfall in appropriately trained consultants to provide the expertise that the service needs. The British Association of Stroke Physicians (BASP) use this information to help plan training for future stroke consultant physicians and this information will be made available to BASP prior to the publication of these results. Urgent consideration needs to be given to the training and recruitment of consultant stroke physicians in order to ensure that there are sufficient stroke consultants, now and in the future, to provide a good quality service.

Band 6 and 7 nurses *(Key indicator 1)*

It is a concern that only 51% of sites are achieving the key indicator of adequate levels of senior nurses on the stroke unit. Senior nurses are essential not only for ward management, but also for taking overall charge of the ward, maintaining standards of care and ensuring more junior staff are appropriately trained in the management of acute stroke. In many units, specialist stroke nurses (often band 6) are the nurses who attend A&E and undertake initial assessment and management of people with acute stroke. The latest SSNAP clinical annual 2015 -16 report shows that 88% of patients are seen by a stroke trained nurse within 24 hours of arrival at hospital, but this still means that 12% are not; and 28% of people who need one are not receiving a swallow screen within 4 hours, which we know is associated with increased rates of pneumonia. Hyperacute nursing is becoming necessarily more complicated, with assessment for thrombectomy, management following thrombectomy and more intensive early management of people with intracerebral

haemorrhage (ICH). Current nurse staffing levels are insufficient to provide good care for everyone who needs it, and as we implement guidelines, more skilled nurses will be required rather than less. While sites with type 2 beds only (beds solely used for patients beyond 72 hours) are not routinely caring for people very acutely after stroke, senior stroke nurses are essential to ensure that patients continue to receive specialist guidelines based care, in an environment where there may not be stroke medical cover particularly out of hours.

All nurse staffing levels

All sites were asked for their whole time establishment of nurses, bands 1 – 8c. The majority of nurses appear to be band 5, with bands 2-3 (unregistered) following closely behind. There are smaller numbers of bands 6 and 7 nurses and above.

Access to qualified clinical psychologists *(Key indicator 2)*

Psychological problems following stroke can be as debilitating as a physical disability and it is essential that these are identified quickly. Historically in this audit the number of sites offering any level of qualified clinical psychologist has been very low, with 54% in 2014 and 57% in 2016. The key indicator (at least one whole time equivalent (WTE) qualified clinical psychologist for every 30 stroke unit beds) is only being met in 6% of sites. These data suggest that only a small number of patients will be able to access input from a psychologist, which contrasts with the high levels of emotional distress and neuropsychological impairments reported by patients and their carers.

Therapy staffing levels

It is good to see that there has been a slight overall increase in therapy numbers, but the SSNAP clinical audit still shows that patients are not receiving the sufficient amount of therapy (particularly speech and language therapy). Three sites still have no qualified speech and language therapists, and there has been a reduction in the number of sites with a qualified dietitian on the stroke unit (from 98% of sites in 2014 to 93% of sites in 2016).

Seven-day working

Ensuring that patients have access to specialist healthcare professionals 7 days a week is now a key part of the national healthcare agenda. The programme used SSNAP data both on stroke service structure through the week and clinical outcomes to demonstrate that variation in acute stroke healthcare is not just 'a weekend effect' but that specialist healthcare presence is needed every day to ensure that all patients have access to high quality care consistently regardless of the day of the week or time of day they arrive at hospital (https://www.strokeaudit.org/Research/Published-papers.aspx). Trusts need to ensure that there is 7-day a week availability of nurses and therapists as well as junior doctors and consultants. A stroke consultant ward round at least daily ensures that patients with suspected stroke have the best access to a senior clinician for decisions about diagnosis, early treatment and on-going management including discharge plans.

Specialist stroke consultant ward rounds *(Key indicator 3)*

It is good to see that more sites in 2016 reported daily stroke consultant ward rounds 7 days a week, but this key indicator may be difficult to achieve in the future unless current vacancies for consultant posts are filled.

Nurses on duty at 10am and 10pm weekends *(Key indicator 4)*

Nurse staffing levels in hospitals are important and associated with patient safety and mortality. Stroke audit data demonstrates an association between higher nursing numbers and lower mortality (http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.1001705). The study showed that patients admitted to hospitals with the lowest weekend ratios of registered nurses to patient beds had the highest mortality. Well-staffed wards have the capacity to undertake the intensive nursing management that acute stroke patients need. This underlines the importance of adequate nurse staffing numbers to ensure high standards of care.

Seven-day therapy access (Key indicator 5)

We are still a long way from having universal access to 6 and 7 day therapy services.

Access to specialist treatment and support

Intra-arterial treatment (thrombectomy) *(Key indicator 6)*

There are currently only 83 consultants reported in the 2016 audit as undertaking this procedure, and 424 patients nationally received this treatment between 1 April 2015 and 31 March 2016. Most sites providing intra-arterial treatment report that the service is only available during the week. Access to intra-arterial treatment (IAT) is likely to remain limited until logistical and workforce issues are resolved.

Thrombolysis

Thrombolysis is recommended for the treatment of selected patients with acute ischaemic stroke. Approximately 20% of stroke patients are eligible to receive thrombolysis treatment, if they can get to a hospital that provides thrombolysis quickly. Outcomes are better the earlier thrombolysis is administered. Some trusts do not provide a service on site but have local arrangements to ensure their patients have access to thrombolysis 24 hours a day, 7 days a week. Some sites use a telemedicine service with remote advice from a stroke consultant.

99% of sites are now able to offer patients thrombolysis treatment 24 hours a day, 7 days a week either on-site or in collaboration with another site. 87% of sites offer 24 hours a day, 7 days a week provision on-site.

Venous thromboembolism prevention *(Key indicator 7)*

While most units have access to intermittent pneumatic compression (IPC) devices, only 16.6% of patients in the annual 2015-16 clinical audit were reported as having IPC devices applied. It is a serious concern that 13% of sites are still routinely using heparin as first line prophylaxis despite evidence that it may be harmful.

Specialist early supported discharge (ESD) *(Key indicator 8)* and community rehabilitation teams (CRT)

More sites now have early supported discharge (ESD) teams in place, and specialist stroke/neurology community rehabilitation teams rather than generic therapy teams which is encouraging, although almost a quarter of sites still do not. It is vital that people with stroke have access to specialist multi-disciplinary rehabilitation teams as soon as they are discharged from hospital and for as long as they need it.

Transient ischaemic attack (TIA)/ neurovascular service *(Key indicator 9)*

Patients with transient ischaemic attack (TIA) are ideally treated as urgent outpatients, because by definition they have recovered. However, a significant proportion of people will rightly seek urgent medical attention at the time of the TIA but be recovering or recovered when first seen in A&E. It is important that inpatient services can see, investigate, treat and discharge on a same date basis 7 days a week to avoid unnecessary overnight stays, and it is disappointing that nearly 30% of services for high risk patients are unable to do this. The number of same day (7 days a week) outpatient services for people with TIA has improved, but nearly 50% of sites cannot offer a 7-day service for high risk patients. Rapid investigation of people with TIA, particularly urgent carotid imaging, is essential to reduce subsequent stroke.

Patient and carer engagement

Patient views on stroke services *(Key indicator 10)*

It is disappointing that almost 40% of sites are undertaking surveys seeking patient and carer views less than once a year or never, as without service user feedback it is difficult to know how well a service is performing.

Strategic group responsible for stroke

Nearly half of stroke strategy groups do not include patient or carer representation. Lay representation at stroke strategy groups ensures a patient voice within service improvement and can help strategy groups make improvements based on patient experience, as well as the experiences of healthcare professionals.

6 month reviews

It is worrying that all patients are not undergoing a review at 6 months. A structured health and social care review allows patients and their carers to discuss the issues that continue to concern them and formulate action plans to deal with them. These may include reinforcement of lifestyle advice for secondary prevention, discussion of medication needs, on-going mobility, communication or other rehabilitation needs, “silent symptoms” such as fatigue, memory or mood disturbance, pain, and return to work or usual activities. Commissioners need to ensure that everyone with stroke has access to a structured assessment at this stage following stroke.

Changes over time

These data demonstrate some of the extraordinary changes that have occurred in the provision of stroke care over the last decade. The questions asked in the organisational audit have, inevitably, changed over the years, so in some areas direct comparisons are only available for one or two previous audits, whereas in other areas we have data going back to 2006. It is striking to see how much progress has been made in the availability of thrombolysis with a real step change occurring in 2006-8, coinciding with the publication of the 2007 National Stroke Strategy and the establishment of the cardiac and stroke networks. There is a concern that the number of type 1 beds (beds used for patients in the first 72 hours following stroke only) has reduced since 2014, despite the fact that the latest SSNAP audit annual results (April 2015 – March 2016) shows that only 58% of patients who need to be are admitted to a stroke unit within 4 hours.

Staffing/Workforce

Access to inter-disciplinary services

There is no doubt that all units are better staffed than they were, although it is worrying that there has been a drop in access to dietetics and there are still sites without access to qualified clinical psychology, speech and language therapy and pharmacy. Access to 7-day working has improved significantly for occupational therapy and physiotherapy, although by no means universal, but weekend availability of speech and language therapy remains very poor. This is a particular concern because of the association between formal swallow assessments by speech and language therapists and pneumonia.

7-day working

There has been an increase in the number of sites offering daily ward rounds on type 1 beds (beds used for patients in the first 72 hours following stroke only) and type 3 beds (beds used for patients pre and post 72 hours following stroke), with 14% having twice daily rounds of type 1 beds (Urgent and Emergency Care review). Only 4% of sites with type 3 beds have consultant ward rounds twice a day.

Access to specialist community teams

It is gratifying that access to early supported discharge (ESD) has increased, but approximately 1 in 5 hospitals still do not have access to ESD and almost a quarter have no access to specialist community rehabilitation teams. ESD is the only evidence based care model shown to be of benefit following discharge from a stroke unit, and commissioners should ensure that everyone has access to specialist care at home.

Transient ischaemic attack (TIA)/ neurovascular service

A decade ago, it was routine for people to be waiting more than a week for a transient ischaemic attack (TIA) clinic, but a body of evidence published in 2007 demonstrated the importance of very early (within 24 hours) intervention for the effective prevention of stroke. It is gratifying to see that most sites now provide a clinic on site, and average waiting times have reduced significantly, but we are still a way off the standard of everyone with TIA being able to access a specialist service within 24 hours. Only 50% of sites provide same day carotid imaging for high risk patients. Early carotid endarterectomy for those who need it is one of the most important interventions in the prevention of stroke following TIA, so availability of same day carotid imaging should be a priority.

Quality improvement

It is depressing that the number of sites having a strategic group responsible for stroke has reduced rather than improved since 2010, which may be related to the loss of the stroke specific networks. 90% of sites report that they have funding for external courses for nurses and therapists. On-going in service training is a vital part of good stroke unit care, and it should be an expectation that staff of all disciplines are able to access both internal and external continuing professional development.

Audit results by country

Provision of health services has traditionally varied across the UK, and stroke care is no exception. Data from England, Wales and Northern Ireland are included in SSNAP, with Scotland having its own stroke care audit. All three countries have stroke beds, although Northern Ireland reports no type 1 beds, and 100% of sites either provide thrombolysis on site or by referral. Access to thrombectomy is patchy, with 37% of sites in England having no access to thrombectomy, either locally or by referral, whilst in Wales all sites reported access to thrombectomy. It is a real concern that despite evidence of harm, 42% of sites in Wales (5), 30% of Northern Ireland sites (3) and 10% of sites in England (16) still use heparin as first line agent for prophylaxis, and intermittent pneumatic compression (IPC) is first line in only 25% of Welsh sites.

Staffing/Workforce Planning

Whole time equivalents (WTE) of and access to staff across all stroke units

Total nurse staffing is not markedly different between the countries, but there are fewer band 6 and more band 7 in Wales and Northern Ireland than in England. There is generally less availability of therapists in the devolved nations than in England. 6 or 7-day therapy working appears to be non-existent in Northern Ireland.

Consultant workforce planning

Sites in Wales and Northern Ireland have significantly lower numbers of stroke physicians' time measured in Programmed Activities (PAs) than sites in England.

7-day working

Specialist stroke consultant ward rounds

Specialist ward round frequency on type 1 beds (beds solely for patients in first 72 hours following stroke) is lower in Wales and Northern Ireland, probably reflecting lower consultant numbers. This impacts on speed of diagnostic and therapeutic decision making, so may impact on outcome and length of stay.

Access to specialist community teams

Access to community rehabilitation varies across the devolved nations, with only 33% of sites in Wales having access to early supported discharge (ESD) and only 17% having access to any kind of specialist community rehabilitation.

Transient ischaemic attack (TIA)/ neurovascular service

Provision of transient ischaemic attack (TIA) clinics across the nations appears similar, although the proportion of sites with 7-day access to carotid imaging for high risk patients is low (17% in Wales and 13% in Northern Ireland), compared to 55% in England.

Quality improvement

Northern Ireland and Wales perform better than England in terms of a strategic group for stroke and community user groups.

6 month reviews

The proportion of sites commissioned to carry out 6 month reviews in Wales and Northern Ireland is greater than in England.

Key indicators of acute stroke organisation

Table 1.1 below defines each key indicator and the criterion required to meet it, and reports the national performance against each. More detailed information and results for each key indicator can be found in section 2 of this report.

Table 1.1 National performance against 10 key indicators of acute stroke organisation

KI	Key indicator *(Criterion for indicator)*	National results*
Staffing/Workforce		
1.	**Minimum establishment of band 6 and band 7 nurses per 10 beds** *(Criterion: Sum of band 6 and 7 (WTE) nurses per 10 stroke unit beds is equal to/above 2.375 per 10 beds)*	**51% (90/178)** of sites meet KI 1
2.	**Presence of a clinical psychologist (qualified)** *(Criterion:Presence of at least one (WTE) qualified clinical psychologist per 30 stroke unit beds)*	**6% (10/178)** of sites meet KI 2
7-day working		
3.	**Minimum number of stroke consultant led ward rounds**** *(Criterion: Met if have at least one ward round per day (7 a week minimum) for **both** type 1 and type 3 beds)*	
	Type 1 beds (beds used solely for pre-72 hour care)	**72% (112/156)** of sites meet KI 3
	Type 3 beds (beds used for pre and post-72 hour care)	
4.	**Minimum number of nurses on duty at 10am weekends***** *(Criterion: Met if have 3.0 nurses per 10 type 1 and 3 beds (average number of nurses on duty on type 1 and type 3 beds)*	
	Type 1 beds (beds used solely for pre-72 hour care)	**20% (31/156)** of sites meet KI 4
	Type 3 beds (beds used for pre and post-72 hour care)	
5.	**At least two types of therapy available 7 days a week** *(Criterion: Met if 7-day working for at least two types of qualified therapy. Includes occupational therapy, physiotherapy and speech and language therapy)*	**31% (55/178)** of sites meeting KI 5
Access to specialist treatment and support		
6.	**Patients can access intra-arterial (thrombectomy) treatment** *(Criterion: Met if patient have access on-site or by referral off-site)*	**67% (105/156)** of sites meet KI 6
7.	**Intermittent pneumatic compression device used as first line preventative measure for venous thromboembolism** *(Criterion: Met if intermittent pneumatic compression device is first line preventative measure)*	**80% (143/178)** of sites meeting KI 7
8.	**Access to a specialist (stroke/neurological specific) early supported discharge (ESD) team** *(Criterion: Met if Yes)*	**81% (145/178)** of sites meet KI 8
9.	**Timescale to see, investigate and initiate treatment for both high risk and low risk patients** **** *(Criterion: Met if:* *HIGH risk TIA patients = The same day or next day 7 days a week* *LOW risk TIA patients = Within a week)*	**73% (130/178) of sites meet KI 9**
Patient and carer engagement		
10.	**Formal survey undertaken seeking patient/carer views on stroke services** *(Criterion: Met if at least one a year)*	**61% (108/178) of sites meet KI 10**

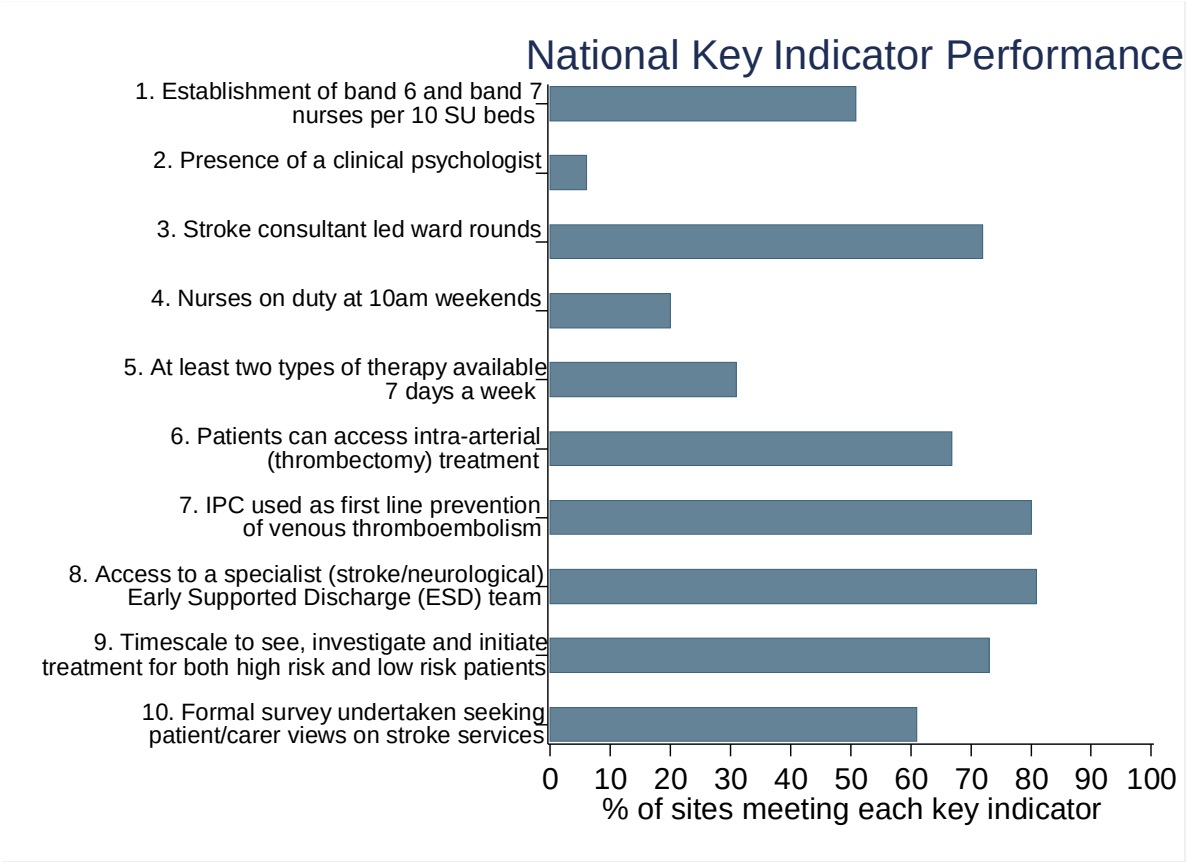
**Sites assigned the performance of the site that treats their patients in the first 72 hours have not been included in the national.*

***If a site has both type 1 and type 3 beds consultant led ward rounds must take place at least once a day on both.*

****If a site has both type 1 and type 3 beds an average of Saturday and Sunday per 10 type 1 and 3 beds.*

*****Can apply to both inpatient and outpatient services. If site has both the one with the BEST time is used.*

Figure 1: National key indicator performance*

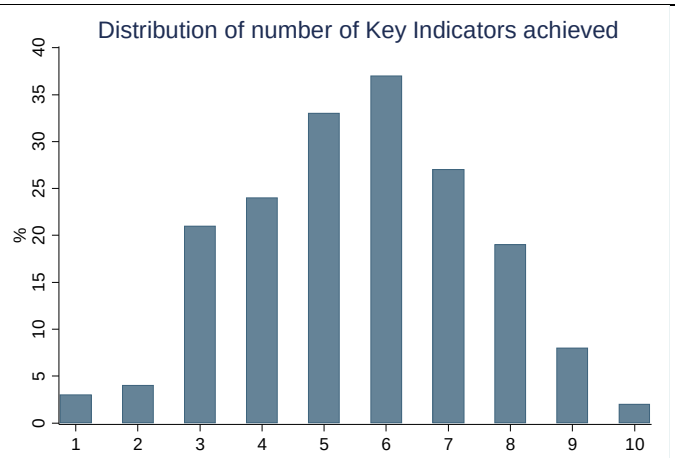


**Please see table 1.1 for a full description of each key indicator*

Table 1.2

Total number of key indicators met*	% (n/N)
1	**2% (3/178)**
2	**2% (4/178)**
3	**12% (21/178)**
4	**13% (24/178)**
5	**19% (33/178)**
6	**21% (37/178)**
7	**15% (27/178)**
8	**11% (19/178)**
9	**4% (8/178)**
10	**1% (2/178)**

Figure 2: Distrbution of number of key indicators achieved by sites



**Sites which do not treat patients within the first 72h have been assigned the performance of the site that treats their patients in the first 72 hours, and are therefore included in the breakdown.*

Figures 1 and 2 presents the percentage of sites meeting each individual key indicator and the number of key indicators being met by sites.

Section 1: Introduction and Methodology

The organisation of acute stroke services has been reported every 2 years since 1998. This most recent report includes results of the Sentinel Stroke National Audit Programme (SSNAP) acute organisational audit describing services as at **1 July 2016**. It covers all acutely admitting hospitals in England, Wales and Northern Ireland and provides continuity with rounds in 2012 and 2014. It complements the SSNAP clinical audit which covers processes of care and outcomes for all patients treated in England and Wales since 2013.

Organisation of the audit

The Healthcare Quality Improvement Partnership (HQIP) commissions the audit on behalf of NHS England, as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP) and is run by the Care Quality Improvement Department (CQID) of the Royal College of Physicians. The audit is guided by a multi-disciplinary steering group responsible for the RCP Stroke Programme (see Appendix 2).

Availability of this report in the public domain

Participating hospitals (sites) received individual results portfolios in September 2016. A full national results portfolio and national report were made available to the wider NHS, including NHS England and the Care Quality Commission in England, NHS Wales (Welsh Assembly Government) and the Department of Health, Social Services and Public Safety in Northern Ireland in October 2016. All named site results were published in November 2016 in line with the transparency agenda subject to HQIP's standard reporting process.

Participation

There is 100% participation of eligible trusts (178) in England (155), Wales (12), Northern Ireland (10) and 1 in the Isle of Man. The 178 sites contain a total of 192 acute hospitals.

The Sentinel Stroke National Audit Programme (SSNAP) is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit Programme (NCA). 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, and in particular to increase the impact that clinical audit has on healthcare quality in England and Wales. HQIP holds the contract to manage and develop the NCA Programme, comprising more than 30 clinical audits that cover 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 audits, also funded by the Health Department of the Scottish Government, DHSSPS Northern Ireland and the Channel Islands.

Methods

Eligibility and recruitment

All sites that routinely treat patients within 7 days of stroke were eligible to participate in the audit. 100% of eligible sites were recruited and participated in the 2016 audit.

Data collection

Data were collected at site level which can be either the only site within a trust or several sites within a trust (Health Board in Wales) using a standardised method. Clinical involvement and supervision at team level is provided by a lead clinician in each hospital with overall responsibility for data quality. Data were collected using a web-based tool accessible via the internet. Security and confidentiality were maintained through the use of hospital codes and high data quality was ensured with the use of validations preventing illogical data being entered. All sites were asked to export and check their data before final sign off on 15 July 2016. No changes to the data were possible after this point.

Evidence based audit

The acute organisational audit measures the structure of acute stroke services. It is evidence based using standards and evidence from sources including the RCP National Clinical Guideline for Stroke, Clinical Commissioning Group Outcome Indicator Set (CCG OIS) and the NICE Quality Standards.

Key Indicators of acute stroke organisation

In order to future proof the acute organisational audit SSNAP has invested existing resources to streamline its data collection, analysis and reporting, ensuring future efficiencies in result dissemination. Therefore, unlike previous years, SSNAP has not provided individual scoring and banding of sites. Instead, the domains and key indicators from the 2014 audit as well as recent research and evidence have been used as a guide to identify 10 key indicators of acute stroke organisation. Participating sites have been measured against specific criteria for each of these 10 key indicators.

Individual site level result portfolios have been made available to participating sites. Each includes site specific results for the 10 key indicators of acute stroke organisation and all data items are benchmarked against national averages.

Standards

The current standards against which acute stroke services are compared are outlined throughout sections 2. They include the new 10 key indicator standards (blue boxes) and the updated NICE Quality Standards (green boxes). Some of the acute criteria against which hospitals were measured in 2014 have been incorporated in to the full results portfolio. In addition to this the 'Looking forward' section describes new standards from the RCP National Clinical Guideline for Stroke, 5th edition and NHS England Urgent and Emergency Care review, and where relevant they have been included in section 2 for context.

How to read this report and presentation of results

Results are presented as percentages or summarised by the median. Ratios of staffing numbers per 10 stroke unit beds are given rather than staffing numbers per stroke unit (SU) to allow comparison to national standards. Denominators may vary throughout depending on the number of hospitals (sites) to which the analysis relate.

Section 2 describes the organisation of acute stroke care. It addresses key aspects of acute stroke care organisation, including each of the 10 key indicators for the audit. Comparison with the 2014 acute organisational audit (shown in the grey sections of data tables) and the SSNAP clinical audit are given where appropriate.

Section 3 describes changes over time and compares 2016 results with previous audit rounds

Section 4 gives a comparison between England, Wales and Northern Ireland

Section 5 is called 'Looking forward'. This section presents guidance from the 5th edition of the National Clinical Guideline for Stroke and NHS England Urgent and Emergency Care review. Due to the 2016 acute organisational audit taking place prior to the publication of these documents this section includes a sense of what will need to be done to achieve the new standards in the future.

Where possible throughout the report results are placed in the context of clinical processes for patients and existing national standards and guidelines (green boxes). Clinical commentary is given in grey boxes throughout. A more detailed introduction and methodology is available in Appendix 1.

Key terms can be found on page 76.

Section 2: Results

Overview of acute stroke services

This section provides a comprehensive overview of the acute stroke service organisation within England, Wales and Northern Ireland including a description of the acute stroke sites in the 2016 acute organisational audit.

Full results, including all data items by named hospital, can be found in the full results portfolio located in the SSNAP Results Portal www.strokeaudit.org/results. This section should be read in the context of the full results portfolio and audit proforma (Appendix 3).

Site description

178 sites participated in the 2016 acute organisational audit. Due to service centralisation, reconfiguration and amalgamation across the country the number of acute care sites has reduced since 2014 (183) but still covers 100% of eligible hospitals.

Within these 178 sites there were a total of 192 hospitals. 93% (166) of sites covered 1 hospital, 6% (10) covered 2 hospitals and 1% (2) covered 3 hospitals.

Type of service provided overall

Standard

NICE Quality Statement

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]

To take into account reconfiguration, in particular the implementation of centralised models of hyperacute care, sites were asked about the extent to which they treat patients in the first 72 hours after stroke.

Table 2.1 Sites providing care in the first 72 hours

Care in the first 72 hours after stroke (Q1.1)	National 2014 (183 sites) % (n)		National 2016 (178 sites) % (n)	
Care provided for **ALL** patients in the **first 72 hours** after stroke	83%	152	78%	139
Care provided for **SOME** stroke patients in **first 72 hours** after stroke	8%	15	10%	17
Care is **NOT provided** for patients within **first 72 hours** of stroke	9%	16	12%	22

The SSNAP clinical audit produces a transfer tree for all acute providers in order for them to see their patient flow across different providers. This may be useful in terms of context for sites that do not treat patients in the first 72 hours and can be found as a tab in the full clinical results portfolios (www.strokeaudit.org/results).

22 sites in the audit do not treat patients within the first 72 hours of stroke, therefore these sites did not answer section 1 of the organisational proforma (Appendix 3) which covers acute care, nor did they answer any questions relating to beds used solely for the first 72 hours of stroke care (Section 2A) or beds used for both the first 72 hours and beyond (Section 2C).

Comment: People presenting with acute stroke need urgent specialist care in a stroke unit. Services may be organised around a traditional model, where a patient is taken by ambulance to a local hospital for admission, or, where services have been reconfigured across a health economy, to designated stroke centres. These may take patients for the entire inpatient pathway, or more commonly, admit patients for the first 72 hours and then repatriate them to their local hospital (if they cannot be discharged home) for further inpatient rehabilitation. 12% (22) of sites now only provide care after the first 72 hours, with hyperacute care being provided elsewhere. It is important that sites provide the care that people need, with enough hyperacute (type 1 and 3 beds, where appropriate) and "post-72 hour" (type 2) beds to ensure rapid access to specialist care.

Type and number of stroke unit beds

Across all sites there are a national total of 5119 stroke unit beds, median 26 per site and interquartile range (IQR) 20-36 per site.

166 sites had stroke unit beds in one hospital, 10 in two hospitals and 2 in three hospitals.

Table 2.2 Type and number of stroke unit (SU) beds

Type and number of stroke unit (SU) beds (Q2.1)	Total N of beds 2014	Total N of beds 2016	Site level		
			%	n	Median (IQR)
	National (183 sites)	National (178 sites)			
Beds solely used for patients in **first 72 hours** after stroke (type 1 beds) (Q2.1c)	681	601	47%	73	8 (5-11)
Beds for **pre- and post-72 hour** care (type 3 beds) (Q2.1e)	2381	2349	67%	105	23 (18-27)
	National (183 sites)	National (178 sites)			
Beds solely used for patients **beyond 72 hours** (type 2 beds) (Q2.1d)	2178	2169	52%	92	22 (16-27)
Total number of beds	5250	5119			

Of the 178 sites providing acute care, 156 stated that they provide care to patients in the first 72 hours after stroke (from question 1.1). These sites were asked to provide information on the number of beds used solely for patients in the first 72 hours (type 1 beds) and the number of beds used for both the first 72 hours and post 72 hour care (type 3 beds).There were 22 sites which stated that they do not treat patients in the first 72 hours so were not asked about these types of beds. All 178 sites were asked about the number of beds used solely for patients post 72 hours after stroke (type 2 beds).

Continuous physiological monitoring

Routinely admitting hospitals should have arrangements in place to continuously monitor and regulate basic physiological functions such as blood glucose, oxygenation, and blood pressure. All sites admitting and treating patients in the first 72 hours following stroke were asked if they provided continuous physiological monitoring and the total number of beds with this.

The number of sites meeting the continuous physiological monitoring criterion for type 1 and type 3 beds is increasing with 78% of sites with type 1 beds and 79% of sites with type 3 beds meeting the minimum criteria. 10% of type 1 beds nationally do not have continuous physiological monitoring.

Table 2.3 Provision of continuous physiological monitoring

Continuous physiological monitoring (Q2.2, Q2.14)	National 2014		National 2016	
	Type 1 beds (75 stroke units) % (n)	Type 3 beds (109 stroke units) % (n)	Type 1 beds (73 stroke units) % (n)	Type 3 beds (105 stroke units) % (n)
	Criterion is 100% of beds are monitored	Criterion is at least 1 monitored bed	Criterion is 100% of beds are monitored	Criterion is at least 1 monitored bed
Percentage of sites meeting criteria for continuous physiological monitoring (ECG, oximetry, blood pressure)	72% (54/75)	88% (96/109)	78% (57/73)	79% (83/105)
Total number and percentage of beds with continuous physiological monitoring (ECG, oximetry, blood pressure)			90% (539/601)	22% (518/2349)

Scanning

It is important that all stroke patients are scanned within appropriate time frames and that there is access to the necessary skilled professionals and clinical interpretation all day, each day of the week.

100% of both type 1 and type 3 beds offer immediate access to scanning for urgent stroke patients. The latest annual SSNAP clinical results 2015-16 show that 47% of stroke patents are being scanned within 1 hour of arrival at hospital, with a median time of 1 hour 6 minutes between arrival and scan. 91% of patients are scanned within 12 hours of arrival at hospital.

Table 2.4 Immediate access to scanning

Access to scanning (Q2.4, Q2.16)	National 2014		National 2016	
	Type 1 beds (75 stroke units) % (n)	Type 3 beds (109 stroke units) % (n)	Type 1 beds (73 stroke units) % (n)	Type 3 beds (105 stroke units) % (n)
Immediate access to scanning for urgent stroke patients	Yes = 99% (74/75)	Yes = 99% (108/109)	Yes = 100% (73/73)	Yes = 100% (105/105)

2.1 Staffing/workforce planning

The establishment of staff within acute stroke services is important and indicates whether staffing levels need to be changed, either nationally or by commissioners at a local level. Hospitals can compare SSNAP clinical audit performance on the 10 domains of acute stroke care with the appropriate workforce information in the organisational audit to investigate whether staffing levels may be contributing to poor performance in stroke patient care. Comparison of workforce information against national levels and other providers will help services lobby for additional funding in order for staffing gaps to be filled.

This section presents stroke consultant physician, nurse, therapist and clinical psychology workforce information. For more detailed results on all professionals please refer to the full results portfolio.

2.1.1 Stroke consultant physician workforce planning

Table 2.5 Consultant workforce, unfilled, existing and planned posts

Unfilled stroke consultant posts (Q6.4)		National 2014 (183 sites) % (n)	National 2016 (178 sites) % (n)
Number of sites with any unfilled stroke consultant posts		26% (48)	40% (72)
If yes:		National 2014 (48 sites)	National 2016 (72 sites)
Number of **programmed activities** (PAs) these **posts cover** (Q6.4(a))	Median (IQR), Total	10 (6-11), 454	10 (8.5-11.9), 804
Number of **months** these **posts** have been **funded but unfilled** (Q6.4(b))	Median (IQR)	8 (2-19)	15 (6-24)

Existing stroke consultant posts (Q6.5)		National 2014 (183 sites)	National 2016 (178 sites)
Number of **programmed activities** (PAs) for **stroke consultant physicians per site**	Median (IQR), Total	22 (14-34, 4671	22 (13-41) 5122
Number of consultants **(individuals) programmed activities** (PAs) are **divided between** (Q6.5(a))	Median (IQR), Total	3 (2-4), 656	3 (2-5), 676
Number of **programmed activities** (PAs) which are **allocated to direct clinical care** (DCC) (Q6.5(b))	Median (IQR), Total	17 (10-27) 3588	19 (11-31) 3907

Future planned stroke consultant posts (Q6.6)		National 2014 (183 sites) % (n)	National 2016 (178 sites) % (n)
Number of sites with new/additional posts for stroke consultant physicians		48% (87)	46% (81)
If yes:		National 2014 (87 sites)	National 2016 (81 sites)
Number of programmed activities (PAs) planned for new/additional stroke consultant physicians (Q6.6)	Median (IQR), Total	(5-10), 829	0 (0-10), 881
Number of new/additional consultants (individuals) these programmed activities (PAs) be divided between (Q6.6(a))	Median (IQR), Total	1 (1-2), 118	1 (1-2), 130
Number of new/additional programmed activities (PAs) for direct clinical care (DCC) for stroke (Q6.6(b))	Median (IQR), Total	7 (4-9), 653	7 (4-9), 670

Comment: While the overall amount of consultant time in stroke has increased since 2014, with an increased number of stroke consultants in post and more consultant time (measured in Programmed Activities (PAs)), the percentage of sites which had an unfilled post has increased from 26% in 2014 to 40% in 2016.This perceived need by providers for more stroke consultants probably reflects the demands of an increasingly complex service and the challenges of providing timely and frequent consultant input 24/7 in hyperacute and acute services, and suggests a shortfall in appropriately trained consultants to provide the expertise that the service needs. The British Association of Stroke Physicians (BASP) use this information to help plan training for future stroke consultant physicians and this information will be made available to BASP prior to the publication of these results. Urgent consideration needs to be given to the training and recruitment of consultant stroke physicians in order to ensure that there are sufficient stroke consultants, now and in the future, to provide a good quality service.

2.1.2 Band 6 and 7 nurses

Standard **Key indicator 1:** **Minimum establishment of band 6 and band 7 nurses**
National performance:
51% (90/178) of sites meet key indicator
Key indicator achieved if: *Sum of band 6 and 7 (WTE) nurses per 10 stroke unit (SU) beds equal to/above 2.375 per 10 SU beds*

Band 6 and 7 nurses are likely to be the most senior nurses organising and managing direct patient care on a stroke unit. Their responsibilities include ward manager roles and giving direction on the care of each patient on a day to day basis. Therefore their presence on a stroke ward is essential for day to day management and operation.

Table 2.6 below presents the total establishment in whole time equivalent (WTE) and WTE per 10 stroke beds for bands 6 and 7 nurses, both as a total and by type of bed. A comparison between 2014 and 2016 has also been given.

The national median in 2016 for the total establishment of both these bands of nurses is 2.375 per 10 stroke beds, with approximately half of sites having a lower establishment. This has been used to set a minimum standard of WTE band 6 and 7 nurses for the future.

Table 2.6 Total establishment of whole time equivalents (WTE) for band 6 and 7 nurses

Establishment of band 6 and 7 nurses/10 stroke unit beds (Key Indicator 1)		**Standard: 2.375**	**51% (90/178) sites equal to or above this standard level**		
2014					
Total establishment nurses (bands 6 -7) for all stroke beds		Total stroke unit beds (183 Sites)	Type 1 beds (75 Sites)	Type 2 beds (99 Sites)	Type 3 beds (109 Sites)
Median (Interquartile range (IQR))					
Band 6	Total WTE of nurses	3.0 (2.0-6.0)	2.5 (0.7-5.4)	2.0 (1.0-3.0)	2.0 (1.0-4.0)
	WTE per 10 beds	1.2 (0.7-2.0)	2.7 (0.9-6.7)	0.9 (0.6-1.3)	0.9 (0.6-1.7)
Band 7	Total WTE of nurses	1.0 (1.0-2.0)	0.5 (0.0-1.0)	1.0 (0.5-1.0)	1.0 (0.8-1.0)
	WTE per 10 beds	0.4 (0.4-0.6)	0.6 (0.0-1.3)	0.4 (0.3-0.5)	0.4 (0.3-0.6)
2016					
Total establishment nurses (bands 6 -7) for all stroke beds (Q3.2)		Total stroke unit beds (178 Sites)	Type 1 beds (73 Sites)	Type 2 beds (92 Sites)	Type 3 beds (105 Sites)
Median (Interquartile range (IQR))					
Band 6	Total WTE of nurses	4.4 (2.0-7.7)	3.0 (1.0-6.6)	2.8 (2.0-4.0)	3.0 (2.0-5.0)
	WTE per 10 beds	1.7 (1.0-2.5)	4.2 (1.7-7.4)	1.3 (0.8-1.7)	1.3 (0.8-2.2)
Band 7	Total WTE of nurses	2.0 (1.0-2.4)	1.0 (0.4-1.4)	1.0 (1.0-1.4)	1.0 (1.0-2.0)
	WTE per 10 beds	0.6 (0.4-0.9)	1.1 (0.5-1.8)	0.5 (0.4-0.6)	0.6 (0.4-1.0)

Comment: It is a concern that only 51% of sites are achieving the key indicator of adequate levels of senior nurses on the stroke unit. Senior nurses are essential not only for ward management, but also for taking overall charge of the ward, maintaining standards of care and ensuring more junior staff are appropriately trained in the management of acute stroke. In many units, specialist stroke nurses (often band 6) are the nurses who attend A&E and undertake initial assessment and management of people with acute stroke. The latest SSNAP clinical annual 2015 -16 report shows that 88% of patients are seen by a stroke trained nurse within 24 hours of arrival at hospital, but this still means that 12% are not; and 28% of people who need one are not receiving a swallow screen within 4 hours, which we know is associated with increased rates of pneumonia. Hyperacute nursing is becoming necessarily more complicated, with assessment for thrombectomy, management following thrombectomy and more intensive early management of people with intracerebral haemorrhage (ICH). Current nurse staffing levels are insufficient to provide good care for everyone who needs it, and as we implement guidelines, more skilled nurses will be required rather than less. While sites with type 2 beds only (beds solely used for patients beyond 72 hours) are not routinely caring for people very acutely after stroke, senior stroke nurses are essential to ensure that patients continue to receive specialist guidelines based care, in an environment where there may not be stroke medical cover particularly out of hours.

2.1.3 All nurse staffing levels

Following analysis of the relationship between nursing numbers and mortality and to obtain further detail of the skill mix of nurses the question about nurse staffing was first broken down by bands in 2014. It is therefore important to compare the current staffing levels with the results for the previous round in 2014.

Looking forward

In the future the recommended minimum nurse staffing level should be 2.9 WTE nurses per bed with a ratio of registered to unregistered nurses being 80:20 ratio for hyperacute beds (type 1 and type 3).

Nurse staffing levels for beds for patients beyond the first 72 hours of stroke only (type 2 beds) should be 1.35 WTE nurses per bed with a ratio of 65:35 registered to unregistered nurses.

Going forward these new nurse staffing level standards will be expected as an absolute minimum for all hyperacute and acute stroke services and sites are encouraged to take the necessary steps to meet them.

Tables 2.7 – 2.9 presents both the total establishment of whole time equivalent (WTE) and WTE per 10 beds of nurses according to each type of bed and band in order to give an indication of where nurses are most stretched. Information from 2014 enables comparison between rounds. The current national level of compliance with the new nurse staffing levels standard as a starting point has also been given - it has not been used as a key indicator for the 2016 audit.

Unregistered nurses *(Have not undertaken nurse training, they are often referred to as nursing assistant or healthcare assistant, but this is not a 'registered qualification'. They are essential to the nursing workforce.)*

Table 2.7 Total establishment of whole time equivalents (WTE) for unregistered nurses

Total establishment of nurses (bands 1-4) for all stroke beds (Q2.8, 2.13 & 2.20) Median (IQR*)			Total stroke unit beds	Type 1 beds	Type 2 beds	Type 3 beds
			2014 (183 sites)	2014 (75 Sites)	2014 (99 Sites)	2014 (109 Sites)
			2016 (178 sites)	2016 (73 Sites)	2016 (92 Sites)	2016 (105 Sites)
Band 2	2014	Total WTE of nurses	12.1 (8.6-17.5)	3.5 (1.5-7.0)	10.0 (6.0-13.0)	10.8 (6.1-14.0)
		WTE per 10 beds	4.6 (3.7-5.8)	5.3 (1.6-6.7)	4.6 (3.7-5.7)	4.8 (3.6-6.2)
	2016	Total WTE of nurses	13.7 (8.2-18.9)	3.0 (1.0-7.2)	12.1 (7.5-16.1)	11.5 (6.2-15.4)
		WTE per 10 beds	5.2 (3.8-6.5)	4.7 (1.7-6.8)	5.4 (4.2-7.4)	5.1 (3.7-6.4)
Band 3	2014	Total WTE of nurses	1.0 (0.0-3.0)	0.0 (0.0-1.0)	0.0 (0.0-2.0)	1.0 (0.0-3.0)
		WTE per 10 beds	0.4 (0.0-1.2)	0.0 (0.0-0.9)	0.0 (0.0-1.1)	0.5 (0.0-1.2)
	2016	Total WTE of nurses	0.9 (0.0-3.0)	0.0 (0.0-0.8)	0.0 (0.0-3.0)	0.6 (0.0-2.0)
		WTE per 10 beds	0.3 (0.0-1.2)	0.0 (0.0-1.1)	0.0 (0.0-1.3)	0.3 (0.0-1.0)
Band 4	2014	Total WTE of nurses	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)
		WTE per 10 beds	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)
	2016	Total WTE of nurses	0.0 (0.0-1.0)	0.0 (0.0-0.6)	0.0 (0.0-0.0)	0.0 (0.0-0.8)
		WTE per 10 beds	0.0 (0.0-0.3)	0.0 (0.0-0.7)	0.0 (0.0-0.0)	0.0 (0.0-0.3)

** Interquartile range*

Registered nurses *(Have trained as a nurse and been awarded a degree (or previously a diploma) in nursing and are registered as a practising nurse with the UK Central Council of Nursing and Midwifery)*

Table 2.8: Total establishment of whole time equivalents (WTE) for registered nurses

Total establishment of nurses (bands 5-8c) for all stroke beds (Q2.8, 2.13 & 2.20) Median (IQR*)			Total stroke unit beds	Type 1 beds	Type 2 beds	Type 3 beds
			2014 (183 sites)	2014 (75 Sites)	2014 (99 Sites)	2014 (109 Sites)
			2016 (178 sites)	2016 (73 Sites)	2016 (92 Sites)	2016 (105 Sites)
Band 5	2014	Total WTE of nurses	18.0 (13.3-27.2)	9.8 (4.5-14.4)	14.0 (10.3-17.8)	14.8 (10.9-18.0)
		WTE per 10 beds	7.3 (5.9-8.7)	10.3 (7.5-16.5)	6.8 (5.2-7.9)	6.9 (5.8-8.2)
	2016	Total WTE of nurses	18.4 (12.8-28.9)	7.9 (4.6-13.0)	14.3 (11.3-20.1)	14.2 (10.4-18.7)
		WTE per 10 beds	7.3 (5.9-8.8)	10.7 (7.6-14.8)	7.0 (5.7-8.0)	7.0 (5.6-8.1)
Band 6	2014	Total WTE of nurses	3.0 (2.0-6.0)	2.5 (0.7-5.4)	2.0 (1.0-3.0)	2.0 (1.0-4.0)
		WTE per 10 beds	1.2 (0.7-2.0)	2.7 (0.9-6.7)	0.9 (0.6-1.3)	0.9 (0.6-1.7)
	2016	Total WTE of nurses	4.4 (2.0-7.7)	3.0 (1.0-6.6)	2.8 (2.0-4.0)	3.0 (2.0-5.0)
		WTE per 10 beds	1.7 (1.0-2.5)	4.2 (1.7-7.4)	1.3 (0.8-1.7)	1.3 (0.8-2.2)
Band 7	2014	Total WTE of nurses	1.0 (1.0-2.0)	0.5 (0.0-1.0)	1.0 (0.5-1.0)	1.0 (0.8-1.0)
		WTE per 10 beds	0.4 (0.4-0.6)	0.6 (0.0-1.3)	0.4 (0.3-0.5)	0.4 (0.3-0.6)
	2016	Total WTE of nurses	2.0 (1.0-2.4)	1.0 (0.4-1.4)	1.0 (1.0-1.4)	1.0 (1.0-2.0)
		WTE per 10 beds	0.6 (0.4-0.9)	1.1 (0.5-1.8)	0.5 (0.4-0.6)	0.6 (0.4-1.0)
Band 8a	2014	Total WTE of nurses	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)
		WTE per 10 beds	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)
	2016	Total WTE of nurses	0.0 (0.0-0.5)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.0 (0.0-0.1)
		WTE per 10 beds	0.0 (0.0-0.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.1)

** Interquartile range*

Table 2.9: National performance against nurse staffing standard

RCP nurse staffing level standard	**Total number of 2016 sites meeting standard**
Criterion:	
Type 1 and 3 - 2.9 nurses/bed and 80:20 ratio of registered to unregistered nurses	Number of sites meeting criteria for type 1 and type 3 beds: 10% (15/156)
Type 2 - 1.35 nurses/bed and 65:35 ratio of registered to unregistered nurses	Number of sites meeting criteria for type 2 beds: 15% (14/92)

Bands 1, 8b and 8c all had a median and interquartile range (IQR) of 0.0 (0.0-0.0) for all beds and years and therefore have not been shown.

Comment: The majority of nurses appear to be band 5, with bands 2-3 (unregistered) following closely behind. There are smaller numbers of bands 6 and 7 nurses and above.

2.1.4 Access to qualified clinical psychologists

Standard **Key indicator 2:** **Presence of a qualified clinical psychologist**
National performance:
6% (10/178) of sites meet key indicator
Key indicator achieved if: *Presence of at least one (WTE) qualified clinical psychologist per 30 stroke unit (SU) beds*

Standard

NICE Quality Statement

Statement 3: Adults who have had a stroke have access to a clinical psychologist with expertise in stroke rehabilitation who is part of the core multi-disciplinary stroke rehabilitation team.
[New 2016]

Comment: Psychological problems following stroke can be as debilitating as a physical disability and it is essential that these are identified quickly. Historically in this audit the number of sites offering any level of qualified clinical psychologist has been very low, with 54% in 2014 and 57% in 2016. The key indicator (at least one whole time equivalent (WTE) qualified clinical psychologist for every 30 stroke unit beds) is only being met in 6% of sites. These data suggest that only a small number of patients will be able to access input from a psychologist, which contrasts with the high levels of emotional distress and neuropsychological impairments reported by patients and their carers.

Table 2.10: Access to qualified clinical psychologists

Sites with access to qualified clinical psychologists (Q3.2(a))	National 2014 (183 sites) % (n)		National 2016 (178 sites) % (n)	
Presence of at least one whole time equivalent (WTE) qualified clinical psychologist per 30 stroke beds (Key indicator 2)			**6%**	**(10/178)**
Presence of at least one qualified clinical psychologist	54%	(98)	57%	(101)
Median (IQR) **WTE of qualified** clinical psychologist	0.1 (0.0-0.5)		0.1 (0.0-0.4)	
Median (IQR) **WTE/per 10 beds of qualified** clinical psychologists	0.0 (0.0-0.2)		0.0 (0.0-0.1)	
Percentage of sites with qualified clinical psychologists **working 7-days a week**	1%	1/98	2%	2/101

2.1.5 Therapy staffing levels

Therapists are an essential part of the multi-disciplinary team caring for people with stroke, not only later in rehabilitation but also as part of the acute stroke assessment team. People with stroke benefit from appropriate early assessment and intervention, and length of stay may be reduced by increased availability of therapists, including at weekends and in the evenings.

Tables 2.11 and 2.12 below describe the current levels of therapy staff and provide comparisons with 2014. They show the percentage of sites with access to at least one of each type, how many have 6 or 7 day working and median and interquartile range (IQR) for whole time equivalent (WTE) as a whole and per 10 beds. See section 2.2.3 on page 36 for further information on sites with 7-day access to at least two of physiotherapy, occupational therapy and speech and language therapy.

Table 2.11: National levels of and access to therapy staff

Whole time equivalents (WTE) (Q3.2)		Qualified staff 2014 (183 sites)	Support staff 2014 (183 sites)	Qualified staff 2016 (178 sites)	Support staff 2016 (178 sites)
Occupational therapy	Percentage (Number YES)	100% (183)	91% (167)	100% (178)	93% (166)
	Percentage (Number 6 day service)	13% (24/183)	7% (12/167)	16% (28/178)	11% (18/166)
	Percentage (Number 7 day service)	22% (40/183)	21% (35/167)	31% (55/178)	25% (41/166)
	Median (IQR)	3.0 (2.0-4.1)	1.0 (0.5-1.8)	3.3 (2.0-4.7)	1.0 (0.6-1.7)
	Median (IQR) per 10 beds	1.1 (0.8-1.5)	0.4 (0.2-0.6)	1.3 (1.0-1.6)	0.4 (0.3-0.6)
Physiotherapy	Percentage (Number YES)	100% (183)	95% (173)	100% (178)	97% (173)
	% (Number 6 day service)	16% (29/183)	10% (18/173)	13% (24/178)	10% (18/173)
	% (Number 7 day service)	28% (52/183)	24% (41/173)	40% (71/178)	32% (56/173)
	Median (IQR)	3.4 (2.5-5.0)	1.2 (0.9-1.9)	3.8 (2.6-5.0)	1.1 (0.9-2.0)
	Median (IQR) per 10 beds	1.3 (1.1-1.6)	0.5 (0.3-0.7)	1.4 (1.1-1.7)	0.5 (0.3-0.7)
Speech and language therapy	Percentage (Number YES)	98% (180)	52% (95)	98% (175)	52% (92)
	Percentage (Number 6 day service)	3% (5/180)	2% (2/95)	9% (15/175)	8% (7/92)
	Percentage (Number 7 day service)	5% (9/180)	8% (8/95)	6% (11/175)	8% (7/92)
	Median (IQR)	1.4 (0.8-2.1)	0.1 (0.0-0.5)	1.6 (1.0-2.2)	0.2 (0.0-0.6)
	Median (IQR) per 10 beds	0.5 (0.3-0.8)	0.0 (0.0-0.2)	0.6 (0.4-0.8)	0.1 (0.0-0.2)
Clinical psychology	Percentage (Number YES)	54% (98/183)	11% (21/183)	57% (101)	12% (21)
	Percentage (Number 6 day service)	0% (0/98)	0% (0/21)	0% (0/101)	0% (0/21)
	Percentage (Number 7 day service)	1% (1/98)	5% (1/21)	2% (2/101)	5% (1/21)
	Median (IQR)	0.1 (0.0-0.5)	0.0 (0.0-0.0)	0.1 (0.0-0.4)	0.0 (0.0-0.0)
	Median (IQR) per 10 beds	0.0 (0.0-0.2)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.0 (0.0-0.0)
Dietetics	Percentage (Number YES)	98% (179)	21% (38)	93% (166)	24% (42)
	Percentage (Number 6 day service)	1% (2/179)	5% (2/38)	2% (3/166)	2% (1/42)
	Percentage (Number 7 day service)	1% (2/179)	8% (3/38)	1% (2/166)	7% (3/42)
	Median (IQR)	0.5 (0.3-0.8)	0.0 (0.0-0.0)	0.5 (0.3-1.0)	0.0 (0.0-0.0)
	Median (IQR) per 10 beds	0.2 (0.1-0.3)	0.0 (0.0-0.0)	0.2 (0.1-0.3)	0.0 (0.0-0.0)
Pharmacy	Percentage (Number YES)	92% (169)	66% (120)	97% (172)	66% (117)
	Percentage (Number 6 day service)	4% (6/169)	4% (5/120)	3% (6/172)	3% (4/117)
	Percentage (Number 7 day service)	9% (16/169)	8% (10/120)	17% (29/172)	17% (20/117)
	Median (IQR)	0.4 (0.2-0.7)	0.2 (0.0-0.4)	0.5 (0.3-1.0)	0.3 (0.0-0.5)
	Median (IQR) per 10 beds	0.2 (0.1-0.2)	0.1 (0.0-0.2)	0.2 (0.1-0.3)	0.1 (0.0-0.2)

Table 2.12: Access to other professionals

Stroke unit has access within 5 days to (Q3.1):	National 2014 (183 sites) % (n)		National 2016 (178 sites) % (n)	
• Social work expertise	97%	(178)	97%	(173)
• Orthotics	86%	(157)	89%	(159)
• Orthoptics	85%	(155)	89%	(159)
• Podiatry / Foot health	60%	(110)	66%	(117)

Comment: It is good to see that there has been a slight overall increase in therapy numbers, but the SSNAP clinical audit still shows that patients are not receiving the sufficient amount of therapy (particularly speech and language therapy) and we are still a long way from having universal access to 6 and 7-day therapy services. Three sites still have no qualified speech and language therapists, and there has been a reduction in the number of qualified dietitians on the stroke unit (from 98% of sites in 2014 to 93% of sites in 2016).

2.2 Seven day working

Comment: Ensuring that patients have access to specialist healthcare professionals 7 days a week is now a key part of the national healthcare agenda. The programme used SSNAP data both on stroke service structure through the week and clinical outcomes to demonstrate that variation in acute stroke healthcare is not just 'a weekend effect' but that specialist healthcare presence is needed every day to ensure that all patients have access to high quality care consistently regardless of the day of the week or time of day they arrive at hospital (https://www.strokeaudit.org/Research/Published-papers.aspx). Trusts need to ensure that there is 7-day a week availability of nurses and therapists as well as junior doctors and consultants. A stroke consultant ward round at least daily ensures that patients with suspected stroke have the best access to a senior clinician for decisions about diagnosis, early treatment and on-going management including discharge plans.

Sites were asked about the availability of specialist stroke consultants, nurses and therapists 7 days a week. The following tables present the number of sites able to provide 7-day access to these disciplines.

2.2.1 Specialist stroke consultant ward rounds

Standard
Key indicator 3:
Minimum number of stroke consultant led ward rounds

National performance:
72% (112/156) of sites meet key indicator
Key indicator achieved if: *At least one a day (7 a week minimum) for type 1 and type 3 beds. If a site has **both** type 1 and type 3 beds, consultant led ward rounds must take place at least once a day on both in order for the key indicator to be met.*

The hyperacute stroke unit (HASU) model of care requires specialist stroke consultant ward rounds to take place at least once a day to ensure that all patients with suspected stroke are reviewed regularly for as long as required. These beds are either type 1 or contained within type 3 beds.

Table 2.13: Specialist consultant led ward rounds (type 1 and 3 beds)

Consultant led ward rounds (Q2.3, Q2.15)	National 2014		National 2016	
	Type 1 beds (75 stroke units) % (n)	Type 3 beds (109 stroke units) % (n)	Type 1 beds (73 stroke units) % (n)	Type 3 beds (105 stroke units) % (n)
Consultant ward rounds 7 days a week* (Key indicator 3)	64% (48/75)	30% (33/109)	84% (61/73)	69% (72/105)

**A minimum of 7 ward rounds a week is required to meet this key indicator*

Comment: It is good to see that more sites in 2016 reported daily stroke consultant ward rounds 7 days a week, but this key indicator may be difficult to achieve in the future unless current vacancies for consultant posts are filled.

Looking forward

Going forward hospitals will be expected to ensure that their stroke patients are seen by a specialist stroke consultant within 14 hours of admission as per the NHS England Urgent and Emergency Care review.

Although the same standard does not formally apply to beds used for post-72 hours only (type 2), table 2.14 below highlights that there are still 25% of sites where consultant led ward round occur less than 5 days a week.

Table 2.14: Specialist consultant led ward rounds (type 2 beds)

	National 2014 Type 2 beds (99 units) % (n)	National 2016 Type 2 beds (92 sites) % (n)
Stroke consultant ward rounds (type 2 beds) (Q2.9)		
Number of **days per week** of **stroke consultant led ward round**	7 days: 9% (9) 5-6 days: 60% (59) Less than 5 days: 31% (31)	7 days: 14% (13) 5-6 days: 61% (56) Less than 5 days: 25% (23)

2.2.2 Nurses on duty at 10am and 10pm weekends

Standard

Key indicator 4:

Minimum number of nurses on duty at 10am weekends

National performance:
20% (31/156) of sites meet key indicator

Key indicator achieved if:

3.0 or more nurses per 10 type 1 and type 3 beds. If a site has both type 1 and type 3 beds an average of Saturday and Sunday per 10 type 1 and type 3 beds is used.

Comment: Nurse staffing levels in hospitals are important and associated with patient safety and mortality. Stroke audit data demonstrate an association between higher nursing numbers and lower mortality (http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.1001705). The study showed that patients admitted to hospitals with the lowest weekend ratios of registered nurses to patient beds had the highest mortality. Well-staffed wards have the capacity to undertake the intensive nursing management that acute stroke patients need. This underlines the importance of adequate nurse staffing numbers to ensure high standards of care.

Table 2.15: Registered nurses on duty at 10am weekends: Type 1 beds

Registered nurses usually on duty at 10am weekends (2.5(i))	% (n) in category 2014 (75 sites)	National median (IQR*) per 10 beds	% (n) in category 2016 (73 sites)	National median (IQR*) per 10 beds
Sites with 3 or more nurses **(Key indicator 4)**		3.3 (2.5-5.0)	56% (41/73)	3.3 (2.5-4.2)
Sites with 2-2.9 nurses			33% (24/73)	
Sites with fewer than 2 nurses			11% (8/73)	

** Interquartile range*

Table 2.16: Registered nurses on duty at 10am weekends: Type 3 beds

Registered nurses usually on duty at 10am weekends (2.17(i))	% (n) in category 2014 (109 sites)	National median (IQR*) per 10 beds	% (n) in category 2016 (105 sites)	National median (IQR*) per 10 beds
Sites with 3 or more nurses **(Key indicator 4)**		1.7 (1.5-2.1)	3% (3/105)	1.8 (1.6-2.1)
Sites with 2-2.9 nurses			34% (36/105)	
Sites with fewer than 2 nurses			63% (66/105)	

** Interquartile range*

Table 2.17: Median number of nurses on duty at 10pm weekends: Type 1 and 3 beds

Registered nurses usually on duty at 10pm/10 stroke beds (2.7(i), 2.12(i) & 2.19(i)) Median (Interquartile range)		Total stroke units	Type 1 beds	Type 3 beds
		2014 (183 sites)	(75 sites)	(109 sites)
		2016 (178 sites)	(73 sites)	(105 sites)
Saturdays	Number per 10 beds	1.3 (1.0-1.7)	3.0 (1.7-3.9)	1.2 (0.9-1.5)
	Number per 10 beds	1.4 (1.2-1.7)	2.5 (2.2-3.9)	1.3 (1.0-1.5)
Sundays / Bank Holidays	Number per 10 beds	1.3 (1.0-1.7)	3.0 (1.7-3.9)	1.2 (0.9-1.5)
	Number per 10 beds	1.4 (1.2-1.7)	2.5 (2.2-3.9)	1.3 (1.0-1.5)

Table 2.18 Median number of nurses on duty at 10am trained in swallow screening

Nurses trained in swallow screening usually on duty at 10am (2.6(i), 2.11(i) & 2.18(i)) Median (Interquartile range)		Total stroke units	Type 1 beds	Type 3 beds
		2014 (183 sites)	(75 sites)	(109 sites)
		2016 (178 sites)	(73 sites)	(105 sites)
Weekdays	Number per 10 beds	1.4 (0.9-1.9)	2.5 (1.7-3.3)	1.4 (0.9-1.9)
	Number per 10 beds	1.5 (0.9-1.9)	2.5 (2.1-4.0)	1.6 (0.9-1.8)
Saturdays	Number per 10 beds	1.4 (0.8-1.7)	2.5 (1.7-3.3)	1.3 (0.8-1.8)
	Number per 10 beds	1.3 (0.8-1.7)	2.5 (1.7-3.8)	1.4 (0.8-1.7)
Sundays / Bank Holidays	Number per 10 beds	1.3 (0.8-1.7)	2.5 (1.7-3.3)	1.3 (0.8-1.8)
	Number per 10 beds	1.3 (0.8-1.7)	2.5 (1.7-3.8)	1.4 (0.8-1.7)

2.2.3 Seven day therapy access

Standard **Key indicator 5:** **At least two types of therapy available 7 days a week**
National performance:
31% (55/178) of sites meet key indicator
Key indicator achieved if: *At least two types of qualified therapy working 7 days a week. Includes occupational therapy, physiotherapy and speech and language therapy.*

Standard

NICE Quality Statement

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]

Sites were asked for information on their occupational therapy, physiotherapy and speech and language therapy workforce and their 7-day working pattern. See page 31 for more detailed information about therapy staffing levels.

Table 2.19 below describes the number of sites with therapy provided by at least two therapy disciplines 7 days a week.

Table 2.19: Number of sites providing two types of therapy 7-days a week

Number of sites providing two types of therapy (qualified) 7-days a week (Q3.2)	2016 National 178 sites % (n)
At least two types of qualified therapy provided 7 days a week* (Key indicator 5)	31% (55)

**At least two types of qualified therapists from occupational therapy, physiotherapy and speech and language therapy (qualified only)*

Table 2.20 below shows the combinations of qualified therapists available 7-days a week within participating sites. There are 11 sites which can provide their patients with therapy of all three disciplines 7 days a week and 44 sites who can provide patients with physiotherapy and occupational therapy 7 days a week.

Table 2.20: National breakdown of qualified therapy staff disciplines working 7 days with participating sites

Combinations of qualified therapy types working 7 days (Q3.2)	2016 National (178 sites) % (n)	
All three types of therapy	6%	(11)
Occupational therapy and physiotherapy	25%	(44)
Physiotherapy only	9%	(16)
No types of therapy available 7 days a week	60%	(107)

2.3 Access to specialist treatment and support

2.3.1 Intra-arterial (thrombectomy) treatment

Standard **Key indicator 6:** **Patients can access intra-arterial (thrombectomy) treatment**
National performance:
67% (105/156) of sites meet key indicator
Key indicator achieved if: *Patients have access to intra-arterial (thrombectomy) treatment on-site or by referral off-site.*

Large artery occlusive stroke in general is associated with higher severity as measured by a high score on National Institutes of Health Stroke Scale (NIHSS) score on presentation and a worse prognosis. Intra-arterial clot removal (intra-arterial thrombectomy (IAT)) in acute large artery occlusive stroke is a relatively new treatment that now has a firm evidence base. It requires early identification of appropriate patients (based on clinical presentation, NIHSS score and presence of large artery clot on imaging (usually by CT angiogram), transfer to a centre with on-site interventional neuroradiology, mechanical clot removal and post thrombectomy care.

This section of the audit aims to ascertain accurately the current levels of IAT activity, document key parts of the IAT process/care pathways and the NHS workforce required. There are 2 sites that have patients referred to them for intra-arterial treatment to them, but do not participate in SSNAP. They submitted information on their thrombectomy service only and their information is included below.

Table 2.21: Patient access to intra-arterial (thrombectomy) treatment

Use of intra-arterial (thrombectomy) treatment to treat patients with acute stroke (Q1.7)	National 2014 (167 sites)		National 2016 (158* sites)	
Sites whose patients have access to intra-arterial (thrombectomy) treatment (Key indicator 6)	Yes, on-site	13% (21)	Yes, on-site	18% (28)
	Yes, by referral	42% (70)	Yes, by referral	50% (79)
	No	46% (76)	No	32% (51)
If yes, hours service is available (Q1.7(c))			Median (IQR)	
Weekdays			8 (8-8)	
Saturdays			0 (0-0)	
Sundays/Bank holidays			0 (0-0)	

** There are 2 sites that have patients referred to them for intra-arterial treatment to them, but do not participate in SSNAP. They submitted information on their thrombectomy service only*

Comment: There are currently only 83 consultants reported in the 2016 audit as undertaking this procedure, and 424 patients nationally between 1 April 2015 and 31 March 2016. Most sites providing intra-arterial treatment report that the service is only available during the week. Access to intra-arterial thrombectomy (IAT) is likely to remain limited until logistical and workforce issues are resolved.

Table 2.22: Number of consultants performing intra-arterial (thrombectomy) treatment

Number of consultant level doctors performing intra-arterial (thrombectomy) treatment (Q1.8)	National 2014 (167 sites)	National 2016 (158* sites)	
		83 consultants in 28 sites	
Specialty of the **consultant performing thrombectomy** (Q1.8)		Total number of consultants identified	Percentage of consultants
Interventional neuroradiology		78	94.0%
Vascular interventional radiology		5	6.0%
Number of stroke patients treated intra-arterially between 1 April 2015 and 31 March 2016 (Q1.9)	295	424	

** There are 2 sites that have patients referred to them for intra-arterial treatment to them, but do not participate in SSNAP. They submitted information on their thrombectomy service only*

No sites had non-vascular interventional radiologists, cardiologists, neuro-surgeons or stroke physicians performing thrombectomy.

2.3.2 Thrombolysis

Comment: Thrombolysis is recommended for the treatment of selected patients with acute ischaemic stroke. Approximately 20% of stroke patients are eligible to receive thrombolysis treatment, if they can get to a hospital that provides thrombolysis quickly. Outcomes are better the earlier thrombolysis is administered. Some trusts do not provide a service on site but have local arrangements to ensure their patients have access to thrombolysis 24 hours a day, 7 days a week. Some sites use a telemedicine service with remote advice from a stroke consultant.

99% of sites are now able to offer patients thrombolysis treatment 24 hours a day, 7 days a week either on-site or in collaboration with another site. 87% of sites offer 24 hours a day, 7 days a week provision on-site.

Table 2.23: Thrombolysis provision

Thrombolysis service offered (Q1.3 and Q1.6d)	National 2014 (167 sites) % (n)		National 2016 (156 sites) % (n)	
• 24 hours a day 7 days a week (24/7) service provided on-site	83%	(138)	87%	(136)
• No on-site service but a 24/7 service provided including local arrangements	8%	(14)	8%	(13)
• Less than 24/7 service provided on-site but a 24/7 service provided overall including local arrangements	8%	(13)	4%	(6)
• Less than 24/7 service provided on-site, with no local arrangements	0%	(0)	1%	(1)
• Less than 24/7 service provided overall including local arrangements	0%	(0)	0	(0)
• No on-site service and less than 24/7 service provided including local arrangements	1%	(1)	0	(0)
• No provision at all	1%	(1)	0	(0)

Table 2.24: Consultants on an on call thrombolysis rota

Consultant level doctors on an on call thrombolysis rota (Q1.4)	National 2014 (151 sites)		National 2016 (143 sites)	
	Median	IQR	Median	IQR
Number of consultant level doctors on a thrombolysis rota*	6	3-8	5	3-8
Specialty on thrombolysis rota	% of sites	n of sites	% of sites	n of sites
Stroke physician	85%	(128)	88%	(126)
Care of the elderly	34%	(51)	35%	(50)
Neurologist	29%	(44)	31%	(45)
Acute Physician	15%	(23)	13%	(18)
A&E	7%	(10)	10%	(14)
General medicine physician	9%	(14)	8%	(12)
Cardiologist	4%	(6)	2%	(3)
Other	2%	(3)	1%	(2)
No consultant	1%	(2)	1%	(2)

**Two of the 143 sites had no consultant level doctors on the thrombolysis rota. 25 sites had 10 or more consultant level doctors on the thrombolysis rota.*

2.3.3 Venous thromboembolism prevention

Standard

Key indicator 7:

Intermittent pneumatic compression (IPC) device used as first line preventative measure for venous thromboembolism

National performance:

80% (143/178)

of sites meet key indicator

Key indicator achieved if:

Intermittent pneumatic compression (IPC) device used as first line preventative measure.

Venous thromboembolism (VTE) is a common complication of stroke which may present as deep vein thrombosis (DVT) or as pulmonary embolism, which can lead to sudden death. VTE prophylaxis using low molecular weight heparin is not normally used in acute stroke because of concerns about haemorrhagic transformation of ischaemic stroke or expansion of an existing haematoma. In 2012 the University of Edinburgh published the CLOTS 3 trial with the aim of establishing whether intermittent pneumatic compression (IPC) reduces the risk of a person admitted to hospital with a stroke developing a deep vein thrombosis (DVT). The trial results showed a 3.6% decrease in absolute risk reduction in the incidence of DVT and that IPC improves overall survival of stroke patients until 6 months. Following publication of the results in August 2013 NHS England and the NHS Improving Quality (NHS IQ) put forward a bid to supply approximately 6 months' worth of IPC sleeves to all units in an effort to realise the benefits in every day practice.

In order to establish what preventative methods stroke units are using since the results of this trial and the distribution of the IPC sleeves the following question was included in the 2014 organisational audit proforma and again in 2016.

Table 2.25: Treatment for preventing venous thromboembolism

First line treatment for preventing venous thromboembolism (VTE) (Q3.5)	National 2014 (183 sites) % (n)		National 2016 (178 sites) % (n)	
Intermittent pneumatic compression device (Key indicator 7)	42%	(77)	80%	(143)
Low molecular weight heparin	35%	(64)	13%	(24)
Short or long compression stockings	1%	(1)	1%	(1)
None of the above	22%	(41)	6%	(10)

Comment: While most units have access to intermittent pneumatic compression (IPC) devices, only 16.6% of patients in the annual 2015-16 clinical audit were reported as having IPC devices applied. It is a serious concern that 13% of sites are still routinely using heparin as first line prophylaxis despite evidence that it may be harmful.

2.3.4 Specialist early supported discharge (ESD)

Standard
Key indicator 8:
Access to a specialist (stroke/neurology) specific early supported discharge (ESD) team

National performance:

81% (145/178)
of sites meet key indicator

Key indicator achieved if:
If site has access to at least one specialist early supported discharge (ESD) team.

NICE Quality Statement

Statement 4: Adults who have had a stroke are offered early supported discharge if the core multi-disciplinary stroke team assess that it is suitable for them.
[New 2016]

An early supported discharge (ESD) team is a multi-disciplinary team which provides rehabilitation and support in a community setting with the aim of reducing the duration of hospital care for stroke patients and to enable them to return home sooner whilst receiving the same level of therapy/care they would do in hospital. A stroke/neurology specific *(specialist)* team is one which treats stroke patients either solely or in addition to general neurology patients.

Table 2.26: Access to specialist early supported discharge (ESD)

Access to specialist early supported discharge (Q4.1)	National 2014 (183 sites) % (n)		National 2016 (178 sites) % (n)	
Site has access to at least one specialist early supported discharge (ESD) team (Key indicator 8)	74%	(135)	81%	(145)
	Median, interquartile range (IQR) n/N			
Percentage of patients at the site which have **access to at least one specialist early supported discharge** (ESD) team	M 100% IQR 85-100% 91/135 with 100%		M 100% IQR 80%-100% 83/145 with 100%	

2.3.5 Community rehabilitation teams (CRT)

Community rehabilitation teams (CRT) are multi-disciplinary teams which also provide rehabilitation and support to a stroke patient at home. CRT teams will take patients directly from inpatient care facilities or 'step down' patients from early supported discharge. A stroke/neurology specific *(specialist)* team is one which treats stroke patients either solely or in addition to general neurology patients. A non-specialist team treats patients with a variety of different conditions.

Table 2.27: Access to community rehabilitation teams (CRT): Specialist and non-specialist

Community rehabilitation teams (Q4.2 and Q4.3)	National 2014 (183 sites) % (n)		National 2016 (178 sites) % (n)	
Access to stroke/neurology specialist community rehabilitation team for longer-term management	72%	(131)	76%	(135)
Access to non-specialist community rehabilitation team for longer-term management	70%	(128)	54%	(96)

Comment: More sites now have early supported discharge (ESD) teams in place, and specialist stroke /neurology community rehabilitation teams rather than generic therapy teams which is encouraging, although almost a quarter of sites still do not. It is vital that people with stroke have access to specialist multi-disciplinary rehabilitation teams as soon as they are discharged from hospital and for as long as they need it.

2.3.6 Transient ischaemic attack (TIA)/ neurovascular service

Standard

Key indicator 9:

Timescales to see, investigate and initiate treatment for both high risk and low risk patients

National performance:
73% (130/178*) of sites meet key indicator
Key indicator achieved if: *HIGH risk TIA patients are seen = The same day or next day 7 days a week* *LOW risk TIA patients are seen = Within a week* *Can apply to both inpatient and outpatient services. If site has both the one with the BEST time is used.*

** One site did not have a neurovascular clinic but has been assigned the performance of the site to which they refer their patients*

All patients have access to neurovascular services. 177 sites were able to offer this on-site with one site referring their patients to another site within their trust.

Comment: Patients with transient ischaemic attack (TIA) are ideally treated as urgent outpatients, because by definition they have recovered. However, a significant proportion of people will rightly seek urgent medical attention at the time of the TIA but be recovering or recovered when first seen in A&E. It is important that inpatient services can see, investigate, treat and discharge on a same date basis 7 days a week to avoid unnecessary overnight stays, and it is disappointing that nearly 30% of services for high risk patients are unable to do this. The number of same day (7 days a week) outpatient services for people with TIA has improved, but nearly 50% of sites cannot offer a 7-day service for high risk patients. Rapid investigation of people with TIA, particularly urgent carotid imaging, is essential to reduce subsequent stroke.

Table 2.28: High risk patients: Timescale to see, investigate and initiate treatment for ALL HIGH risk TIA patients *(Q5.5)*
(Key Indicator 9)

Inpatient	National 2014 (179 sites) % (n)		National 2016 (169 sites) % (n)
Service provided for inpatients	86% (154/179)		83% (141/169)
The same day (7 days a week)	60%	(93/154)	71% (100/141)
The same day (5 days a week)	26%	(40/154)	21% (30/141)
The next day	8%	(12/154)	5% (7/141)
The next weekday	5%	(8/154)	3% (4/141)
Within a week	1%	(1/154)	0% (0/141)
Outpatient	National 2014 (179 sites) % (n)		National 2016 (169 sites) % (n)
Service provided for outpatients	97% (174/179)		96% (163/169)
The same day (7 days a week)	45%	(79/174)	52% (84/163)
The same day (5 days a week)	32%	(56/174)	29% (47/163)
The next day	13%	(22/174)	10% (16/163)
The next weekday	8%	(14/174)	5% (8/163)
Within a week	2%	(3/174)	5% (8/163)

Table 2.29: **Low risk patients: Timescale to see, investigate and initiate treatment for ALL LOW risk TIA patients to receive carotid imaging** *(Q5.6)*
(Key Indicator 9)

Inpatient	National 2014 (183 sites) % (n)		National 2016 (175 sites) % (n)
Service provided for inpatients	57% (104/183)		57% (100/175)
The same day (7 days a week)	40%	(42/104)	50% (50/100)
The same day (5 days a week)	33%	(34/104)	30% (30/100)
The next day	7%	(7/104)	5% (5/100)
The next weekday	10%	(10/104)	8% (8/100)
Within a week	11%	(11/104)	6% (6/100)
Within a month	0%	(0/104)	1% (1/100)
Outpatient	National 2014 (183 sites) % (n)		National 2016 (175 sites) % (n)
Service provided for outpatients	99% (182/183)		100% (175/175)
The same day (7 days a week)	5%	(10/182)	9% (16/175)
The same day (5 days a week)	17%	(31/182)	18% (31/175)
The next day	2%	(3/182)	2% (4/175)
The next weekday	7%	(13/182)	3% (6/175)
Within a week	63%	(115/182)	61% (106/175)
Within a month	5%	(10/182)	6% (11/175)
Longer than a month	0%	(0/182)	1% (1/175)

2.4 Patient and carer engagement

Standard
Key indicator 10:
Formal survey undertaken seeking patient/carer views on stroke services

National performance:
61% (108/178) of sites meet key indicator
Key indicator achieved if: *At least one formal survey is undertaken a year.*

Patient engagement and seeking views from patients and their carers is an important part of hospital quality improvement. It ensures patients and carers feel involved in the care being received and have the chance to feedback, whether that feedback is positive or negative. This information can then be used to inform where service improvement may be needed.

Tables 2.30 and 2.31 present how many sites carry out formal surveys seeking patient/carer views on their stroke services and how many have patient representatives on their strategic group for stroke.

Table 2.30: Formal surveys seeking patient/carer views on stroke services

Patient views on stroke services (Q7.5)*		National 2016 (178 sites) % (n)	
Frequency of a formal survey seeking patient/carer views on stroke services (Key indicator 10)	Continuous (every patient)	31%	(56)
	More than 4 times a year	10%	(17)
	3-4 times a year	3%	(5)
	1-2 times a year	17%	(30)
	Less than once a year	28%	(49)
	Never	12%	(21)

**The comparison with 2014 has not been provided as the question wording changed in 2016 to exclude the Friends and Family Test, so it is not directly comparable.*

Table 2.31: Strategic group for stroke representation

Strategic group responsible for stroke (Q7.3):		National 2014 (183 sites) % (n)		National 2016 (178 sites) % (n)	
		96%	(176)	92%	(164)
Stakeholders represented on the strategic group	• Clinician	100%	(176/176)	99%	(163/164)
	• Commissioner	65%	(115/176)	66%	(109/164)
	• Stroke Network Representative	56%	(99/176)	56%	(92/164)
	• Patient Representative	66%	(117/176)	54%	(88/164)
	• Ambulance trust representative	55%	(97/176)	50%	(82/164)
	• Trust board member	44%	(77/176)	47%	(77/164)
	• Social Services	47%	(82/176)	45%	(73/164)

Comment: It is disappointing that almost 40% of sites are undertaking surveys seeking patient and carer views less than once a year or never, as without service user feedback it is difficult to know how well a service is performing.

Nearly half of stroke strategy groups do not include patient or carer representation. Lay representation at stroke strategy groups ensures a patient voice within service improvement and can help strategy groups make improvements based on patient experience, as well as the experiences of healthcare professionals.

2.5 6 month reviews

6 month reviews are an essential part of the stroke patient pathway, ensuring that patients' needs are met, their progress reviewed and future goals set if further support is needed. By collecting this information about patient outcomes at six months the SSNAP clinical audit can produce data on:

- 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.

Standard

NICE Quality Statement

Statement 7: Adults who have had a stroke have a structured health and social care review at 6 months and 1 year after the stroke, and then annually. [New 2016]

The SSNAP clinical audit collects 6 month review and outcome data. In the latest annual report (April 2015 – March 2016) 58,246 patients were eligible to receive a 6 month review and approximately 17,400 patients (30%) had their review information entered onto SSNAP clinical audit webtool either by acute or post-acute teams.

Table 2.32 shows that 68 acute stroke services are commissioned to carry out 6 month reviews, whilst 83 sites state that they perform reviews at their site. This suggests that some services are carrying out reviews without being commissioned to do so because they see the benefits.

Table 2.32: 6 month reviews

6 month reviews (Q3.7 and Q3.71a)	National 2016 (178 sites) % (n)	
Sites commissioned to carry out 6 month reviews	38%	(68)
Patients discharged from your site given a 6 month review		
All	49%	(87)
Some	43%	(77)
None	8%	(14)*
If all or some patient receiving a 6 month review, these reviews carried out by**:		
Your site	51%	(83/164)
Other services	80%	(132/164)

** No acute services commissioned to carry out 6 month reviews selected None*

*** Sites could select both Your Site and Other services*

Table 2.32 cont.: 6 month reviews

If other services, number of these	Median (IQR*) 2 (1-3)	
	% (n/N)	
If other, type of service		
Community rehabilitation team (CRT)	50%	(66/132)
Early supported discharge (ESD) team	44%	(58/132)
Family and carer support service (e.g. Stroke Association)	33%	(44/132)
Outpatient clinic	26%	(34/132)
6 month review service (stand-alone team)	19%	(25/132)
Other	19%	(25/132)
Other inpatient service (e.g. Community hospital)	9%	(12/132)

** Interquartile range*

In addition to the number of acute services above, the SSNAP 2015 post-acute organisational audit reported that 245 post-acute services deliver 6 month reviews as of 1 April 2015.

Comment: It is worrying that all patients are not undergoing a review at 6 months. A structured health and social care review allows patients and their carers to discuss the issues that continue to concern them and formulate action plans to deal with them. These may include reinforcement of lifestyle advice for secondary prevention, discussion of medication needs, on-going mobility, communication or other rehabilitation needs, “silent symptoms” such as fatigue, memory or mood disturbance, pain, and return to work or usual activities. Commissioners need to ensure that everyone with stroke has access to a structured assessment at this stage following stroke.

Section 3 - Audit results over time - Change between 2006, 2008, 2009, 2010, 2012, 2014 and 2016

This section shows changes over time since 2006. Results for 2006-2010 relate to data collected for the National Sentinel Stroke Audit (NSSA); 2012, 2014 and 2016 data is from the SSNAP acute organisational audit. The section broadly concentrates on the same areas as the main results section of this report but does include some additional pieces of information.

Comment: These data demonstrate some of the extraordinary changes that have occurred in the provision of stroke care over the last decade. The questions asked in the organisational audit have, inevitably, changed over the years, so in some areas direct comparisons are only available for one or two previous audits, whereas in other areas we have data going back to 2006. It is striking to see how much progress has been made in the availability of thrombolysis with a real step change occurring in 2006-8, coinciding with the publication of the 2007 National Stroke Strategy and the establishment of the cardiac and stroke networks. There is a concern that the number of type 1 beds has reduced since 2014, despite the fact that the latest SSNAP audit annual results (April 2015 – March 2016) shows that only 58% of patients who need to be are admitted to a stroke unit within 4 hours.

3.1 Total number of stroke unit beds

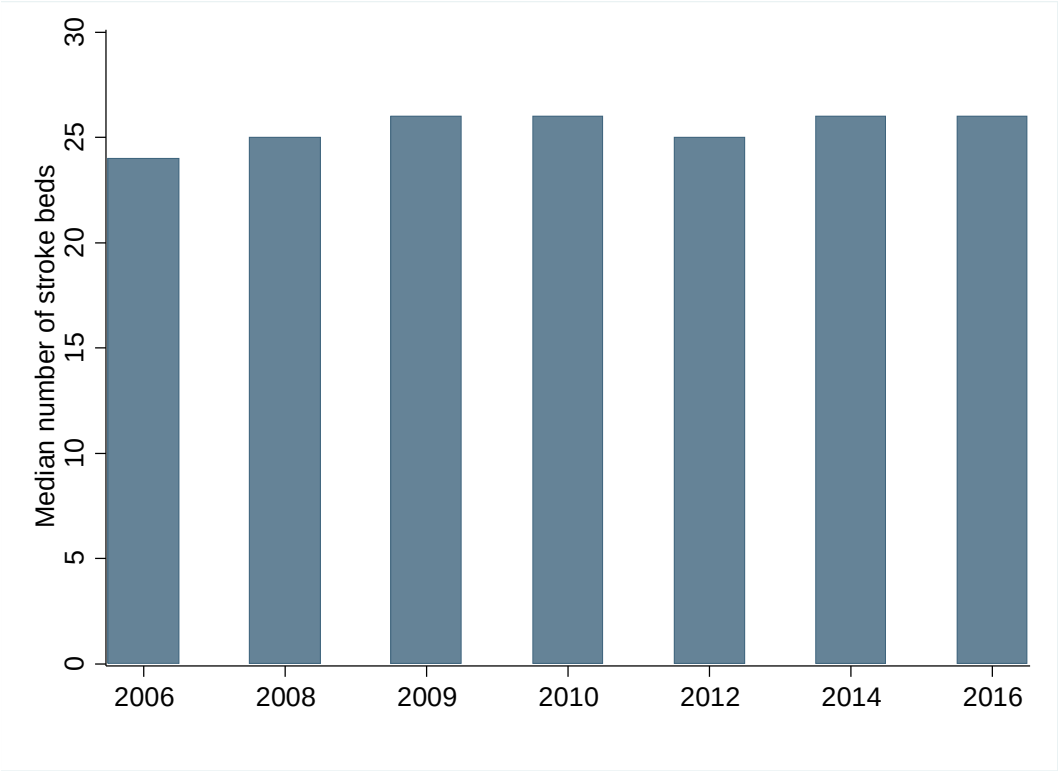
Table 3.1: Total number of beds (type 1 and 3)

	2012	2014	2016
Total number of type 1 beds (Q2.1c)	660	681	601
Total number of type 3 beds (Q2.1e)	2596	2391	2349

Table 3.2: Median number of stroke beds

	NSSA				SSNAP		
	2006	2008	2009	2010	2012	2014	2016
Median and interquartile range (IQR) number of stroke beds (Q2.1)	24 (16-30)	25 (20-34)	26 (20-36)	26 (20-34)	25 (20-34)	26 (20-36)	26 (20-36)

Figure 3: Median number of all stroke unit (SU) beds 2006 - 2016



3.2 Intra-arterial treatment (Thrombectomy)

Table 3.3: Intra-arterial (thrombectomy) treatment (*Key indicator 6)*

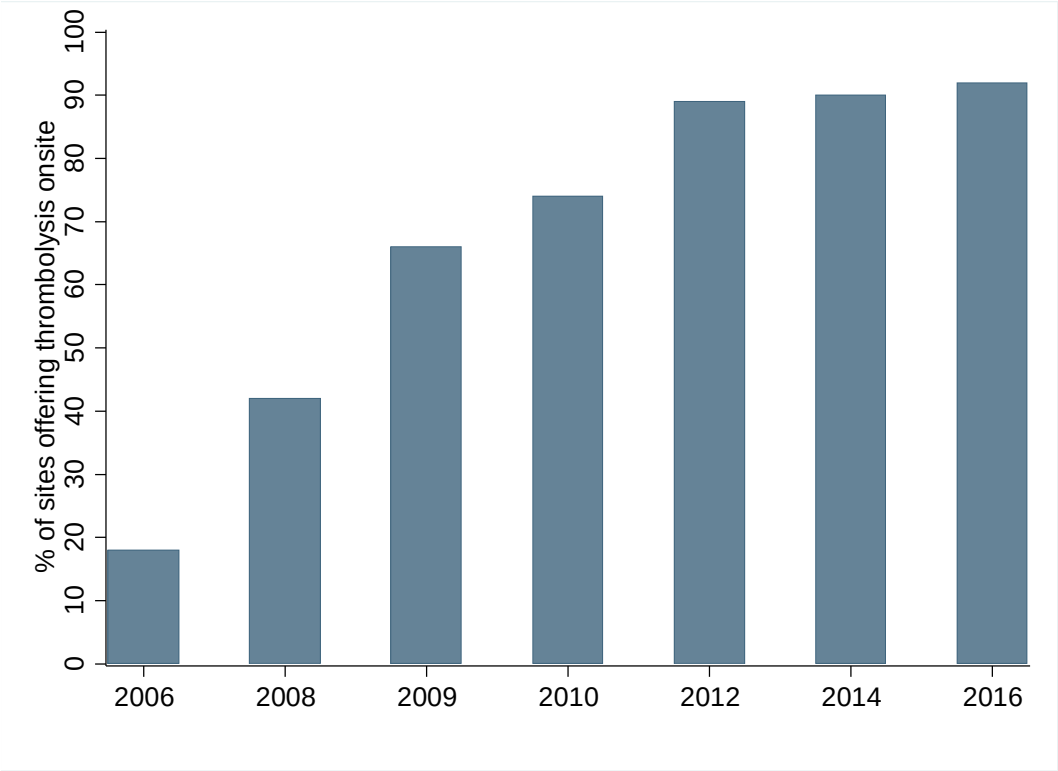
	2014	2016
Percentage of sites performing intra-arterial (thrombectomy) treatment on-site or by referral (Q1.7)	54%	68%

3.3 Thrombolysis

Table 3.4: Thrombolysis provision

	NSSA				SSNAP		
	2006	2008	2009	2010	2012	2014	2016
Percentage of sites offering thrombolysis on-site (Q1.3)	18%	42%	66%	74%	89%	90%	92%

Figure 4: Percentage of sites offering thrombolysis on-site 2006 - 2016



3.4 Use of intermittent pneumatic compression (IPC) devices

Table 3.5: Treatment for prevention of venous thromboembolism *(Key indicator 7)*

	2014	2016
Percentage of sites that use intermittent pneumatic compression (IPC) devices as first line prevention for venous thromboembolism (Q3.5)	42%	80%

3.5 Seven-day working

Comment: There has been an increase in the number of sites offering daily ward rounds on type 1 beds (beds used for patients in the first 72 hours following stroke only) and type 3 beds (beds used for patients pre and post 72 hours following stroke), with 14% having twice daily rounds of type 1 beds (Urgent and Emergency Care review). Only 4% of sites with type 3 beds have consultant ward rounds twice a day.

3.5.1 Specialist stroke consultant wards rounds

Table 3.6: Specialist consultant ward rounds (type 1 and 3 beds) *(Key indicator 3)*

Consultant ward rounds 7 days a week	NSSA	SSNAP		
(Q2.3, Q2.15)	2010	2012	2014	2016
Percentage of sites with type 1 beds	29%	53%	64%	84%
Percentage of sites with type 3 beds	11%	30%	30%	69%

3.5.2 7-day working by therapists and access to other professionals

Table 3.7: Qualified therapists working 7-days a week *(Key indicator 5)*

Percentage of qualified 7 day therapy working (Q3.2)	NSSA			SSNAP		
	2008	2009	2010	2012	2014	2016
Occupational therapy	4%	4%	4%	16%	22%	31%
Physiotherapy	4%	7%	12%	25%	28%	40%
Speech and language therapy	1%	0%	0.5%	3%	5%	6%

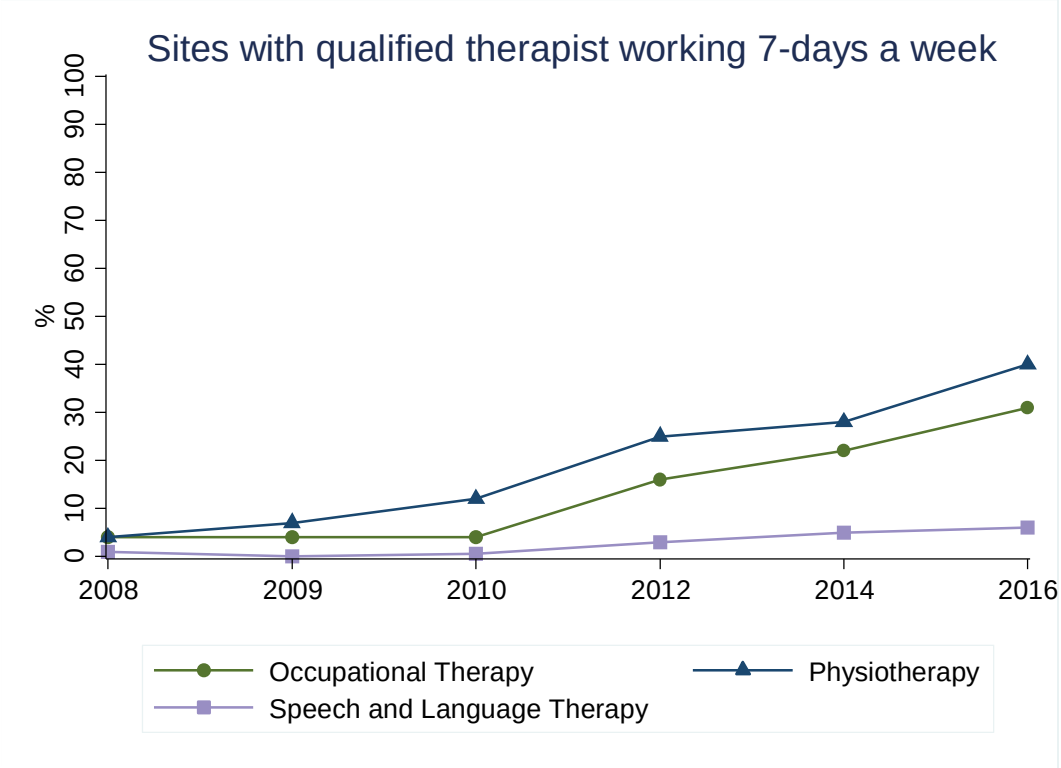


Table 3.8: Access to other professionals

Access to other professionals (Q3.1)	NSSA	SSNAP		
Access to (%):	2010	2012	2014	2016
Social work within 5 days	95%	97%	97%	97%
Orthotics within 5 days	76%	83%	86%	89%
Orthoptics within 5 Days	78%	87%	85%	89%
Podiatry within 5 days	58%	57%	60%	66%

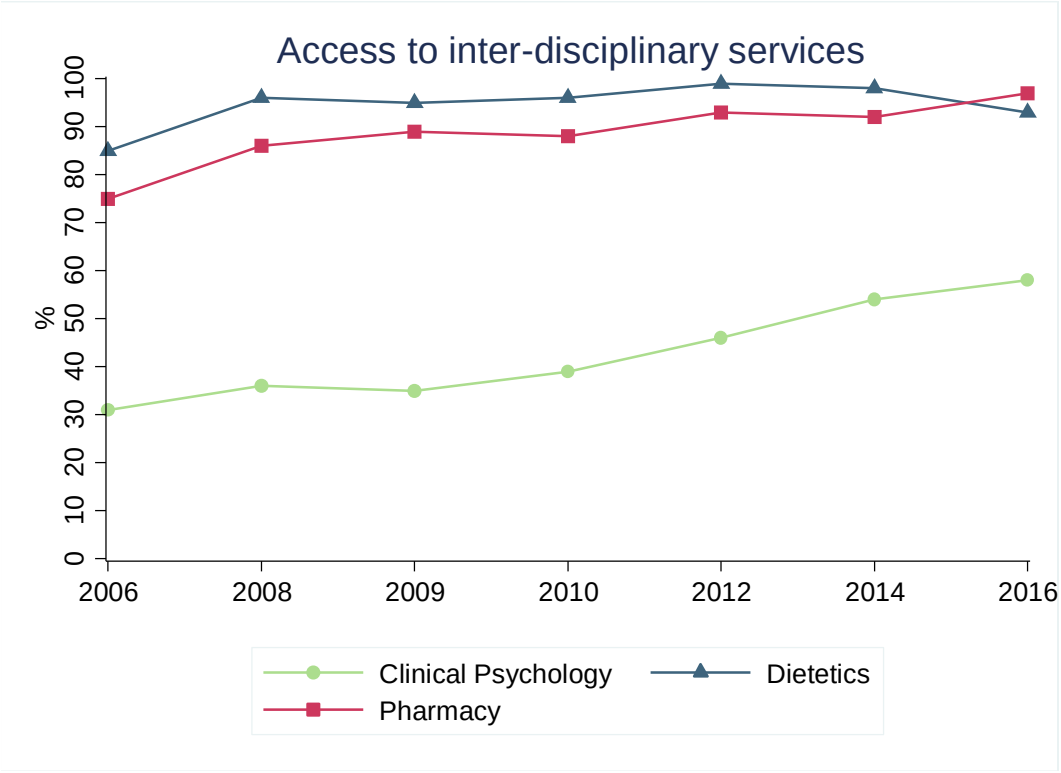
3.6 Access to inter-disciplinary services

Comment: There is no doubt that all units are better staffed than they were, although it is worrying that there has been a drop in access to dietetics and there are still sites without access to qualified clinical psychology, speech and language therapy and pharmacy. Access to 7-day working has improved significantly for occupational therapy and physiotherapy, although by no means universal, but weekend availability of speech and language therapy remains very poor. This is a particular concern because of the association between formal swallow assessments by speech and language therapists and pneumonia.

Table 3.9: Access to inter-disciplinary services

	NSSA				SSNAP		
	2006	2008	2009	2010	2012	2014	2016
Staff establishment (qualified only): (% YES) (Q3.2)							
Occupational therapy	99.5%	100%	99%	99%	100%	100%	100%
Physiotherapy	99.5%	100%	99%	99%	100%	100%	100%
Speech and language therapy	94%	99%	98%	98%	99%	98%	98%
Pharmacy	75%	86%	89%	88%	93%	92%	97%
Dietetics	85%	96%	95%	96%	99%	98%	93%
Clinical psychology	31%	36%	35%	39%	46%	54%	57%

Figure 5: Percentage of sites with access to qualified pharmacy, dietetics and clinical psychology



100% of sites have had access to qualified occupational therapy and physiotherapy since 2012 and 98-99% access to speech and language therapy.

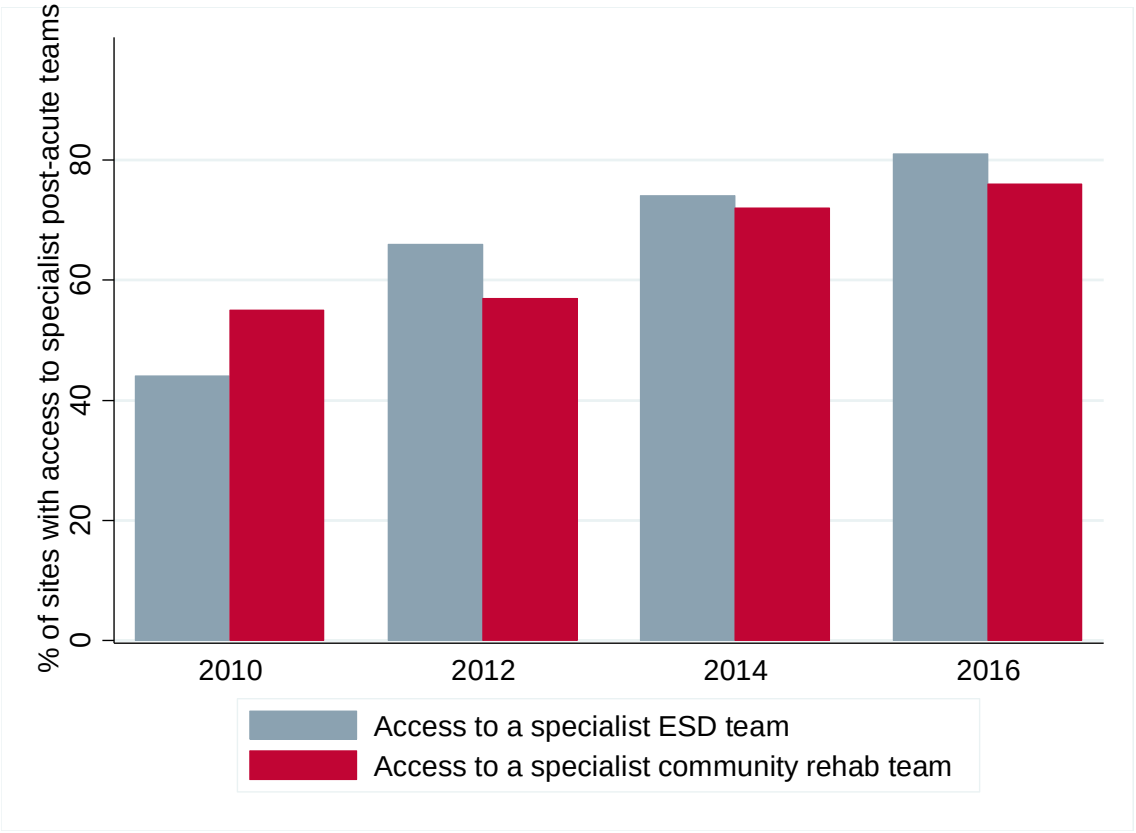
3.7 Access to specialist early supported discharge (ESD) and community rehabilitation teams (CRT)

Comment: It is gratifying that access to early supported discharge (ESD) has increased, but approximately 1 in 5 hospitals still do not have access to ESD and almost a quarter have no access to specialist community rehabilitation teams. ESD is the only evidence based care model shown to be of benefit following discharge from a stroke unit, and commissioners should ensure that everyone has access to specialist care at home.

Table 3.10: Access to specialist early supported discharge and community rehabilitation teams (CRT) *(Key indicator 8)*

	NSSA	SSNAP		
	2010	2012	2014	2016
Access to a specialist early supported discharge (ESD) team (% YES) (Q4.1)	44%	66%	74%	81%
Access to specialist community rehabilitation (% YES) (4.2)	55%	57%	72%	76%

Figure 6: Percentage of sites with access to specialist early supported discharge (ESD) and community rehabilitation (CRT) 2010 - 2016



3.8 Transient ischaemic attack (TIA)/ neurovascular service

Comment: A decade ago, it was routine for people to be waiting more than a week for a transient ischaemic attack (TIA) clinic, but a body of evidence published in 2007 demonstrated the importance of very early (within 24 hours) intervention for the effective prevention of stroke. It is gratifying to see that most sites now provide a clinic on site, and average waiting times have reduced significantly, but we are still a way off the standard of everyone with TIA being able to access a specialist service within 24 hours. Only 50% of sites provide same day carotid imaging for high risk patients. Early carotid endarterectomy for those who need it is one of the most important interventions in the prevention of stroke following TIA, so availability of same day carotid imaging should be a priority.

Table 3.11: Access to neurovascular services

	NSSA				SSNAP		
	2006	2008	2009	2010	2012	2014	2016
Percentage of sites with a neurovascular clinic on-site (Q5.1)	78%	95%	95%	98%	99%	98%	99%
Median (IQR*) number of clinics within a 4 week period (Q5.1b)	5 (4-8)	8 (4-12)	12 (6-20)	20 (9-20)	20 (20-28)	24 (20-28)	22 (20-28)
Average waiting time in days (Q5.1d)	12 (7-17)	7 (5-12)	6 (3-10)	3 (2-7)	2 (1-3)	2 (1-3)	2 (1-4)

** Interquartile range*

Figure 9: Percentage of sites with a neurovascular clinic on-site and average waiting time 2006 - 2016

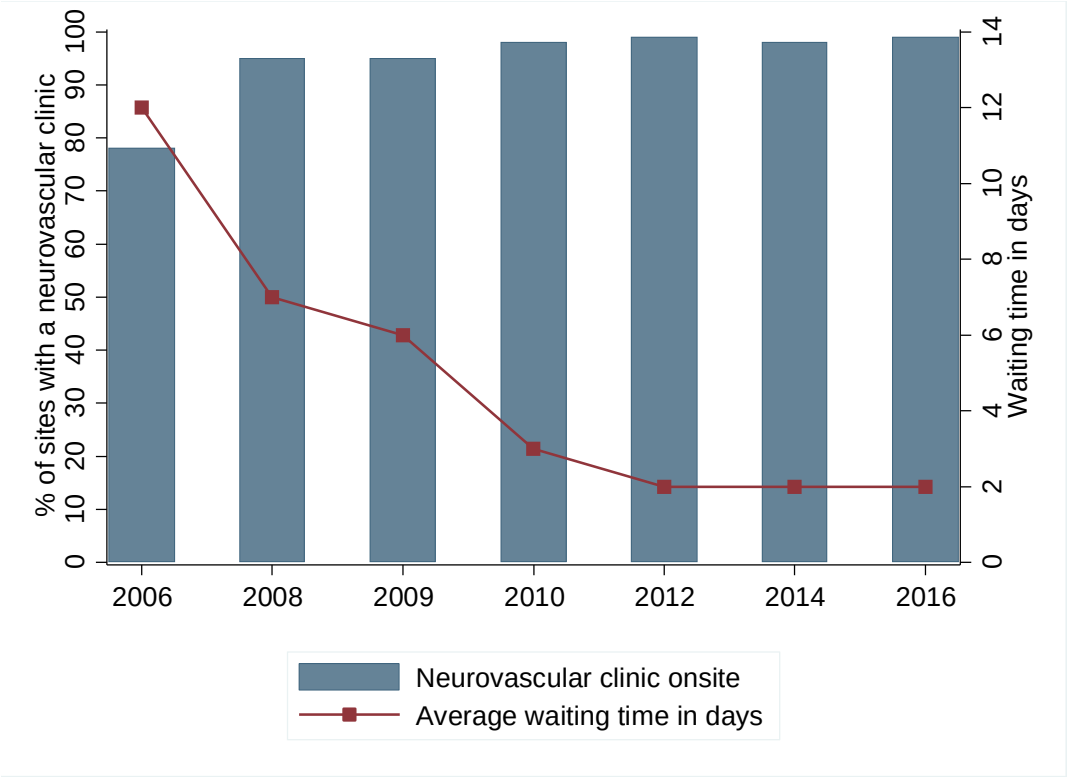
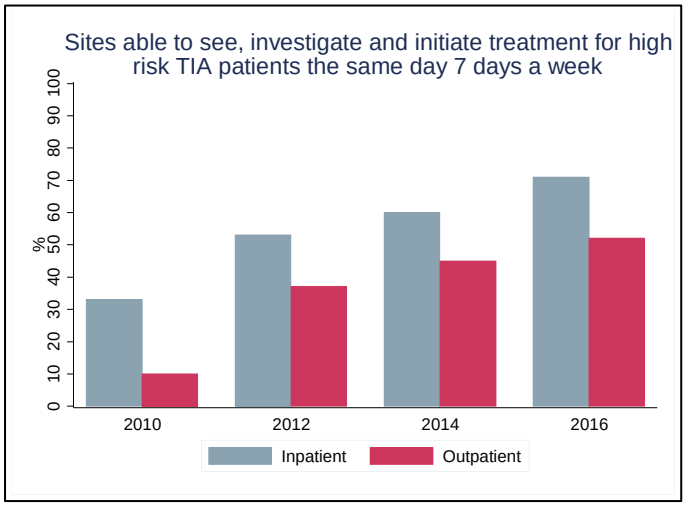


Table 3.12: Timescales for investigation, treatment *(Key indicator 9)* and carotid imaging

Timescales for investigation, treatment of TIAs and carotid imaging (% YES)	NSSA	SSNAP		
	2010	2012	2014	2016
Sites able to see, investigate & initiate treatment for HIGH risk TIA patients the same day 7 days a week (Q5.5)				
• Inpatients	33%	53%	60%	71%
• Outpatients	10%	37%	45%	52%
Sites able to see, investigate & initiate treatment for LOW risk TIA patients the same day 7 days a week (Q5.6)				
• Inpatients	17%	31%	40%	50%
• Outpatients	2%	6%	5%	9%
Carotid Imaging same day 7 days a week (Q5.4)				
• High risk	10%	36%	42%	50%
• Low risk	2%	14%	10%	20%

Figures 10 and 11: Percentage of sites able to see, investigate and initiate treatment for high risk and low risk TIA patients the same day 7 days a week



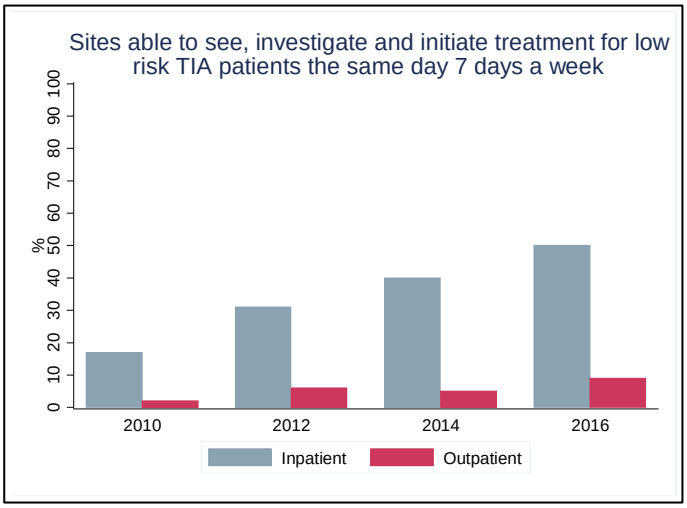
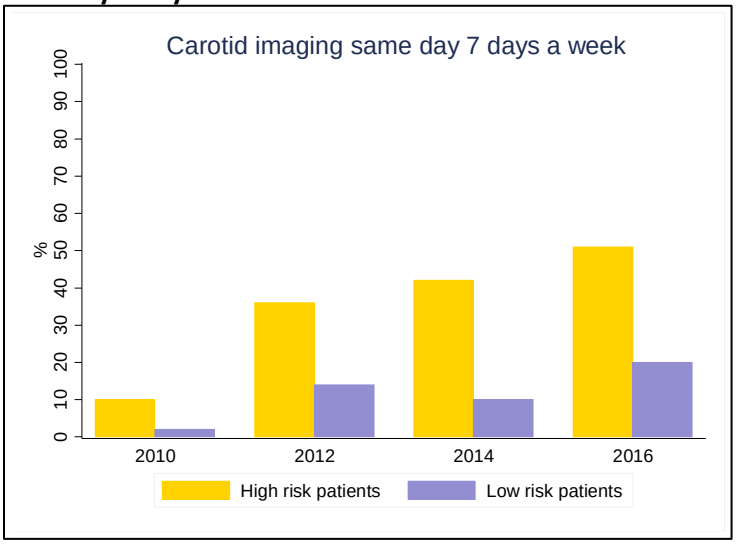


Figure 12: Percentage of sites treating high and low risk TIA patients able to provide access to carotid imaging the same day 7 days a week



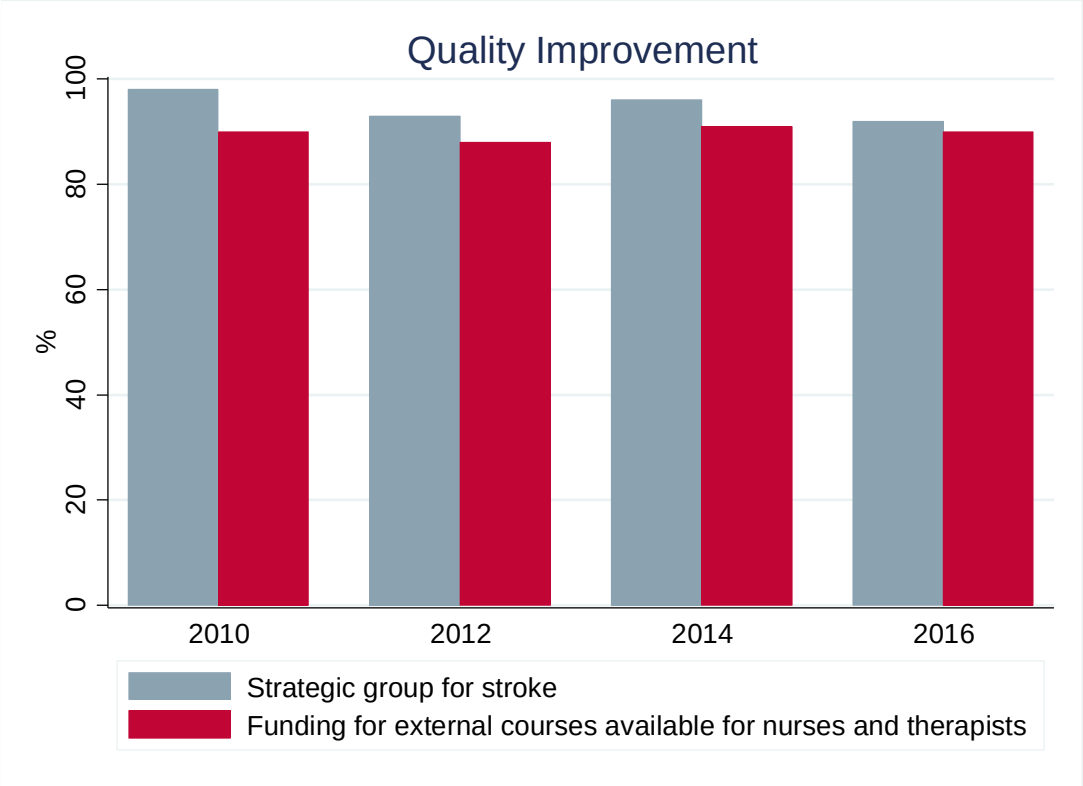
3.9 Quality improvement

Comment: It is depressing that the number of sites having a strategic group responsible for stroke has reduced rather than improved since 2010, which may be related to the loss of the stroke specific networks. 90% of sites report that they have funding for external courses for nurses and therapists. On-going in service training is a vital part of good stroke unit care, and it should be an expectation that staff of all disciplines are able to access both internal and external continuing professional development.

Table 3.13: Strategic group for stroke and funding for external courses

Quality improvement (% YES)	NSSA	SSNAP		
	2010	2012	2014	2016
Strategic group responsible for stroke (Q7.3)	98%	93%	96%	92%
Funding for external courses available for nurses and therapists (Q7.4)	90%	88%	91%	90%

Figure 7: Percentage of sites with a strategic group for stroke and funding for external courses for nurses and therapists 2010 - 2016



3.10 Communication with patients and carers

Table 3.14: Formal links with patient and carers and community user groups for stroke

	NSSA				SSNAP		
	2006	2008	2009	2010	2012	2014	2016
Formal links with patients and carers organisations for communication on service provision, audit, service reviews and future plans or developing research (% YES) (Q8.2)*	74%	81%	86%	90%	88%	91%	87%
Community user group for stroke (% YES) (Q8.3)	68%	75%	81%	92%**	89%**	92%	88%

**In 2012, 53% of sites had formal links on a combination of three topics which include service provision, audit and service reviews and future plans. In 2014, this figure is 51%, and in 2016 this figure is 46%.*
*** In 2010 and 2012 we asked for formal links with community user groups for stroke.*

Table 3.15: Availability of patient information

Patient information literature displayed in unit/ward on (% YES): (Q8.1)	NSSA				SSNAP		
	2006	2008	2009	2010	2012	2014	2016
• Secondary prevention advice			99%	98%	98%	99%	100%
• Social Services local Community Care arrangements	82%	81%	92%	86%	88%	89%	88%
• The Benefits Agency	76%	80%	88%	84%	86%	85%	84%
• Information on stroke				99%	100%	100%	99%
• Patient versions of national or local guidelines/standards	59%	77%	84%	81%	82%	77%	80%
Patients views sought on stroke services (Q7.5)	86%	88%	89%	88%	92%	95%	88%*

**The question wording changed in 2016 to exclude the Friends and Family Test, so it is not directly comparable with previous years.*

Section 4 - Audit results by country

This section compares national figures for the organisation of stroke care in England, Wales and Northern Ireland at 1 July 2016.

Denominators vary within tables because of differing site characteristics. 178 is the total number of sites that participated in the audit in England (155), Wales (12) and Northern Ireland (10) and Islands. There are 22 sites in England which do not provide care to patients in the first 72 hours. These sites are excluded from the analysis of measures relating to this phase of acute care.

The 'All sites' column reflects the national figures including the results from the Isle of Man. However, the regional breakdowns relate to results from England, Wales and Northern Ireland only.

Comment: Provision of health services has traditionally varied across the UK, and stroke care is no exception. Data from England, Wales and Northern Ireland are included in SSNAP, with Scotland having its own stroke care audit. All three countries have stroke beds, although Northern Ireland reports no type 1 beds (beds used for patients in the first 72 hours following stroke only), and 100% sites either provide thrombolysis on site or by referral. Access to thrombectomy is patchy, with 37% sites in England (see table 4.5) having no access to thrombectomy, either locally or by referral, whilst in Wales all sites reported access to thrombectomy. It is a real concern that despite evidence of harm, 42% of sites in Wales (5), 30% of sites in Northern Ireland (3) and 10% of sites in England (16) still use heparin as first line agent for prophylaxis, and intermittent pneumatic compression (IPC) is first line in only 25% of Welsh sites.

4.1 Key indicators of acute stroke service organisation

Table 4.1: Performance against the 10 key indicators of acute stroke service organisation	All sites (178 sites) % (n)	England (155 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Key indicator 1 Establishment of band 6 and 7 nurses	51% (90/178)	53% (82/155)	42% (5/12)	20% (2/10)
Key indicator 2 Presence of a qualified clinical psychologist	6% (10/178)	6% (10/155)	0% (0/12)	0% (0/10)
Key indicator 3* Stroke consultant ward rounds	75% (134/178)	80% (124/155)	42% (5/12)	50% (5/10)
Key indicator 4* Nurses on duty at 10am weekends	29% (51/178)	33% (51/155)	0% (0/12)	0% (0/10)
Key indicator 5 Two types of therapy available 7-days a week	31% (55/178)	34% (53/155)	17% (2/12)	0% (0/10)
Key indicator 6* Patient access to intra-arterial treatment	70% (124/178)	66% (102/155)	100% (12/12)	90% (9/10)
Key indicator 7 Intermittent pneumatic compression devices	80% (143/178)	85% (132/155)	25% (3/12)	70% (7/10)
Key indicator 8 Access to specialist early supported discharge	81% (145/178)	88% (136/155)	33% (4/12)	50% (5/10)
Key indicator 9 Timescales to see, investigate and initiate treatment for high and low risk TIA patients	73% (130/178)	72% (112/155)	83% (10/12)	80% (8/10)
Key indicator 10 Patient/carer surveys on stroke services	61% (108/178)	61% (94/155)	67% (8/12)	50% (5/10)

**Reassigned for sites not treating patients in first 72 hours.*

More detailed key indicator information can be found in section 2. The above table is an overview of key indicator performance; therefore some data is repeated within the relevant area of this section.

4.2 Types of service overall

4.2.1 Care in the first 72 hours following stroke

Table 4.2: Care in the first 72 hours

Care in the first 72 hours after stroke (Q1.1)	All sites (178 sites) % (n)	England (155 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Care provided for ALL patients in the first 72 hours after stroke	78% (139)	76% (118)	100% (12)	80% (8)
Care provided for SOME patients in first 72 hours after stroke	10% (17)	10% (15)	0% (0)	20% (2)
Care is NOT provided for patients within first 72 hours of stroke	12% (22)	14% (22)	0% (0)	0% (0)

4.2.2 Number and type of stroke unit beds across sites

Table 4.3: Number and type of stroke unit (SU) beds

Total number by type of stroke unit beds (Q2.1)	All sites (178 sites) Total	England (155 sites) Total	Wales (12 sites) Total	Northern Ireland (10 sites) Total
Total number of all stroke unit beds	5,119	4,682	279	146
Total number of type 1 beds	601	576	25	0
Total number of type 2 beds	2,169	2,099	70	0
Total number of type 3 beds	2,349	2,007	184	146

4.3 Thrombolysis provision

Table 4.4: Thrombolysis provision

Thrombolysis in your hospital(s) (Q1.3, Q1.6)	All sites (156 sites) % (n)	England (133 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Percentage of sites currently providing an on-site 24/7 thrombolysis service (Q1.3)	87% (136)	86% (115)	100% (12)	90% (9)
Percentage of sites currently providing a 24/7 thrombolysis service, on-site only or in collaboration with neighbouring sites (Q1.6)	99% (155)	100% (133)	100% (12)	100% (10)

4.4 Intra-arterial treatment (thrombectomy)

Table 4.5: Intra-arterial (thrombectomy) treatment

Use of intra-arterial (thrombectomy) to treat patients with acute stroke (Q1.7)	All sites (158 sites) % (n)	England (135 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
On-site	18% (28)	19% (26)	8% (1)	10% (1)
By referral	50% (79)	44% (59)	92% (11)	80% (8)
No	32% (51)	37% (50)	0% (0)	10% (1)

4.5 Venous thromboembolism prevention

Table 4.6: Treatment for prevention of venous thromboembolism

First line treatment for preventing venous thromboembolism for patients with reduced mobility (Q3.5)	All sites (178 sites) % (n)	England (155 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Intermittent pneumatic compression device	80% (143)	85% (132)	25% (3)	70% (7)
Low molecular weight heparin	13% (24)	10% (16)	42% (5)	30% (3)
Short or long compression stockings	1% (1)	1% (1)	0% (0)	0% (0)
None of the above	6% (10)	4% (6)	33% (4)	0% (0)

4.6 Whole time equivalents (WTE) of and access to staff across all stroke units

4.6.1 Whole time equivalents (WTE) of nursing staff across all stroke units

The data for nurses/assistants at 10am and 10pm, specialist nurses and qualified staff within this section are presented as ratios of staff per 10 stroke unit beds.

Comment: Total nurse staffing is not markedly different between the countries, but there are fewer band 6 and more band 7 in Wales and Northern Ireland than England. There is generally less availability of therapists in the devolved nations than in England. 6 or 7 day therapy working appears to be non-existent in Northern Ireland.

Table 4.7: Median number of nurses and care assistants available weekdays and weekends per 10 beds

Median (IQR*) Registered nurses/care assistants per 10 beds usually **on duty at:**	All sites (178 sites)	England (155 sites)	Wales (12 sites)	Northern Ireland (10 sites)
10AM weekdays per 10 beds (Q2.5, 2.10, 2.17)	3.5 (3.2-4.1)	3.5 (3.2-4.0)	3.3 (3.0-4.0)	3.7 (3.5-4.2)
10PM weekdays per 10 beds (Q2.7, 2.12, 2.19)	2.4 (2.1-2.7)	2.5 (2.1-2.8)	2.1 (1.8-2.4)	2.2 (2.0-2.5)
10AM weekends per 10 beds (Q2.5, 2.10, 2.17)	3.4 (3.2-3.8)	3.4 (3.2-3.9)	3.3 (2.9-3.7)	3.6 (3.3-3.7)
10PM weekends per 10 beds (Q2.7, 2.12, 2.19)	2.4 (2.1-2.7)	2.5 (2.1-2.8)	2.1 (1.8-2.4)	2.2 (2.0-2.5)

**Interquartile range*

4.6.2 Whole time equivalents (WTE) of band 6 and 7 nurses

Table 4.8: Median whole time equivalent (WTE) of band 6 and 7 nurses per 10 beds

Median (IQR*) WTE per 10 stroke unit beds for registered nurses across stroke service per 10 beds (Q3.2)	All sites (178 sites)	England (155 sites)	Wales (12 sites)	Northern Ireland (10 sites)
Band 6	1.7 (1.0-2.5)	1.8 (1.1-2.6)	1.0 (0.6-1.5)	0.9 (0.6-1.1)
Band 7	0.6 (0.4-0.9)	0.6 (0.4-0.9)	0.8 (0.5-1.0)	1.1 (0.7-1.2)

**Interquartile range*

4.6.3 Whole time equivalents (WTE) for therapists

Table 4.9: Median whole time equivalent (WTE) for therapists

Median (IQR*) WTE per 10 stroke unit beds for qualified staff: (Q3.2)	All sites (178 sites)	England (155 sites)	Wales (12 sites)	Northern Ireland (10 sites)
Occupational therapy	1.3 (1.0-1.6)	1.3 (1.0-1.6)	0.8 (0.5-1.3)	1.2 (0.9-1.5)
Physiotherapy	1.4 (1.1-1.7)	1.4 (1.2-1.7)	1.1 (0.9-1.3)	1.3 (0.8-1.6)
Speech & language therapy	0.6 (0.4-0.8)	0.6 (0.4-0.8)	0.5 (0.3-0.7)	0.4 (0.3-0.7)
Pharmacy	0.2 (0.1-0.3)	0.2 (0.1-0.3)	0.1 (0.1-0.2)	0.3 (0.3-0.5)
Dietetics	0.2 (0.1-0.3)	0.2 (0.1-0.3)	0.1 (0.0-0.3)	0.0 (0.0-0.1)
Clinical psychology	0.0 (0.0-0.1)	0.0 (0.0-0.1)	0.0 (0.0-0.1)	0.1 (0.0-0.1)

**Interquartile range*

4.6.4 6 and 7-day working by therapists and access to other qualified professionals

Table 4.10: Therapy 6 and 7-day working

Percentage with 6 or 7 day working for therapists (Q3.2)	All sites (178 sites)	England (155 sites)	Wales (12 sites)	Northern Ireland (10 sites)
Occupational therapy	47% (83)	52% (80)	25% (3)	0% (0)
Physiotherapy	53% (95)	59% (91)	33%(4)	0% (0)
Speech & language therapy	15% (26)	16% (25)	8% (1)*	0% (0)*

*One site in Wales and two sites in Northern Ireland did not have any speech and language therapists

Table 4.11: Access to other professionals

Access to other professionals within 5 days of referral: (Q3.1)	All sites (178 sites)	England (155 sites)	Wales (12 sites)	Northern Ireland (10 sites)
Social worker within 5 days	97% (173)	97% (150)	100% (12)	100% (10)
Orthotics within 5 days	89% (159)	93% (144)	100% (12)	30% (3)
Orthoptics within 5 Days	89% (159)	89% (138)	100% (12)	80% (8)
Podiatry within 5 days	66% (117)	65% (101)	92% (11)	40% (4)

4.6.5 Access to qualified clinical psychologists

Table 4.12: Access to clinical psychologists

	All sites (178 sites) % (n)	England (155 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Sites with access to at least one WTE qualified clinical psychologist/30 beds (Q3.2a)	6% (10/178)	6% (10/155)	0% (0)	0% (0)

4.7 Consultant workforce planning

Comment: Wales and Northern Ireland have significantly lower numbers of stroke physicians' time, measured in Programmed Activities (PA's), than sites in England.

Table 4.13 presents the number of acute sites with any unfilled stroke consultant post and the number who plan to add new/additional stroke consultant posts to their workforce. They also give detailed information on the median, interquartile range (IQR) and total number of unfilled, existing and new/additional stroke consultant programmed activities (PAs), and how many of these are/will be for direct clinical care (DCC).

Table 4.13: Consultant workforce, unfilled, existing and planned posts

Unfilled stroke consultant posts (Q6.4)	All sites (178 sites) % (n)	England (155 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Sites with any unfilled stroke consultant posts	40% (72)	42% (65)	25% (3)	40% (4)
Number of PAs do these posts cover: (Median (Interquartile range), Total)	10.0 (8.5-11.9), 804	10.0 (10.0-12.0), 742	10.0 (10.0-11.0), 31	8.0 (6.5-9.0), 31

Existing stroke consultant posts (Q6.5) (Median (Interquartile range), Total)	All sites (178 sites)	England (155 sites)	Wales (12 sites)	Northern Ireland (10 sites)
Number of programmed activities (PAs) for Stroke Consultant Physicians (Q6.5)	22.3 (12.5-41.0), 5122	24.0 (15.0-42.0), 4704	11.0 (7.8-23.5), 239	15.0 (4.0-20.0), 175
Number of individuals PAs divided amongst (Q6.5a)	3 (2-5), 676	3 (2-5), 606	2 (1.5-3.5), 36	2.5 (2-5), 33
Number of PAs which are allocated to direct clinical care (DCC) (Q6.5b)	19.3 (11.0-31.0), 3911	20.0 (12.5-32.0), 3600	9.5 (7.3-15.0), 173	11.0 (4.0-20.0), 131

Table 4.13 cont.

Planned future posts (Q6.6) (Median, (IQR), Total)	All sites (178 sites)	England (155 sites)	Wales (12 sites)	Northern Ireland (10 sites)
Sites with new/additional programmed activities (PAs) planned for Stroke Consultant Physicians (Q6.6)	46% (81)	47% (73)	33% (4)	40% (4)
New/additional Stroke consultant physician programmed activities (PAs) (Q6.6)	0.0 (0.0-10.0), 881	0.0 (0.0-10.0), 805	0.0 (0.0-4.0), 44	0.0 (0.0-8.0), 32
Number of new/additional consultants (individuals) are divided between (Q6.6a)	1 (1-2), 130	1 (1-2), 120	1.5 (1-2), 6	1 (1-1), 4
Number of PAs which are allocated to direct clinical care (DCC) (Q6.6b)	7.0 (4.0-9.0) 670	7.5 (4.0-9.0), 614	9.5 (4.0-13.5), 35	6.0 (4.5-6.3), 22

4.8 7-day working

4.8.1 Specialist stroke consultant ward rounds

Comment: Specialist ward round frequency on type 1 beds (beds solely for patients in first 72 hours following stroke) is lower in Wales and Northern Ireland, probably reflecting lower consultant numbers. This impacts on speed of diagnostic and therapeutic decision making, so may impact on outcome and length of stay.

Table 4.14: Specialist consultant ward rounds

Number of consultant ward rounds per week (Q2.3, Q2.15) (Median (Interquartile range)) (Number of sites)	All sites	England	Wales	Northern Ireland
Type 1 beds	10 (7-12) (73 sites)	10 (7-12) (69 sites)	5 (4.5-5.5) (4 sites)	No type 1 beds
Type 3 beds	7 (5-10) (105 sites)	7 (5-10) (86 sites)	7.5 (5.5-9.5) (8 sites)	6.5 (5-11) (10 sites)

4.8.2 Nurses on duty at 10am weekends

Table 4.15: Nurses on duty at 10am weekends

	All sites	England	Wales	Northern Ireland
Number of registered nurses usually on duty at **10AM** on weekends per 10 beds (2.5i, 2.17i) (Median (Interquartile range)) (Number of sites)	1.7 (1.5-2.5) (156 sites)	1.8 (1.5-2.5) (133 sites)	1.7 (1.3-2.0) (12 sites)	1.6 (1.3-1.8) (10 sites)

4.8.3 7-day access to therapists

Table 4.16: Therapists 7-day working

	All sites (178 sites) % (n)	England (155 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Access to at least two types of therapy 7 days a week (Q3.2**)**	31% (55)	34% (53)	17% (2)	0% (0)

4.9 Access to specialist community teams and neurovascular services

Comment: Access to community rehabilitation varies across the devolved nations, with only 33% of sites in Wales having access to early supported discharge (ESD) and only 17% have access to any kind of specialist community rehabilitation.

4.9.1 Access to specialist early supported discharge (ESD) and community rehabilitation teams (CRT)

Table 4.17: Access to specialist early support discharge and community rehabilitation teams (CRT)

	All sites (178 sites) % (n)	England (155 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Sites have access to at least one specialist early supported discharge (ESD) team (Q4.1)	81% (145)	88% (136)	33% (4)	50% (5)
Sites have access to at least one specialist community rehabilitation team (CRT) (Q4.2)	76% (135)	79% (122)	17% (2)	100% (10)

4.9.2 Transient ischaemic attack (TIA)/ neurovascular service

Comment: Provision of transient ischaemic attack (TIA) clinics across the nations appears similar, although the proportion of sites with 7-day access to carotid imaging for high risk patients is low (17% in Wales and 13% in Northern Ireland), compared to 55% in England.

Table 4.18: Access to neurovascular services

	All sites (178 sites) % (n)	England (155 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Sites with a neurovascular clinic on-site (Q5.1)	99% (177)	100% (155)	100% (12)	90% (9)
Median number of clinics within a 4 week period (Q5.1b) (Median, (IQR))	22 (20-28)	24 (20-28)	20 (6.5-20)	19 (4-20)
Average waiting time in days (Q5.1d) (Median, (IQR))	2 (1-4)	2 (1-4)	3 (2-6)	3 (3-5)

Table 4.19: Timescales for investigation, treatment and carotid imaging

Timescales for investigation, treatment of TIAs and carotid imaging	All sites (178 sites) % (n/N)	England (155 sites) % (n/N)	Wales (12 sites) % (n/N)	Northern Ireland (10 sites) % (n/N)
Sites able to see, investigate & initiate treatment of HIGH risk TIA patients the same day 7 days a week (Q5.5)				
• Inpatients	71% (100/141)	70% (85/122)	83% (10/12)	83% (5/6)
• Outpatients	52% (84/163)	53% (76/144)	55% (6/11)	25% (2/8)
Sites able to see, investigate & initiate treatment of LOW risk TIA patients the same day 7 days a week (Q5.6)				
• Inpatients	50% (50/100)	48% (41/86)	82% (9/11)	0% (0/3)
• Outpatients	9% (16/175)	8% (13/153)	17% (2/12)	11% (1/9)
Carotid Imaging same day 7 days a week (Q5.4a)				
• High risk	50% (85/169)	55% (82/148)	17% (2/12)	13% (1/8)
• Low risk	20% (35/175)	22% (34/153)	8% (1/12)	0% (0/9)

4.10 Quality improvement

Comment: Northern Ireland and Wales perform better than England in terms of a strategic group for stroke and community user groups.

Table 4.20: Strategy group for stroke and funding for external courses

	All sites (178 sites) % (n)	England (155 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Strategic group responsible for stroke (Q7.3)	92% (164)	91% (141)	100% (12)	100% (10)
Funding for external courses available for nurses and therapists (Q7.4)	90% (161)	90% (140)	100% (12)	80% (8)

4.11 Patient and carer engagement

Table 4.21: Formal links with patient organisations and community user groups

	All sites (178 sites) % (n)	England (155 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Formal links with patients and carers organisations for communication on service provision, audit, service reviews and future plans or developing research (Q8.2)	87% (154)	85% (131)	100% (12)	100% (10)
Community user group for stroke (Q8.3)	88% (156)	86% (133)	100% (12)	100% (10)

Table 4.22: Availability of patient information

	All sites (178 sites) % (n)	England (155 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Patient information literature displayed in unit/ward on: (Q8.1)				
• Patient versions of national or local guidelines/standards	80% (143)	79% (123)	100% (12)	70% (7)
• Social Services local Community Care arrangements	88% (157)	87% (135)	100% (12)	90% (9)
• The Benefits Agency	84% (150)	83% (128)	100% (12)	90% (9)
• Information on stroke	99% (177)	99% (154)	100% (12)	100% (10)
• Secondary prevention advice	100% (178)	100% (155)	100% (12)	100% (10)
Patients' views sought on stroke services (Q7.5)	88% (157)	88% (136)	92% (11)	90% (9)

4.12 6 Month reviews

Table 4.23: 6 month review provision within acute services

6 month reviews (Q3.6 and Q3.7)	All sites (178 sites) % (n)	England (155 sites) % (n)	Wales (12 sites) % (n)	Northern Ireland (10 sites) % (n)
Sites commissioned or expected to carry out 6 month reviews	38% (68)	31% (48)	100% (12)	70% (7)
Sites discharging patients are given 6 month review:				
All	49% (87)	47% (73)	75% (9)	50% (5)
Some	43% (77)	44% (68)	25% (3)	50% (5)
None	8% (14)	9% (14)	0 (0)	0% (0)
If all or some patient receiving a 6 month review, reviews are carried out:				
On-site	51% (83/164)	46% (65/141)	92% (11/12)	60% (6/10)
Other services	80%(132/164)	82%(115/141)	58% (7/12)	100% (10/10)

Comment: The proportion of sites commissioned to carry out 6 month reviews in Wales and Northern Ireland is greater than in England.

Section 5 - Looking forward

The Royal College of Physicians (RCP) published the 5th edition of its National Clinical Guideline for Stroke in early October 2016. This section acts as a summary of all standards and guidance that acute stroke services will be required to follow and adhere to looking forward. It outlines guidance from the new guideline (peach), the NHS England Urgent and Emergency Care review (green), NICE Quality Statements for stroke patients (green) and the new SSNAP acute organisational audit 10 key indicators of acute stroke care organisation (blue), appropriate to the topics covered by this report. Reference numbers to link the guidance to relevant sections within their main document have been given where possible.

Going forward the guidance and standards outlined within this section should be followed by all acute stroke trusts.
We recommend that these guidelines and standards are read in context of the SSNAP national acute organisational audit report, full RCP National Clinical Guideline for Stroke, 5th edition, which can be found on the RCP website (https://www.strokeaudit.org/Guideline/Full-Guideline.aspx), the NICE Quality Standards (https://www.nice.org.uk/guidance/qs2) and Urgent and Emergency Care review document (https://www.england.nhs.uk/wp-content/uploads/2015/06/trans-uec.pdf).

Two additional recommendations based on these newly published guidance documents are outlined below. These have also been added to the list of recommendations on page 8 of this report.

Recommendation to be met going forward:

1. All acute stroke units should have a recommended minimum nurse staffing level of 2.9 WTE nurse per hyperacute stroke (type 1 and type 3) bed with the ratio of registered to unregistered nurses being 80:20.

   Nurse staffing levels for beds for patients beyond the first 72 hours of stroke only (type 2 beds) should be 1.35 WTE nurses per bed with a ratio of 65:35 registered to unregistered nurses.

2. All health economies should have plans in place for the 24 hour provision of intra-arterial (thrombectomy) treatment in appropriate patients with acute ischaemic stroke.

5.1 Specialist stroke services

RCP National Clinical Guideline for Stroke, 5th Edition

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.

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.

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.

B A hyperacute and/or acute stroke service should provide specialist medical, nursing, and rehabilitation staffing levels matching the recommendations in Table 2.1.

D A hyperacute stroke unit should have continuous access to a consultant with expertise in stroke medicine, with consultant review 7 days per week.

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

- a geographically-defined unit;
- a co-ordinated 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.

5.2 Treatment of patients in the first 72 hours

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.

NICE Quality Statement

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]

5.2.1 Scanning

RCP National Clinical Guideline for Stroke, 5th Edition

3.4.1
B Patients with suspected acute stroke should receive brain imaging urgently and at most within 1 hour of arrival at hospital.

5.3 Staffing levels

5.3.1 Staffing levels within hyperacute and acute stroke services

RCP National Clinical Guideline for Stroke, 5th Edition

Minimum staffing levels on stroke units have been defined in hyperacute stroke service reconfigurations such as that in London, and observational evidence is accumulating from national registries about acute care processes that are associated with substantial benefits, including outside office hours and at weekends (Ramsay et al, 2015, Turner et al, 2016). In view of this observational evidence, the Working Party endorses the recommended staffing levels expressed as whole-time equivalents (WTE) in the table below. Therapy levels in the table are based on weekday working and will need adjustment for therapy delivered across seven days, whilst also considering skill-mix and the use of therapy assistants delivering rehabilitation under the supervision of a qualified therapist.

The nursing levels will be used as the new RCP nurse staffing level standard going forward.

Table 5.1 Recommended staffing levels for stroke units (table 2.1 in guideline)

	Physio-therapist	Occupational therapist	Speech and language therapist	Clinical neuropsycho-logist/clinical psychologist	Dietitian	Nurse	Consultant stroke physician
	Whole time equivalent (WTE) per 5 beds					WTE per bed	
Hyperacute Stroke Unit	0.73	0.68	0.34	0.20	0.15	2.9 (80:20 registered: unregistered)	24/7 availability; minimum 6 thrombolysis trained physicians on rota
Acute Stroke Unit	0.84	0.81	0.40	0.20	0.15	1.35 (65:35 registered: unregistered)	Consultant-led ward round 5 days/week

2.4.1

C A hyperacute stroke unit should have immediate access to:

- specialist medical staff trained in the hyperacute and acute management of people with stroke, including the diagnostic and administrative procedures needed for the safe and 16 timely delivery of emergency stroke treatments;
- specialist nursing staff trained in the hyperacute and acute management of people with stroke, covering neurological, general medical and rehabilitation aspects;
- stroke specialist rehabilitation staff.

E An acute stroke unit should provide:

- specialist medical staff trained in the acute management of people with stroke;
- specialist nursing staff trained in the acute management of people with stroke, covering neurological, general medical and rehabilitation aspects;
- stroke specialist rehabilitation staff.

J A stroke rehabilitation unit should have a single multi-disciplinary team including specialists in:

- medicine;
- nursing;
- physiotherapy;
- occupational therapy;
- speech and language therapy;
- dietetics;
- clinical/neuropsychology;
- social work,
- orthoptics;
- with easy access to pharmacy, orthotics, specialist seating, assistive technology and information, advice and support for people with stroke and their family/carers.

5.3.2 Senior nurses

*SSNAP 2016 acute organisational audit: Key indicator – **Band 6 and 7 nurses***

Key indicator 1: **Minimum establishment of band 6 and band 7 nurses**
Key indicator requirement: *Sum of band 6 and 7 (WTE) nurses per 10 stroke unit (SU) beds equal to/above 2.375 per 10 SU beds*

5.4 Seven-day working

*SSNAP 2016 acute organisational audit: Key indicator – **Nurses on duty at 10AM weekends***

Key indicator 4: **Minimum number of nurses on duty at 10am weekends**
Key indicator requirement: *3.0 or more nurses per 10 type 1 and type 3 beds. If a site has both type 1 and type 3 beds the average of Saturday and Sunday per 10 type 1 and type 3 beds must be 3.0 or more.*

*SSNAP 2016 acute organisational audit: Key indicator – **7-day therapy access***

Key indicator 5: **At least two types of therapy available 7 days a week**
Key indicator requirement: *At least two types of qualified therapy working 7 days a week. Includes occupational therapy, physiotherapy and speech and language therapy.*

NICE Quality Statement

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]

5.5 Stroke consultant review ward rounds

5.5.1 Stroke consultant review

NHS England Urgent and Emergency Care Review

All emergency hospital admissions should be seen and have a thorough clinical assessment by a competent consultant as soon as possible but at the latest within 14 hours of arrival at hospital.

5.5.2 Stroke consultant led ward rounds

RCP National Clinical Guideline for Stroke, 5th Edition

2.4.1 **D** A hyperacute stroke unit should have continuous access to a consultant with expertise in stroke medicine, with consultant review 7 days per week.

*SSNAP 2016 acute organisational audit: Key indicator – **Stroke consultant led ward rounds***

Key indicator 3: **Minimum number of stroke consultant led ward rounds**
Key indicator requirement: *At least one a day (7 a week minimum) for type 1 and type 3 beds. If a site has **both** type 1 and type 3 beds, consultant led ward rounds at least once a day on both are required.*

5.6 Access to clinical psychologists

RCP National Clinical Guideline for Stroke, 5th Edition

2.12.1
A Services for people with stroke should have a comprehensive approach to delivering psychological care that includes specialist clinical neuropsychology/clinical psychology input within the multi-disciplinary team.
B Services for people with stroke should offer psychological support to all patients regardless of whether they exhibit specific mental health or cognitive difficulties, and use a matched care model to select the level of support appropriate to the person's needs.
C Services for people with stroke should include specialist clinical neuropsychology/clinical psychology provision for severe or persistent symptoms of emotional disturbance, mood or cognition.

*SSNAP 2016 acute organisational audit: Key indicator – **Presence of clinical psychologists***

Key indicator 2: **Presence of a qualified clinical psychologist**
Key indicator requirement: *Presence of at least one (WTE) qualified clinical psychologist per 30 stroke unit (SU) beds*

NICE Quality Statement

Statement 3: Adults who have had a stroke have access to a clinical psychologist with expertise in stroke rehabilitation who is part of the core multi-disciplinary stroke rehabilitation team.
[New 2016]

5.7 Access to specialist treatment and support

5.7.1 Intra-arterial treatment (thrombectomy)

RCP National Clinical Guideline for Stroke, 5th Edition

3.5.1
G Patients with acute ischaemic stroke should be considered for combination intravenous thrombolysis and intra-arterial clot extraction (using stent retriever and/or aspiration techniques) if they have a proximal intracranial large vessel occlusion causing a disabling neurological deficit (National Institutes of Health Stroke Scale [NIHSS] score of 6 or more) and the procedure can begin (arterial puncture) within 5 hours of known onset.

*SSNAP 2016 acute organisational audit: Key indicator – **Intra-arterial (thrombectomy) treatment***

Key indicator 6: **Patients can access intra-arterial (thrombectomy) treatment**
Key indicator requirement: *Patients have access to intra-arterial (thrombectomy) treatment on-site or by referral off-site.*

5.7.2 Thrombolysis

RCP National Clinical Guideline for Stroke, 5th Edition

3.5.1

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

B Patients with acute ischaemic stroke under the age of 80 years in whom treatment can be started between 3 and 4.5 hours of known onset should be considered for treatment with alteplase.

C Patients with acute ischaemic stroke over 80 years in whom treatment can be started between 3 and 4.5 hours of known onset should be considered for treatment with alteplase on an individual basis. In doing so, treating clinicians should recognise that the benefits of treatment are smaller than if treated earlier, but that the risks of a worse outcome, including death, will on average not be increased.

D Patients with acute ischaemic stroke otherwise eligible for treatment with alteplase should have their blood pressure reduced to below 185/110 mmHg before treatment.

E 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

5.7.3 Venous thromboembolism

RCP National Clinical Guideline for Stroke, 5th Edition

3.13.1

A Patients with immobility after acute stroke should be offered intermittent pneumatic compression within 3 days of admission to hospital for the prevention of deep vein thrombosis. Treatment should be continuous for 30 days or until the patient is mobile or discharged, whichever is sooner.

*SSNAP 2016 acute organisational audit: Key indicator – **Venous thromboembolism***

Key indicator 7: **Intermittent pneumatic compression (IPC) device used as first line preventative measure for venous thromboembolism**
Key indicator requirement: *Intermittent pneumatic compression (IPC) device used as first line preventative measure.*

5.7.4 Swallow screening

RCP National Clinical Guideline for Stroke, 5th Edition

3.10.1
E 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.

5.7.5 Early supported discharge (ESD)

RCP National Clinical Guideline for Stroke, 5th Edition

2.7.1
A 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.

*SSNAP 2016 acute organisational audit: Key indicator – **Specialist early supported discharge (ESD)***

Key indicator 8:
Access to a specialist (stroke/neurology) specific early supported discharge (ESD) team

Key indicator requirement:
Access to at least one specialist early supported discharge (ESD) team.

NICE Quality Statement

Statement 4: Adults who have had a stroke are offered early supported discharge if the core multi-disciplinary stroke team assess that it is suitable for them.
[New 2016]

5.7.6 Transient ischaemic attack (TIA)/Neurovascular service

RCP National Clinical Guideline for Stroke, 5th Edition

3.2.1
A People with acute neurological symptoms that resolve completely within 24 hours (i.e. suspected TIA) should be given aspirin 300 mg immediately and assessed urgently within 24 hours by a specialist physician in a neurovascular clinic or on an acute stroke unit.

*SSNAP 2016 acute organisational audit: Key indicator – **Transient ischaemic attack (TIA)***

Key indicator 9:
Timescales to see, investigate and initiate treatment for both high risk and low risk patients

Key indicator achieved if:
HIGH risk TIA patients are seen = The same day or next day 7 days a week
LOW risk TIA patients are seen = Within a week

5.8 Patient engagement

RCP National Clinical Guideline for Stroke, 5th Edition

2.8.1
D The views of people with stroke and their family/carers should be actively sought when evaluating service quality and safety, and when planning service developments.

*SSNAP 2016 acute organisational audit: Key indicator – **Formal patient and carer surveys***

Key indicator 10: **Formal survey undertaken seeking patient/carer views on stroke services**
Key indicator requirement: *At least one formal survey is undertaken a year.*

5.9 Six month reviews

RCP National Clinical Guideline for Stroke, 5th Edition

5.9.1.1
A People with stroke, including those living in a care home, should be offered a structured health and social care review at six months and 1 year after the stroke, and then annually. The review should consider whether further interventions are needed, and the person should be referred for further specialist assessment if:

- new problems are present;
- the person's physical or psychological condition, or social environment has changed.

NICE Quality Statement

Statement 7: Adults who have had a stroke have a structured health and social care review at 6 months and 1 year after the stroke, and then annually.
[New 2016]

Glossary

6 month reviews	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.
$ABCD^2$ score	Prognostic scores to identify people at high risk of stroke after transient ischaemic attack. It is calculated based on: A – age (≥60 years, 1 point) B – blood pressure at presentation (≥ 140/90 mm Hg, 1 point) C – clinical features (unilateral weakness, 2 points or speech disturbance without weakness, 1 point) D – duration of symptoms (≥ 60 minutes 2 points or 10 – 59 minutes, 1 point) The calculation of ABCD2 also includes the presence of diabetes (1 point). Total scores range from 0 (lowest risk) to 7 (highest risk). The definition of high risk is a score of 4 or above and low risk is less than 4. Based on 4th edition of RCP National Clinical Guideline for Stroke.
Carer	A person (commonly the patient's spouse, a close relative or friend) who provides on-going, unpaid support and personal care at home.
Carotid Endarterectomy	Carotid endarterectomy is a surgical procedure in which a stenosis (narrowing) or ulceration of an atherosclerotic plaque in the carotid artery is removed.
Continuous physiological monitoring	Monitoring and regulating basic physiological functions such as blood glucose, oxygenation, and blood pressure. It also includes electrocardiogram (ECG) to check the heart's rhythm and electrical activity.
Commissioners	Funding bodies of NHS services.
CT angiogram	Uses a CT scanner to produce detailed images of both blood vessels and tissues in various parts of the body.

CT scan	A CT scan (computerised tomography) of the head. A CT scan X-rays the body from many angles. The X-ray beams are detected by the scanner and analysed by a computer. The computer compiles the images into a picture of the body area being scanned. These images can be viewed on a monitor or reproduced as photographs.
Direct clinical care (DCC)	Refers to direct patient contact and/or management. DCC is work directly related to preventing, diagnosing or treating illness, including emergency work carried out during or arising from on-call work.
Hyperacute Stroke Unit	Some stroke services designate the most intensive treatment as hyperacute. This would be where patients are initially treated and usually for a short period of time (i.e. up to three days).
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.
Interquartile Range (IQR)	The interquartile range (IQR) is the range between 25th and 75th centile which is equivalent to the middle half of all values.
Intra-arterial treatment/ thrombectomy	The surgical removal of a thrombus from a blood vessel.
Ischaemic stroke	Ischaemic strokes are the most common type of stroke. They occur when a blood clot blocks the flow of blood and oxygen to the brain.
Large artery occlusive stroke	A stroke subtype where there is a blockage in one of the brain's larger blood supplying arteries such as the carotid or middle cerebral artery.
Intracerebral haemorrhage (ICH)	A type of stroke caused by bleeding within the brain tissue itself.
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.
Multi-disciplinary	A team or service which is composed of staff from different healthcare professions with specialist skills and expertise. The members work together to ensure patients receive comprehensive, coordinated treatment.
National Institutes of Health Stroke Scale (NIHSS)	A validated international tool used by healthcare professionals to objectively quantify (measure) the impairment caused by stroke.

National Clinical Guideline for Stroke (2012 and 2016)	A National evidence based guideline for stroke care published by the Intercollegiate Working Party for Stroke fourth edition 2012 http://www.rcplondon.ac.uk/resources/stroke-guidelines . The 5th edition of the national clinical guideline for stroke care will be published at the end of September 2016.
National Sentinel Stroke Audit	National stroke audit conducted between 1998 and 2010 which measured the organisation of stroke services (organisational audit) and the quality of stroke care for a group of patients (clinical audit) every two years. The National Sentinel Stroke Audit has been replaced by the new stroke audit SSNAP.
National Stroke Strategy	A best practice guidance document published in December 2007. It is intended to provide a quality framework to secure improvements to stroke services, to provide guidance and support to commissioners and strategic health authorities and social care, and inform the expectations of patients and their families by providing a guide to high quality health/social care. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/publicationsPolicyAndGuidance/DH_081062
Neurovascular Clinic	An outpatient clinic for patients with transient ischaemic attacks (TIA) or minor stroke for further investigation.
Non-specialist community rehabilitation team (CRT)	A non-specialist team which treats other patients in addition to stroke and neurology patients in the community.
Organisational Audit	Audit of the service organisation, particularly relevant in stroke audit due to the evidence supporting organised stroke services.
Orthotics	Orthotists are the health professionals concerned with the application and manufacture of orthoses, devices which support or correct the function of a limb.
Orthoptists	The evaluation and nonsurgical treatment of visual disorders caused by imbalance of the eye muscles.
Per 10 (30) stroke beds	A method of calculating ratios of staff to every 10 stroke unit bed. The whole time equivalents (WTE) for each staffing discipline in a service divided by the total number of beds used by stroke patients multiplied by 10. This enables comparison between services of different sizes. The same rule applies for per 30 beds in terms of key indicator 2 but multiplied by 30.

Podiatry	A specialism which looks at the diagnosis, medical and surgical treatment of disorders of the foot, ankle and lower extremity.
Programmed activities (sessions)	A 4-hour unit of time (one half day), 10 of which comprise a consultant's work week. In contrast to supporting professional activities, programmed activities are dedicated to direct clinical care.
Secondary Prevention	Measures to prevent recurrence of the same illness.
Sentinel Stroke National Audit Programme (SSNAP)	National Stroke Audit run by the Royal College of Physicians, London. In addition to the acute organisational audit reported on in this document, SSNAP prospectively collects a minimum data set for every stroke patient covering acute care including rehabilitation and 6 month follow up.
Sessions	A term used to describe a junior doctor's time. One session represents half a day.
Specialist community rehabilitation team (CRT)	A specialist community rehabilitation team refers to a stroke specific service delivered by specialist professionals within a multi-disciplinary team working in the community delivering rehabilitation services within a patient's home. A community rehabilitation team (CRT) will cater for patients following inpatient rehabilitation or transfer from early supported discharge (ESD).
Specialist early supported discharge (ESD) Team	An early supported discharge team refers a stroke specific service delivered by specialist professionals within a multi-disciplinary team to provide rehabilitation and support in a community setting with the aim of reducing the duration of hospital care for stroke patients and enabling them to return home quicker.
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.
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).
Thrombolysis	The use of drugs to break up a blood clot.

Transient ischaemic attack (TIA)	A transient ischaemic attack is less severe than a stroke in that all the symptoms disappear within a day (and often last for less than half an hour). It is also referred to as 'mini stroke'.
Trusts	In the context of the UK's National Health Service (NHS), trusts are organisational units, e.g. hospital trusts, community trusts, primary care trusts or combinations thereof. In this report it usually refers to hospitals.
Type 1 beds	Stroke unit beds solely for patients in first 72 hours after stroke
Type 2 beds	Stroke unit beds solely for patients beyond 72 hours after stroke
Type 3 beds	Stroke unit beds used for both pre and post-72 hour care
Urgent and Emergency Care (NHS England) standards	A new set of guidance produced by NHS England to assist NHS Trusts throughout England in running their urgent and emergency care services. https://www.england.nhs.uk/wp-content/uploads/2015/06/trans-uec.pdf
Venous thromboembolism	The formation of blood clots in the vein
Whole time equivalent (WTE)	The whole time equivalent (WTE) of staff is the number of hours staffing disciplines are contracted to work within a typical working week. For example, a WTE number of 1.0 means that the person is equivalent to a full time worker (and works e.g. 37.5 hours per week); while a WTE of 0.5 signals that the worker is half-time (and works 18.75 hours). This should not be confused with the number of individuals, which is the number of people (bodies) a service has to deliver those hours.

Appendix 1: Full introduction and methodology

Introduction

This report presents the results of the Sentinel Stroke National Audit Programme (SSNAP) 2016 Acute Organisational Audit. It describes the organisation of stroke care in England, Wales and Northern Ireland as of **1 July 2016** and includes all acutely admitting hospitals. It provides continuity from the 2012 and 2014 acute organisational audit and previous biennial NSSA audits. The audit is based on standards agreed by representatives of the Intercollegiate Stroke Working Party (ICSWP). Its questions are well understood and the majority comparable with the 2012 and 2014 audit.

SSNAP also comprises of the SSNAP clinical audit which has prospectively collected a minimum dataset for every stroke patient, including acute care, rehabilitation, 6-month follow up, and outcome measures since December 2012. As a result of this SSNAP is now the single source of stroke data for England, Wales and Northern Ireland. The organisational audit complements the continuous clinical audit and results from the SSNAP clinical audit are available to view using the results portal (http://www.strokeaudit.org/results). At the time of submitting data for this organisational audit 82,000 patient records had been analysed for stroke patients admitted between April 2015 and March 2016.

The aims of the SSNAP Acute Organisational Audit

1. To audit against the RCP National Clinical Guideline for Stroke
2. To enable trusts to benchmark the quality of their stroke services nationally and regionally
3. To measure the extent to which the recommendations made in the 2014 acute organisational audit have been implemented
4. To measure the rate of changes in stroke service organisation since the implementation of National Stroke Strategies and publication of the National Audit Office Report.

Organisation of the audit

This audit is commissioned by the Healthcare Quality Improvement Partnership (HQIP) on behalf of NHS England as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP) and run by the Care Quality Improvement Department (CQID) of the Royal College of Physicians, London. Data were collected at site level within trusts (or Health Boards in Wales) using a standardised method. Clinical involvement and supervision at team level is provided by a lead clinician in each hospital who has overall responsibility for data quality. The audit is guided by a multi-disciplinary steering group responsible for the RCP Stroke Programme – the Intercollegiate Stroke Working Party (ICSWP). Details of membership of the ICSWP can be found in Appendix 2.

Availability of this report in the public domain

Participating hospitals (sites) will receive individual results portfolios and national report in September 2016. These portfolios will include all data items for the named hospitals and performance against all key indicators from the acute organisational audit. A full results portfolio and national report will be made available to the wider NHS, including NHS England and the Care Quality Commission in England, NHS Wales (Welsh Assembly Government) and the Department of Health, Social Services and Public Safety in Northern Ireland in early October 2016. All named site results will be published in November 2016 in line with the transparency agenda subject to HQIP's standard reporting process.

Participation

There is 100% participation of eligible trusts (178) in England (155), Wales (12) and Northern Ireland (10) and 1 in the Isle of Man. The 178 sites contain a total of 192 acute hospitals.

Methods

Eligibility and recruitment

All sites that routinely treat patients within 7 days of stroke were eligible to participate. Pre 2012, only hospitals which directly admitted acute stroke patients were eligible, but due to the centralisation of stroke services and the establishment of a hyperacute model of stroke care in different parts of the country this was changed in 2012. Registration forms were submitted by each hospital (site) which confirmed service configuration and details of the lead clinician and clinical audit lead. 100% of eligible sites were recruited and participated in the 2016 audit.

Due to changes in service configurations and trust mergers the total number of sites has changed from 183 to 178 since the 2014 organisational audit.

Standards in the audit

A number of changes were made to the 2016 audit proforma (Appendix 4) from the 2014 audit making many sections shorter and more concise. The interventional neuroradiology section of the proforma was expanded and a new section on the provision of 6 month reviews added. Links between the acute organisational audit and the continuous clinical component of SSNAP have been made where possible.

Data collection tool

Data were collected at site level which can be either the only site within a trust or several sites within a trust (Health Board in Wales) using a standardised method. Clinical involvement and supervision at team level is provided by a lead clinician in each hospital with overall responsibility for data quality. Data were collected using a web-based tool accessible via the internet. Security and confidentiality were maintained through the use of hospital codes and high data quality was ensured through the use of built in validations which prevented illogical data being entered. All sites were asked to export and check their data before final sign off on 15 July 2016. No changes to the data were possible after this point.

Each participating site was provided with a standardised help booklet containing data definitions and clarifications and context specific. These helpnotes were also available within the web-based proforma itself. A telephone and email helpdesk was provided to answer any individual queries. As this is a snapshot audit, sites were asked to reflect their service as of **1 July 2016**.

Evidence based audit

The acute organisational audit measures the structure of acute stroke services. It is evidence based using standards and evidence from sources including the RCP National Clinical Guideline for Stroke, 4th edition, Clinical Commissioning Group Outcome Indicator Set (CCG OIS) and the NICE Quality Standards.

Key indicators of acute stroke organisation

In order to future proof the acute organisational audit SSNAP has invested existing resources to streamline its data collection, analysis and reporting, ensuring future efficiencies in result dissemination. Therefore, unlike previous years, SSNAP has not provided individual scoring and banding of sites. Instead, the domains and key indicators from the 2014 audit as well as recent research and evidence have been used as a guide to identify 10 key indicators of acute stroke organisation. Participating sites have been measured against specific criteria for each of these 10 key indicators.

Individual site level result portfolios have been made available to participating sites. Each includes site specific results for the 10 key indicators of acute stroke organisation and all data items are benchmarked against national averages.

Standards

The current standards against which acute stroke services are compared are outlined throughout sections 2. They include the new 10 key indicator standards (blue boxes) and the updated NICE Quality Standards (green boxes). Some of the acute criteria against which hospitals were measured in 2014 have been incorporated into the results portfolio. In addition to this the 'Looking forward' section will describe new standards from the RCP National Clinical Guideline for Stroke, 5th edition and NHS England Urgent and Emergency Care review, and where relevant they have been included in section 2 for context.

Definitions

Definition of a 'site'

Lead clinicians were asked to collect data on the basis of a unified service typically within a trust. For most trusts the 'site' was the trust. For some trusts there were several 'sites' each offering a discrete service. A site may include several hospitals.

Please note in this report 'trusts' is used as a generic term; however, it is acknowledged that in Wales, these are Health Boards.

Definition of a 'stroke unit'

The definition used for a stroke unit (and used in this audit) is:

Stroke unit - a multi-disciplinary team including specialist nursing staff based in a discrete ward which is geographically defined and has been designated for stroke patients.

There are three categories of stroke unit beds used at different parts of the care pathway which are referenced in this report:
Type 1 beds - used *solely* used for patients in the first 72 hours after stroke
Type 2 beds - *solely* used for patients beyond 72 hours after stroke
Type 3 beds - beds used for *both* the first 72 hours of care and beyond

How to read this report

This report presents national level data for many important aspects of the organisation of stroke services. National results are presented as percentages or summarised by the median. The median is the middle point of the data where 50% of the values lie on either side. Ratios of staffing numbers per 10 stroke unit beds are given rather than staffing numbers per stroke unit (SU) to allow comparison to national standards.

Denominators

It is important to note that denominators vary throughout this report depending on the number of hospitals to which the analyses relate. To illustrate, denominators can include all sites which participated (178), sites which treat all or some of their patients in the first 72 hours after their stroke (156) or sites which have different 'types' of stroke unit beds (for example 73 sites have Type 1 beds).

In addition there are 2 sites that have patients referred to them for intra-arterial treatment; however they do not participate in SSNAP. These two sites have submitted data on their provision of thrombectomy only. Therefore in these instances the denominator will be 180.

Relationships between the acute organisational audit and the SSNAP clinical audit

The SSNAP clinical audit prospectively measures the processes of stroke care for every patient through the longitudinal clinical audit and the acute organisational audit is a component of SSNAP that measures the quality of acute stroke services.

Presentation of results

Section 2 describes the organisation of acute stroke care. It addresses key aspects of acute stroke care organisation, including each of the 10 key indicators for the audit. Comparison with the 2014 acute organisational audit (shown in the grey sections of data tables) and the SSNAP clinical audit are given where appropriate.

Section 3 describes changes over time and compares 2016 results with previous audit rounds

Section 4 gives a comparison between England, Wales and Northern Ireland

Section 5 is called 'Looking forward'. This section presents guidance from the 5th edition of the National Clinical Guideline for Stroke and NHS England Urgent and Emergency Care review. Due to the 2016 acute organisational audit taking place prior to the publication of these documents this section includes a sense of what will need to be done to achieve the new standards in the future.

Where possible throughout the report results are placed in the context of clinical processes for patients and national standards and guidelines (green boxes). Clinical commentary is given in grey boxes throughout.

Intercollegiate Stroke Working Party – List of Members

Chair

Professor Anthony Rudd, Professor of Stroke Medicine, King's College London; Consultant Stroke Physician, Guy's and St Thomas' NHS Foundation Trust

Associate directors from the Stroke Programme at the Royal College of Physicians

Professor Pippa Tyrrell, Professor of Stroke Medicine, University of Manchester; Consultant Stroke Physician, Salford Royal NHS Foundation Trust

Dr Geoffrey Cloud, Consultant Stroke Physician, Honorary Senior Lecturer Clinical Neuroscience, St George's University Hospitals NHS Foundation Trust, London

Dr Martin James, Consultant Stroke Physician, Royal Devon and Exeter NHS Foundation Trust; Honorary Associate Professor, University of Exeter Medical School

List of Members

AGILE – Professional Network of the Chartered Society of Physiotherapy
Mrs Louise McGregor, Allied Health Professional Therapy Consultant – Acute Rehabilitation, St George's University Hospitals NHS Trust, London

Association of British Neurologists
Dr Gavin Young, Consultant Neurologist, The James Cook University Hospital, South Tees Hospitals NHS Foundation Trust

Association of Chartered Physiotherapists in Neurology
Dr Nicola Hancock, Lecturer in Physiotherapy, Acquired Brain Injury Rehabilitation Alliance (ABIRA), School of Health Sciences, University of East Anglia

British and Irish Orthoptic Society
Dr Fiona Rowe, Reader in Orthoptics and Health Services Research, University of Liverpool

British Association of Stroke Physicians
Dr Neil Baldwin, Consultant Stroke Physician

British Dietetic Association
Mr Alex Lang, Guy's and St Thomas' NHS Foundation Trust

British Geriatrics Society
Professor Helen Rodgers, Professor of Stroke Care, Newcastle University

British Psychological Society
Professor Audrey Bowen, Stroke Association John Marshall Memorial Professor of Neuropsychological Rehabilitation, University of Manchester MAHSC
Dr Jason Price, Consultant Clinical Neuropsychologist, Department of Neurology, DSC, James Cook University Hospital
Dr Shirley Thomas, Lecturer in Rehabilitation Physiotherapy, Queens Medical Centre
Dr Viki Teggart, Clinical Neuropsychologist, Psychological Services, Manchester Mental Health and Social Care Trust

British Society of Neuroradiologists
Dr Andrew Clifton, Interventional Neuroradiologist, St George's University Hospitals NHS Foundation Trust, London

British Society of Rehabilitation Medicine/Society for Research in Rehabilitation
Professor Derick Wade, Consultant in Rehabilitation Medicine, The Oxford Centre for Enablement

Chartered Society of Physiotherapy
Dr Cherry Kilbride, Senior Lecturer in Physiotherapy, Institute of Health, Environment and Societies, Brunel University, London

The Cochrane Stroke Group
Professor Peter Langhorne, Professor of Stroke Care Medicine, University of Glasgow

College of Occupational Therapists and Special Section Neurological Practice
Professor Avril Drummond, Professor of Healthcare Research, University of Nottingham
Mrs Karen Clements, Clinical Specialist Occupational Therapist – Stroke, London Road Community Hospital

College of Paramedics
Mr Joseph Dent, Advanced Paramedic, College of Paramedics

Faculty of Pre-Hospital Care of the Royal College of Surgeons of Edinburgh and the National Ambulance Service Medical Directors Group
Dr Neil Thomson, Interim Deputy Medical Director, London Ambulance Service NHS Trust

Health Economics Advice
Professor Anita Patel, Chair in Health Economics, Queen Mary University of London

NIMAST (Northern Ireland)
Dr Michael Power, Consultant Physician Ulster Hospital Belfast, Founder and Committee Member NIMAST

Patient representative
Mr Robert Norbury

Patient representative
Mr Stephen Simpson

Patient representative
Ms Marney Williams

Public Health England
Dr Patrick Gompertz, Consultant Physician, The Royal London Hospital

Public Health England/Royal College of Physicians
Dr Benjamin Bray, Clinical Research Fellow, Kings College London

Royal College of Nursing
Mrs Diana Day, Stroke Consultant Nurse, Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust
Dr Amanda Jones, Stroke Nurse Consultant, Sheffield Teaching Hospitals NHS Foundation Trust

Royal College of Radiologists
Professor Philip White, Hon Consultant Neuroradiologist, Newcastle Upon Tyne Hospitals NHS Foundation Trust

Royal College of Speech & Language Therapists
Ms Rosemary Cunningham, Speech and Language Therapy Team Manager, Royal Derby Hospital (Derbyshire Community Health Services Foundation Trust)

Professor Pam Enderby, Professor of Rehabilitation, University of Sheffield
Dr Sue Pownall, Head of speech and Language Therapy, Sheffield Teaching Hospitals NHS Foundation Trust

Southern Health and Social Care Trust
Dr Michael McCormick, Consultant Geriatrician/Stroke Physician, Craivagon Area Hosptial

Stroke Association
Mr Jon Barrick, Chief Executive, Stroke Association *(Until July 2016)*
Mr Dominic Brand, Director of Marketing and External Affairs, Stroke Association
Mrs Juliet Bouverie, Chief Executive, Stroke Association *(From June 2016)*

Welsh Government Stroke Implementation Group
Dr Phil Jones, Clinical Lead for Wales, Hywel Dda University Health Board

Appendix 4: Acute Organisational Audit Proforma 2016

This proforma should describe your stroke services as on **1 July 2016**. Please complete all questions. Clarification is available online against each question and also in the Help Booklet provided. In some cases you will either be directed to a later question or a response will not apply based on answers to key questions. Data should be submitted to the Royal College of Physicians via the SSNAP Web Portal.

Final Deadline: 8 July 2016

Helpdesk:

Telephone: 020 3075 1383 E-mail: ssnap@rcplondon.ac.uk

SITE CODE: [ ]

Basic Organisational Information

A. Audit Questions

A1. How many hospitals are covered by this form? [ ]

Please give the full name of each individual hospital. In this question, we are asking about acute hospitals which directly admit acute stroke patients or routinely admit them within 7 days.

	Full name of hospital	Total number of stroke unit beds	SSNAP code for hospital
1			
2			
3			
4			

TAB ONE

SECTION 1: Acute Presentation

Care in the first 72 hours after stroke

1.1. Which of the following options best describes the service at your site for patients during the first 72 hours after stroke? (Select one option only)

(i) We treat all of these patients ○

(ii) We treat some of these patients ○

(iii) We treat none of these patients ○

This should be what best describes your service and what happens to patients generally, not what happens in exceptional circumstances. Please see helpdesk for further information and instruction.

If 1.1(iii) is chosen:

1.1(a) Please give the name and RCP site code of the main hospital treating your patients for the first 72 hours.

[ ]

*(This code is **not** the same as the SSNAP Team Code.)*

Please go to Section 2 if 1.1(iii) is chosen.

Telemedicine

1.2. Does the stroke service at your site use telemedicine to allow remote access for the management of acute stroke care?

Yes ○ No ○

If yes:

1.2 (a) Which of the following do you use: (Tick all that apply)

(i) Remote viewing for brain imaging ☐

(ii) Video enabled clinical assessment ☐

1.2 (b) Do you operate a telemedicine rota with other hospitals?

Yes ○ No ○

1.2 (c) Which of the following groups of patients are assessed using telemedicine? (Select one option only)

(i) Only patients potentially eligible for thrombolysis ○

(ii) Some patients (regardless of eligibility for thrombolysis) ○

(iii) All patients (who require assessment during times when telemedicine is in use) ○

Thrombolysis in your Hospital(s)

1.3 What level of coverage does your sites thrombolysis service offer its stroke patients (i.e. by all hospitals covered by this site)?

(a) Weekdays: Number of hours per day [ ] hours

(b) Saturdays: Number of hours per day [ ] hours

(c) Sundays/Bank Holidays: Number of hours per day [ ] hours

1.4. How many consultant level doctors from your site are there on an on call thrombolysis rota? [ ]

For each of these consultants, please state their specialty.

Each column represents one consultant level doctor. Please select speciality of each consultant by row, making sure that the number of columns completed matches the number of consultants entered in 1.4.

Specialty	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Consultant																				
(i) Stroke physician																				
(ii) Neurologist																				
(iii) Care of the Elderly																				
(iv) Cardiologist																				
(v) General Medicine physician																				
(vi) Emergency Physician																				
(vii) Acute Medicine physician																				
(viii) Other _____																				

Thrombolysis in other hospital(s)

1.5. Does your hospital have a formal bypass arrangement with the local ambulance service to take stroke patients to a hospital where a thrombolysis service is available (during those times when you do not provide thrombolysis)?

Yes ◯ No ◯

1.6. Do you have an agreement with (an)other site(s) to provide thrombolysis for your patients (during the hours when your site does not provide it)?

Yes ◯ No ◯

If no go to 1.7

If yes:

1.6(a) How many sites do you have an agreement with? [ ]

1.6(b) Please give the name and RCP codes of each of these sites [ ]

1.6(c) Does your site have a joint on call medical rota for thrombolysis with this/these site(s)?

Yes ◯ No ◯

1.6(d) What level of thrombolysis coverage is provided by your site in combination with the other site(s) for your stroke patients? *(If your thrombolysis service is available to stroke patients 12 hours a day and the other 12 hours are covered by agreements with other sites please enter 24, 24, 24. If your site offers 8 hours coverage a day, and an agreement with another site with coverage for an additional 12 hours a day, please enter 20, 20, and 20.)*

(i) Weekdays: Number of hours per day [ ] hours
(ii) Saturdays: Number of hours per day [ ] hours
(iii) Sundays/Bank Holidays: Number of hours per day [ ] hours

Interventional Neuroradiology

1.7. Does your site use intra-arterial treatment (e.g. thrombectomy) to treat patients with acute stroke? (Select one option only)

(i) Yes, at our site ○

(ii) Yes, by referral to another site ○ [Enter RCP site code]

(iii) No ○

☐ Check box if the site patients are referred to for inter-arterial (thrombectomy) treatment does not participate in SSNAP

(This RCP code is not the same as the SSNAP Team Code)

If 1.7(ii) selected:

1.7(a): If by referral, do you thrombolyse some of these patients first?

Yes ○ No ○

If 1.7(i)selected:

1.7(b) If you carry out intra-arterial treatment at your site, do you then refer them to another site once the treatment has taken place?

Yes ○ No ○

1.7(b)i If yes, please give name of site(s) and RCP site code(s) :

(This RCP code is not the same as the SSNAP Team Code)

If 1.7(i) or 1.8(ii) selected:

1.7(c) What hours is the service available (either at your site and/or by referral?)

(If this service is available to stroke patients 12 hours a day Monday - Sunday enter, 12, 12, 12. If it's available 24 hours a day Monday - Friday, but only available 8 hours on Saturday and no hours on Sunday please enter 24, 8, 0. The number of hours entered should reflect both on-site and off-site coverage, either individually or as a combination.)

(i) Weekdays: Number of hours per day [ ] hours

(ii) Saturdays: Number of hours per day [ ] hours

(iii) Sundays/Bank Holidays: Number of hours per day [ ] hours

If 1.7 (iii) answered go to Section 2.

1.8. How many consultant level doctors from your site carry out interventional neuroradiology (thrombectomy)?

[ ]

(Please do not include doctors who work primarily at other sites – each doctor should only be counted at one site. Please include doctors who have performed 1 or more thrombectomy procedures)

1.8(a) For each of these consultants, please state their specialty.

Which specialty is this consultant?	**Consultant:**									
	1:	**2:**	**3:**	**4:**	**5:**	**6:**	**7:**	**8:**	**9:**	**10:**
Interventional neuroradiology	○	○	○	○	○	○	○	○	○	○
Vascular interventional neuroradiology	○	○	○	○	○	○	○	○	○	○
Non-vascular interventional neuroradiology	○	○	○	○	○	○	○	○	○	○
Cardiologist	○	○	○	○	○	○	○	○	○	○
Neuro-surgeon	○	○	○	○	○	○	○	○	○	○
Stroke Physician	○	○	○	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○	○	○	○

1.9. How many acute stroke patients presenting to your site were treated either on-site or by referral off-site intra-arterially between April 1, 2015 and March 31, 2016? [ ]

If 1.9 is 0 please go to section 2.

1.9 (a) Of these patients, how many were treated:

(i) At your site [ ]

(ii) By referral off-site [ ]

TAB TWO

SECTION 2: STROKE UNITS

2.1. Please give the following details for each of these hospitals:

		Answer separately for each hospital			
	(a) Full name of hospital	**(b)** Total number of stroke unit beds (can be 0).*	**(c)** Number of stroke unit beds **solely** for patients in first 72 hours after stroke	**(d)** Number of stroke unit beds **solely** for patients beyond 72 hours after stroke	**(e)**Number of stroke unit beds used for **both** pre and post-72 hour care
1					
2					
3					
4					
	TOTAL:				

Note: if 1.1(iii) is chosen (i.e. if your site does not treat patients within 72 hours) 2.1(c) and 2.1(e) above will be greyed out and you will not be able to answer any questions in sections 2A or 2C.

SECTION 2A: STROKE UNIT– Beds for patients in first 72 hours after stroke

Care on stroke unit beds used solely for patients in the first 72 hours after stroke (please answer based on ALL beds noted in **2.1(c)**)

2.2. How many of these beds have continuous physiological monitoring (ECG, oximetry, blood pressure)?
[ ]

2.3. How many stroke consultant ward rounds are conducted on your acute stroke ward per week?
[ ]
(If you have 2 consultant led ward rounds 7 days a week please enter 14. If there is more than one location for these beds, please give an average e.g. if there are 20 beds overall and 10 have ward rounds 7 times a week and the other 10 have ward rounds 5 times a week, you should put 6. If you have permutations outside of this please contact the SSNAP helpdesk).

2.4. Is there immediate access to scanning for urgent stroke patients (as defined in the NICE Guidelines) on these beds?
Yes ◯ No ◯

For questions 2.5 – 2.8 only the nursing staff for the beds solely used for patients in the first 72 hours after stroke (i.e. the total entered for 2.1c) should be included.

2.5. How many of the following *nursing* staff are there usually on duty at 10AM for these beds? (Enter 0 if no staff of that grade). *Only the nursing staff for the beds which are solely used for patients in the first 72 hours after stroke (i.e. the total entered for 2.1c).*
(N.B. Please do not double count any nurses/care assistants listed in 2.10 and 2.17)

	Weekdays	Saturdays	Sundays/Bank Holidays
(i) Registered nurses	[ ]	[ ]	[ ]
(ii) Care assistants	[ ]	[ ]	[ ]

2.6. How many nurses are there usually on duty for these beds at 10am who are trained in the following? (Enter 0 if none).
(N.B. Please do not double count any nurses listed in 2.11 and 2.18)

	Weekdays	Saturdays	Sundays/Bank Holidays
(i) Swallow screening	[ ]	[ ]	[ ]
(ii) Stroke assessment and management	[ ]	[ ]	[ ]

2.7. How many of the following *nursing* staff are there usually on duty at 10PM for these beds? (Enter 0 if no staff of that grade). *Only the nursing staff for the beds which are solely used for patients in the first 72 hours after stroke (i.e. the total entered for 2.1c).*

(N.B. Please do not double count any nurses/care assistants listed in 2.12 and 2.19)

		Weekdays	Saturdays	Sundays/Bank Holidays
(i)	Registered nurses	[ ]	[ ]	[ ]
(ii)	Care assistants	[ ]	[ ]	[ ]

2.8. What is the total establishment of whole time equivalents (WTEs) of the following bands of nurses for your Type 1 beds (beds solely for patients in the first 72 hours after stroke) in your site? *(Enter 0 if no establishment)*

Type 1 beds (beds solely for patients in first 72 hours after stroke)	**WTE**
Band 1	
Band 2	
Band 3	
Band 4	
Band 5	
Band 6	
Band 7	
Band 8a	
Band 8b	
Band 8c	

SECTION 2B: STROKE UNIT – Beds for patients beyond 72 hours after stroke

Care on stroke unit beds used solely for patients beyond 72 hours after stroke (please answer based on ALL beds noted in 2.1(d))

2.9. How many days per week is there a stroke specialist consultant ward round for these beds? *(If there is more than one location for these beds, please give an estimated average e.g. if there are 20 beds overall and 10 have ward rounds 7 times a week and the other 10 have ward rounds 5 times a week, you should put 6. If you have permutations outside of this please contact the SSNAP helpdesk).*

[ ]

For questions 2.10 – 2.13 only the nursing staff for beds used solely for patients beyond 72 hours after stroke (i.e. the total entered for 2.1(d) should be included

2.10. How many of the following *nursing* staff are there usually on duty at 10am for these beds? (Enter 0 if no staff of that grade) *Only the nursing staff for the beds which are solely used for patients beyond the first 72 hours after stroke (i.e. the total entered for 2.1d)*
*(N.B. Please do not double count any nurses/care assistants listed in 2**.5 and 2.17**)*

	Weekdays	Saturdays	Sundays/Bank Holidays
(i) Registered nurses	[ ]	[ ]	[ ]
(ii) Care assistants	[ ]	[ ]	[ ]

2.11. How many nurses are there usually on duty for these beds at 10am who are trained in the following? (Enter 0 if none). *(N.B. Please do not double count any nurses listed in 2**.6 and 2.18**)*

	Weekdays	Saturdays	Sundays/Bank Holidays
(i) Swallow screening	[ ]	[ ]	[ ]
(ii) Stroke assessment and management	[ ]	[ ]	[ ]

2.12. How many of the following *nursing* staff are there usually on duty at 10PM for these beds? (Enter 0 if no staff of that grade). *Only the nursing staff for the beds which are solely used for patients beyond the first 72 hours after stroke (i.e. the total entered for 2.1c).*
*(N.B. Please do not double count any nurses listed in 2**.7 and 2.19**)*

	Weekdays	Saturdays	Sundays/Bank Holidays
(i) Registered nurses	[ ]	[ ]	[ ]
(ii) Care assistants	[ ]	[ ]	[ ]

2.13. What is the total establishment of whole time equivalents (WTEs) of the following bands of nurses for type 2 beds (beds solely for patients beyond 72 hours after stroke) (Enter 0 if no establishment)

Type 2 beds (beds for patients beyond 72 hours after stroke)	**WTE**
Band 1	
Band 2	
Band 3	
Band 4	
Band 5	
Band 6	
Band 7	
Band 8a	
Band 8b	
Band 8c	

SECTION 2C: STROKE UNIT – Beds for both pre and post 72 hour care

Care on stroke unit beds which are used for both pre and post 72 hour care (please answer based on ALL beds noted in **2.1(e)**)

2.14. How many of these beds have continuous physiological monitoring (ECG, oximetry, blood pressure)?
[ ]

2.15. How many stroke consultant ward rounds are conducted on your acute stroke ward per week?
[ ]
(If you have 2 consultant led ward rounds 7 days a week please enter 14. If there is more than one location for these beds, please give an average e.g. if there are 20 beds overall and 10 have ward rounds 7 times a week and the other 10 have ward rounds 5 times a week, you should put 6. If you have permutations outside of this please contact the SSNAP helpdesk).

2.16. Is there immediate access to scanning for urgent stroke patients (as defined in the NICE Guidelines) on these beds?
Yes ◯ No ◯

For questions 2.17 – 2.20 only the nursing staff for beds used for patients pre and post 72 hour care (i.e. the total entered for 2.1e) should be included.

Type 3 beds (beds used for pre and post 72 hours only).
2.17. How many of the following *nursing* staff are there usually on duty at 10AM for these beds? (Enter 0 if no staff of that grade). *(N.B. Please do not double count any nurses/care assistants listed in 2.5 and 2.10. Only the nursing staff for the beds which are solely used for patients' pre and post 72 hour care (i.e. the total entered for 2.1e.)*

	Weekdays	Saturdays	Sundays/Bank Holidays
(i) Registered nurses	[ ]	[ ]	[ ]
(ii) Care assistants	[ ]	[ ]	[ ]

2.18. How many nurses are there usually on duty for these beds at 10AM who are trained in the following? (Enter 0 if none). *(N.B. Please do not double count any nurses listed in 2.6* or *2.11)*

	Weekdays	Saturdays	Sundays/Bank Holidays
(i) Swallow screening	[ ]	[ ]	[ ]
(ii) Stroke assessment and management	[ ]	[ ]	[ ]

2.19. How many of the following *nursing* staff are there usually on duty at 10PM for these beds? (Enter 0 if no staff of that grade). *(N.B. Please do not double count any nurses/care assistants listed in 2.7 & 2.10).*

	Weekdays	Saturdays	Sundays/Bank Holidays
(i) Registered nurses	[ ]	[ ]	[ ]
(ii) Care assistants	[ ]	[ ]	[ ]

2.20. What is the total establishment of whole time equivalents (WTEs) of the following bands of nurses for type 3 beds (beds for both pre and post 72 hour care)? (Enter 0 if no establishment)

Type 3 beds Beds for both pre and post 72 hour care)	**WTE**
Band 1	
Band 2	
Band 3	
Band 4	
Band 5	
Band 6	
Band 7	
Band 8a	
Band 8b	
Band 8c	

TAB 3

SECTION 3: SERVICES AND STAFF ACROSS ALL STROKE UNIT BEDS

Do not answer this section if you do not have any stroke units across your site (i.e. if total of 2.1(b) = 0)

3.1. Does your stroke unit have access to the following within 5 days of referral? :

(a) Social work Yes ◯ No ◯

(b) Orthotics Yes ◯ No ◯

(c) Orthoptics Yes ◯ No ◯

(d) Podiatry/foot health Yes ◯ No ◯

3.2. What is the total establishment of whole time equivalents (WTEs) of the following qualified professionals and support workers for all your stroke unit beds? (Enter 0 if no establishment). Only tick the 6 day working or 7 day working option if these professionals treat stroke patients ***in relation to stroke management*** at weekends ***on the stroke unit***.

	WTE	Individuals	5 day working	6 day working	7 day working
(i) Clinical Psychology (qualified)	[ ]	[ ]	◯	◯	◯
(ii) Clinical Psychology (support worker)					
(iii) Dietetics (qualified)					
(iv) Dietetics (support worker)					
(v) Occupational Therapy (qualified)					
(vi) Occupational Therapy (support worker)					
(vii) Physiotherapy (qualified)					
(viii) Physiotherapy (support worker)					
(ix) Speech & Language Therapy (qualified)					
(x) Speech & Language Therapy (support worker)					
(xi) Pharmacy (qualified)					
(xii) Pharmacy (support worker)					
(xiii) Nursing (registered): Band 6					
(xiv) Nursing (registered): Band 7					
(xv) Nursing (registered): Band 8a					
(xvi) Nursing (registered): Band 8b					
(xvii) Nursing (registered): Band 8c					

Junior Doctor Sessions

3.3. How many sessions of junior doctor time are there per week in total for all stroke unit beds?

(i) Specialty trainee 3(ST3)/registrar grade or above [ ] Sessions

(ii) Foundation years/core training/ST1/ST2 or below [ ] Sessions

(iii) Non training grade junior doctor [ ] Sessions

3.4. Do you have Physician Associates as part of your clinical team?

Yes ◯ No ◯

3.4(a) How many whole time equivalents do these Physician Associates (Physician Assistants) work across your stroke service?

[ ] WTEs

Venous thromboembolism prevention

3.5. What is your first line treatment for preventing venous thromboembolism for patients with reduced mobility? (Select one option only)

(i) Short or long compression stockings ◯

(ii) Intermittent pneumatic compression device ◯

(iii) Low molecular weight heparin ◯

(iv) None of the above ◯

6 months reviews

3.6. Are you commissioned (or in Wales, expected) to carry out 6 month reviews?

Yes ◯ No ◯

3.7. Are the patients that you discharge given a 6 month post stroke review?

All ◯ Some ◯ None ◯

3.7(a) If all or some, who carries these out? (Tick all that apply)

(i) Your site ☐

(ii) Other services(s) ☐

3.7 a (i) How many other services carry out reviews on the patients that you discharge? [ ]

3.7(b) What other types of services carry out a 6 month review of patients that you discharge?

(Tick all that apply)

(i) Other inpatient service (e.g. Community hospital) ☐

(ii) Outpatient clinic ☐

(iii) Early Supported Discharge (ESD) team ☐

(iv) Community Rehabilitation Team (CRT) ☐

(v) 6 month review service (stand alone team) ☐

(vi) Family and carer support service (e.g. Stroke Association) ☐

(vii) Other _____ ☐

TAB 4

SECTION 4: OTHER STROKE CARE MODELS

EARLY SUPPORTED DISCHARGE TEAM

Definition – Early supported discharge team refers to a multidisciplinary team which provides rehabilitation and support in a community setting with the aim of reducing the duration of hospital care for stroke patients.

Specialist Early Supported Discharge Team

A stroke/neurology specific team is one which treats stroke patients either solely or as well as general neurology patients. This question should not include non-stroke/neurology specific teams.

4.1. Do you have access to at least one **stroke/neurology specific** early supported discharge multidisciplinary team?

Yes ◯ No ◯

If no go to 4.2

4.1(a) How many Specialist Early Supported Discharge (ESD) teams does you site have access to? (*Only include teams which see more than 10 patients a year.)*

[ ]

4.1(b) Please give the name and contact details of each team.

Team Name	**Contact Name**	**Phone number**	**Email**	Does this service carry out 6 month reviews on patients discharged from your site?
A	Select SSNAP team from lists ☐ Check box if non-SSNAP team Name of team _____			Yes ◯ No ◯
B				Yes ◯ No ◯
etc				Yes ◯ No ◯

4.1(c) What percentage of your patients have access to at least one of these teams if needed? [ ]

LONGER TERM COMMUNITY REHABILITATION TEAM

Definition: A team working in the community delivering rehabilitation services.

We will ask you about two types of CRT team in this part – stroke/neurology specialist and non-specialist (please make sure you answer the correct section(s) – this could be none, either or both)

Specialist Community Rehabilitation Team

A stroke/neurology specific team is one which treats stroke patients either solely or as well as general neurology patients.

4.2. Do you have access to at least one **stroke/neurology specific** community rehabilitation team for longer term management?

Yes ◯ No ◯

If no go to 4.4

4.2(a) How many specialist Community Rehabilitation teams does your site have access to? (*Only include teams which see more than 10 patients a year.)*

[ ]

4.2(b) Please give the name and contact details of each team.

Team Name	**Contact Name**	**Phone number**	**Email**	Does this service carry out 6 month reviews on patients discharged from your site?
A	Select SSNAP team from lists ☐ Check box if non-SSNAP team Name of team _____			Yes ◯ No ◯
B				Yes ◯ No ◯
etc				Yes ◯ No ◯

4.2(c) What percentage of your patients have access to at least one of these teams if needed? [ ]

Non-specialist Community Rehabilitation Team

A non-specialist team is one which treats stroke patients, general neurology patients and other types of patients.

4.3. Do you have access to at least one **non-specialist** community rehabilitation team for longer term management?

Yes ◯ No ◯

If no go to 4.5

4.3(a) How many non-specialist Community Rehabilitation teams who your site have access to? (*Only include teams which see more than 10 patients a year.)*

[ ]

4.3 (b) Please give the name and contact details of each team.

Team Name	**Contact Name**	**Phone number**	**Email**	Does this service carry out 6 month reviews on patients discharged from your site?
A	Select SSNAP team from lists ☐ Check box if non-SSNAP team Name of team _____			Yes ◯ No ◯
B				Yes ◯ No ◯
etc				Yes ◯ No ◯

4.3(c) What percentage of your patients have access to at least one of these teams if needed?

[ ]

TAB 5

SECTION 5: TIA / NEUROVASCULAR SERVICE

5.1. Does your site have a neurovascular clinic?

Yes ◯ No ◯

If no:

5.1(a) If no, who provides this for your patients (select one option only)?

(i) Another site within our trust ◯ Please give name and RCP site code [____] 3 digit code

(ii) Another site not within our trust ◯ Please give name and RCP site code: [____] 3 digit code

Please go to Section 6

If yes:

5.1(b) How many clinics within a 4 week period? [ ]

5.1(c) How many new patients were seen during the past 4 weeks? [ ]

5.1(d) What is the current average waiting time for an appointment from referral? [ ] days

5.2 Is carotid imaging available at your site?

Yes ◯ No ◯

5.3 What patients are treated at your site?

(i) High risk TIA patients (ABCD2 score 4 or more) ◯

(ii) Low risk TIA patients (ABCD2 score less than 4) ◯

(iii) High and low risk TIA patients ◯

5.4. What is the usual waiting time for patients to receive carotid imaging (select one option only for (a) and (b))?

	(a) For HIGH risk TIA patients (ABCD2 score 4 or more)	**(b)** For LOW risk TIA patients (ABCD2 score less than 4)
(ii) The same day (7 days a week)	◯	◯
(iii) The same day (5 days a week)	◯	◯
(iv) The next day	◯	◯
(v) The next weekday	◯	◯
(vi) Within a week	◯	◯
(vii)Longer than a week	◯	◯

5.5. Within what timescale can you see, investigate and initiate treatment for ALL your **HIGH** risk TIA patients?
If 'yes' ticked to (a), must answer one option for (a). If 'yes' ticked for (b), must answer one option for (b)

Tick which service(s) you have:	**a)** Inpatient Yes ○ No ○	**(b)** Outpatient Yes ○ No ○
(i) The same day (7 days a week)	○	○
(ii) The same day (5 days a week)	○	○
(iii) The next day	○	○
(iv) The next weekday	○	○
(v) Within a week	○	○
(vi) Within a month	○	○
(vii) Longer than a month	○	○

5.6. Within what timescale can you see, investigate and initiate treatment for ALL your **LOW** risk TIA patients?
If 'yes' ticked to (a), must answer one option for (a). If 'yes' ticked for (b), must answer one option for (b)

Tick which service(s) you have:	**(a)** Inpatient Yes ○ No ○	**(b)** Outpatient Yes ○ No ○
(i) The same day (7 days a week)	○	○
(ii) The same day (5 days a week)	○	○
(iii) The next day	○	○
(iv) The next weekday	○	○
(v) Within a week	○	○
(vi) Within a month	○	○
(vii) Longer than a month	○	○

TIA patients in your site

5.7. What is the total number of inpatients with confirmed or suspected TIA across all primary admitting hospitals at the time this form is completed? [ ]

If 5.7 is 0 please go to Section 6.

5.7(a). How many inpatients with confirmed or suspected TIA are in stroke unit beds across all primary admitting hospitals on 1st July 2016? [ ]

TAB 6

SECTION 6: SPECIALIST ROLES

6.1. Is there a clinician with specialist knowledge of stroke who is formally recognised as having principal responsibility for stroke services?

Yes ◯ No ◯

If yes:

6.1(a) Please select one option

(i) Doctor ◯
(ii) Nurse ◯
(iii) Therapist ◯

6.2. Do you have at least one accredited specialist registrar in a post registered for stroke specialist training?

Yes ◯ No ◯

6.3. How many accredited specialist registrar posts to you have at your site?

[ ]

6.3(a) How many of them are currently filled?

[ ]

Workforce Planning

The aim of this section is to match the stroke care you provide to the type of consultant workforce that is, and may in the future, be available in your site. This may improve both national planning for training of future consultant physicians working in stroke medicine and their equitable distribution.

6.4. Do you have any unfilled stroke consultant posts?

Yes ◯ No ◯

If yes:

6.4(a) How many programmed activities (PAs) do these posts cover? [ ] PAs

6.4(b) For how many months have these posts been funded but unfilled? [ ] months

Existing posts

6.5. How many programmed activities (PAs) do you have in total for Stroke Consultant Physicians? [ ] PAs

6.5(a) How many consultants (individuals) are these PAs divided amongst? [ ] Consultants

6.5(b) How many of these PAs are Direct Clinical Care (DCCs) for Stroke? [ ]PAs

6.5(c) Please complete the distribution of these DCC PAs in the following table.
NB On the webtool, these questions will be asked in relation to each individual consultant specified in 6.6(a).

Consultants	**Main parent accredited speciality of consultant**	**Estimate of consultant's Direct Clinical Care Programmed Activities for stroke**	**Contributions of consultant (Tick all that apply)**	**Time period for which consultant is likely to continue role**	**Accredited CCST in Stroke Medicine after Stroke Training when SpR**
Consultant 1	Geriatrics ○ Neurology ○ Internal Medicine ○ Other ----------		Stroke unit ☐ TIA clinic ☐ Stroke ☐ out of hours	>10yrs ○ 6-10 yrs ○ 3-5 yrs ○ <3 yrs ○	Yes ○ No ○
Consultant 2					
Consultant 3					
Etc					

Planned future posts
This section refers to changes planned in the next **2 years**.

6.6 How many new/additional programmed activities (PAs) do you plan to have for Stroke Consultant Physicians? [ ] PAs

If 6.6 is '0' go to section 7
6.6(a) How many new/additional consultants (individuals) will these PAs be divided amongst? [ ] Consultants

6.6(b) How many of these new/additional PAs will be for Direct Clinical Care (DCC) for Stroke? [ ] PAs

TAB 7

SECTION 7: QUALITY IMPROVEMENT, TRAINING & LEADERSHIP

7.1. Do your commissioners (LHBs in Wales) require additional information not provided by SSNAP?

Yes ◯ No ◯

7.2. What level of management takes responsibility for the follow-up of the results and recommendations of the Sentinel Stroke Audit? (Tick all that apply)

(i) Executive on the Board ☐
(ii) Non-executive on the Board ☐
(iii) Chairman of Clinical Governance (or equivalent) ☐
(iv) Directorate Manager ☐
(v) Stroke Clinical Lead ☐
(vi) Other (please specify) ☐ _____
(vii) No specific individual ☐
(viii) Not known ☐

7.3. Is there a strategic group responsible for stroke?

Yes ◯ No ◯

If yes:

7.3(a) Which of the following does it include? (Tick all that apply)

(i) Ambulance trust representative ☐
(ii) Clinician ☐
(iii) Patient representative ☐
(iv) Commissioner ☐
(v) Social Services ☐
(vi) Stroke Network representative ☐
(vii) Trust board member ☐

7.4. Is there funding for external courses available for nurses and therapists?

Yes ◯ No ◯

7.5. How often is there a formal survey seeking patient/carer views on stroke service? *(This does not include the Friends and Family test)* (Select one option only)

(i) Never ○
(ii) Less than once a year ○
(iii) 1-2 times a year ○
(iv) 3-4 times a year ○
(v) More than 4 a year ○
(vi) Continuous (every patient) ○

Stroke audit

7.6. What is the total number of whole time equivalents (WTEs) allocated in your site for stroke data collection?

WTEs [ ]

7.6(a) What disciplines are covered by the WTEs for stroke data collection? (Tick all that apply)

Doctor ☐ Manager ☐ Nurse ☐ Therapist ☐ Clinical Audit/Clinical Governance ☐
Data clerk/analyst with specific responsibility for stroke ☐
Data clerk/analyst with general audit responsibilities ☐

TAB 8

SECTION 8: Patient and carer communication

8.1. Is there patient information literature displayed in unit/ward on the following? (Tick all that apply)

	Stroke Unit(s)		Outpatients	
	Yes	No	Yes	No
(a) Patient versions of national or local guidelines/standards	○	○	○	○
(b) Social Services local Community Care arrangements	○	○	○	○
(c) The Benefits Agency	○	○	○	○
(d) Information on stroke	○	○	○	○
(e) Secondary prevention advice	○	○	○	○

8.2. Does the Stroke service have formal links with patients and carers organisations for communication on any of the following?

Yes ○ No ○

8.2(a) If yes, select all that apply:

(i) Service provision ☐

(ii) Audit ☐

(iii) Service reviews and future plans ☐

(iv) Developing research ☐

8.3. Does the stroke service have formal links with community user groups for stroke?

Yes ○ No ○

Appendix 3: List of participating Hospitals and Trusts by region

Region	Site Name	Number of hospitals included	Hospital(s)
London	Barking, Havering and Redbridge University Hospitals NHS Trust	1	Queens Hospital Romford
	Barnet and Chase Farm Hospitals NHS Trust	1	Barnet General Hospital
	Barts Health NHS Trust (Newham University Hospital)	1	Newham General Hospital
	Barts Health NHS Trust (Royal London Hospital)	1	Royal London Hospital
	Barts Health NHS Trust (Whipps Cross Hospital)	1	Whipps Cross University Hospital
	Chelsea and Westminster Hospital NHS Foundation Trust	1	Chelsea and Westminster Hospital
	Chelsea and Westminster Hospital NHS Foundation Trust (West Middlesex University Hospital)	1	West Middlesex University Hospital
	Croydon Health Services NHS Trust	1	Croydon University Hospital
	Epsom and St Helier University Hospitals NHS Trust (St Helier Hospital)	1	St Helier Hospital
	Guy's and St Thomas' Hospital NHS Foundation Trust	1	St Thomas Hospital
	Hillingdon Hospitals NHS Foundation Trust	1	Hillingdon Hospital
	Homerton University Hospital NHS Foundation Trust	1	Homerton University Hospital
	Imperial College Healthcare NHS Trust	1	Charing Cross Hospital
	King's College Hospital NHS Foundation Trust (King's College Hospital)	1	King's College Hospital
	King's College Hospital NHS Foundation Trust (Princess Royal University Hospital)	1	Princess Royal University Hospital
	Kingston Hospital NHS Foundation Trust	1	Kingston Hospital
	Lewisham and Greenwich NHS Trust	1	University Hospital Lewisham
	London North West Healthcare NHS Trust (Northwick Park Hospital)	1	Northwick Park Hospital
	North Middlesex University Hospital NHS Trust	1	North Middlesex Hospital
	Royal Free London NHS Foundation Trust	1	Royal Free Hospital
	St George's Healthcare NHS Foundation Trust	1	St George's Hospital
	University College London Hospitals NHS Foundation Trust	1	University College Hospital
East Midlands	Derby Teaching Hospitals NHS Foundation Trust	1	Royal Derby Hospital
	Kettering General Hospital NHS Foundation Trust	1	Kettering General Hospital
	Northampton General Hospital NHS Trust	1	Northampton General Hospital
	Nottingham University Hospitals NHS Trust	1	Nottingham City Hospital
	Sherwood Forest Hospitals NHS Foundation Trust	1	Kings Mill Hospital
	United Lincolnshire Hospitals NHS Trust (Lincoln County)	1	Lincoln County Hospital
	United Lincolnshire Hospitals NHS Trust (Pilgrim Hospital)	1	Pilgrim Hospital
	University Hospitals of Leicester NHS Trust	1	Leicester Royal Infirmary

Region	Site Name	Number of hospitals included	Hospital(s)
East of England	Basildon and Thurrock University Hospitals NHS Foundation Trust	1	Basildon University Hospital
	Bedford Hospital NHS Trust	1	Bedford Hospital
	Cambridge University Hospitals NHS Foundation Trust	1	Addenbrooke's Hospital
	Colchester Hospital University NHS Foundation Trust	1	Colchester General Hospital
	East and North Hertfordshire NHS Trust	1	Lister Hospital
	Ipswich Hospital NHS Trust	1	Ipswich Hospital
	James Paget University Hospitals NHS Foundation Trust	1	James Paget Hospital
	Luton and Dunstable University Hospital NHS Foundation Trust	1	Luton and Dunstable Hospital
	Mid Essex Hospital Services NHS Trust	1	Broomfield Hospital
	Norfolk and Norwich University Hospitals NHS Foundation Trust	1	Norfolk and Norwich University Hospital
	Peterborough and Stamford Hospitals NHS Foundation Trust	1	Peterborough City Hospital
	Queen Elizabeth Hospital King's Lynn NHS Foundation Trust	1	Queen Elizabeth Hospital Kings Lynn
	Southend University Hospital NHS Foundation Trust	1	Southend Hospital
	West Hertfordshire Hospitals NHS Trust	1	Watford General Hospital
	West Suffolk Hospital NHS Foundation Trust	1	West Suffolk Hospital
West Midlands	Burton Hospitals NHS Foundation Trust	1	Queens Hospital Burton upon Trent
	Dudley Group NHS Foundation Trust	1	Russells Hall Hospital
	George Eliot Hospital NHS Trust	1	George Eliot Hospital
	Heart of England NHS Foundation Trust (Birmingham Heartlands)	1	Birmingham Heartlands Hospital
	Heart of England NHS Foundation Trust (Good Hope Hospital)	1	Good Hope General Hospital
	Heart of England NHS Foundation Trust (Solihull Hospital)	1	Solihull Hospital
	Sandwell and West Birmingham Hospitals NHS Trust (Sandwell District Hospital)	1	Sandwell District Hospital
	Shrewsbury and Telford Hospital NHS Trust	1	Princess Royal Hospital Telford
	South Warwickshire NHS Foundation Trust	1	Warwick Hospital
	The Royal Wolverhampton Hospitals NHS Trust	1	New Cross Hospital
	University Hospitals Birmingham NHS Foundation Trust	1	Queen Elizabeth Hospital Edgbaston
	University Hospitals Coventry and Warwickshire NHS Trust	1	University Hospital Coventry
	University Hospitals of North Midlands NHS Trust	1	Royal Stoke University Hospital
	Walsall Healthcare NHS Trust	1	Manor Hospital
	Worcestershire Acute Hospitals NHS Trust (Worcester Royal Hospital)	1	Worcestershire Royal Hospital
	Wye Valley NHS Trust	1	Hereford County Hospital

Region	Site Name	Number of hospitals included	Hospital(s)
Cheshire and Mersey	Aintree University Hospitals NHS Foundation Trust	1	University Hospital Aintree
	Countess of Chester Hospital NHS Foundation Trust	1	Countess of Chester Hospital
	East Cheshire NHS Trust	1	Macclesfield District General Hospital
	Mid Cheshire Hospitals NHS Foundation Trust	1	Leighton Hospital
	Royal Liverpool and Broadgreen University Hospitals NHS Trust	1	Royal Liverpool University Hospital
	Southport and Ormskirk Hospital NHS Trust	1	Southport and Formby District General
	St Helens and Knowsley Teaching Hospitals NHS Trust	1	Whiston Hospital
	Warrington and Halton Hospitals NHS Foundation Trust	1	Warrington Hospital
	Wirral University Teaching Hospital NHS Foundation Trust	1	Arrowe Park Hospital
Manchester, Lancashire and South Cumbria	Blackpool Teaching Hospitals NHS Foundation Trust	1	Blackpool Victoria Hospital
	Bolton NHS Foundation Trust	1	Royal Bolton Hospital
	Central Manchester University Hospitals NHS Foundation Trust (Manchester Royal Infirmary)	1	Manchester Royal Infirmary
	Central Manchester University Hospitals NHS Foundation Trust (Trafford General Hospital)	1	Trafford General Hospital
	East Lancashire Hospitals NHS Trust	1	Royal Blackburn Hospital
	Lancashire Teaching Hospitals NHS Foundation Trust	1	Royal Preston Hospital
	Pennine Acute Hospitals NHS Trust	1	Fairfield General Hospital
	Salford Royal NHS Foundation Trust	1	Salford Royal Hospital
	Stockport NHS Foundation Trust	1	Stepping Hill Hospital
	Tameside Hospital NHS Foundation Trust	1	Tameside General Hospital
	University Hospital of South Manchester NHS Foundation Trust	1	Wythenshawe Hospital
	University Hospitals of Morecambe Bay NHS Foundation Trust (Furness General Hospital)	1	Furness General Hospital
	University Hospitals of Morecambe Bay NHS Foundation Trust (Royal Lancaster Infirmary)	1	Royal Lancaster Infirmary
	Wrightington, Wigan and Leigh NHS Foundation Trust	1	Royal Albert Edward Infirmary
North of England	City Hospitals Sunderland NHS Foundation Trust	1	Sunderland Royal Hospital
	County Durham and Darlington NHS Foundation Trust	1	University Hospital of North Durham
	Gateshead Health NHS Foundation Trust	1	Queen Elizabeth Hospital Gateshead
	Newcastle upon Tyne Hospitals NHS Foundation Trust	1	Royal Victoria Infirmary
	North Cumbria University Hospitals NHS Trust (Cumberland Infirmary)	1	Cumberland Infirmary
	North Cumbria University Hospitals NHS Trust (West Cumberland Hospital)	1	West Cumberland Hospital
	North Tees and Hartlepool NHS Foundation Trust	1	University Hospitals of North Tees and Hartlepool
	Northumbria Healthcare NHS Foundation Trust (Hexham Hospital)	1	Hexham General Hospital
	Northumbria Healthcare NHS Foundation Trust (North Tyneside General Hospital)	1	North Tyneside General Hospital
	Northumbria Healthcare NHS Foundation Trust (Northumbria Specialist Emergency Care Hospital)	1	Northumbria Specialist Emergency Care Hospital HASU
	Northumbria Healthcare NHS Foundation Trust (Wansbeck General Hospital)	1	Wansbeck General Hospital
	South Tees Hospitals NHS Foundation Trust	1	James Cook University Hospital
	South Tyneside NHS Foundation Trust	1	South Tyneside District Hospital

Region	Site Name	Number of hospitals included	Hospital(s)
Yorkshire and The Humber	Airedale NHS Foundation Trust	1	Airedale General Hospital
	Barnsley Hospital NHS Foundation Trust	1	Barnsley Hospital
	Bradford Teaching Hospitals NHS Foundation Trust	1	Bradford Royal Infirmary
	Calderdale and Huddersfield NHS Foundation Trust	1	Calderdale Royal Hospital
	Chesterfield Royal Hospital NHS Foundation Trust	1	Chesterfield Royal
	Doncaster and Bassetlaw Hospitals NHS Foundation Trust	1	Doncaster Royal Infirmary
	Harrogate and District NHS Foundation Trust	1	Harrogate District Hospital
	Hull and East Yorkshire Hospitals NHS Trust	1	Hull Royal Infirmary
	Leeds Teaching Hospitals NHS Trust	1	Leeds General Infirmary
	Mid Yorkshire Hospitals NHS Trust	1	Pinderfields Hospital
	Northern Lincolnshire and Goole Hospitals NHS Foundation Trust	2	Diana Princess of Wales Hospital Grimsby Scunthorpe General Hospital
	Rotherham NHS Foundation Trust	1	Rotherham Hospital
	Sheffield Teaching Hospitals NHS Foundation Trust	1	Royal Hallamshire Hospital
	York Teaching Hospital NHS Foundation Trust (Scarborough Hospital)	1	Scarborough General Hospital
	York Teaching Hospital NHS Foundation Trust (York Hospital)	1	York Hospital
South East	Ashford and St Peter's Hospital NHS Foundation Trust	1	St Peter's Hospital
	Brighton and Sussex University Hospitals NHS Trust (Royal Sussex County Hospital)	1	Royal Sussex County Hospital
	Dartford and Gravesham NHS Trust	1	Darent Valley Hospital
	East Kent Hospitals University NHS Foundation Trust (Kent & Canterbury Hospital)	1	Kent and Canterbury Hospital
	East Kent Hospitals University NHS Foundation Trust (Queen Elizabeth The Queen Mother Hospital)	1	Queen Elizabeth the Queen Mother Hospital
	East Kent Hospitals University NHS Foundation Trust (William Harvey Hospital)	1	William Harvey Hospital
	East Sussex Healthcare NHS Trust (Eastbourne District General Hospital)	1	Eastbourne District General Hospital
	Epsom and St Helier University Hospitals NHS Trust (Epsom General Hospital)	1	Epsom Hospital
	Frimley Health NHS Foundation Trust (Frimley Park Hospital NHS Foundation Trust)	1	Frimley Park Hospital
	Maidstone and Tunbridge Wells NHS Trust (Maidstone Hospital)	1	Maidstone District General Hospital
	Maidstone and Tunbridge Wells NHS Trust (Tunbridge Wells Hospital)	1	Tunbridge Wells Hospital
	Medway NHS Foundation Trust (Medway Community Healthcare, Kent Community Health)	1	Medway Maritime Hospital
	Royal Surrey County Hospital NHS Foundation Trust	1	Royal Surrey County Hospital
	Surrey and Sussex Healthcare NHS Trust	1	East Surrey Hospital
	Western Sussex Hospitals NHS Trust (St Richard's Hospital)	1	St Richards Hospital
	Western Sussex Hospitals NHS Trust (Worthing Hospital)	1	Worthing Hospital

Region	Site Name	Number of hospitals included	Hospital(s)
South West	Gloucestershire Hospitals NHS Foundation Trust	1	Gloucestershire Royal Hospital
	Great Western Hospitals NHS Foundation Trust	1	Great Western Hospital Swindon
	North Bristol NHS Trust	1	North Bristol Hospitals
	Northern Devon Healthcare NHS Trust	2	North Devon District Hospital Bideford Community Hospital
	Plymouth Hospitals NHS Trust (Derriford Hospital)	1	Derriford Hospital
	Royal Cornwall Hospitals NHS Trust	1	Royal Cornwall Hospital
	Royal Devon and Exeter NHS Foundation Trust	1	Royal Devon and Exeter Hospital
	Royal United Hospital Bath NHS Foundation Trust	1	Royal United Hospital Bath
	Salisbury NHS Foundation Trust	1	Salisbury District Hospital
	Taunton and Somerset NHS Foundation Trust	1	Musgrove Park Hospital
	Torbay and South Devon NHS Foundation Trust	2	Torbay Hospital Newton Abbot Hospital
	University Hospitals Bristol NHS Foundation Trust	1	Bristol Royal Infirmary
	Weston Area Health NHS Trust	1	Weston General Hospital
	Yeovil District Hospital NHS Foundation Trust	1	Yeovil District Hospital
Thames Valley	Buckinghamshire Healthcare NHS Trust	1	Wycombe General Hospital
	Frimley Health NHS Foundation Trust (Wexham Park Hospital)	1	Wexham Park Hospital
	Milton Keynes University Hospital NHS Foundation Trust	1	Milton Keynes General Hospital
	Oxford University Hospitals NHS Foundation Trust (Horton General Hospital)	1	Horton General Hospital
	Oxford University Hospitals NHS Foundation Trust (John Radcliffe Hospital)	1	John Radcliffe Hospital
	Royal Berkshire NHS Foundation Trust	1	Royal Berkshire Hospital
Wessex	Dorset County Hospital NHS Foundation Trust	1	Dorset County Hospital
	Hampshire Hospitals NHS Foundation Trust	1	Royal Hampshire County Hospital
	Isle of Wight NHS Trust	1	St Mary's Hospital Newport
	Poole Hospital NHS Foundation Trust	1	Poole Hospital
	Portsmouth Hospitals NHS Trust	1	Queen Alexandra Hospital Portsmouth
	Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	1	Royal Bournemouth General Hospital
	University Hospital Southampton NHS Foundation Trust	1	Southampton General Hospital

Region	Site Name	Number of hospitals included	Hospital(s)
Islands	Isle of Man Department of Health	1	Noble's Hospital
Northern Ireland	Belfast Health and Social Care Trust (Mater Hospital)	1	Mater Infirmorum Hospital
	Belfast Health and Social Care Trust (Royal Group of Hospitals)	1	Royal Victoria Hospital Belfast
	Northern Health and Social Care Trust (Antrim Area Hospital)	1	Antrim Area Hospital
	Northern Health and Social Care Trust (Causeway Hospital)	1	Causeway Hospital
	South Eastern Health and Social Care Trust (Downe Hospital)	1	Downe General Hospital
	South Eastern Health and Social Care Trust (Ulster Hospitals)	1	Ulster Hospital
	Southern Health and Social Care Trust (Craigavon Area)	1	Craigavon Area Hospital
	Southern Health and Social Care Trust (Daisy Hill Hospital)	1	Daisy Hill Hospital
	Western Health and Social Care Trust (Altnagelvin Hospitals)	1	Altnagelvin Hospital
	Western Health and Social Care Trust (South West Acute Hospital)	1	South West Acute Hospital
Wales	Abertawe Bro Morgannwg University Health Board (Morriston Hospital)	1	Morriston Hospital
	Abertawe Bro Morgannwg University Health Board (Princess of Wales Hospital)	1	Princess Of Wales Hospital
	Aneurin Bevan Health Board (Nevill Hall Hospital, Royal Gwent and Ysbyty Ystrad Fawr)	3	Royal Gwent Hospital Nevill Hall Hospital Ysbyty Ystrad Fawr
	Betsi Cadwaladr University Health Board (Glan Clwyd District General Hospital)	1	Glan Clwyd District General Hospital
	Betsi Cadwaladr University Health Board (Wrexham Maelor Hospital)	1	Maelor Hospital
	Betsi Cadwaladr University Health Board (Ysbyty Gwynedd)	1	Ysbyty Gwynedd
	Cardiff and Vale University Health Board	1	University Hospital of Wales
Wales	Cwm Taf University Health Board (Prince Charles Hospital)	1	Prince Charles Hospital
	Hywel Dda Health Board (Bronglais General Hospital)	1	Bronglais Hospital
	Hywel Dda Health Board (Prince Philip Hospital)	1	Prince Philip Hospital
	Hywel Dda Health Board (West Wales General Hospital)	1	West Wales General
	Hywel Dda Health Board (Withybush General Hospital)	1	Withybush General Hospital
	The Walton Centre*		
	Queens Medical Centre, Nottingham*		

* 2 sites provided some data to the SSNAP acute organisational audit, but are not currently participating on SSNAP clinical