# Sentinel Stroke National Audit Programme (SSNAP)

## Acute Organisational Audit 2021

*Reporting the organisation of stroke services in England, Wales and Northern Ireland on 1 October 2021*

June 2022

**Prepared by**

King's College London, Sentinel Stroke National Audit Programme on behalf of the Intercollegiate Stroke Working Party

HQIP
Healthcare Quality Improvement Partnership

The **Sentinel Stroke National Audit Programme (SSNAP)** is led by the School of Life Course and Population Sciences at King's College London, on behalf of the **Intercollegiate Stroke Working Party (ICSWP).**

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



This report was prepared by the SSNAP project team on behalf of the ICSWP:

**SSNAP Project Team**
Mr Edward Barrett, Project Officer
Dr Ajay Bhalla, Associate Clinical Director
Ms Jennifer Butt, Stroke Programme Manager (Acting, June 2021-January 2022)
Ms Isobel Cabraal, Project Officer
Ms Louise Clark, Associate Director
Mr Nahuel Durante, Project Officer
Dr Rebecca Fisher, Associate Director
Mr Artur Ganeev, Data Scientist
Professor Martin James, Clinical Director
Ms Evelina Käld, Data Analyst
Dr Andrew Lewis-Smith, Senior Data Analyst
Ms Ellie McMullen, Senior Operations Officer
Ms Sabrina Ralph, SSNAP Programme Manager
Ms Anisa Rothman, Project Officer
Ms Tijana Savic, Data Analyst
Ms Kaili Stanley, Stroke Programme Manager

*Please cite as:*
Intercollegiate Stroke Working Party; SSNAP Acute Organisational Audit Report 2021. London: King's College London, 2022.

| | |
|---|---|
| **Title** | SSNAP 2021 Acute Organisational Audit report |
| **Document purpose** | To disseminate the results of the SSNAP 2021 Acute Organisational Audit of stroke services in acute trusts. |
| **Target audience** | Multi-disciplinary stroke teams, managers, medical directors and trust executives of sites that participated in the 2021 acute organisational audit. Health and social care professionals and healthcare management organisations including commissioners. General public and stroke survivors and their carers. NHS England, Wales and Northern Ireland. |
| **Description** | This is the fifth acute organisational audit report published under the auspices of the Sentinel Stroke National Audit Programme (SSNAP). 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 October 2021. It should be read alongside the continuous clinical audit which reports on the care delivered by these hospitals every 3 months.<br><br>Trusts can use this report to benchmark their performance against national level findings and compare themselves with national standards.<br><br>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.<br><br>The report presents key recommendations, an executive summary, an in-depth look at the 10 Key Indicators of the report followed by other key findings from the organisational audit. The aspects of service organisation are presented in tables, graphs and maps, along with clinical commentary.<br><br>A full results portfolio (excel file) of all data items by named hospital is available. |
| **Supersedes** | SSNAP Acute Organisational Audit 2012, 2014, 2016 and 2019<br><br>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 5th edition (Royal College of Physicians, 2016). Published October 2016: https://www.strokeaudit.org/Guideline/Full-Guideline.aspx<br><br>The Healthy NHS Board, A review of guidance and research evidence, 2010: https://www.leadershipacademy.nhs.uk/wp-content/uploads/2013/06/NHSLeadership-HealthyNHSBoard-2010-LiteratureReview.pdf<br><br>NICE Guideline NG128, 2019: https://www.nice.org.uk/guidance/ng128<br><br>NICE Clinical Guideline CG138, 2012: https://www.nice.org.uk/guidance/cg138<br><br>NICE Quality Standard QS2, 2016: https://www.nice.org.uk/guidance/QS2<br><br>NICE Quality Standard QS15, 2019: https://www.nice.org.uk/guidance/QS15<br><br>SSNAP Clinical Audit Quarterly reports: https://www.strokeaudit.org/results/clinical-audit/national-results.aspx<br><br>The Foundations of Good Governance, NHS Providers 2015: https://nhsproviders.org/media/1738/foundations-of-good-governance-web-file.pdf |
| **Contact** | ssnap@kcl.ac.uk |

# Table of Contents

# Foreword

There is a wealth of high-quality evidence about how to reduce case fatality, recurrent vascular events and long-term disability after acute stroke. Implementation of this evidence requires appropriate resources, reconfiguration of care pathways, and leadership within organisations to support change. Ten Key Performance Indicators (KPIs) for acute stroke care have been developed from national clinical guidelines and policy documents. These KPIs enable stroke services in England, Wales, Northern Ireland and Isle of Man to monitor and improve their stroke care.

Despite the COVID-19 pandemic, there have been important improvements in KPIs and against key recommendations since 2019. Access to thrombectomy is improving, though only a fifth of Thrombectomy Centres currently provide 24 hours per day, 7 days a week thrombectomy. More services provide 7 day therapy input (42% versus 38% in 2019). Furthermore, more services (76% versus 63% in 2019) fulfil the KPI for early supported discharge and for magnetic resonance imaging as first line in people with transient ischaemic attack (49% of services versus 33% in 2019). Engagement with senior management has held steady. These data almost certainly reflect the efforts of stroke service staff to improve delivery of evidence-based care.

However, reconfiguration of existing resources can only go part of the way to improve quality of care; it is crucial that services are properly staffed. The data for acute stroke unit staffing are concerning. There has been a shift from trained to untrained nursing staff on acute stroke units: only 46% of services now meet the minimum requirement for trained nursing staff. Only 26% of stroke teams are routinely pre-alerted to patients with possible strokes before their arrival in hospital. Only 9% of services have appropriate access to clinical psychology. The number of sites with at least one unfilled stroke consultant vacancy has risen further to 52%. As of September 2021, there were at least 105 vacant posts across 81 sites – an average of 1.3 per site. And yet, at the same time, existing stroke services are delivering more clinical care than ever before-meaning that existing staff are becoming more overstretched.

As we emerge from the pandemic, I would encourage acute stroke services to reflect with pride on these advances in stroke care, continue to work with senior leadership within organisations to ensure that stroke remains high priority, enlist support of patients and public, and to consider innovative ways to bring about further improvements in care. And all of us involved in stroke care should continue to make the case for additional resources, so that everyone who has an acute stroke or TIA has equitable, rapid access to high quality evidence-based stroke care.

**Professor Gillian E Mead**
President, British and Irish Association of Stroke Physicians

# Executive Summary

This report on the **biennial SSNAP Acute Organisational Audit** (AOA) provides an overview of the organisation of acute stroke services on the census date of **1 October 2021**, with comparative information on the provision of services in **6 domains** (Workforce, Seven-day Working, Access to Specialist Treatment, Patient and Carer Engagement, TIA Services and Quality Improvement/ Leadership) distilled into **Ten Key Indicators** (see Page 8), with each team scored out of 10.

## Introduction and Methodology

**182 acute stroke services are included** – 158 in England, 15 in Wales, 8 in Northern Ireland and one in the Isle of Man (see Appendix 1), representing 157 trusts/providers. As in previous AOAs, there was **100% participation** among eligible acute providers. Data were collected via a web-based audit proforma (Appendix 2), with inbuilt validations to ensure data accuracy. A full introduction and methodology is available in Appendix 3.

## Organisation of the Audit

**Governance oversight** of the AOA is provided by the **Intercollegiate Stroke Working Party**, a multi-disciplinary stroke expert group (see Appendix 4). The audit is run by the Stroke Programme at the School of Life Course and Population Sciences at King's College London.

## Key findings

The **key findings** in each of the **6 domains** across **4,707 acute stroke beds** in those **182 hospitals** and the **significant changes** in services described by the AOA since the previous audit round in 2019, are summarised in the two infographics below.

# ACUTE STROKE SERVICES

ENGLAND, WALES & NORTHERN IRELAND

**4,707**
BEDS ON STROKE UNITS

**808**
HYPERACUTE BEDS ON STROKE UNITS

**85,000**
acute stroke admissions in the preceding year

**157**
participating sites

**1 IN 2 SITES HAVE AN UNFILLED STROKE CONSULTANT POST**

## Quality of acute hospital stroke care 2021

% of sites

### Staffing/Workforce

- **46%** meet the minimum establishment of band 6 and band 7 nurses per 10 beds
- **9%** have the presence of a clinical psychologist (qualified) per 30 beds

### Access to specialist treatment & support

- **26%** receive a pre-alert for suspected stroke patients
- **76%** have access to a specialist (stroke/ neurological specific) early supported discharge (ESD*) team

### TIA service

- **49%** provide MRI** as first line of brain imaging for TIA*** patients

### 7-day working

- **76%** have an out of hours stroke specialist nurse
- **23%** have the minimum number of nurses on duty at 10am weekends
- **42%** offer at least two types of therapy 7 days a week†

### Patient & carer engagement

- **40%** undertake a formal survey seeking patient/ carer views on stroke services

### Quality improvement & leadership

- **61%** have responsibility for audit results taken at management level

**15% of sites achieved 7 out of 10 Key Indicators**

***ESD** Early Supported Discharge
****MRI** Magnetic Resonance Imaging
*****TIA** Transient Ischemic Attack
**†** Includes occupational therapy, physiotherapy and speech and language therapy

# ACUTE STROKE SERVICES

ENGLAND, WALES & NORTHERN IRELAND

## Quality of acute hospital stroke organisation 2019-2021 (% of sites)

### Getting better

| | 2019 | 2021 | |
|---|---|---|---|
| **KI 3** have an out of hours stroke specialist nurse | 71% | 76% | ↑ +5% |
| **KI 5** offer at least two types of therapy 7 days a week | 38% | 42% | ↑ +4% |
| **KI 7** have access to a specialist (stroke/ neurological specific) early supported discharge (ESD) team | 63% | 76% | ↑ +13% |
| **KI 9** provide MRI as first line of brain imaging for TIA patients | 33% | 49% | ↑ +16% |

### Plateauing



| | 2019 | 2021 | |
|---|---|---|---|
| **KI 2** have the presence of a clinical psychologist (qualified) per 30 beds | 7% | 9% | → +2% |
| **KI 10** have responsibility for audit results taken at management level | 63% | 61% | → -2% |

### Getting worse

| | 2019 | 2021 | |
|---|---|---|---|
| **KI 1** meet the minimum establishment of band 6 and band 7 nurses per 10 beds | 58% | 46% | ↓ -12% |
| **KI 4** have the minimum number of nurses on duty at 10am weekends | 30% | 23% | ↓ -7% |
| **KI 8** undertake a formal survey seeking patient/carer views on stroke services | 56% | 40% | ↓ -16% |

**Note:** 9 of the 10 Key Indicators are calculated in the same way as in the 2019 Acute Organisational Audit, these are displayed above. Please note that whilst comparisons can be made for these indicators, there have been significant changes in participating sites since the last organisational audit, so please exercise caution in making any comparisons between these data.
The criteria for KI6 have changed since 2019, see page 19 for further details.

**Improvements** have been seen in the implementation of the 2016 National Clinical Guideline recommendations for **7-day therapy** (42% of services now offer at least two types of rehabilitation therapy 7 days/week) and in access to stroke specialist **early supported discharge** teams (up to 76% of services). The use of **MRI as first-line imaging for TIA patients** has increased substantially to 49%, in line with 2019 NICE Clinical Guideline NG128.

Areas with a **lack of progress**, or going backwards, are mainly relating to workforce/staffing and specialist skills. **Access to clinical psychology** remains as poor as in previous rounds of the AOA, and **nurse staffing on stroke units** has deteriorated, with significantly fewer sites meeting recommendations for senior nursing supervision of acute stroke beds (down 12% to 46%).

**Medical staffing**, already a serious issue threatening the viability of many services, has deteriorated over the last two years, with **over half of sites** (52%) now reporting **at least one vacancy** at consultant grade, and with posts lying vacant for an average of 18 months.

Overall, only **15% of sites (24 sites) achieved 7 or more Key Indicators**, fewer than in 2019 (16% (27 sites)). It is now incumbent on Trust Directors, and all those who provide and commission stroke services, to identify the **key areas for improvement** in their own stroke services and implement an **appropriately resourced improvement plan** in conjunction with other key reviews such as their **2019 Getting It Right First Time (GIRFT)** report (GIRFT National Stroke Report), which in many sites may have been side-lined by the COVID-19 pandemic.

The key points for intervention are summarised in the **Ten Key Recommendations** from this report (see below), along with their 'line of sight' to the underpinning evidence or policy. Some of these Key Recommendations reflect the imperative to **reverse a deteriorating position** with acute care over the time course of the COVID-19 pandemic (e.g., access to rapid, round-the-clock specialist expertise, and admission to an appropriately staffed acute stroke unit within 4 hours of hospital arrival). Now is the **time to restore performance** in these key indicators that are linked through direct evidence to cost-saving care and **better outcomes for people with acute stroke**.

## Ten Key Recommendations

**1. All hospitals providing hyperacute stroke care** should ensure that they are providing sufficient specialist nursing staff on their hyperacute stroke unit – at least 3 registered nurses per 10 beds, all of whom have received training in swallowing assessments. Patients with acute stroke should be admitted to such an appropriately staffed unit within 4 hours of hospital arrival.
*Evidence/policy links: Paley et al, 2018; Bray et al, 2014; RCP National Clinical Guideline for Stroke 2016; NICE Quality Standard QS2, 2016; NHS England National Stroke Service Model, 2021*

**2. All hospitals providing hyperacute stroke care** should have a system for the pre-alert of cases of suspected stroke by pre-hospital clinicians directly to the stroke team who should rapidly assess patients in the emergency department. This assessment should include rapid, round-the-clock access to diagnostics, assessment for reperfusion treatments and direct admission to a specialist stroke unit.
*Evidence/policy links: RCP National Clinical Guideline for Stroke 2016; NICE Guideline for Stroke and transient ischaemic attack in over 16s: diagnosis and initial management, NG128, 2019*

**3. All hospitals providing stroke rehabilitation** should provide at least two types of qualified therapy for 7 days/week. Those that presently do not should examine their traditional working practices and learn from centres that have successfully implemented 7-day working.
*Evidence/policy links: RCP National Clinical Guideline for Stroke 2016; Clarke et al, 2018*

**4. All hospitals providing stroke rehabilitation** should have access to clinical psychology as a member of the multidisciplinary rehabilitation team – at least 1 whole time equivalent qualified psychologist per 30 stroke unit beds.
*Evidence/policy links: RCP National Clinical Guideline for Stroke 2016; NICE Quality Standard QS2, 2016; NHS England National Stroke Service Model, 2021*

**5. All comprehensive stroke services** should provide access to specialist stroke rehabilitation at home, including access to an early supported discharge team with full coverage of the population.
*Evidence/policy links: RCP National Clinical Guideline for Stroke 2016; NICE Quality Standard QS2, 2016*

**6. All stroke services and networks** should regularly seek feedback from patients and carers about the experience of using their services and respond to those views. The active participation of patients, carers and advocacy groups in planning and strategic decision-making for stroke services and networks should be supported.
*Evidence/policy links: NICE Clinical Guideline CG138, 2012; NICE Quality Standard QS15, 2019*

**7. All services for people with suspected TIA and minor (non-hospitalised) stroke** should provide a diagnostic service that includes same-day access to specialist assessment and MRI scanning including diffusion-weighted and blood-sensitive sequences.
*Evidence/policy link: NICE Clinical Guideline NG128, 2019*

**8. All comprehensive stroke services** should include appropriate governance oversight of the service, including as a minimum regular review of comparative national audit (SSNAP) reports by an individual with board-level responsibility for stroke governance. All services providing stroke care should have a member of their board with specific responsibility for stroke.
*Evidence/policy links: The Healthy NHS Board, A review of guidance and research evidence, 2010; The Foundations of Good Governance, NHS Providers 2015*

**9. All local health systems and stroke networks** should work urgently to improve access to reperfusion treatments for acute ischaemic stroke for their population, by reducing variation in the delivery of thrombolysis and extending out-of-hours coverage of regional thrombectomy services.
*Evidence/policy links: NICE Clinical Guideline NG128, 2019; RCP National Clinical Guideline for Stroke 2016; Bray et al, 2013; NHS England National Stroke Service Model, 2021*

**10. Postgraduate deaneries and national training bodies** should take urgent action to reverse the decline in training in stroke medicine, as one step to rectify a situation in which over half of all stroke services are now carrying a vacant consultant post for a median of 18 months. Without immediate action to increase the senior specialist workforce, the continuation of some services will be jeopardised by the absence of consultants to lead and deliver the service.
*Evidence/policy links: Meeting the Future Consultant Workforce Challenges 2019-22; NHS England National Stroke Service Model, 2021*

# Results

## Key Indicators of Acute Stroke Organisation

Table 1.1 on the following page defines each Key Indicator and the criterion required to meet it and reports the national performance against each. The Key Indicators are broken down into 6 different categories:

1. Staffing/Workforce
2. Seven day working
3. Access to specialist treatment and support
4. Patient and carer engagement
5. TIA Service
6. Quality improvement and leadership

More detailed information and results for each Key Indicator can be found in Section 2 of this report. Each Key Indicator is presented in order along with relevant contextual data, information on the standards for the Key Indicator and clinical commentary.

## 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**<br>*Criterion: Sum of band 6 and 7 (WTE) nurses per 10 stroke unit beds is equal to/above 2.375 per 10 beds for ALL stroke beds**.* | **46% (72/157)** of sites meet KI 1 |
| **2.** | **Presence of a clinical psychologist (qualified)**<br>*Criterion: Presence of at least one (WTE) qualified clinical psychologist per 30 stroke unit beds* | **9% (14/157)** of sites meet KI 2 |
| ***7-day working*** | | |
| **3.** | **Out of hours presence of stroke specialist nurse**<br>*Criterion: Met if there is out of hours presence of a stroke specialist nurse to undertake assessments of suspected stroke patients in ED* | **76% (101/133)** of sites meet KI 3 |
| **4.** | **Minimum number of nurses on duty at 10am weekends*****<br>*Criterion: Met if have 3.0 WTE nurses per 10 type 1 and 3 beds (average number of nurses on duty on type 1 and type 3 beds)* † | **23% (30/133)** of sites meet KI 4 |
| **5.** | **At least two types of therapy available 7 days a week**<br>*Criterion: Met if 7-day working for at least two types of qualified therapy. Includes occupational therapy, physiotherapy and speech and language therapy* | **42% (66/157)** of sites meeting KI 5 |
| ***Access to specialist treatment and support*** | | |
| **6.** | **Stroke team receives a pre-alert for suspected stroke patients**<br>*Criterion: Met if a pre-alert is received for all types of strokes and if the call is made to stroke specialist nurse, stroke consultant on call or stroke junior doctor on call* | **26% (34/133)** of sites meeting KI 6 |
| **7.** | **Access to a specialist (stroke/neurological specific) early supported discharge (ESD) team**<br>*Criterion: Met if they have access to at least one stroke/neurology specific ESD team AND at least 66% of patients have access to at least one of the teams if needed* | **76% (119/157)** of sites meet KI 7 |
| **Patient and carer engagement** | | |
| **8.** | **Formal survey undertaken seeking patient/carer views on stroke services**<br>*Criterion: Met if at least one a year* | **40% (63/157)** of sites meet KI 8 |
| **TIA service** | | |
| **9.** | **First line of brain imaging for TIA patients is MRI**<br>*Criterion: Met if MRI is first line brain imaging for suspected TIA AND investigations are completed within 2 days* | **49% (77/157)** of sites meet KI 9 |
| **Quality improvement and leadership** | | |
| **10.** | **Management level that takes responsibility for audit results**<br>*Criterion: Met if Executive on the Board, Non-executive on the Board, or Chair of Clinical Governance takes responsibility for the follow-up of stroke audit results* | **61% (95/157)** 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 results.*

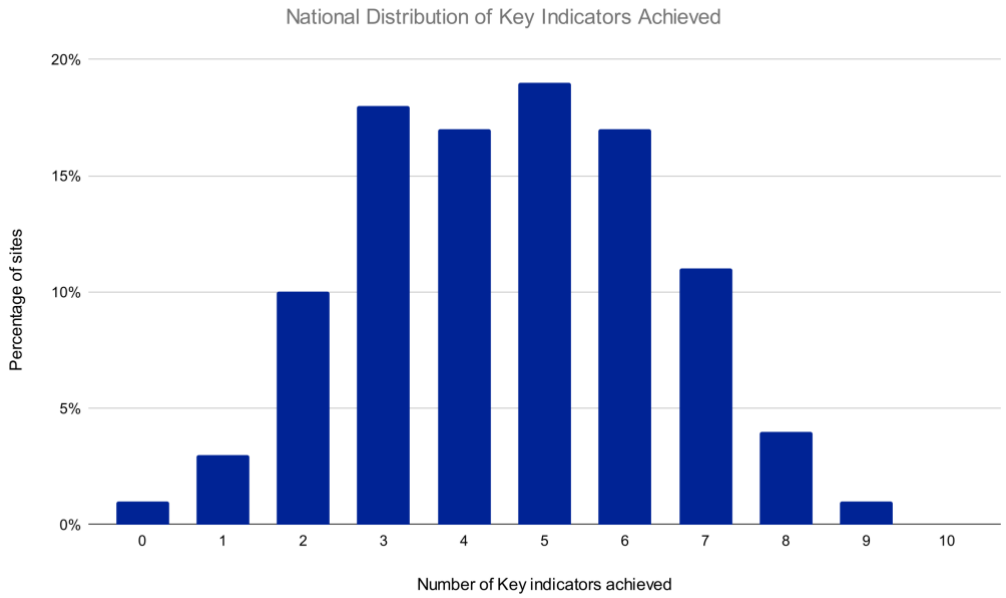
*** The national median in 2016 for the total establishment of both these bands of nurses was 2.375 per 10 stroke beds. This was used to set a minimum standard of WTE band 6 and 7 nurses.*

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

*† Type 1 beds are beds used solely for pre-72 hour care. Type 3 beds are beds used for pre and post-72 hour care.*

## Summary of Key Indicators

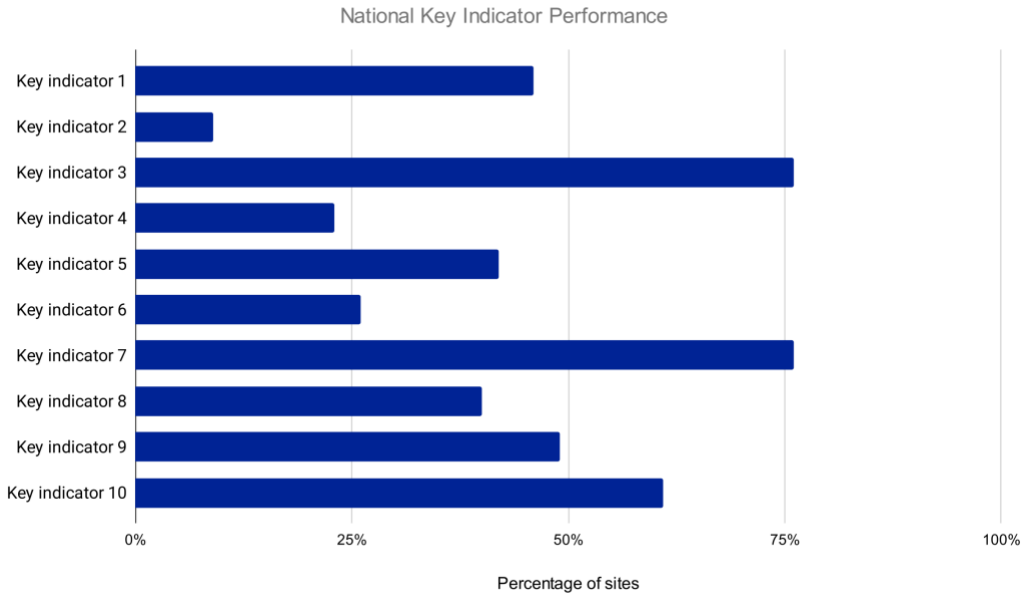
**Figure 1: Distribution of Key Indicators achieved***




**Please see table 1.1 above for full description of each Key Indicator.*

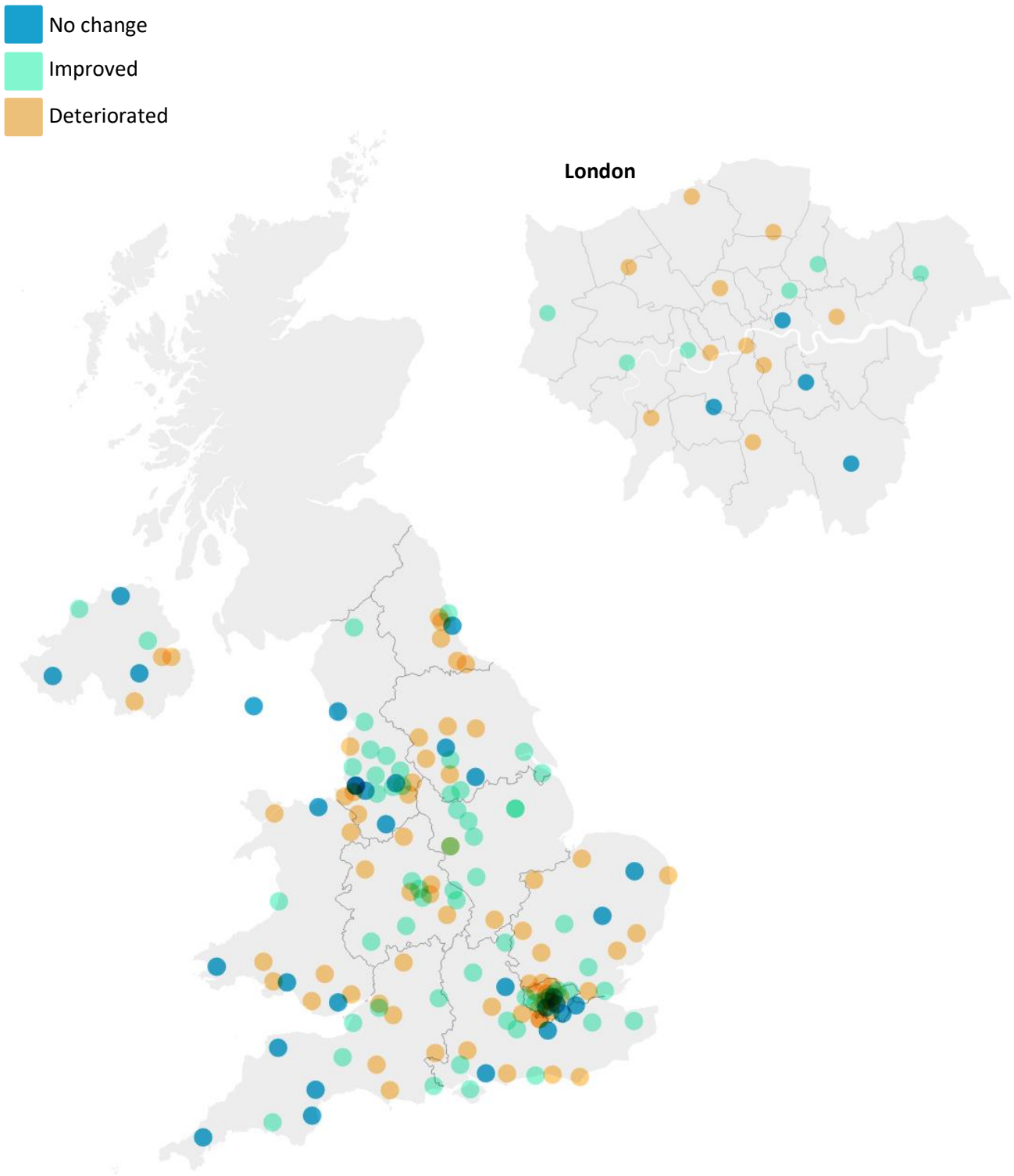
Overall, the average number of Key Indicators (KIs) achieved by the 157 participating sites in the 2021 audit is 5 – unchanged from 2019. Fewer sites achieved 8 or more KIs in 2021 than in 2019, and none achieved all ten. The proportion of sites achieving each of the evidence-based Key Indicators is shown in figure 2. The 'difficult' standards remain much the same as in 2019, and in previous audits before that - with nurse staffing on stroke units and clinical psychology provision remaining prominent.

**Figure 2: National Key Indicator performance***




**Please see table 1.1 above for full description of each Key Indicator.*

**Figure 3: Site-level Key Indicators comparison between 2019 and 2021**




Site-level comparison demonstrating whether the number of Key Indicators achieved by a site has increased, decreased or remained the same between 2019 and 2021

## 1. Staffing/Workforce

### KI.1 Nursing

| **Key Indicator 1**<br>**Minimum Establishment of band 6 and band 7 nurses per 10 beds** | | |
|---|---|---|
| **2016** | **2019** | **2021** |
| **51% (90/178)**<br>of sites meet Key Indicator | **58% (98/169)**<br>of sites meet Key Indicator | **46% (72/157)**<br>of sites meet Key Indicator |
| *Key Indicator achieved if:*<br>*Sum of band 6 and 7 (WTE) nurses per 10 stroke unit beds is equal to/above 2.375 per 10 beds* | | |

***Standard***

***2016 RCP National Clinical Guideline for Stroke, 5th Edition***

**Recommended staffing levels for stroke units (table 2.1)**

| | **Physiotherapist WTE per 5 beds** | **Nurse WTE per bed** |
|---|---|---|
| Hyperacute Stroke Unit | 0.73 | 2.9<br>(80:20 registered: unregistered) |
| Acute Stroke Unit | 0.84 | 1.35<br>(65:35 registered: unregistered) |

There has been a steady fall in the establishment of the sort of senior and experienced nurses necessary to provide clinical leadership in nursing on an acute stroke unit in an Acute Stroke Centre (ASC) or Stroke Recovery Unit (SRU). Most acute sites have insufficient senior nurse establishment to ensure that there is at least one of them present on the acute stroke unit on every shift, leaving the unit in the care of junior and less experienced band 5 nurses. Overall, there has been an erosion of registered nurse staffing at band 5 and above in all types of stroke unit over the last 5 years, which is a cause for concern given the evidence behind trained, skilled nursing in the prevention of complications after acute stroke.

There is clear multi-professional guidance regarding nurse staffing on acutely-admitting stroke units laid out in the 2016 National Clinical Guideline for Stroke, so hospitals should be well aware of the staffing levels and competencies required to maximise the patient and organisational benefits of specialist stroke care.

**Figure 4: Total establishment of registered nurses whole time equivalents (WTE) per 10 beds all Stroke Unit (SU) beds**

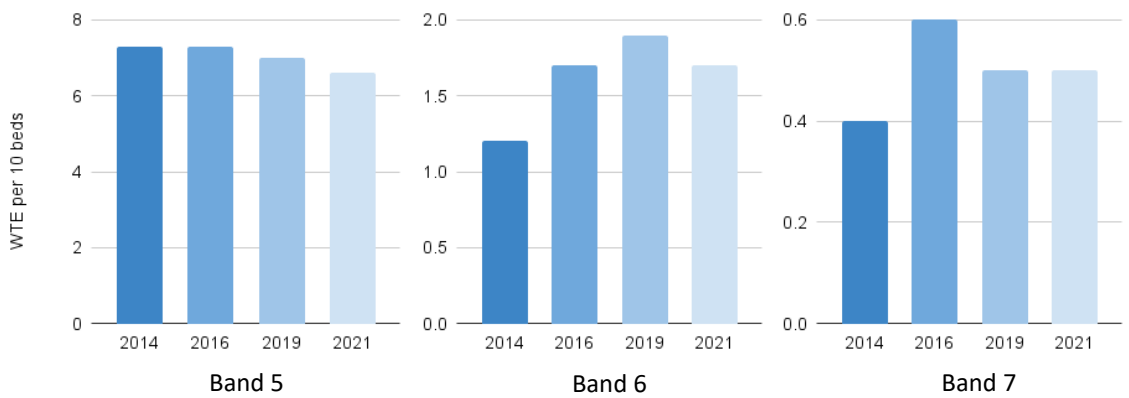


**Table 1.2: Total establishment of registered nurses whole time equivalents (WTE) per 10 beds all Stroke Unit (SU) beds, and by type of SU bed**

| Total establishment of nurses (Bands 5-8a) for all stroke beds (Q2.7, 2.12 & 2.19) Median (IQR) | | | **Total stroke unit beds** | **Type 1 beds** | **Type 2 beds** | **Type 3 beds** |
|---|---|---|---|---|---|---|
| | | | **2016** (178 sites) | **2016** (73 sites) | **2016** (92 sites) | **2016** (105 sites) |
| | | | **2019** (169 sites) | **2019** (86 sites) | **2019** (105 sites) | **2019** (81 sites) |
| | | | **2021** (157 sites) | **2021** (83 sites) | **2021** (98 sites) | **2021** (73 sites) |
| Band 5 Nurses | **2016** | *Total WTE* | *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 / 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)** |
| | **2019** | *Total WTE* | *17.7 (12.4-24.6)* | *7.0 (4.1-13.2)* | *12.9 (9.7-17.0)* | *14.1 (9.0-18.3)* |
| | | **WTE / 10 beds** | **7.0 (5.6-8.2)** | **9.1 (6.0-13.9)** | **6.5 (4.8-7.8)** | **6.6 (5.2-7.6)** |
| | **2021** | *Total WTE* | *18.2 (12.6-26.2)* | *6.9 (4.1-13.3)* | *12.9 (9.4-17.4)* | *13 (8.6-19.3)* |
| | | **WTE / 10 beds** | **6.6 (5.4-8.7)** | **8.9 (5.0-12.9)** | **6.2 (4.7-7.7)** | **6.4 (5.0-7.7)** |
| Band 6 Nurses | **2016** | *Total WTE* | *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 / 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)** |
| | **2019** | *Total WTE* | *5.3 (3.0-8.8)* | *3.4 (2.0-6.0)* | *3.0 (2.0-4.1)* | *3.8 (2.0-6.0)* |
| | | **WTE / 10 beds** | **1.9 (1.4-2.9)** | **3.8 (2.5-6.9)** | **1.4 (0.9-2.0)** | **1.7 (1.1-2.9)** |
| | **2021** | *Total WTE* | *5.2 (3.0-8.0)* | *3.0 (1.0-6.2)* | *3.0 (1.9-4.6)* | *3.5 (2.0-6.0)* |
| | | **WTE / 10 beds** | **1.7 (1.2-2.7)** | **3.1 (1.6-5.9)** | **1.3 (0.9-1.8)** | **1.7 (1.0-2.8)** |
| Band 7 Nurses | **2016** | *Total WTE* | *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 / 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)** |
| | **2019** | *Total WTE* | *1.5 (1.0-2.0)* | *1.0 (0.2-1.4)* | *1.0 (1.0-1.0)* | *1.0 (0.9-1.5)* |
| | | **WTE / 10 beds** | **0.5 (0.4-0.8)** | **0.8 (0.4-1.7)** | **0.5 (0.4-0.6)** | **0.5 (0.3-0.7)** |
| | **2021** | *Total WTE* | *1.0 (1.0-2.0)* | *0.6 (0.2-1.0)* | *1 (0.6-1.0)* | *1.0 (1.0-1.4)* |
| | | **WTE / 10 beds** | **0.5 (0.4-0.6)** | **0.6 (0.3-1.0)** | **0.4 (0.3-0.5)** | **0.4 (0.3-0.7)** |
| Band 8a Nurses | **2016** | *Total WTE* | *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 / 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)** |
| | **2019** | *Total WTE* | *0.0 (0.0-0.8)* | *0 (0.0-0.2)* | *0.0 (0.0-0.3)* | *0.0 (0.0-0.2)* |
| | | **WTE / 10 beds** | **0.0 (0.0-0.2)** | **0.0 (0.0-0.3)** | **0.0(0.0-0.1)** | **0.0 (0.0-0.1)** |
| | **2021** | *Total WTE* | *0.0 (0.0-0.9)* | *0.0 (0.0-0.3)* | *0.0 (0.0-0.5)* | *0.0 (0.0-0.0)* |
| | | **WTE / 10 beds** | **0.0 (0.0-0.2)** | **0.0 (0.0-0.2)** | **0.0 (0.0-0.1)** | **0.0 (0.0-0.0)** |

## KI.2 Clinical Psychology

| **Key Indicator 2**<br>**Presence of a qualified clinical psychologist** | | |
|---|---|---|
| **2016** | **2019** | **2021** |
| **6% (10/178)**<br>of sites meet Key Indicator | **7% (12/169)**<br>of sites meet Key Indicator | **9% (14/157)**<br>of sites meet Key Indicator |
| *Key Indicator achieved if:*<br>*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]

***2016 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.

There remains a persisting problem with access to Clinical Psychology in acute inpatient settings, with very little progress registered in the organisational audit over the last 5 years. This effectively means that the NICE Quality Statement regarding access to clinical psychology is being achieved in little more than a handful of places, and the number of sites with any access at all has fallen by nearly a third. For many years access to clinical psychological rehabilitation for cognitive and mood disorders in stroke rehab has proved resistant to change, 'baked in' by workforce supply and financial issues. Yet feedback from patients and their carers consistently reflects their need for support with adjusting to the enormous changes that sudden physical and cognitive disabilities force on their lives, and these latest data indicate that very little progress has been made in addressing these widespread needs. A fresh approach is required – perhaps using the same approach to the imaginative use of psychological wellbeing practitioners that has underpinned the NHS Improving Access to Psychological Therapies programme. People with stroke certainly need their access to psychological therapies to be improved.

**Table 1.3: Access to qualified clinical psychologists**

| Sites with access to qualified clinical psychologists (Q5.2) | **National 2014**<br>183 sites<br>% (n) | **National 2016**<br>178 sites<br>% (n) | **National 2019**<br>169 sites<br>% (n) | **National 2021**<br>157 sites<br>% (n) |
|---|---|---|---|---|
| **Presence of at least one whole time equivalent (WTE) qualified clinical psychologist per 30 stroke beds (Key Indicator 2)** | N/A | 6%<br>(10/178) | 7%<br>(12/169) | 9%<br>(14/157) |
| **Presence of at least one** qualified clinical psychologist | 54% (98) | 57% (101) | 51% (86) | 43% (68) |
| Median (IQR) **WTE of qualified** clinical psychologist | 0.1 (0.0-0.5) | 0.1 (0.0-0.4) | 0.1 (0.0-0.4) | 0.0 (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) | 0.0 (0.0-0.1) | 0.0 (0.0-0.1) |
| Percentage of sites with qualified clinical psychologists **working 7-days a week** | 1%<br>1/98 | 2%<br>2/101 | 0%<br>0/86 | 0%<br>0/68 |

## 2. Seven Day Working

### KI.3 Out of Hours Access to Stroke Specialist Nursing

| **Key Indicator 3**<br>**Out of hours presence of stroke specialist nurse** | | |
|---|---|---|
| **2016** | **2019** | **2021** |
| **N/A** | **71% (101/142)**<br>of sites meet Key Indicator | **76% (101/133)**<br>of sites meet Key Indicator |
| *Key Indicator achieved if:*<br>*Out of hours presence of a stroke specialist nurse to undertake assessments of suspected stroke patients in ED.* | | |

***Standard***

***2016 RCP National Clinical Guideline for Stroke, 5th Edition***

**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.

People with acute stroke need immediate access to skilled specialist nursing staff at whatever hour they arrive at hospital, and this standard is clearly laid out in the National Clinical Guideline 6 years ago. It seems quite hard to believe that 32 acutely-admitting sites are still attempting to provide a specialist stroke service without appropriately trained nursing staff immediately available for up to half of their admissions (i.e., those that occur outside office hours). This identifies the need for those organisations to prioritise the role of skilled nursing in delivering specialist acute stroke unit care – a key aspect emphasised in the published evidence (Paley et al, 2018).

With half of all acute stroke admissions occurring outside conventional weekday office hours, teams should be scrutinising their organisation and standards of care out of hours to ensure that they match the access to diagnostics and clinical expertise available during the working week. One useful approach is to ask the question: 'What would our SSNAP rating be if we were assessed purely on our out-of-hours service?'

## KI.4 Weekend Nurse Staffing

| **Key Indicator 4**<br>**Minimum number of nurses on duty at 10am weekends** | | |
|---|---|---|
| **2016** | **2019** | **2021** |
| **21% (32/156)**<br>of sites meet Key Indicator | **30% (42/142)**<br>of sites meet Key Indicator | **23% (30/133)**<br>of sites meet Key Indicator |
| *Key Indicator achieved if:*<br>*3.0 nurses per 10 type 1 and 3 beds (average number of nurses on duty on type 1 and type 3 beds)* | | |

**Table 1.4: Registered nurses on duty at 10am weekends: Type 1 beds**

| Registered nurses usually on duty at 10am weekends (Q2.4(i)) | % (n) in category **2014** (75 sites) | % (n) in category **2016** (73 sites) | % (n) in category **2019** (86 sites) | % (n) in category **2021** (83 sites) |
|---|---|---|---|---|
| Sites with 3 or more nurses **(Key Indicator 4)** | N/A | 56% (41) | 49% (42) | 48% (40) |
| Sites with 2-2.9 nurses | N/A | 33% (24) | 28% (28) | 35% (29) |
| Sites with fewer than 2 nurses | N/A | 11% (8) | 19% (16) | 17% (14) |
| National median (IQR) per 10 beds | 3.3 (2.5-5.0) | 3.3 (2.5-4.2) | 3.3 (2.5-4.8) | 2.9 (2.3-3.8) |

**Table 1.5: Registered nurses on duty at 10am weekends: Type 3 beds**

| Registered nurses usually on duty at 10am weekends (Q2.16(i)) | % (n) in category **2014** (109 sites) | % (n) in category **2016** (105 sites) | % (n) in category **2019** (81 sites) | % (n) in category **2021** (73 sites) |
|---|---|---|---|---|
| Sites with 3 or more nurses **(Key Indicator 4)** | N/A | 3% (3) | 6% (5) | 1% (1) |
| Sites with 2-2.9 nurses | N/A | 34% (36) | 17% (14) | 32% (23) |
| Sites with fewer than 2 nurses | N/A | 63% (66) | 77% (62) | 67% (49) |
| National median (IQR) per 10 beds | 1.7 (1.5-2.1) | 1.8 (1.6-2.1) | 1.7 (1.5-2.1) | 1.8 (1.7-2.1) |

**Table 1.6: Median number of nurses on duty at 10pm weekends: Type 1 and 3 beds**

| Registered nurses usually on duty at 10pm/10 stroke beds (Q2.6(i) & Q2.18(i)) Median (Interquartile range) | | | Total stroke units | Type 1 beds | Type 3 beds |
|---|---|---|---|---|---|
| | | | **2014** (183 sites) | **2014** (75 sites) | **2014** (109 sites) |
| | | | **2016** (178 sites) | **2016** (73 sites) | **2016** (105 sites) |
| | | | **2019** (169 sites) | **2019** (86 sites) | **2019** (81 sites) |
| | | | **2021 (157 sites)** | **2021 (83 sites)** | **2021 (73 sites)** |
| Saturdays | **2014** | Number per 10 beds | 1.3 (1.0-1.7) | 3.0 (1.7-3.9) | 1.2 (0.9-1.5) |
| | **2016** | Number per 10 beds | 1.4 (1.2-1.7) | 2.5 (2.2-3.9) | 1.3 (1.0-1.5) |
| | **2019** | Number per 10 beds | 1.4 (1.2-1.8) | 2.5 (2.0-4.0) | 1.2 (1.1-1.7) |
| | **2021** | Number per 10 beds | 1.5 (1.2-1.8) | 2.5 (2.0-3.8) | 1.3 (1.1-1.7) |
| Sundays / Bank Holidays | **2014** | Number per 10 beds | 1.3 (1.0-1.7) | 3.0 (1.7-3.9) | 1.2 (0.9-1.5) |
| | **2016** | Number per 10 beds | 1.4 (1.2-1.7) | 2.5 (2.2-3.9) | 1.3 (1.0-1.5) |
| | **2019** | Number per 10 beds | 1.4 (1.2-1.8) | 2.5 (2.0-4.0) | 1.2 (1.1-1.7) |
| | **2021** | Number per 10 beds | 1.4 (1.2-1.8) | 2.5 (2.0-3.8) | 1.3 (1.1-1.7) |

**Table 1.7: Median number of nurses on duty at 10am trained in swallow screening**

| Nurses trained in swallow screening usually on duty at 10am (Q2.5(i) & Q2.17(i)) Median (Interquartile range) | | | Total stroke units | Type 1 beds | Type 3 beds |
|---|---|---|---|---|---|
| | | | **2014** (183 sites) | **2014** (75 sites) | **2014** (109 sites) |
| | | | **2016** (178 sites) | **2016** (73 sites) | **2016** (105 sites) |
| | | | **2019** (169 sites) | **2019** (86 sites) | **2019** (81 sites) |
| | | | **2021 (157 sites)** | **2021 (83 sites)** | **2021 (73 sites)** |
| Weekdays | **2014** | Number per 10 beds | 1.4 (0.9-1.9) | 2.5 (1.7-3.3) | 1.4 (0.9-1.9) |
| | **2016** | Number per 10 beds | 1.5 (0.9-1.9) | 2.5 (2.1-4.0) | 1.6 (0.9-1.8) |
| | **2019** | Number per 10 beds | 1.5 (1.1-2.1) | 2.5 (2.0-4.3) | 1.6 (0.9-1.8) |
| | **2021** | Number per 10 beds | 1.4 (0.9-1.9) | 2.5 (1.7-3.8) | 1.4 (0.9-1.8) |
| Saturdays | **2014** | Number per 10 beds | 1.4 (0.8-1.7) | 2.5 (1.7-3.3) | 1.3 (0.8-1.8) |
| | **2016** | Number per 10 beds | 1.3 (0.8-1.7) | 2.5 (1.7-3.8) | 1.4 (0.8-1.7) |
| | **2019** | Number per 10 beds | 1.4 (0.9-2.0) | 2.5 (2.0-4.0) | 1.4 (0.8-1.8) |
| | **2021** | Number per 10 beds | 1.3 (0.8-1.8) | 2.5 (1.7-3.7) | 1.2 (0.8-1.8) |

| Nurses trained in swallow screening usually on duty at 10am (Q2.5(i) & Q2.17(i)) Median (Interquartile range) | | | Total stroke units | Type 1 beds | Type 3 beds |
|---|---|---|---|---|---|
| | | | **2014** (183 sites) | **2014** (75 sites) | **2014** (109 sites) |
| | | | **2016** (178 sites) | **2016** (73 sites) | **2016** (105 sites) |
| | | | **2019** (169 sites) | **2019** (86 sites) | **2019** (81 sites) |
| | | | **2021 (157 sites)** | **2021 (83 sites)** | **2021 (73 sites)** |
| Sundays / Bank Holidays | **2014** | Number per 10 beds | 1.3 (0.8-1.7) | 2.5 (1.7-3.3) | 1.3 (0.8-1.8) |
| | **2016** | Number per 10 beds | 1.3 (0.8-1.7) | 2.5 (1.7-3.8) | 1.4 (0.8-1.7) |
| | **2019** | Number per 10 beds | 1.4 (0.9-2.0) | 2.5 (2.0-4.0) | 1.4 (0.8-1.8) |
| | **2021** | Number per 10 beds | 1.2 (0.8-1.8) | 2.5 (1.7-3.7) | 1.2 (0.8-1.8) |

Given the strong observational evidence that the ratio of registered nurses to patients on an acutely-admitting stroke unit is a determinant of early survival for people with stroke (Bray et al, 2014; Paley et al, 2018), we have used the same methodology over the last 7 years to track nurse staffing in acute stroke units. Rather as with KI1 this indicator has shown a steady erosion of registered nurse staffing over that time. Overall, fewer acute sites are now meeting this standard, and there are over 100 sites that are still failing to achieve it. This appears to particularly affect the 83 sites providing type 1 beds for patients in those critical first 72 hours after stroke, at least during the daytime. Fortunately, these sites have remained relatively stable in their availability of nurses trained in swallow screening (for the importance of this, see Paley et al, 2018), but there has been a significant decline across the week in the number of nurses with this skill in combined type 3 beds. It is important for hospitals to avoid redeploying skilled stroke nurses and safeguard nurse staffing for acute stroke in the same way that they do in other directly-admitting specialist areas such as coronary care.

## KI.5 Seven Day Therapy Access

| **Key Indicator 5**<br>**At least two types of therapy available 7 days a week** | | |
|---|---|---|
| **2016** | **2019** | **2021** |
| **31% (55/178)**<br>of sites meet Key Indicator | **38% (65/169)**<br>of sites meet Key Indicator | **42% (66/157)**<br>of sites meet Key Indicator |
| *Key Indicator achieved if:*<br>*7 day working for at least two types of qualified therapy. 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]

***2016 RCP National Clinical Guideline for Stroke, 5th Edition***

**2.11.1**

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

**Table 1.8: National breakdown of qualified therapy staff disciplines working 7 days with participating sites**

| Combinations of qualified therapy types working 7 days (Q5.2) | **2016 National** (178 sites) % (n) | **2019 National** (169 sites) % (n) | **2021 National** (157 sites) % (n) |
|---|---|---|---|
| All three types of therapy | 6% (11) | 9% (15) | 10% (15) |
| Occupational therapy and physiotherapy | 25% (44) | 29% (49) | 31% (49) |
| Speech and language therapy and physiotherapy | 0% (0) | 1% (1) | 1% (2) |
| Physiotherapy only | 9% (16) | 8% (13) | 9% (14) |
| Speech and language therapy only | 0% (0) | 1% (1) | 1% (1) |
| No types of therapy available 7 days a week | 60% (107) | 53% (90) | 48% (76) |

*Further detail is available in Table 1.29*

The last 5 years have seen a steady increase in the proportion of ASCs and SRUs providing therapy at weekends to the highest value we have seen at 42% (representing one more site than in 2019). This is a welcome development and suggests that these sites are taking a fresh approach to accelerated early inpatient rehabilitation, as weekend therapy is more likely to also be able to involve family members and is less likely to be interrupted by other, less productive but fatiguing activity (at least from the patient's point of view e.g., ward rounds and investigations). Weekend therapy represents a genuine opportunity to intensify and accelerate recovery, and SSNAP has produced evidence at the 2021 UK Stroke Forum to show that services providing 7 day therapy are delivering higher levels of treatment rather than simply spreading 5 days' worth of therapy over more days (Cabraal et al, 2021). There is further to go to improve this quality indicator but sites reaping the benefits of weekend therapy should be persuading their 'late adopter' network colleagues to do likewise, particularly in sites not involved in the first 72 hours of hyperacute care, where 7-day therapy is much less commonly provided.

**Table 1.9: Number of sites providing two types of therapy 7 days a week by service type**

| Number of sites providing two types of therapy (qualified) 7 days a week (Q5.2) | **2021 National** 157 sites % (n/N) |
|---|---|
| Treat all patients in first 72h | 46% (57/125) |
| Treat some patients in first 72h | 25% (2/8) |
| Treat no patients in first 72h | 29% (7/24) |
| All sites | 42% (66/157) |

## 3. Access to Specialist Treatment and Support

### KI.6 Stroke Team Alerted Before Arrival at Hospital (Pre-Alert)

| **Key Indicator 6**<br>**Stroke team receives a pre-alert for suspected stroke patients** | | |
|---|---|---|
| **2016** | **2019** | **2021** |
| **N/A** | **38% (54/142)***<br>of sites meet Key Indicator | **26% (34/133)**<br>of sites meet Key Indicator |
| *Key Indicator achieved if:*<br>*Site pre-alert is received for all types of stroke and if the call is made to a stroke specialist nurse, stroke consultant on call or junior stroke doctor on call* | | |

**Criteria for Key Indicator 6 has changed since 2019, so data are not directly comparable. In 2021, teams had to select one recipient for the pre-alert.*

***Standard***

***2016 RCP National Clinical Guideline for Stroke, 5th Edition***

**3.1.1**

**C:** The pre-hospital care of people with suspected stroke should minimise time from call to arrival at hospital and should include a hospital pre-alert to expedite specialist assessment and treatment.

**Table 1.10: Key Indicator 6: Pre-alert relevant member of the stroke team**

| **Key Indicator 6: Stroke team receives a pre-alert for suspected stroke patients** (Q1.11) | | **National 2019** (142 sites) % (n) | **National 2021** (133 sites) % (n) |
|---|---|---|---|
| Do the stroke team receive a pre-alert (telephone call) from your ambulance crews for **thrombolysis candidates only** | Yes | 80% (113) | 74% (98) |
| | No | 11% (16) | 17% (22) |
| | Sometimes | 9% (13) | 10% (13) |
| Do the stroke team receive a pre-alert (telephone call) from your ambulance crews for **all FAST positive** | Yes | 69% (98) | 67% (89) |
| | No | 11% (15) | 14% (18) |
| | Sometimes | 20% (29) | 20% (26) |
| Do the stroke team receive a pre-alert (telephone call) from your ambulance crews for **all other suspected strokes** | Yes | 37% (52) | 41% (55) |
| | No | 15% (22) | 20% (27) |
| | Sometimes | 48% (68) | 38% (51) |

**Table 1.11: Key Indicator 6 recipient of pre-alert**

| **Key Indicator 6: Stroke team receives a pre-alert for suspected stroke patients** (Q1.12) | | **National 2021** 121 sites % (n) |
|---|---|---|
| Pre-alert call made to: | Stroke Specialist Nurse | 32% (39) |
| | Stroke Junior Doctor on call | 4% (5) |
| | Stroke Consultant on call | 1% (1) |

This is the only Key Indicator in which we have 'raised the bar' this year compared to the 2019 audit, by specifying that pre-alerts should be made directly to a member of the stroke team (as opposed to a more general pre-alert to the ED) for all patients, at least 'sometimes'. These changes may account for some, but not all, of the drop in achievement of the Key Indicator we observe between the two audits. Modern paramedic training encompasses stroke presentations that are potentially FAST-negative, especially those in the posterior circulation, so a pre-alert for these patients is clinically appropriate even if the proportion of mimics is likely to be higher than in the FAST-positive group. Direct interaction between paramedics and receiving stroke teams, using telemedicine or video-triage, may improve the appropriate selection of patients for reperfusion and help to identify mimics. Pre-alerting has consistently been shown to be a key component of reducing door-to-needle times, so a relentless focus on reducing time to treatment for both thrombolysis and thrombectomy inevitably requires an inclusive policy of acute assessment for all cases of suspected stroke at the front door – even if this includes a higher 'mimic rate'. Even now, 12 sites in the UK are attempting to provide reperfusion therapy for acute stroke without any form of pre-alert directly to the stroke team – these sites urgently need to review their practices to implement the best available evidence for expediting reperfusion treatment and delivering more benefit to patients. Using a huge sample of SSNAP patients over three years, it has been shown using machine learning that reducing the typical door-to-needle time to 30 minutes in the UK would increase the overall population benefit from thrombolysis by 26% even if the thrombolysis rate itself remains unchanged (Allen et al, 2022).

## KI.7 Specialist Early Supported Discharge (ESD)

| **Key Indicator 7**<br>**Access to a specialist (stroke/neurological specific) early supported discharge team** | | |
|---|---|---|
| **2016** | **2019** | **2021** |
| **N/A*** | **63% (107/169)**<br>of sites meet Key Indicator | **76% (119/157)**<br>of sites meet Key Indicator |
| *Key Indicator achieved if:*<br>*Hospital has access to at least one stroke/neurology specific early supported discharge multidisciplinary team AND at least 66% of patients have access to at least one of the teams if needed* | | |

**Criteria for Key Indicator 7 has changed since 2016, so data are not directly comparable. From 2019, teams must have access to at least one specialist early supported discharge team AND have a coverage of at least 66% of their catchment population.*

### *Standard*

***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]

***2016 RCP National Clinical Guideline for Stroke, 5th Edition***

**2.7.1**
**A:** Hospital inpatients with stroke who have mild to moderate disability should be offered early supported discharge, with treatment at home beginning within 24 hours of discharge.

**Table 1.12: Access to specialist early supported discharge (ESD)**

| Access to specialist early supported discharge (Q6.1(a) & (b)) | **National 2014**<br>183 sites<br>% (n) | **National 2016**<br>178 sites<br>% (n) | **National 2019**<br>169 sites<br>% (n) | **National 2021**<br>157 sites<br>% (n) |
|---|---|---|---|---|
| Site has **access to at least one specialist early supported discharge** (ESD) team | 74%<br>(135) | 81%<br>(145) | 85%<br>(143) | 90%<br>(141) |
| | Median, interquartile range (IQR) and n/N | | | |
| **Percentage of patients** at the site which have **access to at least one specialist early supported discharge** (ESD) team | 100%<br>85-100% (IQR)<br>91/135 with 100% | 100%<br>80%-100% (IQR)<br>83/145 with 100% | 100%<br>67%-100% (IQR)<br>85/143 with 100% | 100%<br>94%-100% (IQR)<br>100/141 with 100% |

Overall, 90% of ASCs and SRUs have access to at least one specialist (stroke/neurology-specific) early supported discharge team, up from 74% in 2014. Most of these have full population coverage, but there is still a significant proportion of services where ESD provision is determined not by the patient's needs, but by where they live – 22 sites have ESD provision that covers less than two thirds of their catchment population. The evidence indicates that patients without ESD will not recover as well (and will stay in hospital longer) than their near-neighbours who are fortunate enough to live in an area with access to such a service. The cost-effectiveness of ESD is robust, but in some places this alone appears insufficient to ensure that it is commissioned – as if such services are required to achieve a higher standard of proof than an equivalently effective pharmaceutical intervention.

In the meantime, the evidence and policy have moved on, and in the future these services will be expected to be reformed into Integrated Community Stroke Services (ICSS) providing a needs-based, not time-limited, seamless transition from facilitating early discharge from hospital for patients at all levels of disability through to supporting community reintegration and return to work (NHS England, 2021). The current proportion of needs-based ESD services is static at 20%. This year represents the last time that the quality of discharge support will be measured purely on the presence of partial coverage for earlier discharge for a subset of patients – expectations for a supported transfer home from hospital will be raised to the higher standard of comprehensive and seamless ICSS provision.

# 4. Patient and Carer Engagement

## KI.8 Formal Survey Undertaken Seeking Patient/Carer Views on Stroke Services

| **Key Indicator 8**<br>**Formal survey undertaken seeking patient/carer views on stroke services** | | |
|---|---|---|
| **2016** | **2019** | **2021** |
| **61% (108/178)**<br>of sites meet Key Indicator | **56% (95/169)**<br>of sites meet Key Indicator | **40% (63/157)**<br>of sites meet Key Indicator |
| *Key Indicator achieved if:*<br>*Formal survey undertaken seeking patient/carer views on stroke services at least once a year* | | |

***Standard***

***2016 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.

***NICE Quality Standard 15***

Statement 4: People using adult NHS services experience care and treatment that is tailored to their needs and preferences. [2012, updated 2019]

**Table 1.13: Seeking patient/carer views on stroke services**

| Patient views on stroke services | | **National 2016**<br>178 sites<br>% (n) | **National 2019**<br>169 sites<br>% (n) | **National 2021**<br>157 sites<br>% (n) |
|---|---|---|---|---|
| **Frequency of a formal survey seeking patient/carer views on stroke services.** (Q9.7) **(Key Indicator 8)** | Continuous (every patient) | 31% (56) | 25% (42) | 16% (25) |
| | More than 4 times a year | 10% (17) | 8% (14) | 5% (8) |
| | 3-4 times a year | 3% (5) | 4% (6) | 3% (4) |
| | 1-2 times a year | 17% (30) | 20% (33) | 17% (26) |
| | Less than once a year | 28% (49) | 23% (39) | 29% (46) |
| | Never | 12% (21) | 21% (35) | 31% (48) |
| Representation on stroke strategic group | | **National 2016**<br>164 sites<br>% (n) | **National 2019**<br>148 sites<br>% (n) | **National 2021**<br>131 sites<br>% (n) |
| Representation on stroke strategic group (Q9.2) | Ambulance trust representative | 50% (82) | 51% (76) | 44% (58) |
| | Clinician | 99% (163) | 100% (148) | 100% (131) |
| | Patient representative | 54% (88) | 45% (67) | 45% (59) |
| | Commissioner | 66% (109) | 62% (92) | 41% (54) |
| | Social Services | 45% (73) | 28% (42) | 14% (18) |
| | Stroke Network representative | 56% (92) | 53% (78) | 66% (86) |
| | Trust board member | 47% (77) | 42% (62) | 36% (47) |

Service quality and safety is only incompletely evaluated if the views of patients and their families are not also taken into consideration. Perhaps rather inevitably over the last two years of severe disruption, reaching out beyond the service to those who use it has fallen to its lowest level – 40% lower than five years ago. In general, the frequency of consultation with service users has fallen across the board, and stakeholder representation on groups locally responsible for strategy and planning has significantly weakened, particularly through a dramatic reduction in engagement from service commissioners, social services and ambulance trusts. Much of the last two years has inevitably been about preserving stroke services in the context of severe pandemic pressures on other acute areas, but the necessary process of recovery and restoration will be hampered without the correct stakeholders 'in the room' (or in the Teams meeting).

This reduction in service user engagement, maintained over the medium to longer term, will weaken services and reduce their responsiveness and accountability. Proper patient and public engagement should not be regarded as an optional add-on, to be set aside when times get tough, but should be at the core of service evaluation and planning for all stroke services and networks. Hearing the voice of people with stroke is notoriously difficult to do properly and requires proper resourcing at provider and network level, but those who put in the effort to do so consistently report its value in shaping services that are patient-centred rather than service-centred. All NHS services should be tailored to the needs and preferences of the people who use them, and the only way to do this reliably is through an active two-way process of consulting with those who are receiving such services, and responding to their feedback.

## 5. TIA Service

### KI.9 First Line of Brain Imaging for TIA Patients

| **Key Indicator 9**<br>**First line of brain imaging for TIA patients is MRI** | | |
|---|---|---|
| **2016** | **2019** | **2021** |
| **N/A** | **33% (56/169)**<br>of sites meet Key Indicator | **49% (77/157)**<br>of sites meet Key Indicator |
| *Key Indicator achieved if:*<br>*MRI is first brain imaging for suspected TIA AND investigations are completed within 2 days (Next weekday, the next day, the same day (5 days a week), or the same day (7 days a week)).* | | |

***Standard***

***Stroke and transient ischaemic attack in over 16s: diagnosis and initial management, NICE NG128***

**1.2.2**
After specialist assessment in the TIA clinic, consider MRI (including diffusion weighted and blood-sensitive sequences) to determine the territory of ischaemia, or to detect haemorrhage or alternative pathologies. If MRI is done, perform it on the same day as the assessment. [2019]

**Table 1.14: First line brain imaging most frequently used for suspected TIAs**

| **Key Indicator 9: First line of brain imaging for TIA patients is MRI AND investigations are completed within 2 days (Next weekday, the next day, the same day (5 days a week) or the same day (7 days a week))** | | **National 2019**<br>169 sites<br>% (n) | **National 2021**<br>157 sites<br>% (n) |
|---|---|---|---|
| First line brain imaging used (type) (Q4.10(a)) | Computed Tomography | 50% (85) | 36% (56) |
| | Magnetic Resonance Imaging | 45% (76) | 60% (94) |
| | Rarely image TIAs | 5% (8) | 4% (7) |

**Table 1.15: Timescale for investigating and initiating treatment**

| **Key Indicator 9: First line of brain imaging for TIA patients is MRI AND investigations are completed within 2 days (Next weekday, the next day, the same day (5 days a week) or the same day (7 days a week))** | | **National 2019**<br>160 sites<br>% (n) | **National 2021**<br>151 sites<br>% (n) |
|---|---|---|---|
| Timescale taken to investigate and initiate treatment for **ALL** outpatients (Q7.11) | The same day (7 days a week) | 31% (50) | 26% (40) |
| | The same day (5 days a week) | 26% (41) | 26% (39) |
| | The next day | 14% (23) | 18% (27) |
| | The next weekday | 8% (13) | 8% (12) |
| | Within a week | 19% (31) | 19% (29) |
| | Within a month | 1% (2) | 2% (3) |
| | Longer than a month | 0% (0) | 1% (1) |

The 2021 acute organisational audit is a welcome opportunity to report on significant progress towards the implementation of NICE Clinical Guideline NG128, with half of all acute sites now reporting the availability of MRI as first-line investigation within one working day for all outpatients referred. Further progress should now be made to ensure that the clinical guideline is fully implemented across the UK, replacing CT as first-line imaging (and thus reducing duplicate imaging) in all TIA clinics.

# 6. Quality Improvement and Leadership

## KI.10 Management Level that Takes Responsibility for Audit Results

| **Key Indicator 10**<br>**Management level that takes responsibility for audit results** | | |
|---|---|---|
| **2016** | **2019** | **2021** |
| **N/A** | **63% (106/169)**<br>of sites meet Key Indicator | **61% (95/157)**<br>of sites meet Key Indicator |
| *Key Indicator achieved if:*<br>*Executive on the Board, Non-executive on the Board or Chair of Clinical Governance take responsibility for the follow-up of stroke audit results.* | | |

**Table 1.16: Level of management responsible for reviewing SSNAP results**

| **Key Indicator 10: Management level that takes responsibility for audit results** | | **National 2019**<br>169 sites<br>% (n) | **National 2021**<br>157 sites<br>% (n) |
|---|---|---|---|
| Management level that takes responsibility for the follow-up of the results and recommendations of the Sentinel Stroke Audit (Q9.1) | Executive on the Board | 58% (98) | 50% (78) |
| | Non-executive on the Board | 17% (28) | 15% (24) |
| | Chair of Clinical Governance (or equivalent) | 25% (43) | 36% (57) |

Achieving continuous quality improvement in complex healthcare is demanding for any organisation and requires sustained commitment at the highest level. Given the enormous pressures and disruption to organisations' 'business as usual' over the last two years, it is encouraging to see that, for the large part, senior managers have remained engaged with stroke audit results and interpretation to a similar extent as prior to the pandemic, with half of all acute sites identifying a board-level executive with responsibility for implementing the audit recommendations.

However, although a prerequisite for quality improvement, this is insufficient on its own to effect the necessary change. Foy and colleagues highlight the other essential components for audit programmes to lead to transformational change: applying what is already known about making audit more effective, attending to the whole audit cycle, getting the right message to the right recipients, making the most of the available data, embedding an incremental approach and engaging with patients and the public (Foy et al, 2020). Continuous quality improvement over the medium term requires a sustained organisational commitment and visibility at executive level and the consistent application of evidence-based approaches. The remaining 62 acute providers that are lacking this visibility have a ready explanation for why they are struggling to improve their services, and they need to be brandishing this report (and others like it, such as their trust-specific Getting It Right First Time (GIRFT) Report, which contains site-specific and region-wide quality improvement recommendations) at senior level within their organisation in order to get the process of quality improvement started again and building momentum.

# Other Key Findings

## A Type and Number of Stroke Unit Beds

The process of rationalisation and centralisation of acute stroke services in England (a process less pronounced in Wales and Northern Ireland) has continued with a further reduction in acute sites to 157 – 15% fewer than seven years ago. Overall, there has been a slight shift towards hyperacute (first 72-hour or type 1) beds through this centralisation, within an overall reduction in acute stroke beds of 10% over the same period.

**Table 1.17: 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** | Total N of beds **2019** | Total N of beds **2021** | n Site level | |
|---|---|---|---|---|---|---|
| | | | | | n | Median (IQR) |
| **Beds** solely used for patients in **first 72 hours** after stroke (type 1 beds) (Q2.1c) | National 183 sites | National 178 sites | National 169 sites | National 157 sites | | |
| | 681 | 601 | 774 | 808 | 83 | 8 (6-12) |
| **Beds** for **pre- and post-72 hour** care (type 3 beds) (Q2.1e) | 2381 | 2349 | 1759 | 1588 | 73 | 22 (14-28) |
| **Beds** solely used for patients **beyond 72 hours** (type 2 beds) (Q2.1d) | National 183 sites | National 178 sites | National 171 sites | National 157 sites | | |
| | 2178 | 2169 | 2314 | 2311 | 98 | 22 (16-28) |
| Total number of beds | 5250 | 5119 | 4847 | 4707 | | |

## B Access to Specialist Treatment and Support

Unsurprisingly, the overall number of thrombectomy-capable centres (in England now termed Comprehensive Stroke Centres (CSCs)) is unchanged, with one each in Wales and Northern Ireland and 24 in England. 5 acutely-admitting sites still do not have access to thrombectomy.

Access hours for thrombectomy are steadily improving – 14 sites now offer a weekend service (up from only 6 two years ago), and only 11 remain restricted to weekday office hours only.

**Table 1.18: Current days and hours of thrombectomy service**

| Thrombectomy centre service hours (Q3.7) | **2021 National** (26 sites) % (n) |
|---|---|
| 24 hours a day, 7 days a week | 19% (5) |
| Extended hours including weekends | 27% (7) |
| Office hours including weekends | 8% (2) |
| Monday-Friday, extended hours | 4% (1) |
| Monday-Friday, office hours | 42% (11) |

***Standard***

*2016 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.

**Table 1.19: Patient access to intra-arterial (thrombectomy) treatment**

| Use of intra-arterial (thrombectomy) treatment to treat patients with acute stroke (Q3.3 & 3.5) | | **National 2014** 167 sites % (n) | **National 2016** 158* sites % (n) | **National 2019** 144* sites % (n) | **National 2021** 134* sites % (n) |
|---|---|---|---|---|---|
| Sites whose patients have access to intra-arterial (thrombectomy) treatment | Yes, on-site | 13% (21) | 18% (28) | 18% (26*) | 19% (26*) |
| | Yes, by referral | 42% (70) | 50% (79) | 75% (108) | 77% (103) |
| | No | 46% (76) | 32% (51) | 7% (10) | 4% (5) |

** In 2016 and 2019, there were 2 sites that have patients referred to them for intra-arterial treatment, but do not have an acute service on site. In 2021, this was 1 site. They submitted information on their thrombectomy service only*

## C Telemedicine

The use of telemedicine remains substantially limited to decision-making in thrombolysis, despite this not necessarily being the most complex area of hyperacute practice. For supporting remote or precariously staffed services, networks should be re-examining the potential for telemedicine, particularly as decision-making for thrombectomy (and the interpretation of advanced imaging) progressively extends beyond standard working hours when a local stroke physician may not be available.

**Table 1.20: Use of telemedicine to allow remote access for management of acute stroke**

| Groups of patients assessed using telemedicine (Q1.20) | **National 2016** 105 sites % (n) | **National 2019** 93 sites % (n) | **National 2021** 89 sites % (n) |
|---|---|---|---|
| All patients | 9% (9) | 13% (12) | 21% (19) |
| Some patients | 30% (32) | 33% (31) | 29% (26) |
| Only patients eligible for thrombolysis | 61% (64) | 54% (50) | 49% (44) |

## D Specialist Stroke Consultant Ward Rounds

There are still eight hyperacute units (type 1 beds) which do not have a ward round 7 days a week – this is an important area to address for these few remaining units.

### *Standard*

*2016 RCP National Clinical Guideline for Stroke, 5th Edition*

**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.

**Table 1.21: Specialist consultant led ward rounds (type 1 beds)**

| Stroke consultant ward rounds (type 1 beds) (Q2.3) | **National 2016**<br>Type 1 beds<br>73 sites<br>% (n) | **National 2019**<br>Type 1 beds<br>86 sites<br>% (n) | **National 2021**<br>Type 1 beds<br>83 sites<br>% (n) |
|---|---|---|---|
| Specialist consultant-led ward round at least once a day (7 days per week) | 84% (61) | 90% (77) | 90% (75) |

## E Nurse Staffing

The steady shift of skill mix from registered to unregistered staff described in previous editions of this audit over the last 7 years has continued, and as reported in Key Indicators 1 and 4, there has been an erosion of the sort of senior nursing leadership and skills present on acute stroke units of all kinds across the week – particularly but not exclusively in type 1 hyperacute beds. The development of new roles for unregistered nursing staff need not be an unwelcome or detrimental process as long as skills are maintained, which does require a commitment to the training and education of staff of all grades to be given appropriate priority. Although funding remains available for external courses for both nurses and therapists in 90% of sites, similar to 2 years ago, the median number of training sessions attended in the last 12 months at 14 (IQR 3-40) appears inadequate to maintain or develop the specialist skills required across the entire nursing and therapy establishment of a stroke unit – and the median number of external training sessions relating to psychological skills was zero.

**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 Nursing and Midwifery Council (NMC))*

**Table 1.22: Total establishment of whole time equivalents (WTE) for registered nurses**

| Total establishment of nurses (bands 5-8a) for all stroke beds (Q2.7, 2.12 & 2.19) 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) |
| | | | **2019** (169 sites) | **2019** (86 sites) | **2019** (105 sites) | **2019** (81 sites) |
| | | | **2021** (157 sites) | **2021** (83 sites) | **2021** (98 sites) | **2021** (73 sites) |
| Band 5 Nurses | **2014** | *Total WTE* | *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 / 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* | *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 / 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)** |
| | **2019** | *Total WTE* | *17.7 (12.4-24.6)* | *7.0 (4.1-13.2)* | *12.9 (9.7-17.0)* | *14.1 (9.0-18.3)* |
| | | **WTE / 10 beds** | **7.0 (5.6-8.2)** | **9.1 (6.0-13.9)** | **6.5 (4.8-7.8)** | **6.6 (5.2-7.6)** |
| | **2021** | *Total WTE* | *18.2 (12.6-26.2)* | *6.9 (4.1-13.3)* | *12.9 (9.4-17.4)* | *13.0 (8.6-19.3)* |
| | | **WTE / 10 beds** | **6.6 (5.4-8.7)** | **8.9 (5.0-12.9)** | **6.2 (4.7-7.7)** | **6.4 (5.0-7.7)** |
| Band 6 Nurses | **2014** | *Total WTE* | *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 / 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* | *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 / 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)** |
| | **2019** | *Total WTE* | *5.3 (3.0-8.8)* | *3.4 (2.0-6.0)* | *3.0 (2.0-4.1)* | *3.8 (2.0-6.0)* |
| | | **WTE / 10 beds** | **1.9 (1.4-2.9)** | **3.8 (2.5-6.9)** | **1.4 (0.9-2.0)** | **1.7 (1.1-2.9)** |
| | **2021** | *Total WTE* | *5.2 (3.0-8.0)* | *3.0 (1.0-6.2)* | *3.0 (1.9-4.6)* | *3.5 (2.0-6.0)* |
| | | **WTE / 10 beds** | **1.7 (1.2-2.7)** | **3.1 (1.6-5.9)** | **1.3 (0.9-1.8)** | **1.7 (1.0-2.8)** |
| Band 7 Nurses | **2014** | *Total WTE* | *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 / 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* | *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 / 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)** |
| | **2019** | *Total WTE* | *1.5 (1.0-2.0)* | *1.0 (0.2-1.4)* | *1.0 (1.0-1.0)* | *1.0 (0.9-1.5)* |
| | | **WTE / 10 beds** | **0.5 (0.4-0.8)** | **0.8 (0.4-1.7)** | **0.5 (0.4-0.6)** | **0.5 (0.3-0.7)** |
| | **2021** | *Total WTE* | *1.0 (1.0-2.0)* | *0.6 (0.2-1.0)* | *1.0 (0.6-1.0)* | *1.0 (1.0-1.4)* |
| | | **WTE / 10 beds** | **0.5 (0.4-0.6)** | **0.6 (0.3-1.0)** | **0.4 (0.3-0.5)** | **0.4 (0.3-0.7)** |
| Band 8a Nurses | **2014** | *Total WTE* | *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 / 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* | *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 / 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)** |
| | **2019** | *Total WTE* | *0.0 (0.0-0.8)* | *0.0 (0.0-0.2)* | *0.0 (0.0-0.3)* | *0.0 (0.0-0.2)* |
| | | **WTE / 10 beds** | **0.0 (0.0-0.2)** | **0.0 (0.0-0.3)** | **0.0 (0.0-0.1)** | **0.0 (0.0-0.1)** |
| | **2021** | *Total WTE* | *0.0 (0.0-0.9)* | *0.0 (0.0-0.3)* | *0.0 (0.0-0.5)* | *0.0 (0.0-0.0)* |
| | | **WTE / 10 beds** | **0.0 (0.0-0.2)** | **0.0 (0.0-0.2)** | **0.0 (0.0-0.1)** | **0.0 (0.0-0.0)** |

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

**Table 1.23: Total establishment of whole time equivalents (WTE) for unregistered nurses**

| Total establishment of nurses (bands 2-4) for all stroke beds 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) |
| | | | **2019** (169 sites) | **2019** (86 sites) | **2019** (105 sites) | **2019** (81 sites) |
| | | | **2021** (157 sites) | **2021** (83 sites) | **2021** (98 sites) | **2021** (73 sites) |
| Band 2 Nurses | **2014** | *Total WTE* | *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 / 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* | *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 / 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)** |
| | **2019** | *Total WTE* | *15.7 (10.0-19.8)* | *3.6 (0.7-4.0)* | *13.6 (9.0-17.2)* | *12.3 (6.8-16.4)* |
| | | **WTE / 10 beds** | **5.7 (4.5-7.1)** | **4.7 (0.2-6.6)** | **6.0 (4.1-8.1)** | **5.6 (4.5-6.8)** |
| | **2021** | *Total WTE* | *15.8 (10.0-22.0)* | *4.2 (1-7.5)* | *13.0 (7.0-16.7)* | *12.6 (5.4-17.0)* |
| | | **WTE / 10 beds** | **6.0 (4.4-7.5)** | **5.5 (1.5-7.3)** | **5.8 (3.6-7.9)** | **5.9 (3.7-7.3)** |
| Band 3 Nurses | **2014** | *Total WTE* | *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 / 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* | *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 / 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)** |
| | **2019** | *Total WTE* | *1.0 (0.0-3.7)* | *0.0 (0.0-1.1)* | *0.9 (0.0-3.0)* | *0.8 (0.0-3.0)* |
| | | **WTE / 10 beds** | **0.4 (0.0-1.5)** | **0.0 (0.0-1.6)** | **0.4 (0-1.6)** | **0.4 (0-1.4)** |
| | **2021** | *Total WTE* | *1.0 (0.0-4.0)* | *0.0 (0.0-1.0)* | *0.4 (0.0-2.6)* | *1.0 (0.0-3.6)* |
| | | **WTE / 10 beds** | **0.4 (0.0-1.5)** | **0.0 (0.0-0.8)** | **0.2 (0.0-1.2)** | **0.8 (0.0-1.9)** |
| Band 4 Nurses | **2014** | *Total WTE* | *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 / 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* | *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 / 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)** |
| | **2019** | *Total WTE* | *0.0 (0.0-1.0)* | *0.0 (0.0-0.7)* | *0.0 (0.0-1.0)* | *0.0 (0.0-1.0)* |
| | | **WTE / 10 beds** | **0.0 (0.0-0.5)** | **0.0 (0.0-0.7)** | **0.0 (0.0-0.4)** | **0.0 (0.0-0.4)** |
| | **2021** | *Total WTE* | *0.4 (0.0-2.0)* | *0.0 (0.0-0.6)* | *0.0 (0.0-1.8)* | *0.0 (0.0-2.0)* |
| | | **WTE / 10 beds** | **0.1 (0.0-0.7)** | **0.0 (0.0-0.6)** | **0.0 (0.0-0.5)** | **0.0 (0.0-0.7)** |

## F Therapy staffing

Therapy staffing levels on acute and rehabilitation stroke units are holding steady over the last 5 years, with a welcome increase in physiotherapy staffing levels. Levels of Support Worker staffing have also remained stable, and these figures are reassuring given the pressures on acute services since the 2019 audit. Teams should always be looking at improving their efficiency and the delivery of at least 45 minutes of each relevant therapy each day, including at weekends to achieve accelerated rehabilitation and discharge. All hospitals providing stroke rehabilitation should provide at least two types of qualified therapy for 7 days/week, and those that do not should be examining their traditional working practices and learning from centres that have successfully implemented increased therapy delivery and 7-day working (RCP National Clinical Guideline for Stroke 2016; Clarke et al, 2018).

**Registered Therapists** (all disciplines)

**Table 1.24: Total establishment of whole time equivalents (WTE) for registered therapy staff**

| Total establishment of the multi-disciplinary team for all stroke beds (Q5.2) Median (IQR) | | | Total stroke unit beds |
|---|---|---|---|
| | | | **2016** (178 sites) |
| | | | **2019** (169 sites) |
| | | | **2021** (157 sites) |
| Occupational therapist (Registered) | **2016** | *Total WTE* | *3.3 (2.0-4.7)* |
| | | **WTE / 10 beds** | **1.3 (1.0-1.6)** |
| | **2019** | *Total WTE* | *3.7 (2.7-5.0)* |
| | | **WTE / 10 beds** | **1.4 (1.1-1.6)** |
| | **2021** | *Total WTE* | *4.0 (3.0-5.5)* |
| | | **WTE / 10 beds** | **1.4 (1.1-1.8)** |
| Physiotherapist (Registered) | **2016** | *Total WTE* | *3.8 (2.6-5.0)* |
| | | **WTE / 10 beds** | **1.4 (1.1-1.7)** |
| | **2019** | *Total WTE* | *4.0 (3.0-5.8)* |
| | | **WTE / 10 beds** | **1.5 (1.2-1.8)** |
| | **2021** | *Total WTE* | *4.5 (3.0-6.2)* |
| | | **WTE / 10 beds** | **1.6 (1.2-1.9)** |
| Speech and language therapist (Registered) | **2016** | *Total WTE* | *1.6 (1.0-2.2)* |
| | | **WTE / 10 beds** | **0.6 (0.4-0.8)** |
| | **2019** | *Total WTE* | *1.8 (1.0-2.8)* |
| | | **WTE / 10 beds** | **0.7 (0.5-0.8)** |
| | **2021** | *Total WTE* | *2.0 (1.5-3.2)* |
| | | **WTE / 10 beds** | **0.7 (0.6-1.0)** |
| Dietitian (Registered) | **2016** | *Total WTE* | *0.5 (0.3-1.0)* |
| | | **WTE / 10 beds** | **0.2 (0.1-0.3)** |
| | **2019** | *Total WTE* | *0.6 (0.2-1.0)* |
| | | **WTE / 10 beds** | **0.2 (0.1-0.3)** |

| Total establishment of the multi-disciplinary team for all stroke beds (Q5.2) Median (IQR) | | | Total stroke unit beds |
|---|---|---|---|
| | | | **2016** (178 sites) |
| | | | **2019** (169 sites) |
| | | | **2021** (157 sites) |
| | **2021** | *Total WTE* | *0.6 (0.4-1.0)* |
| | | **WTE / 10 beds** | **0.2 (0.1-0.3)** |
| Pharmacist (Registered) | **2016** | *Total WTE* | *0.5 (0.3-1.0)* |
| | | **WTE / 10 beds** | **0.2 (0.1-0.3)** |
| | **2019** | *Total WTE* | *0.6 (0.3-1.0)* |
| | | **WTE / 10 beds** | **0.2 (0.1-0.3)** |
| | **2021** | *Total WTE* | *0.8 (0.3-1.0)* |
| | | **WTE / 10 beds** | **0.2 (0.1-0.4)** |

**Unregistered Therapists and Support Workers** (all disciplines)

**Table 1.25: Total establishment of whole time equivalents (WTE) for unregistered therapy staff**

| Total establishment of the multi-disciplinary team for all stroke beds (Q5.2) Median (IQR) | | | Total stroke unit beds |
|---|---|---|---|
| | | | **2016** (178 sites) |
| | | | **2019** (169 sites) |
| | | | **2021** (157 sites) |
| Occupational therapist (Support worker) | **2016** | *Total WTE* | *1.0 (0.6-1.7)* |
| | | **WTE / 10 beds** | **0.4 (0.3-0.6)** |
| | **2019** | *Total WTE* | *1.0 (0.7-2.0)* |
| | | **WTE / 10 beds** | **0.4 (0.3-0.6)** |
| | **2021** | *Total WTE* | *1.0 (0.8-2.0)* |
| | | **WTE / 10 beds** | **0.5 (0.3-0.7)** |
| Physiotherapist (Support worker) | **2016** | *Total WTE* | *1.1 (0.9-2.0)* |
| | | **WTE / 10 beds** | **0.5 (0.3-0.7)** |
| | **2019** | *Total WTE* | *1.5 (1.0-2.0)* |
| | | **WTE / 10 beds** | **0.5 (0.4-0.7)** |
| | **2021** | *Total WTE* | *1.3 (1.0-2.1)* |
| | | **WTE / 10 beds** | **0.5 (0.4-0.7)** |
| Speech and language therapist (Support worker) | **2016** | *Total WTE* | *0.2 (0.0-0.6)* |
| | | **WTE / 10 beds** | **0.1 (0.0-0.2)** |
| | **2019** | *Total WTE* | *0.4 (0.0-0.8)* |
| | | **WTE / 10 beds** | **0.2 (0.0-0.3)** |
| | **2021** | *Total WTE* | *0.4 (0.0-0.9)* |
| | | **WTE / 10 beds** | **0.1 (0.0-0.3)** |
| Pharmacist (Support worker) | **2016** | *Total WTE* | *0.3 (0.0-0.5)* |
| | | **WTE / 10 beds** | **0.1 (0.0-0.2)** |

| Total establishment of the multi-disciplinary team for all stroke beds (Q5.2)<br>Median (IQR) | | | Total stroke unit beds |
|---|---|---|---|
| | | | **2016** (178 sites) |
| | | | **2019** (169 sites) |
| | | | **2021** (157 sites) |
| | **2019** | *Total WTE* | *0.2 (0.0-0.5)* |
| | | **WTE / 10 beds** | **0.1 (0.0-0.2)** |
| | **2021** | *Total WTE* | *0.2 (0.0-0.6)* |
| | | **WTE / 10 beds** | **0.1 (0.0-0.2)** |

## G Consultant Workforce and Training

The well-documented workforce pressures within the medical subspecialty of stroke medicine have continued since 2019, and the number of sites with at least one unfilled consultant vacancy has risen further to over half (52%). As of September 2021, there were at least 105 vacant consultant posts across 81 sites – an average of 1.3 per site (median number of programmed activities covered by vacant posts: 10 (IQR 10-14)). What is more, these posts are lying vacant for longer – up this year to a median of 18 months (IQR 10-24 months). In Northern Ireland 2 hospitals have posts that have been unfilled for an average of 4.5 years (median number of months posts have been funded but unfilled: 54 (IQR 51-57)). At the same time, the number of programmed activities in stroke being delivered by the existing workforce has risen sharply – up 11% in the last two years – appropriately reflecting our greater ability to intervene, but also falling on an already-stretched workforce that over the last two years has also been responding to additional emergency pressures outside stroke medicine. Notably, the effect of the rationalisation of services mentioned earlier (15% fewer acutely-admitting sites over the last 7 years) has done little to offset the shortages in the remaining sites – the workforce will not or cannot move with the patients. This scenario is a source of serious concern, not simply for the existing medical workforce, but also it raises the very real prospect of some acutely-receiving sites being unable to provide a specialist stroke physician at all in the near future.

SSNAP's latest Annual Report '2020-21: A Year Like No Other' documented some concerning trends in clinical quality, hyperacute treatment and access to specialist care for people with acute stroke, including the lowest-ever figures for 4-hour stroke unit access and '90% stay' that SSNAP has reported since its inception in 2013. Whilst understandably considered to be a direct effect of the unique pressures on the acute hospital sector over the pandemic period, the changes documented here in senior medical and nursing staffing, and in hospitals' commitment to quality improvement, will leave the specialty struggling to embark on the renewed process of recovery and restoration that is required to return just to pre-pandemic levels of staffing and quality. Many severe challenges remain and many sites are already lacking the key clinical leaders that will be needed to overcome those challenges to achieve the ambitions we all share for our services and our patients.

**Table 1.26: Consultant workforce, unfilled, existing and planned posts**

| Site has at least one accredited specialist registrar in post for stroke speciality training (Q8.1) | | **National 2014 (183 sites) % (n)** | **National 2016 (178 sites) % (n)** | **National 2019 (169 sites) % (n)** | **National 2021 (157 sites) % (n)** |
|---|---|---|---|---|---|
| Yes | | 29% (53) | 31% (56) | 26% (44) | 29% (45) |
| Unfilled stroke consultant posts (Q8.4) | | **National 2014 (183 sites) % (n)** | **National 2016 (178 sites) % (n)** | **National 2019 (169 sites) % (n)** | **National 2021 (157 sites) % (n)** |
| Number of sites with any **unfilled stroke consultant** posts | | 26% (48) | 40% (72) | 48% (81) | 52% (81) |
| If yes: | | National 2014 (48 sites) | National 2016 (72 sites) | National 2019 (81 sites) | National 2021 (81 sites) |
| Number of **programmed activities** (PAs) these **posts cover** (Q8.4a) | Median (IQR), Total | 10 (6-11), 454 | 10 (8.5-11.9), 804 | 10 (8.0-12.0), 950 | 10 (10-14), 1052 |
| Number of **months** these **posts** have been **funded but unfilled** (Q8.4b) | Median (IQR) | 8 (2-19) | 15 (6-24) | 12 (5-24) | 18 (10-24) |
| Existing stroke consultant posts (Q8.5) | | **National 2014 (183 sites)** | **National 2016 (178 sites)** | **National 2019 (169 sites)** | **National 2021 (157 sites)** |
| Number of **programmed activities** (PAs) for **stroke consultant physicians per site** | Median (IQR), Total | 22 (14-34) 4671 | 22 (13-41) 5122 | 28.2 (20-48) 5,794 | 34.2 (20-60), 6431 |
| Number of consultants **(individuals) programmed activities** (PAs) are **divided between** (Q8.5a) | Median (IQR), Total | 3 (2-4) 656 | 3 (2-5) 676 | 4 (2-6) 730 | 4 (3-7), 763 |
| Number of **programmed activities** (PAs) which are **allocated to direct clinical care** (DCC) (Q8.5b) | Median (IQR), Total | 17 (10-27) 3588 | 19 (11-31) 3907 | 20 (14-35) 4,274 | 25 (15-45), 4763 |

| Future planned stroke consultant posts (Q8.6) | | **National 2014 (183 sites) % (n)** | **National 2016 (178 sites) % (n)** | **National 2019 (169 sites) % (n)** | **National 2021 (157 sites) % (n)** |
|---|---|---|---|---|---|
| Number of sites with **new/additional** posts for stroke consultant physicians | | 48% (87) | 46% (81) | 41% (70) | 50% (79) |
| If yes: | | National 2014 (87 sites) | National 2016 (81 sites) | National 2019 (70 sites) | National 2021 (79 sites) |
| Number of **programmed activities** (PAs) planned for **new/additional** stroke consultant physicians (Q8.6) | Median (IQR), Total | 10 (5-10) 829 | 0 (0-10) 881 | 0 (0-10) 938 | 2 (0-10), 966 |
| Number of **new/additional consultants (individuals)** these programmed activities (PAs) are **divided between** (Q8.6a) | Median (IQR), Total | 1 (1-2) 118 | 1 (1-2) 130 | 1 (1-2) 118 | 1 (1-2), 137 |
| Number of **new/additional** programmed activities (PAs) **for direct clinical care** (DCC) for stroke (Q8.6(b)) | Median (IQR), Total | 7 (4-9) 653 | 7 (4-9) 670 | 8 (5.2-12) 676 | 8 (6.0-10.7), 768 |

## Key Indicators by country

This section compares national figures for the organisation of stroke care in England, Wales and Northern Ireland at 1 October 2021.

Denominators vary within tables because of differing site characteristics. 157 sites participated in the audit across England (136), Wales (12), Northern Ireland (8) and Islands (1). There are 24 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 national 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.

**Table 1.27: Key Indicators summary by country**

| Key Indicator summary by country | National 157 sites % (n) | England 136 sites % (n) | Wales 12 sites % (n) | Northern Ireland 8 sites % (n) |
|---|---|---|---|---|
| **Total Key Indicators Achieved** | | | | |
| 0 | 1% (1) | 1% (1) | 0 | 0 |
| 1 | 3% (5) | 1% (1) | 25% (3) | 13% (1) |
| 2 | 10% (16) | 9% (12) | 17% (2) | 25% (2) |
| 3 | 18% (28) | 16% (22) | 25% (3) | 25% (2) |
| 4 | 17% (27) | 15% (21) | 33% (4) | 25% (2) |
| 5 | 19% (30) | 21% (29) | 0 | 13% (1) |
| 6 | 17% (26) | 19% (26) | 0 | 0 |
| 7 | 11% (17) | 13% (17) | 0 | 0 |
| 8 | 4% (6) | 4% (6) | 0 | 0 |
| 9 | 1% (1) | 1% (1) | 0 | 0 |

*Post 72hrs sites receive points from KIs 3,4, and 6 from their main acute site*

## Key Indicators: England

**Figure 5: Distribution of Key Indicators achieved in England**

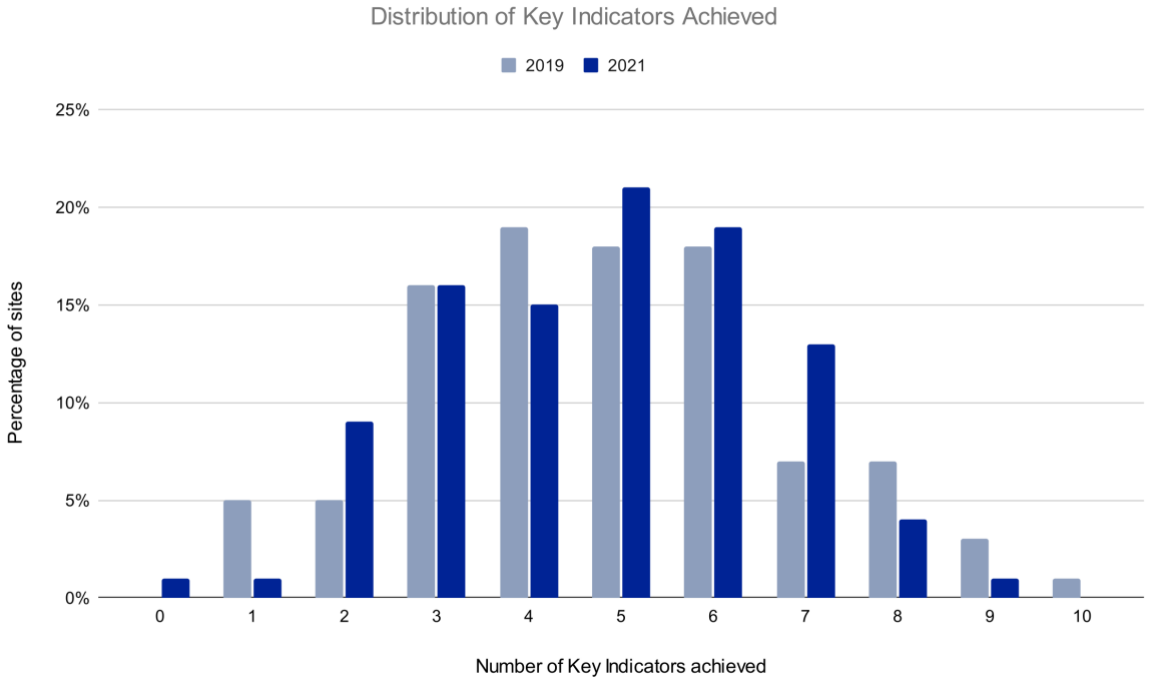
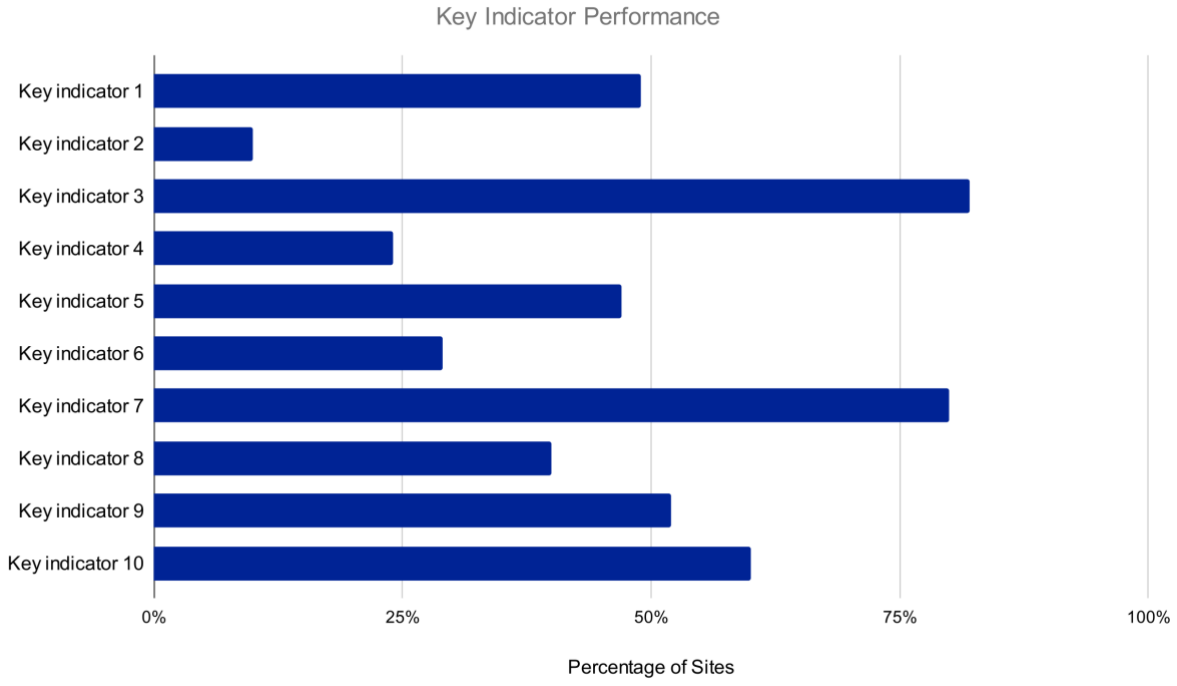



**Figure 6: National Key Indicator performance in England**



## Key Indicators: Wales

**Figure 7: Distribution of Key Indicators achieved in Wales**

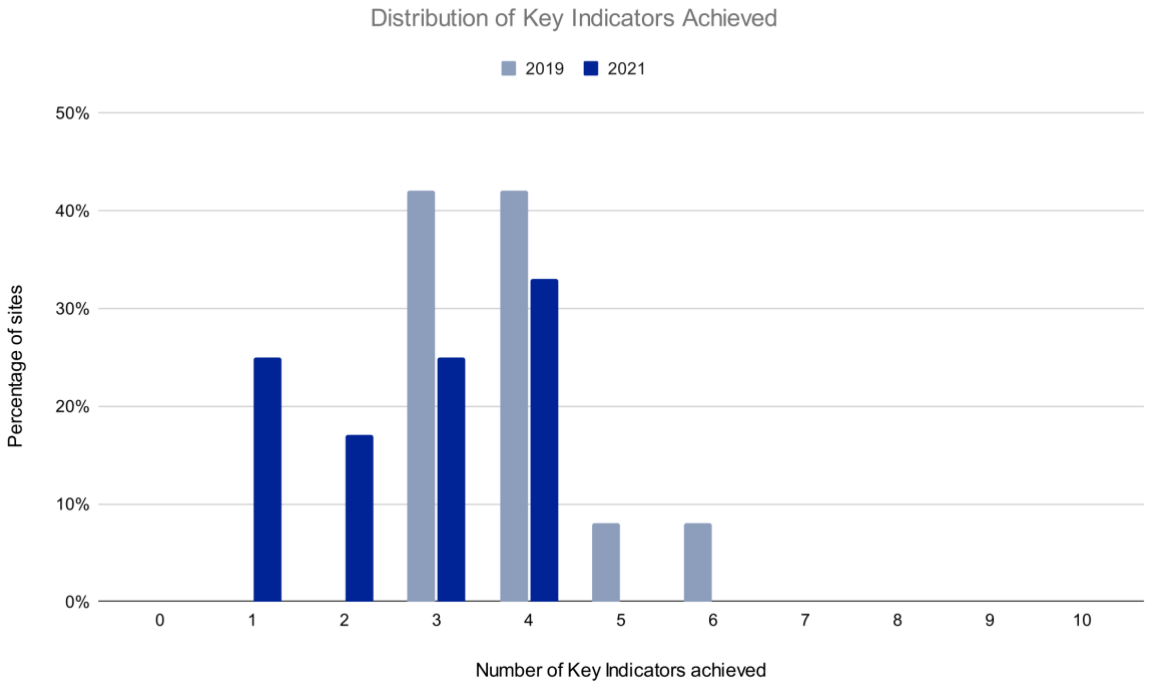
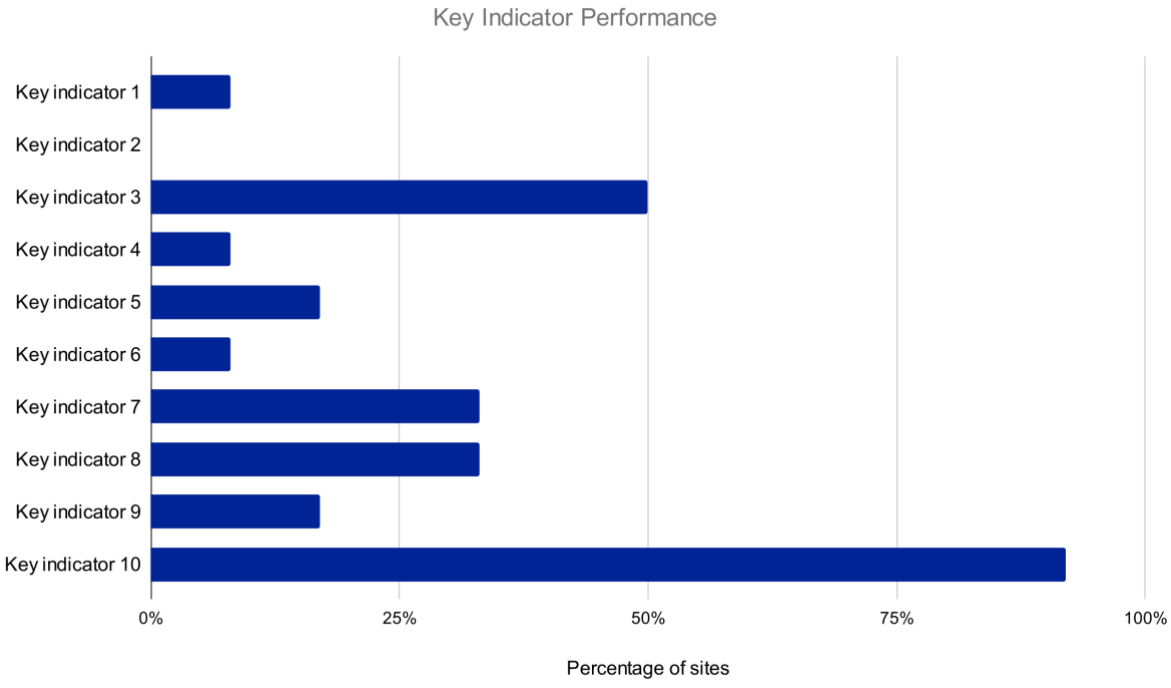



**Figure 8: National Key Indicator performance in Wales**



## Key Indicators: Northern Ireland

**Figure 9: Distribution of Key Indicators achieved in Northern Ireland**

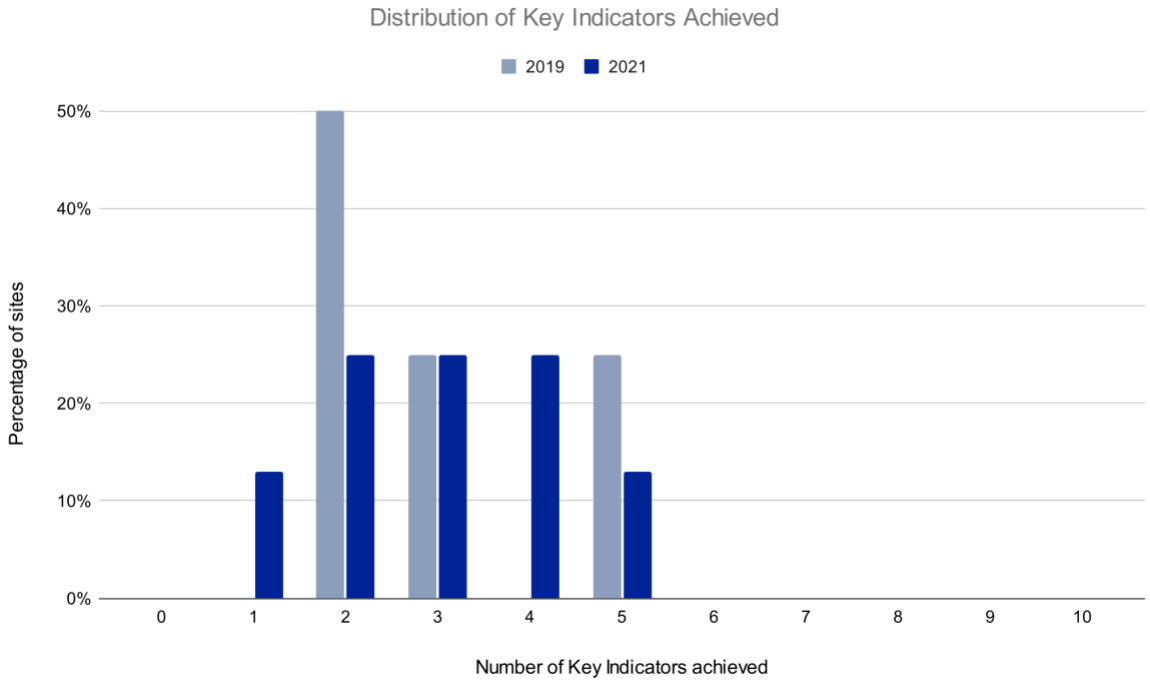



**Figure 10: National Key Indicator performance in Northern Ireland**

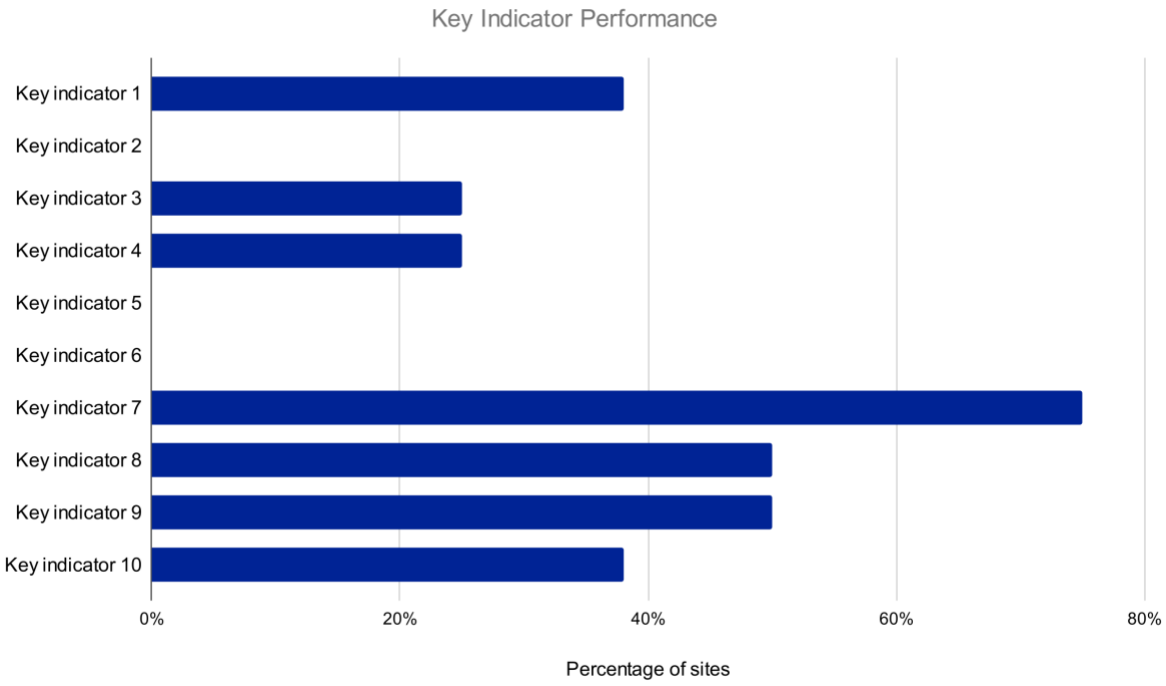


**Table 1.28: Staffing/Workforce**

| Key Indicators by country | National 157 sites % (n) | England 136 sites % (n) | Wales 12 sites % (n) | Northern Ireland 8 sites % (n) |
|---|---|---|---|---|
| **Key Indicator 1: Minimum establishment of band 6 and band 7 nurses per 10 beds** | **46% (72)** | **49% (67)** | **8% (1)** | **38% (3)** |
| Band 6 nurses WTE per 10 beds Median (IQR) | 1.7 (1.2-2.7) | 1.9 (1.3-2.7) | 0.9 (0.7-1.4) | 1.6 (1.2-2.3) |
| Band 7 nurses WTE per 10 beds Median IQR) | 0.5 (0.4-0.6) | 0.5 (0.4-0.6) | 0.5 (0.4-0.6) | 0.5 (0.4-0.7) |
| **Key Indicator 2: Presence of a clinical psychologist (qualified)** | **9% (14)** | **10% (14)** | **0% (0)** | **0% (0)** |
| Clinical psychologist WTE per 30 beds (qualified) Median (IQR) | 0.0 (0.0-0.3) | 0.0 (0.0-0.4) | 0 (0-0) | 0 (0-0) |

**Table 1.29: 7-day working**

| Key Indicators by country | | National 133 sites % (n) | England 112 sites % (n) | Wales 12 sites %(n) | Northern Ireland 8 sites % (n) |
|---|---|---|---|---|---|
| **Key Indicator 3: Out of hours presence of stroke specialist nurse** | | **76% (101)** | **82% (92)** | **50% (6)** | **25% (2)** |
| **Key Indicator 4: Minimum number of nurses on duty at 10am weekends** | | **23% (30)** | **24% (27)** | **8% (1)** | **25% (2)** |
| Nurses per 10 type 1 beds 10am Saturdays Median (IQR) | | 2.9 (2.3-3.8) | 3.0 (2.3-3.8) | 2.5 (1.8-2.5) | 5.0 (4.4-5.0) |
| Nurses per 10 type 1 beds 10am Sundays Median (IQR) | | 2.9 (2.3-3.8) | 2.9 (2.3-3.8) | 2.5 (1.8-2.5) | 5.0 (4.4-5.0) |
| Nurses per 10 type 3 beds 10am Saturdays Median (IQR) | | 1.8 (1.7-2.1) | 1.7 (1.6-2.0) | 1.7 (1.7-1.8) | 2.5 (2.1-2.7) |
| Nurses per 10 type 3 beds 10am Sundays Median (IQR) | | 1.8 (1.7-2.1) | 1.7 (1.6-2.0) | 1.7 (1.7-1.8) | 2.5 (2.1-2.7) |
| **Key Indicator 5: At least two types of therapy available 7 days a week** | | **National 157 sites % (n)** | **England 136 sites % (n)** | **Wales 12 sites % (n)** | **Northern Ireland 8 sites % (n)** |
| | | **42% (66)** | **47% (64)** | **17% (2)** | **0% (0)** |
| (e) Occupational therapy (qualified) available 5, 6 or 7 days per week | 5 days | 40% (63) | 34% (46) | 83% (10) | 75% (6) |
| | 6 days | 19% (30) | 20% (27) | 8% (1) | 25% (2) |
| | 7 days | 41% (64) | 46% (63) | 8% (1) | |
| (g) Physiotherapy (qualified) available 5, 6 or 7 days per week | 5 days | 34% (54) | 28% (38) | 75% (9) | 75% (6) |
| | 6 days | 15% (23) | 16% (22) | | 12% (1) |
| | 7 days | 51% (80) | 56% (76) | 25% (3) | 12% (1) |

| | | National 151 sites % (n) | England 133 sites % (n) | Wales 12 sites % (n) | Northern Ireland 5 sites % (n) |
|---|---|---|---|---|---|
| (i) Speech & Language Therapy (qualified) available 5, 6 or 7 days per week | 5 days | 75% (113) | 73% (97) | 92% (11) | 80% (4) |
| | 6 days | 13% (20) | 14% (19) | | 20% (1) |
| | 7 days | 12% (18) | 13% (17) | 8% (1) | |

**Table 1.30: Access to specialist treatment and support**

| Key Indicators by country | National 133 sites % (n) | England 112 sites % (n) | Wales 12 sites %(n) | Northern Ireland 8 sites % (n) |
|---|---|---|---|---|
| **Key Indicator 6: Stroke team receives a pre-alert for suspected stroke patients** | **26% (34)** | **29% (33)** | **8% (1)** | **0% (0)** |
| 1.11. Do the stroke team receive a pre-alert (telephone call) from your ambulance crews for suspected stroke patients? | | | | |
| **Thrombolysis candidates only** | | | | |
| Yes | 74% (98) | 74% (83) | 83% (10) | 50% (4) |
| No | 17% (22) | 15% (17) | 8% (1) | 50% (4) |
| Sometimes | 10% (13) | 11% (12) | 8% (1) | 0% (0) |
| **All FAST positive** | | | | |
| Yes | 67% (89) | 65% (73) | 58% (7) | 100% (8) |
| No | 14% (18) | 15% (17) | 8% (1) | 0% (0) |
| Sometimes | 20% (26) | 20% (22) | 33% (4) | 0% (0) |
| **All other suspected strokes** | | | | |
| Yes | 41% (55) | 42% (47) | 17% (2) | 62% (5) |
| No | 20% (27) | 21% (24) | 17% (2) | 12% (1) |
| Sometimes | 38% (51) | 37% (41) | 67% (8) | 25% (2) |
| 1.12. If the stroke team receive a pre-alert, who is the call usually made to? | | | | |
| Stroke Specialist Nurse | 32% (39) | 37% (37) | 18% (2) | 0% (0) |
| Stroke Junior Doctor | 4% (5) | 5% (5) | 0% (0) | 0% (0) |
| Stroke Consultant | 1% (1) | 1% (1) | 0% (0) | 0% (0) |
| **Key Indicator 7: Access to a specialist (stroke/neurological specific) early supported discharge (ESD) team** | **National 157 sites % (n)** | **England 136 sites % (n)** | **Wales 12 sites % (n)** | **Northern Ireland 8 sites % (n)** |
| | **76% (119)** | **80% (109)** | **33% (4)** | **75% (6)** |
| 6.1. Do you have access to at least one stroke/neurology specific early supported discharge multidisciplinary team? | 90% (141) | 96% (130) | 42% (5) | 75% (6) |
| 6.1 (b) What percentage of your patients has access to at least one of these teams if needed? % (IQR) | 100 (94-100) | 100 (91-100) | 100 (90-100) | 100 (100-100) |

**Table 1.31: Patient and carer engagement**

| Key Indicators by country | National 157 sites % (n) | England 136 sites % (n) | Wales 12 sites % (n) | Northern Ireland 8 sites % (n) |
|---|---|---|---|---|
| **Key Indicator 8: Formal survey undertaken seeking patient/carer views on stroke services** | **40% (63)** | **40% (54)** | **33% (4)** | **50% (4)** |
| 9.7. How often is there a formal survey seeking patient/carer views on stroke services? (This does not include the Friends and Family Test) | | | | |
| Never | 31% (48) | 32% (44) | 33% (4) | 0% (0) |
| Less than once a year | 29% (46) | 28% (38) | 33% (4) | 50% (4) |
| 1-2 times a year | 17% (26) | 17% (23) | 8% (1) | 25% (2) |
| 3-4 times a year | 3% (4) | 3% (4) | 0% (0) | 0% (0) |
| More than 4 times a year | 5% (8) | 5% (7) | 0% (0) | 12% (1) |
| Continuous (every patient): | 16% (25) | 15% (20) | 25% (3) | 12% (1) |

**Table 1.32: TIA Service**

| Key Indicators by country | National 157 sites % (n) | England 136 sites % (n) | Wales 12 sites % (n) | Northern Ireland 8 sites % (n) |
|---|---|---|---|---|
| **Key Indicator 9: First line of brain imaging for TIA patients is MRI** | **49% (77)** | **52% (71)** | **17% (2)** | **50% (4)** |
| 4.10. Which imaging modality do you most frequently use in your neurovascular clinic for suspected TIAs? | | | | |
| (a) First line brain imaging | | | | |
| Computed Tomography | 35% (56) | 33% (45) | 75% (9) | 25% (2) |
| Magnetic Resonance Imaging | 60% (94) | 62% (85) | 25% (3) | 62% (5) |
| Rarely image TIAs | 4% (7) | 4% (6) | 0% (0) | 12% (1) |
| 7.11. Within what timescale can you see, investigate and initiate treatment for ALL your TIA patients? | | | | |
| Outpatient | 100% (151/151) | 100% (131/131) | 100% (12/12) | 100% (7/7) |
| Outpatient timescale | | | | |
| | **National 151 sites % (n)** | **England 131 sites % (n)** | **Wales 12 sites % (n)** | **Northern Ireland 7 sites % (n)** |
| The same day (7 days a week) | 26% (40) | 30% (39) | 8% (1) | 0% (0) |
| The same day (5 days a week) | 26% (39) | 24% (32) | 25% (3) | 57% (4) |
| The next day: | 18% (27) | 21% (27) | 0% (0) | 0% (0) |
| The next weekday | 8% (12) | 6% (8) | 8% (1) | 43% (3) |
| Within a week | 19% (29) | 18% (23) | 42% (5) | 0% (0) |
| Within a month | 2% (3) | 2% (2) | 8% (1) | 0% (0) |
| Longer than a month | 1% (1) | 0% (0) | 8% (1) | 0% (0) |

**Table 1.33: Quality improvement and leadership**

| Key Indicators by country | National 157 sites % (n) | England 136 sites % (n) | Wales 12 sites % (n) | Northern Ireland 8 sites % (n) |
|---|---|---|---|---|
| **Key Indicator 10: Management level that takes responsibility for audit results** | **61% (95)** | **60% (81)** | **92% (11)** | **38% (3)** |
| 9.1. What level of management takes responsibility for the follow-up of the results and recommendations of the Sentinel Stroke Audit? | | | | |
| Executive on the Board | 50% (78) | 47% (64) | 92% (11) | 38% (3) |
| Non-executive on the Board | 15% (24) | 16% (22) | 17% (2) | 0% (0) |
| Chair of Clinical Governance (or equivalent) | 36% (57) | 40% (54) | 25% (3) | 0% (0) |

## Glossary

| | |
|---|---|
| **Acute Stroke Centre (ASC)** | Provides hyper-acute, acute and inpatient rehabilitation, but excluding thrombectomy and neurosurgery (in England). |
| **Carer** | A person (commonly the patient's spouse, a close relative or friend) who provides on-going, unpaid support and personal care at home. |
| **Commissioners** | Funding bodies of NHS services in England. |
| **Comprehensive Stroke Centre (CSC)** | Provides hyper-acute, acute and inpatient rehabilitation including thrombectomy and neurosurgery (in England). |
| **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. |
| **Getting It Right First Time (GIRFT)** | A national programme designed to improve medical care within the NHS by reducing unwarranted variations. By tackling variations in the way services are delivered across the NHS, and by sharing best practice between trusts, GIRFT identifies changes that will help improve care and patient outcomes, as well as delivering efficiencies such as the reduction of unnecessary procedures and cost savings. https://gettingitrightfirsttime.co.uk/.<br><br>You can read the GIRFT National Stroke Report here. |
| **Hyperacute Stroke Unit (HASU)** | 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). |
| **Integrated Community Stroke Services (ICSS)** | A multidisciplinary team that offers stroke rehabilitation at a range of intensities – from ESD to less-intensive rehabilitation courses. |
| **Intracerebral haemorrhage (ICH)** | A type of stroke caused by bleeding within the brain tissue itself. |
| **Ischaemic stroke** | 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. |
| **Magnetic resonance imaging (MRI)** | A type of scan that uses strong magnetic fields and radio waves to produce detailed images of the inside of the body. |
| **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 (2016)** | A National evidence based guideline for stroke care published by the Intercollegiate Working Party for Stroke fifth edition 2016 https://www.strokeaudit.org/Guideline/Guideline-Home.aspx |
| **Neurovascular Clinic** | An outpatient clinic for patients with transient ischaemic attacks (TIA) or minor stroke for further investigation. |
| **Out of hours** | In hours is between 08.00-18.00 Monday to Friday. Out of hours is all days and times outside this range. |
| **Per 10 (30) stroke beds** | A method of calculating ratios of staff to every 10-stroke unit beds. 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.<br>The same rule applies for per 30 beds in terms of Key Indicator 2 but multiplied by 30. |
| **Pre-Alert** | Information given to a receiving hospital about a critically ill or injured patient's condition. |
| **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. |
| **Sessions** | A term used to describe a junior doctor's time. One session represents half a day. |
| **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. |
| **Specialist early supported discharge (ESD) team** | 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. |
| **Stroke Recovery Unit (SRU)** | Provides acute and inpatient rehabilitation only (in England). |
| **Stroke specialist senior nurses** | Nurses at band 6 level or above with specialist training and experience in stroke medicine. |
| **Swallow screening** | A process which broadly identifies the safety of a patient's swallow ability. This screening process, which may be performed by any member of the team trained to do this, acts to establish whether the patient requires further formal assessment regarding the patient's ability to swallow (either fluids or solid foods). |
| **Thrombectomy** | The surgical removal of a thrombus (blood clot) from a blood vessel. |
| **Thrombolysis** | The use of drugs to break up a blood clot. |
| **Transient ischaemic attack (TIA)** | 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 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. |
| **Whole time equivalent (WTE)** | 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. |

# References


1. Allen M, James C, Frost J, Liabo K, et al, 2022. Stroke Audit Machine Learning (SAMueL): Use of simulation and machine learning to identify key levers for maximising the disability benefit of intravenous thrombolysis in acute stroke pathways *NIHR Journals Library - Health and Social Care Delivery Research* (in press)

2. Bray BD, Campbell J, Cloud GC, Hoffman A, et al, 2013. Bigger, faster? Associations between hospital thrombolysis volume and speed of thrombolysis administration in acute ischemic stroke. *Stroke*, 44, 3129-35. https://www.ahajournals.org/doi/pdf/10.1161/STROKEAHA.113.001981

3. Bray BD, Ayis S, Campbell J, Cloud GC, et al, 2014. Associations between stroke mortality and weekend working by stroke specialist physicians and registered nurses: prospective multicentre cohort study. *PLoS Medicine*, 11(8), e1001705. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4138029/pdf/pmed.1001705.pdf

4. Cabraal I, Kald E, Ralph S, Clark L, et al, 2021. Does 7-day therapy working deliver more therapy overall? Data from the national stroke audit for England, Wales and Northern Ireland (SSNAP). https://www.strokeaudit.org/SupportFiles/Documents/Research/UKSF-poster-SSNAP-5v7-day-therapy.aspx

5. Clarke DJ, Burton LJ, Tyson SF, Rodgers H, et al, 2018. Why do stroke survivors not receive recommended amounts of active therapy? Findings from the ReAcT study, a mixed-methods case-study evaluation in eight stroke units. *Clinical Rehabilitation 2018.* 1-14. https://journals.sagepub.com/doi/pdf/10.1177/0269215518765329

6. Foy R, Skrypak M, Alderson S, Ivers, N.M, et al, 2020. Revitalising audit and feedback to improve patient care. *BMJ*, *368* https://www.bmj.com/content/368/bmj.m213

7. Intercollegiate Stroke Working Party. *National Clinical Guideline for Stroke*. 5th ed. London, UK: Royal College of Physicians; 2016. https://www.strokeaudit.org/SupportFiles/Documents/Guidelines/2016-National-Clinical-Guideline-for-Stroke-5t-(1).aspx

8. Meeting the Future Consultant Workforce Challenges 2019-22. https://www.biasp.org/wp-content/uploads/2022/03/BASP-Stroke-Medicine-Workforce-Requirements-Report-FINAL.pdf

9. National Institute for Health and Care Excellence, 2019. *Clinical Guideline 128: Stroke and transient ischaemic attack in over 16s: diagnosis and initial management* https://www.nice.org.uk/guidance/ng128

10. National Institute for Health and Care Excellence, 2012. *Clinical Guideline 138: Patient experience in adult NHS services: improving the experience of care for people using adult NHS services* https://www.nice.org.uk/guidance/cg138

11. National Institute for Health and Care Excellence, 2016. *Quality Standard QS2: Stroke in adults* https://www.nice.org.uk/guidance/QS2

12. National Institute for Health and Care Excellence, 2019. *Quality Standard QS15: Patient experience in adult NHS services* https://www.nice.org.uk/guidance/QS15

13. NHS England, 2021. *National Stroke Service Model – Integrated Stroke Delivery Networks*. https://www.england.nhs.uk/wp-content/uploads/2021/05/national-stroke-service-model-integrated-stroke-delivery-networks-may-2021.pdf

14. NHS Providers. The Foundations of Good Governance. London: NHS Providers, 2015. https://nhsproviders.org/media/1738/foundations-of-good-governance-web-file.pdf

15. Paley L, Williamson E, Bray BD, Hoffman A, et al, 2018. Associations Between 30-Day Mortality, Specialist Nursing, and Daily Physician Ward Rounds in a National Stroke Registry. *Stroke.* 2018, 49, 2155-2162. https://www.ahajournals.org/doi/pdf/10.1161/STROKEAHA.118.021518

16. The Healthy NHS Board. A review of guidance and research evidence. London: The Healthy NHS Board, 2010. https://www.leadershipacademy.nhs.uk/wp-content/uploads/2013/06/NHSLeadership-HealthyNHSBoard-2010-LiteratureReview.pdf

## Acknowledgements

King's College London and the Intercollegiate Stroke Working Party (Appendix 4) 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 2021 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.

Thanks to Professor Gillian Mead FRCP (Ed), President of The British and Irish Association of Stroke Physicians, for her insightful Foreword.

The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies.
https://www.hqip.org.uk/national-programmes/

Published by SSNAP [June, 2022].