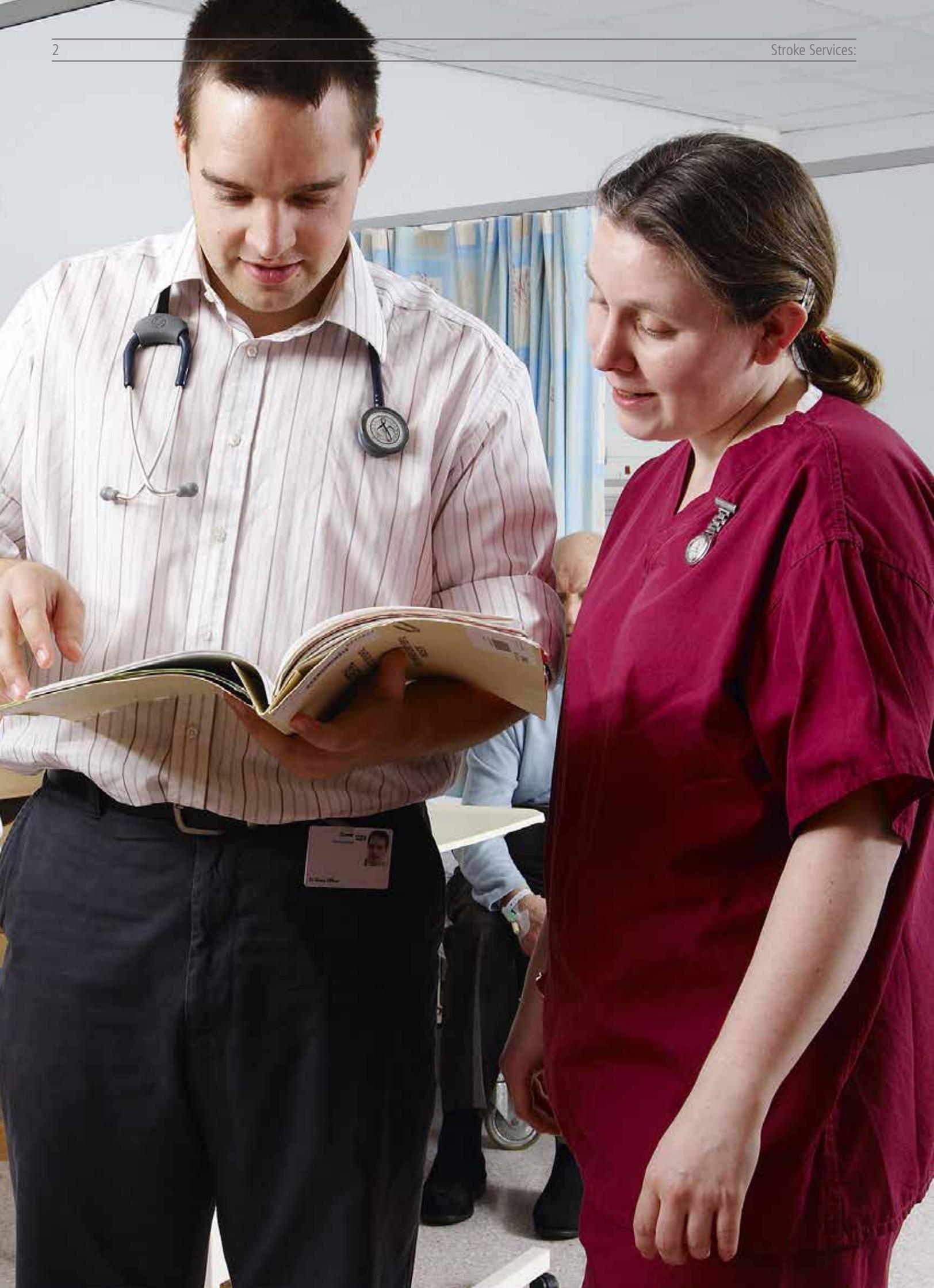


# Stroke Services:

Configuration Decision Support Guide



# Foreword

The way that stroke services are organised will have a major impact on outcomes after stroke. We have robust evidence that management on a stroke unit saves lives and reduces disability. We know that the most important interventions are maintaining homeostasis and preventing stroke-associated complications. We know that thrombolysis delivered quickly will reduce the chances of surviving with disability. Effective prevention strategies after stroke and transient ischaemic attack (TIA) will reduce the risk of recurrence, and specialist rehabilitation both in hospital and in the community also has a strong evidence base. Data from the Sentinel Stroke National Audit Programme (SSNAP) has shown that larger stroke services operate more efficiently than smaller services and they are more likely to be financially viable as well. It has been shown that levels of nurse staffing also have a direct impact on the chance of patients surviving.

To deliver the best outcomes, it is therefore vital that patients are managed in a well-organised service that can deliver the best quality of care. The SSNAP data clearly shows that there are still unacceptable variations in the quality of care across England. Given the major shortages in medical workforce that are going to become even worse in the coming years, the most rational solution, particularly in parts of the country with high population density, will be for providers and commissioners to work together to centralise inpatient care in a smaller number of stroke centres, as suggested in the NHS Five Year Forward View published in 2014. Where this is not possible, for whatever reason, then telemedicine will provide at least partial solutions to existing variations in the care that a patient might expect to receive.

This document contains much of the information necessary to undertake a review and to develop plans to rationalise stroke care. It is largely based upon work that has been done over the last few years in London, Birmingham, Solihull and the Black Country, and more widely in the East of England and Midlands. Nighat Hussain, who has been the stroke programme lead in Birmingham and the Black Country, has done much of the work putting this guide together and I am very grateful to her for the enormous amount of work she has put into it. It is a document that will need to be adapted to local circumstances. It is not a protocol, rather a set of guidelines that will have greater or lesser relevance depending on what your local health economy is attempting to achieve.



## **Professor Tony Rudd CBE**

Professor of stroke medicine, King's College London  
National clinical director for stroke, NHS England  
Consultant stroke physician, Guy's and St Thomas' NHS Foundation Trust  
London stroke clinical director

The Stroke Decision Support Guide sets out the programme framework used for the Birmingham, Solihull and Black Country (BSBC) stroke reconfiguration programme. We have used evidence from previous stroke reconfigurations and service changes and have built on this to develop this document.

As the Chair of Birmingham, Solihull and Black Country Stroke Programme Board I commend the work on this guide, which reflects the recommendation of our national, regional and local clinical leaders. The programme has had strong clinical leadership embedded in its governance framework and we have captured this within the guide to share our learning.

Our local strategic plans support stroke as a high priority area and our local health needs assessment highlights the need for both acute specialist, high quality centres and access to comprehensive longer term care pathways. Providing access to high quality care both in hospital and in the community is critical in delivering improved outcomes for our patients by further driving down mortality and improving morbidity so that outpatients can live longer and more independently. We have shared our approach to building our strategy and hope that you will benefit from the literature review, frameworks and recommendations from the national and local reviews.

We carried out comprehensive travel, workforce and clinical review analyses and developed a robust framework to enable us to reach a decision which benefits all our patients. We spent many months listening and talking to people in every locality. Our clinicians and other stakeholders have developed comprehensive cases for change, stated a vision for the quality and safety standards that stroke services should provide, and proposals for how we can achieve it against measurable quality and safety standards. We have captured this within the guide. I strongly believe that by adopting the principles outlined in this document that clinical outcomes will improve, patient and staff experiences will improve, and services will become more financially sustainable, making the NHS and social care services fit to serve stroke patients for many years to come. As Professor Tony Rudd has already emphasised, this is a document that will need to be adapted to local circumstances.

I do want to take the opportunity to thank the large number of clinicians who have played a key role in developing our local work including GP leads from the clinical commissioning groups (CCGs), stroke physicians, nurses, therapy and stroke co-ordinator leads from the BSBC area, as well as the national and regional leads who have provided invaluable input. I would particularly like to thank Professor Tony Rudd for his support with the local programme, especially for helping to recruit the Independent Panel and chairing the Independent Clinical Panel. We have also benefited from the members of the public, patients, carers, clinical colleagues and other organisations who have taken part in the discussions and allowed us to improve the programme and support the development of guidelines to make them more robust.



**Prof. Nick Harding OBE**

Chair of NHS Sandwell and West Birmingham CCG  
Chair of the Birmingham, Solihull and Black Country Stroke Programme Board  
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# 1. Purpose of the guide

This document has been produced by Sandwell and West Birmingham CCG and commissioned by NHS England. The intention is to provide an overview of the support and guidance available to clinical commissioning groups (CCGs) and their healthcare partners as they seek to consider, assess and potentially progress service change for stroke services.

The aim is to provide CCGs and their partners with a suite of guidance documents, templates and analytical models based upon work undertaken in areas of England where stroke reconfiguration has already progressed.

This guide is not a 'one size fits all' approach and is designed to be a framework, ensuring a consistent application of principles across England for stroke services, while allowing flexibility in how they are applied to suit local circumstances.

The document will outline the objectives for providing improved stroke care and what the expected improved outcomes will be for any patient presenting with stroke symptoms. This will include general expected outcomes, the best use of resources and specific performance standards.

This document is not intended to be prescriptive; instead, it is presented as a guide on good practice for commissioners that highlights key issues to consider and summarises supporting resources. It sets out the policy context in which stroke services operate and the case for improving or making service changes. It provides guidance on how to compile information and conduct analysis and what elements need to be considered for making changes to, or reconfiguring, stroke services. The document contains links to relevant literature, as well as appendices that provide examples of how analysis was done and guidance templates to help in the decision-making process. It includes a tool to model the financial impact of different configurations.

## 2. Policy context

The National Stroke Strategy published by the Department of Health in 2007 provided a national quality framework to secure improvements across the stroke pathway over a period of 10 years. This document's main recommendations were to provide hyperacute stroke units (HASUs) for rapid patient access and then transfer to dedicated stroke units for rehabilitation once patients are stabilised<sup>1</sup>. This model has already been adopted in some parts of the country and has been shown to be both clinically and cost effective.

Since this publication, further key national documents have been developed around stroke care. These include:

- Implementing the National Stroke Strategy – An imaging guide (DH, 2008)<sup>2</sup>
- NICE guideline – diagnosis and initial management of acute stroke and transient ischaemic attack (2008) and the NICE stroke quality standard (2010)<sup>3</sup>
- National clinical guideline for stroke fourth edition (Royal College of Physicians, 2012)<sup>4</sup>
- Stroke Service Standards (British Association of Stroke Physicians, 2010)<sup>5</sup>
- Supporting life after stroke (Care Quality Commission, 2011)<sup>6</sup>
- NICE guideline 162, Stroke rehabilitation: Long-term rehabilitation after stroke (2013)<sup>7</sup>
- Cardiovascular Disease Outcomes Strategy – Improving outcomes for people with or at

risk of cardiovascular disease (Department of Health, 2013)<sup>8</sup>

Stroke care and improvements for people who have experienced a stroke are also incorporated in key national level plans and frameworks:

- The NHS Outcomes Framework 2014/15 (Department of Health, 2013)<sup>9</sup>
- The Public Health Outcomes Framework for England, 2013-2016 (Department of Health, 2012)<sup>10</sup>
- The Adult Social Care Outcomes Framework 2014/15 (Department of Health, 2013)<sup>11</sup>
- Everyone Counts: Planning for Patients 2014/15-2018/19 (NHS England, 2013)<sup>12</sup>
- Putting Patients First: Business plan 2014/15 to 2016/17 (NHS England, 2014)<sup>13</sup>
- Five Year Forward View (NHS England, October 2014)<sup>14</sup>

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1. [http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/documents/digitalasset/dh\\_081059.pdf](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_081059.pdf)

2. [http://www.csnlc.nhs.uk/uploads/files/stroke/documents/national\\_documents/dh\\_085145.pdf](http://www.csnlc.nhs.uk/uploads/files/stroke/documents/national_documents/dh_085145.pdf)

3. <https://www.nice.org.uk/guidance/cg68> and <https://www.nice.org.uk/guidance/qs2>

4. <https://www.rcplondon.ac.uk/sites/default/files/national-clinical-guidelines-for-stroke-fourth-edition.pdf>

5. <http://www.basp.ac.uk/Portals/2/2010%20BASP%20Stroke%20Service%20Standards.pdf>

6. [http://www.cqc.org.uk/sites/default/files/documents/supporting\\_life\\_after\\_stroke\\_national\\_report.pdf](http://www.cqc.org.uk/sites/default/files/documents/supporting_life_after_stroke_national_report.pdf)

7. <https://www.nice.org.uk/guidance/cg162>

8. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/217118/9387-2900853-CVD-Outcomes\\_web1.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/217118/9387-2900853-CVD-Outcomes_web1.pdf)

9. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/256456/NHS\\_outcomes.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/256456/NHS_outcomes.pdf)

10. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/216159/dh\\_132362.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/216159/dh_132362.pdf) [http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/documents/digitalasset/dh\\_081059.pdf](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_081059.pdf) [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/263783/adult\\_social\\_care\\_framework.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/263783/adult_social_care_framework.pdf)

11. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/263783/adult\\_social\\_care\\_framework.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/263783/adult_social_care_framework.pdf)

## Five Year Forward View

The NHS Five Year Forward View was published in October 2014 by NHS England. This document sets out a positive view for the future, based around new models of care. Stroke services were recognised as falling under the new care model of specialised care. Within this new model there is the recognition that for some services, such as stroke, there is a compelling case for greater concentration of care. More specifically it highlights the strong relationship between the number of patients and the quality of care, derived from the greater experience these more practised clinicians have, access to costly specialised facilities and equipment, and the greater standardisation of care that tends to occur. The document specifically highlights the London service change of consolidating 32 stroke units into eight hyperacute units and a further 24 units providing care after the first 72 hours, and highlights that this has achieved a 17% reduction in 30-day mortality and a 7% reduction in patient length of stay.

Data from the Sentinel Stroke National Audit Programme has indicated that there are still considerable variations in the quality of stroke care across England. This evidence demonstrates a clear need to look at the opportunities to improve the quality of stroke services and therefore doing nothing should no longer be an option. This guide will help stakeholders focus on replicating, and even improving, successful stroke service reconfigurations as appropriate.

## NHS Outcomes Framework

The first NHS Outcomes Framework was published more than five years ago, for the 2011-12 financial year. What has followed is an annual refresh, which is a variation to the theme rather than a drastic change of content.

The NHS Outcomes Framework followed the proposals for reform across the NHS, public health and adult social care in 2010, designed to enable services to deliver those improved outcomes<sup>15</sup>.

The NHS Outcomes Framework, alongside the adult social care and public health outcomes frameworks, sits at the heart of the health and care system. The NHS Outcomes Framework<sup>16</sup>:

- provides a national overview of how well the NHS is performing
- is the primary accountability mechanism, in conjunction with the NHS Mandate<sup>17</sup>, between the Secretary of State for Health and NHS England to drive up quality throughout the NHS by encouraging a change in culture and behaviour focused on health outcomes not process.

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12. <http://www.england.nhs.uk/wp-content/uploads/2013/12/5yr-strat-plann-guid-wa.pdf>

13. <http://www.england.nhs.uk/wp-content/uploads/2014/04/ppf-1415-1617-wa.pdf>

14. <http://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf>

15. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/256456/NHS\\_outcomes.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/256456/NHS_outcomes.pdf)

16. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/256456/NHS\\_outcomes.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/256456/NHS_outcomes.pdf)

17. <https://www.gov.uk/government/publications/nhs-mandate-2014-to-2015>

In the list of key indicators included in the NHS Outcomes Framework, there are some relevant to stroke: Public Health Outcomes Framework 2013-2016

### Domain 1 – Preventing people dying prematurely

Reducing premature mortality from the major causes of death:

1.1 Under-75 mortality rate from cardiovascular disease

### Domain 2 – Enhancing quality of life for people with long-term conditions

Ensuring people feel supported to manage their condition:

2.1 Proportion of people supported to manage their conditions

### Domain 3 – Helping people to recover from episodes of ill health following injury

Improving recovery from stroke:

3.4 Proportion of stroke patients reporting an improvement in activity/lifestyle on the modified Rankin Scale at six months

The Public Health Outcomes Framework<sup>18</sup> details the broad range of opportunities to improve and protect health across the life course and to reduce inequalities in health that still persist. The framework is focused on two high-level outcomes to be achieved across the public health system and beyond. These are:

- increased healthy life expectancy
- reduced differences in life expectancy and healthy life expectancy between communities.

The indicator most relevant to stroke is:

- mortality from all cardiovascular diseases (including heart disease and stroke).

18. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/216159/dh\\_132362.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/216159/dh_132362.pdf)

# 3. Key elements of a high quality stroke service

## 3.1 What is a stroke and its impact

A stroke is the brain equivalent of a heart attack. The blood supply to part of the brain is interrupted by either a blood clot or a bleed, and surrounding brain tissue is damaged or dies. There are two main types of stroke: ischaemic and haemorrhagic.

Ischaemic strokes are the most common form of stroke, caused by a clot blocking or narrowing an artery carrying blood to the brain. The likelihood of suffering an ischaemic stroke increases with age. A transient ischaemic attack, or minor stroke, is a temporary stroke that occurs when the blood supply to part of the brain is cut off for a short time only. The symptoms are very similar to an ischaemic stroke but are temporary, lasting a few minutes or hours and normally disappearing completely within 24 hours. However, a TIA is a sign that the individual may be at risk of a more serious stroke in the future.

Haemorrhagic stroke is a less common form of stroke, caused when a blood vessel supplying the brain bursts and causes brain damage. It accounts for around 15% of all strokes but the mortality risk is greater than for ischaemic strokes.

Stroke is the third biggest killer in England and the main cause of adult disability. One in four people who experience a stroke are under 65; one in 10 are under 55. Historically, the outlook for patients was bleak; now, new medical treatments

offer real hope for stroke and specialised intensive rehabilitation can limit disability.

Each year in England, approximately 110,000 people (Scarborough et al, 2009<sup>19</sup>) have a first or recurrent stroke. Africans, African Caribbeans and South Asians (Indians, Pakistanis and Bangladeshis) have a higher risk of stroke than the rest of the population.

Stroke mortality rates in the UK have been falling steadily since the late 1960s. The development of stroke units, following the publication of the Stroke Unit Trialists' Collaboration meta-analysis of stroke unit care<sup>20</sup>, and the further reorganisation of services following the advent of thrombolysis, has resulted in further significant improvements in mortality and morbidity from stroke (as documented in the National Sentinel Stroke Clinical Audit, 2011<sup>21</sup>). However, the burden of stroke may increase in the future as a consequence of the ageing population.

19. Scarborough P, Peto V, Bhatnagar P, Kaur A, Leal J, Luengo-Fernandez R et al. Stroke Statistics. UK. British Heart Foundation & The Stroke Association, 2009

20. Stroke Unit Trialists' Collaboration. Organised inpatient (stroke unit) care for stroke. *Cochrane Database Syst Rev.* 2007; CD000197

21. National Sentinel Stroke Clinical Audit, 2011 <http://www.hqip.org.uk/national-sentinel-stroke-audit-2011>

Stroke is the third biggest killer in England and the main cause of adult disability; stroke killed more than 40,000 people in England in 2009. Around two thirds of people will survive their stroke, but half of stroke survivors are left with long-term disability and dependent on others for everyday activities.

Stroke care costs the NHS and the economy more than £8 billion a year – about £3 billion in direct costs to the NHS<sup>22</sup>, £2.4 billion in informal care costs (costs of nursing home care and care borne by the patients' families) and £1.8 billion in income lost to mortality and morbidity and benefit payments.

## 3.2 Stroke care

**The most important care for people with any form of stroke is prompt admission to a specialist stroke unit. This applies to those with either an ischaemic or haemorrhagic stroke of any severity and for people of any age. That is why the Department of Health developed the Act F.A.S.T. campaign to highlight the symptoms of stroke and the importance of emergency treatment.**

The Stroke Strategy for England (2007) specifies that stroke is a medical emergency: local networks need to plan to ensure that everyone who could benefit from urgent care is transferred to an acute stroke unit (ASU) that provides 24-hour access to scans and specialist stroke care, including thrombolysis. Also, the quality of the stroke unit is the single biggest factor that can improve a person's outcomes following a stroke. Successful stroke units are built around a stroke-skilled multi-disciplinary team that is able to meet the needs of individuals.

Hyperacute stroke services enable patients to have rapid access to the right skills and equipment and be treated 24/7 on a dedicated stroke unit, staffed by specialist teams. Following a stroke, a patient is taken directly to a hyperacute stroke unit where they will receive expert care, including immediate assessment, access to a CT scan and clot-busting drugs (if appropriate) within 30 minutes of arrival at the hospital.

Patients who have suffered a suspected TIA can use an outpatient assessment service within 24 hours for those deemed to be at high risk of further TIA or strokes and within seven days for patients at lower risk.

Many strokes are preventable and the impact of stroke can be minimised if specialist treatment and care are reached quickly. There is considerable scope to improve patient outcomes through integrated commissioning for stroke. An early priority is to treat stroke and TIA as medical emergencies, comparable to heart attack. People who experience a TIA are even more likely to go on to have a full stroke in the first 24 hours than those with chest pain are to go on to have a heart attack. Enabling people to reach specialist care quickly allows them to benefit from the newest treatments becoming available and to have every chance of making a good recovery. This approach can also mean a more effective use of resources across the whole health and social care system, through strokes avoided, shorter length hospital stays and reduced disability costs.

22. *Progress in improving stroke care* (National Audit Office, 2010) <http://www.nao.org.uk/wp-content/uploads/2010/02/0910291.pdf>

### 3.3 Elements of good practice within high quality stroke care

High performing stroke services are well integrated across primary, emergency, acute and social care, delivered by stroke-skilled and specialist staff, and treat stroke as a medical emergency. Specifically they are likely to provide the following:

#### Prevention

- maximise opportunities for preventing stroke through effectively targeted access to highest quality advice or prevention in primary and secondary care risk management.

#### Acute care

- treat transient ischaemic attack as a warning sign comparable to chest pain, which needs to be acted on as quickly as possible if strokes are to be avoided – and treated as a stroke while symptoms persist
- people seen by ambulance staff outside hospital should be screened using a validated tool to diagnose stroke or TIA, and, if clinically required, transferred to a specialist acute stroke unit within one hour
- patients with acute stroke who meet any of the indications for urgent brain imaging should receive this within a maximum of one hour
- patients with suspected stroke should be admitted directly to a specialist stroke unit and receive thrombolysis if clinically indicated
- provide for rapid and accurate diagnosis for direct admission to a specialist stroke unit following an urgent access to imaging and good interpretation, with thrombolysis offered to appropriate patients (usually about 20% of stroke admissions)
- provide early and intensive physiological and neurological monitoring, with immediate recognition of treatment of abnormalities being guided by an evidence-based treatment protocol - for example, thrombolysis complications such as bleeding, anaphylaxis, infection, venous thromboembolism (VTE), malignant middle cerebral artery (MCA) syndrome

- patients with acute stroke should have their swallowing screened within four hours of admission by a specially trained professional before being given oral food, fluid or medication, and have a plan for the provision of adequate nutrition
- patients with acute stroke should be assessed and managed by stroke nursing staff and at least one member of the specialist rehabilitation team within 24 hours of admission, and by all relevant members of the team within 72 hours. Documented multidisciplinary goals should be agreed within five days - for example, nutrition and hydration.

#### Rehabilitation

- patients who need ongoing inpatient rehabilitation should be treated in a specialist stroke rehabilitation unit
- patients should be offered a minimum of 45 minutes of each active therapy that is required, for a minimum of five days a week
- patients who have continued loss of bladder control after two weeks should be reassessed to identify the cause and have a treatment plan involving both patients and carers
- all patients should be screened within six weeks, using a validated tool, to identify mood disturbance and cognitive impairment
- provide early rehabilitation and mobilisation, supported by transfer of care to home as soon as possible with no gap in the provision of care and rehabilitation, and early supported discharge where appropriate
- patients discharged from hospital with residual stroke-related problems should be followed up within 72 hours by specialist stroke rehabilitation services

- provide access to rehabilitation for as long as the patient is benefiting from it.

### Long-term care

- carers should be provided with a named point of contact for stroke information, written information about the patient's diagnosis and management plan, and practical training to enable them to provide care
- ensure people using services and their families are informed and empowered to take control of their care
- provide psychological and emotional support for patients and carers.

### Research and innovation

- units should provide the opportunity to participate in research trials with their patients.



## 3.4 Stroke pathway and service delivery framework

This section sets out the criteria different parts of the stroke pathway need to meet to deliver high quality care to patients and achieve the step change improvement. These are the expected standards commissioners should adopt when commissioning stroke care services. In this section we also introduce a high-level care pathway of an effective stroke service and associated evidence.

The *National Stroke Strategy* (2007) provides the foundation for defining stroke services and outlines what is needed to create the most effective stroke services in England. The strategy identifies major stages in the stroke patient's pathway and stresses a need to reorganise the way in which stroke services are delivered, from prevention through to support for those who have experienced a stroke.

A whole pathway approach to the provision of stroke services is crucial to maximising the clinical outcomes for patients, the resultant quality of life and their experience of stroke services. The first 72 hours of care are vital to ensure the optimum clinical outcome for stroke survivors. This needs to be underpinned by an effective whole system pathway for assessment, discharge and repatriation to local stroke services, subsequent rehabilitation and longer-term support.

### Background to the development of the pathway and associated service specification

This pathway and associated service specification in **Appendix 1** has been developed by NHS Midlands and East stroke review and External Expert Advisory Group (EEAG) in consultation with stakeholders, including stroke networks, clinical staff working in stroke and other associated services, commissioners, and patients and carers who have experienced NHS services. The document aims to build on clinical best practice and provide clarity on the system requirements for stroke services without prescribing the service model to be adopted locally. The service specification has since been reviewed by the Birmingham, Solihull and Black Country Local Clinical Advisory Group, and amendments have been endorsed by Professor Tony Rudd, national stroke clinical lead.

This pathway is based upon a comprehensive and current evidence base and agreed best practice.

It is recognised that guidelines can never provide the answer for every situation and do not replace sound clinical judgement and good common sense. Clinical guidelines are only likely to be applicable to 80% of clinical situations, 80% of the time. This pathway does, however, provide a framework for care and is intended to be practical and relevant for stroke specialists and non-specialists alike.

The pathway contains specific recommendations covering almost every aspect of stroke management. No one can expect to know them all, and no single person or organisation will need to use them all.

Everyone, however, should be aware of the most important recommendations. The pathway is based on the Royal College of Physicians National Clinical Guidelines for Stroke (fourth edition, 2012).

**Appendix 1** sets out the principles of the best practice service specification and builds on the work carried out in the London stroke reconfiguration, NHS Midlands and East Stroke Review and the Birmingham, Solihull and Black Country Stroke Review.

### Objectives of a comprehensive stroke pathway and service delivery framework:

- provide a fully integrated, end-to-end stroke service
- implement the recommendations of the *National Stroke Strategy*
- meet the service standards and specifications set by the Royal College of Physicians and National Institute for Health and Care Excellence (NICE) guidelines

- ensure that stroke services deliver:
  - improved clinical outcomes - for example, reduced mortality
  - improved quality of life outcomes - for example, reduced level of disability following a stroke
  - an excellent patient and carer experience such as experience across the whole pathway and including improved access
- ensure equity of service provision, outcomes and experience across the region.

In meeting the above objectives, the expected outcomes will be that any patient presenting with acute stroke symptoms will receive the most appropriate care for their condition. Placing patients on the correct pathway (TIA, hyperacute or acute) will maximise the likelihood of best possible outcomes and allow NHS Midlands and East to use resources effectively within the local area. The specific performance standards are listed in each section, but the general expected outcomes are:

- improved outcomes for stroke patients, by reducing the levels of death and disability following a stroke
- reduced length of stay for stroke patients in bed-based services
- improved patient experience and enhanced recovery following a stroke through long-term support and follow-up
- a service that is sustainable and provides good value for money through effective use of resources
- access to the services and the quality of care provided is equitable across the region
- provision of high quality specialist stroke professional development.

This stroke pathway should be structured according to the stroke pathway phases below. In addition, expectations that apply across the whole pathway are described at the outset.

- **Primary prevention**
- **Pre-hospital**
- **Acute phase**
  - Hyperacute stroke care
  - Acute stroke care (including in-hospital rehabilitation services)
  - Transient ischaemic attack services
  - Tertiary care services (e.g. neuro and vascular surgery referrals)
- **Community rehabilitation**
  - Early supported discharge (ESD)
  - Stroke specialist community rehabilitation
- **Long-term care and support**
- **Secondary prevention**
- **End of life**

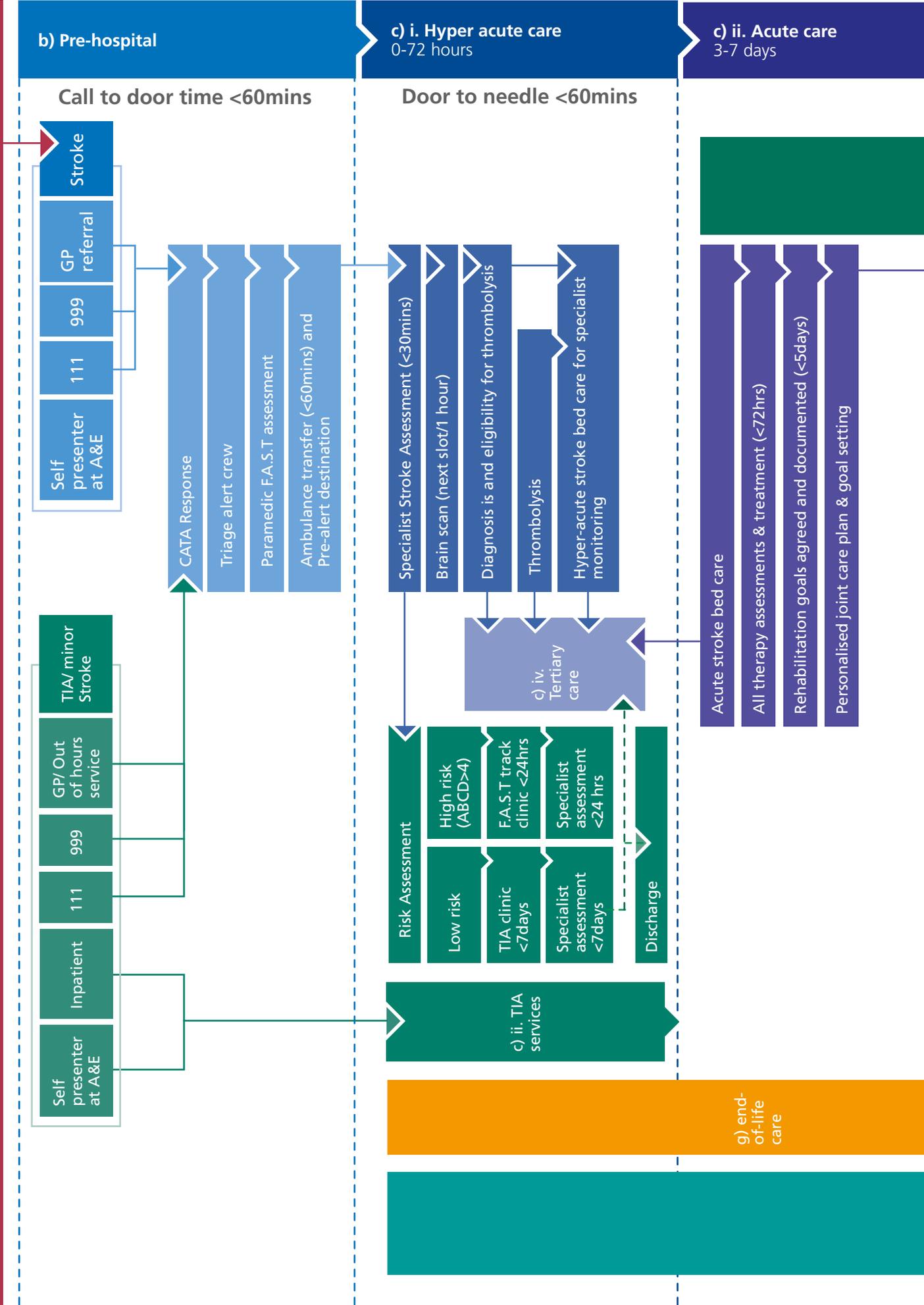
The following diagram identifies core pathway features of an effective stroke service:

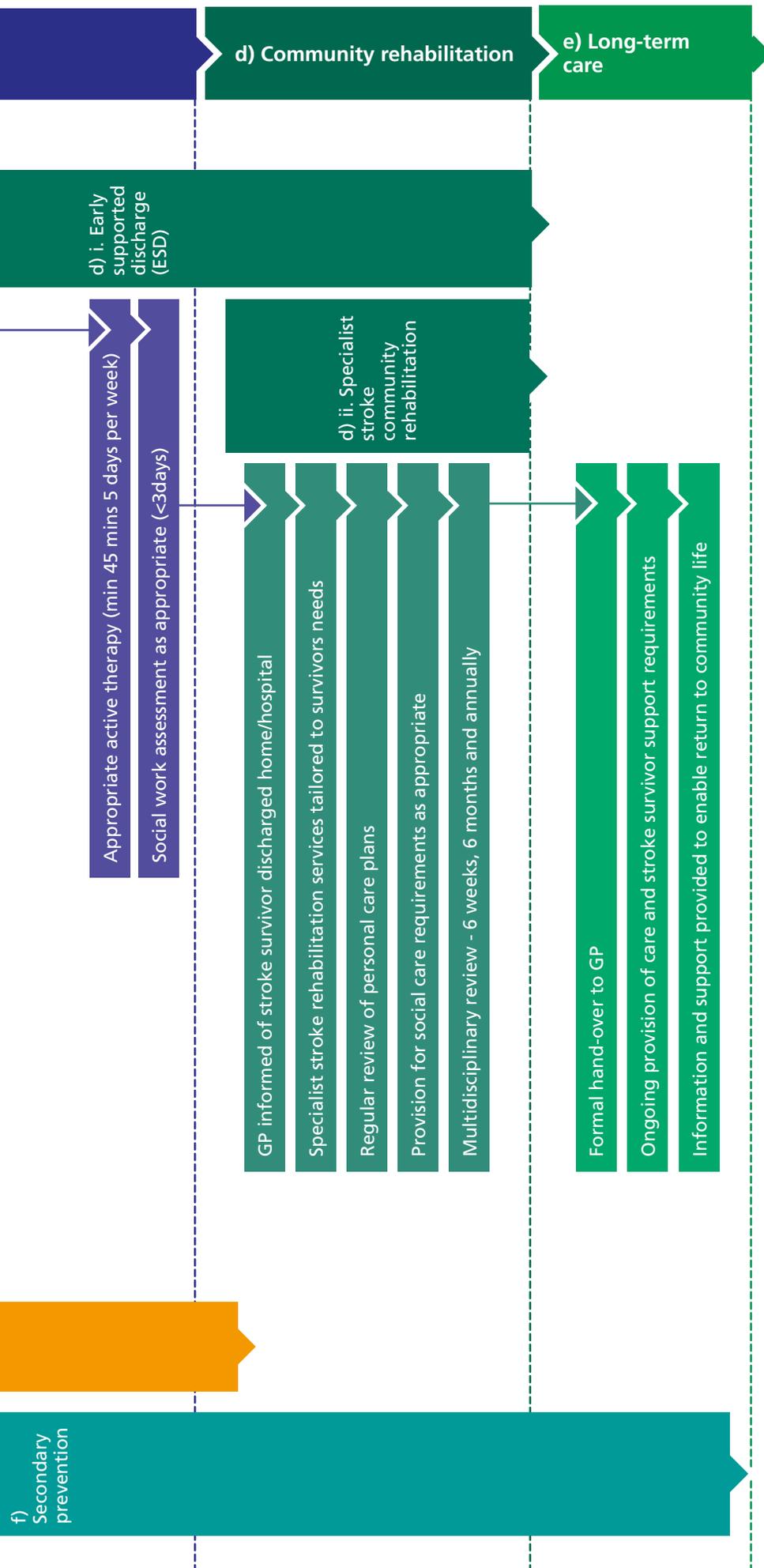


Please refer to Appendices

a) Primary prevention

Suspected Stroke/TIA event





The diagram summarises the pathway according to the patient movement across the phases since they are not necessarily linear and not all phases or services are applicable to all patients.

*Note: No scale - shape sizes not indicative of time*

The following appendices include service specification developed and approved within the BSBC conurbation to support the commissioning of long term care services

**Appendix 2** – inpatient bed based rehabilitations service specification

**Appendix 3** – early supported discharge service specification

**Appendix 4** – community stroke rehabilitation service specification

**Appendix 5** – long term care support and review service specification

## 3.5 Expectations across the whole pathway

Across the entire pathway, stroke care must be underpinned by several universally applicable components – to improve the quality of care (for example, communications), to improve patient experience of stroke services and to ensure the step change improvement being sought in stroke care can be achieved (for example, data collection). These elements that apply across the whole pathway are described in this section.

### Patient experience

- patients and their carers are informed on a regular and timely basis throughout the care pathway of:
  - their prognosis and situation
  - what is likely to happen to them next - for example, how soon they will be seen, frequency of contact, contact information for the new team, how goals will be carried over
  - who is taking care of them and who is responsible for their care
  - what they need to be doing to facilitate their care and recovery - for example, advice and information about exercises or other activities that they can practise independently
- patients and carers are able to access information provided to them, such as in an appropriate format/medium, and in relevant languages, and that information is specific to the phase of recovery they are in and their needs at that time
- patients and carers receive instruction and guidance regarding any prescriptions – verbally and supported by written information
- families and carers are actively involved in day-to-day care, rehabilitation and decisions about the planning and delivery of their care
- patients/carers are directed to relevant voluntary service organisations
- the service has a process in place for incorporating patient/carer feedback into quality improvement service developments.

### Engagement and communications

- awareness-raising activities are proactive and ongoing - for example, Act F.A.S.T.
- awareness across primary care, care homes and providers and the general public
- providers of stroke services are actively engaged with their local stroke networks - for example, to ensure that each stroke unit is linked to a regional neurosciences centre for emergency review of local brain imaging
- clinical teams proactively communicate between themselves and with anyone who takes over responsibility for a patient's care, while the processes used to manage care involve all relevant people and support seamless transitions between services along the pathway
- clinical team members communicate regularly with patients and carers in appropriate ways for their condition and needs
- formal links exist with patient and carer organisations - for example, local users' forum, Stroke Association group, community stroke clubs.

### Data transfer and information sharing

- accurate and explicit records of patients are recorded and shared, using agreed protocols between all hospital, community and social care practitioners and individuals in a timely way.

## Data collection and monitoring

- all clinical services take responsibility for all aspects of data collection, keeping stroke registers, and participating in the Sentinel Stroke National Audit Programme, either directly or via upload of equivalent local data that enables comparison with regional and national peers
- a sustainable system of coding for stroke patients should be in place
- local guidance should be in place to support the collection of data between communities and across service providers
- all organisations will need to develop a robust system for the collection and validation of reliable and accurate stroke data with a lead individual responsible for approving and signing off the data. This may involve investment in data systems and personnel to avoid the burden of data collection falling on clinical staff

- an assessment of patient and carer experience across the stroke pathway is required at regular intervals. This information should be used to inform the improvement of local services and the results submitted to inform commissioners of the progress in improving patient experience.

## Innovation and research and development

- be part of a research network, have a dedicated stroke research lead and actively participate in research - for example, on the role of interventional radiology in the treatment of acute ischaemic stroke or whether the increased intensity of therapy results in improved outcomes
- work with research networks
- be open to performing and participating in national and international trials.



## 3.6 Sentinel Stroke National Audit Programme

The Sentinel Stroke National Audit Programme aims to improve the quality of stroke care by auditing stroke services against evidence-based standards and national and local benchmarks. Building on 15 years of experience delivering the National Sentinel Stroke Audit (NSSA) and the Stroke Improvement National Audit Programme (SINAP), SSNAP is pioneering a new model of healthcare quality improvement through near real-time data collection, analysis and reporting on the quality and outcomes of stroke care.

This audit is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP), and run by the Clinical Effectiveness and Evaluation Unit (CEEU) of the Royal College of Physicians (RCP). Data is collected at team level within trusts (or health boards in Wales) using a standardised method. Clinical involvement and supervision at team level is provided by a lead clinical contact in each hospital who has overall responsibility for data quality. The audit is guided by a multidisciplinary steering group responsible for the RCP Stroke Programme – the Intercollegiate Stroke Working Party (ICSWP).

SSNAP results are made public on a quarterly basis by a named team. This model provides clinicians, commissioners, patients and carers, and the general public, with up-to-date information on the processes of stroke care across the entire pathway and is in line with the Department of Health data transparency policy.

SSNAP is the single source of stroke data and has 100% participation of acute hospitals in England, ascertaining 95% from cases. SSNAP collects process and outcome data for every stroke patient admitted to hospital, up to and including six-month follow-up.

Please note that extremely high standards have been set with the aim of stimulating hospitals to identify where improvements are needed and drive change. Nowhere else in the world has set such stringent standards, and the results should be read in this context.

Commissioners and providers should ensure that data collection systems are in place and are robust. Achievement of performance metrics should become a key discussion item in local stroke meeting forums and contract discussions to support trajectories for improvement.

### Key features of SSNAP

- the single source of stroke data for the NHS
- cutting edge data visualisation
- sophisticated interactive maps
- 'easy access' versions of reports for stroke survivors, carers and the general public
- regional reports with national and local benchmarking.

### SSNAP key indicators, domains and scoring

The SSNAP clinical audit collects a minimum dataset for every stroke patient, including acute care, rehabilitation, six-month follow-up and outcome measures, in England, Wales and Northern Ireland.

The Intercollegiate Stroke Working Party (ICSWP) has chosen 44 key indicators as representative of high quality stroke care. These include data items included in the CCG Outcomes Indicator Set and NICE Quality Standards (covering England only). The key indicators are grouped into 10 domains covering key aspects of the process of stroke care. Both patient-centred (PC) domain scores (scores attributed to every team that treated the patient at any point in their care) and team-centred (TC) domain scores (scores attributed to the team, considered to be most appropriate to assign the responsibility for the measure to) are calculated.

Each domain is given a performance level A to E, and a total key indicator score is calculated based on the average of the 10 domain levels for both patient-centred and team-centred domains. A combined total key indicator score is calculated by averaging the patient-centred and team-centred total key indicator scores. This combined total key indicator score is adjusted for case ascertainment and audit compliance to result in an overall SSNAP level.

Presenting results in this way gives patients, clinicians, commissioners and the public a simple way of understanding complex data and draws conclusions on the level of service provision at national and provider level. The themes covered by the SSNAP domains are:

<b>Domain 1:</b> Scanning	<b>Domain 2:</b> Stroke unit
<b>Domain 3:</b> Thrombolysis domain	<b>Domain 4:</b> Specialist assessments
<b>Domain 5:</b> Occupational therapy	<b>Domain 6:</b> Physiotherapy
<b>Domain 7:</b> Speech and language therapy	<b>Domain 8:</b> Multidisciplinary team working
<b>Domain 9:</b> Standards by discharge	<b>Domain 10:</b> Discharge processes

To be included in the SSNAP scoring, teams have to achieve a minimum case ascertainment requirement. Teams that do not meet this requirement (those with insufficient records to be included in the named team results) are shown by an X. Some teams do not receive results due to them treating a small number of patients during the time period. These teams are shown by TFP (too few patients to report on).

Colour	Level
	A
	B
	C
	D
	E
	X (Too few patients to report on)

Upward pointing arrows indicate that the team has achieved a higher level this quarter than in the previous quarter; downward pointing arrows mean that the team has achieved a lower level this quarter than previously. The number of arrows represents the extent of the change. For example, an increase of two levels from D to B would be shown by the symbol:

**B↑↑**

## Interpreting the results

The colour-coded tables are structured as follows:

- patient-centred results
  - routinely admitting teams
- geographical region
- hospital (ordered alphabetically)
  - non-routinely admitting teams (as above)
  - non-acute teams (as above)
- team-centred results
  - same structure as above.

Further information on the detail regarding both the SSNAP key performance indicators and domains can be found on the SSNAP website at: <https://www.rcplondon.ac.uk/projects/sentinel-stroke-national-audit-programme>

To contact the SSNAP team email [ssnap@rcplondon.ac.uk](mailto:ssnap@rcplondon.ac.uk) or call **0203 075 1318**.

## 3.7 Recommended hyperacute, acute stroke unit and TIA contract performance standards

We have set out a framework commissioners can use to support their commissioning intentions to deliver on a number of key objectives for the stroke pathway:

- raise the quality and safety of stroke patient services
- improve patients' experience of accessing services by providing seamless care irrespective of where the patient receives hyperacute specialist stroke care
- promote more integrated service delivery models in partnership with acute, community and voluntary sectors, where clinically appropriate and of proven value for money
- promote adherence to the best practice service specification where clinically appropriate
- improve value for money in services commissioned to support the delivery of high quality stroke care.

These standards, as per appendices, have been selected from the national SSNAP database to minimise any duplication of data. It is advised that CCGs and providers work jointly to review the performance result tables on a quarterly basis.

The standards should be added to the acute information schedules and reviewed on a quarterly basis. It is recommended that these standards are reviewed as part of the overall review of the 44 key performance indicators (KPIs) across the 10 domains. The standards should therefore be met before stroke care is delivered.

The London stroke service reconfiguration is an example of how standards could be developed and applied in a graduated way, with A being standards that must be met before starting to deliver care, and B,C, D being ones that would need to be implemented over a predefined time.

**Appendices 6-8** provide more detailed designation criteria for providing hyperacute, acute stroke unit and TIA services.

## 3.8 Protocol for the management of possible stroke patients presenting to health services

Reconfiguration of stroke services may lead to some trusts providing hyperacute stroke units (HASUs) and co-located acute stroke units (ASUs) and some providing post-HASU acute care and/or rehabilitation stroke units in addition to community rehabilitation teams for post-discharge care.

As a result of these changes generally, all acute stroke patients should start their care in a HASU before moving onwards, as needed, to ASUs and inpatient (bed-based) and community rehabilitation care.

There will be three main reasons for patients to need to move hospitals, with varying degrees of urgency:

### 1. Patients with an acute stroke in a non-HASU hospital

Patients who present at a hospital without a hyperacute stroke unit (HASU), either as self-presenters, current inpatients with other conditions who then suffer a stroke in a non-HASU hospital, or patients who are taken there by ambulance and subsequently have a stroke diagnosed.

### 2. Patients requiring neurosurgery in a hospital without these services on site

Patients who require neurosurgical intervention who present to any hospital, including those with a HASU, which is not able to offer neurosurgical interventions on site, such as decompressive craniectomy and haematoma evacuation.

### 3. Patients requiring mechanical thrombectomy in a hospital without these services on site

Patients who require an intervention that can only be delivered at a HASU with a co-located interventional neuroradiology department.

The first reason would need to be in place following a reconfiguration. The second and third reasons exist already in most healthcare systems, and this guide is intended to clarify the pathway in those scenarios.

This document is intended to show how to transfer a patient, and with what urgency, following the reconfiguration of stroke services. It is not intended as a clinical guideline as the indications for various interventions change with time. All decisions regarding transfer should be decided by physicians with expertise in stroke medicine in conjunction with the receiving centre's stroke physicians or neurosurgeons.

This guide is for the use of adult stroke patients (>16 years of age). **Appendix 9** and **Appendix 10** provide further detail of the access pathways for both London and the Birmingham, Solihull and Black Country area.

## 3.9 Stroke telemedicine guidelines

Telemedicine is a real-time audio-visual conferencing system that allows specialists in stroke care to remotely assess patients and to view their brain imaging. This enables the remote stroke clinician to advise the local team on the patient's suitability for thrombolysis and other management.

Direct delivery of acute stroke care by specialists cannot always be achieved in every hospital because of geographical issues or staffing shortages. Telemedicine, allowing a stroke physician to talk to the patient and/or carer, watch a clinical examination and view the imaging, can be used safely for evaluation of the appropriateness of thrombolysis and other acute treatments, as an alternative to face-to-face evaluation in a specialist stroke centre.

Various forms of telemedicine (for example, using telephone consultation and video camera linkage with or without remote access to radiology) have therefore been tested in a number of settings over recent years. From the evidence available it is not yet possible to firmly conclude that any form of telemedicine for acute decision-making is as good as a standard bedside assessment or whether telephone consultation is better or worse than video link telemedicine services. However, the consensus of the Intercollegiate Stroke Working Party developing the fourth edition of the Royal College of Physicians National clinical guidelines for stroke was that video-linked telemedicine is preferable to telephone-only consultations. All telemedicine services should have immediate access to information technology (IT) support to ensure that the service is available whenever needed.

Although telemedicine can be used to assess acute stroke patients it must be recognised that there are compromises that have to be made. It is unlikely that the quality of the assessment will be as good, in all cases, as a service where the equivalent level of clinical expertise is at the patient's bedside. Nevertheless, it offers the possibility of providing expert stroke opinions to services that do not have sufficient local expertise to provide a seven-day, 24-hour service, or in remote areas where it is not feasible to transport a patient to a comprehensive stroke centre.

It is essential that acute stroke services are not two-tier. Patients being considered for thrombolysis and patients unsuitable for thrombolysis should receive the same level of attention and care, and therefore if patients are being managed through a 'remote' consultant this needs to be performed for all patients and not just those that are deemed potentially suitable for thrombolysis.

Telemedicine is only able to replace the expert opinion on diagnosis and immediate management. It cannot replace the need for high quality stroke unit facilities, well-trained stroke nurses on site and access to ongoing specialist medical opinion that will be needed repeatedly during the course of an average stroke admission. All the standards defined in the National clinical guidelines for stroke (fourth edition, 2012<sup>23</sup>) need to be met regardless of the way that the hyperacute assessment is made.

A telemedicine consultation does not remove the need to provide specialist bedside assessment of the patient on a daily basis. It is unacceptable to provide an acute assessment using telemedicine on a Friday evening and then not provide a specialist bedside opinion until the Monday. There have been no studies evaluating the effectiveness or feasibility of conducting telemedicine ward rounds. There must always be the option of a bedside assessment of a patient where telemedicine is insufficient to address the patient's needs. Please refer to **Appendix 11** for the full guidelines.

23. <https://www.rcplondon.ac.uk/sites/default/files/national-clinical-guidelines-for-stroke-fourth-edition.pdf>

# 4. Workforce

## 4.1 Stroke workforce guidelines

The National Clinical Guidelines for Stroke (2012) highlight the importance of ensuring stroke services not only have appropriate organisational structures, but also that physical structures and resources, such as staff, buildings, technological support and so on, are in place to support effective service delivery<sup>24</sup>. Evidence on the appropriate number of the different resources is limited; nonetheless, it does highlight that service providers want guidance. The guideline references an example of staffing levels on stroke units from London, where a major reorganisation of care has taken place with predefined standards. The first 72 hours for a stroke patient are spent on a hyperacute stroke unit, with subsequent inpatient care on a stroke unit, once stabilised.

## 4.2 Nursing and therapy workforce

The staffing levels are expressed as whole-time equivalents (WTE) in the table

	Physiotherapist (WTE per 5 beds)	Occupational therapist (WTE per 5 beds)	Speech and language therapist (WTE per 10 beds)	Nurses (WTE per bed)
Hyperacute stroke unit	0.73	0.68	0.68	2.9 (80:20 trained: untrained skill mix)
Stroke unit	0.84	0.81	0.81	1.35 (65:35 trained: untrained skill mix)

It is important to note that these figures are given as an example, but the London model has been shown to improve outcomes, which may result from the higher staffing levels provided in the London stroke units. Additionally, a paper based on data from the national stroke audit<sup>25</sup> has shown a strong correlation between higher nursing levels and lower mortality. Therapy ratios are provided on the assumption of normal working hours. Nursing cover on wards should be provided 24 hours a day, seven days a week.

The Midlands and East specification (**Appendix 1**) enhances these guidelines by also recommending that access is available to a range of additional professionals including those in:

- clinical psychology
- oral health
- orthoptics
- orthotics
- pharmacy.

Where combined stroke units are used, it is expected that beds are designated as hyperacute and acute, then staffed according to the hyperacute service and acute service standards outlined.

24. <https://www.rcplondon.ac.uk/sites/default/files/national-clinical-guidelines-for-stroke-fourth-edition.pdf>

25. Bray BD, Ayis S, Campbell J, Cloud GC, James M, Hoffman A, Tyrrell PJ, Wolfe CD, Rudd AG. Associations between stroke mortality and weekend working by stroke specialist physicians and registered nurses: prospective multicentre cohort study. *PLoS Med* 2014;11 pp.e1001705

## 4.3 Consultant workforce

Progress in the management of stroke over the last 10-15 years has increased demand for the provision of consultant-based specialist services for people with stroke.

Service provision is divided into three key areas: acute care, rehabilitation and outpatient work. These are described as key components of the job plan for trained stroke specialists in order to match the British Association of Stroke Physicians' stroke specification 2005<sup>26</sup>. These components are described as a sliding scale of provision according to the size of the population.

The stroke specification analysis carried out by the British Association of Stroke Physicians (BASP) identifies the need for an increase of 63% on currently available stroke physician 'programmed activities' (PAs) in England, Wales and Northern Ireland; for Scotland this equates to 23%.

BASP guidelines highlight that estimating the workforce requirements of the future is a notoriously inexact science, especially as there may be further developments in the management of stroke patients<sup>27</sup>. BASP has taken the approach of 'normalising' data to a theoretical hospital serving an average population of 350,000 that will admit approximately 600 acute stroke patients per annum. Hospitals and consultant colleagues can adjust the number of PAs needed pro rata to provide a specialist service based on the number of stroke patients per year admitted to their hospital (see table below).

No. of acute stroke admissions per year	Approx. population served ('000)	Acute	Rehab	Outpatients	Total
300	180	8	2	6	16
400	240	9	2.5	6.5	18
500	300	10	2.5	6.5	20
600	350	10.5	3	8.5	22
700	400	11	3.5	8.5	23
800	475	11	4	9	24
900	530	12	4	9	26
1000	600	13	5	10	28

26. [http://www.wales.nhs.uk/documents/BASP\\_2005\\_Stroke\\_Services\\_Specifica-tion.doc](http://www.wales.nhs.uk/documents/BASP_2005_Stroke_Services_Specifica-tion.doc)

27. British Association of Stroke Physicians Specialist Stroke Services: Consultant Workforce Requirements

## 4.4 Stroke-specific workforce competency framework

The following section describes a co-ordinated strategic approach to workforce development through education and training that will enable all those who have had a stroke to receive optimum care from a trained workforce. This competency framework is about working in partnership with individuals following a stroke and/or TIA to implement interventions in the context of their individualised management plans. It covers confirming the nature, purpose and goals of the interventions, implementing the interventions and monitoring the outcomes. This competency framework covers the whole stroke pathway from prevention through to end-of-life and long-term care.

This framework is relevant to practitioners who are stroke specialists working in a variety of settings and also non-qualified staff working within stroke.

Users of this competency framework will need to ensure that practice reflects up-to-date information and policies. It is for people or groups who provide stroke-specific training and those working in health, social, voluntary and educational services who are, or who are likely to be, in contact with people who have had a stroke or a TIA, including:

- stroke-specific and stroke-relevant professional bodies
- course designers
- commissioners of services for those affected by stroke
- health, social, voluntary and independent sector organisations
- people who are likely to be looking for a suitable course or training in stroke
- independent providers of enhanced services.

This guide has been designed for people to have easy access to information around each of the elements of care in the stroke pathway. As such, it is envisaged that whoever uses this framework will dip into the sections relevant to them. This framework has not been designed to be read like a book from cover to cover. The guide

includes access to stroke-specific knowledge and understanding that someone working in stroke should possess. The level of understanding or knowledge will be dependent on the group that is being targeted; this includes non-clinical staff, nurses, therapists and GPs.

It is the remit of the manager to decide which level is appropriate for each individual member of staff, but at each level, the staff member should understand why they are doing what they are doing.

The competency and training frameworks are to be used by both the manager and staff member during supervision and personal development/appraisal sessions. The staff member should refer to the competency framework and the learning resources during protected learning times.

Please refer to the NHS Midlands and East stroke-specific workforce competency framework in **Appendix 12** for further information.

## 4.5 Guide for education and training

In order to achieve good standards of care, a robust programme of education and training is required to develop a stroke specialist workforce that is equipped to deliver consistent, optimum care.

The guide outlines a four-stage commissioning cycle that will help ensure an effective and integrated education programme, together with some tools and sources of support for commissioners and providers.



The cycle outlined is based on the 2011 Royal College of GPs Guidance for commissioning integrated urgent and emergency care: A 'whole system' approach<sup>28</sup>. A similar approach is also used in the patient and public engagement cycle published by InHealth Associates and the Department of Health<sup>29</sup>.

This cycle has a framework for commissioning and implementing education initiatives for the stroke workforce, interpreting the four stages from an educational rather than a commissioning perspective.

This guide aims to help commissioners and providers develop a workforce that is fit to deliver the stroke pathway as outlined in the Midlands and East stroke service specification. It provides a framework for identifying the skills required and signposts to resources available to support the development of those skills. The commissioning portfolio for stroke needs to encompass the whole pathway, from prevention through to end-of-life care, and the guide reflects this by highlighting resources that will support staff through every stage of the pathway. Please refer to **Appendix 13**, NHS Midlands and East guide for education and training, for further information.

28. [http://www.rcgp.org.uk/policy/~media/Files/CIRC/Audit/Urgent\\_emergency\\_care\\_whole\\_system\\_approach.ashx](http://www.rcgp.org.uk/policy/~media/Files/CIRC/Audit/Urgent_emergency_care_whole_system_approach.ashx)

29. <http://engagementcycle.org/>

# 5. Assurance framework

## 5.1 Introduction to the commissioning assurance framework

This guide promotes the benefits of taking an integrated approach across the whole stroke patient journey to ensure the opportunities for improving care and making more efficient use of resources are realised. This chapter of the guide outlines a good practice framework to use when developing plans for major service change to improve the quality and sustainability of services for patients. The principles of the approach have been taken from the following two documents produced by NHS England:

- Planning and delivering service changes for patients: A good practice guide for commissioners on the development of proposals for major service changes and reconfigurations (NHS England, 2015)<sup>30</sup>
- Effective Service Change: A support and guidance guide (NHS England, 2014)<sup>31</sup>.

Commissioners are recommended to read these guidelines and any updates in full at the start of any major service change process, to use these to help develop local plans and keep as a reference resource. While there are a number of legislative requirements relating to reconfiguration explained in this guidance, and it is essential plans can demonstrate evidence against the Government's 'four tests' and that commissioners are aware of any material legal risks and how they are to be mitigated, the reconfiguration process should not solely be reduced to satisfying checklists.

## 5.2 The four tests for service change

NHS England will expect all service change proposals to comply with the Department of Health's four tests for service change (referenced in the NHS Mandate Paragraph 3.4<sup>32</sup> and Putting Patients First<sup>33</sup>) throughout the pre-consultation, consultation and post-consultation phases of a service change programme. The four tests are:

- strong public and patient engagement
- consistency with current and prospective need for patient choice
- a clear clinical evidence base
- support for proposals from clinical commissioners.

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30. <https://www.england.nhs.uk/wp-content/uploads/2015/10/plan-ass-deliv-serv-chge.pdf>

31. [http://www.eoesenate.nhs.uk/files/9314/0862/2233/Effective\\_service\\_change\\_toolkit\\_FINAL.pdf](http://www.eoesenate.nhs.uk/files/9314/0862/2233/Effective_service_change_toolkit_FINAL.pdf)

32. <https://www.gov.uk/government/publications/nhs-mandate-2014-to-2015>

33. <http://www.england.nhs.uk/wp-content/uploads/2013/04/ppf-1314-1516.pdf>

As a proposal is developed and refined, commissioners should ensure it undergoes a rigorous self-assessment against the four tests.

## Six characteristics of quality and sustainability

Everyone Counts: Planning for patients 2014/15 to 2018/19<sup>34</sup> describes six characteristics of a high quality and sustainable system. Service change proposals should contribute to the creation of a system that has the following characteristics:

1. ensuring that citizens will be fully included in all aspects of service design and change, and that patients will be fully empowered in their own care
2. wider primary care, provided at scale
3. a modern model of integrated care
4. access to the highest quality urgent and emergency care
5. a step change in the productivity of elective care
6. specialised services concentrated in centres of excellence (as relevant to the locality).

Evidence of alignment with these characteristics will be sought when assuring service change proposals.

## Timetable

A number of early discussions can help shape the planning of service change proposals. These might include:

- early discussion between commissioners and partner organisations (including area teams) to flag intentions and discuss potential options and approaches (in advance of the formal assurance process)
- discussion with NHS England's area and regional teams and the national support centre strategic finance team regarding support and assurance (again, pre-formal assurance)

- organisations agreeing roles and responsibilities that will then be reflected in programme plan timelines
- undertaking a full stakeholder mapping exercise. This might include: public, patients, overview and scrutiny committee (OSC), neighbouring CCGs, providers, health and wellbeing board, Care Quality Commission (CQC), Monitor, NHS Trust Development Authority (TDA), media and MPs
- considering the alignment of service change assurance with procurement and capital approval processes.

The process set out in the following pages should be seen as best practice that aims to help and guide organisations to take forward complex programmes of service change, to deliver significant and lasting improvements for the benefit of patients. The process outlined in the following pages is therefore intended to be adapted to meet local circumstances, rather than to be followed rigidly.

Developing, explaining and implementing proposals takes time, collective effort and energy. It is not something that single organisations can, or should, do in isolation. The strongest proposals are those developed collaboratively by commissioners, providers, local authorities, patients and the public. This will ensure that proposals are sound and evidence-based, in the best interest of patients, will improve the quality and sustainability of care, and that people affected will be involved and their feedback will be listened to, and acted upon.

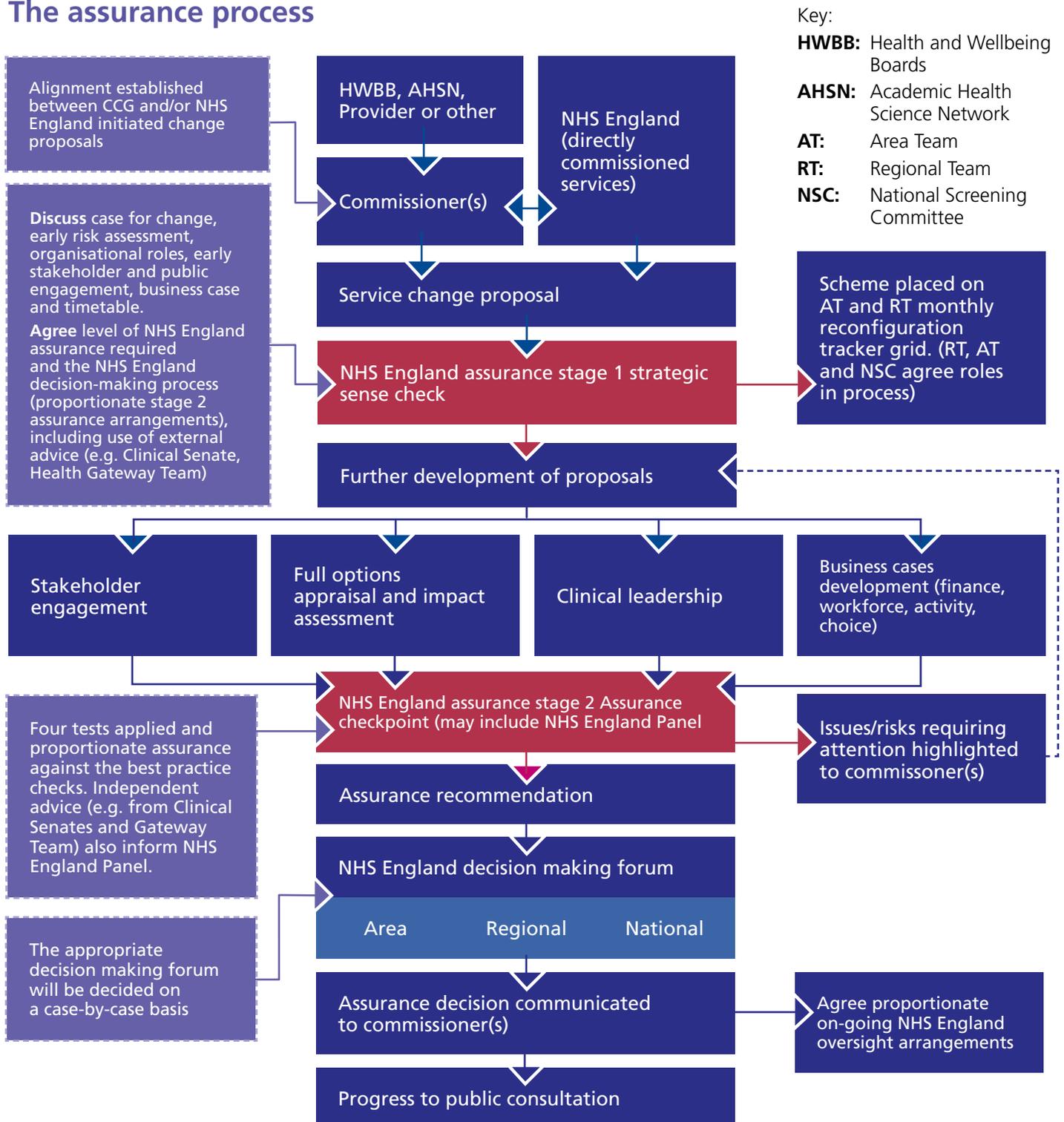
34. Page 10, *Everyone Counts: Planning for Patients 2014/15-2018/19* <http://www.england.nhs.uk/wp-content/uploads/2013/12/5yr-strat-plann-guid-wa.pdf>

## 5.3 Stages and key requirements of the effective service change: a support and guidance guide

This section focuses on preparation to support the assurance framework to meet stage 1 and stage 2 of the NHS England assurance process described in Effective Service Change: A Support and Guidance Guide.

The following diagram describes the assurance process and key steps to meet both stage 1 and 2:

### The assurance process



## Stage 1: Strategic sense check

This is a formal discussion between commissioners leading the change and NHS England at the most appropriate level (usually the area team). NHS England will want to explore the case for change and the level of consensus for change and ensure that a full range of options are being considered. The strategic intent of NHS England, other key partners and neighbouring organisations will also need to be discussed. Commissioners will need to demonstrate proposals align with their statutory functions.

The strategic sense check will agree NHS England's expectations in terms of assurance and the use of a best practice approach. The use of external independent advice should be discussed and agreed at this stage. Any particular issues to be included in the terms of reference for these reviews should be specified.

The following areas will be explored to ensure commissioners can demonstrate a clear case for change and support from key stakeholders to take this forward:

- case for change
- level of consensus
- full range of options being considered
- potential risks identified and mitigated
- alignment between proposed change and strategic intent of:
  - NHS England
  - other key partners
  - neighbouring organisations
  - commissioners' statutory functions.

### Areas of focus

- organisational roles
- level of stakeholder involvement and sign-up
- likely resource requirements, including support
- interrelationship or overlap with CCG and NHS England initiated change proposals
- establish lead commissioner for assurance
- role of networks and clinical senate in providing advice for development of proposals
- choice and competition implications

- capital and estates implications
- parameters for defining and appraising options
- use of clinical senate and/or external independent advice.

### Strategic sense check – outputs

There are a number of key decisions to be made at the strategic sense check. These will be communicated to the lead commissioner and include:

- the expectation that NHS England assurance will be undertaken and advice will be received before any proposal progresses to public consultation
- the judgement made against the main factors used to influence the appropriate level of assurance
- the range and depth of assurance required by NHS England; as a minimum this will be against the four tests for service change, which should be stated.

The assurance process, including specifying use of any independent external advice (for example, Clinical Senate) should be defined. Any requirements to be included in the terms of reference for either a Clinical Senate Review or external independent advice review should be specified and recorded formally. The area team will at this stage specify if they anticipate a single stage process where the scale of the proposals doesn't require a second stage of assurance. For complex schemes, clarity on the role of the lead commissioner leading the service change and the NHS England team leading on assurance should be sought.

## Stage 2: NHS England checkpoint

This stage seeks formal assurance of the proposals, undertaken by NHS England, the scope of which will reflect the agreements made at the strategic sense check. The area team or regional team may decide to establish an assurance panel to discharge its responsibilities in terms of assurance against the tests and best practice checks.

The panel would be formed by a range of NHS England staff suitably qualified to consider evidence submitted against the four key tests and to advise on additional checks. The NHS

England panel might also consider reports or findings received from external or independent advisory bodies. Typically these would have examined either the clinical case for change and clinical model, or the programme management arrangements, with advice sought from the Clinical Senate and/or other external independent sources respectively. Other organisations, for example, Local Education and Training Board (LETB), NHS Trust Development Authority, Monitor, Healthwatch and the Care Quality Commission, might also be invited to share their views of the proposals to help inform the NHS England panel.

Key requirements to support this stage are:

- formal assurance of proposals
- possible review by a regional/area team panel
- review against four service change tests and best practice checks
- can consider reports giving external independent advice - particularly on clinical case for change and clinical model (Clinical Senate) or programme management arrangements
- may invite other organisations to share views on proposals (for example, Healthwatch, TDA, Monitor, LETB, CQC)
- four key tests are mandatory
- support from GP commissioners
- arrangements for public and patient consultation, including local authorities
- clarity on clinical evidence base
- need to develop and support patient choice
- check alignment against NHS England's six characteristics of a high quality sustainable system<sup>35</sup>
- robust economic and financial evidence
- conclusion is assured, partially assured or not assured, with comments against four tests, best practice checks and six characteristics.

### NHS England checkpoint – outputs

The NHS England panel will consider whether it was assured, partially assured or not assured against each of the key tests and provide comment against the appropriate best practice checks and the six characteristics of a high quality and sustainable system. This would then form the basis of the panel's report, along with any risks, issues or other recommendations it identified.

The panel's report should conclude with a recommendation to NHS England on the next steps. This could be in one of three categories:

- assurance received and recommended to proceed
- partial assurance received and advised to proceed alongside further work to be undertaken (probably before public consultation)
- not assured and advised against proceeding at this point, with discussions between NHS England and commissioners on next steps, if any.

Each recommendation will be made to the appropriate forum within NHS England. This might be a decision made at area team director, regional team director or national board level on behalf of NHS England. The appropriate decision-making forum will be decided by NHS England on a case-by-case basis.

35. Page 10, *Everyone Counts: Planning for Patients 2014/15-2018/19* "<http://www.england.nhs.uk/wp-content/uploads/2013/12/5yr-strat-plann-guid-wa.pdf>"

# 6. Developing the case for change

A compelling case for change is critical to gain buy-in from the public, clinicians and other stakeholders. The case for change must show a clear understanding of current stroke service provision and how the proposed changes will improve the quality of care. It is important to also consider the impact of the 'do nothing option'.

The objective in developing the proposal is to show how outcomes could be improved through service change and to determine the range of potential options that could meet population need within the available resources.

For many change proposals, a level of planning and analysis may already have taken place through the development of existing commissioning plans and joint strategic needs assessments (JSNAs).

However, it is likely that further work will be required to develop:

- a more detailed case for change and evidence base
- specific service configuration options
- the plan for engaging wider stakeholders, staff, patients and the public.

While the format of the proposal, and the process leading to its construction, is a matter for commissioners, it is good practice that each proposal incorporates:

- an analysis that considers the full range of potential service changes that could achieve the desired improvement in quality and

outcomes (this could include considering whether other providers can offer suitable alternatives in addition to those available from an incumbent provider)

- the development of a range of options based on the above analysis
- an assessment against legal duties and obligations, including the Public Sector Equality Duty (s.149 of the Equality Act 2010)<sup>36</sup> and the duty to have regard to the need to reduce inequalities under s.14T of the NHS Act 2006<sup>37</sup> (CCGs) and s.13T (NHS England) as amended by the Health and Social Care Act 2012<sup>38</sup>
- dialogue that seeks to align proposals with the plans and priorities of partners
- consideration of whether proposals represent a substantial service change, including discussion with the relevant local authority in its health scrutiny capacity
- assessment against the four tests.

The following sections describe a framework that can be used to support the development of the case for change.

36. <http://www.legislation.gov.uk/ukpga/2010/15/section/149>

37. <http://www.legislation.gov.uk/ukpga/2006/41/contents>

38. <http://www.legislation.gov.uk/ukpga/2012/7/schedule/4/enacted>

## 6.1 Evidence for stroke and TIA service redesign

A major challenge is how to make 24-hour specialised stroke care available to the whole population. Several models of service reconfiguration to improve access to thrombolysis have been suggested, including redirecting patients to comprehensive stroke centres and telemedicine-based systems (Rymer et al, 2013<sup>39</sup>; Audebert et al, 2006<sup>40</sup>). Redirecting patients to larger stroke centres improves thrombolysis rates (Price et al, 2009)<sup>41</sup>. High-volume centres have been associated with better adherence to guidelines (Svendsen et al, 2012)<sup>42</sup>, and this has been associated with both improved stroke outcomes (Abilleira et al, 2012)<sup>43</sup> and higher levels of patient satisfaction (Reker et al, 2002)<sup>44</sup>.

Centralising services might be associated with lower patient and carer satisfaction for a number of reasons. However, Moynihan et al, (2013)<sup>45</sup> investigated user experience and found that although anxiety exists with patients and carers, especially when repatriated to local units after a central stroke unit, overall satisfaction was good.

Organised stroke unit care improves outcomes for all patients with stroke, and results in a significantly shorter length of hospital stay for patients admitted to stroke units compared with alternative care (Stroke Unit Trialists' Collaboration, Cochrane Database, 2007)<sup>46</sup>.

Intravenous thrombolysis using alteplase improves outcomes in acute ischaemic stroke and is currently the only licensed acute treatment for ischaemic stroke (Lees et al, 2010)<sup>47</sup>. Alteplase is licensed for use within 4.5 hours of stroke onset, with rapidly decreasing efficacy even within 4.5 hours (Lees et al, 2010; Wardlaw et al, 2012)<sup>48</sup>, though efficacy to  $\leq 6$  hours has been suggested by the recent third International Stroke Trial (IST-3) (Sandercock et al, 2012)<sup>49</sup>.

Audits in many countries have shown that a minority of eligible patients receive tissue-type plasminogen activator (Nasr et al, 2013<sup>50</sup>; Stecksén et al, 2012<sup>51</sup>). For example, a national audit in England showed low thrombolysis rates with only 1.4% of patients receiving alteplase in 2008 (Rudd et al, 2011)<sup>52</sup>. Thrombolysis rates are increasing in some but not all countries (Nasr et al, 2013; Bray et al, 2013<sup>53</sup>).

The following priorities need to be considered:

- seven-day, 24-hour services
- access to the right people, at the right time, and the right equipment
- scans within four hours to give a better chance of rehabilitation
- quick ambulance response and quick entry into hospital
- access to the right services in the first 72 hours (Birmingham, Solihull and Black Country 2014 stroke review patient event).

Please see **Appendix 14** for an example of a literature review to gather evidence to support service change.

39. Rymer MM, Armstrong EP, Walker G, Pham S, Kruzikas D. Analysis of a coordinated stroke center and regional stroke network on access to acute therapy and clinical outcomes. *Stroke*. 2013; 44:132–137

40. Audebert HJ, Schenkel J, Heuschmann PU, Bogdahn U, Haberl RL; Telemedic Pilot Project for Integrative Stroke Care Group. Effects of the implementation of a telemedical stroke network: the Telemedic Pilot Project for Integrative Stroke Care (TEMPIS) in Bavaria, Germany. *Lancet Neurol*. 2006; 5:742–748

41. Price CI, Clement F, Gray J, Donaldson C, Ford GA. Systematic review of stroke thrombolysis service configuration. *Expert Rev Neurother*. 2009; 9:211–233

42. Svendsen ML, Ehlers LH, Ingeman A, Johnsen SP. Higher stroke unit volume associated with improved quality of early stroke care and reduced length of stay. *Stroke*. 2012; 43:3041–3045

43. Abilleira S, Ribera A, Permanyer-Miralda G, Tresserras R, Gallofré M. Noncompliance with certain quality indicators is associated with risk adjusted mortality after stroke. *Stroke*. 2012; 43:1094–1100

44. Reker DM, Duncan PW, Horner RD, Hoenig H, Samsa GP, Hamilton BB, et al. Postacute stroke guideline compliance is associated with greater patient satisfaction. *Arch Phys Med Rehabil*. 2002; 83:750–756

45. Moynihan B, Paul S and Markus H. User Experience of a Centralized Hyperacute Stroke Service - A Prospective Evaluation. *Advances in Stroke: Health Policy/Outcomes Research, 2013 Stroke*. 2014;45:2 361-362

46. Stroke Unit Trialists' Collaboration. Organised inpatient (stroke unit) care for stroke. *Cochrane Database Syst Rev*. 2007; CD000197

## 6.2 Assessing health need

This section covers how to gauge the likely level of need for stroke and TIA services in your population. It is important to note that changing patterns of service provision will impact on future need. Specifically, a more responsive service that treats stroke as a medical emergency, and reacts quickly to TIA in order to prevent stroke, may cause an increased need for carotid interventions. More responsive services should mean that fewer stroke survivors are left with serious disability, but those that are may choose to leave a hospital setting earlier and will need more intensive community-based rehabilitation services.

The following areas should be considered when you assess the local health needs of your population:

- **prevalence of stroke and transient ischaemic attack**  
The Quality and Outcomes Framework (QOF) for General Medical Services' contracts<sup>54</sup> includes the requirement for each GP practice to have a register of patients who have suffered a stroke or transient ischaemic attack. This is a valuable source of data to estimate prevalence
- **mortality and population**  
While stroke mortality is the third major cause of death in England and Wales, there has been a steady decline in the all-age stroke mortality rate both regionally and nationally between 2001 and 2012.
- **demographics: age, gender and ethnicity**
  - **age as a fixed risk factor**  
Stroke disproportionately affects the elderly population in incidence and mortality. This is mainly due to the cumulative effects of prolonged exposure to risk factors and cardiovascular system ageing (Goldstein et al, 2001<sup>55</sup>). As the rate of stroke increases with age, the younger population has a lower risk of stroke when compared to the higher age groups. However, it is important to remember that although the rate of stroke is low, there is often a higher health burden in the 25-44 year group (Goldstein et al, 2001). As the rate of stroke increases with age, it can be expected that more strokes are likely to occur in areas with greater numbers of elderly residents.

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47. Lees KR, Bluhmki E, von Kummer R, Brodt TG, Toni D, Grotta JC, et al; ECASS, ATLANTIS, NINDS and EPITHET rt-PA Study Group. Time to treatment with intravenous alteplase and outcome in stroke: an updated pooled analysis of ECASS, ATLANTIS, NINDS, and EPITHET trials. *Lancet*. 2010; 375:1695–1703
  48. Wardlaw JM, Murray V, Berge E, del Zoppo G, Sandercock P, Lindley RL, et al. Recombinant tissue plasminogen activator for acute ischaemic stroke: an updated systematic review and meta-analysis. *Lancet*. 2012; 379:2364–2372
  49. Sandercock P, Wardlaw JM, Lindley RL, Dennis M, Cohen G, Murray G et al. The benefits and harms of intravenous thrombolysis with recombinant tissue plasminogen activator within 6 h of acute ischaemic stroke (the third international stroke trial [IST-3]): a randomised controlled trial. *Lancet*. 2012; 379:2352–2363
  50. Nasr DM, Brinjikji W, Cloft HJ, Rabinstein AA. Utilization of intravenous thrombolysis is increasing in the United States. *Int J Stroke*. August 9, 2012. doi:10.1111/j.1747-4949.2012.00844.x. <http://onlinelibrary.wiley.com>. Accessed January 13th 2014
  51. Steckslen A, Asplund K, Appelros P, Glader EL, Norrving B, Eriksson M. Thrombolytic therapy rates and stroke severity: an analysis of data from the Swedish stroke register (Riks-Stroke) 2007–2010. *Stroke*. 2012; 43:536–538
  52. Rudd AG, Hoffman A, Grant R, Campbell JT, Lowe D; Intercollegiate Working Party for Stroke. Stroke thrombolysis in England, Wales and Northern Ireland: how much do we do and how much do we need? *J Neurol Neurosurg Psychiatry*. 2011; 82:14–19
  53. Bray BD, Campbell J, Hoffman A, Tyrrell PJ, Wolfe CD, Rudd AG. Stroke thrombolysis in England: an age stratified analysis of practice and outcome. *Age Ageing*. 2013; 42:240–245
  54. <http://www.nhsemployers.org/your-workforce/primary-care-contacts/general-medical-services/quality-and-outcomes-framework>
  55. Goldstein L, Bushnell C et al. Guidelines for the Primary Prevention of Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. 2001

It is important to consider that any changes in acute stroke service delivery will have long-term implications. Consideration should also be given to how this picture will change over time, which will have implications for long-term planning, especially around rehabilitation care and follow-up.

– **gender as a fixed risk factor**

Stroke is more common in males than females (Goldstein, 2001). Furthermore, men also have higher age-specific stroke incidences than women, for both haemorrhagic and ischaemic stroke (Asplund, 2009<sup>56</sup>; Goldstein et al, 2001<sup>57</sup>; Manolio, 1996<sup>58</sup>). Although prevalence and incidence is more common in men, conversely a study of London PCTs found that stroke mortality was higher in women (Hayward, 2009<sup>59</sup>). It is difficult to consider the effects of gender without considering age, as gender profiles change by age group.

– **ethnicity as a fixed risk factor**

Not only is stroke more common in ethnic minorities, stroke mortality is higher in black people (Goldstein, 2001). The American Heart Association published age-adjusted stroke mortality rates from 2005, which showed black women had a mortality rate of 60.7 per 100,000 versus 44.0 per 100,000 for white women. Black men had an extra 25.8 deaths per 100,000 deaths than white men (Lloyd-Jones, 2009<sup>60</sup>).

Another point to consider when planning services is that within ethnic minority populations (especially in older generations) there will be variation in English language proficiency. Although using formal translation services is a gold standard, in reality family members will often act as informal translators. If specialist services are to be located in areas far from where patients and their relatives live, capacity will have to be built for using formal translation services.

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56. Asplund, K, Karvanen, J, Giampaoli S et al. *Relative Risks for Stroke by Age, Sex, and Population Based*. *Stroke* 2009; 40: 2319-2326
57. Goldstein, L, Bushnell, C et al. *Guidelines for the Primary Prevention of Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association*. 2001
58. Manolio TA, Kronmal RA, Burke GL, O'Leary DH, Price TR. *Short-term predictors of incident stroke in older adults: the Cardiovascular Health Study*. *Stroke*. 1996; 27:1479–1486
59. Hayward, JA., Martin, S., and Soljak, M. for Public Health Action Support Team (PHAST): ' *Health Needs Assessment: Stroke in South West and South East London*. 2009
60. Lloyd-Jones D, Adams R, Carnethon M, De Simone G, Ferguson TB, Flegal K, Ford E, Furie K, Go A, Greenlund K, Haase N, Hailpern S, Ho M, Howard V, Kissela B, Kittner S, Lackland D, Lisabeth L, Marelli A, McDermott M, Meigs J, Mozaffarian D, Nichol G, O'Donnell C, Roger V, Rosamond W, Sacco R, Sorlie P, Stafford R, Steinberger J, Thom T, Wasserthiel-Smoller S, Wong N, Wylie-Rosett J, Hong Y; American Heart Association Statistics Committee and Stroke Statistics Subcommittee. *Heart disease and stroke statistics—2009 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Circulation*. 2009; 119:480–486

## Example: Key findings from the Birmingham, Solihull and Black Country stroke health needs assessment

By mapping stroke mortality, deprivation and hospital locations, we observe that current hospital locations are in close proximity to areas of high deprivation and high stroke mortality rates. Further work is recommended to assess journey times to hospital against need, linking to the work of the Commissioning Support Unit and data modelling group.

It is likely that fewer units may increase journey times, resulting in a negative impact on inequalities. More promotion will need to be done with the population, to ensure an early call for help when symptoms arise.

The most important factors that can prevent stroke are effective management of hypertension, atrial fibrillation and quitting smoking.

The latest stroke audit for patients admitted/discharged between October and December 2014 showed only 38% of patients on admission with atrial fibrillation (AF) are taking anticoagulants (SSNAP, 2014). Variation in GP performance should be reported and addressed, as the impact of improving the lowest quartile performers towards the mean will prevent more strokes.

A key priority for NHS England and clinical commissioning groups is to increase the use of anticoagulation medication. Target groups include patients at high risk of stroke, those with a history of atrial fibrillation, and women. When the two highest age bands are taken together, local authority data shows that proportions of elderly residents in Dudley and Solihull are increasing, which will have implications for long-term planning, especially around rehabilitation care and follow-up.

Age and gender are fixed risk factors of stroke, with Birmingham, Solihull and Dudley identified as areas of high risk. Ethnicity is also a fixed risk factor for stroke, with Wolverhampton and Sandwell identified as high risk areas. Birmingham is a high risk area for both age, particularly on the periphery (especially north Birmingham), and ethnicity (in central Birmingham). As age-standardised stroke incidence and mortality are higher in ethnic minority populations, changes to stroke services in areas of high risk across age, gender and ethnicity will have to be considered.

Stroke patients who are admitted to 'organised stroke care' (usually a specialist stroke unit) are less likely to die and more likely to leave hospital independently than those who are cared for in general wards (usually medical and care of the elderly).

The current average time from onset of symptoms to arrival at the hospital is 147 minutes (SSNAP, 2013), highlighting the need for measures such as promoting the Act F.A.S.T. (Face, Arm, Speech, Time) campaign.

Increasing flu vaccination uptake, especially for people with other risk factors, is also a key factor in preventing strokes.

## 6.3 Health impact assessment (HIA)

Health impact assessment is a specific impact test within the mandatory impact assessment process. It is a means of developing better evidenced-based policy by careful consideration of the impact on the health of the population.

A good HIA will consider the positive and negative impact of the proposed service change on health. It will identify any unintended health consequences that may either lend support to the service change or suggest improvements to it. It will also contain a clear analysis of whether the health of the whole population or just certain sections within the population will be affected.

The aim of this section is to provide a guide to support a health impact assessment and consider the potential impacts that a change in hyperacute stroke care could have on health outcomes. Where possible, these impacts can be estimated in terms of number affected and magnitude of impact. The HIA should also make recommendations to increase any positive impacts and reduce any negative impacts.

**Example: Framework used to inform the HIA to support a decision on the number of hyperacute stroke units (as part of the Birmingham, Solihull and Black Country service change). The results of the discussion have not been captured as the service change is not complete.**

The HIA considered the following questions to assess the impact these configurations would have:

- which factors are associated with stroke mortality and stroke morbidity? This will help to identify if there are any modifiable factors that could be affected by any proposed changes
- how does time from onset of symptoms to treatment impact on stroke mortality and morbidity? This will help to identify the role of location of a HASU versus quality of service
- what is the patient and carer experience of using HASUs and of acute stroke care in general? This will help to identify if hyperacute care is an important determinant of patient experience of the stroke pathway overall, and to anticipate how proposed changes might impact on user and carer experience.

In order to answer the above questions, the following sources of information were considered:

- relevant literature

- data on time taken to receive treatment (including ambulance times), admissions and thrombolysis (by trust)
- patient and carer feedback from local and national events, as well as qualitative research published on Health Talk Online<sup>61</sup>.

### Recommendations of initial HIA to increase positive impacts and reduce negative impacts

Since there are, as yet, a number of potential configurations, these recommendations are generalised and would need to be modified to specific circumstances once a final proposal has been decided.

The key recommendations from this health impact assessment are:

- centralisation of hyperacute stroke care has the potential to improve health outcomes, including mortality, by increasing thrombolysis rates, and possibly through the concentration of expertise and treatment of higher volumes of patients. If resource and capacity considerations require this service to be provided on a smaller number of sites, it is likely that, for the majority, the

61. <http://www.healthtalk.org/>

benefits of improved process times within the unit would offset any increase in travel time by ambulance. This may not hold true if an existing, high performing unit(s) is (are) decommissioned

- any changes to stroke care must consider the ease of access that relatives/friends/carers have to stroke patients. We therefore recommend further consultation with patients and carers, once a smaller number of configurations have been decided, as to how to make visiting as easy as possible, for example, visiting hours, facilities, parking, information and so on. Potential negative effects may be mitigated through repatriation to a closer stroke unit after the hyperacute stage
- further work is needed to change the behaviour of patients (and their families/carers) in order to encourage them to contact the emergency services earlier
- further modelling would be required to estimate the impact of HASU location for those travelling by car/bus. For the 20% choosing not to travel by ambulance to a distant HASU, the benefits provided by a high quality HASU may not be enough to compensate for the increase in travel time
- work should be done to minimise delays for patients seeking help from general practice, a non-HASU A&E department, and those having a stroke as an inpatient at a non-HASU hospital
- patient-defined quality standards should also be considered in light of current feedback from patients and carers, and incorporated into new service specifications; these can be sought through further consultation.

## 6.4 Equality impact assessment (EQIA)

### Public sector equality duties

To ensure compliance with the Equality Act 2010, all strategies or policies, proposals for a new service or pathway, or changes to an existing service or pathway, should be assessed for their relevance to equality, diversity and inclusion for patients, the public and for staff. The general equality duty requires that when exercising its functions the NHS has due regard to the need to:

- eliminate unlawful discrimination, harassment, victimisation and any other conduct prohibited by the Act
- advance equality of opportunity between people who share a protected characteristic and those who do not
- foster good relations between people who share a protected characteristic and those who do not.

### Protected characteristics

There is a need to analyse the effect on equality for all protected characteristics, namely: age, disability, sex, race, gender reassignment, sexual orientation, religion and belief, pregnancy and maternity and marriage and civil partnership. It is important to also consider other groups who are currently outside the scope of the Equality Act, but who may have a significant relationship with NHS services (for example, carers, homeless people, travelling communities, sex workers and migrant groups).

### What does 'analyse the effect on equality' mean?

The aim of an equality analysis in this context is to ensure that, when looking at the stroke pathway for each protected characteristic group, there is a need to strive for equality of outcome and positive patient experience for all patients. To do this effectively, there is a need to understand the diversity of these groups.

Key questions will be:

- are there different risks for each particular group because of lifestyle, diet, genetic or other factors?
- are there barriers to access for physical, cultural or other reasons when looking at the entire story, from access to and effectiveness of, preventative messages through to aftercare?
- what might it feel like to experience the pathway right now for each group, and how will the proposals under consideration improve or mitigate this? This will test the robustness of the pathway. For example, how will a person with a significant learning disability experience the different parts of the pathway? are there processes in place to respond effectively at each stage? Are they sensitive to the particular needs that a person with a learning disability may have? If not what can be done to rectify this?
- have staff received mandatory training on equality and diversity so that the warmth and professionalism they offer, for example, to a transgender person is indistinguishable from that offered to others?

Equality analysis is not a simple desktop exercise to be done by one person as a quick and simple adjunct to the 'main business' of redesigning the pathway. There is a need to allocate adequate time to do it that allows for research and consultation. Ideally, enlist the support of a multidisciplinary team, and involve patient representatives and/or advocates from local voluntary support organisations. It is important to identify locally who can help nourish the understanding.

This need not be too onerous; there is a lot of learning, advice and expertise out there that people are happy to share. This discussion is one small example of this. Importantly, the process of equality analysis will help to ensure that the proposals or designs being progressed are more robust and are less likely to be found wanting once implemented – deficiencies that otherwise could cost you greater effort and money to put right and which might compromise patient care and patient safety in the meantime.

Even at the end of the process of equality analysis, on the rare occasion it may be felt that nothing new has been learned, the process of reflection and self-scrutiny on these matters gives greater legitimacy to decisions and conclusions, and allows the programme to feel more confident that it will then stand up to political and public scrutiny.

Please see **Appendix 16** for an outline template to support a comprehensive EQIA. **Appendix 17** contains a worked-up example from the Birmingham, Solihull and Black Country Stroke Service Review.

## 6.5 Cost benefit analysis (CBA)

### What is cost benefit analysis?

Cost benefit analysis is a relatively straightforward tool for deciding whether to pursue a project. In a cost benefit analysis all costs and benefits are expressed in a common 'currency', usually money, so that a comparison can be made between different options. It is a defined methodology for valuing costs and benefits that enables broad comparisons to be made between maintaining existing services or reconfiguring stroke and TIA services, giving a measure of transparency to the decision-making process.

This short section summarises the steps. For a worked-up example, see **Appendix 18**, which contains a hyperacute stroke unit configurations economic option appraisal methodology paper. Please also refer to **Appendix 19** for a summary of intelligence to support the cost effectiveness of implementing robust stroke management.

Generally, follow these steps to do a cost benefit analysis:

### Step one: list costs and benefits

In undertaking a CBA, all relevant costs that accrue from the costs or inputs into a stroke or TIA intervention must be identified and a cost applied to them. Inputs are defined as any additional human, physical and financial resources that are used to undertake an intervention. Then, do the same for all of the benefits of the project. Can you think of any unexpected costs? And are there benefits that you may not initially have anticipated? Once you have compiled all the costs and benefits, think about the lifetime of the project. What are the costs and benefits likely to be over time? Is there a need for any 'double running' of the service using two models?

Please refer to Appendices



### Step two: assign a monetary value to the costs

Costs include the costs of physical resources needed, as well as the cost of the human effort involved in all phases of a project. Costs are relatively easy to estimate compared with revenues. It is important that you think about as many related costs as you can. For example, what will any training cost be? Will there be a reduction in productivity while people are learning a new system or technology, and how much will this cost?

Remember to think about costs that will continue to be incurred once the project is finished. For example, consider whether you will need additional staff, if your team will need ongoing training or if you'll have increased overheads.

Sources of data on activity and costs can be sourced by the CCG and Commissioning Support Unit (CSU) teams, from databases such as Hospital Episode Statistics, the NHS Payment by Results (PbR), the Personal Social Services Research Unit (PSSRU) and the Office for National Statistics (ONS).

### Step three: assign a monetary value to the benefits

This step is less straightforward than step two. Firstly, it's often very difficult to predict revenues accurately, especially for new products. Secondly, along with the financial benefits that you anticipate, there are often intangible, or soft, benefits that are important outcomes of the project.

An economic calculator can be built in to estimate the benefits of the different configurations based on different models of site numbers. Benefits can be monetised values for improvements in mortality rates, patient length of stay and societal benefits. Here, it's important to consult with other stakeholders and decide how you'll value these intangible items.

### Step four: compare costs and benefits

Finally, compare the value of your costs to the value of your benefits and use this analysis to decide your course of action. To do this, calculate your total costs and your total benefits and compare the two values to determine whether your benefits outweigh your costs. At this stage it's important to consider the payback time, to find out how long it will take for you to reach the break-even point, in other words, the point in time at which the benefits have just repaid the costs.

For simple examples, where the same benefits are received each period, you can calculate the payback period by dividing the projected total cost of the project by the projected total revenues:  $\text{Total cost/total revenue (or benefits) = length of time (payback period)}$ .

### Limitations of cost benefit analysis

Cost benefit analysis struggles as an approach where a project has cash flows that come in over a number of periods of time, particularly where returns vary from period to period. In these cases, use net present value (NPV) and internal rate of return (IRR) calculations together to evaluate the project, rather than using cost benefit analysis. These also have the advantage of bringing "time value of money" into the calculation.

Also, the revenue that will be generated by a project can be very hard to predict, and the value that people place on intangible benefits can be very subjective. This can often make the assessment of possible revenues unreliable. Therefore it is vital that this is not the only tool used in the decision-making process.

Please refer to Appendices

# 7. Reviewing service provision

The next step is to compare how current service provision meets the needs identified. A variety of providers across health and social care organisations, together with the independent and voluntary sector, will have a role in stroke care and support. The following areas should be reviewed and assessed to determine if effective service provision is provided across the stroke pathway:

- the system works cohesively, with the needs of people who have had a stroke at its core. The following documents may provide a useful checklist to consider:
    - National clinical guidelines for stroke fourth edition (Royal College of Physicians, 2012)<sup>62</sup>
    - Stroke Service Standards (British Association of Stroke Physicians, 2010)<sup>63</sup>
    - Birmingham, Solihull and Black Country stroke specification objectives and standards.
  - when assessing the case for change the Sentinel Stroke National Audit Programme provides key performance data for the acute and community phase. The recommendation is that this analysis should provide the starting point for understanding stroke performance locally
  - total number of strokes each year, per unit, to ensure that a hyperacute stroke unit should see no less than 600 patients per year. Less than 600 strokes per year would not be sufficient to ensure staff would have enough clinical experience and institutional learning experience to maintain their experience. The minimum of 600 strokes per year was also a threshold endorsed by the Midlands and East stroke review. Similarly, a HASU that is too large could be detrimental both psychologically and physically for staff. An upper limit of 1,500 confirmed strokes per annum on any given unit was endorsed by the Birmingham, Solihull and Black Country stroke review. Experience from the London stroke service reconfiguration has shown that running at 1,500 stroke admissions can become difficult at times and departments are often in a position where two or maybe three acute stroke patients arrive at once who all need an assessment. Managing this with a single team of clinicians can be challenging
  - all patients are seen on the stroke unit, except for a few for whom this is not necessarily the most appropriate setting, such as people receiving palliative care
  - travel access analysis should be undertaken on journey times and journey times should be analysed over all times of day and night
  - workforce analysis should be assessed in line with Royal College of Physicians (RCP) the national clinical guidelines for stroke fourth edition (Royal College of Physicians, 2012)
  - there is an emphasis on commissioning effective preventative primary and secondary services that seek to tackle health inequalities
  - emergency pathways are commissioned to support effective transfer to specialist stroke units, supported by direct access pathways to the stroke team and unit
- Please refer to Appendices

62. <https://www.rcplondon.ac.uk/sites/default/files/national-clinical-guidelines-for-stroke-fourth-edition.pdf>

63. <http://www.basp.ac.uk/Portals/2/2010%20BASP%20Stroke%20Service%20Standards.pdf>



- patients experiencing a transient ischaemic attack are seen within 24 hours for all urgent cases and seven days for routine cases
- access to longer-term services across the whole pathway should be looked at to ensure that patients have access to seamless care.

### What does a good stroke service look like?

- access 24 hours a day, seven days a week
- rapid and accurate diagnosis
  - clinical expertise
  - access to imaging and good interpretation
- direct admission to a specialist stroke unit
- immediate access to treatment
- specialist centres with sufficient numbers of patients and expert staff
- high quality information and support for patients and carers
- access to early rehabilitation and mobilisation
- opportunity to participate in research trials
- inpatient care through a specialist unit
- transfer to home as soon as possible with no gaps (early supported discharge where appropriate)
- the service measures what it does, publishes data and constantly looks for improvements.

## 7.1 Clinical commissioner leadership and collaborative decision-making

All service change must demonstrate a process of robust assurance that seeks the support of the key stakeholder and statutory bodies. Proposals for service change can arise from a range of organisations including commissioners, providers and local authorities, and combinations of those bodies working together, as well as from communities themselves. Irrespective of which organisation or group proposes a major service change, there should be a planned and managed approach from the start, which establishes clear roles and a shared approach between organisations early on, and builds alignment with the case for change. Planning and delivery of major service change is a complex task that will need to balance a very wide variety of considerations and views.

Commissioners should be active in leading service design and change, corresponding with their responsibilities to identify high quality services to meet local population needs. Where providers bring forward proposals, it is essential that commissioners ensure these align with their commissioning intentions and reflect local commissioning plans. Commissioners should also work closely with local authorities, who have an important role, not just in scrutinising proposals, but in contributing to their development through health and wellbeing boards. This early preparation provides a firm foundation for more detailed development of plans.

A major service change could be proposed by a number of bodies, including a CCG or group of CCGs collaborating together, jointly between CCGs and local authorities, NHS England as a direct commissioner or providers. Irrespective of which organisation proposes a service change, commissioners should play a leading role in the planning and development of proposals. This section explains the governance and collaborative working arrangements that should inform that process.

Where a proposal involves a single CCG then it should arrange planning and decision-making, subject to what is set out in its constitution, either through the CCG Governing Body or by creating a specific committee and delegating the exercise of the relevant functions to it.

It is also good practice that a clinically-led group should oversee the design and development of proposals. Commissioners should ensure that clinical ownership and leadership of plans is part of any programme and governance arrangements whether this is through a formal clinical committee (or equivalent body) of relevant commissioners or through a suitable alternative structure. Where schemes relate exclusively to directly commissioned services, NHS England will make arrangements for senior clinicians to be part of the governance structure for schemes.

The organisation or group of organisations leading the development of the proposal (whether a single CCG or area team or multiple commissioners working collaboratively) should be led by commissioners. They may choose to invite other partners to join any working or steering groups as may be required to help the development of plans and alignment across the local health and care system.

Where a proposal may involve multiple commissioning organisations, the Health and Social Care Act 2012 allows for a number of collaborative working models and these are described below.

## Collaborative commissioning for service reconfiguration

Collaborative commissioning between CCGs is the process whereby two or more CCGs work together in order to effectively commission some of the services for which they are responsible.

CCGs should make a judgement, primarily based on their local knowledge, about whether, on balance, it would be in the best interests of their patients to collaborate in a particular circumstance such as in the planning and delivery of a major service reconfiguration.

CCGs should be clear in advance what responsibilities they have, individually and together, for ensuring full support for a collective decision. In all but the most minor and informal of arrangements, CCGs should set up an oversight board (or similar) on which each of the participating CCGs would be represented and through which agreements are reached. It is also important that all parties should understand what happens when there is lack of consensus on a proposal. There should be advance agreement regarding how these circumstances will be handled and any conditions that should apply.

Where two or more CCGs engage in collaborative arrangements, the individual CCGs will retain liability for the exercise of their respective statutory functions for their areas. This cannot be delegated or shared and the arrangements must recognise this. Section 14(Z)(3) of the NHS Act 2006 (as amended by the Health and Social Care Act 2012) allows any two or more clinical commissioning groups to make arrangements for one CCG to exercise any of the commissioning functions on behalf of or for all of clinical commissioning groups to exercise any of their commissioning functions jointly.

A CCG may make provision:

- for the appointment of committees or sub-committees of the clinical commissioning group, and
- for any such committees to consist of, or include persons other than members or employees of the clinical commissioning group.

In respect of multiple CCG involvement, although Section 14(Z) (3) does not allow

CCGs to exercise functions jointly by way of a joint committee, each CCG can delegate any functions required for developing service reconfiguration proposals to a committee (in accordance with the CCG's constitution) consisting of its members or employees and those from other CCGs involved in the reconfiguration.

That would enable all CCGs involved to have committees consisting of the same people and those committees could then meet in common for the purpose of decision-making. This is informally referred to as the 'committee in common' model.

It is important that each CCG committee is clear that it is making its own decision in respect of the service reconfiguration under consideration. It is good practice that membership of the 'committee in common' is drawn from CCG chairs or accountable officers (where these are GPs) or a nominated senior clinical GP lead from each CCG, and the medical director of the relevant area team(s) where schemes have a component of direct commissioning.

In creating the above process for decision-making, it is also good practice that the CCGs consider whether they establish a separate programme (or advisory) board consisting of commissioners, providers, local authorities and other relevant stakeholders to make sure that all relevant information is fed into the reconfiguration process. It is important to note that such a programme board would not be able, under the terms of Section 14(Z) (3), to exercise any function on behalf of any CCG, but it could be invaluable for the development of shared proposals and in providing recommendations to the 'committee in common' or CCG Governing Bodies.

The 'committee in common' model is one approach that CCGs may wish to explore when developing collaborative arrangements to underpin proposals. Further advice on collaborative commissioning is available from:

[www.england.nhs.uk/wp-content/uploads/2012/03/collab-commiss-frame.pdf](http://www.england.nhs.uk/wp-content/uploads/2012/03/collab-commiss-frame.pdf)

Please see Appendix 20 for an example of a collaborative agreement.



# 8. Programme governance

## 8.1 Principles of governance

Changes to the delivery of a number of phases of the pathway are expected to require collaborative agreement by CCGs and key partners. This is particularly relevant in the hyperacute and acute phases of care. In addition, it is expected that CCGs will require an understanding of each other's intentions in relation to all the phases of care even if joint commissioning arrangements are not applicable.

Therefore, it is recommended that a programme board, composed of nominated representatives from CCGs and supported by a programme executive group and a number of subgroups, will oversee and drive the process and will reflect the intention to manage the programme across all of the local area. See **Appendix 21** for the recommended structure.

This programme board should report to the agreed CCG forum(s) and work collectively to provide the mandate and governance for the project, and ultimately determine the implementation approach to be taken in order to deliver the principles and the standards within the scope of the programme. This should include an understanding of implications for both designated and non-designated providers in order to ensure that the decisions are robust, sustainable and in the longer-term interests of local economies.

The programme board should also draw on expert advice from a number of individuals and organisational representatives, in the form of a clinical reference group, in order to inform and support its decision-making. These may include secondary care consultants, other professions and public health specialists. It should also draw on advice through other forums to receive views from patients and the public, the local authority and provider trusts, and through clinical senates.

Please see the following appendices for examples of terms of reference for the London and Birmingham, Solihull and Black Country stroke programmes.

- **Appendix 22** – London stroke governance arrangements
- **Appendix 23** – BSBC stroke programme board
- **Appendix 24** – BSBC independent clinical advisory group
- **Appendix 25** – BSBC local clinical advisory group
- **Appendix 26** – BSBC public health advisory group
- **Appendix 27** – BSBC communication and engagement group
- **Appendix 28** – BSBC patient advisory group
- **Appendix 29** – BSBC financial advisory group
- **Appendix 30** – BSBC modelling advisory group

To maintain project confidentiality and to ensure that, under no circumstances, any provider information/submission response is discussed with another provider or providers, it is important that all members understand and sign up to a robust governance framework. Please see **Appendix 31** and **Appendix 32** for the BSBC confidentiality and conflict of interest documentation.

**Appendix 33** provides an overview of the Birmingham, Solihull and Black Country stroke reconfiguration programme. This draws together work undertaken to date by the Midlands and East Stroke Review and seeks to understand if there is a need to reconfigure local stroke services to deliver better patient outcomes. It provides an example of a potential framework to set up future programmes.

## 8.2 Programme capacity and resources

It is recommended a specific programme management team is established to provide the capacity to support delivery of the programme across a 12-18 month time span.

The table below captures the likely resources required to deliver the programme and a current understanding of the amount of capacity and key skills base required. This includes a core programme team and a range of additional expertise on a more sessional basis.

### Proposed core team programme capacity

Resource (pay)	WTE	Band	Spread
Programme director	1 WTE	Band 8d	Throughout life of project - 18 months
Programme manager	1 WTE	Band 8a/b	Throughout life of project - 18 months
Programme officer/administrator	1 WTE	Band 4/5	Throughout life of project - 18 months
Patient and public engagement (PPE) lead	0.5 WTE	Band 7	Throughout life of project - 18 months

Additional expertise is likely to be required, including the following.

Resource (pay)	WTE	Approx. cost	Spread
Procurement	To be agreed locally	Sessional basis	Throughout life of project - 18 months
Finance	To be agreed locally	Sessional basis	Throughout life of project - 18 months
Communications	To be agreed locally	Possibly sourced through CSU	Throughout life of project - 18 months
Business intelligence	To be agreed locally	Possibly sourced through CSU	Throughout life of project - 18 months
Public health	To be agreed locally	Sessional basis	To be agreed locally
Clinical leadership	To be agreed locally	Sessional basis	Flexible - throughout the project.
Interpreters/training	To be agreed locally	Sessional basis	To support consultation/PPE
Legal advice	To be agreed locally		Phase 3/4

#### Resources (non-pay)

For example, venue hire, room bookings and so on, particularly for the public consultation.

Printed material for public consultation.

## High level project plan

A number of early discussions can help shape the planning of service change proposals. These might include:

- early discussion between commissioner(s) and partner organisations (including area team) to flag intentions and discuss potential options and approaches (in advance of the formal assurance process)
- discussion with NHS England's area and regional teams and the national support centre strategic finance team regarding support and assurance (again, pre-formal assurance)
- organisations agreeing roles and responsibilities that will then be reflected in programme plan timelines
- undertaking a full stakeholder mapping exercise. This might include: public, patients, overview and scrutiny committee, neighbouring CCGs, providers, health and wellbeing board, Care Quality Commission, Monitor, Trust Development Authority, media and MPs
- programmes may need to consider the alignment of service change assurance with procurement and capital approval processes.

### Example of high level project plan from Birmingham, Solihull and the Black Country

Milestone	Timeframe
Scoping	December 2013
Activity/travel time modelling	December 2013 – February 2014
Financial modelling	December 2013 – July 2014
Public health needs assessment/health impact assessment/ equality impact assessment	December 2013 – June 2014
Independent expert advisory group review of provider recommendation	December 2013 – June 2014
Cost benefit analysis	March – July 2014
West Midlands Strategic Clinical Senate Assurance Panel	June – September 2014
Gateway Stage 1 Review	September 2014
NHS Assurance Checkpoint	October 2014
Decision by CCGs and area team	October/November 2014
Potential public consultation	November 2014 onwards

## 8.3 Clinical Senate review processes

### Clinical Senate review

Clinical Senates will be requested to provide clinical advice on a service change proposal as part of the formal NHS England service change assurance process<sup>64</sup>.

This request to provide advice might come from the commissioner leading the proposal or a regional or area team of NHS England (from now on these will be referred to as the sponsoring organisation). This request will be referred to as the clinical review.

The Clinical Senate's council will need to agree the terms of reference for each review with the sponsoring organisation. As a minimum this will include reviewing the clinical evidence base underpinning the proposals (one of the Government's four tests for service change). The terms of reference must detail the scope of the clinical review, its timeline, methodology and communication plan. This will include all the information that the sponsoring organisation will need to provide to NHS England as part of the assurance process. These requirements will have been part of the strategic sense check discussions between the commissioner and NHS England at stage one of the assurance process.

Clinical review teams are not expected to advise or make comment upon issues of the NHS England assurance process that will be reviewed elsewhere (for example, patient engagement, GP support or the approach to consultation).

### Scheduling Clinical Senate reviews

The precise timing of the Clinical Senate review can be agreed on a case-by-case basis.

The Clinical Senate review will be proportionate to the particular reconfiguration scheme and can therefore range from a half-day review of written materials to several days or more of onsite activity and interviews.

If an overview and scrutiny committee refers a reconfiguration, the outcomes of the Clinical Senate review will be sought by the independent review panel as part of its review of the scheme. Action plans produced by programme teams should be made publicly available.

## 8.4 Social Value Act

The act was implemented in January 2013 and all public bodies have to comply with the new law, including CCGs, NHS trusts, government departments, fire and rescue services and housing associations. Public bodies are required to consider how the services they commission and procure might improve the economic, social and environmental wellbeing of the area.

The act applies to public service contracts and those public services contracts with only an element of goods or works over the EU threshold. This currently stands at £113k for central government and £174k for other public bodies. This includes all public service markets, from health and housing to transport and waste.

Commissioners will be required to factor social value in at the pre-procurement phase, allowing them to embed social value in the design of the service from the outset.

### What is the act?:

- social value has been defined as “the additional benefit to the community from a commissioning/procurement process over and above the direct purchasing of goods, services and outcomes”
- there is no defined list of what this includes and it is best approached by considering what is beneficial in the context of local needs or the particular strategic objectives of a public body
- a procuring body must consider:
  - how the proposal might improve the economic, social and environmental wellbeing of the relevant area
  - how, in conducting the process of procurement, it might act with a view to securing that improvement.
- the act aims to give commissioners and procurement officials the freedom to determine what kind of additional social or environmental value would best serve the needs of the local community as well as giving providers the opportunity to innovate.

64. <http://www.swsenate.org.uk/wp/wp-content/uploads/2014/07/Clinical-Senate-review-process-guidance-note-final-July2014.pdf>

## Procurement duties and directives

- the act complements other developments in procurement rules at UK and European levels:
  - at the UK level, it sits alongside the Department for Communities and local Government’s statutory guidance on the Best Value Duty which is not about keeping costs down, but rather about “arrangements to secure continuous improvement in the way in which its functions are exercised, having regard to a combination of economy, efficiency and effectiveness.”
- the Department for Communities and Local Government’s new guidance is “more explicit about the scope for authorities to consider social value in their functions”. It states: “Under the Duty of Best Value [...] authorities should consider overall value, including economic, environmental and social value, when reviewing service provision. As a concept, social value is about seeking to maximise the additional benefit that can be created by procuring or commissioning goods and services, above and beyond the benefit of merely the goods and services themselves.”

## Suggested ways to implement the act:

- pre-procurement – The act obliges authorities to consider social value at the pre-procurement phase. The act should be built into the commissioning cycle when:
  - initiating commissioning
  - conducting a needs analysis
  - consulting shareholders and/or the market place
  - designing the services to be procured
  - setting the objectives for any contract to be procured.
- procurement phase
- ongoing monitoring.

A guidance and assessment template for the Act has been developed and is included in

### Appendix 34.

## 8.5 Arrangements for public and patient engagement, including local authorities

The NHS Act 2006 (as amended by the Health and Social Care Act 2012) places legal duties on NHS England and CCGs respectively to make arrangements to involve service users in the development and consideration of proposals for changes in commissioning arrangements, where this will impact on how services are delivered or the range of services that will be available.

The act does not specify how NHS England and CCGs should involve service users and it is important that a range of engagement approaches are employed depending on the nature of the proposals and the most effective means of engaging service users. Commissioners may want to undertake this in partnership with providers, local authorities and patient groups, but this should be determined locally.

CCGs have a responsibility under Section 14Z2 (*Public Involvement and Consultation by Clinical Commissioning Groups*). It says that CCGs must make arrangements to ensure that the people who use the service should be involved:

“(2) The clinical commissioning group must make arrangements to secure that individuals to whom the services are being or may be provided are involved (whether by being consulted or provided with information or in other ways):

(a) in the planning of the commissioning arrangements by the group

(b) in the development and consideration of proposals by the group for changes in the commissioning arrangements where the implementation of the proposals would have an impact on the manner in which the services are delivered to the individuals or the range of health services available to them

(c) in decisions of the group affecting the operation of the commissioning arrangements where the implementation of the decisions would (if made) have such an impact.”

The duty is often referred to as the duty to consult. The obligation is far wider than that, as demonstrated by the various stages at which the public must be involved. However, in practice, a formal public consultation is the appropriate means by which a CCG should involve the public at the stage of considering the proposals it has drawn up.

CCGs must therefore ensure that they involve the public in the development of any proposals for changes in the NHS healthcare services they commission, in the consideration of any proposals that they develop and in the decisions that they take on the implementation of those proposals. The general rule is that a decision-maker is entitled to narrow the options prior to consulting on the preferred option and need not consult on discarded options, provided the proposed course has not been decided on and can still be altered as a result of the consultation. It seems clear that the need to deal with alternative options only arises where there are specific reasons why it would be unfair not to do so.

It is for commissioners to decide the most effective means for engaging their communities. The nature and methods of communication and engagement will vary depending on the proposal and the audience. This includes written, online and face-to-face communications, and messages should be tailored to the information preferences of the audience. In addition to traditional written documents and leaflets and public events, modern digital communications, such as social media, provide opportunities for an interactive dialogue with different groups of service users. Any material produced should contain specific, relevant and clear information presented in languages and formats that are accessible and will enable patients and users of services to be able to contribute.

It is good practice that, when undertaking formal engagement on a specific set of configuration options, proposing bodies have:

- an effective public communication and media handling plan that articulates clearly and consistently the case for change and the benefits
- a detailed plan for reaching all groups who will be interested in the change
- staff engagement plans
- clear, compelling and straightforward information on the range of options being tested, which is accessible and will address the needs of those being engaged.

The consultation process is a legal requirement and should be part of an ongoing process to involve patients, carers, their communities and other stakeholders. Successful consultation involves people from an informative stage. It begins to develop a dialogue and builds confidence in the process as people feel informed and involved.

Consulting on a new model can often be controversial and unwelcome by the local population, particularly if the plans are proposing significant change. It is important that the CCG, as the local commissioner of health services, is seen to be fair, open and transparent. All reconfigurations of NHS healthcare services are potentially controversial. Any proposed changes that may see a reduction in the number of sites where a treatment is offered are particularly likely to be opposed. Any failures or inadequacies in meeting the consultation duty can be used as the basis for a legal challenge by way of a judicial review.

An engagement and communications plan should be developed that aims to ensure fulfilment of the following quality standards:

- an objective, sincere and rigorous formal consultation that complies with all relevant legislation, policy and good practice
- an open, transparent, consistent and evidenced consultation process that stands up to external scrutiny
- an inclusive approach to consultation, including identification of key stakeholders including, but not exclusively, clinical staff, patients, their carers and their communities, and other stakeholders including health overview and scrutiny committees and Healthwatch

- the use of a variety of audience-appropriate methods of consultation to ensure equity in both opportunity and access to participation
- the provision of good, up-to-date, honest, consistent and timely information to ensure informed participation in the consultation process
- consultation opportunities that are well-publicised to maximise involvement
- genuine and equal consideration given to all feedback, including views and/or suggestions on alternatives to the preferred option
- feedback given to consultation participants on the next steps and outcomes in a timely manner following the conclusion of the formal consultation period, with clear, demonstrable links made between the views given and the resulting impact and influence
- skilled and informed staff to support the consultation process to ensure objectivity and impartiality throughout.

**Appendix 35** gives an example of the Birmingham, Solihull and Black Country engagement plan.

## Practical arrangements

In order to bring consultation plans to life, a template has been developed by Sandwell and West Birmingham CCG to grow and capture all of the planned consultation activities that also enables implementation to be tracked.

The template (see page 56) is designed to be a 'living document' and should be used to populate a detailed list of previously identified stakeholders, breaking down all possible forums where it may be possible for leads to consult with that particular audience, within what context or setting, and the different methods/approaches intended to be used.

The columns will also provide a way of capturing supporting details for activities in 'real time' or as the arrangements are made. This should include contact names and telephone numbers for making arrangements, meeting names, time slots, venues and so on. Comments about the arrangements can also be added for tracking purposes.



Once arrangements are in place, leads should identify who would form the consultation team for each activity. Depending on the consultation method this might either note who would be required to attend a meeting to deliver a presentation (for example, a clinician, non-clinical lead or engagement/communications lead) who would then be named in the template once availability had been confirmed. Alternatively, it would note who, in particular, would need to action an activity (for example, disseminating a press release, posting correspondence and making telephone calls).

The use of this 'live' template has previously proved to be a successful way of making arrangements and tracking progress, while also identifying any gaps during the consultation process.

Formal Consultation – Implementation Tracker								
Status	Target Audience	Method	Date	Location	Contact	Comms/ PPI lead to organise	Comments	Consultation team attending
✓								
→								
↻								
→								
✓								
→								
→								
→								
↻								

Status Key		Version Control	
✓	Complete	Edited by:	
→	In progress/pending completion	Date:	
↻	Ongoing	Time:	
	Incomplete		

# 9. Option appraisal process

## 9.1 Principles to support the option appraisal process

CCGs must make sure that they have a process in place for appraising and testing options, including the option of no change. There should be a robust, documented process for sifting any long-list of options into a shortlist. There should also be a framework in place to further test shortlisted options to make sure that they are sufficiently robust and fit for purpose. This framework should also be used on any new options that emerge from the consultation. The options appraisal must include an analysis of the implications of no change. In order to arrive at such decisions, it is essential that sound, robust analysis is undertaken.

The evidence is strong that being admitted to a specialist stroke centre with access to stroke expertise 24 hours a day, seven days a week results in better outcomes than being managed without these resources. The improved outcomes arise from careful attention and treatment to maintain homeostasis, skilled nursing and medicine to avoid complications and early intervention to treat complications before they become life-threatening.

There is no doubt that intravenous thrombolysis given to the right patients in the right way also increases the likelihood of avoiding long-term disability, although it has no effect on overall mortality. Currently, even in the most active centres, only about 20% of unselected stroke admissions are treated with thrombolysis. The remaining patients are excluded from treatment because they arrive too late for the treatment to be useful or they have other contraindications that would make treatment too hazardous to justify. If patients are treated within three hours of the onset of symptoms, for every seven patients treated, one person will have a major stroke converted into one that leaves little or no long-term disability.

Reorganisation of stroke services therefore needs to take into account where the benefits lie for the population that the hospitals are serving. In areas of high population density there can be no excuse not to provide high quality care, including access to intravenous thrombolysis to the whole population.

However, in rural areas compromises might need to be made as achieving a well-staffed unit working 24/7 that is also within a 45-60 minute drive in a blue light ambulance might not be possible. For example, imagine a rural area currently with two underperforming stroke services about 30 miles apart. They cannot run 24/7 services because one has only two consultants and the other has two funded consultant posts (but one is vacant despite repeated advertisements). The 600 stroke admissions a year across the area are divided between the two units meaning that neither has a sufficient volume of cases to maintain the necessary levels of experience and expertise. In addition, both hospitals are dependent on the stroke physicians to help run the general medical rota, meaning that having a specialist stroke rota is unfeasible while also complying with the European Working Time Directive. Centralising

services onto one site therefore seems logical but doing so would mean that a population of about 70,000 patients will be up to 90 minutes' drive away from the stroke centre. This would result in about 110 patients a year having to travel the 90 minutes, of whom about 22 would have been suitable for thrombolysis but will arrive too late for treatment. Of these, three would have had a better outcome if they had received thrombolysis. However, travelling that extra distance will mean that all 110 patients will get better quality care in the specialist centre and far more than three will have improved outcomes as a result.

So while not ideal, it is necessary to be pragmatic and organise services that will provide the greatest good for the greatest number of people and not fail to do this because it is thought that equality must be preserved at all costs. Maintaining poor services for all must not be an option even where it is not possible to provide thrombolysis for the entire population.

## 9.2 Factors to consider for urban areas

The following factors should be considered when looking into redesigning stroke services in urban areas:

- clinical and financial critical mass, of >600 and <1,500 stroke admissions per annum
- balance between volumes and financial viability
- travel time should be ideally 30 minutes but no more than 60 minutes
- standards that must not be compromised are:
  - specialist assessment on admission (24 hours a day) and daily thereafter during hyperacute phase
  - stroke unit staffed and equipped in line with best practice specification
  - 24-hour access to scanning
  - access to thrombolysis, but less important than other aspects of care
  - access to therapy.
- potential models
  - hub and spoke
  - telemedicine.

## 9.3 Factors to consider for rural areas

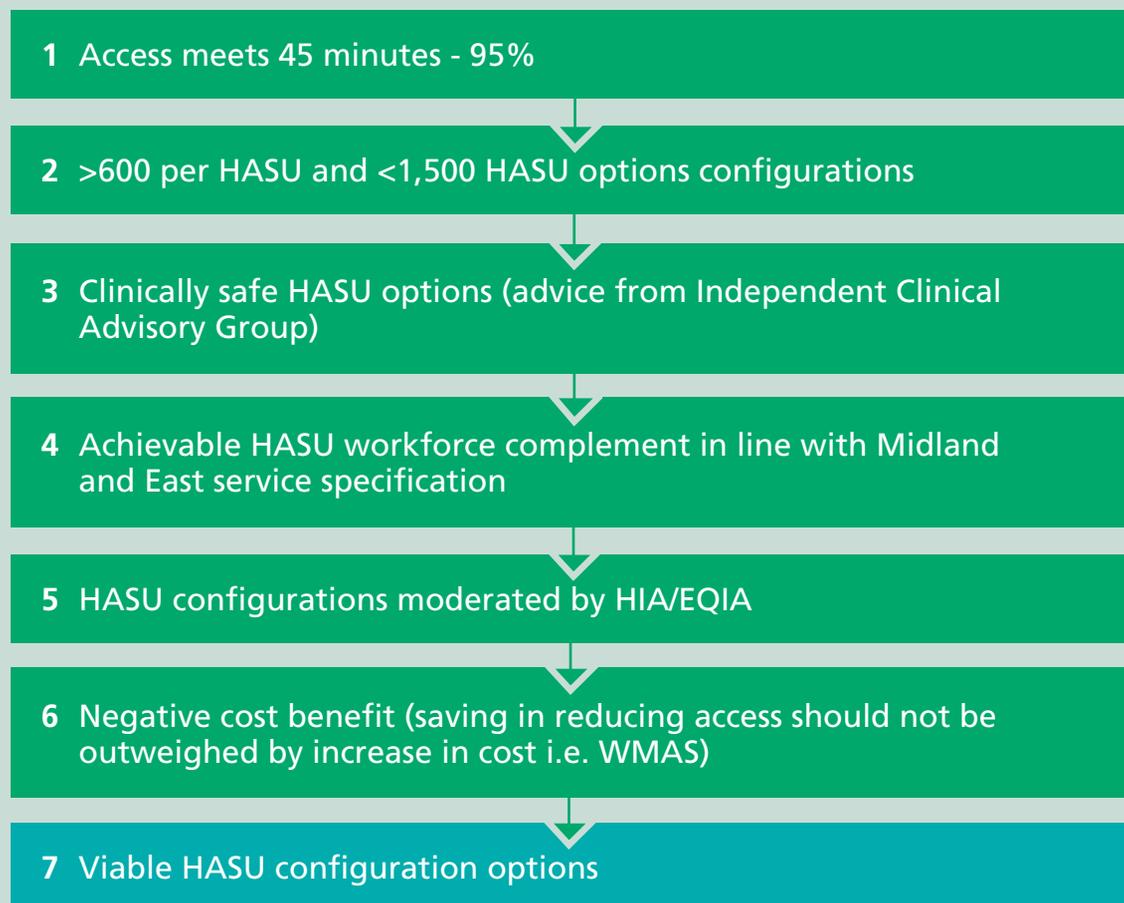
The following factors should be considered when looking into redesigning stroke services in rural areas:

- clinical and financial critical mass standards achievable in urban areas may not always be feasible in low population density areas
- balance between volumes, travel times and financial viability
- standards that must not be compromised are:
  - specialist assessment on admission (24 hours a day) and daily thereafter during hyperacute phase
  - stroke unit staffed and equipped in line with best practice specification
  - 24-hour access to scanning
  - access to thrombolysis, but less important than other aspects of care
  - access to therapy.
- potential models:
  - fully equipped and staffed small hospitals
  - hub and spoke
  - 'drip and ship'
  - telemedicine.

## 9.4 The Birmingham, Solihull and Black Country example of a decision framework

The following section describes the process followed by the Birmingham, Solihull and Black Country Stroke Service Review to agree the optimum configuration of hyperacute stroke units.

The stroke programme developed the following decision tree to support the recommendation on the optimum model and number of future HASUs/ASUs and high risk TIA clinics. The decision tree sets out the different criteria that need to be met in order for a configuration to be considered viable. The Independent Clinical Advisory Group, CCG and area team leads endorsed the use of these criteria (February-April 2014).



### Access meets 45 minutes is 95%

An access analysis has been undertaken on journey times of 30 minutes, 45 minutes and 60 minutes and the achievement of the 95% threshold. The 30-minute option ruled all configurations as viable, and the 60-minute option also indicated every configuration was viable. In light of this, and following both the advice from the Independent Clinical Advisory Group and the NICE standards recommendation (2010), it was determined that a maximum time of 45 minutes should be considered for modelling purposes. The journey times of 45 minutes calculated are based upon an average journey length over all times of day and night.

### More than 600 and less than 1,500 stroke admissions per HASU

The Independent Clinical Advisory Group provided advice that a HASU should see no less than 600 patients per year and an upper limit of 1,500 confirmed strokes per annum on any given unit, which was endorsed by the programme board.

### Clinically safe HASU options (advice from Independent Clinical Advisory Group)

The Stroke Programme Board has sought advice from the Independent Clinical Advisory Group to ensure that any future stroke service configuration is clinically safe and sustainable (please see **Appendices 36-41** for trust submission templates to support the review of future options).

## **Achievable HASU workforce is in line with the Midlands and East Service Specification**

The programme would carry out analysis and look at the workforce complement to ensure that any future service provision could meet the workforce recommendation as set out in the Midlands and East Stroke Service Specification.

## **HASU configurations moderated by the equality impact assessment**

The proposed HASU configuration will undergo a full health impact assessment and a comprehensive equality impact assessment. Consideration will be given to the protected groups, which include: sex, age, disability, race, sexual orientation, gender reassignment, religion or belief, pregnancy and maternity, and marriage and civil partnership.

## **Negative cost benefit (savings through reducing units should not be outweighed by an increase in cost, for example, for West Midlands Ambulance Service)**

The independent cost benefit and financial analysis will look at the benefits of moving to the recommended model and HASU configurations.

The analysis and advice from the decision framework supported the decision on the optimum viable HASU model and configuration options.

## **Birmingham, Solihull and Black Country option appraisal principles**

The Stroke Programme Board agreed a period of consultation/market engagement with the current providers to obtain information (non-financial and financial) to better understand the capability and capacity of providers to deliver current and future activity models. This information was presented to the Independent Clinical Advisory Group Panel to review and recommend the most appropriate model that meets the clinical and demographic solution for the Birmingham, Solihull and Black Country

CCGs. The process was carried out with a robust framework to ensure confidentiality was maintained and under no circumstances would any provider submission response have been discussed with another provider or providers.

The option appraisal process asks providers to put forward evidence of their capacity and capability to deliver current service and supporting information to provide increased level of stroke activity to support a high quality HASU in line with the Midlands and East Service Specification.

## **Evaluation of current and future system capacity**

All current providers of stroke services were asked to complete a questionnaire to identify their current capability and capacity and for them to articulate their ambitions and capacity for operating a HASU in the future. It must be emphasised that although some of the questions being asked are similar to those that may be expected to be included at the pre-qualification questionnaire (PQQ) stage of a procurement exercise, this stage does not constitute an evaluation of individual existing providers' ability to provide HASU services in future, but is an attempt to assess current overall capability so as to identify the likely capacity and hence the potential number of HASUs (and spread by geographical area). It is therefore not intended that any providers, which from this initial assessment do not appear to have the capacity to be a HASU in future, will be excluded from any subsequent procurement exercise.

## **Identification of optimum number of HASUs for the future**

By taking into account such issues as travelling time, health inequality and cost efficiency, this exercise will identify the optimum number of HASUs required in future.

These two exercises are matched to identify whether there is sufficient capacity to meet the optimum configuration.



The following documents in **Appendices 36-41** provide the detailed provider submission templates:

- **Document A** – option appraisal, provider engagement and procurement process
- **Document B** – guidance on the option appraisal assessment process
- **Document D** – HASU assessment submission
- **Document E** – ASU assessment submission
- **Document F** – TIA assessment submission
- **Document G** – rehabilitation and long-term care.

# 10. Procurement regimes

There are currently three different procurement regimes that commissioners looking at reconfiguring stroke services need to take into account:

- NHS (Procurement Patient Choice and Competition) (No.2) Regulations 2013<sup>65</sup> (the Regulations)
- The new EU Procurement Directive and the Public Contracts Regulations 2015
- Treaty on the Functioning of the European Union (where there is a cross-border interest).

This chapter touches on the new EU Procurement Directive and Public Contracts Regulations 2015 but its focus is on the regulations which are overseen by Monitor.

## 10.1 The new EU Procurement Directive and Public Contracts Regulations 2015

In February 2015, the Public Contracts Regulations 2006 were replaced by the Public Contracts Regulations 2015, which brings the new EU Directive 2014/24/EU (the new EU Procurement Directive) into national legislation. The Public Contracts Regulations 2015 will apply to any healthcare services that fall under the regulations from 18 April 2016. Until then Public Contracts Regulations 2006 continue to apply.

The Public Contracts Regulations 2015 remove the distinction between Part A and Part B services, although healthcare services remain in a special category and subject to a limited

regime. Healthcare contracts with a value above €750,000 will be subject to a number of procedural requirements. Commissioners will need to be transparent about their intention to procure services and the result of that procurement.<sup>66</sup>

The following link provides further information on the new EU Procurement Directive and the Public Contracts Regulations 2015: <https://www.gov.uk/transposing-eu-procurement-directives>.

## 10.2 The regulations

The regulations are a principle-based framework designed to:

- ensure that commissioners secure high quality, efficient NHS healthcare services that meet the needs of people who use the services
- protect the rights of patients to choose who provides their healthcare in certain circumstances
- prevent anti-competitive behaviour by commissioners unless this is in the interests of patients.

65. *The National Health Service (Procurement, Patient Choice and Competition) (No 2) Regulations 2013 (SI. 2013 No.500), which were made on 6 March 2013, replace the National Health Service (Procurement, Patient Choice and Competition) Regulations 2013 (SI. 2013 No.257), which were made on 11 February 2013. The Regulations were made pursuant to sections 75, 76, 77 and 304(9) and (10) of the Health and Social Care Act 2012.*

66. *More information on the specific procedural requirements for health care services can be found at: <http://www.legislation.gov.uk/ukSI/2015/102/contents/made> Section 7.*

Monitor's role is to ensure that commissioners have operated within the legal framework established by the regulations and it has a number of investigation and enforcement powers as a result (see "Monitor's enforcement powers under the regulations" below). The regulations also give Monitor the power to enforce certain requirements that commissioners must comply with relating to patient choice set out in the Responsibilities and Standing Rules Regulations.<sup>67</sup> Other than in relation to anti-competitive behaviour, Monitor is only able to investigate a potential breach of the regulations if it has received a complaint.

Monitor has published substantive guidance on the application of the regulations which can be found on its website.<sup>68</sup> Monitor also provides informal advice about the application of the regulations to specific circumstances. If commissioners have any questions or queries about their proposals then they should contact Monitor to discuss them.<sup>69</sup>

**Obligations under the regulations:** It is for commissioners to decide what services to procure and how best to secure them in the interests of the people they serve, having due regard to the requirements set out in the regulations. Those requirements include:

- the overall objective to procure services that secure the needs of people who use the services and to improve the quality and efficiency of the services, including through the services being provided in an integrated way (Regulation 2)
- the general requirements that commissioners must comply with to:
  - act transparently, proportionately and not to discriminate between providers (Regulation 3(2))
  - commission services from those providers that are most capable of securing the needs of healthcare service users and improving the quality and efficiency of services, and that provide the best value for money in doing so (Regulation 3(3))

- consider appropriate means of improving NHS healthcare services, including through enabling providers to compete to provide services, increasing patient choice and the integration of services (Regulation 3(4))
- maintain a record of how each contract awarded complies with commissioners' duties to exercise their functions effectively, efficiently and economically, and with a view to improving services and delivering more integrated care (Regulation 3(5)).

Regulations 4 to 12 set out more specific requirements that commissioners must comply with where appropriate. More information about all of these and the above requirements can be found in Monitor's substantive guidance.

### Applying the regulations to the stroke programme

When deciding how to approach a reconfiguration of stroke services, commissioners should use the framework of the regulations and the substantive guidance. Many of the other sections in this booklet discuss work commissioners might undertake to understand whether any reconfiguration will meet the needs of patients and improve the quality and efficiency of services, which are relevant considerations under the regulations. In particular commissioners should bear in mind the following:

- commissioners must procure services from those providers best placed to meet the needs of patients and improve quality and efficiency of services and provide best value for money
- when considering whether the quality and efficiency of services can be improved commissioners should consider the most appropriate means of achieving this, including through integration, competition, and patient choice
- procurement of services must be conducted in a transparent, proportionate and non-discriminatory way
- commissioners must ensure providers can express an interest to provide services

67. *The National Health Service Commissioning Board and Clinical Commissioning Groups (Responsibilities and Standing Rules) Regulations 2012 (SI. 2012 No.2996).*

68. <https://www.gov.uk/government/publications/procurement-patient-choice-and-competition-regulations-guidance>

69. Contact information to obtain informal advice from Monitor can be found on its website here.

- competitive tendering is not compulsory. Commissioners need to identify the best providers. There are a number of ways to do this and which one is appropriate will depend on local circumstances. A competitive process may help to identify potential providers but equally the benefits of a competitive process may be outweighed by the cost of running it
- a commissioner may award a new contract to a provider without advertising and seeking offers from other providers where a commissioner is satisfied that the services are capable of being provided only by that particular provider
- where a commissioner has decided that a competitive tender is the best way to secure the services it requires then the contract notice must be published on Contracts Finder or a replacement website maintained by NHS England
- commissioners are required to publish details of all contract awards, record how conflicts of interest have been managed, and maintain records about how their duties relating to effectiveness, efficiency, improvement in quality and integration have been complied with through the contract award
- commissioners must not engage in anti-competitive behaviour which is not in the interests of healthcare service users
- commissioners are expected to safeguard the rights to choice under the NHS Constitution.

This is not an exhaustive list and commissioners should consult the regulations, substantive guidance and, where required, Monitor, to ensure that they are acting within the framework of the regulations.

As set out above, there is no obligation under the regulations to put a reconfiguration of stroke services out for competitive tender. Commissioners are under an obligation to procure services from the most capable provider or providers but there may be a number of

different ways to identify the most capable providers. For example, they might be identified through a review of the market or through a competitive process. What is appropriate and compliant with the regulations will depend on the local circumstances and should be assessed by the commissioners on a case-by-case basis with reference to the regulations and substantive guidance. Informal advice may be sought from Monitor if commissioners have any questions about the application of the regulations.

In certain circumstances where a commissioner is satisfied and can demonstrate with evidence that there is only one capable provider able to deliver services, the commissioner may award that contract without publishing a contract notice or undertaking a competitive tender (see Regulation 5(1) and correspondence guidance). However, the regulations do require commissioners to ensure that there is an opportunity for providers to express an interest in providing the specified services (this does not mean that they are required to carry out a competitive tender exercise, merely to tell providers what they are doing and allow people to express an interest).

There is a duty under the regulations for commissioners to act in a non-discriminatory way when procuring healthcare services. Any differential treatment of providers when awarding contracts for HASUs must be objectively justified.

Further guidance and case scenarios which may help inform the commissioner's decision-making process to ensure that it is compliant with the regulations can be found on Monitor's website.<sup>70</sup>

70. <https://www.gov.uk/government/publications/procurement-patient-choice-and-competition-regulations-guidance>

## 10.3 Monitor's enforcement powers under the regulations

When deciding whether or not to open an investigation under the regulations, Monitor will apply its prioritisation framework. This framework also applies for Monitor to decide whether or not to continue an investigation once underway. This is a framework designed to assist Monitor to focus its activities on those issues that make the best use of its resources and is consistent with its main duty to protect and promote the interests of people who use healthcare services.

In making its decision, Monitor will weigh up the benefits and costs of taking action, including: likely benefits to healthcare service users (both direct and indirect) and the costs of taking action. Monitor will consider what (if any) action is proportionate in the circumstances. It may choose between taking informal action, formal action or no action at all. Informal action can include: providing guidance for commissioners on achieving or maintaining compliance, issuing an advisory letter on compliance issues or a warning letter to prompt compliance. Informal action may also be a precursor to formal action where the concerns which prompted the informal action have not been adequately addressed.

Monitor's investigation and enforcement powers under the regulations include:

- the power to investigate potential breaches of the regulations and the power to request information from a commissioner for the purpose of carrying out an investigation (Regulation 13)
- where Monitor is satisfied that there has been a sufficiently serious breach of the regulations, the power to declare that an arrangement (or a term or condition of an arrangement) for NHS healthcare services be declared ineffective (in other words, set aside) (Regulation 14)

- the power to issue a wide range of directions, including the power to direct a commissioner to take steps to prevent breaches, remedy breaches or mitigate their effect; to vary or withdraw an invitation to tender or to vary an arrangement for NHS healthcare services (Regulation 15)
- the power to accept an undertaking from a commissioner in relation to a matter which could have been the subject of a direction under Regulation 15 (Regulation 16).

Further information can be found in Monitor's enforcement guidance.<sup>71</sup>

71. [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/283508/EnforcementGuidanceDec13.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/283508/EnforcementGuidanceDec13.pdf)

## 10.4 Example of the Birmingham, Solihull and Black Country procurement process (in the context of acute stroke services only)

In 2012, the CCGs began a comprehensive and extensive review of the requirements for stroke services in their area in order to identify the optimum configuration and number of stroke units needed to deliver improved clinical outcomes.

As part of this work the CCGs established that, in order to improve clinical outcomes, any HASU:

- would need to be co-located with A&E and critical care facilities
- would need to be accessed within an average 45 minute travel time
- would need to treat no less than 600 and no more than 1,500 stroke admissions each year (optimum critical mass).

### Evaluation of current and future system capacity

All current providers of stroke services were asked to complete a questionnaire to identify their current capability and capacity and for them to articulate their ambitions and capacity for operating a HASU in the future. It must be emphasised that although some of the questions asked are similar to those that may be expected to be included at the PQQ stage of a procurement exercise, this stage does not constitute an evaluation of individual existing providers' ability to provide HASU services in future. It is an attempt to assess current overall capability so as to identify the likely capacity and hence the potential number of HASUs in the Birmingham, Solihull and Black Country area (and spread by geographical area within

it). It was therefore not intended that providers, who from this initial assessment do not appear to have the capacity to be a HASU in future, will be excluded from any subsequent procurement exercise.

### Identification of the optimum number of HASUs for the future

By taking into account such issues as travelling time, health inequality and cost efficiency, this exercise identified the optimum number of HASUs required in the future. This may relate to the whole Birmingham, Solihull and Black Country patch or specific geographical locations within this.

These two exercises were matched to identify whether there was sufficient capacity to meet the optimum configuration.

# 11. Finance and financial modelling

## 11.1 Introduction

NHS hospitals face financial and workforce pressures; reconfiguration of hospital services can provide a powerful means of improving quality in an environment where money and skilled healthcare workers are scarce (Kings Fund, 2011)<sup>72</sup>.

This chapter gives a potential financial framework to support commissioners to review and reach a decision on the optimum configuration of stroke services. It is important to recognise that financial analysis of services is only one component and the decision to change the configuration of services should be considered as one component of the assessment and therefore not the only decision-making tool.

The framework described here is based primarily on the Birmingham, Solihull and Black Country (BSBC) CCGs review of stroke services. The CCGs collectively agreed to understand the need and role that reconfiguration could play to further improve the quality of patient care.

BSBC CCGs and other stakeholders considering potential configurations, commonly require some assessment of the likely impact on provider expenditure. It is essential that the whole pathway is modelled; from the point of 999 call, through the acute and the impact of long-term patient rehabilitation and care.

This chapter draws upon a recent project to reconfigure stroke services in Birmingham, Solihull and the Black Country. The financial model was created by Sandwell and West Birmingham CCG, with oversight and support from NHS England, to consider the incremental impact of stroke reconfigurations on the underlying surplus/deficit of the providers involved.

## 11.2 Defining and identifying stroke and TIA activity

Acute stroke care is paid through payment by results (PBR) and any local tariffs. For the acute phase, stroke activity data can be identified with a Healthcare Resource Group (HRG) and diagnosis code listed in the table below. HRGs are standard groupings of clinically similar treatments which use common levels of healthcare resource. Tariffs are attached to HRG to remunerate providers for delivering care to patients.

Where activity modelling is carried out independently of financial impact analysis, CCGs should ensure that the activity model is able to generate HRGs per unit of activity, as one of its outputs.

Rehabilitation stroke care is often paid through block contracts or local cost and volume contracts. The activity for these contracts is more difficult to obtain as stroke beds are often paid for as part of larger neuro rehabilitation contracts. Community activity information is often not recorded.

72. Kings Fund, 2011 <https://www.kingsfund.org.uk/sites/files/kf/Briefing-on-Reconfiguring-hospital-services-Candace-Imison-Kings-Fund-September-2011.pdf>

West Midlands Ambulance Service identify stroke and TIA activity when they arrive on scene. Patients are then conveyed to the most appropriate site for treatment.

### Confirmed acute stroke and TIA HRG and diagnosis codes

HRG/ Diagnosis Code	Description
AA22A	Non-transient stroke or cerebrovascular accident nervous system infections or encephalopathy with CC
AA22B	Non-transient stroke or cerebrovascular accident nervous system infections or encephalopathy without CC
AA23A	Haemorrhagic cerebrovascular disorders with CC
AA23B	Haemorrhagic cerebrovascular disorders without CC
AA29A	Transient ischaemic attack with CC
AA29B	Transient ischaemic attack without CC
I61	Intracerebral haemorrhage
I63	Cerebral infarction
I64	Stroke not specified as haemorrhage or infarction
G45	Transient cerebral ischaemic attacks and related syndromes

In addition to income from the standard stroke tariffs above, providers are eligible to a best practice top-up tariff, should they fulfil certain criteria. Best Practice Tariff payments are additional top-ups available to providers for delivering certain elements of care. This is designed to improve quality of service and penalise providers who don't provide best practice treatment.

There are three opportunities to earn best practice tariff during a stroke spell:

1. CT scan within 24 hours of suspected stroke
2. alteplase administered in relevant cases
3. the length of time a stroke patient spends on stroke ward. See the figure below for more details.

### Illustration of best practice elements

#### Rapid Brain Imaging

Patients are CT scanned within 24 hours

#### Alteplase

Drug administered within 4-5 hours. This only affects 15% to 20% of patients

#### Direct Admissions

90% of patients stay is on a Stroke Ward

The maximum income which can be received by each provider (and cost to each CCG), for each HRG is illustrated in the table below. This information has been taken from the national PBR tariff guidance for 2014/15 and can be found at [www.gov.uk](http://www.gov.uk)<sup>73</sup>.

When considering the breakdown of income across the proposed stroke pathways, Rapid Brain Imaging and Alteplase admission should only be considered relevant to the HASU element of the spell, as they only attract best practice top-up if administered in the first 24 hours.

During the financial modelling, consideration should be given on whether to allocate 100% of the best practice top-up for alteplase. In the table below, only 20% of the total available top-up is shown, because only 15%-20% of patients are eligible to receive the drug.

### Maximum income under best practice tariff per provider

2015-15 PBR		Conditional Top Ups						
Stroke/TIA	HRG	Name	Base Tariff (£)	Rapid imaging (£)	Direct admission (£)	Alteplase (£)	Maximum Tariff under 14/15 BPT (£)	Non-Elective Tariff (£)
Stroke	AA22A	Non-Transient Stroke... with CC	2,733	399	1,026	828	4,986	3,875
Stroke	AA22B	Non-Transient Stroke... without CC	1,745	399	1,026	828	3,998	2,886
Stroke	AA23A	Haemorrhagic Cerebrovascular Disorders with CC	2,820	399	1,026	-	4,245	3,961
Stroke	AA23B	Haemorrhagic Cerebrovascular Disorders without CC	1,362	399	1,026	-	2,787	2,502
TIA	AA29A	Transient Ischaemic Attack with CC	1,261	-	-	-	1,261	1,261
TIA	AA29B	Transient Ischaemic Attack without CC	555	-	-	-	555	555

## 11.3 Primary conveyance – the impact on ambulance services

Any acute reconfiguration has an impact on ambulance pathways and therefore it is important to engage the ambulance providers in discussions early on and to model the impact locally. During the Birmingham reconfiguration, the ambulance service nominated a stroke lead who was responsible for ambulance modelling, using the CSU to support with the local analysis.

In a reduced site model, ambulances would be displaced by having to travel further to reach destination HASUs. This creates a vortex where areas may be left without cover for certain amounts of time. The ambulance service was asked to submit a proposal for the number of new ambulances required as a result of ambulance displacement. The CCG challenged the proposal. The providers should be engaged to analyse the conveyances to each of the sites in the current configuration, analyse how patient flows would change as a result of reconfigurations and calculate the difference in drive times. The view in BSBC was that ambulances should be considered stepped fixed in nature.

73. <https://www.gov.uk/government/publications/national-tariff-payment-system-2014-to-2015>

## 11.4 Gathering provider cost information for delivering acute stroke and TIA activity

In order to understand the cost of delivering stroke activity, CCGs need to obtain information on the cost base of each provider involved in the reconfiguration (please see Appendix 42). The method used across Birmingham, Solihull and the Black Country was to request cost information for pay, non-pay, income and overheads for each stage of the pathway, through a standardised template.

The standard template requires providers to insert costs for varying levels of activity, as well as current activity for the acute pathway, inpatient rehabilitation, outpatient TIA, early supportive discharge (ESD) and community rehabilitation. The ranges of activity for the acute stages are shown below.

### Activity split between HASU and ASU

The HASU part of the acute stay is the first three days. After three days patients are repatriated to their local ASU ward for the fourth to seventh day. The eighth day onwards is also spent in the ASU and is likely to consist of mainly rehabilitation.

HASU Activity (Increments of 300)							
Current	600	900	1200	1500	1800	2100	2400

ASU Activity	
Current	Forecast

### Setting the activity range

It is advisable that CCGs perform some activity modelling before finalising provider templates, to understand the range of activity in any reconfiguration. Generally it is considered that the minimum activity to pass through a stroke ward should be no fewer than 600 and the maximum to be 1,500 where critical mass is achieved. The Birmingham, Solihull and Black Country reconfiguration modelled its activity ranges under the new specification as 600, rising in increments of 300 units to a maximum of 2,400. Small increments of 300 units of activity allow CCGs to more accurately “flex” provider cost basis, which most closely match modelled activity.

Furthermore, it was felt that due to the impact on ambulance conveyance times, six units would be the maximum number of HASUs but three would be the minimum number.

For the ASU (4-7 days length of stay) and ASU (8+ days length of stay) activity can be modelled by looking at the current length of stay (LOS) for each spell from the data source. For example a patient with a LOS of 10 would have three days in HASU (0-3 LOS), four days in the ASU (4-7 LOS) and three days in the ASU (8+ LOS).

### Repatriations (second conveyance)

In the Birmingham, Solihull and Black Country review it was agreed that patients would be repatriated to their local ASU, regardless of the configuration option. The base cohort of patients will not change and therefore the provider template only considers two activity options.

Repatriations can be modelled through the ambulance modelling phase (discussed previously), however, CCGs may decide to consider flexing local patient transport contracts (PTS) to cover the additional repatriations rather than using ambulances for the second conveyance and impacting on the ambulance contract.

Commissioners may wish to consider a co-located model, where patients are not repatriated after the initial three days of their spell. If this is the case then commissioners should consider the impact on provider bed capacity for the additional stroke beds and stroke mimic.

### Comparing provider returns

The provider returns allow commissioners to compare cost and activity on a consistent basis. This allows for quick identification of returns which stray away from the average. During the Birmingham, Solihull and Black Country review providers did not appear to experience difficulty in completing the returns.

### Overhead treatment

Providers should be encouraged to carefully consider how overheads are treated. Overheads are generally not considered to be a variable cost and therefore should not increase at the same rate as activity. An increase in overheads due to activity is merely a reappportionment of overheads and not a real increase in cost. The real value of overheads should not increase unless increased activity leads to new wards or facilities being opening to deal with the increased demand.

### Consultant pay

Commissioners should ensure that the amount of consultant time required is made explicit in the specification, as well as in the template instructions. In the Midlands and East specification, the level of consultant input is one headcount, regardless of the level of activity. As 'consultant' pay is so significant, different interpretations could lead to significantly different cost submissions from provider returns.

## 11.5 Review and 1:1 meetings

The first cut of provider returns should be analysed for consistency. Appropriate ratios might include:

- cost per bed (help identify errors in bed calculations and exceptionally high/low cost services)
- overheads as a percentage of total costs (if overheads are increasing at the same proportion it could point to an incorrect treatment by the provider)
- average length of stay (ALOS) (if ALOS is significantly different between providers it could point to an alternate pathway or explain variances in total beds)
- cost per spell (this simply compares providers on a spell-by-spell basis and could help identify outliers, as well as an average trend).

CCGs should consider a post-review 1:1 meeting with the providers to discuss findings from the review. Provider information is sensitive and should never be shared with other trusts. However, the results of the review should help CCGs to identify benchmarks and acceptability thresholds to challenge provider assumptions. Providers should submit a revised template considering discussions in the 1:1 meetings.

It is advisable that CCGs pay close attention to local pathway variations, as this could be the cause of significant variation in ALOS or costs. For example:

- **provider one:** only provides the acute stroke care and already repatriates patients on day two to a separate inpatient facility. In this situation, there are virtually no rehabilitation costs in the acute phase. This makes it appear comparably cheaper
- **provider two:** provides the acute stroke service but also some of the rehabilitation service. For this provider, some of the costs of providing rehab will be included in the ASU 8+ section of the return making it much more expensive compared to provider one.

In the scenario above provider one is paid for rehab and acute care through PBR, but only delivering the acute phase. The commissioners to provider one could be paying noticeably more for stroke care compared to the commissioners of provider two.

## 11.6 Other benchmarks

**Users should consider using other benchmarks to validate submitted provider returns. By multiplying the provider submitted reference cost (for stroke/TIA HRGs) by the activity in provider returns, a total cost of the service can be estimated. CCGs should compare this to the total cost of the stroke service in the provider returns. Any significant mismatch should be investigated. Referenced costs are nationally published and can be found online<sup>74</sup>.**

London already operates a reconfigured stroke service; following a HASU (zero to three LOS), ASU (four to seven LOS), ASU (eight plus LOS) model. CCGs should consider using the London tariffs and multiplying against the activity submitted in the provider returns to see whether the level of income is similar to the proposed income quantum under the new specification. London has successfully implemented and maintained the reconfigured service under these local tariffs. By comparing total income quantum of using London tariffs, against the total income quantum under the new specification, CCGs can judge the value for money provided by the local reconfiguration.

The provider returns require providers to enter the current level of activity under each of the stroke/TIA HRGs. In order to validate the activity volume and mix submitted by the trust, CCGs should query SUS databases and verify provider accuracy.

## Pricing model

The pricing model allows users to estimate the total expenditure on acute stroke services, by calculating the cost of each proposed stage individually, using information from submitted provider returns.

## Model outputs

The model is designed to show how provider costs change under the new configuration. The provider "income" and corresponding commissioner costs are assumed to be fixed in this model at the maximum possible income available to the providers.

In the Midlands, the view was taken that the maximum CCG investment would be tariff plus best practice tariff and, therefore, the maximum income available to providers (and which CCGs should be able to fund) would be tariff plus 100% best practice tariff.

By fixing the income, configurations can be compared to the existing stroke surplus or deficit. In the West Midlands, the decision as to whether a configuration is acceptable would be dependent on whether it worsened the current provider position.

## Overheads

Overheads should be modelled as the CCGs see fit. The model currently assumes the overheads are stepped fixed in nature for HASU and increase in spell increments. For ASU the overheads in the provider submissions are used.

However if provider overhead modelling appears unreasonable compared to the increase in spells, the CCG should consider using the provider current overheads. The extent of provider capital costs and capacity will impact on the overhead modelling assumptions, depending on the local impacts.

## Other considerations

It is important to note that the model excludes:

- income from excess occupied bed days (OBD)
- short stay income adjustments (all income is assumed to be paid at the base tariff)
- repatriation costs

74. <https://www.gov.uk/government/collections/nhs-reference-costs>

- additional cost associated with increased ambulance drive time
- transformation costs associated with reconfiguration are also excluded.

The model should be used as a tool to give users an indication of total estimated expenditure. Local differences in pathways and specifications mean that this model might not be suitable for all reconfigurations.

Users should complete the user input tabs highlighted in yellow. Providing the provider returns use the same range of modelled spells and same increments as in the BSBC reconfiguration, the model automatically calculates the cost of stroke and TIA services.

## 11.7 Analysis update from Birmingham, Solihull and the Black Country

The analysis above is based on 2013/14 initial provider return submissions.

### Illustration of input – process - output



### Assumptions

The pricing model has been specifically designed for the reconfiguration in Birmingham, Solihull and the Black Country but can be used as a tool for other similar local reconfigurations. The following assumptions are relevant:

- the model costs stroke services for three separate stages of the acute pathway; HASU (0-3 days LOS), ASU (4-7 days LOS) and ASU (8+ days LOS)
- short stay and XS occupied bed days adjustments have not been considered in this model
- the model does not take into account mimic income as, locally, HRGs for mimics were unknown at the time of evaluation
- no cost efficiencies are assumed from combining the HASU and ASU 4-7 stages of the pathway
- total expenditure is calculated based on a fixed range and activity increments in trust returns. This starts at 600 and increased in increments of 300 up until 2,400 units. These metrics are annualised stroke activity
- ambulance capital costs are not considered in this model
- savings from LOS reductions are not considered in this model
- best practice tariff is assumed to be recovered on 100% of the activity under the new specification. This is assumed to be the overall income quantum, i.e. the maximum income available to providers for delivering stroke activity.

The model assumes that the average cost of the provider receiving activity will be used to estimate the total cost. Further local modelling may be required if activity is being diverted away from specialist centres which would have a much higher average cost per spell. The issue is that the model will favour sites with the cheapest unit costs but the HASU with currently the most expensive unit cost of care may be the most expensive because it treats proportionately more complicated cases.

## User input tabs

### Activity raw data tab:

CCGs should complete the user input tabs highlighted in yellow. The “activity raw data” tab should be used to enter estimated provider activity, against each provider, for each reconfiguration option. This should be completed three times for HASU 0-3, ASU 4-7 and ASU 8+.

### ASU unit cost calculation:

The “ASU unit cost calculation” tab should be used to insert the current activity and current cost of delivering ASU activity. This information can be drawn from submitted provider returns. The sheet works out the unit cost of ASU 4-7 and ASU 8+ then calculates an estimated cost for the modelled ASU 4-7 and ASU 8+ activity under the new configurations. It is unlikely that provider activity will be materially altered as a result of adopting a repatriation model, so users should gain reasonable assurance that a materially correct cost will be provided by the pricing model.

### Provider return summary

The “provider return summary” tab requires users to break down provider expenditure between fixed, semi fixed and variable. This action is required for HASU (0-3 LOS), ASU (4-7 LOS) and ASU (8+ LOS). Users can obtain the input information from provider returns submitted.

## Calculating PBR

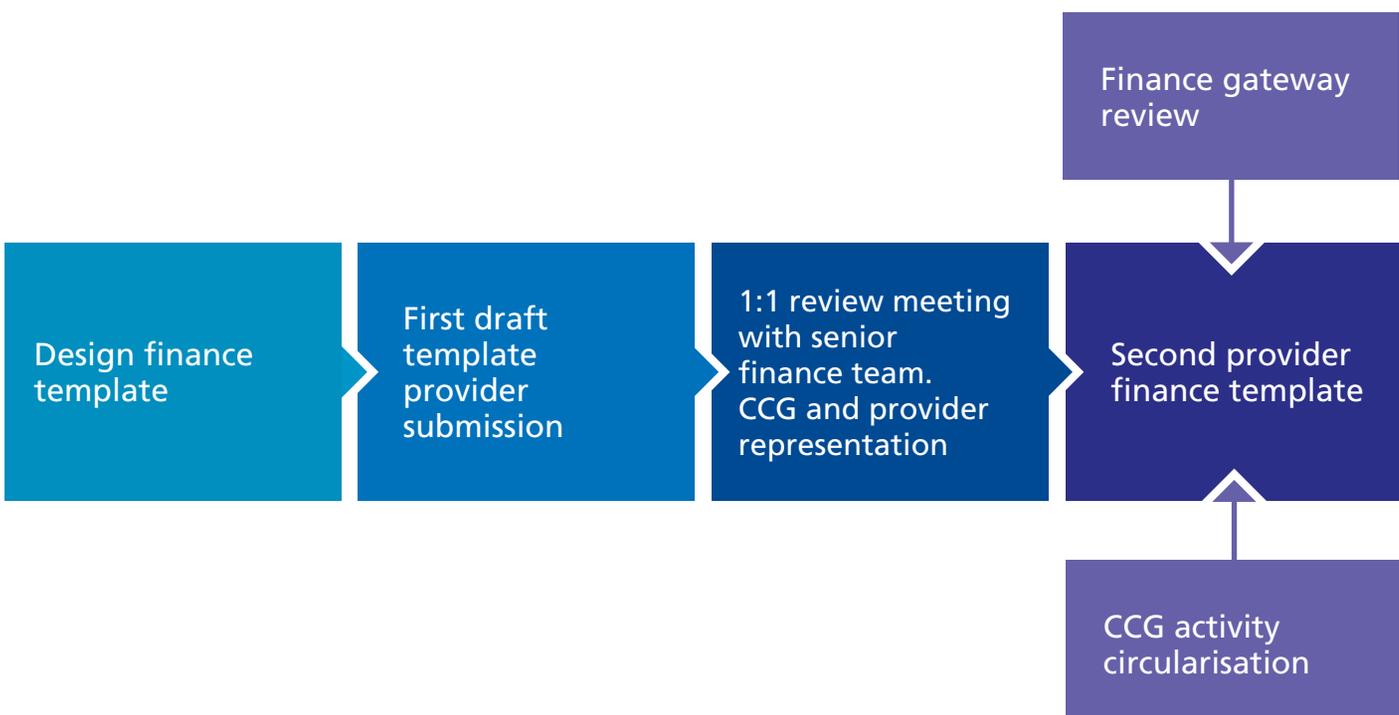
To calculate the total income, users should obtain the total activity under each of the stroke HRGs, for each configuration option. Activity should be multiplied by the tariff price at each HRG, and then grossed up/down by the market forces factor (MFF) percentage. The income estimate is allocated to each stage of the pathway based on the % of total acute cost at each stage.

## Matrices tabs

The matrices tabs calculate the costs of ASU 4-7 and HASU stages of the acute pathway. Different modelling assumptions are applied depending on whether the cost nature is fixed, semi fixed or variable.

The tabs work by pulling through a provider return cost for all levels of activity. Depending on the type of cost behaviour, a different method is used to calculate total cost:

- variable costs are flexed directly with activity. Examples of variable costs would be drugs and nurses
- stepped/semi fixed costs rise in increments of 300 (at mid point). An example of a stepped/semi fixed cost would be consultant pay or additional ambulances required. Semi fixed costs are anything which don't move directly with activity, but will require increased input



at certain points. For example, a consultant wouldn't be required for every patient, but a new consultant might be required if 100 new patients are flowing through the stroke unit every week

- fixed costs increase to the provider return value at every increment of 300. This assumes the overheads provided in the trust return are used.

Commissioners should consider whether it is appropriate to use overheads submitted by providers in returns. Unless increased stroke activity results in new wards being constructed or renovated, the real trust overheads should not increase significantly. In some cases providers apply a standard percentage on service cost to account for a proportion of trust overheads. This is merely a reallocation of apportioned expenditure and should not be seen as an incremental increase in cost as a result of the stroke reconfiguration.

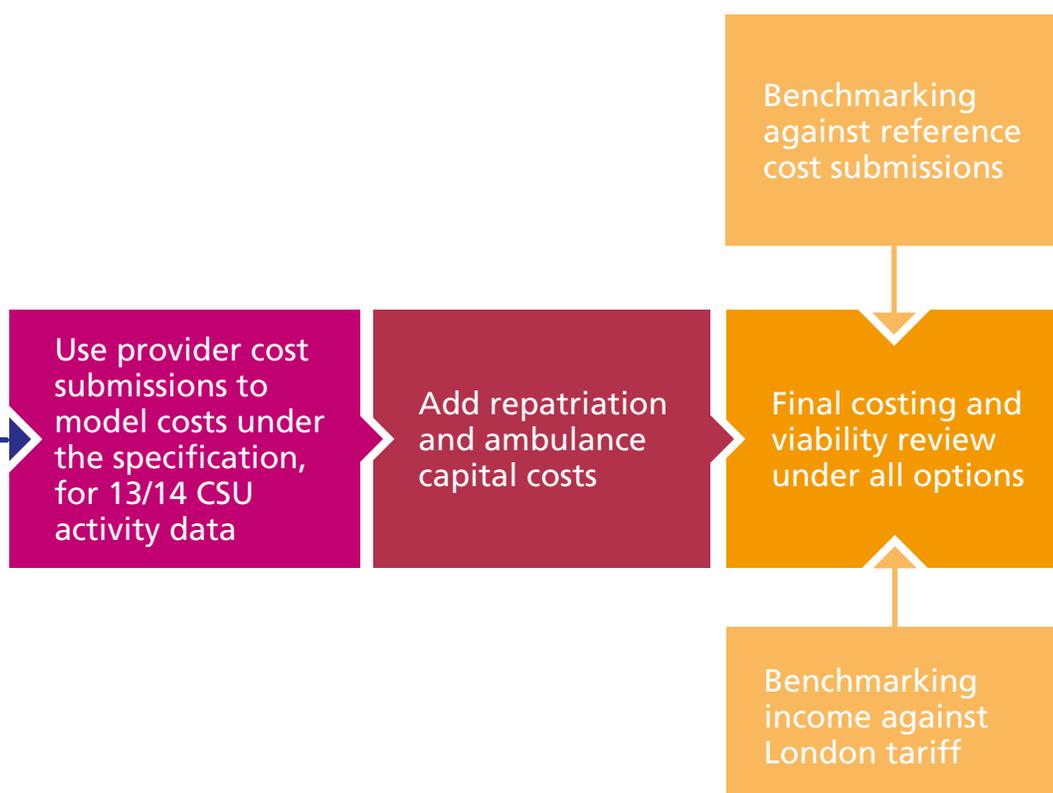
### Configuration cost tab

Users are required to insert the current provider surplus/deficit into the column BX. Commissioners in the BBCSol reconfiguration drew the conclusion that a reconfiguration option would be acceptable if it didn't worsen any current deficit held by providers.

### Assumptions cost tab

Users should detail any assumptions here to ensure an audit trail is retained.

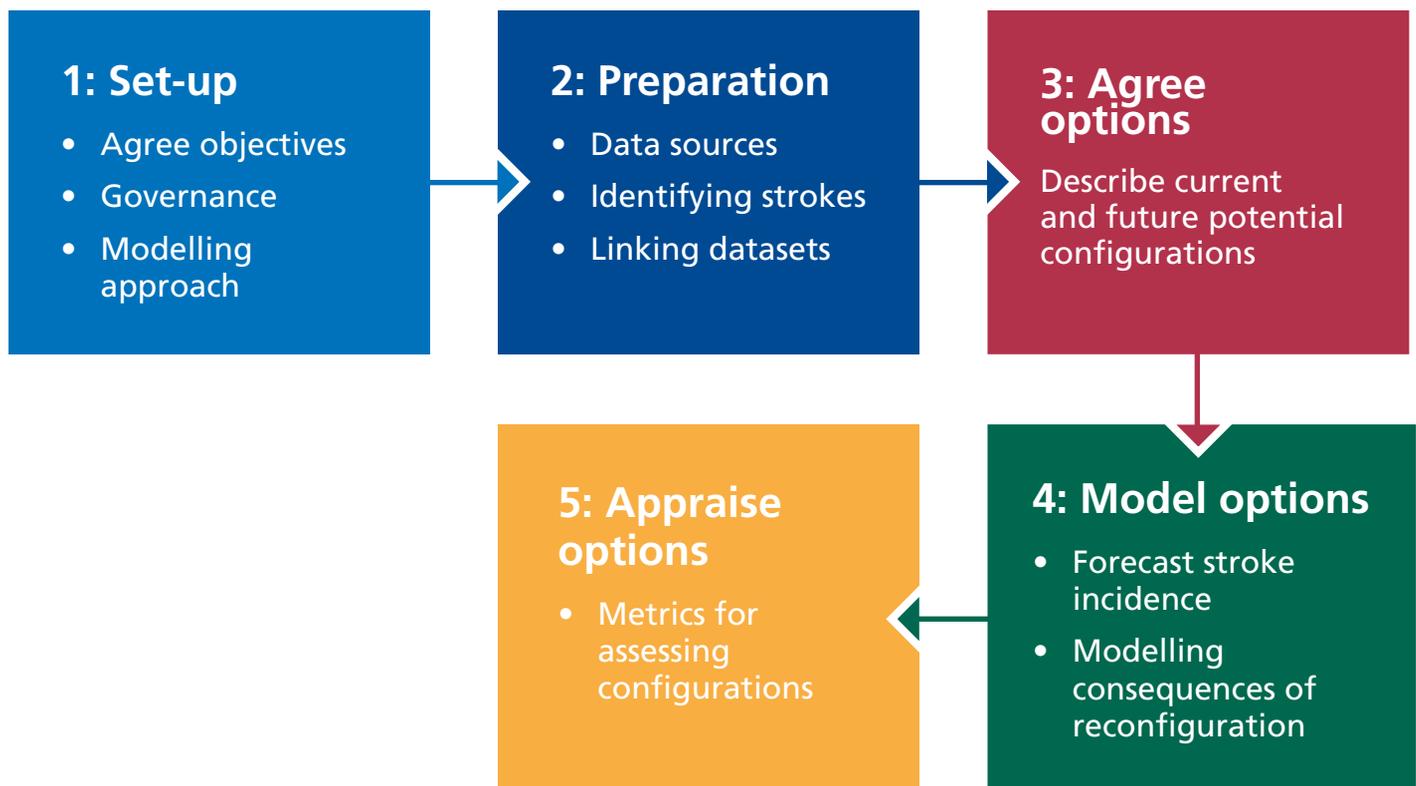
**The diagram below shows the process of financial evaluation followed in the Birmingham, Solihull and Black Country reconfiguration.**



# 12. Travel, activity and accessibility modelling

## 12.1 Introduction

Decision-makers and stakeholders considering potential configurations of stroke services, commonly require some assessment of the likely impact of a reconfiguration on provider activity levels and patient travel times. This chapter sets out the methodological and logistical issues that health economies may wish to consider when commissioning or carrying out modelling of this type using a five-stage process.



This chapter draws upon the project to reconfigure stroke services in Birmingham, Solihull and the Black Country. The activity and accessibility model for this project was developed by the strategy unit hosted by NHS Midlands and Lancashire Commissioning Support Unit.

## 12.2 Stage one: set-up

### Modelling objectives and governance

Although activity and accessibility modelling is commonly regarded as a technical and objective exercise, it is more often the case that the modelling outputs are highly dependent on a range of subjective decisions about the model scope, methods and parameters. Given the controversial nature of health service reconfigurations, local health economies may wish to consider establishing a reference group to oversee and guide the modelling process to ensure greater transparency of the model development and greater ownership of the model results.

Membership of a reference group might include: clinicians and managers from local acute and community service providers, clinical commissioning groups, ambulance services, patient and carer representatives, the third sector and independent clinical and technical advisors. Terms of reference should include objectives, scope, deliverables, stakeholders, roles and responsibilities, resource and support implications and a meeting schedule.

The objectives of a modelling exercise are likely to be manifold and diverse. Discussions leading to clear decisions about the model scope and the nature of the outputs that are required will result in a more efficient modelling process. When considering the model scope and objectives, local health economies might wish to consider the following issues:

#### Scope

Coverage:

- geographical/population
- providers
- patients (stroke, TIA, mimics)
- level of care (hyperacute, acute, rehabilitation).

Baseline period and model time horizon.

#### Scope

Factors outside the control of the reconfiguration process:

- demographic changes
- lifestyle changes
- patient behaviour changes
- other service reconfigurations
- new medical technologies.

The number of potential future configurations.

#### Possible objectives

To estimate the likely impact on:

- the level and distribution of acute hospital admissions
- acute and community bed day usage
- the journey times for patients
- ambulance service resources and logistics
- repatriations between hospitals
- travel times and costs for visitors.

Local health economies should be aware that as the model scope and objectives increase, so too do the timescales and costs associated with model development, the difficulty of auditing the model and the likelihood for the model results to be complex and equivocal.

### Modelling approaches and methodologies

At the heart of any activity or accessibility modelling is the question: *'How would the distribution of patients between providers and associated travel times change if services were reconfigured?'* The core task therefore of any model is to redistribute patients on some logical basis to providers under one or more potential configurations.

While assessments of activity and accessibility of future potential configurations may be useful in their own right, health economies may wish to understand how these future states compare to levels of activity and accessibility in an agreed baseline period and to a future state where no service configuration takes place (the 'do nothing' scenario).

Models and modelling methods are often described as either deterministic or probabilistic. Deterministic models take no account of underlying randomness of the characteristics of the model subjects (for example, patients) or the

events that occur to these model subjects. One of the important implications of this distinction is that deterministic models will always return the same results so long as the model parameters are not changed. Probabilistic models reflect inherent randomness in subject characteristics and events and therefore return different results each time the model is run.

A deterministic model was developed to support the stroke reconfiguration programme in Birmingham, Solihull and the Black Country. This decision was taken for two reasons: to minimise the timeframe for the model construction and to enable providers to reconcile the model results within a baseline period.

## 12.3 Stage two: preparation

### Useful data sources

While it may be possible to arrange bespoke data collection exercises to populate an activity and accessibility model, local health economies should first consider whether existing data (routinely collected, published or proprietary data) is sufficient.

The Hospital Episode Statistics data, in its processed and validated form from the Health and Social Care Information Centre (HSCIC) or via the Secondary Uses Service, is detailed record-level datasets of inpatient consultant episodes, outpatient attendances and accident and emergency department attendances. These datasets contain a mix of administrative (admission date, provider name), demographic (patient's age, gender), geographic (local authority for patient's address), clinical (diagnoses, procedures, consultant specialty) and costing (HRG, excess bed days) data. Data dictionaries for these datasets are available from HSCIC<sup>75</sup>. The data may be supplied in anonymised or pseudonymised form or with patient identifiers, depending on the arrangements governing the supply of the data by HSCIC.

Extracts may be obtained from ambulance service computer-aided dispatch systems containing information about calls received, ambulances dispatched and the onward conveyance of patients. The format of these datasets will vary between ambulance services but will contain a mix of administrative, demographic, geographic and clinical data that serves to describe a call and its handling. Information sharing agreements may be required to facilitate the transfer of this data from ambulance services to support the development of an activity and accessibility model. Additional summary data about ambulance activity and performance is published by NHS England<sup>76</sup>.

HSCIC maintains lists of NHS organisations and sites and makes these available via the Organisation Data Service<sup>77</sup> (ODS). These tables contain information about the status, type and location of hospitals and other services. This information will need to be supplemented with local intelligence about the nature of services offered at these hospitals and sites.

Mid-year population estimates and sub-national population projections published by the Office for National Statistics<sup>78</sup> provide information about the current and forecast population size by age and gender at CCG and local authority level.

Geographic data (for example, boundary files and transport networks) can be obtained from the Ordnance Survey Public Sector Mapping Agreement<sup>79</sup> (PSMA) and through ONS Geography<sup>80</sup>.

A number of commercial organisations supply data on the average or expected journey time from one location to another at different times of day using private vehicles and public transport. Software applications are usually required to integrate these datasets with transport networks to allow effective interrogation.

75. <http://www.hscic.gov.uk/hesdatadictionary>

76. <http://www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators/>

77. <http://systems.hscic.gov.uk/data/ods>

78. <http://www.ons.gov.uk/ons/index.html>

79. <http://www.ordnancesurvey.co.uk/business-and-government/public-sector/mapping-agreements/>

80. <http://www.ons.gov.uk/ons/guide-method/geography/about-ons-geography/index.html>

## Defining and identifying stroke and TIA activity

Inpatient hospital episode statistics are organised by consultant episode. A consultant episode is a period of care under a particular hospital consultant. A stay in hospital, often referred to as a spell, may be made up of one or more consultant episodes, with the start of one episode coinciding with the end of another. The admission method code can be used to identify the patient's route into hospital.

The patient's primary diagnosis, and as many as 20 secondary diagnoses, is recorded for each consultant episode using the International Classification of Diseases version 10 (ICD10). The table below lists ICD10 codes that may warrant inclusion in a stroke/TIA reconfiguration model, although health economies may wish to consider all codes between I60.0 and I69.8 and between G45.0 and G45.9:

ICD10 code	Description
I61.0 to I61.9	Intra-cerebral haemorrhage
I63.0 to I63.9	Cerebral infarction
I64.0 to I64.9	Stroke, not specified as haemorrhage or infarction
G45.4	Transient global amnesia
G45.8	Other transient cerebral ischaemic attacks and related syndromes
G45.9	Transient cerebral ischaemic attack, unspecified

To define a hospital admission as an emergency admission following a stroke or TIA requires a number of key decisions<sup>81</sup>:

- which admission method codes should be used to define an emergency admission
- which of the ICD10 codes above should be used to define a stroke or TIA
- should the definition of a stroke admission

refer to the primary diagnosis only or include any of the secondary diagnoses

- should the definition of a stroke admission refer to the admission episode, dominant episode, discharge episode or to any episode within the spell.

As an alternative, Healthcare Resource Groups (HRGs) could be used to identify stroke or TIA admissions or episodes. The table below lists the relevant HRG codes:

HRG code	Description
AA23A	Haemorrhagic cerebrovascular disorders with complications and comorbidities
AA23B	Haemorrhagic cerebrovascular disorders without complications and comorbidities
AA24A	Brain tumours or cerebral cysts with complications and comorbidities
AA24B	Brain tumours or cerebral cysts without complications and comorbidities
AA29A	Transient ischaemic attack with complications and comorbidities
AA29B	Transient ischaemic attack without complications and comorbidities

Identifying stroke and TIA related activity in accident and emergency is more problematic. While a patient's presenting condition should be recorded using the standard A&E diagnosis classification system, many acute trusts do not comply with this requirement. Furthermore, the A&E diagnosis classification system does not allow patients with a stroke or TIA to be differentiated from patients with other cerebrovascular conditions<sup>82</sup>. Investigations and treatments are somewhat more reliably and consistently recorded and, while CT scans<sup>83</sup> and thrombolysis<sup>84</sup> can be identified, these are neither sufficient nor necessary indicators of a stroke or TIA.

A patient's chief complaint is routinely recorded by the ambulance service at the point a telephone call is received. Strokes are well-recorded at this

81. For the Birmingham, Solihull and Black Country Stroke Services Reconfiguration model, emergency admissions (admission method = 2\*) with primary diagnosis in I61.\*, I63.\*, I64.\*, G45.4, G45.8 or G45.9 in any episode within the spells were included.

82. Cerebrovascular conditions – HES A&E diagnosis code 21

83. Computerised tomography – HES A&E Investigation code 12

84. Thrombolysis – HES A&E treatment code 28

stage and ambulance crews are subsequently dispatched. While many of these patients will be identified as F.A.S.T positive by the ambulance crew at scene, a substantial proportion will be F.A.S.T<sup>85</sup> negative and the outcome of this assessment is not always recorded in computer-aided dispatch (CAD) systems. Moreover, many patients who are assessed as F.A.S.T positive following a face-to-face assessment by the ambulance crew at the scene may have initially indicated an alternative chief complaint. Tracking the onward conveyance of all F.A.S.T positive patients is therefore not trivial.

### Linking datasets to track patients through the urgent care system

Many patients seen in A&E with a suspected stroke or TIA are subsequently admitted. Although Hospital Episode Statistics (HES) A&E and HES inpatient tables do not contain a specific field to allow an A&E attendance to be linked to a resultant inpatient admission, deterministic linkage is still feasible using the following fields:

- A&E and inpatient NHS number (or its pseudonym)<sup>86</sup>
- A&E disposal code
- inpatient admission method
- A&E arrival date and conclusion time and inpatient admission date.

Some pragmatic prioritisation method may be required to select a single A&E attendance or inpatient admission where multiple matches occur.

It is uncommon for data from ambulance service computer-aided dispatch systems to record a patient's NHS number and so probabilistic/fuzzy data linkage is required to match an ambulance conveyance and resultant A&E attendance. Weights for probabilistic data linkage might refer to the following fields:

- ambulance arrival (at hospital) date-time and A&E arrival date-time
- ambulance incident postcode and A&E patient postcode (or postcode sector or output area)<sup>87</sup>
- A&E arrival mode
- ambulance and A&E patient gender
- ambulance and A&E patient age
- ambulance chief complaint and A&E diagnosis (cerebrovascular condition)
- ambulance chief complaint and A&E investigation (CT scan)
- ambulance chief complaint and A&E treatment (thrombolysis).

Note that in some instances and at certain hospitals, patients arriving by ambulance bypass A&E and are admitted directly onto a ward or assessment unit. In this case, weights for probabilistic data linkage might refer to the following fields:

- ambulance arrival (at hospital) date-time and inpatient admission date
- ambulance incident postcode and inpatient patient postcode (or postcode sector or output area)<sup>88</sup>
- inpatient admission method
- ambulance and inpatient patient gender
- ambulance and inpatient patient age
- ambulance chief complaint and inpatient primary diagnosis.

85. <http://www.nhs.uk/actfast/pages/stroke.aspx>

86. Probabilistic /fuzzy matching may be required where NHS numbers (or a pseudonym) are not available, using for example age, sex and geographic location of residence (level available may vary for example, postcode or lower super output area).

87. Bearing in mind that the incident may not have been at home, this match should be used to confirm but not discount matches.

88. Bearing in mind that the incident may not have been at home, this match should be used to confirm but not discount matches.



The results of data matching can be interpreted as follows:

Ambulance record	A&E record	Inpatient record	Pathway	Stroke/TIA or mimic
<b>N / S</b>	<b>N / S</b>	<b>S</b>	Patient conveyed by ambulance to A&E and subsequently admitted	confirmed stroke/TIA
<b>S</b>	<b>N / S</b>	<b>N</b>	Patient conveyed by ambulance to A&E and subsequently admitted	mimic
<b>N / S</b>	<b>S</b>	-	Patient conveyed by ambulance to A&E and then discharged	either stroke/TIA or mimic
<b>S</b>	<b>N</b>	-	Patient conveyed by ambulance to A&E and then discharged	mimic
<b>N / S</b>	-	<b>S</b>	Patient conveyed by ambulance to hospital and admitted, bypassing A&E	confirmed stroke/TIA
<b>N / S</b>	-	<b>N</b>	Patient conveyed by ambulance to hospital and admitted, bypassing A&E	mimic
-	<b>N / S</b>	<b>S</b>	Patient conveyed to A&E by means other than ambulance and subsequently admitted	confirmed stroke/TIA
-	<b>S</b>	<b>N</b>	Patient conveyed to A&E by means other than ambulance and subsequently admitted	mimic
<b>S</b>	-	-	Patient not conveyed to hospital	either stroke/TIA or mimic
-	<b>S</b>	-	Patient conveyed to A&E by means other than ambulance and then discharged	either stroke/TIA or mimic
-	-	<b>S</b>	GP directed admission or transfer	confirmed stroke/TIA

**S** Record indicates presence of stroke/TIA

**N** Record does not indicate presence of stroke/TIA

- No record

## 12.4 Stage three: agree options

### Identifying current and potential future configurations

Mapping current secondary care service provision for patients with hyperacute and acute stroke and TIA is an essential prerequisite for the development of an activity and accessibility model. This should include services outside the geographical scope of the reconfiguration programme, which may become the closest service provider for local patients under some future configurations<sup>89</sup>. Thematic maps may assist stakeholders to understand the flow of patients from incident or resident locations to hospitals via ambulance or by other means. Maps might plot the location of each stroke incident, coloured according to the hospital to which the patient was conveyed.

Stroke reconfiguration programmes usually seek to test the benefits of reducing the number of hyperacute stroke units, although, in some cases, there may also be an interest in rationalising the number of acute stroke units. Health economies considering stroke service reconfiguration should consider drawing up a longlist of all potential future configurations.

Without other constraints, if the number of stroke units is currently  $n$  and the plan is to reduce to  $k$  hyperacute stroke units, then there are  $n!/k!(n-k)!$ <sup>90</sup> potential configurations. Note that this number can become large and unmanageable from a practical perspective as  $n$  increases and approaches  $n/2$ . In these cases, a reference group may need to agree a pragmatic list of potential configurations that should be modelled. This number may increase further if there is uncertainty about the location of acute stroke units.

Health economies will also need to make an assessment of the likely changes to stroke services in areas neighbouring the geographical scope of the programme.

## 12.5 Stage four: model options

### Forecasting changes in stroke activity resulting from changes in stroke incidence

For the purposes of this guide, we define stroke incidence rates, emergency hospitalisation rates and prevalence rates for the population of a geographic area as follows:

- incidence rate – the number of stroke or TIA incidents per head of population per year (note that an individual may have more than one incident per year)
- emergency hospitalisation rate – the number of emergency admissions to hospital following a stroke or TIA per head of population per year
- prevalence rate – the number of people receiving ongoing treatment or management following a stroke or TIA per head of population at a given point in time (note that this treatment or management could take place in a range of primary, community or secondary care settings).

While stroke and TIA prevalence rates are routinely published<sup>91</sup> and are useful as an indication of the burden of the disease or of the capacity requirement for chronic disease management of primary care, they are less useful when modelling a service reconfiguration focusing on the acute and hyperacute aspect of stroke care.

Stroke incidence rates are infrequently published following specific research studies. However, hospitalisation rates for strokes and TIAs should be broadly aligned with incidence rates and can be derived from routinely available data such as Hospital Episode Statistics.

Trends in age/sex specific stroke incidence rates can be estimated by dividing the number of emergency hospital admissions for stroke in a given age/sex group each year by the size of population in that age/sex group.

89. In many areas, the provision of stroke services has evolved over an extended period. Indeed, changes may have occurred to stroke service provision during the agreed baseline period for the model. In this case, health economies may wish to construct a modelled baseline against which any future configurations are assessed.

90. Where  $n!$  is  $1 \times 2 \times 3 \times \dots \times (n-1) \times n$

91. Stroke and TIA prevalence and management indicators are published by HSCIC as part of the Quality and Outcomes Framework (QOF) collected from general practices in England: <http://www.hscic.gov.uk/qof>. The disparity between stroke prevalence estimates from the Health Survey for England (HSE), and the number reported in QOF led to the production of a stroke prevalence model from the former Association of Public Health Observatories: <http://www.apho.org.uk/default.aspx?RID=61214>

The number of people admitted to hospital in an emergency for a stroke or TIA is driven by two factors:

- the size and age/sex profile of the population
- the stroke and TIA incidence rates for the population in each age/sex sub-group.

Similarly, changes in these two factors will influence the number of emergency hospitalisations for stroke and TIA in the future.

Trends in age/sex specific hospitalisation rates<sup>92</sup> can be forecast to some future year<sup>93</sup> and multiplied by the projected population in the relevant age/sex group to estimate the number of hospitalisations for stroke and TIA in a future year. These estimates can be summed up across all age/sex groups to estimate the total number of hospitalisations for stroke or TIA in a given future year.

While these total estimates of emergency hospitalisations for stroke or TIA are useful in their own right, they are also required as a component of the activity and accessibility model. In particular, the model will require multipliers (the ratio of future hospitalisations to current hospitalisations) by age group, gender and area.

### Modelling activity and accessibility changes under potential future configurations

Decision-makers and stakeholders will want to assess differences between activity levels, resource use for each provider service and travel times in:

- the baseline year
- the end year of the model (or some intermediate point) without a reconfiguration
- the end year of the model (or some intermediate point) for each of the longlisted configurations.

Activity levels and resource use in the baseline year can be derived directly from the linked ambulance service, accident and emergency and inpatient datasets described above.

While ambulance journey times in the baseline year should be available in the ambulance service extract, other journey times will need to be estimated using information about the patient's postcode (or postcode sector or output area)<sup>94</sup>, the location of the hospital they attended and drive time datasets/software.

Activity levels, resource use and travel times in future years without reconfiguration can be estimated using the stroke/TIA incidence multipliers described above.

To estimate activity levels, resource use and travel times in future years under specific configurations requires the redistribution of activity, weighted by the stroke/TIA incidence multipliers, to stroke services. A model will require a set of rules that encode this redistribution.

Rules for distributing or assigning patients to hyperacute stroke units in any future configuration might take one of the following forms:

- a. Patients should be assigned (in other words, travel to) a hyperacute stroke service by minimising the travel time (or distance) from the patient's stroke incident (or residence)
- b. Patients should be assigned to the hospital that they attended in the baseline year unless this hospital is not a HASU in the configuration under consideration, in which case the patient should be assigned to a hyperacute stroke service by minimising the travel time (or distance) from the patient's stroke incident (or residence)

92. The age/sex specific rates could be refined further with reference to deprivation, smoking status etc.

93. Given reductions in smoking prevalence (a key risk factor for stroke) and improvements in chronic disease management, reductions in age/sex specific rates might be anticipated. These improvements may be offset in total or in part by increases in the number of adults aged 75+.

94. As a proxy for the origin of their journey to hospital

- c. Patients should be assigned to the hospital that they attended in the baseline year unless this hospital is not a HASU in the configuration under consideration, in which case the patient should be onward conveyed to a hyperacute stroke service by minimising the travel time (or distance) from the hospital attended
- d. Patients should be assigned to hyperacute stroke services such that the number of patients attending each HASU is equal, HASU catchment populations are contiguous and the total patient travel time/distance is minimised<sup>95</sup>
- e. Other more complex scenarios may consider patient movements in which boundary retention or creation for one or more hospitals is required due to capacity limitations, although the impact on travel times needs to be closely assessed in this instance.

Different rules may be selected for different groups of patients (for example, rule (a) may be used to assign ambulance conveyed patients, whereas rule (c) may be used to assign self-conveyed patients).

Rules that describe the movement of patients from hyperacute stroke units to stroke units might take one of the following forms:

- patients whose stay in the baseline year was four days<sup>96</sup> or more will be transferred from a hyperacute stroke unit to an acute stroke unit by minimising the travel time (or distance) from the patient's resident postcode
- patients whose stay in the baseline year was four days or more will be transferred from a hyperacute stroke unit to an acute stroke unit. If, in the configuration under consideration, the hyperacute stroke unit to which the patient has been assigned has a co-located acute stroke unit, then the patient will be transferred to this unit. Otherwise, the patient will be transferred to an acute stroke unit by minimising the travel time (or distance) from the hyperacute stroke unit.

Rules that describe the movement of stroke-mimic patients from hyper-acute stroke units to local general hospitals may take the following form:

- patients whose stay in the baseline year was two days or more will be transferred from a hyperacute stroke unit to local general hospital by minimising the travel time (or distance) from the patient's resident postcode
- patients whose stay in the baseline year was two days or more will be transferred from a hyperacute stroke unit to a general ward in the same hospital on day one of their stay.

More complex models could:

- move patients on the basis of a distribution of length of stay before repatriation
- include transport to computerised tomographic angiography (CTA) thrombectomy services
- assume some failure rate for repatriations
- describe the management of patients who have a stroke while in hospital, having been admitted for another medical condition.

While commercial travel time datasets estimate journey times for privately owned vehicles, it is possible to derive estimates of ambulance conveyance durations under 'blue-light' conditions as follows:

- $A_x$ : ambulance conveyance duration ('blue light') to hospital x in baseline period
- $T_x$ : estimated travel time for privately owned vehicle to hospital x in baseline period
- $T_y$ : estimated travel time for privately owned vehicle to hospital y in future configuration
- $A_y = T_y \cdot A_x / T_x$  : ambulance conveyance duration ('blue light') to hospital y in future configuration.

95. Note that implementing this rule is not trivial

96. Or some other length of stay

## 12.6 Stage five: appraise options

### Metrics for assessing performance of potential future configurations

Having constructed a model to estimate activity levels and accessibility levels in the baseline period, for a 'do nothing' scenario and under each future potential configuration, health economies will require a high level assessment of each. Health economies may wish to consider using the following metrics to assess and compare configurations. These metrics aim to provide coverage of the main issues that preoccupy health economies when assessing the relative merits of configurations from an activity and accessibility perspective<sup>97</sup>: changes in time-critical ambulance journeys, the relationship between HASU activity levels and clinical quality and sustainability, the impact on ambulance service resources, the number of patient moves between hospitals and the impact on patient visitors' journey times and costs.

#### Time-critical ambulance journeys

- the proportion of patients with suspected stroke or TIA following face-to-face assessment by an ambulance crew or paramedic that are conveyed to a hyperacute stroke unit within 45 minutes of departure from the incident
- the average conveyance durations of patients with suspected stroke or TIA following a face-to-face assessment by an ambulance crew or paramedic
- the proportion of patients with suspected stroke or TIA whose conveyance duration, following a face-to-face assessment by an ambulance crew or paramedic, is more than 10 minutes greater than in the 'do nothing' scenario.

#### HASU activity levels

- the number of HASUs with anticipated activity levels lower than some agreed minimum threshold required to maintain clinical standards or ensure financial viability
- the number of HASUs with anticipated activity levels higher than some agreed maximum threshold required to avoid diseconomies of scale or safe staffing ratios.

#### Impact of ambulance services

- the sum of ambulance conveyance durations<sup>98</sup>.

#### Patient repatriation levels

- the number of patients who require repatriation from HASU to ASU at a different site
- the number of patients who require repatriation from HASU to a general ward at a different site.

#### Impact of visitors

- the total journey times for patient visitors
- the total cost of visitor journeys.

While other variables may also be of interest to health economies (for example, HASU bed days usage) these may not serve to differentiate between the potential configurations.

<sup>97</sup>. Other perspectives (for example, finances) are discussed in other chapters.

<sup>98</sup>. The additional ambulances crews required may not be proportional to the sum of the additional conveyance durations.

# 13. Evaluation framework

The purpose of this guide is to provide a framework for longer-term monitoring of stroke services once a decision on the configuration of services has been reached and implemented. It is recommended that both acute and community services are reviewed on an annual basis in a standardised and systematic way led by clinical commissioning groups.

## 13.1 Evidence to support assessments

The main source of data for patient level metrics for acute stroke standards is the Sentinel Stroke National Audit Programme. This is hosted by the Royal College of Physicians (RCP). Trusts are able to access data related to their own service and the RCP produces quarterly reports. However, there will be a need for other sources of data and there is a requirement for services to maintain their own datasets, in particular with regard to staffing ratios and infrastructure. Other sources of evidence include: schedules of rotas, agendas/minutes for meetings, training programmes and reports.

Commissioners will need to agree the local minimum datasets to support the evaluation of services with community services. The service specification provides a guide on the key standards against which performance will need to be measured.

The annual measuring period should be across the 12 months (four quarters) since the previous annual assessment.

## 13.2 Timeline to review preparation

To support preparation it is important to ensure all members of staff are familiar with the documentation as there is a significant amount of work involved. Therefore it is vital that they have enough time to prepare and draw together all the right information to present at the review.

Below is an approximate minimum timeline of milestones in preparation for the review:

What	Details	When	Who
1. Validated SSNAP reports/data submission	Yearly reports including any recent organisational and quarterly reports that make up the 12 month timeframe. All infrastructure and therapy SSNAP reports	Day 0	Trust
2. Exception report submitted to review team	Submit patient level data with details of clinical exception	17-21 days	Trust
3. Review visit	Please see FAQ for further information	28 days	Representatives from trust, network, commissioner, clinical lead

Please refer to the Pan London Annual Review - Operational Guide 2013/14 and the detailed evaluation templates for HASU and ASU and Non-Acute service specifications to support the annual reviews. These can be adapted to focus on areas that require specific attention.

**Appendix 45** – Pan London Annual Review - Operational Guide 2013/14

**Appendix 46** – Pan London HASU Annual Review Template

**Appendix 47** – Pan London ASU Annual Review Template



# 13. Conclusion

## Reflections on developing the guide

The way in which the NHS develops clinical services has changed significantly over the last few decades. Service transformation now requires greater public involvement, clinical support and evidence. The governance structures supporting these changes face ever greater scrutiny and challenge. This document seeks to provide a framework which will act as a guide for commissioners and their partners to support reviews of local stroke services. We have aimed to identify best practice frameworks and build on knowledge and experience from previous stroke reviews to provide practical help to commissioners throughout the lifecycle of a stroke review/reconfiguration process.

The framework within this document has the potential to significantly strengthen the ability of local health economies to develop robust and appropriate stroke service reconfiguration proposals. It advises on how to improve quality, ensure earlier and better engagement, reduce development time and resource (through access to literature and templates). It also gives examples of the steps that need to be taken to meet key assurance processes and to help improve decision-making and alignment with local and national directives.

We have had the opportunity to work with great leaders, passionate clinicians and patient advocates who strongly believe that improving stroke services is a priority for their populations. We have learnt about the merits of early engagement and co-design/co-production with all stakeholders including patients, clinicians and managers across commissioning, provider and local authority boundaries in not only reviewing services but also finding the best solution to meet the needs of patients.

We would like to take this opportunity to thank everyone who has contributed to the materials within this document, from both current and previous reviews, as this has been vital in helping to shape the guide. Thank you to Professor Nick Harding and Andy Williams in the CCG for the opportunity to work on the local stroke review

which helped build the start of these guidelines. We would especially like to thank Professor Tony Rudd for his support and guidance in developing the guide. A special thanks also to NHS Midlands and Lancashire CSU's Communications and Engagement Team for reviewing the documents and creating an excellent visual and accessible guide.

We have thoroughly enjoyed working on the commissioning and development of the guide and hope that you find it useful when embarking on your stroke review journey.

### **Nighat Hussain**

Birmingham, Solihull and Black Country stroke programme director

### **Dimitri Varsamis**

NHS England acute care clinical policy and strategy programme manager

# 14. Resources

It is important to note that this guide has been developed using best practice guidelines and narrative already available to avoid replicating work and to ensure consistency. These have been referenced throughout the document.

In particular, the following documents and service reviews have shaped the core narrative:

- Planning and delivering service changes for patients: A good practice guide for commissioners on the development of proposals for major service changes and reconfigurations (NHS England, 2013)<sup>99</sup>
- Effective Service Change: A support and guidance toolkit (NHS England, 2014)<sup>100</sup>
- Healthcare for London acute stroke review documentation
- NHS Midlands and East stroke service review documentation
- NHS London reconfiguration guide 2011
- Improving Stroke Services: A guide for commissioners (Department of Health, 2006)
- Birmingham, Solihull and Black Country stroke review documentation.

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99. <http://www.england.nhs.uk/wp-content/uploads/2013/12/plan-del-serv-chge1.pdf>

100. [http://www.eoesenate.nhs.uk/files/9314/0862/2233/Effective\\_service\\_change\\_toolkit\\_FINAL.pdf](http://www.eoesenate.nhs.uk/files/9314/0862/2233/Effective_service_change_toolkit_FINAL.pdf)

# 15. Acknowledgements

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