

South East

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Clinical  
**senate**

**Review of the Case for Change  
For Stroke Services in Kent and  
Medway**

June 2015

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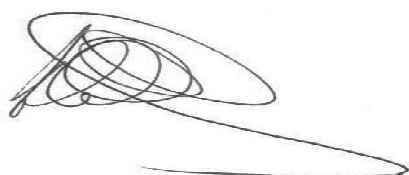
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# 1. Foreword

Regional clinical senates exist to provide strategic, independent, clinical advice to commissioners, and to health systems, to help them make the best decisions about health care for the populations they are responsible for.

In line with that remit, the South East Clinical Senate (SECS) was formally requested to review the draft case for change and the first stage decision making criteria for stroke services in Kent and Medway that had been produced by the programme board set up by the Kent and Medway's CCGs.

The SECS convened an expert clinical review group to undertake this work on its behalf. I am very grateful to the members of this group, who gave of their time freely and at short notice, and contributed their experience, expertise and independent perspective to produce this report. The SECS Council has reviewed then approved this report, and on behalf of the Council, I hope it provides the balanced clinical overview that was requested, and proves useful in progressing the project through its subsequent stages towards providing the highest possible quality of stroke services for the population of Kent and Medway.

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Lawrence Goldberg  
South East Clinical Senate Chair,  
and Chair of the Clinical Senate's Expert Clinical Review Group

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# 1. Summary of Key Recommendations

## 1.1 Set the ambition

There should be a clear statement of the shared ambitions for providing outstanding stroke services in Kent and Medway, and for delivering an excellent patient experience evidenced by specific patient-centred outcomes, high quality multi-professional working supported by ongoing training and education, and engagement in clinical research. This aspiration is not explicit enough, and would add to the power of the Case for Change, beyond just complying with service specifications and standards.

*See recommendations: 4.1.1; 4.1.5; 4.3.1.*

## 1.2 Demonstrate a patient-centred and clinical focus throughout the Case for Change

As the rationale for the Case for Change is ultimately about improving outcomes and the experience of patients with strokes (or TIAs), it would be beneficial to provide more evidence of a patient-centric perspective. In addition, its tone and language would benefit from clearer clinician input.

*See recommendations: 4.1.8-9; 4.3.2*

## 1.3 Consider the whole stroke and transient ischaemic attack patient pathways, not hyper-acute stroke units (HASUs) in isolation

There should be a clear outline of the full stroke and TIA pathways, from the patient and carer as well as strategic perspective, starting from primary and secondary prevention, right through to pre-hospital, hyper-acute and acute care, rehabilitation and recovery in the community. This outline will ensure that the stroke networks are designed to maximise positive long term patient outcomes and experience, and will avoid un-intended consequences of focusing on and prioritising just the acute elements of the pathway. Clinical commissioners, working with local authorities, should consider commissioning the whole stroke and TIA pathway to ensure that rational, co-ordinated and patient-centred care is delivered.

*See recommendations: 4.1.2; 4.3.3; 4.4.1-2; 4.4.4; 4.4.8.*

## **1.4 Ensure that HASUs are configured, staffed and are of sufficient size to deliver their potential for optimal care**

Whilst some HASUs achieve good results and outcomes with fewer than the nationally recommended minimum stroke activity of 600 confirmed cases per year, there should be a stated *aim* or any designated HASU in Kent and Medway to achieve this minimum activity, based on the wide range of clinical benefits seen in larger units, and the likely financial benefits resulting from economies of scale). Any designated HASU should be appropriately staffed to deliver high quality 24/7 and 7/7 specialist care (as required).

*See recommendations: 4.1.3-5; 4.5.3.*

## **1.5 Describe how HASUs and acute stroke units (ASUs) would be networked, and the inpatient pathways for patients with stroke mimic symptoms**

The planned relationships between HASUs, where the first 72 hours of care should be delivered, and ASUs for ongoing inpatient care (whether in the same hospital, or local to the patient's home), should be clearly described. In addition, there should be explicit care pathways for patients transferred to HASUs who turn out not to have had a stroke (patients with 'stroke mimic' symptoms), particularly describing the consequences for either ongoing care within the HASU hospital, or onward transfer of clinical care to their local acute hospital.

*See recommendations: 4.1.2; 4.1.7; 4.4.1-2; 4.4.8-10.*

## **1.6 Detail the clinical co-dependencies of HASUs and ASUs**

Inpatient stroke services are highly inter-dependent with a range of other clinical specialities and services and these should be described in detail as they have significant implications for the location of HASUs and ASUs, and for determining the required co-located or otherwise networked supporting services. In addition, there should be clearly defined referral pathways to tertiary centres for neurosurgery and neuroradiology intervention.

*See recommendations: 4.4.11 and Appendix C.*

## **1.7 Provide more detailed presentations of travel times, ambulance and transport issues**

The issue of distance from home and time taken to travel to centralised specialist units, both for delivering timely hyper-acute care, and for visiting by family and friends, is a key consideration for the public. There should also be a clear summary of travel times to and between the various hospitals across Kent and Medway. Account should also be taken of population density variations. This information will explicitly set the context in which the networked arrangements between HASUs and ASUs, and inpatient rehabilitation, would work in delivering care closer to home as soon as clinically appropriate. The implications for the regional ambulance (SECamb) are significant: for the appropriate clinical delivery of pre-hospital stroke care, for meeting the ambulance Clinical Quality Indicator of 60 minutes call-to-delivery to hospital, and for the onward transfer of patients between sites within the stroke network, and need to be articulated.

*See recommendations: 4.4.7-8; 4.5.13.*

## **1.8 Establish a clinically appropriate ‘call to needle time’ for the stroke networks**

Whilst there are a number of time-specific standards and targets for the hyper-acute pathway, the key clinically relevant time for patients who would benefit from thrombolysis is that between the onset of stroke symptoms and the administration of the thrombolytic drug. The earlier thrombolysis is administered the better are the outcomes, with less than 90 minutes the ideal based on available evidence. *A new standard of a maximum of 120 minutes for the ‘call to needle time’ is recommended (and as soon as possible within that time frame)*, which enables any longer travel times to HASUs resulting from centralisation of services, to be mitigated by a more rapid and efficient pre-referral response, and response on arrival at hospital (including immediate access to CT scanning). This new standard will require integration, coordination and agreement between the ambulance service, acute providers and commissioners, and responsibilities for the monitoring and reporting of the individual components of this overarching standard will need to be made explicit and shared across the system.

*See recommendations: 4.1.6; 4.3.9.*

## **1.9 Address in more detail the issues of the multi-professional stroke workforce, and its education and training needs working across the whole pathway**

There are many workforce challenges to delivering high quality multi-disciplinary specialist stroke care across the whole stroke pathway, and across all provider organisations involved in the provision of care in the region, and these should be detailed. These include issues of available specialist manpower, recruitment and retention (medical and non-medical), and the need to deliver 24/7 and seven day services. In this context, there are significant benefits in concentrating the relevant specialists in fewer but larger HASUs. However there are real risks to destabilising on-call rotas in non-HASU hospitals, particularly in Elderly Care, unless this is acknowledged and planned for. In addition, any new model needs to fully consider the education and training requirements of the workforce, as the consequences of different service configurations may materially impact on how these requirements are sustained. Commissioners should work closely with Health Education England on the required workforce plans and anticipated education and training needs, and include a review of potential new or extended roles of different staff groups. Particular consideration should also be given to the availability and training of interventional neuroradiologists in tertiary referral centres, given the potential large increase in demand for intra-arterial thrombectomy based on recent clinical trial results.

*See recommendations: 4.5.1-14.*

## **1.10 Model future demand for stroke services, ensure an ongoing focus on prevention, and address existing health inequalities**

Planning for stroke care across Kent and Medway needs to anticipate and meet the population needs over at least the coming ten to fifteen years (including for patients living outside the county who will utilise the services). There is value in modelling changes in activity over this time frame, taking account of factors that increase or decrease the incidence and subsequent prevalence of stroke. Prevention of cardiovascular disease in general needs to remain a key focus for health systems taking into account variations in socioeconomic status such as deprivation in the region and address their underlying causes. There should be a particular focus on the identification and prophylactic anticoagulation of patients with atrial fibrillation who meet treatment criteria. This modelling and planning work should be aligned with the Joint Strategic Needs Assessments and the Joint Health and Wellbeing Strategies of the health and wellbeing boards.

*See recommendations: 4.2.1-4.*

## 2. Context of the Clinical Senate Review

Stroke affects around 110,000 people each year (with many more experiencing the warning condition of a TIA), is the third highest cause of death in England, and is the single largest cause of severe adult disability (1). Many strokes are considered preventable (particularly by better identification and treatment of high blood pressure and atrial fibrillation, and through other cardiovascular risk reduction measures). For those who sustain a stroke or TIA, there is a large body of evidence that the ready availability and provision of a wide range of multidisciplinary interventions (medical, nursing and therapies), in the context of appropriately constituted specialist stroke units, reduces mortality and long term disability.

Whilst there are no nationally mandated specifications for hospital-based stroke services (unlike many NHS England-commissioned specialised services), the recommended infrastructure is laid out in the National Stroke Strategy 2007, which provided a national quality framework to improve services across the stroke pathway. Clinical standards for stroke care and its provision are incorporated in the national stroke audit programme (SSNAP), and most recently, NHS England has commissioned a 'Configuration Decision Support Guide' to configuring stroke services, which will provide important guidance applicable to the whole stroke pathway (publication imminent).

In addition, regional clinical and quality standards for stroke services, produced by the South East Cardiovascular Strategic Clinical Network (SECVSCN), have been previously agreed within the region as appropriate supplementary standards to assess the quality of stroke care (2).

It is clear that patients presenting with a stroke to hospital should be cared for in a specialist stroke unit, defined as 'a multidisciplinary team including specialist nursing staff based in a discrete ward which has been designated for stroke patients' (3). The intensity and nature of care required is different though, depending on the time after the stroke has occurred (and the severity of the stroke). Three kinds of stroke units are described:

**1. Hyper-acute stroke units (HASUs)**, for the first 72 hours of care post-stroke, including assessment for, and the administration of, thrombolysis in suitable patients. Key features (which are described in full detail in the above references) include: continuous physiological monitoring, immediate access to scanning for urgent stroke patients, direct admission from A&E; senior specialist ward rounds seven days a week; acute stroke protocols/guidelines; nurses trained in swallow screening; and nurses trained in stroke assessment and management.



**2. Acute stroke units (ASUs) for subsequent (72 hrs +) acute hospital care.** This includes ongoing specialist care, with seven day therapies services (physiotherapy, occupational therapy, speech and language therapy, dietetics input), and effective multi-disciplinary team (MDT) working.

### **3. Combined HASU/ASU units.**

In addition, there are agreed standards for the care of TIA patients, with patients classified as needing urgent (<24 hours) assessment and management, or within seven days if less urgent.

The respective standards required for HASUs, ASUs and TIAs are laid out in the above documents.

One of the key recommendations for stroke units is the number of confirmed stroke patients a HASU should have, with a recommendation of at least 600 and up to 1500 per annum (i.e. approximately 2-4 new patients per day averaged over the year). In Kent and Medway, there are currently seven acute hospitals, all providing combined hyper-acute and acute stroke care for the total population of 1.7 million. There were 2572 patients with acute stroke treated in the seven hospitals in 2013/14, with the number of cases treated in each ranging from 321 to 473, i.e. well below the minimum recommended (data provided by the Kent and Medway Stroke Services Programme Board).

Stroke services and outcomes in Kent and Medway have been reviewed by the clinical commissioners against these core standards and recommendations, and found to show marked variability in performance, and overall a level of performance that must be improved, as well as insufficient case numbers in each centre (noting that some units perform significantly better in the SSNAP audit than others). See Appendix B for a summary of the SSNAP audit for Kent and Medway providers October – December 2014.

A programme board for stroke services in Kent and Medway, informed by a clinical advisory board, has therefore been set up by the Kent and Medway commissioners, and has produced a draft Case for Change and outline criteria for deciding on options for future models of care across the county.

The stated aims of the programme Board are to:

- Ensure that Kent and Medway hyper-acute and acute stroke care meets the needs of all Kent and Medway residents.
- Improve and ensure consistency of the hyper-acute/acute stroke pathway.
- Identify and make recommendations for the continued improvement of outcomes for stroke patients.

- Ensure that services are high quality, safe, sustainable and fit for the future population in Kent and Medway for the next 10-15 yrs.
- Ensure that hyper-acute/acute stroke services are commissioned to be compliant with best practice guidance and work towards level A across the Sentinel Stroke National Audit Programme (SSNAP) measures.
- Ensure that the Kent and Medway stroke services are delivered in accordance with national evidence-based best practice models and specifications.

The South East Clinical Senate (SECS) has been asked to formally review the Case for Change, and to suggest decision making criteria to use, ensuring they are built on best practice for hyper-acute and acute stroke care, are in line with clinical guidance and national best practice, and to help the Programme Board deliver its objectives.

# 3. Methodology

## 3.1 Defining the task given to the South East Clinical Senate

The South East Clinical Senate (SECS) received a formal request for a clinical review from the Kent and Medway CCGs, through the Kent and Medway Stroke Programme Board, to inform their strategic planning for future stroke services. The request to the Clinical Senate was for two phases of review:

### Phase 1 (to which this report relates):

To provide an independent clinical review of the clinical case for change, the decision management process and decision tree, to ensure that hyper-acute and acute stroke care are in line with clinical guidance and national best practice.

### Phase 2:

To clinically review the subsequent options paper describing the preferred model(s), to help ensure safe, high quality and sustainable stroke services in Kent and Medway in the coming years.

In line with the request, the SECS remit for this phase 1 was agreed as needing more specifically to address the following and ensure that:

- There are robust pathways in place that are safe and of high quality
- That there is a clinical network that is clearly understood and transparent
- That stroke care is delivered in accordance with best clinical practice across all Kent and Medway providers.
- That stroke services in Kent and Medway are sustainable and fit for the future.
- That due consideration is given to the whole stroke pathway, from community in to specialist care and out.
- There is consideration of any broader workforce, education and training issues.
- Clinical research issues are considered.
- That the implications for other clinical and support services of any reconfiguration are identified (through the inter-relationships and co-dependencies between services) and make recommendations as to how those could be addressed
- That network options and relevant hub and spoke issues are reviewed; including onward care of patients to more local care after specialist care is completed.
- An independent Patient and Public Engagement (PPE) perspective is included.

## 3.2 Expert Clinical Review Group (ECRG)

Senior professionals from a wide range of professions involved with stroke services, together with a strong Patient and Public Engagement (PPE) voice, were invited to join an expert clinical review group (ECRG) set up by the SECS specifically for the purposes of this review.

Group members were invited to join on the basis of a combination of experience, expertise, role and vitally their preparedness and availability to devote their time to participate in this work in the short time scales required. A full list of the ECRG membership is found in Appendix D.

Invitations to membership of the ECRG intentionally avoided anyone employed by a Kent or Medway organisation, and all members were required to fulfil the conflict of interest and loyalties requirements as described in SECS's Standards of Business Conduct and Conflict of Interest Policy (available on request). A conflict of interest can be defined as any situation in which a member's responsibilities or interests, professional or personal, may, or may appear, to affect the impartiality of the Clinical Senate's advice. Members of the ECRG were also required to act independently, i.e. they do not represent their employing organisation or professional body. A full summary of ECRG members' declarations of interests is found in Appendix D.

## 4. Review of the Case for Change, and detailed recommendations

The draft Case for Change, as provided by the programme board, has been reviewed by the ECRG and the SECS council, and the following detailed points have been made. It should be recognised that for many of the recommendations, the draft Case for Change does allude to the issues these recommendations highlight, but not to the extent or in the way that was felt fulfilled its purpose.

### 4.1 General recommendations

#### The Case for Change should:

- 4.1.1 State a clear, motivating and ambitious plan for first class, high performing stroke services, and the opportunities provided by larger centres to deliver that ambition, rather than simply be seen to be meeting service specifications. A greater focus on improving specific patient outcome measures would bolster the strength of and rationale for the clinical case for change.
- 4.1.2 Articulate the rationale for change in greater detail and include the whole stroke pathway from primary prevention to rehabilitation, including the availability of community rehabilitation facilities. It should have a coherent overview of the stroke pathway from the patient perspective, not just an isolated focus on acute hospital-based services. Even if detailed work on the required rehabilitation and community services is not intended at this stage, the configuration and requirements of acute stroke services in Kent and Medway can only be understood in the context of the whole pathway and how it joins up.
- 4.1.3 The minimum requirement of 600 confirmed stroke patients per year per HASU is recommended in current draft national guidance. However, to the ECRG's understanding, this is not an evidence-based absolute number, but one derived in part from an analysis of the delivery of timely thrombolysis in relation to unit activity, showing that hospitals with higher volumes of thrombolysis activity achieved statistically and clinically significant shorter delays in administering tissue plasminogen activator (tPA) to patients after arrival in hospital (4). Some units of a smaller size have however demonstrated generally good quality outcomes and so this minimum number of 600 should not be seen as an absolute requirement. A smaller unit though would need to convincingly demonstrate that the required quality can be delivered without compromising activity levels in neighbouring hospitals where HASUs are planned, and we recommend that commissioners and units *aim* for activity of at

least 600 cases per annum to maximise the manpower, training, experience and potential quality gains enabled by larger units, and the likely financial economies of scale.

- 4.1.4 Develop a realistic plan for the future number of feasible HASUs in Kent and Medway, based on each unit having sufficient activity, and taking account of the workforce opportunities and challenges (and financial constraints), and the ability to deliver clinically appropriate call to needle times for thrombolysis patients (see 4.1.6).
- 4.1.5 Clearly articulate how a rationalisation of stroke units would drive quality improvements (e.g. through the most efficient and effective use of limited specialist staff, skills and financial resources). It should be made clear that the benefits of fully functional HASUs relate not purely to the relatively small proportion of patients who might receive thrombolysis ( $\approx 20\%$ ), but for all patients, who will benefit from the 7 day or 24/7 specialist skilled multi-disciplinary staff and appropriate facilities that these units would provide in the early stages following a stroke.
- 4.1.6 Explicitly balance the overall benefits of centralising services (in order to deliver thrombolysis and gain access to HASU facilities and their workforce skills) against the longer travel times that would be an inevitable consequence for patients living distant from designated HASUs. Requiring rigidly defined short travel times to fewer and larger HASUs across Kent and Medway would likely not be deliverable given the geography of Kent and Medway. It is therefore vital to develop a clinically appropriate standard for the 'call to needle time' (a composite of call to door, door to scan, and scan to needle times), to ensure patients needing thrombolysis receive it in the required time scale (see detailed recommendation 4.3.9).
- 4.1.7 Describe the need to develop acceptable pathways for patients with stroke mimic symptoms. Such patients transferred to HASUs before a true stroke is ruled out can end up in an inappropriate hospital, unnecessarily distant from their homes and families and the local facilities to support discharge planning. Where such patients have their ongoing hospital-based care must be planned, balancing the advantages of transfer back to their local hospital (nearer home, decongesting the HASU site and maintaining patient flow there) as against the disruption to continuity of care and additional inter-hospital transfers.
- 4.1.8 Provide more evidence of clinical involvement and authorship of this review. There is little evidence of the extent of involvement of multi-disciplinary clinicians (and clinical commissioners) in the development process of the Case for Change.

- 4.1.9 Include details of how patient and public views have and will be received, to ensure their voice is heard throughout the planning stages. In line with NHS England participation guidance for CCGs, the Case for Change should describe how it has and will involve people potentially affected, by providing information, consulting or in other ways.
- 4.1.10 Provide a description of how the proposals will be communicated to the public and patients, and in a way that emphasises the anticipated improved patient outcomes. It may be helpful to further outline the planned communication strategy throughout the process of service review.

## **4.2 Demographics, health inequalities, public health and prevention.**

- 4.2.1 There is currently a lack of links within the Case for Change to relevant findings and priorities within Kent and Medway's JSNA and their JHWS, and it is important to make these links to demonstrate system alignment. This would include understanding demographic trends, inequalities in cardiovascular health, and sustainability, and how they might impact of future planning of stroke services.
- 4.2.2 Future demand and activity over the coming 10-15 year time frame should be modelled, based on demographic trends and the impact of primary and secondary prevention, to help anticipate future stroke service requirements in Kent and Medway. There are drivers to both increase and decrease stroke incidence over this period. The net effect of these opposing tendencies is unknown, but should be referred to in the Case for Change:
- An increase in stroke incidence can be expected from the aging population (with associated co-morbidities), the expected increase in diabetes and obesity in the population, and the increased survival of patients with underlying cardiovascular disease (including patients who have had previous strokes, coronary artery disease and vascular disease).
  - Factors that would decrease stroke incidence are the impact of implementation and take-up of better public health, primary and secondary prevention measures. These include reduction in smoking rates, improvements in diabetes detection and care, better identification and management of high blood pressure and atrial fibrillation, more widespread use of statins, the impact of NHS Health Checks, and the potential impacts of primary prevention initiatives to address obesity and increase physical activity.

An important reference for such modelling is the Cardio & Vascular Coalition's 2008 report: Modelling the UK Burden of Cardiovascular Disease to 2020 (5).

- 4.2.3 Account should be taken of current and future demographics, and the geographical population in areas of deprivation, and populations at particular risk of stroke, to inform subsequent options for service reconfiguration to ensure adequate access to services.
- 4.2.4 The impact of any service reconfigurations on environmental sustainability should be considered alongside financial sustainability, particularly in relation to any increase in patient and staff transport requirements.

## 4.3 Relevant quality and safety standards

### Range of audits and metrics available

- 4.3.1 Include a clearly articulated aspiration for improvement and quality e.g. specified SSNAP grades across all domains and above the national average. We recommend aiming high (level A in all domains), as these are expected to translate into improved patient outcomes, and without setting the ambition and direction, high scores are very unlikely to be achieved. The staffing and infrastructure requirements for both HASUs and ASUs, across *all* domains (including therapies and MDTs) should therefore be appropriately commissioned to enable the high quality outcomes (maximal patient survival and functional recovery) expected. Regular self-monitoring together with national audit should be supported by continuous quality improvement work and planning. There should be benefit from learning from other high performing HASUs as to how they achieve their standards, and with what staffing and clinical processes.
- 4.3.2 Focus more on metrics that demonstrate good clinical and patient outcomes (and not just reduced mortality), in addition to the structural and process measures that already describe a high quality service in SSNAP.

Examples include:

- Six and twelve month modified Rankin scale outcomes (useful as it breaks down disability in to easily understood and captured outcomes).
- Percentage of stroke patients returning home
- Percentage of patients being discharged to a residential / nursing home
- Percentage of patients having their six and twelve monthly reviews



- Percentage of patients returning to work
- Patients and carers outcomes relating to quality of life scores (although not currently being collected at a national level) such as Euro-QOL, SF-36, the Stroke Impact Scale, and the Stroke Carer Burden Scale.
- Patient reported outcome measures, such as patient questionnaires on HASUs and ASUs and potentially at six month reviews.
- Qualitative evaluation to triangulate with hard metrics (with the potential to develop a research proposal around this with the University of Canterbury).

4.3.3 Recognise that if the aim is fundamentally to improve clinical and patient outcomes, performance across the whole pathway of care, including ASUs, rehabilitation and post-discharge care, and not purely that within HASUs, must be considered. Providers should be able to demonstrate how they will obtain and report SSNAP and other quality metrics data for all patients, using robust mechanisms e.g. having a dedicated data analyst. This would improve the public perception and confidence in future services.

4.3.4 Describe comprehensively, consistently and succinctly the appropriate national and local standards, clinical guidance and evidence based best practice for hyper-acute / acute stroke care, and where relevant, out of hospital care. These include:

- National Stroke Strategy 2007 (6)
- NICE Clinical Guideline CG68 'Diagnosis initial management of acute stroke and transient ischemic attack' 2008 (7)
- RCP National Clinical Guidelines for Stroke 2012 (8) (with update due in draft early 2016)
- NICE Clinical Guideline CG162, Stroke Rehabilitation 2013 (9)
- South East Coast Cardiovascular Strategic Clinical Network Stroke and TIA Service and Quality Core Standards 2014 (2)

A detailed list of stroke-related metrics can be found in Appendix A.

4.3.5 Emphasise the importance of a seamless service, and transfer of information, between health and social care about patients under their joint care.

4.3.6 Identify measures to demonstrate high quality secondary prevention of further cardiovascular disease in patients who have had strokes, and need for the 'system' and local health services to deliver these.

- 4.3.7 High quality and sufficient palliative care should be readily available for those patients who need it.
- 4.3.8 The need for high quality in longer term care in the community should be described, even if just in broad terms, such as: the timely provision of aids and adaptations, the use of augmented tools (such as functional electrical stimulation), the provision of appropriate housing, provision of appropriate and adequate domiciliary care, and return to work initiatives.

### **Call to needle time: a proposed new clinically relevant metric**

- 4.3.9 A new standard of a maximum of 120 minutes for call to needle time is recommended (and as soon as possible within that time frame). Meta-analyses of response to the thrombolytic drug tPA indicate that the earlier it is given, the better are long term outcomes, with administration within 90 minutes achieving the best outcomes (10), and beyond 180 minutes (3 hours) there is a diminishing effect (11).

This composite metric involves ambulance response time to the patient call, journey time to the HASU, then rapid CT scanning, decision making and institution of thrombolysis by the receiving hospital. This composite metric is clinically relevant, and an overall marker of the effectiveness of the hyper-acute pathway. It also enables the counter-balancing of longer travel times for patients in certain areas (if HASUs are centralised) with more efficient response on arrival in hospitals with HASUs to minimise in-hospital delays. To progress this, the following should be considered:

- The number of minutes that the proposed standard of call to needle time would be set at needs agreement by the programme board and clinical advisory group, together with the South East Coast Ambulance Service.
- Currently the 'call to door' time standard is 60 minutes, as stated in NICE Stroke Quality Standard QS2 (12). This time standard is not cast in stone, as NICE QS2 states that 'The goal of 1 hour set by this statement has been selected to take into account the differences between urban, rural and remote locations. However, trusts can set appropriate targets for their local service configurations.'
- Pre-alerts from the ambulance service to prepare the admission and assessment process before the patient reaches hospital (like for heart attacks) will minimise delays on arrival at the stroke centre.
- The current standard for door to scan time is within 60 minutes.
- It will involve consideration of the impact and methods of report for the national

Ambulance Clinical Quality Indicators (see Ambulance Quality Indicator SQU03 6.1.1, pg 33, ref (13)).

- Telemedicine support from off-site specialists during on call times can continue to support rapid senior decision-making about the thrombolysis and other hyper-acute management decisions.

This proposed new standard would require coordination and agreement between the ambulance service, acute providers and commissioners, and responsibilities for and the monitoring of the individual components of this overarching standard will need to be made explicit.

## 4.4 Stroke Pathways, networks and co-dependencies

### Whole pathway view

- 4.4.1 There should be a clear outline of the full stroke pathway, from the onset of a stroke, through primary care/pre-hospital care, hospital based care (in HASUs and ASUs), inpatient rehabilitation, early supported discharge and community support, terminal care and long term support for stroke survivors. The ECRG did not believe that appropriate planning of hospital-based services could be achieved in isolation from the rest of the pathway. The National Stroke Strategy 2007 (6) appropriately recommended that ‘stroke networks should be established, bringing together key stakeholders and providers to review, organise and improve delivery of services across the care pathway’, and that ‘increasingly it is becoming impractical for organisations to offer care pathways that are safe, of high quality and responsive to individuals without being part of defined networks’. Examples of a range of stroke scenarios and cases should be provided, to demonstrate the current pathways and to illustrate where these could be improved by service change. Such examples may help identify and understand the issues and current problems better.
- 4.4.2 Commissioners should consider commissioning the whole stroke pathway, to ensure rational, co-ordinated and patient-centred care is delivered, taking account of the essential inter-relatedness of HASUs/ASUs, inpatient rehabilitation units, early supported discharge and community services. There is a risk that excessive focus on the acute hospital services can create a two-tier service, with the essential rehabilitation needs not being adequately addressed, with the knock on effect of poor flow through the acute units. For example, are there sufficient community in-patient beds to support the acute pathway, enabling flow are releasing capacity in the acute units? Efficiencies at the ‘back door’ will enable efficiencies at the ‘front door’.

- 4.4.3 The Case for Change should demonstrate how any proposed changes would be financially sustainable, e.g. that all CCGs are committed to investing where required to delivering the highest quality service.
- 4.4.4 The integrated pathway between health and social care should be described, including addressing cross boundary issues, local authority involvement, delayed transfers of care, and funding and integrating budgets in future models. This is fundamental for successful patient outcomes, flow, and the efficient use of HASUs and ASUs.
- 4.4.5 Demonstrate how evidence from successful service changes in other areas e.g. London and Manchester, has been incorporated, though acknowledging the differences between these large cities and the mixed urban/rural nature of Kent and Medway, and the additional resources made available to the London reconfiguration.

## **Travel times**

- 4.4.6 Articulate clearly the balance that needs to be struck between the benefits to patient outcomes from providing hyper-acute stroke care in more centralised and larger specialist stroke centres, versus the need for patients in certain areas to travel further to receive that care (and the consequences if the patient turns out not to have had a stroke). Whilst there is a powerful argument for a centralised specialist service, the alternatives should be outlined.
- 4.4.7 There should be more evidence and analysis presented of the travel times to the full range of acute hospitals that may provide HASUs, and travel times between individual hospitals. In addition, the travel times need also to include public transport and road links for visiting relatives and to inform access to TIA services. This will enable a clear understanding by all, including the public, of the travel time issues resulting from any reconfiguration, which will enable early thinking as to how to mitigate the consequences of longer travel times.

## **HASUs and ASUs in networks**

- 4.4.8 A model describing the future predicted demand for HASU, ASU, rehabilitation and community beds, and the capacity required, should be provided, and how this aligns with the catchment population of any proposed units. The proposed or potential relationships between the HASUs and ASUs should be made clearer.
- 4.4.9 The need to retain a level of stroke knowledge and skills within hospitals where there is no HASU should be recognised, to ensure inpatients who sustain a stroke whilst in a

non-HASU hospital for other medical reasons and who cannot be urgently transferred on medical grounds, get appropriate stroke care. How this is delivered, e.g. supported remotely by specialist centres, telemedicine etc. needs to be considered, so that there are clear clinical pathways for such patients.

- 4.4.10 There is a need to describe the flexibility in capacity required of stroke units (HASUs and ASUs) at times of bed pressures or surges in demand, and the need for networks to describe how they will manage escalation when trusts are in 'black' status (i.e. under severe bed pressures).

## Co-dependencies

- 4.4.11 A clear and explicit description of the clinical co-dependencies of acute stroke services should be provided (using the SECS clinical co-dependencies report Dec 2014 as a template (20). This would inform decisions regarding the reconfiguration/relocation of services, identify issues and barriers to certain configurations of stroke services, and help anticipate the impact that may arise through possible withdrawal of hyper-acute stroke services from a site. The clinical services that HASUs and ASUs need to be provided on site, without transfer of the patient, are extracted from this report and shown in Appendix C, whilst the full grid and report can be found on the SECS's website at <http://www.secsenate.nhs.uk/news/clinical-co-dependencies-acute-hospital-services-clinical-senate-review/>.

## Neuroradiology and Neurosurgery

- 4.4.12 Recognise that there are insufficient interventional neuroradiologists to undertake specialist interventions (including intra-arterial thrombectomy, and the treatment of haemorrhagic strokes and subarachnoid haemorrhage) in all HASUs, so the Kent and Medway stroke networks need to have explicit agreed pathways and agreements with specified regional neuroradiology centres to provide the service required. It should be noted that this is likely to be a rapidly evolving area, with the benefits of early intervention in selected patients who have responded inadequately to peripheral thrombolysis demonstrated in recent large randomised controlled trials (14–16). Future planning should take account of the potential implications of this significant development. Similarly, there should be clearly defined referral pathways to tertiary neurosurgery centres to treat the surgical complications of acute strokes.

## Telemedicine

- 4.4.13 Describe the uses and limitations of telemedicine for acute stroke care. Whilst it enables remote diagnosis and decision-making at presentation, remote care does not substitute for the seven day bedside assessment of patients that would be provided on a fully constituted HASU.
- 4.4.14 Telemedicine remote diagnosis requires a degree of knowledge and clinical competence from on-site staff, and if this is to be used, the requirements for that on-site support should be described (such as specialist stroke nurses, or medical registrars).

## TIAs

- 4.4.15 There must be a clear description of the pathways ( $\leq 24$  hours and  $\leq 7$  days according to clinical categorisation) and the requirements of stroke units to investigate and manage patients with a transient ischemic attack (TIA), with appropriate resources and to meet the nationally agreed standards, and to ensure the best outcomes by preventing subsequent strokes in all those in whom it is possible. A separate analysis of the TIA pathway with travel times and arrangements for weekend travel should be included.

## Patients with 'stroke mimic' symptoms

- 4.4.16 The Case for Change should explicitly describe the issue of 'stroke mimic' patients (20-60% of patients brought in to Kent and Medway HASUs according to data provided to us (though validated figures across providers in Kent and Medway were not available), and their pathways when they turn out not to have a stroke after transfer to a HASU. Centralising stroke services will increase the flow of patients to HASUs, and without clear pathways together with good triage, there are risks of overwhelming the receiving hospital, and having patients in the 'wrong' hospital for their diagnosed condition, unless there is a clear understanding of and planning for how the patient pathway should work.

## Rehabilitation Medicine

- 4.4.17 There should be early partnership working with rehabilitation medicine. Amongst other issues, cohesive spasticity management is required, even at the acute stage. This often sits within tertiary rehabilitation units and pathways to access specialist clinicians in acute settings often lack clarity.

## 4.5 Workforce Issues

### General workforce points

- 4.5.1 More recognition should be given to the fact that workforce availability and specialisms are a significant driver for the future configuration of stroke services across the whole pathway, and therefore that a more comprehensive workforce plan which reflects this is essential if any service reconfiguration is to achieve the best outcomes for patients. There should be more detail given of the workforce requirements other than consultants (i.e. middle grade physicians, specialist nurses, the full range of therapies and other relevant AHPs, and potentially physician associates).
- 4.5.2 The resource implications of providing appropriate levels of specialist medical, nursing and therapies (24/7 or 7/7 as required) should be understood and referred to.
- 4.5.3 Recognise the potential for centralisation to concentrate specialists and provide wider professional development and research opportunities which may present a more attractive offer when recruiting staff. This could also provide a network hub for advice and supervision to others who are less experienced in stroke and who seek specialist advice e.g. paramedics and clinicians working in primary care and in hospitals without stroke units.
- 4.5.4 Acknowledge and plan around the uncertainty that the workforce will necessarily voluntarily relocate if services are centralised.
- 4.5.5 Include workforce plans that reflect how providers move from currently low staffing levels in many of the current centres to achieve the service that is aspired to (delivering 7 day services, and meeting the needs of SSNAP domains 4-8). Currently there are difficulties in recruiting staff at all levels in all disciplines and how this will be addressed in the short and medium term needs to be included. Innovative approaches will be required to recruit and retain specialist staff. A detailed workforce plan is required, fully supported by HEE.
- 4.5.6 The flexible utilisation of the workforce across the stroke pathway should be explored and encouraged. A professional silo approach will likely inhibit achievement of the required standards across the SSNAP domains. By developing and/or utilising other practitioners' existing skills and/or amending pathway protocols, it may reduce the need for additional staff. Examples include specialist stroke nurse practitioners helping run stroke units to minimise the requirement for middle grade physicians. Similarly, specialist nursing time could be freed up by developing more junior staff to safely undertake parts of the admission process.

- 4.5.7 Consistent staffing ratios should be required across future HASUs and ASUs in Kent and Medway, so that there are no inequities of provision.
- 4.5.8 Telemedicine is effective in relation to urgent assessment and decision-making regarding thrombolysis. However, telemedicine services are not sufficiently robust and its use is not widespread or consistent resulting in too few clinicians with sufficient practical experience. Workforce development will be needed to improve competence and confidence in using telemedicine to achieve consistently good outcomes, where no appropriate specialist is available on site at the HASU.
- 4.5.9 The training and education needs of the workforce should be described, and ring-fenced and sustainable funding to adequately support workforce development and training for all stroke specialists across all grades and professions should be planned for.

## **Stroke Consultants**

- 4.5.10 More detail should be provided about the low consultant numbers across the region that is tabled in the Case for Change, and whether there are unfilled but funded posts. There is a well-recognised national shortage of stroke physicians, and this constraint can be a key driver for centralising services.
- 4.5.11 Most current consultant stroke physicians will also have another clinical role within their current trust (such as being a consultant in elderly care and on combined rotas), and any transfer of their stroke duties to a centralised centre will impact on their other roles and responsibilities in these other clinical areas, and risks destabilising other on call rotas unless this is anticipated and carefully planned for.

## **Medical Trainees (SpRs)**

- 4.5.12 National recruitment to training posts is challenging (not just in our region but across the country) with unfilled posts. There needs to be work at College level to consider reasons for this (which is no doubt multi-factorial). Workforce plans need to consider how this may impact on the ability to deliver seven day (and 24/7) services in Kent and Medway irrespective of any service reconfiguration, and what mitigations need to be put in place (such as extending the roles of non-medical staff, or the recruitment of physician associates). Specialist stroke units with higher levels of activity would provide enhanced training opportunities, experience, and recruitment, and would likely attract new national training numbers if available.



## Specialist Nurses and Allied Health Professionals

- 4.5.13 There should be more detail about the workforce requirements and training needs for specialist nurses, speech and language therapists, physiotherapists, occupational therapists, paramedics, pharmacists, dieticians and clinical psychologists, as they play a crucial role, from early diagnosis to rehabilitation and care in the community. Whilst medical workforce issues are key, the requirements of the whole MDT need to be fully considered.
- 4.5.14 It should be recognised that some specialisms are difficult to recruit to, e.g. speech and language and occupational therapies, and consideration should be given as to how to incentivise recruitment and what contingencies would be put in place if a centralised model was preferred and the workforce did not relocate.

## 4.6 Research

- 4.6.1 Include reference to ongoing research and how organisations engage with and use findings to improve patient outcomes. Examples of research impacting on routine clinical care include the IST3 (17) and CLOT3 trials (18).
- 4.6.2 Ensure that PPE includes raising awareness of the opportunities to participate in clinical research, particularly in larger specialist centres.
- 4.6.3 Consider how stroke research would be delivered, including the role of the stroke/generic research nurse within trusts to act as a champion for stroke research.
- 4.6.4 Include a requirement for Good Clinical Practice (GCP) training and research participation to be included in the job plans of stroke consultants working in specialist centres, and expect middle-grade doctors and other staff who might contribute to research to undertake GCP training.
- 4.6.5 To support engagement with the KSS Stroke Research Network (SRN), local stroke clinicians and MDT members should be supported to become Principal Investigators (PI) for multi-centre stroke studies.
- 4.6.6 Ensure that research (particularly involvement in multi-centre stroke trials) is given priority, and that all clinicians and MDT individuals are supported to participate in research, and that it is recognised in job planning.

## 5. Suggested criteria for the decision management tree

From our recommendations, we have developed a list of potential criteria to use for either stage 1 or 2 decision making processes, to supplement those provided to us in the draft Case for Change. The details provided of the two stages of the decision making process (from long list to short list, then from short list to deciding on the preferred option pre-public consultation) were not considered sufficient for the SECS to align potential criteria to a specific stage.

- 1.** Plans for a proposed HASU should demonstrate how it will be configured, staffed and be of a sufficient size to deliver its potential for optimal care, outcomes and efficiencies, with a clear aim of achieving >600 cases per annum in a defined period, backed up by robust demographic modelling. Plans should ensure provision is made for compliance with the recommended staffing levels of the full multi-disciplinary team, and that they will provide the bed capacity to deliver the planned activity (allowing for peaks in demand).
- 2.** There should be a description of how the overall stroke network in which the proposed HASU would be centred would look, including pre-hospital care, palliative care, and inpatient rehabilitation and community care post-stroke.
- 3.** There should be a clear and detailed description of how the proposed HASU would network with surrounding acute trusts and their ASUs to provide coordinated care for acute stroke patients. Stroke care in Kent and Medway needs to be coordinated and integrated across the pathway between the various providers, and an outline model should be provided, including a demonstration of the network leadership role that HASUs can serve.
- 4.** There should be a clear statement of ambition as to the quality of service and outcomes that will be delivered by the stroke units, and the entire stroke network.
- 5.** SSNAP level A across the board should be the aim, with stated time scales as to when these could be delivered (accepting that this could not be immediate).
- 6.** There should be explicit, realistic and acceptable patient pathways describing how patients with stroke mimic symptoms will be managed after transfer to the HASU and diagnosis of alternative pathology.

- 7.** There should be a demonstrated understanding of the key clinical co-dependencies of HASUs and ASUs, and how they will be addressed. Reference should be made to the SECS co-dependencies report (20), from which a summary for stroke units is provided in Appendix C of this review.
- 8.** Proposed HASUs should be able to demonstrate how they will deliver a clinically appropriate and ambitious 'call to needle' time for patients in their proposed catchment area, taking account of accurate ambulance travel times, and responsiveness on arrival at the HASU. This review proposes a maximum call to needle time of 120 minutes as an appropriate standard to set and meet.
- 9.** There should be convincing proposals for how the multidisciplinary workforce (medical, nursing and therapies as required) will be delivered in the HASU, in order to provide the required 24/7 and/or 7 day services. Robust and detailed workforce plans, including the multi-professional education and training needs, should be provided.
- 10.** The TIA pathways for the proposed stroke networks should be outlined, to demonstrate that the required rapidly responsive service would be delivered.
- 11.** There should be an articulation of the research role that the HASU would have, and a commitment to support staff (through job planning and other enablers) in participating in clinical trials and other forms of stroke research, in partnership where appropriate with universities, medical schools, the CLRN and KSS's AHS.

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## 7. Glossary

Acronym / intervention	Definition
<b>ASU</b>	<b>Acute Stroke Unit</b> is a specialist unit providing acute hospital care for the subsequent (72+ hours). This includes ongoing specialist care, with 7 day therapies services (physiotherapy, occupational therapy, speech and language therapy, dietetics input, and effective Multi-Disciplinary Team working).
<b>AF</b>	<b>Atrial fibrillation</b> is an irregular and often rapid heart rate that commonly causes poor blood flow to the body. During atrial fibrillation, the heart's two upper chambers (the atria) beat chaotically and irregularly — out of coordination with the two lower chambers (the ventricles) of the heart.
<b>CCGs</b>	<b>Clinical Commissioning Groups</b> are the NHS organisation set up by the Health and Social Care Act 2012 to implement the commissioning roles described by the Act. They are clinically led groups that include all General Practice (GP) groups in their geographical area. The aim is to give GPs and other clinicians the power to influence commissioning decisions for their patients.
<b>ECRG</b>	<b>Expert Clinical Reference Group set up by the South East Clinical Senate to undertake the work of this report</b>
<b>Early Supported Discharge</b>	<b>Early Supported Discharge</b> is a service for people after stroke which allows transfer of care from an inpatient environment to a primary care setting to continue rehabilitation, at the same level of intensity and expertise that they would have received in the inpatient setting.
<b>HASU</b>	<b>Hyper-Acute Stroke Unit</b> is a specialist acute hospital unit for the first 72 hours of care post-stroke, including assessment for, and the administration of, thrombolysis in suitable patients. Key features are: Continuous physiological monitoring (ECG, oximetry, blood pressure); immediate access to scanning for urgent stroke patients; direct admission from A&E/front door; specialist ward rounds on 7 days a week; acute stroke protocols/guidelines; nurses trained in swallow screening; and nurses trained in stroke assessment and management.
<b>HEE</b>	<b>Health Education England</b>
<b>IR/Interventional Radiology</b>	A medical sub-specialty of radiology utilising minimally-invasive image-guided procedures to diagnose and treat patients.
<b>JSNA</b>	<b>Joint Strategic Needs Assessment</b>
<b>MDT</b>	<b>Multi-Disciplinary Team</b> is a group of health and social care workers who are members of different disciplines (professions e.g. doctors, nurses, psychologists, Allied Health Professionals, Social Workers, etc.), each providing specific services to the patient.
<b>Neuroradiology</b>	<b>Neuroradiology</b> is the branch of radiology that deals with the nervous system where x-rays are used in the diagnosis and treatment of disorders of the nervous system.

<b>PPE</b>	<b>Patient and Public Engagement</b>
<b>QOF</b>	<b>Quality Outcomes Framework</b>
<b>SECamb</b>	<b>South East Coast Ambulance</b>
<b>SECS</b>	<b>South East Clinical Senate</b>
<b>SSNAP</b>	<b>Sentinel Stroke National Audit Programme</b> 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.
<b>Stroke</b>	A <b>stroke</b> is a 'brain attack' caused by a disturbance to the blood supply to the brain. There are two main types of stroke: Ischaemic: the most common form of stroke, caused by a clot narrowing or blocking blood vessels so that blood cannot reach the brain, which leads to the death of brain cells due to lack of oxygen. Haemorrhagic: caused by a bursting of blood vessels producing bleeding into the brain, which causes damage.
<b>Stroke Mimic</b>	<b>Stroke mimic</b> is the term used to describe conditions that present with stroke-like symptoms. The presentation resembles or may even be indistinguishable from an ischemic stroke syndrome e.g. alterations in the normal blood sugar level (hypo or hyper-glycaemia); changes within the central nervous system can present with symptoms that are similar to those of a stroke but which on clinical examination are found to be due to other causes.
<b>Telemedicine</b>	<b>Telemedicine</b> is the use of telecommunication and information technologies in order to provide clinical health care at a distance. It helps eliminate distance barriers and can improve access to medical services that would often not be consistently available in distant rural communities
<b>Tertiary Services</b>	<b>Tertiary services</b> describes specialised consultative care, usually on referral from primary or secondary medical care personnel, by specialists working in a centre that has personnel and facilities for special investigation and treatment
<b>Thrombolysis</b>	<b>Thrombolysis</b> is the used in the treatment of an ischaemic stroke. A 'clot-busting' medication is injected to dissolve the blood clots and restores the flow of blood to the brain. It is most effective if treatment is started as soon after the stroke as possible (within four and half hours). Thrombolysis is only carried out following a brain scan to confirm diagnosis of an ischaemic stroke.
<b>TIA</b>	<b>Transient Ischemic Attack</b> is sometimes referred to as a 'mini stroke' a TIA is caused by a temporary disruption in the blood supply to part of the brain.
<b>TPA (tPA)</b>	<b>Tissue Plasminogen Activator</b>

# Appendix A. Quality measures and definitions

## National and regional recommendations for hyper-acute and acute stroke units

<p><b>Each measure is referenced according to the source as follows:</b></p> <p><b>Ref:1 - Draft Stroke Services Configuration Decision Support Guide - February 2015</b></p> <p><b>Ref: 2 - SEC Joint Integrated Stroke Service Pathway Specification 2012 – 2013 and Quality Standards</b></p> <p><b>Ref:3 - South East Coast Cardiovascular Strategic Clinical Network Stroke and TIA Service Quality and Core Standards 2014</b></p> <p><b>Ref: 4- Stroke Sentinel National Audit Programme (SSNAP)</b></p>
<p><b>Hyper-Acute Stroke Unit</b></p> <p>7 day dedicated specialist unit with between 600 – 1500 confirmed stroke admissions per annum to maintain clinical quality and outcomes. (Ref:1)</p> <p>95 % of patients can access the hyper-acute unit within 30-45 minutes (Ref: 4)</p> <p>To achieve 24 hour rapid access to assessment and brain imagery to achieve:</p> <ul style="list-style-type: none"> <li>• Thrombolysis (for in licence IV use), if clinically indicated, (about 20% of patients), door to needle time within 1 hour</li> <li>• brain imaging and reporting by Radiologist or Stroke Consultant undertaken within 1 hour for eligible patients</li> <li>• expert consultant clinical assessment within 1 hour</li> <li>• specialist swallowing assessment within 4 hours</li> </ul> <p>(Ref: 1, 2, 3 &amp; 4)</p> <p>24/7 availability of a hyper-acute trained stroke physician to make decisions regarding thrombolysis either in person or via telemedicine, with a sustainable on-call rota (no more onerous than 1:8) (Ref: 2 &amp; 3)</p> <p>24/7 stroke trained nurse and therapist cover (Ref: 2)</p> <p>Hyper Acute Stroke Unit minimum staffing (7/7) of:</p> <ul style="list-style-type: none"> <li>• 2.9 WTE nurses per bed to comply with 80:20 trained vs untrained skill mix and 1:2 nurse: patient ratio</li> <li>• 1.0 WTE Physiotherapist per 5 beds (respiratory &amp; neuro)</li> <li>• 0.68 WTE Occupational Therapist per 5 beds</li> <li>• 0.68 WTE Speech &amp; Language Therapist per 10 beds</li> <li>• 0.5 WTE Dietician per 20 beds</li> <li>• 1.0 Clinical Psychologist per 40 stroke beds</li> </ul> <p>(Ref: 3)</p>
<p><b>Hyper-acute or Acute Stroke Unit</b></p> <p>Direct admission to a specialist stroke unit (HASU or ASU) within 4 hours (Ref: 2 &amp; 3)</p>



90% of in-patient stay time to be spent on a specialist stroke unit (HASU, ASU or rehabilitation) (Ref: 2 & 3)
Assessment/management by stroke nursing staff and at least one member of the specialist rehabilitation team within 24 hours of admission. (Ref: 1, 2, 3 & 4)
Assessment of malnutrition and risk of malnutrition using a validated screening tool e.g. Malnutrition Universal Screening Tool (MUST) within 24 hours of admission (Ref: 3)
Cranial imaging within 12 hours of admission (aim to achieve 95%) (Ref: 1, 2 & 3)
Carotid imaging performed within 24 hours for patients suitable for rapid access carotid endarterectomy (RACE) (aim to achieve 90%) (Ref: 3)
Carotid intervention (e.g. endarterectomy) performed within 48 hours of diagnosis for symptomatic carotid artery stenosis, where clinically appropriate for both stroke and TIA (aim to achieve 90%) (Ref: 3)
24/7 stroke trained nurse and therapist cover (Ref: 3)
24 hour availability of specialist assessments (Ref: 2 & 3)
Ambulance staff to use a validated screening tool and transfer suspected stroke patients to a specialist acute stroke unit within 1 hour (Ref: 2)
To treat transient ischaemic attack quickly if strokes are to be avoided, and must be treated as a stroke whilst symptoms persist. (Ref: 1 & 2)
Travel times (door to needle) 30 – 45 minutes to meet treatment access times (e.g. thrombolysis and imaging within 1 hour) (Ref: 3)
Early and intensive physiological and neurological monitoring with immediate recognition and treatment of abnormalities i.e. bleeding, anaphylaxis, infection, VTE, Malignant MCA syndrome, using evidence-based treatment protocols (Ref: 1)
Assessment by all relevant members of the MDT team within 72 hours of admission including: <ul style="list-style-type: none"> <li>• A nutritional assessment</li> <li>• Receiving anti-platelet therapy</li> <li>• Speech &amp; Language Therapist assessment for all patients who fail swallow screen</li> <li>• Receiving adequate food and fluids for the first 72 hours</li> <li>• Physiotherapist assessment</li> <li>• Occupational Therapist assessment</li> </ul> (Ref: 1 & 2)
Documented multidisciplinary rehabilitation goals should be agreed within 5 days i.e. nutrition, hydration etc. (Ref: 1)
Early Supported Discharge Team in place with the ability to see all appropriate patients as soon as required after admission (Ref: 3)
Patients identified as high risk by any healthcare provider are seen within a fast-track TIA clinic within 24 hours of referral (Ref: 3)

### **Acute Stroke Unit** (variations on above)

5 days per week, 9am – 5pm Consultant stroke physician availability  
(Ref: 2)

Acute Stroke Unit minimum staffing (7/7) of:

- 1.35 WTE nurses per bed (65:35 trained to untrained skill mix) to give 1:3 nurse: patient ratio
- 1.0 WTE Physiotherapist per 5 beds
- 0.81 WTE Occupational Therapist per 5 beds
- 0.81 WTE Speech and Language Therapist per 10 beds
- 0.5 WTE Dietician per 20 beds
- 1.2 Clinical Psychologist per 40 stroke beds

(Ref: 3)

### **TIA Standards** (Ref: 1 & 3)

Carotid Duplex performed within 24 hours of referral for patients suitable for CE (not all patients)

95% TIA cases with a higher risk of stroke who are assessed and treated within 24 hours of referral received

95% TIA cases with a lower risk of stroke who are assessed and treated within 7 days of referral received

### **Tertiary Centres** (Ref:1 & 3)

95% carotid surgery within 7 days of symptom onset (TIA and Stroke)

95% carotid surgery within 7 days (TIA and Stroke) of assessment and diagnosis

### **Additional patient outcome measures** (Ref:2)

*Any patient presenting with stroke will be placed on either the Hyper-Acute or Acute pathway, to receive the most appropriate care for their condition.*

*The implementation of these pathways will not only provide the best possible outcomes for the patients, but allow the NHS in South East Coast to use resources effectively within the health economy.*

General expected outcomes are:

- To improve the outcomes for stroke patients by reducing mortality and levels of dependency following an acute stroke
- To reduce the length of stay of stroke patients in bed based services
- To improve patients' experience and to enhance their recovery following a stroke
- To reduce readmission rates for stroke patients
- To improve patient access and experience of specialist stroke care
- To provide services based on an accepted international and national evidence base

## Sentinel Stroke National Audit Programme (SSNAP) Domains (Ref: 4)

SSNAP analysis has shown/highlighted considerable variability in stroke care.

**44 Key Indicators** representative of high quality stroke care are grouped into **10 domains** covering key aspects of the process of stroke care.

Each domain is given a performance level (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**.

### Domain 1: Scanning

- 1.1 Proportion of patients scanned within 1 hour of clock start
- 1.2 Proportion of patients scanned within 12 hours of clock start
- 1.3 Median time between clock start and scan (hours:mins)

### Domain 2: Stroke unit

- 2.1 Proportion of patients directly admitted to a stroke unit within 4 hours of clock start
- 2.2 Median time between clock start and arrival on stroke unit (hours:mins)
- 2.3 Proportion of patients who spent at least 90% of their stay on stroke unit

### Domain 3: Thrombolysis

- 3.1 Proportion of all stroke patients given thrombolysis (all stroke types)
- 3.2 Proportion of eligible patients (according to the RCP guideline minimum threshold) given thrombolysis
- 3.3 Proportion of patients who were thrombolysed within 1 hour of clock start
- 3.4 Proportion of applicable patients directly admitted to a stroke unit within 4 hours of clock start AND who either receive thrombolysis or have a pre-specified justifiable reason ('no but') for why it could not be given
- 3.5 Median time between clock start and thrombolysis (hours:mins)

### Domain 4: Specialist Assessment

- 4.1 Proportion of patients assessed by a stroke specialist consultant physician within 24h of clock start
- 4.2 Median time between clock start and being assessed by stroke consultant (hours:mins)

- 4.3 Proportion of patients who were assessed by a nurse trained in stroke management within 24h of clock start
- 4.4 Median time between clock start and being assessed by stroke nurse (hours:mins)
- 4.5 Proportion of applicable patients who were given a swallow screen within 4h of clock start
- 4.6 Proportion of applicable patients who were given a formal swallow assessment within 72h of clock start

**Domain 5: Occupational therapy**

- 5.1 Proportion of patients reported as requiring occupational therapy
- 5.2 Median number of minutes per day on which occupational therapy is received
- 5.3 Median % of days as an inpatient on which occupational therapy is received
- 5.4 Compliance (%) against the therapy target of an average of 25.7 minutes of occupational therapy across all patients (Target = 45 minutes x (5/7) x 0.8 which is 45 minutes of occupational therapy x 5 out of 7 days per week x 80% of patients)

**Domain 6: Physiotherapy**

- 6.1 Proportion of patients reported as requiring physiotherapy
- 6.2 Median number of minutes per day on which physiotherapy is received
- 6.3 Median % of days as an inpatient on which physiotherapy is received
- 6.4 Compliance (%) against the therapy target of an average of 27.1 minutes of physiotherapy across all patients (Target = 45 minutes x (5/7) x 0.85 which is 45 minutes of physiotherapy x 5 out of 7 days per week x 85% of patients)

**Domain 7: Speech & language therapy**

- 7.1 Proportion of patients reported as requiring speech and language therapy
- 7.2 Median number of minutes per day on which speech and language therapy is received
- 7.3 Median % of days as an inpatient on which speech and language therapy is received
- 7.4 Compliance (%) against the therapy target of an average of 16.1 minutes of speech and language therapy across all patients (Target = 45 minutes x (5/7) x 0.5 which is 45 minutes of speech and language therapy x 5 out of 7 days per week x 50% of patients)

**Domain 8: MDT working**

- 8.1 Proportion of applicable patients who were assessed by an Occupational Therapist within 72h of clock start
- 8.2 Median time between clock start and being assessed by Occupational Therapist (hours:mins)
- 8.3 Proportion of applicable patients who were assessed by a Physiotherapist within 72h of clock start
- 8.4 Median time between clock start and being assessed by Physiotherapist (hours:mins)
- 8.5 Proportion of applicable patients who were assessed by a Speech and Language Therapist within 72h of clock start

- 8.6 Median time between clock start and being assessed by Speech and Language Therapist (hours:mins)
- 8.7 Proportion of applicable patients who have rehabilitation goals agreed within 5 days of clock start
- 8.8 Proportion of applicable patients who are assessed by a nurse within 24h AND at least one therapist within 24h AND all relevant therapists within 72h AND have rehab goals agreed within 5 days

**Domain 9: Standards by discharge**

- 9.1 Proportion of applicable patients screened for nutrition and seen by a Dietician by discharge
- 9.2 Proportion of applicable patients who have a continence plan drawn up within 3 weeks of clock start
- 9.3 Proportion of applicable patients who have mood and cognition screening by discharge

**Domain 10: Discharge processes**

- 10.1 Proportion of applicable patients receiving a joint health and social care plan on discharge
- 10.2 Proportion of patients treated by a stroke skilled Early Supported Discharge team
- 10.3 Proportion of applicable patients in atrial fibrillation on discharge who are discharged on anticoagulants or with a plan to start anticoagulation
- 10.4 Proportion of those patients who are discharged alive who are given a named person to contact after discharge

# Appendix B. Sentinel Stroke National Audit Programme Data

## Summary Report for Kent and Medway October-December 2014 (admissions and discharges)

	Dartford and Gravesham NHS Trust	East Kent Hospitals University NHS Foundation Trust			Maidstone and Tunbridge Wells NHS Trust		Medway NHS Foundation Trust
	Darent Valley Hospital	Kent and Canterbury Hospital	Queen Elizabeth the Queen Mother Hospital	William Harvey Hospital	Maidstone District General Hospital	Tunbridge Wells Hospital	Medway Maritime Hospital
SSNAP Level	D	D	D	B	C	D	E
Case ascertainment band	B	A	C	A	A	B	A
Audit compliance band	B	B	C	B	B	B	C
Combined Total Key Indicator level	C	D	B	B	C	D	D
<b>Patient-centred KI levels- Patient-centred Domain levels</b>							
1. Scanning	A	A	B	A	D	C	B
2. Stroke unit	C	D	C	C	D	E	E
3. Thrombolysis	B	D	C	D	D	D	D
4. Specialist assessments	B	B	A	A	C	B	D
5. Occupational therapy	B	C	A	A	A	C	E
6. Physiotherapy	C	D	A	B	B	B	E
7. Speech and Language therapy	E	E	E	C	D	E	D
8. MDT working	D	D	B	D	B	D	D
9. Standards by discharge	C	B	C	B	C	C	D
10. Discharge process	B	B	B	B	A	D	A

Team-centred KI levels – Team-centred Domain levels	Dartford and Gravesham NHS Trust	East Kent Hospitals University NHS Foundation Trust			Maidstone and Tunbridge Wells NHS Trust		Medway NHS Foundation Trust
	Darent Valley Hospital	Kent and Canterbury Hospital	Queen Elizabeth the Queen Mother Hospital	William Harvey Hospital	Maidstone District General Hospital	Tunbridge Wells Hospital	Medway Maritime Hospital
1. Scanning	A	A	B	A	D	C	B
2. Stroke unit	C	D	C	C	C	E	E
3. Thrombolysis	B	D	C	D	D	D	D
4. Specialist assessments	C	B	A	A	C	B	D
5. Occupational therapy	C	D	A	A	A	B	E
6. Physiotherapy	C	D	A	B	A	B	E
7. Speech and Language therapy	E	E	E	C	D	E	D
8. MDT working	D	D	D	B	B	C	D
9. Standards by discharge	C	B	B	B	C	D	D
10. Discharge process	B	B	C	B	A	E	A

# Appendix C. The clinical co-dependencies of hyper-acute and acute stroke units

The SECS published their report titled 'The Clinical Co-Dependencies of Acute Hospital Services' in 2014. HASUs and ASUs were two of the large acute services reviewed, both for their dependencies on other clinical services, and the dependencies of the other large acute services on stroke services. The full report, grid and analysis can be found on the SECS website at <http://www.secsenate.nhs.uk/news/clinical-co-dependencies-acute-hospital-services-clinical-senate-review/>. An extract from the grid, which summarises the dependencies of HASUs and ASUs on other services, is shown below.

Using the colour coding used in the SECS report:

- A **Purple**-coded dependency indicates that the supporting specialty should be *based* on site.
- A **Red**-coded dependency indicates that that the service should be able to come to the patient, but if not based in the same hospital, should be provided by visiting, or in reach from another site (either in person, or via telemedicine links if appropriate).



The recommendations for HASUs and ASUs for on-site provision of care from other clinical services.

Clinical specialties and functions supporting Hyper-Acute and Acute Stroke Units	Hyper-Acute Stroke Unit	Acute Stroke Unit
A&E /Emergency Medicine	P	P
Acute and General Medicine	P	P
Acute Cardiology	P	P
Acute Inpatient Rehabilitation	(ideally on site but could be available through network)	P
Acute Mental Health Services	P	P
Critical Care (adult)	P	P
CT Scan	P	P
Dietetics	R	R
Elderly Medicine	P	P
General Anaesthetics	P	P
MRI Scan	P	(not required on site)
Nephrology (not including dialysis)	R	R
Neurology	R	R
Occupational Therapy	P	P
Palliative Care	R	R
Physiotherapy	P	P
Respiratory Medicine (including bronchoscopy)	P	P
Speech and Language	R	R
Urgent GI Endoscopy (upper & lower)	P	R (within 4 hrs)
X-ray and Diagnostic Ultrasound	P	P

# Appendix D. Expert Clinical Review Group membership, and declarations of interest

## 1. Expert Clinical Reference Group Membership

NAME	ROLES
<b>Lawrence Goldberg (Chair)</b>	SECS Chair, and Chair of ECRG Consultant Nephrologist, Brighton and Sussex University Hospitals NHS Trust
<b>Khalid Ali</b>	Consultant Stroke Physician: Brighton and Sussex University Hospitals NHS Trust Senior Lecturer in Geriatrics: Brighton and Sussex Medical School- BSMS Ageing research lead: KSS Clinical Research Network
<b>Neil Baldwin (external)</b>	Consultant Stroke Physician Member of the Inter-Collegiate Stroke Working Party of the Royal College of Physicians; Member of the National executive of the British Association of Stroke Physician; peer reviewer for the RCP / BASP peer review programme.
<b>Caroline Davies</b>	Deputy Chief Nurse; Brighton and Sussex University Hospitals NHS Trust
<b>Huw Davies</b>	PPE representative
<b>David Davis</b>	Clinical Lead AHPs, SECS Council, NHS Pathways Clinical Lead and Deputy Lead Governor NHS111 Workforce Programme National Clinical Lead, NHS England South East Coast Ambulance NHS Trust
<b>Matthew England</b>	Paramedic/emergency/patient transport, South East Coast Ambulance NHS Trust
<b>Claire Fuller</b>	Clinical Chair, Surrey Downs Clinical Commissioning Group. General Practitioner
<b>Linda Honey</b>	SECS Council Member Head of Prescribing and Medicines Commissioning. NHS North West Surrey Clinical Commissioning Group
<b>Tony Kelly</b>	Consultant Obstetrician & Gynaecologist, Honorary Clinical Senior Lecturer & Associate Medical Director for Quality & Innovation Brighton & Sussex University Hospitals
<b>Alan Keys</b>	PPE representative
<b>Panos Koumellis</b>	Consultant Neuroradiologist, Brighton and Sussex University Hospitals NHS Trust
<b>Fiona Mooney</b>	Clinical Manager Neuro rehabilitation. Central Surrey Heath (CSH) Surrey
<b>Kath Pasco</b>	Consultant Stroke Physician KSS Training Programme Director and Regional RCP Advisor for Stroke Royal Surrey County Hospital NHS Trust Health Education England
<b>Karen Poole</b>	Professional Lead for Physiotherapy & Clinical Specialist for Neurology and Rehabilitation, East Sussex Healthcare NHS Trust

<b>Mohit Sharma</b>	Centre Consultant Public Health, Public Health England - Kent, Surrey and Sussex
<b>Ottilia (Tilly) Speirs</b>	Consultant Stroke Physician and Geriatrician, Stroke Lead Frimley Park Hospitals NHS Trust
<b>Eleanor Langridge</b>	SECS Programme Manager
<b>Ali Parsons</b>	SECS Manager Joint AD SE SCNs and Clinical Senate

## 2. ECRG Declarations of Interest

<b>NAME</b>	<b>Personal pecuniary interest</b>	<b>Personal family interest</b>	<b>Non-personal pecuniary interest</b>	<b>Personal non-pecuniary interest</b>
<b>Lawrence Goldberg</b>	None	None	None	None
<b>Khalid Ali</b>	None	None	None	None
<b>Neil Baldwin</b>	None	None	None	None
<b>Caroline Davies</b>	None	None	None	None
<b>Huw Davies</b>	None	None	None	None
<b>David Davis</b>	None	None	None	None
<b>Matthew England</b>	None	None	None	None
<b>Claire Fuller</b>	None	None	None	None
<b>Linda Honey</b>	None	None	None	None
<b>Alan Keys</b>	None	None	None	None
<b>Panos Koumellis</b>	None	None	None	None
<b>Fiona Mooney</b>	None	None	None	None
<b>Kath Pasco</b>	None	None	None	None
<b>Karen Poole</b>	None	None	None	None
<b>Mohit Sharma</b>	None	None	None	None
<b>Ottilia (Tilly) Speirs</b>	None	None	None	None
<b>Eleanor Langridge</b>	None	None	None	None
<b>Ali Parsons</b>	None	None	None	None

## Appendix E. Clinical Senates and the clinical review process

The South East Clinical Senate (SECS), along with the other 11 Clinical Senates in England, is a non-statutory body set up to provide independent strategic clinical advice to health care commissioners and systems, including the CCGs, NHS England and Health and Wellbeing Boards of Kent, Surrey and Sussex.

SECS aims to provide advice that is evidence based and impartial, informed through engagement with a broad range of health and care professionals, together with patients and public, in its formulation.

Clinical senates are available to provide a clinical component to the assurance process of service change and reconfiguration proposals, to give confidence to patients, staff and the public that proposals are well thought through, have taken on board their views and will deliver real clinical benefits to patients.

NHS England's 'Planning and delivering service changes for patients' (December 2013)(19) describes the high level framework and oversight of service change, supported by the document 'Effective Service Change: A Support and Guidance Toolkit' (21), which details the assurance process which NHS England applies to service change proposals.

The guidance describes the clinical assurance role in this process for clinical senates as:

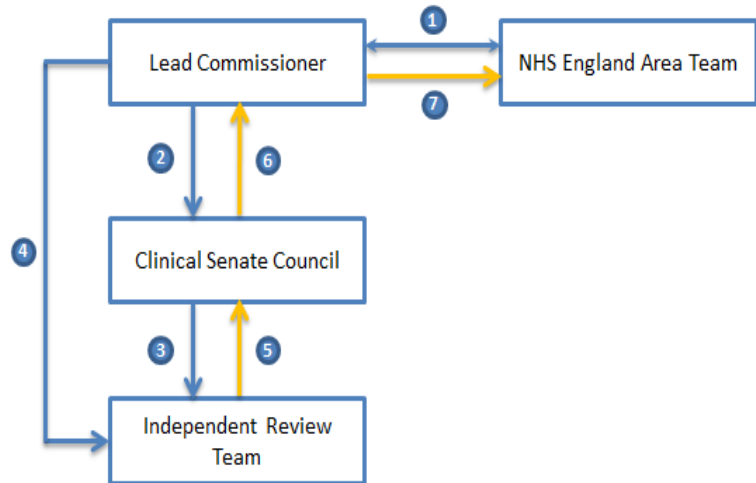
*The aim of clinical assurance is to establish whether the proposed changes are supported by a clear clinical evidence base and will improve the quality of the service provided. The decision to request an external clinical assurance review should follow discussions between the relevant commissioner(s), area teams at the strategic sense check – with input where required from the local clinical senate, who can bring multi-disciplinary strategic advice to the development of proposals.*

The advice provided by clinical senates is part of the broader assurance process and is considered alongside assurance of the other aspects of a service change proposal.

This review process is described in figure 1. below, and this current clinical senate review has followed this process.

The Independent Clinical Review Process:  
a worked example

- 1 NHS England agrees level of assurance required with lead commissioner (at stage 1 of NHS England assurance process)
- 2 Lead commissioner requests clinical senate advice as part of assurance process. Clinical senate and lead commissioner agree terms of reference for independent clinical review
- 3 Clinical senate establishes independent review team and appoints chair of review
- 4 Lead commissioner provides key documents to independent review team and supports other review requirements
- 5 Review undertaken and draft report sent to Clinical Senate Council
- 6 Clinical Senate Council agrees final report and returns to lead commissioner
- 7 Report submitted by lead commissioner as part of NHS England's assurance process.



# Appendix F. South East Clinical Senate Council Members

NAME	ROLES
<b>Lawrence Goldberg</b>	Clinical Senate Chair Consultant Nephrologist, Brighton and Sussex University Hospitals NHS Trust
<b>Amanda Allen</b>	Therapy Manager, Maidstone and Tunbridge Wells NHS Trust
<b>Christopher Allen</b> (Deputy to Amit Rai)	Consultant in Dental Public Health, Public Health England Kent Surrey Sussex Centre
<b>Sally Allum</b>	Director of Nursing & Quality, NHS England South (South East)
<b>Katie Armstrong</b>	Clinical Chief Officer, NHS Coastal West Sussex Clinical Commissioning Group. General Practitioner
<b>Mandy Assin</b>	Consultant Psychiatrist, Sussex Partnership NHS Foundation Trust
<b>Michael Bosch</b>	General Practitioner, Horley, Surrey
<b>Maxine Bullen</b>	Independent Patient and Public Engagement Facilitator
<b>David Davis</b>	Paramedic, Clinical Informatics Advisor, Medical Directorate, NHS England, NHS Pathways Clinical Lead, SECamb
<b>Claire Fuller</b>	Clinical Chair, Surrey Downs CCG. General Practitioner
<b>Peter Green</b>	Chief Clinical Officer, General Practitioner, NHS Medway CCG. General Practitioner
<b>Des Holden</b>	Medical Director, Surrey and Sussex Healthcare NHS Trust
<b>Linda Honey</b>	Head of Prescribing and Medicines Commissioning, NHS North West Surrey CCG
<b>Caroline Jessel</b> (Deputy to James Thallon)	Clinical Strategy Lead, Kent and Medway Area Team Sustainability Lead, NHS England South, South East
<b>Tony Kelly</b>	Consultant Obstetrician & Gynaecologist, Honorary Clinical Senior Lecturer & Associate Medical Director for Quality & Innovation Brighton & Sussex University Hospitals
<b>Rachael Liebmann</b>	Registrar and Consulting Lead, Royal College of Pathologists. Clinical Director of Pathology Services, Queen Victoria Hospital, East Grinstead. Consultant Pathologist
<b>Carolyn Morris</b>	Patient and Public Engagement Representative
<b>Edward Palfrey</b>	Consultant Urologist / Clinical Integration Director, Frimley Health NHS Foundation Trust
<b>Amanda Parker</b>	Director of Nursing & Quality, Western Sussex Hospitals Foundation Trust
<b>Jo Pritchard</b>	Managing Director, CSH Surrey
<b>Amit Rai</b>	Chair, Dental Local Professional Network, Medical Directorate, NHS England South (South East)
<b>Mohit Sharma</b>	Centre Consultant, Public Health England – South East

