South East Clinical Senate

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Hospitals without acute stroke units:

A review of the clinical implications, and recommendations for stroke networks

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Request from the Surrey Clinical Commissioners to the South East Clinical Senate:

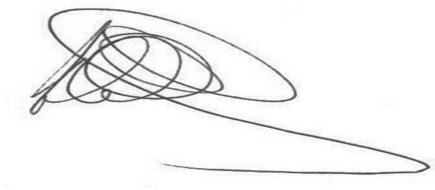
For a population whose local acute hospital does not have either a hyper-acute or acute stroke unit, how can high quality, safe and appropriate care be ensured for patients developing a stroke?

Foreword

The centralisation of acute stroke services has been shown to result in important benefits to patient outcomes. The implications for hospitals that lose such services as a result of such reconfiguration, and their local resident population, have not however previously been clearly articulated. The South East Clinical Senate (SECS) was asked to review this issue, and provide recommendations and advice for stroke networks and their commissioners and providers.

The SECS convened an expert clinical review group to undertake this work on its behalf. We are very grateful to the members of this group for contributing their expertise, experience and time to the production of this report.

Whilst the request came from Surrey, the review and report is intended to be of value to other health and care systems in England and elsewhere considering re-configuration of their stroke pathways.



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Expert Clinical Review Group Chair, and SECS Chair

Table of contents

Foreword **3**
1. Executive Summary **5**
2. Introduction **7**
3. Methodology **10**
4. General recommendations for stroke networks with non-HASU/ASU hospitals **11**
5. Pathways for patients with an acute stroke whose local hospital does not have a HASU **13**
5.1 Pathway for an acute stroke in the community 13
5.2 Pathway for an acute stroke occurring in an inpatient in the non-HASU/ASU hospital 15
6. Pathways for stroke mimics whose local hospital does not have a HASU or ASU **16**
6.1 Definition, incidence, and impact on HASU bed requirements 16
6.2 Initial assessment 17
6.3 Transfer to the HASU hospital pending diagnosis 17
6.4 onward pathway of care after exclusion of a stroke at the HASU hospital 18
7. Pathways for transient ischaemic attacks **18**
8. Stroke rehabilitation services in relation to hospitals without a HASU or ASU **21**
8.1 Relevant background to stroke rehabilitation pathways 21
8.2 General points and recommendations 23
8.3 Enabling patient discharge directly home from the HASU/ASU hospital 24
8.3.1 Early supported discharge 24
8.3.2 Community based rehabilitation 26
8.4 Patients who need ongoing inpatient stroke rehabilitation post-ASU - options 26
9. Ensuring effective information sharing between hospital sites **30**
10.Required workforce and competencies at the non-HASU/ASU hospital/site **31**
10.1 General recommendations 31
10.2 Medical 32
10.3 Nursing 33
10.4 Physiotherapists, occupational therapists and speech and language therapists 33
11. Public and patient perspective **34**
12. Public health perspective **35**
13. Glossary **36**
Appendices **37**
Appendix A. Expert Clinical Review Group membership, and declarations of interest **37**
1. Expert Clinical Review Group Membership 37
2. ECRG Declarations of Interest 38
Appendix B. Diagram of the full stroke pathway **39**
Appendix C. ECRG Agenda -24/11/15 **40**

1. Executive summary

There is now a large body of evidence demonstrating the many benefits to patient outcomes of centralising specialist services for acute stroke patients in hyper-acute and acute stroke units, alongside effective early supported discharge (ESD) and rehabilitation services. As a result of such reconfigurations, some hospitals currently providing stroke services to their local populations may have these services transferred to a specialist centre. It is therefore important to understand the implications of such a service move for hospitals without stroke services and their local populations, and for the rehabilitation pathways. In this context, the South East Clinical Senate (SECS) was requested by the Surrey CCGs to provide a review of these issues, to aid them and their providers' strategic planning of their future stroke services. The question asked of SECS was as follows:

For a population whose local acute hospital does not have either a hyper-acute or acute stroke unit, how can high quality, safe and appropriate care be ensured for patients developing a stroke?

This report however is a generic review of the issues relating to hospitals without stroke units, and their stroke systems and networks, and is not specific to Surrey.

This review proposes some broad principles that should be used when planning new stroke pathways that involve acute hospitals without a hyperacute or acute stroke unit (HASU or ASU), that should include:

- Ensuring that high quality and timely stroke services are patient centred, and are available to all patients in the network, regardless of their place of residence
- Service reconfiguration should be evidence based (where the evidence exists)
- Clinically unnecessary transfers of care should be avoided
- Any transfer of stroke services should avoid destabilising other specialties or clinical services.

Hospitals without stroke units should not be seen in isolation, but as part of a stroke network that is centred around their network's HASU, and which provides system and clinical leadership, pathway coordination and oversight, and consistency of approach for the whole of its population.

Whilst face, arm, speech test (FAST) positive patients should be transferred direct to the HASU, other stroke and stroke mimic patients will inevitably arrive initially at the non-HASU hospital. For these patients there need to be clear and agreed pathways. For the majority, this would involve urgent inter-hospital transfer to the HASU hospital (often before brain CT scanning) unless there are valid clinical reasons to avoid or delay transfer, so as to achieve maximum benefit. There should be an urgent clinical discussion with the HASU clinician to decide the most appropriate pathway for the individual patient. This also applies to patients developing stroke

whilst in the stroke hospital for other conditions. On this basis, there is considered to be no requirement for the maintenance of specialist stroke clinicians to be based at the non-HASU/ASU hospital, but core diagnostic skills should remain in place.

The pathway for TIAs should be agreed across the network. High risk TIAs should be managed at the HASU, as could all lower risk TIAs, benefiting from the seven day availability of specialist clinicians and diagnostics at the HASU, but if a more local service is to be provided in the local hospital, it should comply with the necessary specification of such a service, and be fully integrated with the HASU.

The provision of high quality, fully staffed and skilled specialist stroke rehabilitation services is an essential component of good stroke care and outcomes, reduces length of stay in the acute stroke unit, and reduces the need for post-acute stroke care back in a patient's local hospital or other inpatient facility. Such rehabilitation services should be highly coordinated, if not fully integrated, with acute stroke services, and there are various models that can be considered. Performance should be measured by the new post-acute Sentinel Stroke National Audit Programme (SSNAP) audit tool, and submission of data to it should be a requirement of all relevant providers.

Early supported discharge teams should preferentially be embedded and integrated with the acute stroke unit, to streamline pathways, improve team working and communications, and to reduce length of stay.

Community stroke rehabilitation is a specialist service and needs to be staffed as such. The configuration of such services should take account of the finite pool of the appropriately skilled staff, which should be a leading driver of required models of care. Post-acute inpatient rehabilitation can take place on an acute hospital site, but there may be clinical and organisational disadvantages of siting such services there. The pros and cons of the location should be explicitly evaluated.

In conclusion, stroke networks can deliver high quality stroke care to all their population even if one of their acute hospitals does not provide stroke services, but clear, agreed, evidence based pathways should be in place, with an integrated, network approach to the best use of the available specialist workforce and resources.

2. Introduction

There is now strong evidence that the provision of the full range of multi-disciplinary interventions by specialist stroke units reduces mortality and improves long term patient outcomes. The benefits of delivering acute stroke care in fewer larger units include: faster thrombolysis, better outcomes, reduced length of stay and overall bed requirements, financial and workforce economies of scale, improved recruitment and retention, teaching, training and research opportunities, and appropriate co-location with other key clinical services[1] [2] [3] [4]

The recommended infrastructure and standards for such specialist stroke units were set out in the National Stroke Strategy in 2007[5], in the Sentinel Stroke National Audit Programme (SSNAP)[6] and more recently these have been incorporated within the NHS England-commissioned stroke commissioning toolkit, and within the South East, summarised in the strategic clinical network's Stroke Service Specification and Stroke. The clinical network has also produced draft commissioning guidance for rehabilitation in the community[7].

The intensity and nature of care that is required changes in the days and weeks after the stroke has occurred. A representation of the full stroke pathway is shown in appendix 2. Initial care (usually the first 72 hours) should be delivered by a hyper-acute stroke unit (HASU). HASUs should be of a minimum size of 600 confirmed stroke cases per year to achieve maximum patient benefits, quality outcomes and cost effectiveness, and this size requirement is resulting in reviews of potential stroke service reconfigurations around the country (the most significant and earliest being that in London from 2010[3]). The consequence will be fewer and larger HASUs, each of which will form the hub of local stroke networks.

Patients should then be transferred to an acute stroke unit (ASU) for the remainder of the acute hospital inpatient care (which may be on the same hospital site), and

[1] Bray BD, Campbell J, Cloud GC, Hoffman A, Tyrrell PJ, Wolfe CDA, et al. Bigger, faster? Associations between hospital thrombolysis volume and speed of thrombolysis administration in acute ischemic stroke. Stroke. 2013 Nov;44(11):3129–35. Available from: http://stroke.ahajournals.org/content/44/11/3129.full.pdf+html

[2] Stroke Unit Care Combined With Early Supported Discharge Improves 5-Year Outcome, A Randomized Controlled Trial. Hild Fjærtoft, PT et al. Stroke. 2011;42:1707-1711. http://stroke.ahajournals.org/content/42/6/1707.full.pdf

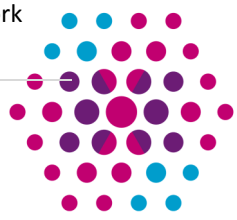
[3] Impact on Clinical and Cost Outcomes of a Centralized Approach to Acute Stroke Care in London: A Comparative Effectiveness Before and After Model. Hunter MR et al. PLoS One 2013. 8(8): e70420 http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0070420

[4] Organised inpatient (stroke unit) care for stroke. Cochrane Collaborative 2013. http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD000197.pub3/epdf/sta

[5] DH. National Stroke Strategy [Internet]. 2007. Available from: http://clahrc-gm.nihr.ac.uk/wp-content/uploads/DoH-National-Stroke-Strategy-2007.pdf

[6] https://www.strokeaudit.org/Home.aspx

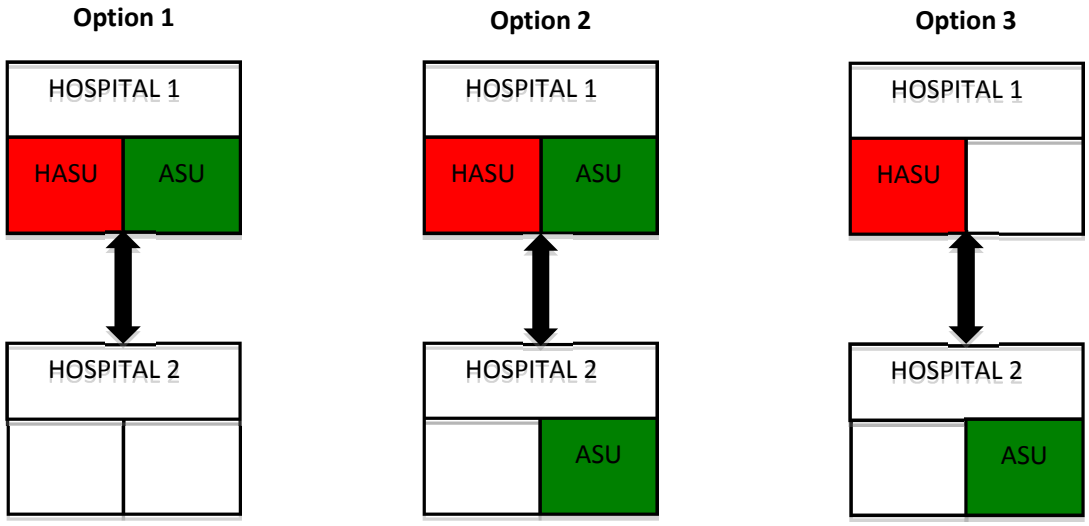
[7] All three of these documents are due for publication shortly. For the South East Strategic Clinical Network documents, these will be available at http://www.secscn.nhs.uk/our-networks/cardiovascular/



then subsequently either transferred home via 'early supported discharge' teams to continue with their recovery and rehabilitation in a community setting, or if they need more intensive residential rehabilitation, would be transferred to a specialist stroke rehabilitation ward or unit, with a range of potential locations (see figure 2 on page 22).

ASUs can be co-located with (i.e. in the same hospital as) the HASU, but also could be set up or maintained in hospitals which do not have a HASU. Conversely, hospitals without a HASU may or may not have an ASU. There are therefore three potential configurations for acute inpatient stroke units within a two hospital one HASU network (see figure 1).

Figure 1. Configuration options for a HASUs and ASUs across two hospitals



Historically, most acute hospitals have delivered acute stroke care for stroke patients admitted though their Accident & Emergency (A&E) or medical take, and have not transferred the patient to another hospital for specialist care. Given the patient benefits now of establishing HASUs, a key issue is which stroke services if any should still be provided by the non-HASU hospital.

The issues facing acute hospitals without both a HASUs and an ASU (as for hospital 2 in option 1 in the above figure) is potentially relevant for any area of the country considering centralising stroke services. In evaluating the appropriateness of option 1 models of acute stroke care, there are no available published guiding principles or reviews on how such hospitals should relate to the stroke networks in which they sit (and their specialist stroke units), yet there are important issues, as well as reasonable concerns from clinicians, patients and the public, that must be addressed, and identified clinical risks need to be mitigated. In addition, pathways of

care developed and implemented in major metropolis like London and Manchester may not be fully transposable to more mixed urban and rural areas, such as in the south east counties.

In Surrey, a review of stroke services concluded that stroke patient outcomes and performance indicators needed to significantly improve, and through a stroke change board, have been developing options for future service configurations. Potential configurations include one or two hospitals that might not have a HASU or an ASU.

Therefore, to aid the Surrey health systems in understanding the key issues for such hospitals before developing more their stroke networks, commissioning specifications and more detailed options for appraisal, the South East Clinical Senate (SECS) was asked to produce generic advice that would be relevant to Surrey that was not Surrey-specific, and therefore would be of value to any equivalent health system considering their future stroke configuration options.

3. Methodology

The South East Clinical Senate (SECS) received a formal request for a clinical review from The Surrey clinical commissioners to answer the following question:

For a population whose local acute hospital does not have either a hyper-acute or acute stroke unit, how can high quality, safe and appropriate care be ensured for patients developing a stroke?

An expert clinical review group (ECRG) of experienced clinicians and others from a wide range of professions involved with stroke services, together with a strong patient and public engagement voice, was established 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 and role. A full list of the ECRG membership is found in Appendix A. Invitations to membership of the ECRG excluded anyone employed by a Surrey organisation or with any other clear conflicts of interest[8]. Members of the ECRG were also required to act independently and do not represent their employing organisation or professional body. A full summary of ECRG members' declarations of interests is found in Appendix A.

The ECRG met on 24.11.15 (see agenda, Appendix C), a draft report was produced, which was refined by teleconference, sent to the commissioners for comment and checking matters of accuracy. The report was considered by the SECS Council on 20.1.16, where final recommendations were made and the report was approved for final submission.

[8] The SECS's Standards of Business Conduct and Conflict of Interest Policy is available on request from england.clinicalsenatesec@nhs.net

4. General recommendations for stroke networks with non-HASU/ASU hospitals

A general set of principles that evolving stroke networks are recommended to adopt in relation to hospitals without stroke units are set out below:

- High quality stroke services, from initial onset through to recovery in the community, should be patient-centred, and be available for all patients in the network, regardless of their place of residence or whether their local hospital has an acute stroke unit.
- The issues of a non-HASU/ASU hospital cannot be considered in isolation. These hospitals should be explicitly associated and aligned with a designated HASU and its associated operational network. Such hospitals must be represented on the network so that their role and issues are fully accounted for in pathway planning and delivery, to ensure that their local patients receive the best quality care. The designated HASU/ASU provider within each health system should also take responsibility for any ongoing stroke training and education needs in the non-HASU/ASU hospital.
- The most effective and efficient patient care would be delivered by the highly coordinated provision of services by all providers involved in the patient pathway. Formalised stroke networks were considered the most effective vehicle for providing system leadership, better overall outcomes, consistency and complementarity of approach (within and between systems), integration and coordination of the workforce, accountability for providers, clarity and reassurance to service users and other stakeholders, and facilitation of research, sharing of knowledge and best practice. The coordination required of stroke services is at two levels:
    - At the local system level, centred on the designated HASU. These would be operational stroke networks, and could align with system resilience groups (SRGs).
    - At the strategic level, to coordinate stroke delivery across the county (or other strategically defined geography). They would provide strategic oversight, leadership and coordination, and could align with the strategic urgent care network (SUCN).
    - Stroke networks could be time limited, tasked initially with implementing and monitoring new configurations, and their form and function could evolve as the systems develop and mature. They should have the influence and authority required to deliver the specified requirements of stroke services within the network.

- The network would need to support the non HASU/ASU site with robust and responsive systems that facilitate the rapid and safe transfer of patients to the designated HASU for their diagnosis and initial management to maximise the clinical benefits and outcomes for stroke patients. Subsequent unnecessary transfers of care should be avoided: the more handovers between teams and/or organisations, the greater the disruption to the continuity of care, potentially causing slower recovery, greater clinical risk, and a longer length of inpatient stay.
- Any move of stroke services to a different site resulting from reconfiguration should not de-stabilise remaining services (e.g. elderly care and the therapies). Risks should be explicitly stated and considered in advance of any reconfiguration, and mitigating plans put in place.
- Pathway development for acute stroke patients should not compromise the quality of care of patients in whom a stroke is excluded.

5. Pathways for patients with an acute stroke whose local hospital does not have a HASU

5.1 Pathway for an acute stroke in the community

- There is clear evidence that stroke patients have significantly improved outcomes if admitted to a designated stroke unit, and all stroke patients, wherever they live, should have access to this specialist stroke care[9].

- FAST-positive stroke patients[10] should be transferred immediately to the HASU hospital following diagnosis at home by the General Practitioner (GP) or ambulance staff.

- FAST-negative patients will normally first arrive at their local hospital (as self-presenters, GP referral with unclear diagnosis, or via the ambulance service). Their pathway will then depend on a number of factors including:

    - The time from initial stroke symptoms (determining whether thrombolysis would be potentially indicated and therefore how urgent the transfer to the HASU should be)

    - Whether the patient requires a critical care environment (ICU or HDU) making transfer unsafe

    - Whether the patient is for palliative treatment only.

    - Is stroke the clinically dominant condition, and if not, where is the best environment for ongoing care

    - For renal dialysis patients, the need for a combined HASU/inpatient renal unit hospital (which may need transfer to a different/more distant HASU from usual)

[9] Bray BD, Campbell J, Cloud GC, Hoffman A, Tyrrell PJ, Wolfe CDA, et al. Bigger, faster? Associations between hospital thrombolysis volume and speed of thrombolysis administration in acute ischemic stroke. Stroke. 2013 Nov;44(11):3129–35. Available from: http://stroke.ahajournals.org/content/44/11/3129.full.pdf+html

[10] F.A.S.T. The aid to the public in identifying an acute stroke: Face, Arms, Speech, Time. http://www.nhs.uk/actfast/Pages/stroke.aspx

- All patients with symptoms of an acute stroke should be urgently assessed and then discussed with the HASU. This initial triage requires maintenance of the appropriate clinical skills amongst the paramedic staff, and the medical and nursing staff in the receiving specialties of the local hospital (mainly in A&E, acute medicine and elderly care).

- Transfer should be immediate if the time of symptom onset indicates that thrombolysis could be administered within the agreed effective timescale.

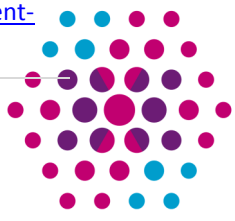
- The clinical discussion with the HASU should agree whether to undertake CT brain scanning before transfer of patients without a clear clinical diagnosis of stroke. Time-critical transfer to the stroke unit to enable rapid thrombolysis would be best enabled by urgent transfer to the HASU for immediate scanning there. This needs to be balanced with the likelihood of a different underlying diagnosis which would not require transfer to the HASU hospital. Such decision making should be within the context of NICE and Royal College of Physicians recommendations on CT scanning within one hour for specifically described presentations (other than for thrombolysis assessment)[11] [12]. If undertaken locally, CT scan images should then be immediately available electronically for the HASU clinical team to review.

- The pathways and protocols for potential stroke patients need to be clearly articulated, including mechanisms for rapid inter-hospital transfer, and agreed with the ambulance service. They should include the requirement that the receiving HASU hospital accepts all clinically appropriate acute stroke referrals from their other networked hospitals. This will usually be an A&E to A&E transfer, with rapid brain scanning on arrival before transfer to a HASU bed. There should be no non-clinical barriers (including bed pressures in the HASU hospital) that delay such urgent patient transfer.

- The apparent severity of a stroke should not be a determinant of transfer to the HASU. Apparently 'mild' strokes can worsen quickly, and important but more subtle neurological deficits may not be diagnosed in a non-specialist setting.

[11] On anticoagulant treatment; a known bleeding tendency; a depressed level of consciousness (GCS<13); unexplained progressive or fluctuating symptoms; papilloedema, neck stiffness or fever; severe headache at onset of stroke symptoms.

[12] See recommendation 1.3.2. from http://www.nice.org.uk/guidance/cg68/resources/stroke-and-transient-ischaemic-attack-in-over-16s-diagnosis-and-initial-management-975574675141



- Even if a presenting patient is diagnosed with having had a previously unknown stroke at some time in the past, they should be discussed with the HASU and transferred to the stroke unit (HASU or ASU depending on how recently the stroke is considered to have occurred) if their presentation is thought to be due to the effects of the stroke. If however the primary cause of admission to hospital is judged to be due to another acute diagnosis (e.g. urinary tract or chest infection), then local neurology or geriatric assessment of their stroke issues during their admission, without transfer, may be appropriate.

5.2 Pathway for an acute stroke occurring in an inpatient in the non-HASU/ASU hospital

- Some patients already in hospital for another condition can develop a stroke whilst an inpatient. This could be in a HASU hospital or another hospital in the network. There is a risk that such patients in a non-HASU hospital would be at a disadvantage if no agreed pathway for transfer to the HASU hospital is in place.

- Such pathways, which include discussion then urgent transfer from non-HASU hospital to HASU hospital, should be explicit, agreed and in place 24/7 with key clinical staff and the bed management teams of both hospitals. The clinical discussion should include whether CT brain scanning should be undertaken before or after the planned transfer. The factors determining the appropriateness of transfer are as listed in section 5.1.

- The ambulance service should be consulted with, and agreement reached on this urgent inter-hospital transfer pathway.

6. Pathways for stroke mimics whose local hospital does not have a HASU or ASU

6.1 Definition, incidence, and impact on HASU bed requirements

- Patients with symptoms that suggest or mimic a stroke but who subsequently turn out to have an alternative diagnosis (such as syncope, seizures, migraine, somatisation disorders, metabolic disturbances, central nervous system infections or tumours) are referred to as 'stroke mimic' patients. These alternative diagnoses have on average a much shorter length of stay than confirmed stroke cases (at Buckinghamshire Healthcare NHS Trust 64% had a length of stay of 0-3 days[13]), and can often be discharged directly home without acute rehabilitation requirements (though some patients with complex or serious alternative diagnoses require prolonged admissions but usually not on a stroke unit).

- There are no national data collected on the incidence of stroke mimic patients presenting to hospital A&E departments or admitted to stroke units, but there have been a number of reports from individual centres, with numbers equating to between 26% and 100% of confirmed stroke cases[14]. However, the absolute numbers of patients are small when considering the impact of stroke mimics on the workload in the A&E department and HASU. For example using a 40% stroke mimic rate for modelling, a HASU taking 600 confirmed stroke cases per year would admit 240 stroke mimics per year or 0.75 per day. For the impact of a non-HASU hospital transferring their stroke mimic patients to the HASU hospital, this would be much smaller, as the stroke mimic numbers relate directly to the number of stroke cases provided from that individual hospital.

- The number of beds required on the HASU and ASU will be determined not only by the number of stroke and stroke mimic (and admitted TIA) patients and their length of stay, but also by the care pathway for stroke mimic patients once a stroke is excluded.

[13] Data provided by Thames Valley Strategic Clinical Network, and available on request.
[14] References available in the SECS review of Sussex stroke services Dec 2015, and available on request

6.2 Initial assessment

- Initial misdiagnosis or diagnostic uncertainty can occur at paramedic assessment at the patient's home, or on arrival at hospital at the A&E department or at acute medical assessment. Ongoing training and education in relevant diagnostic skills are essential to appropriate assessment and triage, and to avoid commencing an inappropriate pathway of care.
- All patients with a potential acute stroke (which includes stroke mimic patients until a stroke is excluded) should have the opportunity to benefit from specialist stroke assessment in a designated centre so they are in the right place if a stroke is confirmed.

6.3 Transfer to the HASU hospital pending diagnosis

- Patients where an acute stroke cannot be ruled out at initial assessment should by default be discussed with the HASU hospital, and then transferred urgently if agreed as clinically appropriate, as this ensures that the patient would benefit from the specialist skills and facilities available there should a stroke be confirmed. Given the urgency of transfer (to enable timely thrombolysis if an acute stroke is confirmed), this would normally be from the local hospital A&E to the HASU hospital A&E, where the patient would receive a brain scan on arrival, and the diagnosis of stroke confirmed or excluded (as for more clear cut strokes – see section 5.1).

- Some patients would be considered unsuitable for or not requiring HASU transfer after discussion (based on the likelihood of an alternative diagnosis, or if transfer is considered unsafe or inappropriate on clinical grounds). Such patients would therefore remain in the local hospital and have their investigations (including CT scanning) undertaken there.

- Once in the HASU hospital, confirmation or exclusion of a stroke before admission to an inpatient ward may not be possible, and such patients would then normally be admitted to the HASU as the most appropriate ward for further assessment and observation. Close collaboration with the neurology service is required for many of these patients.

6.4 Onward pathway of care after exclusion of a stroke at the HASU hospital

- If a stroke has been excluded after investigation at the HASU hospital, the patient can either: continue inpatient care in the HASU; be transferred to a non-stroke ward within the HASU hospital; be transferred back to their more local hospital for ongoing inpatient care; or discharged home. Judgement is required for patients, whose local hospital is not the HASU hospital, taking in to account a number of factors, and in discussion with the patient and their carer and family.
  Factors favouring the patient remaining at the HASU hospital until discharge include:
    - Anticipated short overall length of stay in hospital
    - A clinical diagnosis and patient needs best managed in the HASU hospital
    - Avoiding discontinuity of care, and associated clinical risks and prolonged length of stay, resulting from inter-hospital transfer

  Factors favouring transfer to the patient's more local hospital until discharge include:
    - Anticipate longer length of stay (with readier access for carers, friends and family)
    - Familiarity with local clinical teams
    - A clinical diagnosis best looked after in the local hospital

- There should be clear and agreed repatriation policies in place for patients appropriate for transfer to their local hospital. This is of even more importance where the local hospital is in a different trust to that of the HASU hospital.

7. Pathways for transient ischaemic attacks

- A TIA is the occurrence of stroke symptoms and signs that resolve within 24 hours. Urgent investigation of patients with TIAs is important to diagnose the cause and to prevent (or reduce the chance) of a subsequent full blown stroke. Patients with a TIA, as for a stroke, should be cared for by teams with the required specialist knowledge and training, and have ready access to the required diagnostics (carotid Doppler, echocardiography, MR and/or CT angiography) and other specialist teams. The current standards for TIA services are set out in the Royal College of Physicians Stroke Guidelines 2012[15].

- At present, TIAs are classified into high risk (needing assessment within 24 hours) and lower risk (needing assessment within seven days). However this distinction in under discussion at a national level and may be removed shortly, as all TIAs could be considered of high enough risk to require urgent assessment.

- Patients with 'high risk' TIAs (if they don't need admitting to the HASU) need to be referred urgently to a setting that delivers seven day specialist services. These therefore need to co-locate with HASUs, and in London most HASUs provide out of hours service to their networked ASU or non-HASU/ASU hospitals.

- For low risk TIA patients (as currently defined) requiring assessment within seven days of symptom onset, there are two alternative pathways available. One is to provide the TIA clinical assessment service locally (such as through an outreach model from the centre), the other is to refer the patient to the centralised service on the HASU/ASU site.

    - A locally provided assessment service for low risk TIAs provides convenience for patients and reduced risk of non-attendance, but requires additional manpower to provide the outreach service. The required diagnostics and their reporting need to be readily available, with seamless information sharing between the stroke centre and the non-HASU hospital. It is considered unlikely that the full range of services with the required timeliness of access and therapeutic decision making could be sustainably provided as effectively on such an outreach model basis.

[15] https://www.rcplondon.ac.uk/guidelines-policy/stroke-guidelines

    - A centralised service has the advantage of providing direct access to imaging and vascular services seven days per week, and increased clinician experience (as the diagnosis can be difficult to make). However the patient would need to travel further for this assessment.

- TIAs can be over-diagnosed and risk overwhelming TIA clinics. Stroke networks should ensure that there is specialist triage in place, both by phone and via rapid access clinics, to support GPs and others in the appropriate referral of patients.

- The most appropriate model will depend on local factors, including the availability of the required diagnostics and available manpower, but whichever model is employed for low risk TIAs, there should be clear clinical pathways for patients presenting to non-HASU/ASU hospitals. Clinical judgement is as always required when considering the benefits to individual patients sustaining a TIA of referral to a more distant specialist centre compared with more local care, particularly frail patients with multiple co-morbidities.

8. Stroke rehabilitation services in relation to hospitals without a HASU or ASU

8.1 Relevant background to stroke rehabilitation pathways

- The rehabilitation of stroke patients starts as an inpatient on a hyper-acute or acute stroke unit as soon as they are medically stabilised, and involves physiotherapists, occupational therapists, speech and language therapists, dieticians, clinical psychologists and social care, in addition to specialist medical and nursing care.

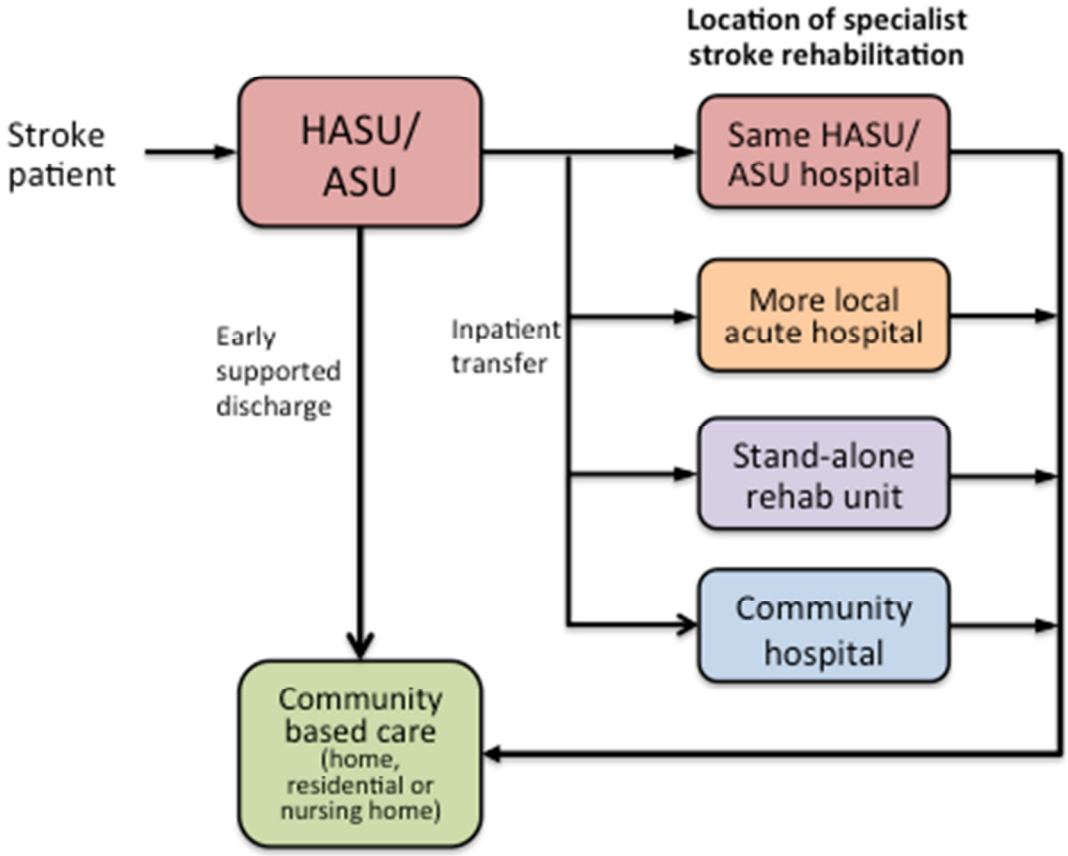
- The range of needs of stroke patients is very wide, and dependent on the severity of their stroke, their co-morbidities and previous functional status, family and carer support, and their mental state. Some patients have minimal requirements and discharge home can be organised rapidly with a tailored programme of outpatient therapies support. At the other extreme patients may have severe disabilities, and need ongoing intensive inpatient rehabilitation. Some patients' functional status can be so severe and irreversible that long term nursing home care is required, and attempts at rehabilitation are futile.

- Any stroke rehabilitation programme needs to provide specialist clinical care, be flexible enough to meet the varying needs of their patient population, wherever they live and wherever their ongoing care is to take place, and of sufficient capacity to meet the demand. There should be close collaboration, if not integration, with the relevant social services.

- Rehabilitation can take place in the following settings:
    - During acute inpatient stay on the HASU then ASU.
    - After transfer to a separate specialist inpatient rehabilitation facility or ward
    - In the home, residential care or nursing home

- The British Society for Rehabilitation Medicine core standards document 2014[16] and service description 2015[17] summarise the pathways for any patient suffering an acute and severe disabling illness or injury (not specific to stroke patients). For modern stroke care specifically, this can be simplified to the representation in figure 2. As shown, a more local non-HASU/ASU hospital is just one of several possible locations for such ongoing inpatient rehabilitation.

Figure 2. Stroke rehabilitation pathway options



[16] Rehabilitation for patients in the acute care pathway following severe disabling illness or injury: BSRM core standards for specialist rehabilitation 2014.*http://www.bsrm.org.uk/downloads/specialist-rehabilitation-prescription-for-acute-care-28-11-2014-ja--(ap1-redrawn).pdf*

[17] Specialist neurorehabilitation services. BSRM 2015. http://www.bsrm.org.uk/downloads/specialised-neurorehabilitation-service-standards--7-30-4-2015-forweb.pdf

8.2 General points and recommendations

A detailed consideration of community-based stroke rehabilitation services was also outside the scope of this review, but some general points are made.

- All stroke related services, whether in hospital, rehabilitation or the community, should work together in a coordinated, integrated and patient-centric way, and consistent high quality stroke rehabilitation should be made available to all patients, wherever they live. This is regardless of the location of the HASU and ASUs within the network.

- It is recommended that this coordination of all relevant rehabilitation providers is enabled by an operational stroke network, centred around the HASU.

- There are a range of models whereby the integration of stroke services could be delivered, such as those referred to in the Five Year Forward View, including:

    - Collaborative and coordinated working without formal integration
    - Vertical integration, through a primary acute care system (PACS)
    - Multi-specialty community provider (MCP) models, though with close links with the acute hospital HASU and ASU services
    - A hybrid model of PACS and MCP
    - Close partnership with any independent service providers

- Partnership with adult social care, whether through a model of formal integration or various levels of collaboration and coordination, is essential.

- The rehabilitation therapies workforce is a key determinant of high quality and sustainable stroke service reconfigurations, and in this light local health systems need to consider how it should be configured to deliver the best outcomes most efficiently and effectively.

- Unnecessary and inappropriate patient transfers between multiple providers should be avoided, and pathways should be developed with that in mind.

- Seamless information sharing between all providers on the patient pathway is key, to ensure effective and safe transfers of care.

- Length of stay in hospital before discharge to home-based care should be kept as short as clinically appropriate, to maintain flow through these limited beds and to ensure they are used for the maximum number of patients who need them.

- Stroke and other neurological rehabilitation services in the community are current often co-located and integrated. The alternative model for specialist stroke therapies staff is to integrate with and rotate through the HASU/ASU acute site, ensuring an aligned single stroke workforce with enhanced and broadened skills, and with additional potential for recruitment, retention, training and research.

- All providers of post-acute stroke services should submit their performance data to SSNAP. This new element to the national stroke audit programme incorporates:
    a) The new post-acute standards[18].
    b) Those within the Royal College of Physicians Stroke Guidelines[19] .
    c) Those in NICE stroke quality standards[20].

8.3 Enabling patient discharge directly home from the HASU/ASU hospital

8.3.1. Early supported discharge

- Discharge in to the community for ongoing out-of-hospital rehabilitation is enabled by 'early supported discharge' (ESD). This 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[21]. There are a number of ESD issues to consider with regard to reconfigured stroke systems and the role of acute hospitals after the initial inpatient episode.

- ESD, combined with carer availability, enables patients to be discharged back in to the community as quickly as clinically appropriate, and to receive the level of rehabilitation support required to maximise their recovery potential, without having to remain as an inpatient in the acute hospital.

[18] SSNAP post-acute national organisational audit. *https://www.strokeaudit.org/results/PostAcute/National.aspx*
[19] https://www.rcplondon.ac.uk/guidelines-policy/stroke-guidelines
[20] https://www.nice.org.uk/guidance/qs2
[21] NICE Guidelines of stroke rehab 2013: http://www.nice.org.uk/guidance/cg162/resources/stroke-rehabilitation-in-adults-35109688408261)

- ESD combined with acute care on stroke units reduces length of stay on stroke units, and improves long term outcomes[22] [23].

- An ESD team of nurses, therapists, and social care staff work collaboratively as a team and with patient and families, providing intensive rehabilitation at home for up to 6 weeks, thereby reducing the risk of re-admission into hospital for stroke related problems and increasing independence and quality of life with support for the carer and family.

- It is important that commissioners ensure that there is a shared and agreed definition of ESD across the stroke system, identify and address gaps in the provision of ESD, and align the service specification with recommendations and standards as described in the post-acute SSNAP audit[24].

- The ESD and community stroke services should be tightly aligned and coordinated with that of the HASU/ASUs, if not fully integrated with them. A variety of models for ESD provision exist with regard to the relationship with the HASU. These can generally be described as 'push' models, where the ESD team is integrated with the HASU/ASU team and based in the hospital with links in to the community, or 'pull' models, where the ESD team is community based and in-reaches in to the stroke unit to assess then transfer patients out.

- There are pros and cons to each of the push and pull models, and both can work. The clinical senate's ECRG was of the general view that the ESD workforce integrated within the HASU/ASU would function more efficiently (recognising that each HASU/ASU is likely to cover a wider area than current community-based ESD teams do). There are benefits for inter-professional communication, efficient pathways, reduction of duplication of assessments by separate teams and economies of scale (e.g. availability of equipment and facilities), avoidance of fragmented pathways, and the possibility of rotating staff between the acute services and the community.

[22] Stroke Unit Care Combined With Early Supported Discharge Improves 5-Year Outcome, A Randomized Controlled Trial. Hild Fjærtoft, PT et al. Stroke. 2011;42:1707-1711.
http://stroke.ahajournals.org/content/42/6/1707.full.pdf
[23] Cost-Effectiveness of Stroke Unit Care Followed by Early Supported Discharge
Saka O et al. Stroke2009; 40: 24-29
http://stroke.ahajournals.org/content/40/1/24.full.pdf
[24] SSNAP post-acute national organisational audit.
https://www.strokeaudit.org/results/PostAcute/National.aspx

- Whichever of the two approaches is taken (push or pull), the required workforce capacity, and access and response time standards must be met to ensure the quality and efficiency of the service is delivered (with the benefits of reduced length of stay, and better outcomes).

8.3.2 Community-based rehabilitation

- Stroke and neurological rehabilitation is often integrated (in community neuro-rehabilitation teams), given the overlap of skills required for these different patient groups. However the nature of stroke rehabilitation, which is usually time-limited (relating to the improved functioning of the patient after a stroke), is different from that for many chronic neurological conditions (where the underlying condition is often progressive), and there are some benefits from separating them.

- Careful consideration is required when deciding the location of the different specialist community-based services across the health system, anticipating any unintended de-stabilising consequences of moving individual services on others.

8.4 Patients who need ongoing inpatient stroke rehabilitation post-ASU - options

- Once patients no longer need the intensive acute medical and nursing input of an ASU, and are considered suitable for rehabilitation with prospects of useful recovery, but are too dependent to be supported at home until further recovery made, they should be transferred to an inpatient stroke rehabilitation facility. These patients often have a long length of stay, and their needs and the services that should be provided are different from those provided in the acute ward setting[25] [26].

[25] Rehabilitation for patients in the acute care pathway following severe disabling illness or injury: BSRM core standards for specialist rehabilitation 2014. *http://www.bsrm.org.uk/downloads/specialist-rehabilitation-prescription-for-acute-care-28-11-2014-ja--(ap1-redrawn).pdf*

[26] Specialist neurorehabilitation services. BSRM 2015. http://www.bsrm.org.uk/downloads/specialised-neurorehabilitation-service-standards--7-30-4-2015-forweb.pdf

- The need for post-acute inpatient care, wherever it is provided, is considered likely to reduce over time with a) the better outcomes associated with larger and fully operationalized and staffed HASUs and ASUs[27], b) fully staffed and efficient ESD teams[28] , and c) the potential benefits from improved outcomes resulting from radiological clot extraction. This trend to reduce demand though would need to be balanced with any potential increase in stroke incidence based on local stroke modelling. Commissioners and providers should model the required inpatient rehabilitation bed capacity, adjusting for effective ESD and community rehabilitation services and lower length of stay in acute beds than currently.

- For patients needing longer term inpatient stroke rehabilitation, but who don't need to be in an acute hospital setting, there are four general options for where such care could continue:
    - On a rehabilitation ward within the HASU/ASU hospital
    - On a rehabilitation ward in an acute non-HASU/ASU hospital
    - In a stand-alone specialist rehabilitation unit
    - In a community hospital

- In any of these locations, the patients should be under the management of a specialist neurological rehabilitation/ stroke team

- There are advantages and disadvantages to any of these models, and the ECRG identified a number of points that health systems should consider when planning future services (though it is acknowledged that this is not a comprehensive list). These points are summarised in table 1. The over-riding requirement however is that the range of services specified as required for inpatient rehabilitation need to be provided, wherever the care is delivered.

[27] Impact on Clinical and Cost Outcomes of a Centralized Approach to Acute Stroke Care in London: A Comparative Effectiveness Before and After Model. Hunter MR et al. PLoS One 2013. 8(8): e70420. http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0070420 http://www.plosone.org/article/fetchObject.action?uri=info%3Adoi%2F10.1371%2Fjournal.pone.0070420&representation=PDF

[28] Evidence-Based review of stroke Rehabilitation Chapter 5 The efficacy of Stroke Rehabilitation. http://www.ebrsr.com/sites/default/files/Chapter5_Efficacy-of-SR_FINAL_16ed.pdf

Table 1. Pros and cons of locating post-acute stroke inpatient specialist rehabilitation services in four different settings.

Location of sub-acute inpatient rehabilitation unit	Pros	Cons
Within the HASU/ASU hospital	•Avoid transfer to another hospital. •More integrated with the acute care team •Economies of scale and workforce •Possible shorter length of stay •Easier to provide seven day services	•Access harder for F family and friends (with effects on patient's psychological recovery). •Competing pressures on beds and facilities •Environment less appropriate
At a more local non-HASU/ASU acute hospital	•More local to patient (if within its catchment area) •Alternative use of ward if acute stroke unit was centralised to another site.	•Competing pressures on beds and facilities •Environment less appropriate •Possible longer length of stay •Separation of specialist workforce from ASU •Discontinuity of care
At a stand-alone specialist rehabilitation unit	•Concentration of specialist rehabilitation expertise and facilities, with economies of scale. •Customised, appropriate environment •Different ethos and culture which fosters independence and promotes partnership with patients	•Possible longer length of stay •Separation of specialist workforce from ASU •Discontinuity of care •? cost effectiveness vs ongoing care in ASU
At a community hospital	•Most local care, with easier access for family and friends •Less medicalised, more familiar environment	•Difficult to provide level of specialist stroke rehab required in multiple smaller facilities •Uncertain cost effectiveness •Possible longer length of stay •Discontinuity of care

- Whichever model is progressed, it will be important to review inpatient rehabilitation bed requirements as new stroke networks develop and mature, as these may well reduce. A staged approach to reconfiguring such services may therefore need to be taken.

    - With specific regard to community hospitals, community stroke rehabilitation services are designated as specialist (level 3a), and require nurses and therapists with specialist stroke expertise, and consultant support[29]. In that regard, the role, specification and necessity of community hospitals for inpatient stroke rehabilitation needs to be carefully defined, and take account of the finite available workforce.

    - The workforce implications of these different models need to be assessed. There are economies of scale that could be exploited through the application of a more integrated model. It would be hard to meet and sustain the therapy SSNAP standards, such as 45 minutes or each therapy at least 5 days per week, through too distributed a model of provision.

[29] Specialist neurorehabilitation services. BSRM 2015. http://www.bsrm.org.uk/downloads/specialised-neurorehabilitation-service-standards--7-30-4-2015-forweb.pdf

9. Ensuring effective information sharing between hospital sites

- There should be a clear IT and communications infrastructure to enable effective and seamless communications and information sharing across the network, including with the non-HASU/ASU hospital. If the non-HASU/ASU and the HASU hospitals are in different trusts, the information governance and data sharing issues should be addressed in advance of any centralisation of services in the commissioning specification, so that they do not create barriers to effective patient care.

- Rapid and accurate assessment of stroke patients by the HASU team require immediate access to any previous or current brain scans of patients being consulted on. There should be seamless links between the radiology systems of the hospitals in the stroke network to enable this.

- Whilst telemedicine is being used successfully in many places to make a remote diagnosis of stroke and to decide whether to administer thrombolysis, it is not clear whether it is of benefit to support non-HASU/ASU hospitals in making the clinical decisions as to whether to transfer the patient to the HASU. There is a risk of introducing delay in transfer, and the additional complexity of maintaining a functioning video link 24/7 in the non-HASU/ASU hospital. Stroke networks should carefully consider whether this is of value over and beyond simple telephone communication, before deciding on its introduction.

- Within Kent, Surrey and Sussex, the Academic Health Science Network (AHSN) has offered to look into the use of technology to drive improvements further if requested.

10. Required workforce and competencies at the non-HASU/ASU hospital site

10.1 General recommendations

- All providers need to be committed to providing a sustainable integrated workforce within their local stroke network. Commissioners and providers need to agree and specify the required staffing levels and skill mix required to fulfil their role in the pathways for stroke patients, and have clear and realistic plans for the distribution, recruitment and retention of the required workforce. For the longer term, the workforce could be re-designed and developed around the necessary competencies rather than specific professional groups.

- A clear consequence of centralizing stroke services is the concentration of expertise at the HASU/ASU site, and the potential loss of such expertise and experience from hospitals without future stroke units. Core skills in the diagnosis of stroke should be maintained by relevant medical and nursing staff at the non HASU/ASU hospital, particularly on the admissions floor. The rotation of staff to the HASU/ASU site may be appropriate where possible and relevant to maintain these skills.

- The significant issues for the current specialist stroke staff of non-HASU/ASU hospitals asked to work at hospital sites and even organisations, such as Human Resources (HR), travel arrangements and new colleagues, should be acknowledged and addressed. There should also be an expectation that a significant proportion of staff (in particular nursing staff) might not be prepared to make such a move, and may elect to remain in their base hospital and change their sub-specialty. Such staff should be well supported and consideration given as to how their transferable skills can be otherwise utilised.

- The HASU/ASU hub has a responsibility for ensuring the necessary training and updates on stroke care for staff that are considered necessary for their networked hospitals without stroke units.

- Non-HASU/ASU hospitals should consider identifying a stroke champion from each of their medical, nursing and therapies workforce, to maintain the professional links and liaison between their hospital and the stroke centre and network.

10.2 Medical

- Additional medical manpower will be required at the HASU/ASU hospital to provide the necessary 24/7 medical cover, and 7 days per week ward rounds and care. Providers should calculate the total consultant medical time required to run the stroke network, factoring in all relevant programmed activities (both direct clinical care and supporting professional activities), and plan for the stroke rota to include a minimum of six consultants (noting that an on call rota requirement of at least 1 in 6 does not automatically equate to a requirement for 6 Whole Time Equivalents (WTE)).

- Physicians currently participating in stroke care and rotas in their current hospital are often not purely stroke physicians, but work in other associated specialties (most commonly elderly care, neurology, or other internal medicine specialities). If these physicians wish to continue with stroke-related work in the event of their hospital's stroke services being centralised to another site, this would mean doing sessions at the HASU/ASU hospital and participating on its stroke rota. However this may risk destabilizing their own medical or elderly care departments in the non-HASU/ASU hospital and their rotas. These implications need to be recognised and addressed at an early stage.

- The HASU should provide a 24/7 senior specialist medical point of contact for advice through its on call rota for urgent stroke conditions, and provide ongoing daily support, at least by telephone, for the care of patients who are not suitable for transfer to the stroke hospital.

- There should be no requirement to maintain a stroke consultant at the non-HASU/ASU site, but stroke knowledge and basic diagnostic and management skills should be maintained (given the presentation of stroke, stroke mimic and TIA patients to A&E and the medical take, and the development of strokes in patients on the wards with other primary conditions). Current medical consultants have training and experience in at least the basic diagnosis and basic management of stroke patients, but for trainees this will depend on their training rotations. It will be important for training programme directors to ensure the requirements for stroke knowledge and skills are met, most likely by rotation to a HASU/ASU hospital.

- The HASU hub should consider it their network responsibility to map out and plan how these core skills will be maintained in their associated non-stroke unit hospitals within their network (including the potential use of simulation training).

10.3 Nursing

- There should be no requirement for specialist stroke nurses at non-HASU/ASU hospitals. The occurrence of stroke on site is too uncommon to justify the 24/7 staffing required to deliver such a service, and most stroke cases coming through that hospital would be discussed with the HASU hospital and transferred there.

- During the transition phase, as stroke services move off site, although stroke-trained staff will at least initially remain on site, these staff and skills would gradually be lost.

- There should be ongoing provision of training and education to nursing staff potentially involved in stroke pathways. This is particularly the case for nurses working in A&E and acute admissions units, where the rapid identification and triage of potential stroke patients is essential.

10.4 Physiotherapists, occupational therapists, and speech and language therapists

- The maintenance of clinical skills within the therapies workforce for stroke patient management is important for supporting patients who are considered unsuitable for transfer to the HASU/ASU hospital. Rotation of staff through the HASU/ASU hospital can ensure maintenance of the necessary skills. This may require inter-trust as well as intra-trust rotations.

- The therapies departments usually care for patients with a wide variety of conditions with a pooled workforce, though with sub-specialisation. There is a risk that staff with specialist skills relating to neurological conditions may re-locate to the new stroke centre, and destabilize the non-stroke neurorehabilitation services at the non-HASU/ASU hospital. The extent to which this happens will depend in part on what other clinical services remain on site (such as if other clinical services are centralised away from their hospital). This may be more of an issue for the smaller therapies services, such as speech and language, and the higher grades of staff. This could be mitigated by integration and coordination of staff rotations between hospitals (again within the same trust or across trusts).

11. Public and patient perspective

- The many benefits of centralising stroke services to patient outcomes following a stroke must be clearly communicated to the public and service users. The inevitable concerns from the local population of losing stroke services from their local hospital must be met with a clear explanation of the new pathways, providing re-assurance that patient safety issues are addressed, that patient transfers to the centre will be appropriate and timely, and that post-acute stroke care will be of a high standard that maximises rehabilitation outcomes, with rehabilitation at home as soon as possible.

- Commissioners and providers should engage with the public, stroke patients and their carers in considering the impact of their local hospital not having a specialist stroke unit. Meaningful and demonstrable engagement should be part of any commissioning specification. Such engagement needs to acknowledge the potential trade-off between the benefits of travelling for specialist treatment, and the lack of more local provision of the service.

- The quality of engagement will be driven by the quality of the questions used to focus and direct the engagement, and patients, carers and the public should be involved in the design of such surveys. Written patient and carer information needs to be provided to explain the models of care and consequent improved clinical outcomes which can result from the transfer of care to a HASU.

12. Public health perspective

- Regardless of the average wealth, health and outcomes of the stroke network's population, there are usually pockets of population deprivation that could be affected by the 'inverse case law' where the population from the more disadvantaged backgrounds are likely to experience reduced access and worse health outcomes. In a recent study led by Kings College London it was found that despite improvements in equal access to healthcare since 2001, patients from more deprived areas tend to receive a poorer level of care following a stroke. The impact of socioeconomic deprivation on the care given also appears to be more pronounced in black patients than in white patients[30].

- In relation to the impact of the centralization of stroke services, it is recommended that commissioners undertake a baseline evaluation of outcomes against different population groups (e.g. Black and Minority Ethnic community (BME), and older people), modelling and identifying potential risks, and reflecting these within any commissioning specification. There is a risk some groups may be further disadvantaged by reconfiguration moving services further away. Providers should be required to identify mitigating actions addressing these issues.

- There are potential risks to sustaining local primary care engagement if the integrated HASU/ASU/community stroke model is viewed as remote. It is vital that the stroke network fully engages primary care in pathway development, as such an integrated approach will enhance high quality service delivery, and may have benefits for the training and ongoing education of general practitioners and other primary care staff.

- Any developments in integrated pathways need to explicitly include stroke prevention (primary and secondary) which takes place through community-wide interventions and through primary care. This needs to be managed through the stroke network and progress monitored.

[30] Ruoling C et al. *Socioeconomic deprivation and provision of acute and long-term care after stroke: the South London Stroke Register cohort study.* J Neurol Neurosurg Psychiatry 2014 http://jnnp.bmj.com/content/early/2014/04/12/jnnp-2013-306413.short?rss=1

13. Glossary

Acronym	Definition
A&E	Accident and Emergency Department
AHSN	Academic Health Science Network
ASU	Acute Stroke Unit
BME	Black and Minority Ethnic community
CCGs	Clinical Commissioning Groups
ECRG	Expert Clinical Review Group, set up by the South East Clinical Senate to undertake the work of this report
ESD	Early Supported Discharge
FAST	Face, arm, speech test for early identification of a stroke
HASU	Hyper-Acute Stroke Unit
HDU	High Dependency Unit
ICU	Intensive Care Unit
MCP	Multispecialty Community Providers
NICE	National Institute for Clinical Excellence
PACS	Primary and Acute Care System
PPE	Patient and Public Engagement
SECS	South East Clinical Senate
SESCNSSS	South East Strategic Clinical Network Stroke Services Specification
SECVSCN	South East Cardiovascular Strategic Clinical Network
SRG	System resilience group
SSNAP	Sentinel Stroke National Audit Programme
SUCN	Strategic Urgent Care Network
TIA	Transient Ischemic Attack
WTE	Whole time equivalent (or full time equivalent) in relation to employment

Appendix A. Expert Clinical Review Group membership and declarations of interest

1. Expert Clinical Reference Group Membership

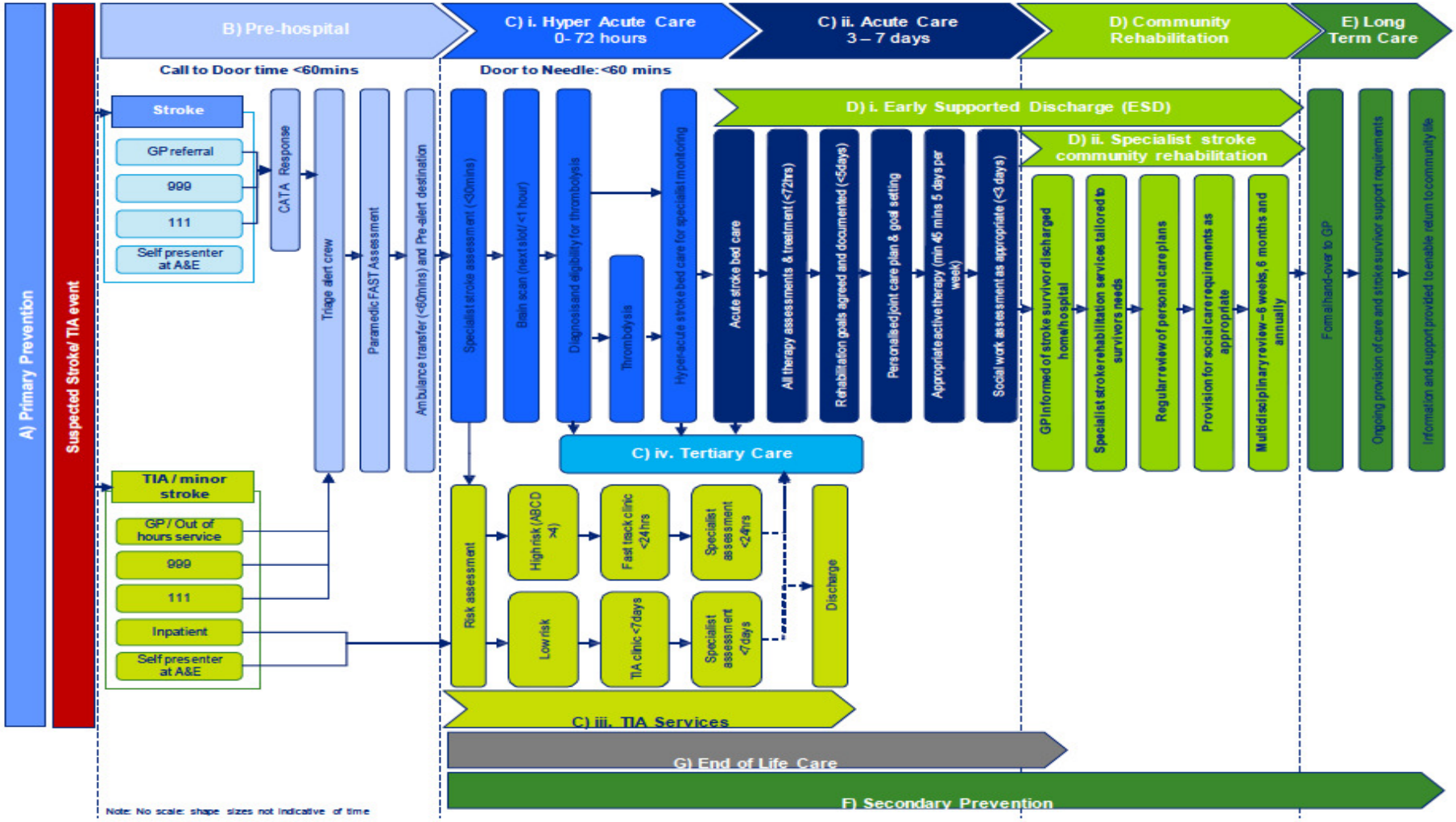
Name	Roles
Lawrence Goldberg (Chair)	SECS Chair, and Chair of ECRG. Consultant Nephrologist, Brighton and Sussex University Hospitals NHS Trust
Matthew Burn	Stroke Physician. Buckinghamshire Healthcare NHS Trust. Stroke Lead, Thames Valley Strategic Clinical Networks
Patrick Gompertz	Stroke Physician Royal London Hospital, Barts Health NHS Trust
Nicky Gainsborough	Consultant Stroke Physician Department for the Elderly, Brighton & Sussex University Hospitals NHS Trust (BSUH)
Tak Ellis	Consultant Physician and Clinical Lead for Stroke, Maidstone & Tunbridge Wells Hospitals NHS Trust
Michael Baker	Centre Consultant, Healthcare Public Health Public Health England South East
Caroline Bates	Specialist Stroke Nurse, Maidstone & Tunbridge Wells Hospitals NHS Trust
Michelle Gatehouse	Stroke Service Co-ordinator, Darent Valley Hospital, Dartford and Gravesham NHS Trust.
David Hamilton	Patient, Public Engagement representative Member of SEC SCN PPE Reference Group; KSS Cancer Network; Awareness and Early Diagnosis CAG; National Peer Review (Quality Surveillance) Team; KSS CCG review team and Non-Executive Director of the KSS Clinical Research Network; Chairman of the West Kent Patient Locality Group
Karen Poole	Professional Lead for Physiotherapy & Clinical Specialist for Neurology and Rehabilitation, East Sussex Healthcare NHS Trust
Amanda Allen	Therapies Manager, Tunbridge Wells Hospital Pembury Tunbridge Wells Kent. SECS Council member,
Peter Carpenter	Director of Improvement, Kent, Surrey & Sussex Academic Health Science Network
Christopher Gedge	Clinical Services Manager - Stroke Services, Medway Community Healthcare
Ali Parsons	SECS Manager
Eleanor Langridge	SECS Programme Manager

2. ECRG Declarations of Interest

Name	Personal pecuniary interest	Personal family interest	Non-personal pecuniary interest	Personal non-pecuniary interest
Lawrence Goldberg	None	None	None	None
Matthew Burn	None	None	None	None
Patrick Gompertz	None	None	None	None
Nicky Gainsborough	None	None	None	None
Tak Ellis	None	None	None	None
Michael Baker	None	None	None	None
Caroline Bates	None	None	None	None
Michelle Gatehouse	None	None	None	None
David Hamilton	None	None	None	None
Karen Poole	None	None	None	None
Amanda Allen	None	None	None	None
Peter Carpenter	None	None	None	None
Christopher Gedge	None	None	None	None
Ali Parsons	None	None	None	None
Eleanor Langridge	None	None	None	None

Appendix B: Diagram of the full stroke pathway

Taken from the South East Strategic Clinical Network Stroke Service Specification 2015



Appendix C. ECRG Agenda 24.11.15

South East Clinical Senate Expert Clinical Review Group on Stroke Services in Surrey Wednesday 24th November 2015, 12.30pm – 6.30pm (lunch available from12.30) Board Room, York House, 18-20 Massetts Road, Horley RH6 7DE			
Item	**Time**	**Item**	**Lead**
1	**13.00**	Welcome and Mutual introductions ECRG declarations of interests Introduction and outline: Role of the clinical senate and the ECRG	**LG (Chair)**
2	**13.20**	Surrey Stroke Services. Commissioner session (Julia Ross, SRO, and Claire Fuller, Chair of the Stroke Change Board) Background and context to the Surrey stroke review Questions from the ECRG	**Julia Ross and Claire Fuller**
3	**14.00**	Orientation to the meeting framework Network arrangements and relationships with the HASU and ASU hospitals and services	**All**
	15.00	**Break (10 mins)**	
4	**15.10**	**Acute patient pathways** • Acute stroke in the community (within the hospital's catchment area). • Acute stroke in hospital • TIAs • Stroke mimics **Rehabilitation** • Inpatient rehabilitation • Early supported discharge • Outpatient rehab • Social services	**All**
	16.10	**Break (10mins)**	
5	**16.20** Break to be taken within session as required	**Potential consequences of new stroke service models resulting in acute hospitals without a HASU or ASU, and mitigating actions** • Public health perspective: demographics, deprivation, addressing health inequalities, sustainability • Impact on other services (clinical co-dependencies) • Remote support for stroke care e.g. telemedicine. • Impact on the workforce, and what competencies need to remain on site? (i) Medical (ii) Nursing (iii) Therapies • Ambulance and transport issues. • PPE issues and considerations. **General public and patient issues and perspectives**	
6	**17.30**	**Discuss and agree key recommendations**	**All**
7	**17.45**	**Conclusion and next steps** • Timeline for report development and completion • Webinar/Webex –tbc • ECRG members roles and responsibilities • Report sign off and approval by SECS Council	**LG**
8	**18.00**	**Meeting Close**	

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