

Stroke Review Pre Consultation Business Case

Appendix E

South East Clinical Senate Review
Kent and Medway stroke options

South East

Clinical
senate

**Future acute stroke services in
Kent and Medway:
A clinical senate review of the STP's
draft proposals prior to public
consultation**

January 2018

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1. Introduction and background

The CCGs of Kent and Medway (K&M) through their Sustainability and Transformation Partnership (STP) have agreed on the need to centralise acute stroke care in hyperacute stroke units (HASUs) and acute stroke units (ASUs), in order to achieve the significant improvement in patient outcomes seen in other parts of the country who have undertaken such service change. K&M have previously produced a strong case for change for stroke services¹, following a previous clinical senate review² of the draft case for change from which a series of recommendations were incorporated into the final document. The Kent and Medway health system have undertaken a detailed and lengthy review of how the aims can be achieved, and have agreed on the need to move from the current configuration where six of the current seven acute hospitals provide acute stroke services without HASUs or ASUs, to one where there are three hospitals providing a combined HASU and ASU. Through a well defined process, they have moved from a long list of 20 combinations of three acute hospitals, to a medium list of 13, and subsequently to a short list of five options, using various 'hurdle criteria'.

Prior to progressing these shortlisted options to the regional investment committee and then to public consultation, the South East Clinical Senate was asked to provide an independent, clinical review of the proposals, to ensure that they and the underlying model for stroke care in K&M are clinically sound and sustainable.

2. Remit and approach of the clinical senate review

The purposes of this review as agreed with the STP programme board were as follows:

- To review stroke proposals against recommendations of the previous clinical senate review of K&M's case for change for stroke services (2015).
- To provide an overall assessment of the viability of the proposed options prior to public consultation.

A model for excellent stroke care requires a full pathway based approach that includes prevention and post-acute care rehabilitation. However the clinical senate was asked to focus on the provision of acute, inpatient stroke services. Whilst this review did not therefore look in detail at prevention and rehabilitation, an understanding of the future demand for stroke services required some consideration of these two areas.

¹ Kent and Medway stroke services review: case for change. July 2015.

<https://democracy.kent.gov.uk/documents/s53558/Case%20for%20Change%20-%20Stroke%20Review.pdf>

² Review of the case for change for stroke services in Kent and Medway. South East Clinical Senate, June 2015. http://www.secsenate.nhs.uk/files/3914/4118/1216/SECS_Kent_and_Medway_Stroke_Services_Review_Report_June_2015.pdf?PDFPATHWAY=PDF

As summarised in the national Stroke Reconfiguration Support Guide³:

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

An independent expert panel was assembled by the clinical senate, consisting of clinicians and other professionals involved with stroke care, with no direct connections with stroke services in Kent and Medway (see appendix 2 for membership). The STP provided the clinical senate with the pre-consultation business case (PCBC), the impact assessment, and a range of appendices (listed in appendix 4).

Key lines of enquiry for the review were agreed. The panel had a pre-meet on the 9th November, then held the formal panel with members of the STP clinical board and the K&M stroke clinical reference group on 16th November. A list of attendees meeting with the panel that day is in appendix 3.

Subsequent to the clinical senate panel meeting and the submission of its draft report to the STP on 30th November 2017, the panel was informed by the STP of two important changes in the modelled activity levels. This arose from two factors:

1. That patients coming from the Sevenoaks area, initially modelled to flow to the Princess Royal University Hospital (PRUH) in Bromley, South East London, would instead flow to Tunbridge Wells Hospital based both on current referral pathways and on improvements to the A21 (from September 2017) that reduced travel times to Tunbridge Wells.
2. That the PRUH stroke activity data initially provided to the Kent and Medway STP was over-counted, resulting in fewer patients modelled to flow to Darent Valley and Tunbridge Wells hospitals than initially modelled.

The consequence of these two factors was the additional shortlisting of a fifth option, and a need to describe how Tunbridge Wells Hospital would achieve the required minimum activity levels. Consequently, additional supporting information was provided to the clinical senate panel prior to the final report, to take account of these changes in activity modelling.

This report summarises the key lines of enquiry employed, key points that the panel raised about the pre-consultation business case and the shortlisted proposals, and provides a series of recommendations for the STP and its CCGs to consider prior to finalising their case and options.

³ Stroke Services Configuration Decision Support Guide. NHS 2015. http://www.necn.nhs.uk/wp-content/uploads/2015/02/ADD_1210_Stroke-NHS-toolkit_c1_full_2016.08.18_11.48_10_single-1.pdf

The structure of the feedback is in two sections: 1) themes relevant to all proposals and the general approach, and 2) topics specific to the four shortlisted options. The recommendations produced within each section are summarised below in section 3.

3. Summary of recommendations

Recommendations	
Ambition and purpose	
Recommendation 1.	Make explicit the specific improvements in patient outcomes for the population of K&M that would stem from centralising stroke services.
Recommendation 2.	Specify the goals regarding future stroke service performance (using the SSNAP framework).
Stroke incidence projections and modelling	
Recommendation 3.	Future stroke incidence modelling should take account of the projected population growth within Kent and Medway.
Recommendation 4.	The projected lack of growth in stroke incidence in the coming years is dependent on delivering effective preventative health programmes at scale for the known stroke risk factors. More detail is required of the future commitment and programmes to deliver these preventative interventions.
Bed modelling	
Recommendation 5.	The average length of stay in HASU/ASU beds is 13 days, not 18 days, using the modelling criteria stated. This should be corrected throughout the PCBC and its appendices.
Recommendation 6.	Effective discharge pathways and clear plans for ongoing care and rehabilitation are key to minimising LoS, and the gaps in current capacity across K&M (including stroke rehabilitation beds for those requiring bedded care post-ASU) will need to be addressed to deliver on the ambitions for reduced LoS in stroke units achieved in other health systems.
Recommendation 7.	A bed occupancy rate of 85-90% would be more appropriate than the current modelling on 80%, which is considered unrealistic in the context of general pressures on acute hospital beds. HASU and ASU beds should be ring-fenced to ensure that new stroke patients have the required rapid access to the specialist stroke care that improves their outcomes.
Travel times and stroke to needle times: general points	
Recommendation 8.	A journey time to the stroke hospital of within 60 minutes is agreed as appropriate. However, in order to achieve the desired maximum call to needle time of 120 minutes, the time taken for ambulance response, on site assessment and departure, and for in-hospital assessment, scanning and initiation of thrombolysis (door to needle) must be minimised.

Recommendation 9.	Travel time references should not be confused with call to door time (which includes ambulance response and assessment times before journey initiation).
Recommendation 10.	Average travel times should be given in addition to the percentage of journeys falling within 60 minutes.
Proposed metrics for evaluating the quality of future stroke services	
Recommendation 11.	There should be a formalised Kent and Medway stroke network that takes responsibility for overseeing the implementation and quality improvement of stroke services across the pathway.
Thrombectomy pathway	
Recommendation 12.	Given the solid evidence base for thrombectomy for acute stroke, and the growing need for a centre in K&M that can provide this service 24/7, more detailed description of the likely demand, bed requirements, referral and repatriation pathways and the impact of this service on any centre that would provide the service, is advised. Higher levels of activity are to be expected at the designated thrombectomy HASU.
TIA pathways, confirmation that SSNAP and national guidelines will be met	
Recommendation 13.	The TIA pathway should be given greater prominence in the PCBC, including its required alignment with HASUs and ASUs.
Stroke mimic patients: patient pathways and impact on the HASU hospital	
Recommendation 14.	More detail of the patient pathway for stroke mimic patients should be provided in order to better understand the impact on the HASU hospital, and to ensure safe pathways of care are fully integrated with the proposed stroke models. Agreement on these pathways with the ambulance service will be required.
Workforce review	
Recommendation 15.	Consultant job planning should ensure that all stroke-related direct clinical care (DCC) activities, which includes clinical administration and cross cover for annual leave are included in DCC PAs, and not SPA PAs. There should be a minimum of 2.0 SPAs in stroke consultant contracts, to ensure adequate time for quality improvement work, service management and development, teaching and training, research and CPD.
Recommendation 16.	The total DCC PAs required in stroke hospitals should be reviewed against the guidance provided in the BASP document 'Stroke Medicine Consultant Workforce Requirements 2011-2015', to confirm the PCBC modelling to date is accurate, and to ensure internal consistency within the PCBC.

Recommendation 17.	There should be greater recognition in the PCBC and in consultant workforce planning that not all consultants participating in stroke care need to be full time stroke physicians, even if they are required to participate in the on call rota. Ideally consultants should have CCT in stroke medicine or equivalent experience in thrombolysis. Enabling dual specialty consultants is likely to help with recruitment. There is also unlikely to be a service need for sufficient stroke PAs for six or more full time stroke consultants, even though at least six will be required on the on call rota.
Recommendation 18.	There must be a major focus on the range of measures required to enhance the recruitment and retention of the stroke nursing workforce, in the face of high levels of vacancies and turnover in some of the hospitals, and national concerns about the future nursing workforce. Committees and groups at all levels working on future stroke plans for K&M must have senior nursing representation on them.
Recommendation 19.	Greater accuracy and clarity about the therapies staffing requirement is needed, to appropriately plan the future workforce. Training programmes that help extend and share roles across the therapies services will maximise the effectiveness and efficiency of the workforce. Rotations across organisations and in to the community are likely to enhance the attractiveness of posts, and aid in recruitment and retention.
Projected HASU stroke activity within each option	
Recommendation 20.	The expected annual stroke activity for each hospital should be updated to take account of any additional activity arising from agreed changes to patient flows, or continuation of current flows, that have not been included in the modelled HASU activity in the current PCBC. This is particularly important for Option C, D and E, where projected activity in one of the hospitals in each option is below the minimum national recommendations for annual confirmed stroke activity in a HASU of 500 cases.
Recommendation 21.	There must be clarity about which postcodes/LSOAs are within which HASU network. This is required so that acute trusts can have confidence in a catchment area that delivers enough stroke cases to warrant a HASU, and so that the ambulance service will convey stroke patients to the agreed and designated HASU hospital. There should be formalised agreements between neighbouring STPs and with the ambulance services on these stroke catchment areas.
Recommendation 22.	Options that include HASUs where the expected stroke activity is less than 500 per annum after taking account of any proposed additional changes in HASU catchment areas are not recommended for inclusion, as they do not meet national guidelines to achieve the multiple benefits and patient outcomes that centralised stroke services can deliver.

Recommendation 23.	Travel times from LSOAs to HASUs should be remodelled to take account of the upgrade to the A21 between Pembury and Tonbridge, and to determine its impact on HASU activity.
Relationship between the HASU and ASU within each hospital	
Recommendation 24.	When planning the siting of the HASU and ASU within designated hospitals, they should wherever possible be co-located to maximise operational efficiencies.
Travel times from home to the HASU hospital.	
Recommendation 25.	The presentation of ambulance travel times from home to the nearest HASU would benefit from more granularity, in order to more explicitly show the range of travel times within the 60 minute requirement (which is being met within all options). Providing the proportion of travel times within 30 and 45 minutes, and average travel times, would aid a better understanding of likely journey times.
Recommendation 26.	For times when road transport is severely affected (such as by exceptional traffic or accidents), there should be contingencies in place to use the air ambulance service.
Implementation trajectories, and capital investments	
Recommendation 27.	More clarity about the realistic date when the trusts' additional bed capacity would be in place will help sequence planning and recruitment to the posts, and help to align stakeholders' expectations with the likely implementation date.

4. General themes

4.1. Ambition and purpose

R1. Make explicit the specific improvements in patient outcomes for the population of K&M that would stem from centralising stroke services.

The case for centralisation would have more impact and relevance to stakeholders if outcomes were described, such as:

- Number of lives saved.
- Reduction in number of patients with serious disability (as evidenced by 6 month reviews).
- Number of patients who would be able to return home, as opposed to requiring long term bed-based care.
- Reduced length of stay in an acute hospital.
- Increase in number of patients who could return to work.

Whilst metrics to be used are outlined in the comprehensive proposed benefits framework (PCBC fig 16), the anticipated potential improvements in outcomes are not quantified anywhere, which would benefit the case.

R2. Specify the goals regarding future stroke service performance (using the SSNAP framework).

The current audit data (as shown in fig 7 of the PCBC for 2016/17) summarises the current poor performance against targets. However we could not locate any reference to what standards are aspired to following centralisation. It would help to set the level of ambition in these terms.

4.2. Stroke incidence projections and modelling

R3. Future stroke incidence modelling should take account of the projected population growth within Kent and Medway.

R4. The projected lack of growth in stroke incidence in the coming years is dependent on delivering effective preventative health programmes at scale for the known stroke risk factors. More detail is required of the future commitment and programmes to deliver these preventative interventions.

The PCBC assumes no net increase in stroke incidence in the coming years, based on the two analyses referred to (PCBC Appendix J pg. 2: Chambers M. 2015, analysing data and trends in K&M, and Lee, Shafe and Cowie analysing trends 1999-2008). Whilst the Chambers analysis takes into account of demographic change, it is not clear from the text or

references if this adequately accounts for the significant projected increase in K&M's overall population growth including people moving in to the area. The PCBC pg 37 (and ref 11 and 12) states that the population will increase from 1.8 million in 2015 to 2.2 million in 2031 (a 22% increase, or 1.4% per annum), due to the aging population, and people moving in to the area.

In addition, The Burden of Stroke in Europe report⁴ suggests that in the United Kingdom that stroke incidence will increase by 44% between 2015 and 2035 (2.2% per annum). This was however calculated by applying current age and sex specific incidence rates to demographic projections which may overestimate future incidence. We are aware that some other areas in England are modelling an increase in stroke incidence in their stroke plans.

A steady state for stroke incidence in the face of changing demographics is dependent on continuing to increase the impact of a range of prevention programmes that relate to good population management of hypertension, diabetes, obesity, cholesterol, smoking cessation, identification and anticoagulation of patients with atrial fibrillation, and timely and effective management of patients with TIAs. Some initiatives were described to us, but were not in the PCBC, and details of scale and impact have not been provided. It cannot be assumed that the previous trend for a reduced age-specific incidence of stroke will continue in to the future without increased action and investment on prevention. In this context, note the following potential impact on better prevention measures on stroke incidence:

- An analysis of potential reduced stroke incidence in Kent and Medway in the 'Size of the Prize' NHS Healthcheck report with further improvement in control of blood pressure, lipid levels, and anticoagulation of higher risk atrial fibrillation patients⁵.
- The Atrial Fibrillation Budget Impact Model, which describes the stroke incidence and cost benefit of better detection and management of anticoagulation⁶.

4.3. Bed modelling

R5. The average length of stay in HASU/ASU beds is 13 days, not 18 days, using the modelling criteria stated. This should be corrected throughout the PCBC and its appendices.

⁴ The burden of stroke in Europe (see page 95 for UK stroke projections). Stroke Alliance for Europe. http://www.strokeeurope.eu/downloads/The_Burden_of_Stroke_in_Europe_Report_-_Appendix.pdf

⁵ Size of the Prize: reducing heart attacks and strokes. NHS Health Check. NHS. http://www.healthcheck.nhs.uk/commissioners_and_providers/data/size_of_the_prize_reducing_heart_attacks_and_strokes/

⁶ Atrial Fibrillation Budget Impact Model. Imperial College Health Partners and Public Health England. <https://imperialcollegehealthpartners.com/af-budget-impact-model/>

- R6. Effective discharge pathways and clear plans for ongoing care and rehabilitation are key to minimising LoS, and the gaps in current capacity across K&M (including stroke rehabilitation beds for those requiring bedded care post-ASU) will need to be addressed to deliver on the ambitions for reduced LoS in stroke units achieved in other health systems.**
- R7. A bed occupancy rate of 85-90% would be more appropriate than the current modelling on 80%, which is considered unrealistic in the context of general pressures on acute hospital beds. HASU and ASU beds should be ring-fenced to ensure that new stroke patients have the required rapid access to the specialist stroke care that improves their outcomes.**

The number of stroke beds required within K&M depends on incidence rates, length of stay in HASU and ASU beds, TIA and stroke mimic admission rates, length of stay, and patient flows to hospitals outside of K&M. The following comments relate to each of these components.

4.3.1. Stroke incidence rates

Future Incidence rates are based on current rates with no growth over time (as covered in section 4.2). Given the challenge of modelling future stroke incidence and assuming the caveats are addressed, this was considered a reasonable assumption.

4.3.2. Length of stay

Length of stay (LoS) is determined by the quality of the acute care provided (all its elements) in the HASU/ASU, together with the discharge pathways to ongoing rehabilitation and care out of hospital.

Throughout the PCBC there is reference to an anticipated average LoS of 18 days. This is incorrect using the assumptions described within the PCBC: a planned LoS on the HASU of 3 days, and for the 2/3 of patients going to the ASU an average additional LoS of 15 days, would give an average LoS for all stroke patients of 13 days. Whilst it is assumed that the detailed modelling undertaken was correct, the average LoS for all stroke patients of 13 days rather than 18 days in the bed modelling appendix (J), should be corrected.

Whilst this average LoS of 13 days was considered a reasonable starting point, the proven benefits of reduced LoS from stroke service reorganisations elsewhere should lead to average LoS lower than this⁷.

⁷ London Strategic Clinical Networks 2014 Review of HASU data; SSNAP organisational audit 2016; Hyper Acute Stroke Unit impact on Stroke Patient's Length of Hospital Stay and Discharge Destination University Greenwich/Imperial College Healthcare NHS Trust. reduced LOS with new HASU Brooke and Ames 2011. https://matrix.rcn.org.uk/data/assets/pdf_file/0010/382843/2011_RCN_research_poster_We02.pdf Also see 'Impact of centralising acute stroke services in English metropolitan areas on mortality and length of

4.3.3. Bed occupancy rates and protecting stroke beds

It is not clear why an 80% occupancy rate was used in modelling the required HASU and ASU bed numbers. Conventional bed modelling is based on 85%-90% occupancy rates to maintain flow, and it will be hard to justify an 80% occupancy rate with the rest of the acute hospital under inevitable and persistent pressure on their beds. Managing bed flow with higher occupancy rates relies on the protection of HASU and ASU beds for stroke patients (i.e. ring fencing), and effective and efficient discharge processes from stroke units, which must be in place⁸. More broadly, ongoing whole system approaches aimed at reducing A&E waiting time and hospital bed pressures will enhance the ability to protect specialist stroke beds.

4.3.4. Discharge and rehabilitation pathways from HASU/ASUs

Without more detail of the rehabilitation pathways, we could not comment on the achievability of delivering the planned length of stay, though the reductions seen in London were an effect of the acute care re-organisation and happened without any changes in post-acute pathways. Additional reductions in LoS would undoubtedly arise if adequate skills and capacity to deliver early supported discharge (ESD), an integrated community stroke team (ICST), intermediate care beds, and specialist inpatient rehabilitation beds, are provided. The supplementary paper provided to us, 'Summary of work to date on the whole stroke pathway', although showing the proposed four pathways model, also identified many key gaps in the current service. These will need to be addressed to ensure the best patient outcomes, and manageable flow through acute stroke beds.

4.3.5. TIA and stroke mimic admission rates to HASUs

The additional admissions to HASUs of TIA patients (10% of confirmed and admitted strokes) and stroke mimics (25% of confirmed and admitted strokes) was considered appropriate, and consistent with published data. These proportions would be higher without adequate triage in A&E/acute medical admission units.

4.4. Travel times and stroke to needle times: general points

R8. A journey time to the stroke hospital of within 60 minutes is agreed as appropriate. However in order to achieve the desired maximum call to needle time of 120 minutes, the time taken for ambulance response, on site assessment and departure, and for in-hospital assessment, scanning and initiation of thrombolysis (door to needle) must be minimised.

hospital stay: difference-in-differences analysis. Morris S et al. BMJ 2014.

<http://www.bmj.com/content/bmj/349/bmj.g4757.full.pdf>

⁸ Understanding patient flow in hospitals. Karakusevic S. Nuffield Trust 2016.

<https://www.nuffieldtrust.org.uk/files/2017-01/understanding-patient-flow-in-hospitals-web-final.pdf>

R9. Travel time references should not be confused with the call to door time (which includes ambulance response and assessment times before journey initiation).

R10. Average travel times should be given in addition to the percentage of journeys falling within 60 minutes.

Patients with acute stroke benefit from rapid initiation of specialist care. This is particularly the case for those who will benefit from thrombolysis (or thrombectomy), where prompt initiation of this treatment is associated with better outcomes. The clinically relevant time interval for patients who would benefit from thrombolysis is measured from the onset of stroke symptoms to the institution of thrombolytic treatment: the 'stroke to needle time'. There are at present no national standards for stroke to needle time, so each step of the pathway should be reviewed to ensure that the total is within a clinically acceptable time frame.

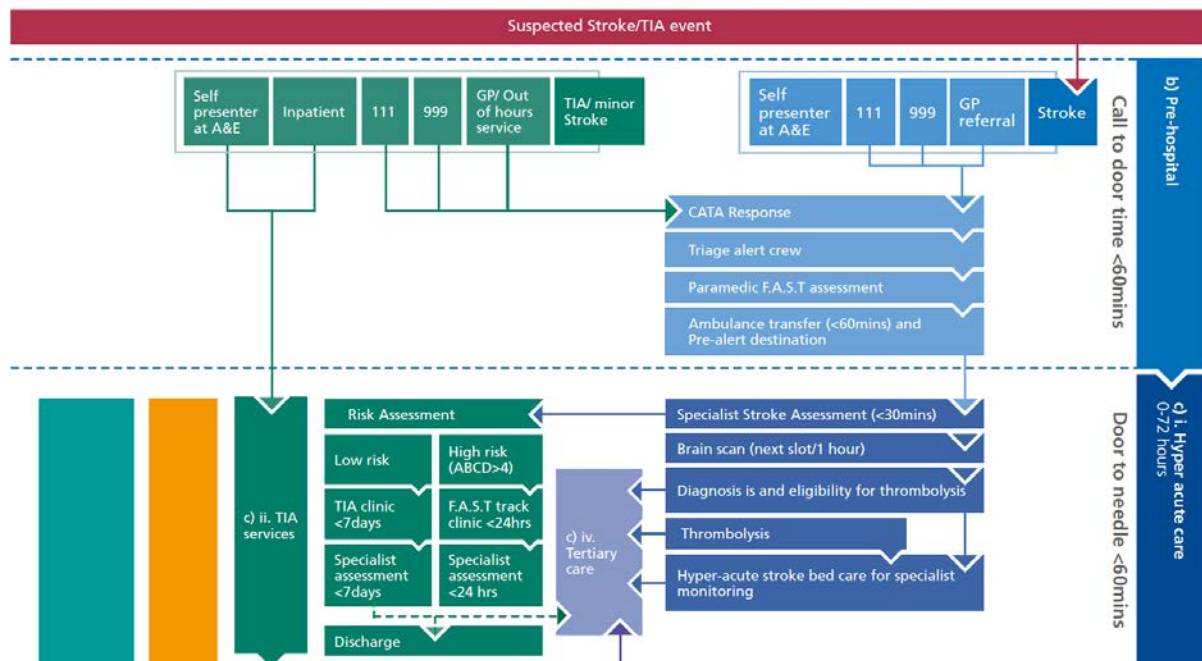
Whilst there are national standards for 'call' (to the ambulance service) to 'door' (of the stroke hospital) of within 60 minutes, and CT brain scanning within 60 minutes of arrival followed promptly by thrombolysis if indicated (see figure 1), the South East Clinical Senate previously proposed a clinically meaningful composite target of 120 minutes from 'call to needle' (institution of thrombolysis), which was also used in their review of Sussex stroke services. This ensures that there is the ability to compensate for longer travel times to reach a HASU if more distant than the local hospital, by reducing the time for ambulance and paramedic attendance and assessment, and more rapid assessment and scanning on arrival in hospital (which can be delivered in well performing HASU hospitals in under 30 minutes to reduce door to needle times (and is now a standard in London's acute commissioning and tariff guidance⁹).

It must be recognised though that some patients have complex clinical presentations, and careful assessment should not be compromised by a need to adhere to a time target.

Travel time data is presented within the PCBC as the percentage journey times within 30, 45 or 60 minutes. It would be informative for stakeholders and the public to also know what the average (mean) travel times are to each of the proposed stroke centres.

⁹ 50% of stroke patients eligible for thrombolysis to receive thrombolysis treatment within 30 minutes of entry to A&E (door to needle time). Stroke acute commissioning and tariff guidance Appendix 3. London Strategic Clinical Networks 2014. <http://www.londonscn.nhs.uk/wp-content/uploads/2015/01/Stroke-acute-commissioning-and-tariff-guidance-2014.pdf>

Figure 1. Core pathway features of an effective stroke service (pre-hospital and hyperacute care)^{5B}.



4.5. Clinician engagement

There was evidence of extensive and meaningful clinical engagement and leadership throughout K&M’s development of their future stroke care proposals, which the panel considered should be a model for other service reconfigurations within K&M, and in other health systems.

4.6. Public and patient engagement

There was evidence of substantial engagement with the public, through listening events arranged in different parts of Kent and Medway (including in hard to reach groups and deprived areas), and ‘testing and refinement’ of proposals based on discussions with patient representatives and patient representative groups. The active involvement of the Stroke Association in engaging the public and patients was noted. The use of a ‘patient and public advisory group’, chaired by the Healthwatch Kent chief executive (who also sits on the stroke programme board) demonstrated a serious intention to ensure the patient and public voice was heard. It was not entirely clear though to what extent the public and patients were directly involved in the co-design of the stroke models of care and evaluation of the options.

4.7. Proposed metrics for evaluating the quality of future stroke services

R11. There should be a formalised Kent and Medway stroke network, that takes responsibility for overseeing the implementation and quality improvement of stroke services across the pathway.

The benefits realisation framework (as summarised in figure 16, pg. 59 of the PCBC) is a comprehensive approach to evaluating stroke care and patient outcomes. There may be additional performance measures that come out of the Get It Right First Time programme, when the stroke workstream reports its conclusions. The South East Clinical Networks Stroke and TIA Service and Quality Core Standards document (2016) provides regionally agreed standards, and stroke units should be audited and performance managed against these¹⁰.

There is though no description of the mechanisms by which K&M's future stroke services will be monitored (such as activity levels, standards, and quality improvements). In the clinical senate's review of the case for change for stroke in K&M, one of the recommendations was:

'The National Stroke Strategy 2007¹¹ (supported by the South East Clinical Senate in their review of the case for change for stroke in K&M¹²) recommended that 'stroke networks should be established, bringing together key stakeholders and providers to review, organise and improve delivery of services across the stroke pathway', and that 'increasingly it is becoming impractical for organisations to offer care pathways that are safe, high quality and responsive to individuals without being part of defined networks.'

The panel considers this to remain very important, and the London Clinical Stroke Network direct involvement in facilitating change is one of the reasons why the centralisation of stroke services in London has been more effective than in Manchester¹³.

¹⁰ Stroke and TIA Service and Quality Core Standards. South East Clinical Networks 2016. http://www.secn.nhs.uk/files/6814/8095/2230/SE_Clinical_Network_Stroke_and_TIA_standards_v21_Final.pdf

¹¹ National Stroke Strategy, 2007. Department of Health. http://webarchive.nationalarchives.gov.uk/20130105121530/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyandguidance/dh_081062

¹² Review of the case for change for stroke services in Kent and Medway. South East Clinical Senate. June 2015. http://www.secsenate.nhs.uk/files/3914/4118/1216/SECS_Kent_and_Medway_Stroke_Services_Review_Report_June_2015.pdf?PDFPATHWAY=PDF

¹³ Explaining outcomes in major system change: a qualitative study of implementing centralised acute stroke services in two large metropolitan regions in England. Fulop N et al. Implementation Science 2016. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4891887/pdf/13012_2016_Article_445.pdf

4.8. Thrombectomy pathway

R12. Given the solid evidence base for thrombectomy for acute stroke, and the growing need for a centre in K&M that can provide this service 24/7, more detailed description of the likely demand, bed requirements, referral and repatriation pathways and the impact of this service on any centre that would provide the service, is advised. Higher levels of activity are to be expected at the designated thrombectomy HASU.

There is now a strong evidence base for the benefits of early thrombectomy for a significant proportion of patients who have received thrombolysis (estimated at around 10% of all strokes^{14,15}). Most recent evidence from the DAWN trial suggests that additional late presenting patients without cerebral infarction may also become suitable for thrombectomy, though the proportion of total strokes that might benefit is currently unknown^{16,17}. As there is no current thrombectomy service in K&M, patients are at present transferred to London units for this treatment. The PCBC states an intention to set up a K&M unit, and it is likely there would be demand for one centre within K&M to which all patients could be referred on to.

It is understandable that the location of such a service must await at least the decision on which three hospitals will host the HASUs in K&M. However there is no proposed timeline for the development of a thrombectomy service, no detail of what a referral and repatriation pathway would look like, and no estimation of the impact on any future thrombectomy centre, especially upon bed requirements. Greater clarity is advised, so that all stakeholders are better prepared for future developments, which are likely to be required during the next five years (given the acceptance by NHS England of the case for specialised commissioning of this treatment¹⁸).

It should be noted that the future designated K&M thrombectomy centre will likely take additional stroke patients directly¹⁹, increasing the total bed numbers and activity in that

¹⁴ Estimating the number of UK stroke patients eligible for endovascular thrombectomy. McMeekin P et al. European Stroke Journal 2017. <https://doi.org/10.1177/2396987317733343>

¹⁵ A population-based incidence of acute large vessel occlusions and thrombectomy eligible patients indicates significant potential for growth of endovascular stroke therapy in the USA. Rai A et al. Journal of Neurointerventional Surgery 2016. <http://jn.is.bmj.com/content/9/8/722>

¹⁶ Thrombectomy 6 to 24 hours after stroke with a mismatch between deficit and infarct. Nogueira R et al. NEJM 2017. <http://www.nejm.org/doi/full/10.1056/NEJMoa1706442?query=TOC>

¹⁷ A new DAWN for imaging-based selection in the treatment of acute stroke. Hacke W. NEJM 2017. <http://www.nejm.org/doi/full/10.1056/NEJMe1713367?query=TOC>

¹⁸ Mechanical thrombectomy for acute ischaemic stroke. NHS England clinical commissioning policy proposition. https://www.engage.england.nhs.uk/consultation/clinical-commissioning-consultation-may-2017/user_uploads/mechanical-thrombectomy-policy-proposition.pdf

¹⁹ Bypassing primary stroke centre reduces delay and improves outcomes for patients with large vessel occlusion. Mohamad N et al. European Stroke Journal 2016. <http://journals.sagepub.com/doi/pdf/10.1177/2396987316647857>

HASU, and scales have been developed to be used by ambulance teams to triage these patients²⁰.

4.9. TIA pathways, confirmation that SSNAP and national guidelines will be met

R13. The TIA pathway should be given greater prominence in the PCBC, including its required alignment with HASUs and ASUs.

The pathway for TIA patients impacts directly on acute stroke services, in terms of the additional beds required in HASUs, the need for seven day assessment services, and access to urgent carotid artery imaging and where required, surgery. TIA services therefore need to be closely aligned and networked with stroke centres. There is no mention of TIA within the PCBC, though a broad outline of the proposed model, based on the EKHFT model, is provided in the supplementary 'Summary of work to date on the whole stroke pathway' document.

4.10. Stroke mimic patients: patient pathways and impact on the HASU hospital

R14. More detail of the patient pathway for stroke mimic patients should be provided in order to better understand the impact on the HASU hospital, and to ensure safe pathways of care are fully integrated with the proposed stroke models. Agreement on these pathways with the ambulance service will be required.

Up to an additional 25% of patients admitted to a HASU (over and beyond confirmed stroke cases) are later shown not to have had a stroke: they are referred to as stroke mimics. Clear and agreed pathways for these patients are vital to maintain flow within the HASU, but also to ensure safe and appropriate onward care for these patients with alternative diagnoses. The supplementary document 'Summary of work to date on the whole stroke pathway' provided to us, outlined the proposed pathway for such patients, which describes ongoing care within the HASU hospital if the predicted LoS is ≤ 2 days, or transfer to their local hospital site (if it isn't the HASU hospital itself) if the predicted LoS is > 2 days.

This pathway needs more detailed work, to understand the bed and resource impact of these patients on the HASU hospital, and to learn from the experience of other centres who have already centralised services (such as in London). It may not be appropriate to transfer

²⁰ Large Vessel Occlusion Scales Increase Delivery to Endovascular Centers Without Excessive Harm From Misclassifications. Zhao H et al. Stroke 2017. <http://stroke.ahajournals.org/content/48/3/568>

patients to their local hospital if their acuity, or the services they require, make it inappropriate to transfer. Clear 'repatriation' agreements will be required between hospitals to avoid blocks to patient transfer, and the implications for the ambulance service need to be mapped out.

For context, on the assumption that the number of stroke mimic patients admitted to a HASU is 25% of confirmed stroke patient numbers, for a unit receiving 600 stroke patients per year, this equates on average to only one stroke mimic patient admitted to a HASU every two days.

4.11. Workforce review

4.11.1. Medical

R15. Consultant job planning should ensure that all stroke-related direct clinical care (DCC) activities, which include clinical administration and cross cover for annual leave are included in DCC PAs, and not SPA PAs. There should be a minimum of 2.0 SPAs in stroke consultant contracts, to ensure adequate time for quality improvement work, service management and development, teaching and training, research and CPD.

R16. The total DCC PAs required in stroke hospitals should be reviewed against the guidance provided in the BASP document 'Stroke Medicine Consultant Workforce Requirements 2011-2015', to confirm the PCBC modelling to date is accurate, and to ensure internal consistency within the PCBC.

R17. There should be greater recognition in the PCBC and in consultant workforce planning that not all consultants participating in stroke care need to be full time stroke physicians, even if they are required to participate in the on call rota. Ideally consultants should have CCT in stroke medicine or equivalent experience in thrombolysis. Enabling dual specialty consultants is likely to help with recruitment. There is also unlikely to be a service need for sufficient stroke PAs for six or more full time stroke consultants, even though at least six will be required on the on call rota.

The medical workforce modelling was provided in Appendix N of the PCBC. A number of issues were raised:

- SPA activity was described as including 'admin and prospective cover'. These are described as direct clinical care activities in the consultant contract, and should therefore be included in total DCC PA calculations.
- Although the consultant contract recommends 2.5 SPAs in a 10 PA contract, in line with the BASP report a minimum of 2.0 SPAs is considered reasonable. However

there is reference N to 11 and 12 PA contracts having a reduced SPA total of 1.8. The SPA allowance should remain as a minimum of 2.0.

- The tables showing stroke consultant coverage across the seven day week, for the various direct clinical care activities associated with stroke care, are shown in figures 5 and 6 of Appendix N. This is inconsistent with the guidance produced by the British Association of Stroke Physicians (see figure 2)²¹, and with the subsequent tables 5 and 6 in Appendix N, which do take account of the BASP recommendations. It is strongly recommended that the PA calculations are reviewed against this document, to ensure the total PAs required for the proposed K&M stroke units (and associated costs) have not been overcalled.

Figure 2. Number of stroke specialist consultants required, assuming 8 DCC stroke PAs, for varying sizes of stroke units.²²

No. of acute stroke admissions per year	Total stroke DCC PAs for this service	Number of full time Stroke Specialists (WTE)
300	16	2
400	18	2.25
500	20	2.5
600	22	2.75
700	23	2.9
800	24	3
900	26	3.25
1000	28	3.5

- Consultants working on stroke units can have additional specialisations, and as long as they participate on the on call stroke rota, and provide a specified minimum level of stroke activity, dual specialty appointments should be considered. This option is likely to enhance the ability to recruit stroke physicians to the new stroke units.
- Whilst modern stroke care is primarily a consultant-delivered service, it is very important to have trainee stroke physicians working and training in stroke units. There is a national shortage of such training posts, but the reported increase in StR training numbers for all specialties due for K&M should help staff stroke units with such trainees. The potential for a Kent medical school is also likely to enhance recruitment and retention of new medical staff, though this would be a medium term, not short term benefit.

²¹ Meeting the Future Challenge of Stroke: Stroke Medicine Consultant Workforce Requirements 2011-2015. British Association of Stroke Physicians. <http://basp.ac.uk/wp-content/uploads/2017/02/BASP-Meeting-the-Future-Challenge-of-Stroke-2011-15.pdf>

²² Meeting the Future Challenge of Stroke: Stroke Medicine Consultant Workforce Requirements 2011-2015. British Association of Stroke Physicians. <http://basp.ac.uk/wp-content/uploads/2017/02/BASP-Meeting-the-Future-Challenge-of-Stroke-2011-15.pdf>

4.11.2. Nursing

R18. There must be a major focus on the range of measures required to enhance the recruitment and retention of the stroke nursing workforce, in the face of high levels of vacancies and turnover in some of the hospitals, and national concerns about the future nursing workforce. Committees and groups at all levels working on future stroke plans for K&M must have senior nursing representation on them.

There are significant challenges in providing the level of specialist stroke nursing on HASUs and ASUs, from the current starting point where there are no such designated units. There are however a significant number of nurses experienced, trained and working on current stroke units and hospitals across K&M. The nursing gap for registered and unregistered nurses is substantial, and will require a range of initiatives to enhance recruitment, retention and training. These are outlined in table 9 of the PCBC Appendix N.

That appendix also summarises turnover and vacancy rates in the different hospitals, but this is at a whole trust level, and not specific for stroke services. These are summarised in figure 3.

Figure 3. Vacancy and turnover rates in Kent and Medway, average of three years 2015-2017.

	Rates, nursing and midwifery staff, average 2015-17 (% of established posts)	
Site	Vacancy rates (%)	Turnover rates (%)
DVH	11.41	10.18
TWH	16.87	6.51
MGH	19.83	7.05
MMH	24	13.1
WHH	8.41	9.3

We understand that vacancy and turnover rates have been on an improving trajectory recently, so it may be more accurate (and encouraging) to show instead only the 2016-17 one year rates.

It would also be more meaningful if possible to show stroke nursing staff rates specifically, or if that is not possible, then nursing rates within the medical specialties. Recent data from the NMC does paint a more discouraging picture though, with a reduction in entry to nurse training courses, and the presumed impact of the Brexit process on EU nursing staff.

Additionally, whilst it is hoped that the current specialist stroke nursing workforce will move where required to the new HASU/ASU units, this cannot be assumed.

This makes it all the more important to ensure roles in stroke services are well designed and attractive, with opportunities for extended roles, and additional competencies training, for apprenticeships, and innovative recruitment packages.

4.11.3. Therapies

R19. Greater accuracy and clarity about the therapies staffing requirement is needed, to appropriately plan the future workforce. Training programmes that help extend and share roles across the therapies services will maximise the effectiveness and efficiency of the workforce. Rotations across organisations and in to the community are likely to enhance the attractiveness of posts, and aid in recruitment and retention.

Stroke patients require the full range of therapies (physiotherapy, occupational therapy, speech and language therapy, dietetics, and clinical psychology), both within stroke units and within the community following their discharge from hospital. The PCBC documents current vacancies across these therapies (including the absence of any clinical psychologist working with stroke patients across the whole of K&M).

It will be essential to have in place detailed training, recruitment and retention workforce plans for the therapies services if HASUs and ASUs are to fulfil their potential for improving patient outcomes and reducing length of stay in hospital. Again, table 9 of PCBC Appendix N lists a range of measures that will be taken. Within this table, we would correct the proposal that 'allied health professionals to be supported to train in other professions, i.e. occupational therapist to be trained in physiotherapy...'. It would be more correct to refer to cross-disciplinary training within the allied health professions and nursing staff, to broaden individual clinicians' competencies.

The required number of therapies staff required is shown in PCBC Appendix N table 4. The source of the WTE per HASU and ASU bed standards is the national stroke reconfiguration decision support guide (pg. 25), not the BASP document referred to (which only describes the medical workforce). The ASU column headings are also mis-labelled as for HASUs. The guidance gives WTE per 5 HASU or ASU beds (for physiotherapy and occupational therapy) and per 10 beds (for speech and language therapy). The column heading suggest the WTEs are per 1 bed. We are unclear where the columns titled 'No. beds per WTE' originate, or how these numbers are arrived at from the clinical standards in the national decision support guide document.

As a result, we did not have confidence in the workforce modelling for therapies. A worked example for option A physiotherapy (see figure 4). This approach should be adopted for all the therapies across all four options, to better understand the workforce requirement.

Figure 4. Therapies workforce planning example. Option A for Physiotherapy only

Physiotherapy for HASU = 0.73 per 5 beds and for ASU beds would be 0.84WRE per 5 beds.

- DVH = 40 beds (if they modelled 10 beds as HASU and 30 as ASU) then there physiotherapy requirements would be 1.06 WTE for HASU and ASU requirements would be 5.04 WTE giving them a **total of 6.1 WTE Physiotherapists for DVH**
- MMH = 34 beds (if they modelled 10 HASU beds and 24 ASU beds) then their requirements would be 1.06 WTE PT's for HASU and ASU = 4.03WTE giving them a total **of 5.1 WTE Physiotherapists required for MMH**
- WHH= 59 beds (if they modelled 15 as HASU and 34 as ASU beds) then the requirements for physiotherapy would be 2.19 WTE for HASU beds and 5.71WTE for ASU giving them a total of **7.9 WTE physiotherapist for WHH**
- Therefore the total requirements for Physiotherapy staff under option A would be approx. **19 WTE staff.**

The STP should be aware of the likelihood that a number of therapies staff in hospitals that are losing their current stroke services, may not move to the new stroke centres, but may re-deploy in related clinical areas of frailty, intermediate care rehabilitation, community neurological services, and early supported discharge teams.

5. Targeted review of the five shortlisted options

Following the long-listing, medium-listing and short-listing process followed by the STP (as shown in the PCBC appendices shared with us), there were five short-listed options for future combined HASUs and ASUs on three hospital sites, as shown in figure 5 below:

Figure 5. Summary of the five shortlisted options for combined HASUs and ASUs.

Option (long list number)	Combined HASU/ASU hospital sites		
A (3)	Darent Valley	Medway Maritime	William Harvey, Ashford
B (5)	Darent Valley	Maidstone General	William Harvey, Ashford
C (8)	Maidstone General	Medway Maritime	William Harvey, Ashford
D (10)	Tunbridge Wells	Medway Maritime	William Harvey, Ashford
E (11)	Tunbridge Wells	Darent Valley	William Harvey, Ashford

The clinical senate panel reviewed specific key aspects of the options, based on details provided to it by the STP.

5.1. Projected HASU stroke activity within each option

R20. The expected annual stroke activity for each hospital should be updated to take account of any additional activity arising from agreed changes to patient flows, or continuation of current flows, that have not been included in the modelled HASU activity in the current PCBC. This is particularly important for Option C, D and E, where projected activity in one of the hospitals in each option is below the minimum national recommendations for annual confirmed stroke activity in a HASU of 500 cases.

R21. There must be clarity about which postcodes/LSOAs are within which HASU network. This is required so that acute trusts can have confidence in a catchment area that delivers enough stroke cases to warrant a HASU, and so that the ambulance service will convey stroke patients to the agreed and designated HASU hospital. There should be formalised agreements between neighbouring STPs and with the ambulance services on these stroke catchment areas.

R22. Options that include HASUs where the expected stroke activity is less than 500 per annum after taking account of any proposed additional changes in HASU catchment areas are not recommended for inclusion, as they do not meet national guidelines to achieve the multiple benefits and patient outcomes that centralised stroke services can deliver.

R23. Travel times from LSOAs to HASUs should be remodelled to take account of the upgrade to the A21 between Pembury and Tonbridge, and to determine its impact on HASU activity.

The PCBC quotes national guidance in determining the appropriate activity levels within a HASU:

- Guidance from NHS England (2015): ‘Generally it is considered that the minimum activity to pass through a stroke ward should be no fewer than 600 and the maximum to be 1,500’²³.
- Subsequent Royal College of Physicians guidance (2016): ‘The evidence regarding the optimum size of a hyperacute stroke unit...corresponds with a volume of at least 500 acute stroke admissions per year’²⁴.

The hurdle criteria used for medium listing then shortlisting recognised this minimum activity level of 500 acute stroke admissions per year in the category ‘Services must treat a large enough volume of patients for staff to retain their skills and for services to be cost effective’.

In the PCBC, a further qualification was made in the PCBC that ‘*Options with units that fell outside 10% of the minimum and maximum number of stroke patients were excluded from further consideration.*’ It is not clear to the panel why this 10% allowance was made, and it appears arbitrary. It was explained as a ‘10% tolerance’ factor to the panel, without further detail or explanation. If this 10% refers to variability around the mean (e.g. standard deviation), then there could equally be a 10% lesser activity level.

The projected numbers of acute stroke cases per HASU in each of the options A-E are shown in figure 6. This shows that within option C, D and E, Tunbridge Wells Hospital (D and E) and Maidstone Hospital (C) would be below an already low threshold for the minimum size of a HASU. However currently many of the patients in the Sevenoaks area, although modelled to flow to the Princess Royal University Hospital in Bromley based on the shortest travel time,

²³ Stroke Services: Configuration Decision Support Guide. NHS 2015. http://www.necn.nhs.uk/wp-content/uploads/2015/02/ADD_1210_Stroke-NHS-toolkit_c1_full_2016.08.18_11.48_10_single-1.pdf

²⁴ Royal College of Physicians National Clinical Guidelines for stroke (5th edition). 2016 [https://www.strokeaudit.org/SupportFiles/Documents/Guidelines/2016-National-Clinical-Guideline-for-Stroke-5t-\(1\).aspx](https://www.strokeaudit.org/SupportFiles/Documents/Guidelines/2016-National-Clinical-Guideline-for-Stroke-5t-(1).aspx)

are actually taken to TWH ²⁵. These patients would be additional activity to that which has been modelled. Furthermore, the panel was informed of the recent opening of the A21 upgrade between Tonbridge and Pembury, which reduces travel time to Tunbridge Wells from areas north west of it, which will impact on the modelling of shortest travel time for stroke patients. It is important that the impact of this development on HASU activity is fully analysed.

Figure 6. Projected annual confirmed stroke numbers for each HASU within options A to E²⁶. HASUs with projected stroke cases of <500 per annum are highlighted in bold. *Note that these figures do not take account of any future agreed changes to HASU catchment areas that were not included in the modelling undertaken for the STP.*

HASU hospital	Option				
	A	B	C	D	E
Darent Valley	766	803			1236
Medway Maritime	704		647	824	
William Harvey, Ashford	1242	1199	1189	1188	1294
Maidstone General		865	487		
Tunbridge Wells				448	480

5.2. Relationship between the HASU and ASU within each hospital

R24. When planning the siting of the HASU and ASU within designated hospitals, they should wherever possible be co-located to maximise operational efficiencies.

No details were provided as to how future HASUs and ASUs, co-located within the same hospital, would be configured. As was discussed with the panel, this will be the subject of future estates and operational planning within each hospital trust. It will be important in this planning to recognise the operational and staffing benefits of co-locating a HASU with an ASU.

²⁵ To assist ambulance crew in knowing which hospital to take patients to, Greater Manchester ODN have developed an app-based approach to support this. For further information contact Joe Dent (panel member) at dentjipd@gmail.com

²⁶ Updated data provided by STP on 4.1.08. Document title '180104 activity modelling v0.2.pdf'.

5.3. Co-dependencies of clinical services in the HASU/ASU hospitals

The PCBC describes the detailed review the STP has undertaken of the availability of the co-dependent services required for stroke units of the hospitals in K&M, using the South East Clinical Senate's general report on clinical co-dependencies²⁷. All the shortlisted options were concluded as being able to provide the required on site clinical services, or being able to access additional services by appropriate networking and specialist outreaching.

As any HASU would need at least one back up CT scanner to ensure guaranteed 24/7 access to CT scanning, it is advised that the hospitals in the five shortlisted options have such a backup, or have plans if the relevant options are approved to ensure such back up is in place.

5.4. Travel times from home to the HASU hospital

R25. The presentation of ambulance travel times from home to the nearest HASU would benefit from more granularity, in order to more explicitly show the range of travel times within the 60 minute requirement (which is being met within all options). Providing the proportion of travel times within 30 and 45 minutes, and average travel times, would aid a better understanding of likely journey times.

R26. For times when road transport is severely affected (such as by exceptional traffic or accidents), there should be contingencies in place to use the air ambulance service.

An analysis of travel times was undertaken by the STP, using Basemap and their TRACC software. The STP used as one of their hurdle criteria the requirement for 95% of the population to be able to be conveyed to a HASU within 60 minutes, in order to be able to deliver the 120 minute call to needle standard. However the analysis also shows that the majority of patients would be conveyed within 30 minutes (see figure 7, which summarises the data in STP appendices K and M). It would be useful to provide this level of detail, to re-assure stakeholders. Additional value and re-assurance might be gained by providing the average travel time for each option.

²⁷ The clinical co-dependencies of acute hospital services. South East Clinical Senate, Dec 2014. <http://www.secsenate.nhs.uk/clinical-senate-advice/published-advice-and-recommendations/clinical-co-dependencies-acute-hospital-services-clinical-senate-review/>

Figure 7. Travel times from home to HASU for the four shortlisted options.

Option	HASU sites	Travel time to nearest HASU (% of population)		
		<30 mins	<45 mins	<60 mins
A	DVH, MMH, WHH	71.9%	91.0%	99.9%
B	DVH, MGH, WHH	73.3%	91.6%	98.1%
C	MGH, MMH, WHH	73.6%	91.6%	99.9%
D	TWH, MMH, WHH	79.8%	92.2%	99.9%
E	TWH, DVH, WHH	76.9%	91.9%	99.9%

The ‘heat maps’, which show the travel times for the population across the geography of K&M (which were provided to the clinical senate panel following the meeting with the STP), re-assuringly show that only 1250 people (less than 0.1% of the population of K&M) live just beyond the 60 minute travel time, at an estimated 60.15 minutes travel time.

Nonetheless, there will be times when the estimated travel times will be compromised, such as by exceptional traffic or accidents. In this situation, there should be contingency arrangements to use air ambulances to transfer acute stroke patients to their nearest HASU.

5.5. Impact on and from neighbouring CCGs, hospitals and STPs

The established joint commissioning board, that includes the neighbouring CCGs of Bromley, and High Weald, Lewes and Havens, ensures coordination of the proposed changes in K&M with the stroke plans in these CCGs and their STPs, and the modelling for the various options has taken account of these relationships and impacts.

The biggest impact of the proposed K&M options would be on the PRUH in south east London, where the impact on required stroke bed numbers ranges from -16 (for option B) to +12 (for option C). We were told that Bexley CCG and the Princess Royal University Hospital NHS Trust were prepared for any of the options once decided. The impact on Eastbourne DGH would be minimal for any of the options (with additional bed requirements ranging from 0-4), and no concerns were shared with the panel about the implications of any of the options presented.

There were no plans we were made aware of in the PCBC of any changes to stroke services initiated in the neighbouring STPs that would impact on the stroke modelling for K&M.

5.6. Implementation trajectories, and capital investments

R27. More clarity about the realistic date when the trusts' additional bed capacity would be in place will help sequence planning and recruitment to the posts, and help to align stakeholders' expectations with the likely implementation date.

The high level timeline for the implementation plan (figure 42, pg. 114 of the PCBC) indicates that the phased go live and development of the estate (large capital) would take place within the period June 2019 – March 2020. In Appendix K pg. 25, the 'timescale required' for the William Harvey Hospital (which appears in all five options A-E) is stated as 18+ months. It is not clear if that is from the time of Treasury approval (Jan 2019 from the high level timeline), later, or earlier. It is therefore unclear what the realistic timeframe for the fully established HASUs and ASUs is to be up and running.

A review of the financial modelling, projections and capital requirements, provided in PCBC Appendix O, was not within the scope of the clinical senate review. It was unclear to the panel however, whether there was a cast iron commitment to provide the capital sums required to provide the HASUs and ASUs in each of the four options (£32-41 million), and that this capital was available. The clinical senate panel was left unsure if there is a 'plan B' in the event that all the capital is not forthcoming.

6. Conclusion

The Kent and Medway STP and its stakeholder organisations and representatives have undertaken a thorough analysis and process for producing proposals to modernise and centralise stroke services that will lead to much improved patient outcomes for the population. The South East Clinical Senate panel has aimed to provide constructive recommendations for further refinement of these proposals before they are taken to the public consultation and investment committee stages, by undertaking this review through an independent, clinical lens. Clinical senates are advisory rather than statutory bodies, and it is hoped that the recommendations provided here will help to facilitate the progress of these proposals through the next required stages of decision making and approval.

The clinical senate and its review panel thanks the Kent and Medway STP leadership, the clinical board and the stroke reference group for their collaborative, partnership-based approach to working with the clinical senate on this review.

7. Appendices

Appendix 1. Key Lines of Enquiry

Clinical Senate Review of Kent and Medway Stroke Services Options Planned key lines of enquiry

Proposed key to rating of each element:

Green	No specific concerns
Amber	Minor concerns that need addressing
Red	Major/significant concerns
Purple	Unable to form a view without more information

KLOEs: Review of overall strategy, principles and approach

1. **AMBITION AND PURPOSE:** Is there a clear statement/description of the purpose of the proposed changes, and adequate ambition?
 - Including reference to SSNAP metric ambition across all domains; plans and indicative trajectories.
2. **DEMAND MODELLING:** Has there been sufficient modelling of current and expected future demand for stroke services, and demonstration that planned capacity in K&M (in HASUs and ASUs) is aligned with this demand? (N.B. this will also be reviewed option by option).

The panel will want to understand the detail of the modelling that surmises a 'flat' incident rate trajectory:

- Provide detail on the assumptions/modelling around Prevention interventions.
 - Summarise, demonstrating the modelling including TIA's/Mimics. What modelling assumptions have been made re ESD and rehab that supports HASU/ASU modelling?
 - What quality assurance has been applied around the bed modelling?
 - What assumptions have been made re overall acute/A&E activity peaks. Does the model assume HASU beds are ring-fenced?
3. **EQUITY OF ACCESS:** Has the need for equity of access to acute stroke services across the geography of K&M been taken in to account?
 - Has the impact on the various equality groups been quantified?
 - Rehab access.
 4. **IMPACT ON AND FROM NEIGHBOURING STPs:** Has the impact of K&M stroke service reconfiguration on Sussex and SE London stroke services, and conversely that of any planned reconfigurations in neighboring counties, been taken into account?
 5. **WHOLE PATHWAY APPROACH:** Has a whole pathway approach been taken in developing the stroke options? If not, is there sufficient recognition of the importance of aspects of pathway that are out of scope of this review, and description of the further plans to address these?

6. **KEY METRICS:** Are the metrics by which the improvement in the quality of patient outcomes will be assessed sufficiently detailed and appropriate?
 - SSNAP trajectory across all domains
 - Are other quality measures referred to?
 - How are metrics being used to facilitate improvements?
7. **CLOT THROMBECTOMY:** Is the forthcoming important role of clot thrombectomy for selected stroke patients referred to in the PCBC, with a description of the possible ways this service might be provided for Kent and Medway patients?

KLOEs: Review of the four individual stroke services options

General points

1. **HASU-ASU /INTRA HOSPITAL NETWORKS:** Are the respective roles and relationships of the various HASUs and ASUs in the options adequately described and delineated?
 - What is the pathway/relationship between the HASU and ASU for each of the hospital options?
2. **ACCESS:** Does the option ensure equity of access to acute stroke services across the geography of K&M? This relates to ambulance travel time, and private and public transport links and provision.
3. **BED CAPACITY:** Will there be sufficient bed capacity within the planned HASUs and ASUs, and is there confidence that any need for increased capacity can be met? It is assumed that bed modelling data has been provided. Does this modelling take account of augmented out-of-hospital options, such as Early Supported Discharge, or community-based inpatient rehabilitation?
 - How are the net bed increase requirements for each option illustrated in the bed capacity modelling?
 - Demonstrate the validity of the bed /capacity modelling for each hospital site.

HASU/ASU

4. **ACTIVITY:** Is there a clear articulation of the expected HASU activity levels (confirmed strokes per annum) in each of the proposed centres, both current and in the coming 5-10 yrs, with sufficient data provided to supporting these assumptions?
 - Has sufficient account been taken of neighboring counties stroke modelling assumptions; eg Sussex?
5. **MEDICAL STAFFING:** Is there a credible and sustainable recruitment and retention plan for consultant staffing and 24/7 rotas that meets national specifications.
6. **NURSE STAFFING:** Is there a credible and sustainable recruitment and retention plan for specialist nursing.
7. **THERAPIES/AHP STAFFING:** Is there a credible and sustainable plan for recruitment and retention for both HASU and ASU-based physio, OT, SALT, and clinical psychology?

8. **CALL-TO-DOOR AND CALL-TO-NEEDLE TIMES:** Is there evidence of engagement with and support for the modelling from SECAmb?
 - Has SECAmb indicated preferred activity modelling?
 - What is the likely impact on paramedic and ambulance resources?
9. **CO-DEPENDENT SERVICES:** Is there evidence that the required co-dependent clinical services are available on the proposed HASU/ASU sites?
 - Co-dependencies need to be understood and articulated on a hospital site basis.

(Refer to the purple and red rated services in the SECS review of the clinical co-dependencies of acute hospital services).

(Services as for HASUs, but with the additional need for inpatient rehabilitation services).

Non ASU/HASU Hospitals

10. **PATIENT PATHWAYS:** For any hospitals which will not have either a HASU or ASU, are the following pathways for specific patient groups clear: A&E attenders, GP referrals, in-hospital stroke, stroke mimics, TIAs?
 - What are the agreed repatriation pathways?
8. **EFFECT ON OTHER SERVICES:** Has the potential impact of withdrawal of a current HASU/ASU on other clinical services been described, and if so, the mitigations that are being considered?

TIA Pathway

9. **MEETING STANDARDS:** Will the plans ensure that nationally specified standards will be met, including pathways for urgent and less urgent patients?
 - The assumptions for the expansion of the proposed EK model need to be aligned with each option.

Stroke Mimic

10. **ACTIVITY MODELLING:** Have the total numbers of such patients been quantified and validated (showing the modelling and evidence for assumptions, and that such modelling is agreed across the STP)?
11. **PATIENT PATHWAYS:** Has the patient pathway both for onwards referral and repatriation for these patients before and following exclusion of an acute stroke been clearly articulated?

Rehabilitation pathways

12. **POST-HASU/ASU PATHWAYS:** Are the pathways for onward care post-HASU/ASU described, with an understanding of the anticipated need for community based rehabilitation beds, and where that would be provided?

Appendix 2. Clinical Senate Review Panel membership, declarations of interest.

No.	Panel Role / Functional area	Name	Job Title/Role/ Employing organisation	Declarations of interest
1	Chair	Lawrence Goldberg	Chair of the South East Clinical Senate (SECS), and Consultant Nephrologist, Brighton and Sussex University Hospitals NHS Trust	None
2	Stroke Consultants	Dr Tilly Spiers	Frimley Health FT	None
3		Dr Simone Ivatts	Western Sussex Hospitals NHS FT	None
4		Dr Patrick Gompertz	Barts Health NHS Trust	None
5	Interventional Neuroradiology	Dr Panos Koumellis	Brighton and Sussex University Hospitals NHS Trust	None
6	Nursing	Heather Caudle	Director of Nursing (Improvement) NHS England	None
7	General Practice	Dr Terry Lynch	Clinical Director, Horsham and Mid Sussex CCG	None
8	Public health	Dr Alison Barnett	Deputy Centre Director, Public Health England (SE)	None
9	Allied Health Professional	Karen Poole	Consultant Therapist in Rehabilitation AHP Lead - East Sussex Healthcare NHS Trust Director of Trauma Rehabilitation, Sussex Trauma Network	None
10	Ambulance and transport services, and 111 services	Joe Dent	Advanced Practitioner (stroke). Salford Royal FT	None
11	Public and patient perspective	Priscilla Chandro	PPE	None
12	SE Clinical Senate Associate Director	Ali Parsons	NHS England	None

Appendix 3. Attendees at Clinical Senate Panel Review meeting 16.11.17

Name	Role	Organisation
Patricia Davies	Stroke Review SRO	NHS Dartford, Gravesham and Swanley CCG and NHS Swale CCG
Anne Tidmarsh	Director of Older People and Physical Disability	Kent County Council
Paul Stevens	Medical Director	EKHUFT
Jonathan Bryant	Clinical Chair	West Kent CCG
Sue Braysher	Director of Strategic Development	D&G NHS Trust
Kirti Mukerjee	Consultant Anaesthetist	Medway Foundation NHS Trust
Louise Ward	Senior stroke nurse	EKHUFT
Oena Windibank	Stroke Review Programme Lead	
Jackie Huddleston	Strategic Clinical Network Manager	South East Clinical Networks
Tara Galloway	Head of Stroke Support	Stroke Association
Michael Ridgewell	STP Programme Director	K&M STP
Shelley Whittaker	Stroke Review Comms and Engagement Lead	NHS Dartford, Gravesham and Swanley CCG
Sarah Vaux	Chief Nurse	Medway CCG
James Williams	James Williams Director of Public Health	Medway Council
Bob Bowes	Clinical Chair	West Kent CCG
Rebecca Bradd	Workforce Programme Lead	K&M STP
Claire Hall	Clinical Education Lead	SECamb
Mark Spencer	Programme Support	Carnall Farrar
Alice Caines	Programme Support	Carnall Farrar
Inderjit Chana	STP PMO	K&M STP

Appendix 4. Materials provided to the clinical senate review panel by the STP.

Materials provided to the clinical senate review panel by the STP.	
Document 1.	Draft Kent and Medway STP PCBC Version 6
Document 2.	Stroke Review: Whole pathway progress
Document 3.	Draft Integrated Impact Assessment- Stroke
Appendix A.	Glossary
Appendix Ba.	Stakeholder engagement
Appendix C.	Stroke Review Case for Change
Appendix D.	Kent and Medway Public Health Observatory evidence review
Appendix E.	Detail of stroke services by site
Appendix F.	List of quality standards
Appendix G.	SE Clinical Senate review of the Case for Change 2015
Appendix I.	Long list to medium list pack
Appendix J.	Bed and capacity modelling
Appendix K.	Medium list to shortlist pack
Appendix L.	Stakeholder event feedback report (evaluation criteria).
Appendix M.	Travel modelling
Appendix N.	Workforce modelling
Appendix O.	Finance modelling and capital implications
Appendix P.	Outline health and social care estates framework
Appendix Q.	Final report to enhance seldom heard engagement in K&M
Supplementary paper 1.	Revised options evaluation for the stroke programme. Provided 21.12.17
Supplementary paper 2.	180104 activity modelling v0.2. Provided on 4.1.18, provided re-analysis of HASU activity and expanded methodology.