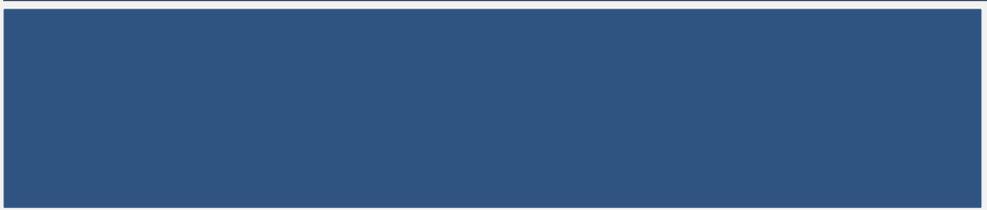


Coventry and Rugby CCG
South Warwickshire CCG
Warwickshire North CCG

Improving Stroke Outcomes for Coventry and Warwickshire

Pre-Consultation Business Case



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1.0 EXECUTIVE SUMMARY

1.1 Purpose of this Document

This document aims to describe the process through which we have worked with all key stakeholders since the outset of the programme in 2014, to develop a proposed new clinically and operationally sustainable model for stroke services across Coventry and Warwickshire that:

- meets nationally and locally defined requirements and guidance for the provision of stroke services
- has considered the growing bank of evidence for the most effective treatment and care services/pathways and lessons from other systems developing best practice care models
- has been shaped by substantial stakeholder engagement throughout the journey
- has had clear and consistent multi-agency governance and assurance
- has undergone open and transparent appraisal both financially and non-financially to ensure the long-term viability of the model
- is aligned with local and national strategy

This document also describes how stroke services are currently provided across Coventry and Warwickshire, sets out the issues and inadequacies with the current services and our proposal for change.

We recognise that stroke services across Coventry and Warwickshire can achieve better health outcomes for patients by being set up in line with established best practice guidance. In so doing, they can also be more effective and efficient.

As system leaders it is our role to present the community with a clear service pathway and proposal for change. This will require us to make changes to the structure of the existing services, including enhancing some services and reducing or stopping others when they are no longer appropriate. We believe that through delivery of this business case we will create services that contribute to a more effective health and social care system.

1.2 Stroke and TIA Definition

Stroke is the leading cause of disability and fourth largest cause of death in the UK. Just over 1,200 people a year in Coventry and Warwickshire have a stroke and are taken to one of our three local hospitals. In 2016/17 there were over 15,000 stroke survivors on local GPs stroke registers and over 320 people were diagnosed with a Transient Ischaemic Attack (TIA).

A stroke occurs when the blood supply to part of the brain is cut off and is therefore unable to carry essential nutrients and oxygen to the brain, causing brain cells to become damaged or to die. The damage caused can have different effects on the body and how people think, feel and communicate, depending on where the damage occurs.

There are two types of stroke:

- Ischaemic stroke – most strokes are an ischaemic stroke, caused by a blockage that cuts off the blood supply to the brain; and
- Haemorrhagic stroke – these are caused by bleeding in or around the brain.

A Transient Ischaemic Attack (TIA) is also known as a mini-stroke; whilst the same as a stroke, the symptoms last for a short amount of time and no longer than 24 hours, as the blockage that stops the blood getting to the brain is temporary.

As people age their arteries become harder and narrower and are at more risk of becoming blocked, causing ischaemic strokes. Certain medical conditions and lifestyle factors however – including high blood pressure and obesity - are known to speed up this process and increase the risk of a stroke.

1.3 Governance Arrangements

The development of the Pre-Consultation Business Case has been a Commissioner-led process overseen initially by the Warwickshire and Coventry CCG Federation and now by the Strategic Commissioning Joint Committee (comprising CCG Clinical Chairs, Accountable Officers, Chief Financial Officers and other key members of all three local CCGs). However, it has extensively involved key stakeholders through a multi-agency project governance structure. This structure was established at the beginning of the programme in 2014 and has been in place throughout.

Local acute and community service providers, as well as ambulance, Local Authority and patient representatives, have been represented at various levels, including via:

- Stakeholder Board – comprising provider strategy and medical leads;
- Clinical Review Group – comprising Medical Leads to support the development of the clinical model; and
- Activity and Finance Workstream.
- Clinical and Operations Group – comprised of Clinical and Operational Leaders

A full description of the governance and assurance structure and arrangements can be found in section 5.1.

1.4 The Case for Change

There is a strong and growing evidence base, that the organisation and timeliness of stroke specialist assessment and treatment significantly affects outcomes. The following key issues have been identified with the current service organisation and provision which results in locally increased mortality and morbidity following a stroke:

- The current service provision across Coventry and Warwickshire does not meet the requirements of the NHS Midlands and East regional Stroke Services Specification, particularly in ensuring that all patients suffering a stroke receive appropriate hyper acute care within the first 72 hours. Currently, on average 4 patients per day do not receive hyper acute assessment;

- The HASU/ASU beds and rehabilitation services for Coventry and Warwickshire patients do not universally meet all of the national performance standards for best practice care. Indeed, the latest published data in the NHS Atlas of Variation (2015) showed that the number of patients in Coventry and Warwickshire directly admitted to an Acute Stroke Unit within 4 hours of onset of a stroke was amongst the lowest in the country;
- There is variable service provision and inequality of access to key services for Coventry and Warwickshire patients which must be corrected; particularly to HASU beds, inpatient rehabilitation, specialist community rehabilitation and Early Supported Discharge (ESD). Cohorts of patients in Warwickshire North and South Warwickshire currently have no access to some of these services;
- Inadequate provision exists in primary prevention, in the form of gaps in anticoagulation therapy for those with atrial fibrillation to reduce the risk of stroke, with evidence that we could avoid c230 strokes over 3 years by bridging this gap;
- The Sentinel Stroke National Audit Programme (SSNAP) results between Dec 2017-Mar 2018 show that Coventry and Warwickshire services are poor when compared to national average performance in delivering rapid access to appropriate services. The most significant issues arising from the SSNAP audits in support of the case for improvement are:
 - The proportion of patients scanned within 1 hour – in one of the local units 13% of patients are scanned within an hour, in comparison to a national average of 52.4%;
 - The median time taken for patients to be scanned – most recent results show it takes just over 2 hours and 43 minutes at one of our hospitals for patients to be scanned, against a national average of just under an hour;
 - The time taken for patients to be admitted to a Stroke Unit – whilst the national average time for patients to be admitted to a Stroke Unit is 3 hours and 52 minutes, it takes between 6 and 11 hours for patients in Coventry and Warwickshire; and
 - The proportion of patients assessed by a Stroke Specialist Consultant Physician within 24 hours is below the national average for two of the three acute providers in Coventry and Warwickshire.
- There is considerable variation in the acute care provided across the three sites, particularly in relation to lengths of stay. It is clear from review work undertaken that, due to a lack of specialist stroke ESD and community stroke rehabilitation services, patients are currently staying longer in the available acute stroke beds than is in their best interest;
- Critically, there are insufficient Stroke Specialist Consultants to operate an improved and effective service within the current configuration of services, given the requirement to staff services on each of the three acute sites. At the outset of this work, there were only four permanent Stroke Specialist Consultants working across the three acute providers. Five years later this is still the case. There are known

national shortages of these specialists and recruitment to vacant posts has been challenging for all providers.

Given these issues, work is clearly required to improve local stroke care across Coventry and Warwickshire so that more patients can survive their stroke and achieve their optimum level of recovery and independence.

1.4.1 Clinical Best Practice

The assessment of current services and design of the future clinical model and pathway has taken into consideration published evidence, guidance and observations of best clinical practice at other organisations in England.

The NHS Midlands and East Stroke Specification sets out the criteria, as recommended by the External Expert Advisory Group, that different parts of the stroke pathway need to meet to deliver high quality care to patients. These are the expected standards that commissioners should adopt when commissioning stroke care services. The proposed clinical model has been developed with the NHS Midlands and East Regional Stroke Services Specification at the forefront of thinking.

Learning from other stroke service models in England

Members of the Coventry and Warwickshire Stroke Clinical Review Group have learned from a number of other stroke units in the country which had been identified as demonstrating clinical best practice and from published evaluation findings. These included the London Stroke Model, Nottingham stroke service, Stoke on Trent stroke service and North Essex ESD service. The evidence is clear that centralising stroke treatment at a much smaller number of hospitals with specialist stroke care has considerable benefits.

The Coventry and Warwickshire model proposed has been designed taking into account learning from the operation of each of these sites as well as wider documented evidence. This has included testing the capacity planning for the proposed new service provision; the capacity we have planned is broadly in line with the findings from research into stroke services at other best practice regions with similar demographics.

Early Supported Discharge (ESD) and Community Stroke Rehabilitation

There is strong evidence nationally that a new and comprehensive ESD service will be able to reduce patient's length of stay in hospital. Within Coventry, ESD services were piloted from December 2014 to May 2015 and following the success of the pilot, standard ESD has been substantively commissioned in Coventry only since September 2015.

Data from the pilot and the current service provide strong evidence of the success and reach of the proposed model. Full details of this evidence can be found in section 4.3.

The success of an ESD service rests on the provision of high quality, sustainable community stroke rehabilitation services. The community stroke rehabilitation element of the proposed model provides flow through the system that enables ESD to sustain high quality, high

intensity, and timely discharges for those most likely to gain full or near to full recovery post stroke. It also provides interdisciplinary rehabilitation to support flow from bedded rehabilitation for those who have had a moderate to severe stroke, to enable appropriately supported discharge from hospital.

Atrial Fibrillation (AF)

There is evidence that optimally treating high risk AF patients has the potential to avert 230 strokes over three years in Coventry and Warwickshire ('The Size of the Prize on CVD prevention', Public Health England and NHS England).

This evidence indicates that there is significant clinical and financial benefit potentially from this intervention and it has been factored into the activity and financial modelling for the proposed new service.

1.4.2 Local and National Strategy

The proposed new service model is in line with the following local and national strategy documents:

- The National Stroke Strategy (2007), which advocated provision of specialist stroke units, rapid access for TIA patients, immediate access to diagnostic scans and thrombolysis (for those who need it) and Early Supported Discharge.
- The NHS England Five Year Forward View (2014), which cited the centralisation of 32 stroke units in London to 8 units and the reduction in mortality rates and lengths of stay in hospital that resulted from this service change.
- The NHS Long Term Plan (2019) which includes commitment to improved post-hospital stroke rehabilitation models by 2020
- Coventry and Rugby CCG's Commissioning Intentions (2017 – 2019)
- South Warwickshire CCG's Strategic Plan (2016 – 2020)
- Warwickshire North CCG's Vision for Quality Clinical Vision
- The Coventry and Warwickshire Sustainability and Transformation Plan

1.5 Summary of Current Stroke Service Provision

The current services in Coventry and Warwickshire for patients who suffer a stroke or have a Transient Ischemic Attack (TIA) are provided locally by three acute hospital trusts and a local provider of community physical and mental health services, as listed below:

- University Hospitals Coventry & Warwickshire NHS Trust (UHCW)
- South Warwickshire NHS Foundation Trust (SWFT),
- George Eliot Hospital NHS Trust (GEH)
- Coventry and Warwickshire Partnership NHS Trust (CWPT).

The services currently provided are described in the table below.

Services	UHCW	SWFT	GEH	CWPT
HASU beds	6	0	0	Not Available
ASU beds	30	12	18 (+1 assessment bed)	Not Available
Inpatient stroke Rehabilitation beds	6	20	Not Available	Not Available
Total beds	42	32	19	Not Available
TIA service	7-day consultant-led	5-day service	7-day nurse-led	Not Available
Thrombolysis	Yes	Treated at UHCW	Treated at UHCW	Not Available
Carotid imaging	Yes	Yes	2 sessions	Not Available
Carotid endarterectomies	Yes	Treated at UHCW	Treated at UHCW	Not Available
Stroke outreach team	Not Available	Yes	Yes	Not Available
Early Supported Discharge (ESD) service	Not Available	Rugby residents only	Not Available	Coventry residents only
Community Stroke Rehabilitation	Not Available	Not Available	Not Available	Yes

A more detailed description of the key services in the current system is provided below.

1.5.1 Hyper Acute Stroke Units

There is a Hyper Acute Stroke unit (HASU) at University Hospitals Coventry & Warwickshire NHS Trust (UHCW). This offers 24-hour, 7-day cover with rapid assessment for patients on arrival to the Emergency Department. It includes rapid access to imaging and thrombolysis as appropriate and wider access to other specialist skills and diagnostics.

The HASU sees all Coventry and Rugby patients who are suspected of having a stroke, and also patients from north and south Warwickshire who are assessed by a paramedic to be FAST-positive within 4 hours of onset of symptoms.

As soon as patients are assessed as having a stroke (this can sometimes be in the ambulance or in the Emergency Department in UHCW), all patients are seen by the Stroke Consultant-led Team for a multi-disciplinary assessment. This assessment determines likely diagnosis and if confirmed as a stroke, they are admitted to the HASU.

However, not all Coventry and Warwickshire patients suspected of having had a stroke are immediately taken or directed to the HASU. Therefore, not all patients have an immediate specialist assessment, where they will also have access to the full range of specialist skills and diagnostics. This is a significant gap in the current service provision when it is compared to the NHS Midlands and East regional Stroke Services Specification, which identifies that any patient within 72 hours of onset of stroke symptoms can benefit from assessment and treatment in a hyper-acute centre.

There is a cohort of patients from north and south Warwickshire who are either:

- Taken to, directed to or who self-present at their local general hospital; or
- Assessed by a paramedic to be FAST-positive after 5 hours of onset of symptoms and are then taken to their local general hospital Emergency Department i.e. George Eliot Hospital NHS Trust (GEH), or South Warwickshire NHS Foundation Trust (SWFT).

After the hyper acute element of care at UHCW:

- Patients are discharged home if medically appropriate;
- Where further acute care is needed, Coventry and Rugby patients are transferred to the Acute Stroke Unit (ASU) at UHCW;
- Patients from south and north Warwickshire needing further acute care are repatriated to the local ASUs at SWFT or GEH respectively, within 72 hours if possible, subject to bed availability. If there is no ASU bed available in their local hospital, they are admitted to UHCW ASU until a local bed becomes available.

1.5.2 Acute Stroke Units

All three local acute providers deliver Consultant-led Acute Stroke Care on a 24 hour, 7 day basis and have brain imaging available on all sites.

1.5.3 Rehabilitation, Outreach and Early Support Discharge

There is considerable variation in the stroke specialist rehabilitation services available across the area, as described in the table below.

Rehabilitation service	Coventry & Rugby CCG	South Warwickshire CCG	Warwickshire North CCG
Inpatient rehabilitation	6 beds at the Hospital of St Cross for patients from Rugby aged 65 years and over	20 beds in Leamington Spa	No specifically designated beds
ESD	Available to all patients	Not available	Not available
Community rehabilitation	Community Stroke rehabilitation services for Coventry residents provided by CWPT. Community general rehabilitation services for Rugby residents provided by SWFT	Stroke Outreach therapy service provided by SWFT	Stroke Outreach therapy service provided by GEH. Community general rehabilitation services provided by SWFT

The lack of comprehensive access to specialist stroke rehabilitation services is a gap when comparing the current services to the requirements of the NHS Midlands and East regional Stroke Services Specification.

1.5.4 TIA

For those patients experiencing a TIA, carotid imaging is available on site at both UHCW and SWFT; it is available for two sessions each week at GEH. Patients presenting at GEH who require carotid imaging when carotid imaging is not available are transferred to UHCW. All patients from across Coventry and Warwickshire requiring a carotid endarterectomy undergo surgery at UHCW.

Both UHCW and GEH provide onsite TIA clinics on a daily basis, 365 days a year. UHCW's clinics are Consultant-led, whilst GEH clinics are nurse-delivered with Consultant leadership. Since January 2016, all high-risk TIA patients in the south Warwickshire region, who previously would have been seen at SWFT, are now seen at UHCW.

1.6 Proposed Future Clinical Model

A significant amount of work has been undertaken by clinicians from across the health economy to design a new model for stroke services that meets the clinical best practice outlined in the NHS Midlands and East Stroke Services Specification.

1.6.1 Stakeholder engagement.

Over the last five years, the model of care has been co-designed through public and patient representative engagement. The rationale behind the proposed model has been shared extensively, including with:

- Local commissioners;
- Health, social care and other key partners including the Stroke Association;
- The Warwickshire and Coventry Adult Social Care and Health Overview and Scrutiny Committees and District and Borough Council Scrutiny Committees
- The Public and Patient Advisory Group specifically established to advise on the development of proposals since the project started in 2014;
- Stroke survivors in stroke clubs and
- Health professionals and other key stakeholder groups (i.e. Local Authorities, Councillors).

All of these parties have helped to shape and inform the development of the proposed stroke service model. During the engagement in 2017 they have been supportive of this proposed model assuming that a number of key access factors, particularly for carers and relatives, can be mitigated. We have taken this feedback on board and reshaped the proposals during 2018 to reach this final case. Further, engagement in 2018 helped to shape the process for appraising the options for bedded rehabilitation; coproducing the desirable criteria to be used for the non-financial appraisal and culminating in stakeholder participation in the non-financial option appraisal.

1.6.2 Options development and analysis

Development of the Options

To develop the proposed model a range of options have been considered; initial development work focused on the acute stroke pathway only. A long list of scenarios was developed and explored for the provision of an acute pathway. The long list is as follows:

- Scenario 1 - Do Nothing
- Scenario 2 - HASU at UHCW / 1 ASU at UHCW
- Scenario 3- HASU and ASU for Coventry and Rugby patients up to discharge at UHCW, and for North and South Warwickshire patients up to day 7, with repatriation to ASU and SWFT or GEH at day 8 as required. (discounted as clinically not viable)
- Scenario 4 - HASU at UHCW / 3 ASUs at UHCW, SWFT & GEH
- Scenario 5A - HASU at UHCW / 2 ASUs at UHCW & SWFT
- Scenario 5B - HASU at UHCW / 2 ASUs at UHCW & GEH

An assessment based on clinical viability using the following criteria was undertaken:

1. Be capable of meeting the Midlands and East Stroke Service Specification;
2. Be clinically viable in terms of both activity and workforce. Local clinicians agreed that to be clinically sustainable, a Stroke Unit would require a minimum of 10 stroke beds being operational.

Assessment of each of the long list options found that option 2 is the only option that would be capable of sustaining the expert workforce required to drive improvements to outcomes. As such all other options were clinically unsustainable. The details of the assessment are described in sections 5.3 and 5.4.

A single preferred acute pathway clinical option was at this stage selected. This was discussed with local Councillors who are the Health portfolio holders and members of the Public and Patient Advisory Group during 14th to 17th September 2015. It was also considered at the Health Overview and Scrutiny Committees in Warwickshire and Coventry in September 2015. All groups were generally supportive of the model but asked that it be expanded to include comprehensive stroke rehabilitation services and interventions to prevent strokes. The model of care was therefore extended to include these.

During June and July 2017, a further comprehensive public engagement process was undertaken on a proposal for a centralised hyper acute and acute service, bedded rehabilitation on two sites, ESD, community stroke rehabilitation at home and improvements in AF anticoagulation therapy. This resulted in some specific concerns being raised regarding access and travel, most of which are addressed through an action plan working with Council colleagues. Alongside this the stroke expert Clinical and Operations Group leading the clinical design of the future stroke service model was asked to revisit the work completed to date and to consider if there was another method of delivering bedded rehabilitation for the Coventry and Rugby population, to address the travel for carers concerns raised.

This further work identified that there were a number of potential scenarios for providing the bedded rehabilitation aspect of the pathway. A long list of potential scenarios was developed by the Clinical and Operations Group. These scenarios were assessed against their ability to:

- meet national guidance and the requirements of the NHS Midlands and East Regional Stroke Service Specification
- demonstrate at least the minimum levels of delivery of: quality; being safe; being sustainable and better outcomes for patients

Following these clinical assessments two viable stroke rehabilitation options remained:

Rehab Option 1: Early Supported Discharge Service (ESD) and community rehabilitation in all areas. Bedded rehabilitation at South Warwickshire Foundation Trust (SWFT) in Leamington and George Eliot Hospital (GEH) in Nuneaton

Rehab Option 2: ESD and community rehabilitation in all areas. Community bedded rehabilitation provision in Coventry with specialist therapy in-reach. Bedded rehabilitation at SWFT in Leamington and GEH in Nuneaton

These options were then taken forward for full non-financial appraisal by all key stakeholder groups. Details of the options appraisal are provided within section 5.7

On the basis of this work, an options appraisal of the two viable options for providing bedded rehabilitation was carried out. The appraisal involved representatives from all key stakeholder groups, examples include; patients and carers, local councillors, voluntary sector and community support NHS clinicians, social care commissioner and managers.

The outcome of the options appraisal identified Rehab Option 1 as the preferred option:

Early Supported Discharge Service (ESD) and community rehabilitation in all areas. Bedded rehabilitation at South Warwickshire Foundation Trust (SWFT) in Leamington and George Eliot Hospital (GEH) in Nuneaton.

Integrated Impact Assessment (IIA)

Two Integrated Impact Assessments have been undertaken in 2015 and 2017/18 as proposals have developed. They were completed to estimate the possible implications of re-designing stroke services on patients and their carers and how these effects may be distributed amongst different groups and geographies. The impact assessment focused on three main areas; travel and access; health and determinants of health and equality. The IIA made recommendations to enhance potential positive outcomes and minimise negative impacts of the proposals.

The assessment and scoring from the IIA suggest that proposals for the centralisation of all acute care and proposed models for rehabilitation would have an overall positive impact on patients and carers compared to the do-nothing scenario. Whilst the centralisation and community bedded rehabilitation options will invariably negatively impact on travel and access for some patients and carers, particularly from the North and South of Warwickshire, the expected health benefits, greater proportion of time recovering at home and a greater

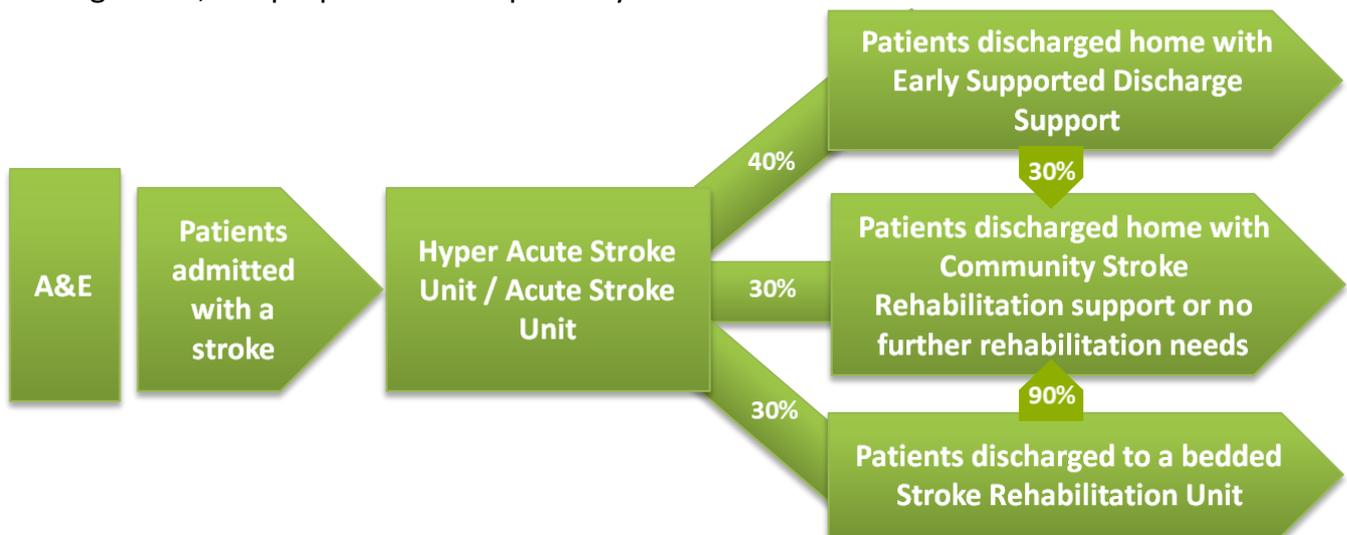
equity of exemplar service provision across the area, in the proposals would more than offset any negative impacts.

1.6.3 The proposed future model for stroke services

We believe that the resulting proposed new pathway of excellence will be the best possible clinical model for stroke services in Coventry and Warwickshire for the following reasons:

- It has been designed taking into account the requirements of the NHS Midlands and East Stroke Services Specification and the latest clinical best practice evidence;
- It improves equity of access to stroke services across Coventry and Warwickshire;
- It fits with local and national strategy;
- It will create workforce development opportunities and improve recruitment and retention of stroke specialist staff;
- It has been tested through a range of clinical quality assurance processes, including the West Midlands Clinical Senate and West Midlands Cardiovascular Network;
- Significant stakeholder engagement and co-production of the proposals through the engagement activities undertaken has provided support to proceed with this option.

At a high level, the proposed future pathway is as follows:



The pathway has the following key features:

- Provision of a single centralised Hyper Acute Stroke Unit (HASU) and Acute Stroke Unit (ASU) at UHCW, with the necessary infrastructure, support and workforce to assess and diagnose all patients suspected of having had a stroke from across Coventry and Warwickshire, within 72 hours of onset;
- Home-based stroke specialist ESD service across all of Coventry and Warwickshire;
- Home-based community stroke rehabilitation across all of Coventry and Warwickshire;
- Bedded stroke rehabilitation services for those patients that require more intensive support after discharge from the ASU and
- A systematic focus on preventing stroke in the form of an integrated anticoagulation pathway that acts to reduce the risk of stroke.

The CCGs are clear on the improved outcomes they wish to see delivered through this change. By ensuring a consistent, high quality service offer, improvement will be made against the following three key clinical outcomes:

1. Reduced levels of mortality for people who have suffered a stroke: case adjusted mortality rates for Coventry and Warwickshire will meet those of comparable population areas;
2. Reduced levels of dependency for those who have suffered a stroke: outcomes will be at least comparable with similar populations by improving and increasing access to the specialist stroke ESD and community rehabilitation services at home, and specialist bedded stroke rehabilitation, and
3. An improvement in cognitive function for people after suffering a stroke: outcomes will be at least comparable with similar population areas.

1.6.4 Equity of access to services

Put simply, under the new model, all patients across Coventry and Warwickshire will be seen more promptly and in the right place by specialist skilled professionals, where they will receive the highest quality care.

There will be no inequality of access to the appropriate specialist care. A consistent stroke service will be in place across all of Coventry and Warwickshire, removing the current inequity of access to services. This applies to all elements of the pathway, including HASU and ASU beds and stroke specialist rehabilitation services.

Centralisation of acute care and standardised bedded rehabilitation will ensure a body of suitably qualified and experienced staff is available to see and treat all patients. The home-based rehabilitation will provide an extra 620 packages of care and the anticoagulation therapy will prevent 230 strokes over three years.

1.6.5 Quality assurance

In order to ensure that the new model is appropriate clinically, the following quality assurance reviews and processes have been undertaken:

Health Gateway Review 0;

National Clinical Advisory Team Review;

West Midlands Strategic Clinical Network Assurance;

West Midlands Clinical Senate Review;

Assessment of the fit against the “Five Tests” for Reconfiguration;

Two Integrated Impact Assessments (IIA); and

A Privacy Impact Assessment (PIA).

The outcome from all of these tests has been supportive of the new model. In particular, external clinical advice has agreed that our preferred model is appropriate and based on best practice.

1.7 Financial and Activity Impact

The preferred option for the proposed future clinical model for Coventry and Warwickshire has been agreed by all stakeholders to provide the best possible quality of care for stroke patients. However, given the finite resources within the health economy, it is also important to demonstrate that the proposed new model is affordable. Finance and activity modelling work has therefore been undertaken to estimate the likely impact on patient flows, costs and potential savings from the potential new models and is described in section 7.

1.7.1 Bed capacity modelling

Modelling has been undertaken to establish the number of beds required to manage demand through the current service model (do nothing state) and to manage the flow of patients through each of the options under consideration for the proposed future state.

Activity for 2017/18 was used to form the baseline for modelling, with growth of 1.07% assumed annually. In establishing the future bed base, the following assumptions were made:

- HASU length of stay would continue to be up to 3 days;
- ASU length of stay is expected to reduce from the current 18 days (spell average) to 11 days at day 1 of introduction of the full pathway;
- the HASU will operate at 85% bed occupancy, the ASU and bedded rehabilitation will operate at 90% bed occupancy, to allow the future service to manage peaks in activity to deliver the necessary patient flow through the system;
- 40% of patients on the Acute Stroke Unit will require a standard ESD package, with a further 30% of patients suitable for bedded rehabilitation provision and 30% discharged with community rehabilitation;
- 30% of the patients discharged with ESD will go on to receive community stroke rehabilitation support.
- 90% of the patients discharged from bedded rehabilitation will go on to receive community stroke rehabilitation support.
- There will be no bed base reduction at any of the acute providers. Beds that are identified as not required for stroke care will be used to support the delivery of other acute hospital activity.

The results of this work on bed modelling are shown in the table that follows:

Bed/Service provision	Current	Future	Difference (Beds)
Hyper Acute Stroke beds	6 beds at UHCW	12 beds at UHCW	+ 6 beds
Acute Stroke beds	30 ASU beds at UHCW 12 ASU beds at SWFT 18 ASU beds plus 1 assessment bed at GEH (Total 61 beds)	31 ASU beds at UHCW	- 30 beds
Community Stroke Rehabilitation beds	6 inpatient rehabilitation beds at Rugby site, UHCW for Rugby patients aged 65+ 20 inpatient rehabilitation beds at Leamington site, SWFT for SW patients only (Total 26 beds)	17 for C&R CCG (preferred option 9 in SWFT/8 in GEH) 12 beds in SW (SWFT) 10 beds in NW (GEH) (Total 39 beds)	+ 13 beds (N.B. different specification of beds)
Total bed numbers	93 beds	82 beds	- 11 beds

1.7.2 Financial modelling

The financial implications of the proposed model have been assessed. This assessment has been discussed at STP level and the following principles agreed by both Commissioners and Providers:

- The bedded part of the stroke pathway will continue to be covered by tariff under the current tariff cost envelope.
- The three CCGs will invest the required amounts in the additional ambulance transfers, elements of prevention and the community stroke rehabilitation pathway

In line with these assumptions, estimates have been produced by Commissioners and Providers of income, activity and costs under the current model and the future model options. These estimates have been based on 2017/18 planned activity and prices to enable a consistent approach to be taken.

Assumptions have been made for future demand driven by changes in population demographics and expected growth rates for Coventry and Warwickshire. It is important to note that there will be no savings to Commissioners from the planned bed base realignment outlined in the previous section.

The table that follows provides the results of the financial analysis of the investment required by CCGs in the community elements of the pathway.

Community pathway elements	£000s
Historic Investment by CCGs	1,663
Revised Investment by CCGs	5,074
Additional Investment by CCGs	3,411

Additional cost of Acute model	374
Less savings on CHC packages	-700
Net additional CCG investment required	3,085

This analysis indicates that the CCGs will be required to invest a further £3.1m in the community pathway. It has been agreed how this investment will be split between the CCGs:

- Proposed investment levels are within CCG financial plans for 2019/20 (on a part year basis) and will be in 2020/21 (on a full year basis). The five-year financial plan being developed will include the impact of this service provision.
- The source of funding for stroke prevention (Atrial Fibrillation anticoagulation therapy) is savings delivered from elsewhere within CCG budgets.

Section 7.3 provides full details of the financial modelling that has been undertaken.

1.7.3 Financial risks

A number of financial risks have been identified whilst undertaking the modelling and are described in full in section 7.4.4. Of those risks identified, all have in place mitigation plans and only two of the risks are identified as high.

The first, is the risk of failing to achieve an acute length of stay of 11 days. It is expected, based on clinical evidence nationally and locally, that the introduction of bedded rehabilitation, ESD and Community Stroke Rehabilitation across all geographical areas will achieve this reduction in the acute length of stay.

The second, is the risk that the realignment of use of the beds no longer required for stroke as part of the proposed model, will result in a reduction in provider income for those beds. A period of transitional activity and associated cost has been agreed to mitigate the potential impact should this risk materialise.

1.7.4 Conclusions

The financial analysis indicates that the CCGs would be required to invest £3.1m in the proposed model of care, to fund the delivery of the community elements of the pathway.

Some modest financial savings will accrue to the CCGs as a result of the new model: £0.7m from a combination of the impact of improved anticoagulation therapy for AF and reduction in long term NHS funded packages of care through the improved rehabilitation offer.

This is considered an appropriate investment to make to remove the current system inequality, increase the quality of services, improve outcomes and access, addressing the key issues outlined above.

After the consultation process, and as part of mobilisation, further work will be undertaken on the timing of the required investments.

1.8 Implementation

Implementation will be overseen by the formation of an Implementation Board, chaired by a Chief Executive of one of the provider organisations (to be nominated), with membership comprising at least one Executive from each of the provider and commissioner organisations. The Implementation Board will have responsibility and accountability for signing off progression through the implementation gateways defined.

It is proposed that the already established Stroke Clinical and Operations Group will reconfigure to become the Implementation Team, with day to day responsibility and accountability for managing the delivery of the new networked clinical model.

1.8.1 Timescales

Implementing the proposed new clinical model represents a significant change to current services and as such will be a complex process.

We are currently in the early stages of implementation planning as the focus to date has been on comprehensively engaging with all key stakeholders to design the most appropriate service delivery model.

Acknowledging that greater detail will be provided during and following consultation, the present outline implementation timeline is provided overleaf. A high-level project plan Gantt chart illustrating the key tasks and project gateway decision points that will be used by the Implementation Board to determine whether implementation can progress has been developed.

Business Case	
Business case complete	June 2019
NHS England Assurance process commences	June 2019
Consultation period	October 2019 –January 2020
Governing Bodies consider consultation results and decision made (BC updated with consultation outcomes)	January 2020 - February 2020
Contract signed	March 2020
Proposed Mobilisation and Implementation should pathway be agreed	
Community pathway mobilisation/ implementation	
Recruitment commences to ESD and CSR posts	March 2020
Mobilisation of ESD and CSR	May 2020
ESD and CSR fully implemented	Jan 2021
Acute pathway mobilisation/ implementation	
Recruitment commences to acute posts	March 2020
Adequate acute staffing in post. Go/No Go gateway decision	Jan 2021
UHCW: additional HASU/ASU beds implemented	April 2021
SWFT: ASU beds closed / SWFT CSRB implemented	
GEH: ASU beds closed / GEH CSRB implemented	
Complete pathway implemented	April 2021

A significant amount of work has been undertaken with regard to the future workforce requirements, identifying a proposed future workforce model and the potential actions required to implement such a model. This work is described in sections 6.2 and 8.1.4.

1.8.2 Risks

This is a complex service reconfiguration and as such work has already taken place to identify the potential risks to delivery of the proposed new clinical model and to develop appropriate mitigation plans. The key risks include, workforce planning, capacity planning and maintaining affordability given these two risks. Full details of the risk analysis and mitigation plans are described in detail in section 8.1.5

2.0 BACKGROUND AND CONTEXT

This document describes how stroke services are currently provided across Coventry and Warwickshire, sets out the issues with the current services and our proposal for change.

Just over 1,200 people a year in Coventry and Warwickshire have a stroke and are taken to one of our three local hospitals. In 2016/17 there were over 15,000 stroke survivors on local GPs stroke registers and over 320 people were diagnosed with a Transient Ischaemic Attack (TIA). Current stroke services in Coventry and Warwickshire have improved over time and are providing a good standard of care but, they are not meeting the latest national and regional guidance and evidence.

Comparisons of the performance and outcomes of current stroke services across Coventry and Warwickshire with best practice standards and the achievements of other health systems in England, show we can achieve better health outcomes for patients, more effective and efficient services. The range of services currently available to our patients also varies considerably based on where people live.

The Coventry and Warwickshire Sustainability & Transformation Plan (STP) defines the re-configuration of stroke services as outlined in this Business Case as a key priority as part of its Emergency and Urgent Care Workstream. It is important to note that each of the leaders within the STP has agreed that the model outlined in this business case is the right one and should be implemented.

As system leaders it is our role to present the community with a clear service pathway that is easy to navigate. This will require us to make changes to the structure of existing services; enhancing some and reducing or stopping others when they are no longer appropriate. We believe that through delivery of this business case we will create services that contribute to a more effective health and social care system.

We begin by outlining the current way in which stroke services are delivered.

2.1 Current services

The current services in Coventry and Warwickshire for patients who suffer a stroke or have a Transient Ischemic Attack (TIA) are described in the table below. These services are provided locally by three acute hospital trusts: University Hospitals Coventry & Warwickshire NHS Trust (UHCW), South Warwickshire NHS Foundation Trust (SWFT), George Eliot Hospital NHS Trust (GEH) and a local provider of community physical and mental health services, Coventry and Warwickshire Partnership NHS Trust (CWPT).

Providers of Stroke, TIA & Related Services

Provider	Stroke / TIA Services
University Hospitals Coventry & Warwickshire NHS Trust (UHCW) – covering Coventry, Rugby and parts of Warwickshire	<ul style="list-style-type: none">• Hyper Acute Stroke Unit (6 beds);• Acute Stroke Unit (30 beds);• Only site that undertakes thrombolysis;• Inpatient Stroke Rehabilitation Beds (6 beds in Rugby);• TIA Service (7-day Consultant-led service);• Carotid imaging available;• Only site to undertake carotid endarterectomies.

Provider	Stroke / TIA Services
South Warwickshire NHS Foundation Trust (SWFT) – covering south Warwickshire population for acute care and Warwickshire population for general community services	<ul style="list-style-type: none"> • Acute Stroke Unit (12 beds); • TIA (5-day service); • Carotid imaging available; • Stroke patients requiring thrombolysis treated at UHCW; temporary transfer of high risk TIA patients (in place from January 2016); • Inpatient Stroke Rehabilitation Beds (20 beds in Leamington Spa); • Stroke Outreach team; • ESD service for Rugby residents.
George Eliot Hospital NHS Trust (GEH) – covering north Warwickshire, south west Leicestershire and parts of north Coventry	<ul style="list-style-type: none"> • Acute Stroke Unit (18 + 1 assessment bed); • TIA (7-day nurse-led service); • Patients requiring thrombolysis, or carotid endarterectomies transferred to UHCW; • carotid imaging, 2 sessions a week at GEH otherwise UHCW; • Stroke Outreach team.
Coventry and Warwickshire Partnership NHS Trust (CWPT) – covering Coventry for Community and Mental Health services (and Warwickshire for Mental Health)	<ul style="list-style-type: none"> • Community Stroke Rehabilitation and ESD service for Coventry residents.

2.2 Hyper Acute Stroke Unit

A hyper acute stroke unit (HASU) offers 24-hour, 7 day cover with rapid assessment for patients on arrival to an Emergency Department. This includes rapid access to imaging and thrombolysis as appropriate and wider access to other specialist skills and diagnostics.

At UHCW, a single 6-bedded HASU has been in operation since 2008 providing a Consultant-led service, with immediate on-site access to vascular and cardiac imaging, radiology and neuro-interventional and neuro-radiology imaging.

The HASU sees all Coventry and Rugby patients who are suspected of having a stroke and all patients from north and south Warwickshire for whom an ambulance has been called and they are assessed by a paramedic to be FAST-positive, within approximately 4 hours of the onset of symptoms.

However, not all Coventry and Warwickshire patients suspected of having had a stroke are immediately taken or directed to the HASU. Therefore, not all patients have an immediate specialist assessment, where they will also have access to the full range of specialist skills and diagnostics.

There is a cohort of patients from north and south Warwickshire who are either:

- Taken to, directed to or self-present at their local general hospital; or
- Assessed by a paramedic to be FAST-positive after 4-6 hours of onset of symptoms and then taken to their local general hospital Emergency Department i.e. GEH or SWFT.

Patients who are taken to UHCW are seen by the Stroke Consultant-led Team for a multi-disciplinary assessment to determine likely diagnosis. If a stroke is confirmed, the patient is admitted to the HASU, as well as being assessed for their suitability for thrombolysis and their ongoing care needs.

After the hyper acute element of care at UHCW:

- Patients are discharged home if medically appropriate;
- Where further acute care is needed, Coventry and Rugby patients are transferred to the Acute Stroke Unit (ASU) at UHCW;
- Patients from south and north Warwickshire needing further acute care are repatriated to the local ASUs at SWFT or GEH respectively, within 72 hours if possible and subject to bed availability. If there is no ASU bed available, they are admitted to the UHCW ASU until a local bed becomes available.

2.3 Local Acute Stroke Units

All three local acute providers deliver Consultant-led Acute Stroke Care on a 24 hour, 7 day basis and have brain imaging available on all sites. Their bed allocation is as follows:

Number of Acute Stroke & Related Beds

Provider	ASU	Assessment	Total Beds
UHCW	30	0	30
GEH	18	1	19
SWFT	12	0	12
Total			61

2.4 Rehabilitation, Outreach and Early Supported Discharge

There is considerable variation in the range of stroke specialist rehabilitation services that are available across Coventry and Warwickshire.

The table below details the current service availability for CCG resident populations:

Rehabilitation service	Coventry & Rugby CCG	South Warwickshire CCG	Warwickshire North CCG
Inpatient rehabilitation	6 beds at the Hospital of St Cross for patients from Rugby aged 65 years and over	20 beds in Leamington Spa	No specifically designated beds
ESD	Available to all patients	Not available	Not available
Community rehabilitation	Community Stroke rehabilitation services for Coventry residents provided by CWPT. Community general rehabilitation services for Rugby residents provided by SWFT	Stroke Outreach therapy service provided by SWFT	Stroke Outreach therapy service provided by GEH. Community general rehabilitation services provided by SWFT

2.5 TIAs

For patients experiencing a TIA, carotid imaging is available on site at UHCW and SWFT and for two sessions each week at GEH. Patients presenting at GEH who require carotid imaging when carotid imaging is not available, are transferred to UHCW. All patients from across Coventry and Warwickshire requiring a carotid endarterectomy undergo their surgery at UHCW.

Both UHCW and GEH provide onsite TIA clinics on a daily basis, 365 days a year. UHCW's clinics are Consultant-led, whilst GEH clinics are nurse-delivered with Consultant leadership. Since January 2016, all high-risk patients in the south Warwickshire region, who previously would have been treated at SWFT, are now treated at UHCW.

2.6 Conclusion

Stroke is the fourth commonest cause of death in the UK each year. In Coventry and Warwickshire just over 1,200 people each year experience a stroke.

Current stroke services in Coventry and Warwickshire have improved over time and are providing a good standard of care but, they are not meeting the latest national and regional guidance and evidence.

It is clear from the analysis of current service provision that there is considerable unwarranted variation and inequity in the range of service provision for patients across each CCG footprint in Coventry and Warwickshire. For example, access differs to inpatient rehabilitation beds, specialist community rehabilitation and ESD.

3.0 THE CASE FOR CHANGE

There is strong and growing evidence, that prompt specialist assessment and treatment significantly improve a person's chance of surviving with the least complications and disabilities following a stroke. The evidence shows that patients are 25% more likely to survive or recover from a stroke if treated in a specialist centre. Patients need fast access to high quality scanning facilities and some need fast thrombolytic treatment. Being within 30 minutes (by ambulance) from a hyper-acute unit will permit a more expert assessment, quicker treatment and far higher chances of a full rehabilitation. The most recent clinical guidelines from the RCP Stroke Working Party in 2016, state that 'patients with acute stroke should be admitted directly to a hyper-acute unit....'.

There are several issues with the current service provision in Coventry and Warwickshire. To investigate the current state of Stroke and TIA services we have undertaken reviews of our service provision, performance and outcomes. We have also reviewed and identified best practice to understand how local services compare and can be improved. This work has been undertaken by a Clinical Review Group comprising of local medical leads and a Clinical and Operations Group comprising of local clinical and operational leaders, supported by external clinical review and challenge from the National Clinical Director for Stroke and the West Midlands Cardiovascular Network. Their work is summarised through this section, the outputs of which have told us that a number of key improvements are needed. We have used these insights to develop our proposed future clinical model and priorities for action.

3.1 NHS Midlands and East Stroke Services Specification

The Midlands and East Stroke Services Specification (Appendix 1) was developed by NHS Midlands and East in October 2012 and updated in 2015. The specification was developed by an External Expert Advisory Group in consultation with stakeholders, including Stroke Networks, clinical staff working in the field, commissioners, patients and carers who have experienced NHS services. It built on clinical best practice to describe the standards commissioners should adopt, setting out the criteria that pathways need to meet to deliver high quality care and outcomes.

The specification states that a "whole pathway approach" to the provision of stroke services is crucial to maximising clinical outcomes for patients, to achieve the resultant quality of life and improve their experience of stroke services. In particular, the first 72 hours of care is vital. The specification defines components of the pathway with recommended timescales for each phase.

The three CCGs that cover Coventry and Warwickshire need to commission stroke services in line with the Midlands and East Stroke Services Specification. However, the current Stroke and TIA service provision across Coventry and Warwickshire does not meet the requirements of this specification. In particular, not all patients suffering a stroke receive appropriate hyper acute care within the first 72 hours and there is a lack of comprehensive access to ESD services and specialist community stroke rehabilitation.

3.2 Primary Prevention

There is inadequate provision in primary prevention of stroke in Coventry and Warwickshire. Local data suggests patients with atrial fibrillation are going unidentified and improvements can be made to better manage atrial fibrillation, hypertension and diabetes locally.

The clinical evidence shows that:

- Reducing blood pressure in all adults with diagnosed and undiagnosed hypertension by 5 mmHg reduces risk of cardiovascular disease (CVD) events by 10%
- Statin therapy to reduce cholesterol by 1 mmol in people with a 10 year risk of CVD risk greater than 10% reduces the risk of CVD events by 20-24%
- Anti-coagulation of high risk AF patients averts one stroke in every 25 treated

NHS Commissioning for Value and Public Health England analysis identified that there are significant opportunities in Coventry and Warwickshire to prevent the occurrence of strokes through ensuring that Atrial Fibrillation is identified (to the right prevalence rate), anticoagulation treatment is optimised and patients at high risk of having a stroke are managed appropriately (see data below).

The Size of the Prize in Cardiovascular Disease Prevention – Coventry and Warwickshire

1. The diagnosis and treatment gap, 2015/16		2. The burden: first ever CVD events, 2015/16			
 Hypertension	Estimated adult population with hypertension	230,500	Coronary Heart Disease	1,650	
	Estimated adult population with undiagnosed hypertension	92,800	Stroke	1,000	
	GP registered hypertensives not treated to 150/90 mmHg target	25,700	Heart Failure	900	
 Atrial Fibrillation (AF)	GP registered population with Atrial Fibrillation (AF)	15,900	3. The opportunity: potential events averted and savings over 3 years by optimising treatment in AF and hypertension, 2015/16		
	Estimated GP registered population with undiagnosed AF	8,000			
	GP registered high risk AF patients (CHA2DS2VASc >=2) not anticoagulated	3,200			
 CVD risk	Estimated adult population 30 to 85 years with 10 year CVD risk >20%	63,500	Optimal anti-hypertensive treatment of diagnosed hypertensives averts within 3 years:	150 heart attacks 230 strokes	Up to £1.10 million saved ² Up to £3.40 million saved ¹
	Estimated percentage of people with CVD risk ≥20% treated with statins	49%	Optimally treating high risk AF patients averts within 3 years:	260 strokes	Up to £4.60 million saved ¹

3.3 Access

There is significant inequality of access to HASU/ASU beds and rehabilitation services for Coventry and Warwickshire patients.

3.3.1 HASU / ASU beds

Not all patients suspected of having had a stroke from across Coventry and Warwickshire are immediately taken or directed to the HASU for an immediate specialist assessment, where they will have access to the full range of specialist skills and diagnostics. All Coventry and

Rugby patients suspected of having had a stroke are treated in the HASU, whilst patients from the rest of Warwickshire will only be taken to the HASU if they are assessed by a paramedic to be FAST-positive within 4 hours of the onset of symptoms.

There remains a cohort of patients from north and south Warwickshire who are either:

- Taken to, directed to or self-present at their local general hospital; or
- Assessed by a paramedic to be FAST-positive after 5 hours of onset of symptoms and are then taken to their local general hospital Emergency Department i.e. GEH or SWFT. Once at their local general hospital, if they are assessed to be in the hyper acute phase of a stroke and will benefit from thrombolysis, they will be transferred to UHCW as an emergency patient. Otherwise, once confirmed as a stroke patient, their care will remain at their ASU.

Thrombolysis is only delivered from one site as Coventry and Warwickshire only has sufficient numbers of patients having a stroke for one unit to operate safely. UHCW has the required staff and infrastructure to deliver this.

3.3.2 Rehabilitation

Access to rehabilitation services is inequitable.

- Stroke inpatient rehabilitation beds are currently only available to south Warwickshire patients and a small cohort of patients from Coventry and Rugby.
- ESD services are only available to Coventry patients.
- Community stroke rehabilitative services are available to residents of Coventry and Rugby, with Outreach teams providing more limited post-hospital support to patients in north and south Warwickshire.

3.4 Performance and Outcomes

The Sentinel Stroke National Audit Programme (SSNAP) measures stroke service performance against a range of key areas critical to delivering optimal outcomes for patients. The results for the period October 2018 to December 2018 (Appendix 2) show that Coventry and Warwickshire services need to improve. The most significant issues arising from the SSNAP audits in support of a case for improvement are the:

- proportion of patients scanned within 1 hour – two of the local units are more than 20% below the national average of 52.4%;
- median time taken for patients to be scanned – across the system it varies from 26 minutes to just over 1 hour and 52 minutes for patients to be scanned, against a national average of just under an hour;
- time taken for patients to be admitted to a Stroke Unit – whilst the national average time for patients to be admitted to a Stroke Unit is just over 3.5 hours, it takes between 3 hours 20 mins and over 11 hours for patients in Coventry and Warwickshire; and
- proportion of patients assessed by a Stroke Specialist Consultant Physician within 24 hours - two of the three acute providers are significantly below the national average.

The most recent results against these four metrics can be found in the table below:

Key SNNAP Metrics - October 2018 to December 2018

Domain Metric	Time Period	England Average	GEH	SWFT	UHCW
Proportion of patients scanned within 1 hour of clock start ¹	Oct 2018 – Dec 2018	54.5%	31.9%	34.1%	67.4%
Median time between clock start and scan	Oct 2018 – Dec 2018	0h 52m	1h 40m	1h 52m	0h 26m
Median time between clock start and arrival on Stroke Unit	Oct 2018 – Dec 2018	3h 37m	11h 34m	3h 58m	3h 20m
Proportion of patients assessed by a Stroke Specialist Consultant Physician within 24hours	Oct 2018 – Dec 2018	84.4%	88.4%	63.6%	75.2%

3.5 Length of Stay

The Clinical Review Group completed two separate point prevalence audits in October and December 2014, to ascertain the appropriateness of patients in acute hospital beds at the time of the audits. These audits found that of the 93 beds available across Coventry and Warwickshire, all were occupied in the first audit, with 77% (72 beds) occupied in the second audit.

The audit was repeated by the clinicians in 2017, to test whether these findings were still relevant, the results confirmed the findings remain relevant.

The audits identified a number of patients who were in acute stroke inpatient beds that could have been benefitting from rehabilitation support outside hospital, had those services been available. These included patients that could have been:

- discharged with support from either a standard or enhanced ESD service
- discharged to a residential or nursing care home
- discharged with a package of care including further community stroke rehabilitative care, or
- receiving onward support in a specialist stroke rehabilitation unit, this latter being the largest cohort of the patients.

Analysis of current activity data still supports these conclusions. Average lengths of hospital stay for patients that have experienced a stroke vary between 17 and 25 days (average length of stay for the system is 18 days). This is significantly longer than the length of stay in areas where they have optimised the configuration of services such as London, who achieve an average length of stay of 11 days.

¹ The term 'Clock Start' is used throughout SNNAP reporting to refer to the date and time of arrival at first hospital for newly arrived patients, or to the date and time of symptom onset if patient already in hospital at the time of their stroke. <https://www.strokeaudit.org/results/Clinical-audit/Regional-Results.aspx>

3.6 Best Practice Standards of Care

3.6.1 HASU / ASU beds

Whilst there have been improvements made in stroke care locally, there remains inequity of access to services for patients suspected of having had a stroke. In particular there is inequity of access to both hyper acute stroke care (for those outside of the 4 hour window) and adequate rehabilitation services, to meet the national best practice care standards.

The latest published NHS Atlas of Variation data (published in September 2015 using 2013/14 data) showed the number of patients in Coventry and Warwickshire directly admitted to an acute stroke unit within 4 hours of onset of a stroke was amongst the lowest in the country.

Extract from Map 40, NHS Atlas of Variation

<i>Percentage of people with acute stroke who were directly admitted to a stroke unit within four hours of arrival at hospital by CCG, 2013/14</i>			
CCG Name	Rate	95% Lower Limit	95% Upper Limit
NHS Coventry and Rugby	43.00	38.20	47.94
NHS Warwickshire North	38.10	32.32	44.23
NHS South Warwickshire	34.20	29.64	39.06

This data highlights local variance from best practice standards and national performance in accessing the right care at the right time to help improve patients' chances of survival, optimising their independence and in minimising the level of disability resulting from a stroke.

3.6.2 Rehabilitation

As has been highlighted above, there is considerable unwarranted variation in the range of stroke rehabilitation services provided across Coventry and Warwickshire. In the north of Warwickshire and in Rugby, there is limited or no access to local stroke specialist rehabilitative care and there are varying levels of rehabilitative care in hospitals. This results in significant inequity in service provision for our population.

3.7 Findings from Local Stroke Review

A significant work programme was undertaken by the Clinical Review Group (CRG), which was led by the nominated lead clinical representative for all three CCGs, with the clinical leads of stroke and rehabilitative care for all local providers involved.

This work included a review of local stroke services, which concluded that:

- **HASU:** Not all patients with a suspected stroke are being seen in a specialist hyper acute stroke unit and therefore some may be missing the opportunity provided by a hyper acute assessment and/or unit;
- **Service configuration:** Local services are not configured in the best way to achieve the improved standards that other best practice areas have achieved, as demonstrated in the NHS Atlas of Variation;

- **Workforce:** There are insufficient Stroke Specialist Consultants to operate an improved stroke service as currently configured and a national shortage of Stroke Specialist Consultants;
- **Equity of service provision:** There is a need to address the inequity of access to services, particularly stroke specialist rehabilitation;
- **Length of Stay:** Due to a lack of specialist stroke ESD and community stroke rehabilitation services, patients are currently staying longer in the available acute hospital stroke beds than is ideal; and
- **Community services:** Many patients are currently in stroke acute hospital beds whilst they are waiting for other community-based services, such as care packages.

Appendix 3 contains the complete review document.

3.8 Workforce Challenges

A workforce review undertaken by the Clinical and Operational Group has identified existing gaps and a high probability of long-term workforce challenges and constraints, which make continuing with the current configuration of services a risk. There is a particular issue with respect to the Stroke Specialist Consultant workforce where there is an acknowledged national shortage of Stroke Consultants. The BASP 2011 report Meeting the Future Challenge of Stroke indicated a deficit of circa 163 posts.

At the outset of this work, there were only four permanent Stroke Specialist Consultants working across the three acute providers and recruitment to vacant posts has been challenging for all providers. Five years later this remains the case. To respond to this challenge, the Clinical Review Group signed up to developing a new, networked clinical workforce model as part of the future service model to ensure sufficient medical cover across all three acute sites.

There is also a potential challenge relating to stroke nurse staffing as there may be a change in nursing skills mix required, with an increase in the ratio of qualified nursing staff needed and a decrease in the numbers of unqualified nursing staff.

Optimising the limited specialist workforce across the area will improve recruitment, retention, education and training and help to mitigate the workforce sustainability risk.

3.9 Benefits

The key benefits being sought from these proposals mostly relate to access to services and clinical outcomes. A Benefits Realisation Plan has been developed (Appendix 4) identifying the key indicators that will be measured to monitor the improvements resulting from the new pathway.

At a summary level, these are:

- More timely access to stroke-related services, including a specialist assessment at the outset of a stroke;

- Improved mortality rates overall;
- Reduced level of long-term disability;
- Increased number of patients admitted to a centralised Stroke Unit within 4 hours;
- Increased number of patients given a brain scan in a timely manner;
- The financial cost of the new proposals assumes financial savings resulting from reducing the incidence of strokes as a result of better prevention (i.e. improved diagnosis and treatment of AF) and from reductions in long term care costs as a result of the increased access to better rehabilitation services and access to the HASU for all. Whilst it can be assumed that there is likely to be financial savings resulting from reduced social care requirements (as a result of improved health outcomes/reduced disability following the onset of stroke) these benefits have not been included or quantified within either the benefits or financial analysis.

3.10 Conclusion

The comprehensive review of local services has identified a range of significant issues with current service performance, access and outcomes against expected best practice and published guidance. Significant scope for improving the quality of services and delivering consequent benefits in patient outcomes and experience has been identified across the stroke pathway, from prevention to acute care.

Given this range of access, quality and significant workforce issues, work is clearly required to improve local stroke care across Coventry and Warwickshire so that more patients can survive their stroke and achieve their optimum level of recovery.

4.0 SUPPORTING EVIDENCE AND BEST PRACTICE

This section further explains the work that has been done to ensure that we are proposing the best possible clinical model for Coventry and Warwickshire.

We believe that the new service model proposed in this Business Case is the best possible clinical model for stroke services in Coventry and Warwickshire for the following reasons:

- It has been designed taking into account the NHS Midlands and East Stroke Services Specification and the latest available clinical best practice evidence;
- It ensures equity of access to services across Coventry and Warwickshire;
- It fits with local and national strategy;
- It has been tested through a range of quality assurance processes that have been undertaken and
- The range of engagement activities that have been undertaken have in general agreed that it is the best option, with some concerns from the public about travel for carers and relatives.

4.1 The Midlands and East Stroke Services Specification

In 2011, following the benefits realised by the London Stroke Model, the then NHS Midlands and East Strategic Health Authority (SHA) set out its ambitions for regional improvements in Stroke and TIA healthcare, underpinned by a vision to provide fast access to the best standards of service possible.

This resulted in the Midlands and East SHA commencing a review of stroke services in 2012, to help drive an improvement in the way that patients have access to high quality stroke, TIA and rehabilitation services. The underpinning aim of this was to deliver:

- Centralisation of Stroke Units;
- Reduced unwarranted variations in clinical outcomes and services and
- Services based on evidence and best practice.

In response to the latter, the NHS Midlands and East developed the Stroke Services Specification, which used a comprehensive and current evidence base to agree best practice. The NHS Midlands and East Stroke Services Specification evidence base includes:

- National Stroke Strategy (2007) Department of Health;
- National Clinical Guidelines for Stroke (2016) Royal College of Physicians;
- Quality Standards Programme: Stroke (2010) National Institute for Clinical Excellence;
- Stroke Service Standards (2010) British Association of Stroke Physicians Quality and Outcomes Framework for 2012/13 (2011) NHS Employers;
- The NHS Outcomes Framework 2012/13 (2011) Department of Health;
- A Public Health Outcomes Framework for England 2013-2016 (2012) Department of Health;

- The 2012/13 Adult Social Care Outcomes Framework (2012) Department of Health and
- Supporting Life after stroke (2011) Care Quality Commission.

The specification identified 7 phases of the stroke care pathway, as follows:



The specification defines components of the pathway with recommended timescales for each phase, as follows:

Regional Specification Pathway and Lengths of Stay

0 – 72 hours	3 – 7 days	7 – 20 days	20 + days
1. Hyper-Acute Care Specialist stroke assessment Brain scan Thrombolysis as appropriate HASU bed	2. Acute Care ASU bed All therapy assessments & treatment with 72 hours Rehab goals established within 5 days Active therapy (45mins, 5 days a week)	4. Community Bedded Stroke Rehabilitation Specialist stroke rehabilitation Bed-based provision for up to 6 weeks Medically stable Active therapy (45mins, 5 days a week) Will be discharged home or into placement	
	3. Early Supported Discharge Specialist multi-disciplinary stroke rehabilitation for up to 6 weeks Home-based delivery Active therapy (45mins, 5 days a week) “Standard” ESD delivery		
	5. Community Stroke Rehabilitation Specialist multi-disciplinary stroke rehabilitation with regular review of goals and rehabilitation needs Community provision		
		6. Long term Care Nursing / residential care	

The proposed future clinical model for Coventry and Warwickshire has been developed with the Midlands and East Stroke Services Specification at the forefront of thinking. In particular:

- All patients suffering from a stroke will receive appropriate hyper acute care within the first 72 hours,
- There will be comprehensive access to ESD services and specialist community stroke rehab, and
- There will be greater focus on primary prevention in the form of improvements in identifying atrial fibrillation and using anticoagulation to reduce the risk of stroke.

4.2 Equity of access

Achieving the best outcomes for patients experiencing a stroke requires access to the full range of specialist stroke rehabilitation services for the whole population. Equity of access is therefore a core requirement for high quality stroke services, with access to services being based on patients' needs and not their home address.

Under the new model, all patients across Coventry and Warwickshire will be seen more promptly and in the right place by specialist skilled professionals, where they will receive the highest quality care.

There will be no inequality of access to the appropriate specialist care. Centralisation of acute care and standardised bedded rehabilitation will ensure a body of suitably qualified and experienced staff is available to see and treat all patients. The home-based rehabilitation will provide an extra 620 packages of care and the anticoagulation therapy will prevent 230 strokes over three years.

A consistent stroke service will be in place across all of Coventry and Warwickshire, removing the current inequity of access to services. This applies to all elements of the pathway, including HASU and ASU beds and stroke specialist rehabilitation services.

4.3 Clinical best practice evidence

The Midlands and East Stroke Service Specification is based on a comprehensive evidence base and agreed best practice. However, given the time that has elapsed since its publication, in developing the future clinical model and pathway for Coventry and Warwickshire, we have also observed best practice in other organisations/health systems.

London Stroke Model

Evidence is clear that centralising acute stroke treatment at a much smaller number of hospitals has considerable benefits. The London Stroke Model was implemented in July 2010 and in their November 2010 stroke newsletter from the stroke clinical director Dr Tony Rudd, the London Cardiac and Stroke Networks reported that:

- The average length of stay for Stroke patients decreased from 15 days in 2009/10 to 11.5 days year-to-date at August 2010;
- The 2010 National Sentinel Stroke Audit evidenced that 84% of London patients were spending 90% of their time on a dedicated stroke unit against a national average of 68% for periods Q1 2009/10 – Q1 2010/11; and
- The 2010 National Sentinel Stroke Audit evidenced that 85% of high-risk TIA patients were being treated within 24 hours, against a national average of 56% for periods Q1 2009/10 – Q1 2010/11.

The reconfiguration has been shown to have delivered an absolute reduction in mortality of 3% and enabled an additional 6% of people to achieve independent life at home after a stroke. More than 95 extra lives are saved every year in London alone as a result of concentrating specialist stroke care in eight HASUs.

The London HASU model, which operates 24 hours a day, seven days a week, avoids £5.2 million each year.

National Institute for Health Research Published Evaluation Findings

On 28 May 2019, the National Institute for Health Research published “Evaluation of reconfigurations of acute stroke services in different regions of England and lessons for implementation: a mixed-methods study” . Earlier NIHR evidence published in 2014 showed that the London model appears to perform better on key indicators such as mortality. This study adds to the earlier published evaluations by evaluating the longer-term results of the London model as well as the subsequent reconfiguration of Manchester services.

The 2019 evaluation was a mixed-methods study comparing the effectiveness of the different models of stroke service centralisation implemented in London, Manchester and the Midlands and East region with the rest of England. The paper concludes that:

- Centralised service models where all stroke patients are eligible for treatment in a hyperacute stroke unit seem to perform better than those with more selective admission criteria. If all patients went to a specialist unit for stroke, there were fewer deaths than if some patients went to units that were not specialist.
- Centralising stroke services led to fewer patient deaths, less time spent in hospital, provision of better care and overall good patient experiences and value for money.
- This should guide other urban regions looking to reconfigure their stroke care so that the changes can be made as effectively as possible.

Other models

Members of the Clinical Review Group made contact with and/or visited a number of other stroke units in the country, which had been identified as demonstrating clinical best practice, or were in areas of similar demographics to Coventry and Warwickshire. These included the following services and key findings:

Nottingham stroke service

- There are two general hospitals, Nottingham City Hospital (NCH) and Kings Mills Hospital (KMH), which treat 2500 strokes per year, including 600 mimics;
- There are 16 HASU beds at NCH and four at KMH with an average length of stay of 2 days;
- There are 20 ASU beds at NCH and 16 at KMH with an average length of stay of 7 days;
- There is standard ESD capacity for c.30 patients in the south (NCH area) and a community Stroke team. ESD for the KMH team is unknown; and
- There are 40 rehab ward beds at NCH, of which 21 are for standard rehab and for which there is daily consultant input. The other 19 beds are for complex slower rehab with twice a week input from consultants, due to aiming for more therapist led care. There are 20 rehab beds at KMH.

Stoke stroke service

- There is a Hub and Spoke model for the city and county. There is 1 HASU and 1 ASU at University Hospitals of North Midlands (UHNM), 1 ASU at Stafford Hospital, 1 ASU at Macclesfield Hospital and 1 ASU at Leighton/Crewe. 1,200 patients are treated per year;
- There are six HASU beds at UHNM;
- There are 26 ASU beds at UHNM, 10 at Stafford Hospital, 12 at Macclesfield Hospital and 10 beds at Leyton/Crewe. This is a total of 58 ASU beds and the average length of stay across HASU and ASU is 5-7 days.

North Essex ESD service

- The service is spread over four sites and is led by a stroke service lead that actively in-reaches every morning to the stroke ward to identify ESD candidates. The stroke co-ordinator then meets with the patient on the ward, introduces the service and arranges an initial visit for within 24 hours of discharge;
- On average 75% of acute strokes are discharged through the ESD service (349 patients in 2013-14);
- Approximately 50% of patients are referred for further rehabilitation with the community stroke team; and
- The ESD team has access to a community stroke team for longer-term rehabilitation and refers 50% of patients.

The capacity proposed for Coventry and Warwickshire, for each aspect of Stroke and TIA service provision is broadly in line with that expected from the results of the primary research into stroke services at other best practice regions with similar demographics. These included the Nottingham, Stoke and North Essex services outlined above.

Coventry ESD and Community Stroke Rehabilitation Pilot

There is clear evidence nationally that an ESD service can reduce length of stay in hospital. The experience in Coventry from the development of an ESD service has supported this.

In Coventry in December 2014 a pilot ESD service was established to support the discharge of appropriate patients over the winter period. Analysis of the impact of the service was undertaken, including consideration of the numbers of individuals who were supported to leave the Stroke Unit; the level of ESD support offered and what impact this had on the length of stay on the Stroke Unit.

In the first 3 months of the ESD provision, the provider was able to evidence a reduction in the average length of stay by 9 days compared to the same time period in the previous year. However, this also included facilitating an earlier discharge of 12 patients from the Stroke Unit who were suffering from other neurological conditions or having had a recent TIA, as part of the team's approach to free up capacity on the Stroke Unit.

As a result of the positive outcomes of the pilot, the service was substantively commissioned for Coventry in September 2015. The service model in place in Coventry is a standard ESD service, matching the model proposed for the whole of Coventry and Warwickshire in this Business Case. The clinical performance and results of this service therefore offer strong evidence supporting the success of the proposed model.

The length of stay for Coventry patients has reduced overall on average by 11 days. Analysis of the percentage of patients suitable for ESD from SSNAP has shown that on average 53% of patients were found to be suitable over the last year. The results are shown below:

- Dec – Mar 2017 = 62.8%
- Apr – Jul 2017 = 61.9%
- Aug – Nov 2017 = 47.5%
- Dec – March 2018 = 42%

The numbers of patients during the last two financial years who have been discharged out of hospital supported by the Coventry ESD service are as follows:

- Apr 2016 - Mar 2017 = 281
- Apr 2017 – Mar 2018 = 274
- Apr 2018 – Mar 2019 = 267

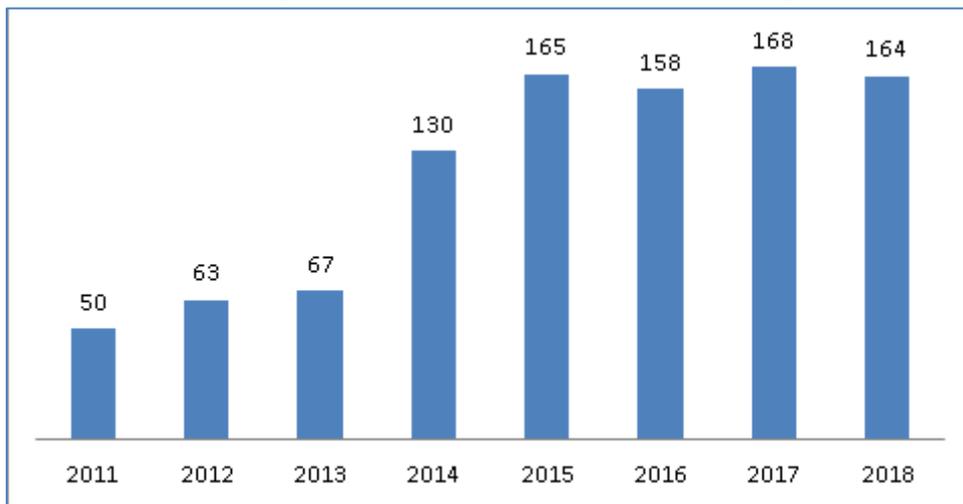
The existing Coventry Community Stroke Therapy Team (CST) provides community stroke rehabilitation support to ESD patients needing ongoing therapy beyond the 6 weeks of ESD support (approximately 30% of all ESD patients) to enable them to achieve their potential and maximise gains and independence post stroke. The team also supports the 30% of stroke patients with moderate to severe stroke who are discharged from the HASU/ASU directly home. This team supports those with the highest levels of impairment and complexity; the majority of the patients will require 2 therapists for each and every therapy session.

The success of the ESD service is dependent on the existence of sustainable, high quality community stroke rehabilitation. Community stroke rehabilitation supports:

- Patient flow from ESD to enable response times within 24-48 hours and intensity of treatment for this cohort with the most potential for change to remove long term disability. The flow to community stroke rehabilitation enables ESD to sustain high quality, high intensity, timely discharges for those most likely to gain full, or near to full, recovery post stroke;
- Patient flow from bedded rehabilitation for those who have had a moderate to severe stroke and who are now medically stable and able to return to the community. Community stroke rehabilitation provides: interdisciplinary rehabilitation to support discharge from hospital and meet a person's maximal level of independence; carer and social care support for long term decisions regarding care and environment needs; goal setting based on participation in the community despite levels of disability, including consideration of return to work and meaningful roles for those affected by stroke.
- Access to and availability of beds in the HASU/ASU by maintaining the flow of patients through the system

The Coventry community stroke rehabilitation team sits alongside the ESD team as a sister service, facilitating timely handover from the ESD team to maintain patient flow into this early intervention team. The proposed model therefore includes plans to ensure equivalent provision across Coventry and Warwickshire. Existing service activity and outcomes have been used as the evidence base for our modelling.

The chart below shows the annual volumes of patients supported to leave hospital by the existing Coventry CST team. A significant step change in activity can be noted from the point at which in-reaching to hospital and the ESD service began in 2014.



The figures below show the CST service reported outcomes, taken from their latest Key Performance Indicator report (October to Dec 2018), which demonstrate on average:

- 8% reduction in disability (using the Modified Rankin Score²);
- Of the patients suitable for scoring there was on average a 25-point improvement per patient in increased functional independence on discharge from the service using FIM/FAM³ (Functional Independence Measure and Functional Assessment Measure).
- 10% improvement in independence in Activities of Daily Living (using the Modified Barthel Score⁴) and;
- 88% of patients achieved all of the agreed rehabilitation goals; a further 8% of patients partially achieved the agreed goals.

Atrial Fibrillation (AF)

There is evidence that optimally treating high risk AF patients has the potential to avert 230 strokes over three years in Coventry and Warwickshire ('The Size of the Prize on Cardiovascular Disease prevention', Public Health England and NHS England referenced in Section 3.2 above). This evidence indicates that there is significant clinical and financial benefit potentially from this kind of intervention.

² The Modified Rankin Score (mRS) is a **6 point** disability scale with possible scores ranging from **0 to 5**. A separate category of 6 is usually added for patients who expire. The Modified Rankin Score (mRS) is the most widely used outcome measure in stroke clinical trials

³ **FIM+FAM** is designed for measuring disability in the brain-injured population. FIM is an 18 item global measure of disability, FAM specifically addresses cognitive and psychosocial function, which are often the major limiting factors for outcome in brain injury.

⁴ The **Barthel scale** or **Barthel ADL index** is an ordinal **scale** used to **measure** performance in activities of daily living (ADL). Each performance item is rated on this **scale** with a given number of points assigned to each level or ranking

4.4 Local strategy

4.4.1 CCG Commissioning intentions and work priorities

Improving stroke care in the way proposed in this Business Case fits with the strategies of each of the CCGs in Coventry and Warwickshire as follows:

Coventry and Rugby CCG's Commissioning Intentions (2017 – 2019)

Coventry and Rugby CCG's Commissioning Intentions document for 2017/18 – 2018/19 sets out its seven key priorities. Stroke forms part of its Urgent & Emergency Care priority, with the CCG setting out its plan to work with partners to commission a single integrated stroke pathway that secures consistent specialist care, including rehabilitation.

South Warwickshire CCG's Strategic Plan (2016 – 2020)

South Warwickshire CCG's 2016 – 2020 Strategic Plan, translating our 2020 Vision into Reality, acknowledges that for some services where there is a strong relationship between the numbers of patients and the quality of care – including stroke – there is evidence to suggest improvements in outcomes and patient experience that are derived from having expertise, facilities and equipment in one place. As such, it sets out the vision to centralise stroke services to work towards the delivery of the NHS Midlands and East stroke pathway, given the evidence this will deliver better clinical outcomes.

Warwickshire North CCG's Vision for Quality Clinical Vision

One of the four clinical priority areas for the CCG comprises urgent and emergency care, including emergency general surgery, stroke services and cardiovascular disease. The CCG's plan for improved stroke care centres on:

- Improving identification of patients at risk of cardiovascular disease through primary and secondary care prevention and developing a pathway for heart failure, including cardiac rehabilitation services;
- Commissioning TIA services from a provider of specialist stroke care; and
- Commissioning additional stroke rehabilitation services in the local area.

4.4.2 Coventry & Warwickshire Sustainability & Transformation Plan

The Coventry and Warwickshire Sustainability & Transformation Plan (STP) defines the re-configuration of stroke services as outlined in this Business Case as a key priority as part of its Emergency and Urgent Care Workstream.

It is important to note that each of the leaders within the STP has agreed that the model outlined in this business case is the right one and should be implemented. The STP Board discussed and approved this Business Case at its meeting on 20 May 2019.

4.5 National strategy

Every year over 100,000 people in the UK have a stroke. Stroke is the leading cause of disability and fourth largest cause of death in the UK, with costs to the NHS and economy of circa £7 billion a year. Whilst there has been a gradual decline in mortality rates, due to public campaigns such as FAST, stroke remains the single largest cause of severe acquired disability,

driving the need for continued investment in delivering appropriate quality and timely services.

The National Stroke Strategy (2007) previously set out a clear direction for the development of stroke services in England over a 10-year period, with recommendations for the entirety of the patient pathway from prevention to end of life. The evidence-based strategy advocated provision of specialist stroke units, rapid access for TIA patients, immediate access to diagnostic scans and thrombolysis and early supported discharge.

The NHS England Five Year Forward View (2014) also advocated new models of care, including specialist care, citing examples of the centralisation of 32 stroke units in London to 8 units and the resulting reduction in mortality rates and lengths of stay in hospital.

The NHS Long Term Plan set out a series of ambitions for improving stroke care, with key milestones for improved post-hospital stroke rehabilitation models.

The National Stroke Programme, developed jointly by NHS England and the Stroke Association, seeks to support local organisations to deliver better prevention, treatment and care and meet the ambitions for stroke set out in the Long-Term Plan. The national programme aims to:

- Improve post-hospital stroke rehabilitation models for stroke survivors
- Deliver a ten-fold increase in the proportion of patients who receive a thrombectomy after stroke so that each year 1,600 more people will be independent after their stroke
- Train more hospital consultants to offer mechanical thrombectomy
- Deliver clot-busting thrombolysis to twice as many patients, ensuring 20% of stroke patients receive it by 2025 – the best performance in Europe
- Enhance the Sentinel Stroke National Audit Programme (SSNAP) to identify further need and drive improvements
- Ensure three times as many patients are receiving 6 month reviews of their recovery and needs – from 29% today to 90%

The Sentinel Stroke National Audit Programme (SSNAP) June 2017 recognised overall continued improvement in the management of strokes within acute stroke units and discharge, but there are still notable variances across the country:

- Some organisations are still not providing 24 hour hyper-acute stroke care;
- Nearly 10% of applicable patients do not receive swallow assessments within 72 hours of admission;
- In-hospital stroke patients tend to be identified and managed slowly
- Approximately one 5th of stroke admissions are not seen by a specialist stroke physician within 24 hours of admission;
- At least 50% of stroke patients will suffer from depression or cognitive impairments in the weeks following their stroke and will require psychological support.

The proposed new model set out in this Business Case aligns to the ambitions and commitments set out in the Long Term Plan and National Stroke Programme. It has been developed recognising the local variations from accepted clinical best practice set out within SSNAP and the national direction of travel. This includes the centralisation of HASU services.

The model also has the values, principles and pledges within the NHS Constitution at its core, ensuring that the population of Coventry and Warwickshire receive improved access, equity and quality of care to further improve the quality of their lives.

4.6 Conclusion

There is an established and increasing evidence base establishing best practice in stroke care. NHS England has set out key ambitions and commitments for the improvement of stroke services nationally, which are reflected in local commissioning strategies and priorities.

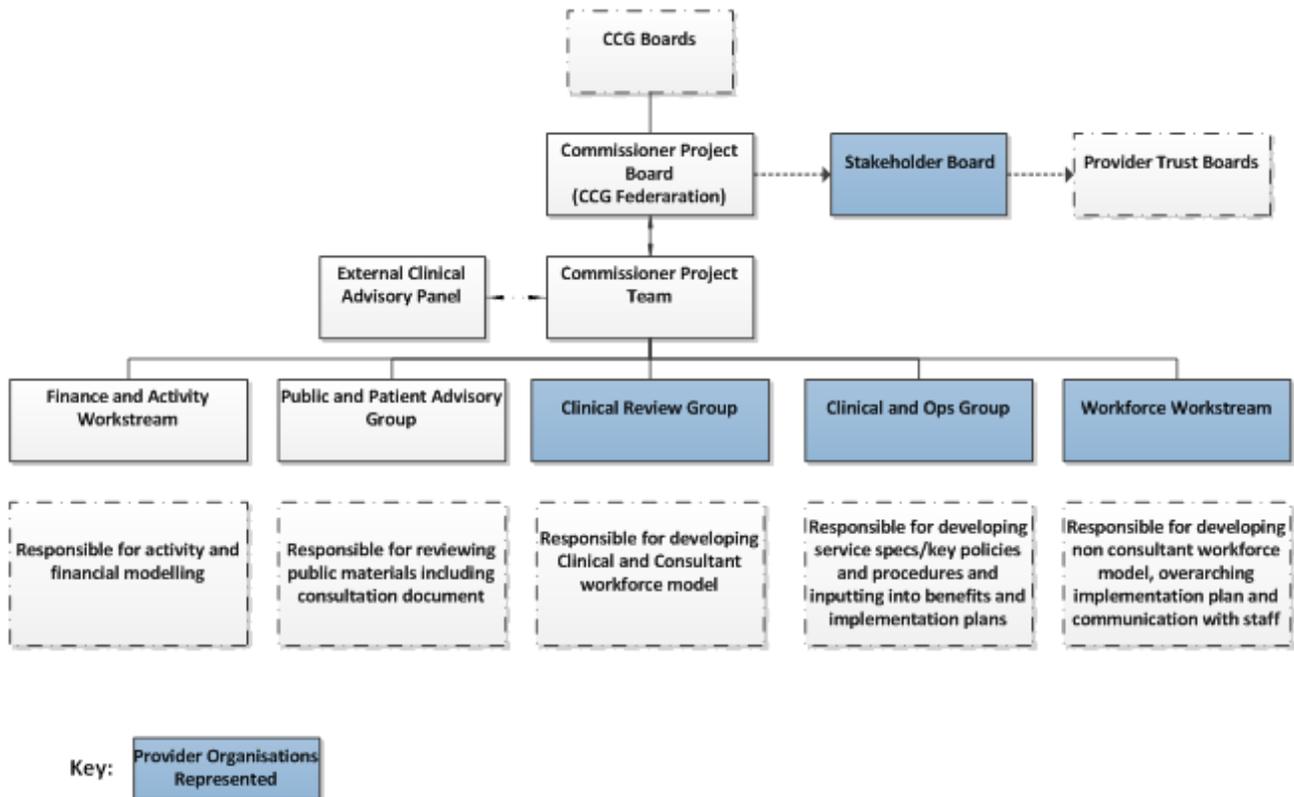
Evaluations of centralised HASU/ASU service models have been completed, demonstrating that centralised stroke services have led to fewer patient deaths, less time spent in hospital, the provision of better care and overall good patient experiences and value for money.

This section has summarised the strong evidence base and the national policy direction and priorities that support the proposed new clinical model set out in this Business Case.

5.0 OPTIONS DEVELOPMENT AND APPRAISAL

5.1 Assurance & Governance Arrangements

Whilst the development of the Pre-Consultation Business Case has been a Commissioner-led process overseen initially by the local Warwickshire and Coventry CCG Federation and now by the Strategic Commissioning Joint Committee (comprising CCG Clinical Chairs, Accountable Officers, Chief Financial Officers and other key members of all three local CCGs), it has extensively involved key stakeholders through a multi-agency project governance structure as shown below:



The Senior Responsible Officer for the project is Andrea Green, Chief Officer for Warwickshire North CCG, who is responsible to the Warwickshire & Coventry CCG Federation and now to the Strategic Commissioning Joint Committee, which acts as the Project Board.

Local acute and community service providers, as well as ambulance, Local Authority and patient representatives, have been represented at various levels, including via:

- Stakeholder Board – comprising provider strategy and medical leads;
- Clinical Review Group – comprising Medical Leads to support the development of the clinical model;
- Activity and Finance Workstream.
- Clinical and Operations Group – comprised of Clinical and Operational Leaders

The Clinical Review Group has been a primary group in expanding the clinical model beyond the hyper-acute and acute stroke phases to include the community and rehabilitative phases of care; helping to build the evidence and model for this.

The Clinical and Operations Group has provided clinical and operational management expertise, oversight and challenge into the development and evaluation of;

- potential scenarios for service delivery
- staffing models of each aspect of the proposed service options
- implementation plans

There has been an extensive programme of pre-consultation engagement with the public including, stroke survivors and carers. The project also established a Public & Patient Advisory Group which is chaired by a Stroke Association representative. A member of this group attends the Stroke Stakeholder Project Board. This group has overseen the pre-consultation engagement to date and has helped to broaden the voice of the patient/public, feeding into the Chair who sits on the Stakeholder Board. The pre-consultation engagement is further described in section 5.2 and in detail in appendices 5-7.

5.2 Stakeholder Engagement

The CCGs have undertaken an array of stakeholder engagement activities and co-production with regards to improving the Stroke and TIA service provision across Coventry and Warwickshire. Throughout the engagement programme, the focus has been on ensuring that there is good visibility, clarity and understanding of the services currently being delivered and the evidence base for the proposed changes in the stroke pathway and services. The engagement process provides the platform through which patients, carers, the public, health professionals and other key stakeholder groups (i.e. Local Authorities, Councillors etc.) are able to voice their thoughts, observations and concerns.

The feedback from the pre-consultation activities has resulted in two phases of development of potential scenarios, the first to identify and build the scenarios for the provision of Hyper Acute and Acute services (sections 5.3 and 5.4) and the second phase to facilitate the inclusion of rehabilitation services and primary prevention of stroke (sections 5.5 and 5.6). Crucially the pre-consultation engagement has supported the co-production of the options under consideration and the non-financial appraisal of those options.

The summarised findings from the engagement processes are noted in section 5.2.2. Appendices 5 and 6 contain full details of the engagement processes.

5.2.1 Pre-consultation engagement approach and objectives

A programme of pre-consultation engagement has been undertaken in two phases:

- **Phase 1** was undertaken in 2014/15 to build up the possible scenarios for the Hyper Acute and Acute pathway; and
- **Phase 2** followed on from the outcome of Phase 1, in which it was identified there was the need for the inclusion of rehabilitation and prevention of stroke in patients with Atrial Fibrillation. Phase 2 focused on the option of UHCW providing the centralised specialist HASU/ASU units with localised rehabilitation at home via ESD, bedded and community rehabilitation.

The engagement builds on significant work that has been undertaken in recent years to help improve stroke and stroke-related services across the local health economy.

5.2.2 Summary of Engagement, Themes and Responses

The responses from stakeholders throughout the engagement process were varied, mainly depending on the location of those being engaged, with issues and queries being raised in relation to each scenario. It is important to note that most respondents acknowledged that 'something' needed to change. Depending on their personal circumstances, how that change would affect them varied across the county.

The overriding theme however, appears to be an acknowledgement of the need for intensive hyper acute care at the onset of a crisis. This is offset by concerns around the longer and costlier travel journeys some patients and families will experience during the acute phase of care.

The consultation material will address the key concerns and queries raised through the pre-engagement process. It is acknowledged that the issue of travel, transport and parking is the predominant theme and this has not only been included in an extended Integrated Impact Assessment in 2017/18, but the Coventry and Warwickshire CCGs are already engaged with the West Midlands Combined Authority to establish a long-term transport plan for vulnerable people which includes patients and carers. Work is in train with local Councils to see if local policies might better support transport for carers and relatives not just for those who have a stroke, but others who are deemed vulnerable.

Other areas of concern raised that the consultation document has addressed include:

- Travel, transport and parking: including costs of travel and difficulty in parking at UHCW, the impact on both patients and family/carers/visitors and ambulance travel times;
- The loss of rehabilitation beds in Rugby;
- Concerns about capacity in UHCW;
- Concerns about recruitment to serve the new model;
- Whether the longer distance to UHCW for those patients who live further afield, negates the benefit of being taken to the HASU for assessment;
- Whether the closure of acute stroke services at GEH and SWFT will result in the closure of other services;
- Risk of over-crowding on the UHCW site, and potential negative impact on beds for those that most need them; and
- The need for good communication between the hospital units and Consultants and other staff. There is a perception that teams across sites do not currently communicate when patients are being transferred.

5.2.3 Health Overview and Scrutiny Committees

The programme has undertaken extensive stakeholder engagement and co-production with regards to developing and appraising the options for improving stroke service provision across Coventry and Warwickshire. A key aspect of this process has been regular engagement with Council Overview and Scrutiny Committees. Senior members of the programme have attended committee meetings to provide updates on progress and receive feedback and comments.

Below is a summary of meetings attended:

September 2015 Health Overview and Scrutiny Committees in Warwickshire and Coventry

2nd June 2016 Nuneaton and Bedworth Health Overview and Scrutiny Panel

13th October 2016 Brooke Overview and Scrutiny Committee (Rugby Borough Council)

6th July 2017 Nuneaton and Bedworth Health Overview and Scrutiny Panel

10th July 2017 Coventry Health and Wellbeing Board

13th July 2017 Brooke Overview and Scrutiny Committee meeting

22nd February 2018 Nuneaton and Bedworth Health Overview and Scrutiny Panel

27th February 2018 Warwickshire and Coventry Council Joint HOSC Members briefing session

8th October 2018 Coventry Health and Wellbeing Board

20th March 2019 Coventry and Warwickshire Joint Health Overview and Scrutiny Committee

18th April 2019 Nuneaton and Bedworth Health Overview and Scrutiny Panel

The feedback from each meeting attended has been considered and any requirements for further engagement/consultation that came out of those meetings have been detailed below with reference to the specific meeting the request came from.

Rugby Borough Council's Brooke Overview and Scrutiny Committee

Andrea Green, Senior Responsible Officer for the project on behalf of the Coventry and Warwickshire CCGs and Chief Officer NHS Warwickshire North and NHS Coventry and Rugby CCGs and Dr Adrian Canale-Parola, Chairman of Coventry and Rugby CCG attended Rugby Borough Council's Brooke Overview and Scrutiny Committee meeting on 13 July 2017 to present the Improving Stroke Services In Coventry and Warwickshire engagement document and respond to questions. Key points discussed included:

- the methods by which consultation materials would be publicised and stakeholder groups would be engaged
- the expected impact of ESD and community stroke rehabilitation on outcomes and the number of Social Care packages required following implementation and
- the rationale for the 6 beds at St Cross Hospital not being included.

It was agreed that a full list of consultees would be shared with the Scrutiny Committee and explained that minimum clinical standards based on bed numbers needed to be considered in assessing the viability of units. 6 beds had been identified as too small a number to sustain a viable unit.

Members were informed that outcomes of the engagement period will be considered in August/September 2017.

Further bed modelling has been considered since the engagement report and more information will be available during the consultation period.

Summary of Nuneaton and Bedworth Health Overview and Scrutiny Committee

Members considered the stroke engagement document at their meeting on 6 July 2017, below is a summary of the key points raised and responses to those points:

- Transport: councillors were clear that this was a very real issue for local residents both in terms of getting to UHCW and parking capacity and costs whilst there. The recent Integrated Impact Assessment completed since the engagement phase will be available to provide information at the consultation stage.
- Rehabilitation: the importance of getting this right and ensuring patients are cared for close to home. Further bed modelling has taken place since the engagement phase and more information will be available at the consultation stage.
- Workforce: a need to understand concerns about workforce capacity and skills. Further workforce assessment has taken place and more information will be available at the consultation stage.
- Carers: the importance of supporting and listening to carers during the process and ensuring there is a sufficient community service offering to support them. Carers have been listened to during the engagement phase they will continue to be engaged during and after the consultation phase.
- Nuneaton: ensure more engagement in Nuneaton during the consultation phase. Every effort will be made to engage widely and comprehensively with the people of Nuneaton.

Warwickshire and Coventry Council Joint HOSC Members briefing session

Warwickshire and Coventry Council worked together to form a joint HOSC Members briefing session on 27 February 2018, to hear about the proposals after taking account of the public engagement during June and July 2017.

The final proposals and actions to address the outcomes of the engagement in June and July 2017 and the latest Integrated Impact Assessment were presented.

Coventry and Warwickshire Joint Health Overview and Scrutiny Committee

At its meeting on 20 March 2019, the Committee considered a report presented by Andrea Green, Senior Responsible Officer, which provided an update on the process and timescale to complete the Pre-Consultation Business Case and the NHS England assurance process. Members raised a number of issues in response to the report and responses were provided. Particular areas of questioning included the reason for the delays in the project progress and additional work that had been required.

The Committee resolved that the public consultation should take place over a twelve week period and requested that arrangements be put in place for an informal briefing for members on the proposals when appropriate.

5.3 Long-List of Scenarios - Hyper Acute and Acute Services

At the onset of the project a set of underpinning principles were agreed by Commissioners for the potential scenarios for the delivery of stroke services. These were:

- All scenarios must meet the requirements of the NHS Midlands and East regional Stroke Service Specification and therefore provide for:
 - A Hyper-Acute Stroke Unit – to remain at UHCW;
 - Acute Stroke Unit(s) with one aligned to the HASU at UHCW at a minimum;
 - A standard Early Supported Discharge service;
- Stroke rehabilitation beds will be provided locally for the post-acute phase of care: for those patients who no longer require acute stroke care, but have ongoing care and rehabilitation needs that prevent them from returning home;
- All high risk TIAs would be seen at UHCW.

Based on the above principles, a longlist of scenarios for the provision of Hyper Acute/Acute services was developed by the Clinical and Operations Group as follows:

Scenario 1 - Do Nothing

Scenario 2 - HASU at UHCW / 1 ASU at UHCW Centralisation

Scenario 4 - HASU at UHCW / 3 ASUs at UHCW, SWFT & GEH

Scenario 5A - HASU at UHCW / 2 ASUs at UHCW & SWFT

Scenario 5B - HASU at UHCW / 2 ASUs at UHCW & GEH

During the work to develop the above scenarios, two additional scenarios were considered:

- Scenario 3 - a scenario was introduced which sought to have a HASU and an ASU for Coventry and Rugby patients up to the point of discharge, and north and south Warwickshire patients at UHCW up to day 7. The latter cohort of patients would be repatriated to a local ASU at SWFT or GEH as appropriate, if a longer acute hospital stay was needed. This scenario was later discounted following external advice sought from a senior External Clinical Advisory Panel member who cautioned against splitting a patient's acute length of stay in an ASU;
- Scenario 5 – a 2-ASU scenario was considered, with one ASU being specified at UHCW and the other at either SWFT or GEH. It was later agreed that this scenario would be sub-divided into Scenarios 5A –and Scenario 5B, with specific locations at SWFT and GEH identified for each.

5.4 Short-List of Scenarios - Hyper Acute and Acute Services

5.4.1 Clinical and Operational Viability Assessment of Scenarios

Having developed the long-list of scenarios, an initial assessment based on clinical viability was undertaken. The criteria against which the scenarios were assessed were developed by the Clinical Review Group. These were that each scenario must:

1. Be capable of meeting the NHS Midlands and East Stroke Service Specification;
2. Be clinically viable in terms of both activity and workforce. Using the findings of the visits to Stroke services that were demonstrating best practice, members of the Group agreed that to be clinically sustainable, a Stroke Unit would require a minimum of 10 stroke beds being operational.

To support the assessment of the scenarios against criteria 2 above, capacity modelling was completed, the results of which are shown in the table overleaf.

Shortlisting Exercise Based on Clinical Viability – Modelling Results for Total No of Beds

	Scenario 1	Scenario 2	Scenario 4	Scenario 5A	Scenario 5B
UHCW	42 beds (6 HASU / 30 ASU / 6 Stroke Rehab)	43 beds (12 HASU / 31 ASU)	40 beds (10 HASU / 30 ASU)	40 beds (12 HASU / 28 ASU)	39 beds (13 HASU / 26 ASU)
SWFT	32 beds (12 ASU / 20 Stroke Rehab)	0 beds (All ASU)	3 beds (All ASU)	2 beds (All ASU)	0 beds (All ASU)
GEH	19 beds (All ASU)	0 beds (All ASU)	2 beds (All ASU)	0 beds (All ASU)	3 beds (All ASU)

It can be seen that in Scenarios 4, 5A and 5B, the Acute Stroke Units at both SWFT and GEH are projected to require considerably fewer than 10 beds, which was determined as the minimum threshold for sustaining an acute stroke service. This is predominantly due to:

- A shift of suspected stroke activity from SWFT and GEH to UHCW;
- Reduction in overall lengths of acute hospital stay by the introduction of an ESD service and additional support in the community.

On the basis that Scenarios 4, 5A and 5B result in the Acute Stroke Units at SWFT and GEH being clinically unsustainable, these scenarios were discounted. This left two scenarios under consideration i.e. **Scenario 1** – Do Nothing; and **Scenario 2** – Centralisation.

Given that Scenario 1 – Do Nothing does not meet the Midlands and East Stroke Service Specification requirements and was included for comparative purposes only, the Coventry & Warwickshire Stroke project identified only one clinically viable scenario for the acute phase of the pathway: Scenario 2 - Centralisation. As only one clinical viable scenario remained for the provision of hyper acute and acute services, financial modelling was not undertaken on the non-viable options.

5.4.2 Patient and Public Engagement and Feedback

In parallel, in 2014/15 the pre-engagement phase of the project with the public was handled informally through meetings with stroke groups and groups representing the 'nine protected characteristics' equality strands and identified in the initial Integrated Impact Assessment. The purpose was to ascertain their thoughts and wishes for an acute stroke service.

The 2015 engagement exercise then engaged on the following 4 scenarios:

1. Do nothing;
2. Maximise centralisation at UHCW (hyper acute and acute unit for ALL patients);
3. All patients go to UHCW Hyper-Acute unit for 2 – 3 days then patients who are from the Warwickshire North area transfer to GEH and patients from South Warwickshire transfer to Warwickshire Hospital; and
4. All patients go to UHCW Hyper-Acute unit for 2 – 3 days then North and South Warwickshire patients transfer to one other hospital, either the George Eliot Hospital or Warwick Hospital with closure of stroke facilities at the other unit.

The feedback captured in the Engagement Report was considered by the Project Board who, in response to the feedback, decided to expand the scope of the project to include specialist stroke community rehabilitation services and action to prevent more strokes for patients with Atrial Fibrillation.

5.5 Long list of Scenarios – Rehabilitation Services

The original principles for the stroke service improvements described in section 5.3 had only included the ESD aspects of out of hospital care. Following the feedback received in 2015 from the first engagement phase, a decision was made by Commissioners to expand the scope of the business case to include specialist stroke community rehabilitation and action to prevent more strokes; namely increased anticoagulation rates for those with Atrial Fibrillation.

There is clear clinical best practice evidence in the Midlands and East Specification and also described from other health systems and the Coventry pilot, that improved outcomes and shorter lengths of stay are achieved by services that enable those patients suitable for ESD to receive ESD and community rehabilitation. This evidence is detailed in section 4.3.

This evidence strongly suggests that ESD and an expansion of community rehabilitation in patients own homes are a prerequisite in whichever new pathway is introduced for Coventry and Warwickshire.

A proposed model of care that included the expanded scope above was developed. At this stage there appeared to be only one way to secure a clinically viable, future end to end pathway. So, from 15th June to 28th July 2017 a further, comprehensive, 6 week public engagement process was undertaken on a proposal for a centralised hyper acute and acute service, bedded rehabilitation on 2 sites, ESD, community stroke rehabilitation at home and improvements in AF anticoagulation therapy.

This engagement included the following activities:

- More than 500 stakeholders received electronic engagement and a questionnaire via NHS and Local authority partners, Healthwatch and the voluntary sector;
- Five public meetings were held;
- There were nine community engagement events and meetings;
- Local media advertisements, including two items on local radio throughout July 2017 and 27 articles in local newspapers.

The key concerns identified by the public from this engagement related to concern for carers of those living in Coventry and Rugby, who would need to travel to access the bedded stroke rehabilitation proposed for them at George Eliot Hospital and Leamington Rehabilitation Hospital i.e. not a local provision for this cohort of individuals. This feedback was considered in the updated Integrated Impact Assessment and most of these addressed through an action plan working with Council colleagues. Alongside this, the stroke expert Clinical and Operations Group leading the clinical design of the future stroke service model, was asked to revisit the work completed to date and consider if there was another method of delivering bedded rehabilitation for the Coventry and Rugby population, that might mitigate this.

The following longlist of scenarios was identified by the Clinical and Operations Group for the provision of rehabilitation services:

- Scenario 1** ESD and community rehabilitation in all areas. Bedded rehabilitation at South Warwickshire Foundation Trust (SWFT) in Leamington and George Eliot Hospital (GEH) in Nuneaton
- Scenario 2a** ESD and community rehabilitation in all areas. Community bedded rehabilitation provision in Coventry with specialist therapy in-reach and bedded rehabilitation at SWFT in Leamington only.
- Scenario 2b** ESD and community rehabilitation in all areas. Community bedded rehabilitation provision in Coventry with specialist therapy in-reach. Bedded rehabilitation at SWFT in Leamington and GEH in Nuneaton
- Scenario 3a** ESD in all areas (no community rehabilitation). Discharge to Assess in Coventry with in-reach. Bedded rehabilitation at SWFT in Leamington only
- Scenario 3b** ESD in all areas (no community rehabilitation). Community bedded rehabilitation provided in Coventry with specialist in-reach. Bedded rehabilitation at SWFT in Leamington and GEH in Nuneaton

Use of rehabilitation beds at the Hospital of St Cross, Rugby was not considered clinically feasible for inclusion in the long list. Splitting the specialist rehabilitation model over three hospital bedded units would demand a workforce model that clinicians agreed could not be recruited to and sustained. The key drivers for this were:

- the reduced size and patient volumes that each rehabilitation unit would be managing would present viability challenges for the size of clinical teams and retention of clinical skills in each of the units;

- operating over three units would increase the additional workforce needed and the national workforce shortage in specific skill sets led to concerns regarding the ability to recruit sufficient staff to operate the services.

5.6 Short list of Scenarios – Rehabilitation Services

5.6.1 Clinical and Operational Viability Assessment of Scenarios

Having developed the long-list of scenarios, the Clinical and Operations Group reviewed each option to assess their ability to meet the following minimum essential criteria:

- meet national guidance and the NHS Midlands and East Regional Stroke Service Specification
- must demonstrate at least the minimum standards of quality; be safe; be sustainable and deliver better outcomes for patients

In addition, the Clinical and Operations Group assessed the long-list options against nine standard, health service best practice criteria:

- Better access to services – equality; travel; car parking*
- Improved clinical quality – better health outcomes; better configuration; enabling new methods of delivering care*
- Improved environmental quality – conditions conducive to effective care; meeting patient and staff expectations; functional suitability*
- Development of services – increasing quantity*
- Improved strategic fit – meeting strategic needs of the locality or region*
- Meeting training, teaching, research needs – easier to recruit, train, retain staff; protecting accreditation standards; improve productivity*
- More effective use of resources – human; service; facilities; better value for money*
- Ease of delivery – practical delivery and implementation*
- Meeting national, regional policy initiatives*

Against these nine criteria each option was scored by the Clinical and Operations Group, to facilitate a robust discussion about the relative risks, benefits and issues with each. The agreed scoring criteria used a scale of 0 to 4, with the following descriptors:

Score	Description
4	Excellent degree of confidence in delivery model. High certainty of delivery of model and associated outcomes
3	Comprehensive and able to fully meet requirements. High level of confidence in delivery model and associated outcomes
2	Acceptable level of confidence in delivery model. Reasonable level of confidence in delivery model and associated outcomes
1	Limited degree of confidence in delivery model. Fails to meet requirements of delivery model and associated outcomes
0	Deficient model that offers no confidence in ability to deliver the model and associated outcomes

As a result of this assessment process, 3 scenarios were rejected due to not meeting the essential criteria. Two viable options remained:

Option 1 Early Supported Discharge Service (ESD) and community rehabilitation in all areas. Bedded rehabilitation at South Warwickshire Foundation Trust (SWFT) in Leamington and George Eliot Hospital (GEH) in Nuneaton

Option 2b Early Supported Discharge Service (ESD) and community rehabilitation in all areas. Community bedded rehabilitation provision in Coventry with specialist therapy in-reach. Bedded rehabilitation at SWFT in Leamington and GEH in Nuneaton.

These options were to be taken forward (as Option 1 and Option 2) for full non-financial appraisal by all key stakeholder groups. Details of the non-financial appraisal process are provided in section 5.7.

5.6.2 Patient and Public Engagement and Feedback

The Clinical and Operations Group shortlisting process had identified two viable options for the provision of bedded rehabilitation; both assume that ESD and community stroke rehabilitation at home will be delivered in all areas.

Further engagement sessions were carried out with the Patient and Public Advisory Group and wider stakeholder groups to recap on the journey so far, gather feedback and agree the process for appraising the viable options.

One of the key activities undertaken was the co-production of the list of desirable non-financial criteria against which the options would be appraised. An initial meeting with the Patient and Public Advisory Group in August 2018 resulted in the development of a set of patient and public focussed criteria with which to assess the options for future stroke bedded rehabilitation services. These were shared with wider members of the public via 4 public engagement sessions in September 2018. These sessions tested and further developed the detail of the desirable criteria.

Key themes already captured from previous engagement in 2017 and the Integrated Impact Assessment were also incorporated into the desirable criteria.

5.7 Options Appraisal

The results of the option development work had found that there was only one option for the provision of HASU/ASU services and the establishment of ESD and community rehabilitation across Coventry and Warwickshire. The only aspect of the stroke pathway with options for consideration was therefore the bedded rehabilitation provision.

A wide and representative group of stakeholders were invited to a non-financial options appraisal event, to appraise the two viable options for the provision of bedded stroke rehabilitation. The stakeholder group included patients and carers, local councillors, voluntary sector and community support groups, community pharmacists, NHS clinical staff, NHS commissioners, social care commissioner and managers. The process of inviting stakeholders to this event involved mapping our comprehensive stakeholder lists against the nine protected characteristics within equality law and cross-referencing these to the 2017/18 Integrated Impact Assessment to ensure appropriate representation was achieved.

The options appraised were:

1. One bedded rehabilitation unit at South Warwickshire Foundation Trust (SWFT) in Leamington Spa and one bedded rehabilitation Unit at George Eliot Hospital (GEH) in Nuneaton.
2. One bedded rehabilitation unit in the Coventry area, not on an NHS hospital site, with specialist therapists coming into the site to provide rehabilitation into the unit; one bedded rehabilitation unit at South Warwickshire Foundation Trust (SWFT) in Leamington Spa and one bedded rehabilitation Unit at George Eliot Hospital (GEH) in Nuneaton.

Both options assumed that HASU/ASU care would be provided at UHCW and ESD and Community rehabilitation at home would be delivered in all areas.

As described in section 5.6.2 above, through extensive patient and public engagement a list of non-financial desirable criteria was co-produced and used to appraise each of the clinically viable service delivery options. These criteria are shown in the table below.

Stakeholder coproduced desirable criteria for the non-financial options appraisal

Equality, accessibility and consistency of services	<p>Services should be equitable, consistent and always available</p> <p>Availability of car parking / accessibility of public transport</p> <p>Equality of access no matter where you live, who you are and what your personal circumstances are</p> <p>Staff development, training, skills and information should be consistent – from ambulance teams to rehab therapists</p> <p>No patient or carer should feel disadvantaged by the new service</p>
Improved clinical quality of services	<p>Service should focus on the best quality and the best possible outcomes and recovery</p> <p>Providing better long term health outcomes for patients</p> <p>Addressing existing clinical problems that not all clinical services are available on all sites</p> <p>There needs to be the right balance of staff, in the right places with the right skills and knowledge</p> <p>Providing the opportunity to ensure that we have the best clinical outcomes for every stroke patient</p>
Improved delivery of services	<p>Professionals who are delivering the services should understand the stroke patients’ feelings and the consequences of having a stroke</p> <p>We should create an environment where experiences, knowledge and information can be shared to benefit stroke survivors and their carers</p> <p>All stroke services should work together with a smooth transition at all points in the stroke patients care</p> <p>Patients should feel that staff are working in one team for their patient, even if they work for different organisations.</p> <p>Holistic services need to be considered as they help people to not fall through the cracks</p> <p>Services should integrate and include community and voluntary</p>

Development of personalised services	<p>Services should be personalised with care that is right for each individual patient Loved ones and carers need to be supported, informed and consulted at all stages Services should be modelled on the best outcome and care for patients not what can be done with the current staff or finances Patients and loved ones should receive timely, awareness raising communications and signposting All or other health considerations should be taken into consideration when planning the patients care</p>
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The options appraisal event used the following process:

- The co-produced desirable criteria were reviewed as a group and weightings agreed for their relative importance
- Smaller table top groups were then asked to consider each of the two viable options against the desirable criteria to enable each individual present to score these
- Each table then fed back their scores which were entered into a single spreadsheet.
- The result was a consensus view from those attending the options appraisal event on the options for bedded rehabilitation.

The agreed weightings and resulting scores for each option are shown below:

The non-financial options appraisal desirable criteria	Weight (decimal)	Option 1 Table Score (from 0 to 10) as decimal	Option 2 Table Score (from 0 to 10) as decimal	Score for Option 1	Score for Option 2	
Equality, accessibility and consistency of services	0.27	0.70	0.51	18.78	13.76	
Improved clinical quality of services	0.32	0.86	0.39	27.03	12.30	
Improved delivery of services	0.24	0.85	0.45	20.09	10.69	
Development of personalised services	0.18	0.77	0.57	14.06	10.37	
				TOTAL	79.97	47.12

Options were scored on a scale of 0 to 10, where 0 indicated an option completely failed to meet the criteria and 10 indicated that an option completely met the criteria. As the results above show, the **preferred option from the non-financial options appraisal was option 1.**

One bedded rehabilitation unit at South Warwickshire Foundation Trust (SWFT) in Leamington Spa and one bedded rehabilitation Unit at George Eliot Hospital (GEH) in Nuneaton.

Full details of the options appraisal can be seen in Appendix 8.

5.8 Risk Assessment of Options

To support Commissioners in assessing the clinical and operational delivery feasibility of each of the bedded rehabilitation options and further support the decision-making as to the preferred option, a risk assessment was undertaken by the Clinical and Operations Group.

At the non-financial options appraisal event stakeholders had challenged the Clinical and Operations Group assessment that it would not be possible to sustainably staff 3 hospital sites for rehabilitation. The option of providing bedded rehabilitation at the Hospital of St Cross, Rugby was therefore included in the risk assessment to enable a robust re-assessment of this position.

The options risk assessed were:

Option 1	<i>ESD and community rehabilitation in all areas. Bedded rehabilitation at SWFT in Leamington Spa and GEH in Nuneaton</i>
Option 2	<i>ESD and community rehabilitation in all areas. Community bedded rehabilitation provision in Coventry, not on an NHS hospital site, with specialist therapy in-reach. Bedded rehabilitation at SWFT in Leamington Spa and GEH in Nuneaton</i>
Option 2 using Rugby	<i>ESD and community rehabilitation at home available in all areas. One bedded rehabilitation unit at South Warwickshire Foundation Trust (SWFT) in Leamington Spa, one bedded rehabilitation Unit at George Eliot Hospital (GEH) in Nuneaton and one bedded rehabilitation unit at the Hospital of St Cross, Rugby.</i>

The Clinical and Operations Group agreed a set of criteria to reflect the range of clinical, operational delivery and healthcare system risks that any model could present. The agreed risk assessment criteria are shown in the table that follows.

Risk Assessment Criteria	
1	Patients are transferred to the bedded rehabilitation provider that are ready for rehabilitation but have medical needs outside the capability of the rehabilitation provider
2	Patients developing complications and/or deteriorating cannot be appropriately supported in the bedded rehabilitation provider, leading to transfers to A&E
3a	Difficulty in recruiting and retaining sufficiently skilled clinical staff to cover the rotas – Consultants
3b	Difficulty in recruiting and retaining sufficiently skilled clinical staff to cover the rotas – Nurses
3c	Difficulty in recruiting and retaining sufficiently skilled clinical staff to cover the rotas – other clinical staff
4	Difficulty in securing a high quality, sustainable provider with on-site facilities conducive to rehabilitation
5	Limitations on the capabilities of the bedded rehabilitation reduce capacity, impacting on patient flow out of UHCW
6	Lack of consistent clinical governance arrangements across the providers reduces the system ability to manage the quality of care
7	Adverse impact on wider NHS provider sustainability in the health system, that could impact on the need for changes in other local services
8	Fragmented care and unnecessary delays in the management of patients journeys due to lack of access to social workers and/or other community-based infrastructure to support patient needs assessment
9	An inability to sustain staff skill levels and competence in stroke rehabilitation

Each of the options was assessed against the risk criteria, using a NHS standard likelihood and consequence assessment matrix.

Consequences	Likelihood				
	Rare (1)	Unlikely (2)	Possible (3)	Likely (4)	Almost certain (5)
Negligible (1)	1	2	3	4	5
Minor (2)	2	4	6	8	10
Moderate (3)	3	6	9	12	15
Major (4)	4	8	12	16	20
Catastrophic (5)	5	10	15	20	25

To ensure consistency in the scoring of each option the following assumptions were agreed and applied when considering each option against the risks.

1. Beds provided at the Hospital of St Cross in Rugby would be providing the same level of service as those provided by SWFT and GEH
2. The number of beds provided at the Hospital of St Cross in Rugby would be based upon the geographically identified number of patients closest to the location
3. For all options risk assessed ESD and community stroke rehabilitation would be provided as per the Business Case
4. For all options, clear service specifications would be in place for the services commissioned
5. The beds provided for community bedded rehabilitation with in-reach (Option 2) would all be provided from one location

The results of the risk assessment are shown below.

	Option 1		Risk		Option 2		Risk		Option 2 using Rugby		Risk
	L	C	Score		L	C	Score		L	C	Score
1	3	2	6	4	3	12	3	2	6		
2	1	1	1	4	3	12	1	1	1		
3a	3	2	6	3	2	6	3	2	6		
3b	3	4	12	4	4	16	4	4	16		
3c	3	4	12	4	4	16	4	4	16		
4	1	5	5	4	5	20	1	5	5		
5	2	4	8	3	4	12	2	4	8		
6	1	2	2	2	2	4	1	2	2		
7	2	2	4	3	3	9	4	4	16		
8	2	2	4	3	2	6	3	2	6		
9	2	3	6	4	3	12	4	3	12		
			66			125			94		

As is shown in the results above, Option 1 has a lower level of risk than Option 2, having a total risk score of 66 compared to 125. The risk assessment also supported the original assessment that developing a third rehabilitation unit in Rugby poses higher risks of an inability to recruit the required nursing and therapy staff and critically, presents a significant, red risk of having an adverse impact on wider NHS provider sustainability in the health system, that could impact on the need for changes in other local services.

The risk assessment therefore supports the results of the non-financial options appraisal in determining that **the option with the least clinical and operational service delivery risks is Option 1.**

One bedded rehabilitation unit at South Warwickshire Foundation Trust (SWFT) in Leamington Spa and one bedded rehabilitation Unit at George Eliot Hospital (GEH) in Nuneaton.

The full risk assessment document can be found in appendix 9.

5.9 Integrated Impact Assessment and Equalities

Integrated Impact Assessments have been carried out in 2015 and 2017/18 as proposals have developed, the purpose of these was to identify the groups most likely to be affected by stroke and provide a full analysis of the impacts of the potential scenarios on travel and access, determinants of health and equality.

The scenarios considered within the 2017/18 assessment reflect the short-list of options identified through the process described in sections 5.3, 5.4, 5.5 and 5.6:

Scenario 1: Do nothing

Scenario 2a: all stroke patients in Warwickshire will be treated at UHCW throughout both the hyper-acute and acute phases. When appropriate for discharge, patients will be sent home for supported rehabilitation or, in the case of bedded rehabilitation requirements (around 30% of patients), will have the choice of either GEH or Leamington Spa Hospital (LSH) dependent on proximity to usual residence and/or bed availability.

Scenario 2b: all stroke patients in Warwickshire will be treated at UHCW throughout both the hyper-acute and acute phases. When appropriate for discharge, patients will be sent home for supported rehabilitation or, in the case of inpatient bedded rehabilitation requirements (around 30% of patients), will be transferred to either GEH or Leamington Spa Hospital (20%) with the remainder of patients in Coventry and Rugby (10%) being commissioned a suitable care home bed in Coventry, with access to a specialist in-reach stroke rehabilitation team.

The Integrated Impact Assessment (IIA) documents are appended (appendices 10 and 11).

The following table summarises the potential scale of the impact for each of the elements of service changes on patient numbers and estimated numbers of those by district and in the quantifiable equality population groups. These are considered a broad estimate of the scale of impacts for consideration alongside the following impact assessments. The impact on carers and visitors can be assumed to follow a similar distribution in the absence of additional information to the contrary.

IIA estimates of impacts for the proposed changes by district and assorted equality groups, based on 2015/16 data.

Element of the Service Change	Description	Estimated numbers impacted	By Area	By Equality group
Centralisation Stroke	All Stroke patients not currently treated at UHCW for hyperacute and acute stage	726	Coventry – 19	Age (over 65s) - 582
			North Warwickshire – 84	BAME - 89
			Nuneaton & Bedworth – 86	Males - 346
			Rugby – 32	Female - 380
			Stratford – 133	Deprived areas - 58
			Warwick – 191	Pregnant/maternity - 13
			Out-of-Area – 81	
Centralisation (TIA)	All TIA patients not currently treated at UHCW.	165	Coventry – 1	Age (over 65s) - 135
			North Warwickshire – 23	BAME - 24
			Nuneaton & Bedworth – 44	Males - 79
			Rugby – 3	Female - 86
			Stratford – 25	Deprived areas - 9
			Warwick – 41	Pregnant/maternity - 3
			Out-of-Area – 28	
ESD and community rehabilitation	All stroke patients suitable for ESD and community recovery and rehabilitation post-acute stage (70%) including those currently receiving ESD and community rehab	952	Coventry – 245	Age (over 65s) – 683
			North Warwickshire – 76	BAME - 137
			Nuneaton & Bedworth – 199	Males - 510
			Rugby – 86	Female - 442
			Stratford – 99	Deprived areas - 131
			Warwick – 123	Pregnant/maternity – 21
			Out-of-Area – 123	
Complex and bedded rehabilitation	All stroke patients requiring inpatient rehabilitation post-acute stage (30%) including those currently receiving inpatient rehab	408	Coventry – 105	Age (over 65s) - 323
			North Warwickshire - 33	BAME - 65
			Nuneaton & Bedworth - 85	Males - 190
			Rugby - 37	Female - 218
			Stratford - 42	Deprived areas - 45
			Warwick – 53	Pregnant/maternity - 5
			Out-of-Area – 53	

Source: The Strategy Unit.

Summary of the impacts and potential mitigations identified in the IIA

The proposed changes are designed to improve outcomes for all stroke patients regardless of their area of residence: thereby increasing the likelihood of survival, decreasing recovery time with lower risk of complications and permanent disability, enabling shorter lengths of stay in hospital with more time at home, receiving appropriate support and rehabilitation.

The total number of stroke patients likely to be affected by the changes is estimated, using 2017/18 activity data, to be an additional 699 patients in the hyper and acute phase, an estimated total of 1,268 patients for the ESD and community rehabilitation and 349 patients for bedded rehabilitation. It is important to note that because many patients will receive input and care from a combination of all of these stroke services, individual patients will appear multiple times in these numbers.

Three principle areas of impact were identified in the IIA:

- Travel and access
- Health
- Equality

It is recognised that there will be negative short-term impacts felt by some of the carers of, and regular visitors to stroke patients during the inpatient stays in both the hyper/acute and rehabilitation phases, particularly those reliant on public transport.

Carers and visitors in North Warwickshire, Warwick and Stratford-upon-Avon district will be disadvantaged most in terms of longer and further journeys in relation to acute care in Coventry. Carers and visitors from Coventry and Rugby will be impacted most during the rehabilitation phase, should their relatives need rehabilitation in a bedded setting prior to discharge home, as the rehabilitation beds will be located in Nuneaton and Leamington only.

On balance the negative impacts of increased travel time and distance for some visitors and carers is offset by improved availability of specialist stroke treatment throughout the pathway, reduced lengths of stay (during both the acute and rehabilitation phases) and the potential improvement in health outcomes and reduction in disability for all stroke survivors.

Nevertheless, the CCGs have established a Health and Transport planning group with the Local Authorities to develop plans to address the transport and travel challenges faced. Membership includes voluntary and community providers, Public Health and Local Council representation. Responsibilities of the group include:

- developing a fuller understanding of the criteria/eligibility arrangements around current access to various transport schemes
- developing a consistent message around health services in Warwickshire and Coventry regarding parking costs and information provided by healthcare providers about travel costs and who is entitled to concessionary parking schemes.
- supporting the development of cross border acceptance of public transport travel passes between different bus providers in Warwickshire and Coventry.

To support those visitors and carers who will be using public transport, information regarding existing direct and non-direct public transport services will be made available, as will information about voluntary and subsidised transport schemes. Consideration will also be

given to inpatient visiting hours, especially during winter, to reduce the amount of time visitors and carers spend traveling in the dark.

UHCW is currently working with partners to creating additional car parking on site of circa 1600 spaces, which are anticipated to be in place by March 2021.

Summary of overall impacts and conclusions

The technical documents included at appendix 11 of this business case provide a full account of the scores for each element of the IIA. For example, the EIA scores can be found in section 5.3 and appendix 7.10 of the technical documents and the health scores are in section 5.2 and appendix 7.9 of the technical documents. The summary scores are shown below:

Scenario	Travel & Access	Health			Equalities
		Health Impact	Health Inequalities	Determinants of Health	
1	0	0	0	0	0
2a	-6.5	+20	+15	-1	+18
2b	-5.5	+3	-7	+1	+22

The assessment and scoring suggest that both proposals for centralisation of all acute care and rehabilitation would have an overall positive impact on the population compared to the do-nothing scenario, reducing the inequalities in the current/do nothing scenario. Scenario 2a offers the greatest gain in terms of the direct health benefits to patients and the most positive impact on reducing health inequalities.

If the scoring is considered alongside information on the scale of the impact in terms of the volume of patients affected by the proposed changes, the impacts would be magnified further, as the clinical model for 2a is considered more effective and viable than in option 2b. Scenario 2b offers the most flexible rehabilitation pathway and appears to provide the greatest extent of positive impacts in terms of equality of access, particularly in respect of those in the population with protected characteristics. However, it should be noted that some of the equality groups would constitute a relatively small volume/scale of stroke patients (e.g. pregnant/maternal women and those from BAME groups), thus additionally their carers and visitors. Similarly, the number of strokes from areas that might be affected more by changes to travel are lower than in some of the more urban areas.

Overall, the IIA demonstrates both quantitative and qualitative evidence that the proposed scenarios could have major benefits for the Warwickshire and Coventry populations including vulnerable groups. The key benefits relate to the ability of the changes to achieve:

- Everyone within 72 hours of the onset of stroke to have the benefit of assessment in a Hyper Acute Stroke Unit ('HASU');
- Increased timeliness and equitable access to hyper acute, acute and rehabilitative care for all Coventry and Warwickshire residents, removing inequalities in the current provision;
- Improved workforce development opportunities, and recruitment and retention of Stroke specialist staff;
- Reduced levels of mortality and morbidity for people who have suffered a Stroke;

- Reduce levels of dependency for people after suffering a stroke;
- Improved cognitive function for people after suffering a stroke;
- Improvements in stroke prevention for all patients reducing the current inequalities.

Whilst the centralisation will invariably negatively impact on patients and visitors travel and access, particularly from the North and South of Warwickshire, the expected health benefits, greater proportion of time recovering at home and a reduction in inequalities from the exemplar service provision across the area in the proposals should more than offset them.

Headlines from the feedback from the groups identified as most affected by stroke echoed the feedback by the Stroke group engagement meetings and were as follows:

Transport	Location	Services
Transport is a problem if people have to travel further;	Quality of care more important than location;	Things cannot stay as they are;
Concern about increased travel time to UHCW in an ambulance;	All services should be at UHCW where best care is delivered;	There is the need for consistency in service provision;
Extra travel wouldn't be too much of a problem;	GEH provides better care;	Concerns around capacity as UHCW is already busy;
Concern about cost of transport and car parking;	Centralisation is a good idea; better if they come back to their local hospital afterwards;	Better training for carers needed;
Parking is difficult at UHCW;	Specialist unit first and then to a local hospital is a good idea;	Best treatment and facilities are the most important;
Concern about increased travel for visitors;	Access to specialist first and then to a local hospital;	Community care needs consideration;
Public transport from Nuneaton to Coventry is difficult, particularly for the elderly;	Access to specialist stroke unit in their local area, which are better for people especially the elderly;	Sharing of patient notes between hospitals do not work;
Voluntary transport is variable, particularly at weekends;	Specialist stroke unit in Nuneaton needed;	Poor communication between hospitals, with the need to repeat yourself; and
Long-term outcomes are more important than travel;	Do not change the existing services;	Patients need to be discharged only with sufficient support.
Car parking is difficult and expensive at UHCW and Warwick;	It doesn't make sense to bypass the local hospital if time is critical;	
Concern about poorer outcomes for patients if they have to travel further;	Care closer to home is best, to help local carers and relatives;	
Need to think about how patients travel home.	Centralisation at UHCW may not be best for everyone.	

5.10 Quality Assurance

In line with best practice the Coventry & Warwickshire Stroke project has undertaken the following quality assurance reviews and processes:

- Health Gateway Review 0;
- National Clinical Advisory Team Review;
- West Midlands Strategic Clinical Network Assurance;
- West Midlands Clinical Senate Review;
- Achievement of the five tests for service change will be tested in the final assurance meeting with NHS England;
- Two Integrated Impact Assessments (IIA) as the model has evolved; and
- Privacy Impact Assessment (PIA).

Each of the quality assurance reviews and processes are detailed below.

5.10.1 Health Gateway Review 0

In October 2014 the project commissioned an OGC Health Gateway 0 Review to help assure the process being undertaken. This review resulted in a rating of 'amber' (i.e. successful delivery appears feasible but issues that appear resolvable require management attention). Each of the 4 actions recommended by the OGC Health Gateway Team were subsequently addressed as follows:

- Critical path to be clearly identified – a clearly defined critical path document was produced and monitored;
- Project governance structure to be reviewed and strengthened – this resulted in clearer delineation between Commissioner and Provider roles;
- Robust risk management strategy and plan to be developed – this task was completed, and a detailed risk register maintained and shared with all parties; and
- Necessary resources required for successful delivery of the Business Case to be secured – the necessary support and resources were secured.

5.10.2 National Clinical Advisory Team Review

The project has been supported by an External Clinical Advisory Group (ECAG) comprising the following members:

- Dawn Good, Head of Stroke Services, Nottingham University Hospitals NHST;
- Dr Christine Roffe, Consultant Stroke Physician, North Staffordshire Combined HCT;
- Professor Tony Rudd, Consultant Stroke Physician, Guy's & Thomas' NHSFT and National Clinical Director for Stroke;
- Matthew Ward, Head of Clinical Practice, West Midlands Ambulance Service; and
- Rob Wilson, Cardiovascular Manager, West Midlands Strategic Clinical Network.

The ECAG was specifically invited to review the longlist of scenarios in 2014 which resulted in a more detailed exploration and development of the post-acute element of the care pathway. In addition to this, Professor Tony Rudd has visited each of the three local acute

provider sites to see the Stroke wards and meet with key staff and in doing so, provide support and guidance in the development of the clinical model.

5.10.3 West Midlands Strategic Clinical Network Assurance

From the outset of the project, the Associate Director for the West Midlands Strategic Clinical Network has been represented on the Stakeholder Board and as such, has had oversight of the development of local plans. Additionally, the regional Stroke lead for the Strategic Clinical Network has provided his support and input on request.

5.10.4 West Midlands Clinical Senate Review

A review of the clinical model was undertaken by the West Midlands Clinical Senate in line with NHS England's stage 2 assurance process. As a result, the Senate convened an Independent Clinical Review Panel chaired by Dr Nick Harding, Chair of Sandwell & West Birmingham CCG and comprised of a further 22 panel members including the national Clinical Director for Stroke, Professor Tony Rudd.

Following a review of submitted information, the Panel convened a 3-day review in January and February 2016, of which the first two days were spent with members of the Coventry and Warwickshire Stroke programme. Members of the programme met with the Panel on day 2 and included the Senior Responsible Officer; the Clinical, Finance and Project Management leads; and Stroke medical/clinical leads from the current four provider organisations.

Following the review and the updated clinical case for change document, the Clinical Senate submitted their report in May 2016 which concluded that the case for change "contains strong and compelling national and international evidence for improved stroke care and that its final iteration should result in an enhanced patient care pathway and is likely to improve patient outcomes". The Senate approved the clinical model and case for change, whilst identifying 11 recommendations to be addressed.

Project leaders met with the Senate to review completion of the 11 recommendations in July 2018. The Senate concluded that adequate work had been done to meet the recommendations. A copy of the letter from the Clinical Senate Chair is attached (Appendix 12).

5.10.5 "Five Tests" for Reconfiguration

Support from GP Commissioners

Through the governance of the project, GP clinical commissioners have been engaged with and provided support to the Clinical Review Group. The CCG Federation convened as the stroke Project Board acting as the oversight and decision-making body for the project. The CCG Federation is chaired by the clinical chair of one of the CCGs and attended by the other two clinical chairs. The CCGs evolved the Federation into a Joint Strategic Commissioning Committee in 2017. The CCG federation reviewed and approved the Pre-Consultation Business Case and proposed model on 13th February 2019.

Strengthened Public and Patient Engagement

As evidenced in section 5.2, there has been wide and deep engagement across the whole community with stroke survivors and their carers. A Patient and Public Advisory Group chaired by the Stroke Association has met regularly as part of our assurance process and advised on the process for our engagement and the appraisal of options. On-going engagement will be carried out to support the implementation of the commissioned pathway and public views will be fed into these plans.

Clarity on the Clinical Evidence Base

The clinical model which the CCGs seek to commission is based on national evidence used in developing the Midlands and East Stroke Services Specification, is in line with stroke service developments nationally and is supported by Professor Tony Rudd – the National stroke lead. Local services have been audited and assessed against best practice and local clinical engagement has supported the shaping of the model. Evidence from other areas stroke service improvements have also been used to test the design of the proposed clinical model. Sections 3.6, 3.7, 4.1, 4.3 and 4.5 of this document draw together clinical evidence base that underpinned the development of the proposed model.

Consistency with Current and Prospective Customer Choice

The CCGs as commissioners are committed to the provision of patient choice and to ensuring that patients service options are of both adequate quality and accessible.

Overall, the proposed future pathway increases patient choice of the right quality and volume of services although it is acknowledged that there will also be some changes to the locations for the provision of some services that will result in a reduction in choice:

- The provision of HASU services remains unchanged in terms of location of the service but, offers expansion in the level of cover that enables patients in North and South Warwickshire to have greater access to a HASU within 72 hours of onset of symptoms. An additional 699 patients per year are anticipated to have access to HASU/ASU as a result, which clinical evidence suggests will significantly improve individual outcomes.
- There will be increased provision and choice of ESD and CSR; currently patients within North and South Warwickshire do not have access to the right range of specialist rehabilitation services. The expansion of these community services is expected to give an additional circa 860 patients access to ESD and CSR, improving the quality of the outcome of their care through increasing access to services.
- The proposed future pathway limits the locations for provision of ASU from 3 sites (GEH, SWFT and UHCW) to one site (UHCW). The CCGs acknowledge that this reduces choice for this service but, on balance the expected improvement in service quality and outcomes through both the increased access to and quality of specialist care is considered to outweigh the reduction in choice.

Alongside this the outcomes of the engagement with patients and the public, has shaped the model to ensure that all patients will get access to specialist services when they need

them, but are returned to their own home, or into a facility close to home where they require further medical or nursing care, as soon as they are medically able.

The 5th Test

From 1 April 2017 NHS England introduced a new test for proposed service changes. This test requires that in any proposal that includes plans to significantly reduce hospital bed numbers, commissioners are expected to be able to evidence that they can meet one of the following three conditions:

- i. Demonstrate that sufficient alternative provision, such as increased GP or community services, is being put in place alongside or ahead of bed closures, and that the new workforce will be there to deliver it; and/or
- ii. Show that specific new treatments or therapies, such as new anti-coagulation drugs used to treat strokes, will reduce specific categories of admissions; or
- iii. Where a hospital has been using beds less efficiently than the national average, that it has a credible plan to improve performance without affecting patient care (for example in line with the Getting it Right First Time programme).

The proposed service model does not reduce the overall number of hospital beds; it realigns the use of some beds based on robust modelling of the proposed improvements in patient pathways and a significant expansion of community services.

5.10.6 Data Protection Impact Assessment

A Data Projection Impact Assessment (Appendix 13) has been undertaken based on the services being delivered by existing providers and the proposed new model. All providers are currently subject to an existing Information Sharing Agreement. The assessment has been reviewed by the CCG Information Governance Advisory Group. The Group concluded that no immediate further actions are needed and that once the model has been agreed and as implementation arrangements develop, the assessment should be revisited.

5.11 Conclusion

Whilst the development of the Pre-Consultation Business Case has been a Commissioner-led process, it has extensively involved key stakeholders through a multi-agency project governance structure.

There is an existing, well-established evidence base for the most effective clinical models for providing stroke care, which the programme has drawn on in establishing the elements of the pathway that need to be in place for Coventry and Warwickshire.

Clinical and operational leaders alongside members of the public, including stroke survivors and carers, have played a key role in the development and evaluation of the potential scenarios for service delivery. Crucially, public engagement has also supported the co-production of the process for the non-financial appraisal of the options.

To develop the proposed model a range of options have been considered. Initial development work focused on the acute stroke pathway only (HASU/ASU, supported by ESD). Following an assessment of the clinical viability of the options on the long-list, it is evident that there is only one clinically viable scenario for acute care: centralisation of HASU/ASU services at UHCW.

ESD and community stroke rehabilitation are key services required for a high quality stroke pathway. Both need to be provided in patients homes and community settings across Coventry and Warwickshire and require some investment and development; they are not optional parts of the care model. Development work for these services has focussed on modelling the workforce implications to develop the optimal service delivery model affordable within Commissioners planned investments in stroke care.

There were a number of potential ways in which bedded rehabilitation could be provided. A long list of potential scenarios was developed and clinically assessed for viability, with two viable options remaining. A full non-financial appraisal of these options by all key stakeholder groups, identified the preferred option as the provision of bedded rehabilitation at two sites, Leamington and Nuneaton.

A clinical and operational risk assessment of the different models and a financial appraisal of indicative costs supported the outcome of the non-financial appraisal.

Our work to identify and evaluate the options for provision of the future clinical model for stroke care has therefore identified the preferred option for Coventry and Warwickshire as:

- *Centralised HASU/ASU at UHCW*
- *ESD and community rehabilitation in all areas.*
- *Bedded rehabilitation at SWFT in Leamington and GEH in Nuneaton.*

6.0 FUTURE CLINICAL MODEL

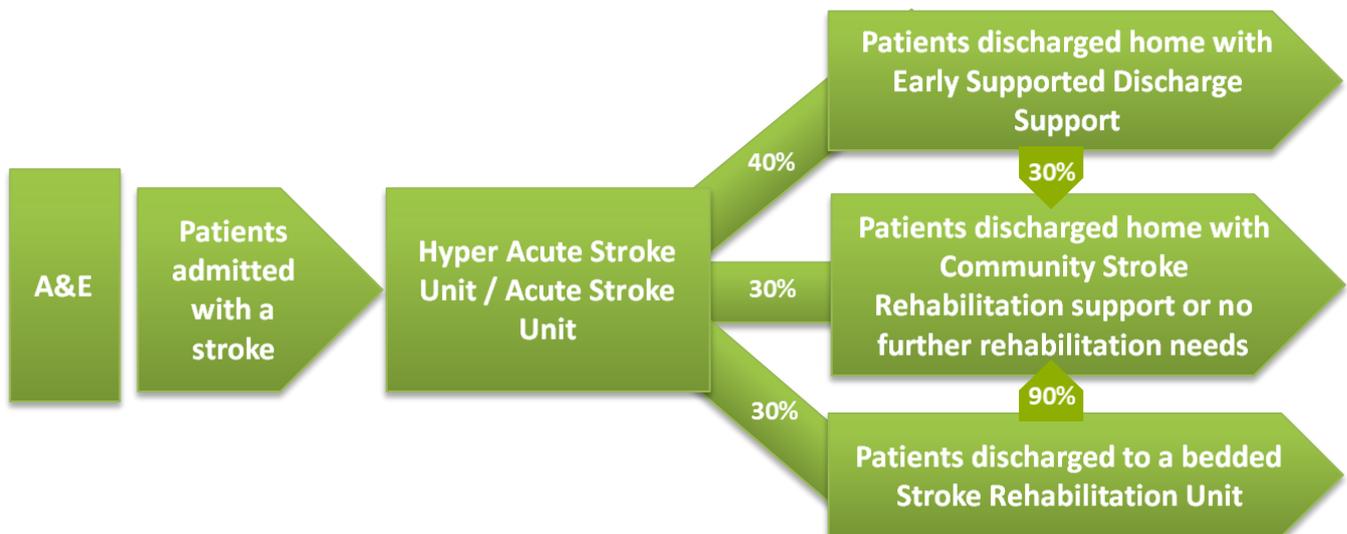
A significant amount of work has been undertaken by clinicians from across the health economy to design a new model for stroke services in Coventry and Warwickshire that will meet the clinical best practice outlined in the Stroke Services Specification developed by NHS Midlands and East and more recent updates to national clinical guidelines.

This section sets out the future clinical model and vision.

6.1 Future Clinical Model & Pathway

Patients will be seen more promptly and in the right place by specialist, skilled professionals, where they will receive the highest quality care. Once the acute episode is complete, patients will either transfer to an inpatient community rehabilitation bed or return home or to their usual place of residence with the appropriate level of community support from both health and social care services. The three CCGs are working in partnership with their partners in local authorities and the third sector to develop seamless services that support people to be as independent as possible and receive appropriate support when they need this.

At a high level, the future pathway will be as follows:



The future pathway has the following key features:

- Provision of a single centralised hyper acute stroke unit (HASU) and an acute stroke unit (ASU) at UHCW, with the necessary infrastructure, support and workforce to assess and diagnose all patients suspected of having had a stroke from across Coventry and Warwickshire, within 72 hours of onset;
- An Early Supported Discharge service;
- Community stroke rehabilitation services, and
- Bedded stroke rehabilitation services for those patients that require more intensive support after discharge from the ASU.

- All patients suspected as having a stroke will be admitted to the HASU/ASU for assessment and treatment, patients will then follow one of 3 routes depending on their clinically assessed need:
 - Discharged home with community stroke rehabilitation support, or potentially requiring no further support. Analysis of historic activity identifies this route applies to 30% of patients
 - Discharged home with Early Supported Discharge. Analysis of historic activity identifies this route applies to 40% of patients; 30% of these patients will need further rehabilitation and therapy input to reach their goals and increase their independence and will go on to receive community stroke rehabilitation support
 - Discharged to a bedded Stroke Rehabilitation Unit. Analysis of historic activity identifies this route applies to 30% of patients. 90% of patients within this cohort will, on discharge from bedded rehabilitation, go on to receive community stroke rehabilitation to achieve their optimal rehabilitation.

It is proposed that the HASU length of stay will be up to 72 hours in line with the NHS Midlands and East Stroke Services Specification. ASU length of stay will be eight days, after which patients will transfer to a bedded rehabilitation facility if they are not ready to return home.

Components of the new pathway are outlined through the rest of this section, all of which are explicitly in line with the NHS Midlands and East Stroke Services Specification.

6.1.1 Early prevention and Atrial Fibrillation

Each CCG has plans in place to improve primary and secondary prevention of stroke, including:

- Identification of patients with Atrial Fibrillation (AF) in primary care; and
- Increased anticoagulation rates for those diagnosed with Atrial Fibrillation.

During August and September 2017, primary and secondary care professionals involved with the AF and anticoagulation pathway started regular meetings to discuss, plan and agree collaborative working practices to deliver an integrated anticoagulation pathway.

The CCGs are already commissioning primary prevention improvements where there are opportunities for the better management of AF, hypertension and diabetes. Opportunistic screening for AF is underway to increase the identification of patients to bring prevalence up to the expected 2%. Work is progressing across Coventry and Warwickshire to put contracts in place with General Practice. It is anticipated that contracts will be in place across the region by 31st March 2020.

In addition, a full programme of work across the diabetes pathway is underway, with an emphasis on stroke. From April 2018 the national programme for prevention of diabetes has been rolled out.

6.1.2 Pre-Hospital Care

All patients identified as having a stroke within the first 72 hours of onset will be transferred by emergency ambulance for a hyper acute assessment at UHCW. Ambulances will need to collect patients from wherever they have their stroke, as well as from Warwick and George Eliot Hospitals as some patients may self-present at their local A&E Department.

6.1.3 Hyper Acute Stroke Unit

For all patients suspected of having a stroke, the HASU will provide expert specialist clinical assessment, clinical imaging and the ability to offer intravenous thrombolysis for those who need it 24 hours a day, 7 days a week, typically for no longer than 72 hours after admission. At least 600 cases per year are typically required to provide sufficient patient volumes to make a hyper acute stroke service clinically sustainable, to maintain staff expertise and to ensure good clinical outcomes. As is shown in the activity modelling in section 7, the proposed HASU patient flow will easily meet this target.

6.1.4 Acute Stroke Unit

Acute stroke care will immediately follow the hyper acute phase, mostly after the first 72 hours of admission. The ASU will provide:

- Continuing specialist day and night care;
- Daily multi-disciplinary care;
- Continued access to Stroke Specialist Consultant care;
- Access to physiological monitoring; and
- Access to urgent imaging as required.

In-hospital rehabilitation should be assessed immediately after the person has had a stroke and commence as soon as possible.

6.1.5 Early Supported Discharge

ESD will enable appropriate stroke survivors to leave hospital 'early' through the provision of intense rehabilitation in the community at a similar level to the therapy care provided in hospital. The ESD service will operate 7 days a week, able to deliver immediate response to all hospital discharges and patients at risk. The service is therapy led, with medical support provided by the Stroke Consultant where required.

The team will provide intense rehabilitation at home for up to six weeks, thereby reducing the risk of re-admission for stroke related problems, increasing independence and quality of life, with support to the carer(s) and their family. Based on analysis of 3 years of activity data and the Coventry ESD service outcomes it is assumed that 40% of patients will be appropriate to receive ESD services.

Local CCGs will commission ESD using a standard ESD specification across Coventry and Warwickshire, thus ensuring equity of access, service quality and performance standards.

6.1.6 Community Bedded Stroke Rehabilitation

Community bedded stroke rehabilitation is recommended for stroke patients who are medically stable enough to not require daily medical care from stroke physicians, but have ongoing care and rehabilitation needs that prevent them from returning home. The point prevalence audits, bed audits on the UHCW stroke unit and clinical discussions have concluded that this cohort equates to 30% of the patients in an acute stroke unit at any point in time.

Local CCGs will commission community bedded stroke rehabilitation using a standard specification across Coventry and Warwickshire, thus ensuring equity of access, service quality and performance standards.

The provision of this service will be predicated on 'pulling' appropriate patients from the acute stroke unit, providing goal focused rehabilitation and facilitating an onward discharge either home or into an onward residential or care setting, should that be required. Based on local activity analysis, 90% of the patients admitted to bedded stroke rehabilitation will be discharged with community stroke rehabilitation to achieve their optimal rehabilitation.

The facility will require the wider health and care system to support onward flow and thus ensure capacity to continuously improve patient flow from the acute stroke service.

The criterion for the bedded rehabilitation facility has been determined as follows:

- Nurse led care provision, with multidisciplinary therapy interventions;
- Initial admission for up to six weeks of care and stroke rehabilitation;
- Maximum extension of a further four weeks reviewed on an individual case basis;
- Minimum of a weekly review of progress and identification of onward care and therapy needs;
- In-reach support from the ESD service to identify and facilitate the onward pathway of care, including access to the ESD/Community Neuro-Rehabilitation service; and
- Support from Social Care to support onward discharge to home, residential/nursing home placement, ensuring that the maximum period of a 10 week admission is not breached.

6.1.7 Community Stroke Rehabilitation

Stroke survivors' rehabilitation will continue out in the community after time spent in a bedded rehabilitation unit, or after their acute inpatient stay on an ASU. These services enable stroke survivors to develop a greater quality of life and independence following a stroke. Patients will access community stroke rehabilitation services following standard discharge from a stroke unit or following ESD.

The service will ensure regular review of rehabilitation goals with stroke patients, their carer(s) and families and regular review of whether the full rehabilitation potential has been achieved, so that patients can be suitably discharged from the service.

Local CCGs will commission community stroke rehabilitation using a standard specification across Coventry and Warwickshire, thus ensuring equity of access, service quality and performance standards.

6.1.8 Long-term Recovery

Stroke survivors and their carer(s) should be enabled to live a full life in the community in the medium and long-term (i.e. greater than three months). The ESD and community stroke rehabilitation teams will review all stroke patients at 6 months post stroke and offer long term access to rehabilitation for patients with a stroke-based need for multi-disciplinary team intervention. Support will be required from local services to ensure that stroke survivors receive tailored support to assist in their re-integration into the community and maximise the quality of life experienced by stroke survivors, their carer(s) and families.

6.2 Workforce

An important part of mobilising and implementing the proposed model is creating the workforce that will be required by providers to deliver the pathway.

Workforce modelling has been completed with providers as part of the development of the options for service delivery and the subsequent financial appraisal of those options. Staffing levels and skill mix have been based on the NHS Midlands and East Stroke Service Specification, which gives clear guidance on the minimum staffing levels for the various core specialist skills required for high quality stroke care. For those staff groups not prescribed in the Midlands and East Stroke Service Specification, workforce requirements were agreed based on published national guidelines for stroke services and local clinical experience. With regard to ESD and community stroke rehabilitation, local clinical experience of patient complexity, the impact of rurality and recruitment challenges have been used to adapt the proposed skill mix. The workforce model was reviewed with West Midlands CVD Network and their recommendations were used to further shape the proposed model.

The rehabilitation services (community and bedded) have been modelled to provide a 7 day service, in particular it should be noted that therapy services will operate 7 days a week, including providing immediate response to all hospital discharges and patients at risk. The capacity for specific elements of rehabilitation services will vary across the 7 days and has been modelled to match the known profile of demand. This will facilitate the flow from acute and rehabilitation beds over the weekend into the community whilst offering priority visits and intervention to these groups of patients at weekends.

It is acknowledged that as a result of local tailoring, the proposed skill mix for ESD and community stroke rehabilitation includes some deviations from the NHS Midlands and East Stroke Specification. Where the proposed workforce model is not fully aligned to the Specification the adjustments are based on responding to the clinical expertise and experience of the local clinicians.

There are strong rationales underpinning the decisions to change the skill mix profile which include:

- The proposed model has been designed to mirror that of the successful Coventry pilot described in section 4.3; a key factor in this decision is the successful outcomes the team is delivering. The most recent SNNAP results (July-Dec 18) measuring modified Rankin scores, shows that the team delivers input to a much higher percentage of moderate and severely impaired patients as compared to national levels.
- The ESD and CSR teams do not currently include nursing posts as nursing vacancies are currently high in the acute pathway, rehabilitation and community nursing both locally and nationally. Band 4 Assistant Practitioner and Band 3 Rehabilitation Technician Posts have been created within the model and their roles will include traditional nursing activities such as tissue viability and continence management.
- The model includes senior therapist posts; reasons for this include:
 - Having experienced clinical specialists on the ground and available to risk assess, manage arising daily concerns and support less experienced and unregistered staff is an essential foundation for any future plans to develop services further to provide enhanced ESD
 - Providing banding progression through all therapy disciplines was felt to be a clear and sure way of attracting, recruiting and retaining the high numbers of therapy disciplines required.
 - Band 8b psychology posts have been sustained in the model to provide governance and guidance to Band 8as as this support is not available within the existing structures outside of the stroke teams.

The tables that follow show the current stroke workforce in place in each of the providers and the proposed workforce developed to meet the needs of the future service model.

The current stroke workforce is as follows:

Role	Band	UHCW	SWFT	GEH	CWPT
Consultant		4	1	1	0
SpR		2	2.34	1	0
Stroke Specialty doctor (Fast Bleep/TIA clinics)		2	0	0	0
SHO		4	0	1	0
Dietetics	7	0	0.65	0.9	0
Dietetics	6	1	0	0	0.37
Speech & Language Therapist	7	0.8	0.6	0.5	1.45
Speech & Language Therapist	6	1	1.3	0.5	0.67
Speech & Language Therapist	5	0.6	0.6	0	0
Speech & Language Therapist	4	1	0	0.4	0
Physiotherapy	7	0.8	2	0	0.8
Physiotherapy	6	3	2	1	2.88
Physiotherapy	5	3	2	1	1
Physiotherapy	2	0	1.5	0	0
Occupational Therapy	7	1	1.28	0	1.64
Occupational Therapy	6	2.8	1.4	0	1.81
Occupational Therapy	5	2	1.5	0	1
Occupational Therapy	2	0	1.3	0	0
Therapy assistants/MTO	4	0	0	0	2.9
TIA support worker	3	1.02	0	0	0
Therapy assistants	3	2.79	2.3	1	4
Therapy assistants	2	2	0	0	0
Psychology	8b	0.5	0.5	0.5	0.84
Psychologist	8a	0	0	0	0.8
Psychology assistant	5	0.5	0	0	0
Pharmacy	8a	0.5	0	0	0
Stroke co-ordinator/Clinical Lead	8a	1	0	0	0.83
Stroke CNS/TIA CNS	7	0	1	2.6	0
Stroke CNS	6	1.4	2	1	0
Stroke secretary	4	2	0	0	0
Stroke data officer	3	1	0	0	1
Stroke data officer	2	1	2.02	0	0
Nursing	7	1	2	1	0
Nursing	6	2.8	4	4.8	0
Nursing	5	28.42	25.81	11.11	0
HCA	3	3.18	2.6	1.93	0
HCA	2	16.33	23.2	10.49	0
Ancillary	2	0	1.46	0	0
Total number of staff					244.52

The proposed workforce model is as follows:

Role	Band	HASU/ ASU	Bedded Rehab	ESD	Community Rehab
<i>Consultant Physician (thrombolysis trained)</i>		8			
<i>SpR</i>		3	2	0	0
<i>Stroke Specialty doctor (Fast Bleep/TIA clinics)</i>		2	0	0	0
<i>SHO</i>		4	0	0	0
<i>Dietician</i>	6	1	1	0.4	0.5
<i>Dietician</i>	5	0.5	1.63	0	0
<i>Dietician</i>	3	0	0.5	0	0
<i>Speech & Language Therapist</i>	7	0.8	2	1.6	1.05
<i>Speech & Language Therapist</i>	6	2	2	1	1.87
<i>Speech & Language Therapist</i>	5	1	2	0	0
<i>Speech & Language Therapist</i>	4	1	0	0	0
<i>Speech & Language Therapist</i>	3	0	0.5	0	0
<i>Physiotherapist</i>	7	1.8	2	2.3	2
<i>Physiotherapist</i>	6	4	4	1.8	7.1
<i>Physiotherapist</i>	5	3	2	4	3
<i>Occupational Therapy</i>	7	1	2	1.8	1.84
<i>Occupational Therapy</i>	6	3.8	4	2.3	5.8
<i>Occupational Therapy</i>	5	2	2	3.8	3
<i>Assistant Practitioner</i>	4	0	0	0	6.85
<i>TIA support worker</i>	3	1.6	0	0	0
<i>Rehab Assistant</i>	3	4.2	6	10.8	6
<i>Rehab Assistant</i>	2	2	0	0	0
<i>Psychologist</i>	8b	0	0	0	1.84
<i>Psychologist</i>	8a	1	1.2	1.4	1.2
<i>Psychology Asst</i>	5	0.5	0	0	0
<i>Pharmacist</i>	8a	1	0	0	0
<i>Stroke Services Team Leader*</i>	8a	1	0	0.9	0.9
<i>Stroke Clinical Nurse Specialist*</i>	7	1	0	0	0
<i>Stroke Fast Bleep Holders</i>	6	6	0	0	0
<i>Medical Sec</i>	4	2	0	0	0
<i>Data Clerk/Admin</i>	3	1	2	2.5	0
<i>Admin</i>	2	1	1	0	0
<i>Ward Sister</i>	7	1.2	2	0	0
<i>Ward nurse</i>	6	5	2	0	0
<i>Ward nurse</i>	5	38	29.5	0	0
<i>HCA – ward</i>	3	8.2	3.2	0	0
<i>HCA - ward</i>	2	21	19.2	0	0
<i>Orthotics</i>		0	0.24	0	0

Total number of staff

306.12

*These roles will be working on opposite shifts to provide 7-day specialist cover to HASU/ASU

6.3 Conclusion

To deliver the NHS Midlands and East Stroke pathway and to achieve the step change improvement that has been achieved by other health economies in areas of best performance, we need to change the way that stroke services are collectively provided across Coventry and Warwickshire.

The new networked stroke pathway proposed has been designed based on the best practice evidence available, incorporating HASU, ASU, bedded rehabilitation, ESD and community rehabilitation support services. It will ensure that all stroke survivors can access the right standard of stroke specialist ESD and community stroke rehabilitation, providing evidenced based care to reduce the level of disability of those who survive a stroke.

The proposed future service model for stroke care described in this Business Case will meet the projected population demands and support providers to achieve the best practice standards for anyone on the stroke pathway.

The new networked workforce model and pathway when commissioned will place the local providers in the best position to overcome the current recruitment challenge and gap between the number of stroke specialist staff we need and those employed.

The NHS Long Term Plan and National Stroke Programme set out national ambitions for improvements and new developments in stroke services such as mechanical thrombectomy, to further increase stroke survival and rehabilitation outcomes. Crucially, the proposed new clinical model for stroke in Coventry and Warwickshire will establish a service structure and pathway that gives the foundations for these improvements in stroke care to be delivered.

7.0 FINANCIAL AND ACTIVITY IMPACT

Finance and activity modelling have been undertaken to estimate the likely impact on patient flows, costs and potential savings from the potential new models. The results of this work provide evidence to demonstrate that the proposed new model is affordable.

7.1 Financial Appraisal of Remaining Options

Following an assessment of the clinical viability of the potential options for a new model of stroke services, it was evident that:

- there is only one clinically viable scenario for acute care: centralisation of HASU/ASU services at UHCW
- ESD and community stroke rehabilitation are key services required for a high quality stroke pathway. Both require some investment and development across Coventry and Warwickshire; they are not optional parts of the care model.
- There is more than one possible way to provide bedded stroke rehabilitation.

Based on the options development and appraisal the financial case has been prepared on the basis of a do-nothing comparison to a centralised model for HASU/ASU. Modelling for ESD and community stroke rehabilitation has been based on a clinical assessment of the workforce needed to provide these services. A smaller financial options appraisal was undertaken to develop indicative costs for the following options for bedded rehabilitation:

Option 1 - Bedded rehabilitation at SWFT in Leamington Spa and GEH in Nuneaton.

Option 2a - Bedded rehabilitation provision in the Coventry area, not on an NHS hospital site, with specialist therapy in-reach; one bedded rehabilitation unit at SWFT in Leamington Spa and one bedded rehabilitation unit at GEH in Nuneaton.

A lack of clarity on how clinical and operational risks could be mitigated and market availability of beds have made this option difficult to quantify. Pathway costs are subject to significant variation dependent on the location, spread of patients and the exact service support put in. Best estimates of the costs range from this option saving £135k on Option 1 to incurring an additional £200k per annum, assuming that therapy support needs doubling and with medical support going into the facilities. Given the risks identified in section 5.8, the actual pathway required to deliver this option could be beyond this cost base.

Option 2b - One bedded rehabilitation unit at SWFT in Leamington Spa, one bedded rehabilitation unit at GEH in Nuneaton and one bedded rehabilitation unit at the Hospital of St Cross in Rugby.

This pathway when costed was £788k per annum more than Option 1.

The results of the risk assessment (section 5.8) provide a strong steer from the clinical and operational leaders of stroke services that:

- Option 2a has significantly higher levels of clinical and operational risk than Option 1.
- Option 2b poses higher risks of an inability to recruit and a significant risk of having an adverse impact on wider NHS provider sustainability in the health system, than both Option 1 and Option 2a

The above financial appraisal provides a high level, indicative financial test only. Option 1, as the clinically most viable option and preferred option from the non-financial options appraisal, has been used as the basis for the financial case that follows.

7.2 Bed Modelling

Bed capacity modelling has been undertaken to establish the number of beds that should be required to manage demand through the current service model (do nothing state) and for the proposed future clinical model. Modelling for the proposed new clinical model has also been tested to ensure achievement of SSNAP measures.

Activity for 2017/18 was used to form the baseline for modelling, with growth of 1.07% assumed annually. Appendix 14 details the assumptions applied to the activity to complete the modelling and their source/evidence base. Cross boundary activity involving Coventry and Warwickshire's bordering providers (University Hospitals of Leicester, Worcestershire Acute Hospital and Birmingham Heartlands Hospitals) was also analysed to identify any potential impacts. The resulting cross-boundary flow of activity was found to be minimal.

The results of the activity modelling on the required bed numbers are shown in the table below:

Bed and Service Provision: Current vs Future State

Bed/Service provision	Current	Future	Difference (Beds)
Hyper Acute Stroke beds	6 beds at UHCW	12 beds at UHCW	+ 6 beds
Acute Stroke beds	30 ASU beds at UHCW 12 ASU beds at SWFT 18 ASU beds plus 1 assessment bed at GEH (Total 61 beds)	31 ASU beds at UHCW	- 30 beds
Community Stroke Rehabilitation beds	6 inpatient rehabilitation beds at Rugby site, UHCW for Rugby patients aged 65+ 20 inpatient rehabilitation beds at Leamington site, SWFT for SW patients only (Total 26 beds)	17 for C&R CCG (preferred option 9 in SWFT/8 in GEH) 12 beds in SW (SWFT) 10 beds in NW (GEH) (Total 39 beds)	+ 13 beds (N.B. different specification of beds)
Total bed numbers	93 beds	82 beds	- 11 beds

In establishing the future bed base, the following assumptions about the patient flow through the proposed future clinical model were made:

- HASU length of stay would continue to be up to 3 days;
- Acute length of stay is expected to reduce from the current 18 days (spell average) to 11 days at day 1 of introduction of the full pathway, reducing further to 7 days from

year 2 of the new pathway being implemented. The implementation plan for the proposed new model introduces and embeds the new community rehabilitation services in phase 1, to make the necessary changes to patient flow to reduce length of acute stay in advance of centralising the HASU and ASU services.

- Following their stay on the ASU, patients will be discharged as follows:
 - 40% of patients will be discharged with a standard ESD package
 - 30% of patients will transfer to bedded rehabilitation provision
 - 30% of patients will be discharged with community stroke rehabilitation.
- Community stroke rehabilitation will also support 30% of the patients completing ESD and 90% of the patients discharged from bedded rehabilitation.
- Bed occupancy rates have been agreed with clinical input from providers to enable the pathway to manage peaks in demand and to deliver the patient flow necessary to sustain the existing HASU/ASU bed ringfencing policy. The occupancy rates applied are as follows:
 - HASU – modelled assuming 85% occupancy
 - All other Stroke related beds – modelled assuming 90% occupancy

The proposed new clinical model results in a redistribution of the current stroke bed capacity and an overall reduction of 11 beds in the total number of stroke beds required. These beds will be reallocated to other hospital specialisms, recognising the demand pressures for other acute hospital beds in the system from demand growth and given the need to ensure that patient flow is maintained.

7.3 Activity Impact

A detailed model of patient flow through the system was constructed with clinical engagement and using points prevalence audits to test and refine assumptions (Appendices 14-16). The tables below show a comparison of activity flows through the Coventry and Warwickshire acute hospitals through the current versus the proposed future pathway, for each of the acute provider organisations. This illustrates the potential impact that the centralisation of HASU/ASU is likely to have on both patients and providers.

Activity Impact

	UHCW		GEH		SWFT	
	Current	Future	Current	Future	Current	Future
Suspected stroke patients – arriving by ambulance	2,077	3,091	437	-	577	-
No of patients assessed in A&E	2,336	3,345	659	224	820	246
Patients transferred to UHCW HASU	-	-	-	120	-	109
No of patients Treated in HASU/ASU	1,053	1,752	281	-	418	-
No of patients to receive bedded rehab			-	170	-	179

Early supported discharge and Community Stroke Rehabilitation	Coventry and Warwickshire
No of patients to receive ESD	465
No of patients to receive CSR	803

Due to the likely increase in patient journeys identified within the proposed new model we have directly engaged with NHS West Midlands Ambulance Service (WMAS) to enable them to model patient journeys under the proposed future model. This modelling completed by WMAS has identified that implementation of the proposed new model will result in an additional 2.78 ambulance journeys per day. WMAS have confirmed that this increase could be planned into their annual workload. The WMAS modelling report can be found in Appendix 15.

Specific review and agreement of the proposed model was sought from NHS England Specialised Commissioning to ensure that the changes proposed would not impact on the services commissioned by them. A letter of support in principle from Specialised Commissioning has been received.

7.4 Financial Modelling

The financial implications of the proposed new model have been assessed through joint work between commissioners and providers. The results have been discussed at STP level and the following principles have been agreed by both commissioners and providers:

- The bedded part of the stroke pathway (i.e. HASU/ASU and bedded rehabilitation) will continue to be covered by tariff under the current tariff cost envelope.
- The three CCGs will invest the required amounts in the additional ambulance transfers, elements of prevention and the community stroke rehabilitation pathway.

The agreement that tariff will cover the bedded elements of the proposed new pathway has been used to set an overall financial envelope. This will be recast for the latest tariff at the time of implementation. The three local acute providers have agreed to operate the model within this envelope and to jointly mitigate and manage any risks associated with this element of the pathway, having assessed the costs of delivery and scope for efficiencies.

It is important to note that there will be no savings to Commissioners from the planned stroke bed base realignment outlined above. Tariff will continue to be paid on the nationally set basis.

The level of investment required from CCGs into the community elements of the pathway has been calculated based on the activity modelling and costing of the proposed workforce models and associated service delivery costs. Further details on the commissioner investments are provided in section 7.4.2

In line with the agreements and assumptions identified above, estimates have been produced by Commissioners and Providers of the impact on income, activity and costs under the current model and the future model options, both at system and individual provider level. These estimates have been based on 2017/18 planned activity and prices to enable a consistent approach to be taken.

The table that follows compares the costs for both CCGs and providers of the current and preferred option.

	Current Investment by CCGs	Proposed Model	Change from Current Investment	UHCW	GEH	SWFT	CWPT	Other
	£000s	£000s	£000s	£000s	£000s	£000s	£000s	£000s
Acute HRGs	10,440	9,312	-1,128	9,312				
Rehabilitation	2,478	3,980	1,502		1,990	1,990		
Bedded facilities			0					
Acute Outpatients	642	642	0	642				
Acute elements	13,560	13,934	374	9,954	1,990	1,990	0	0
Community - ESD and Rehab	1,663	4,775	3,112			2,669	2,106	
Ambulance extra journeys		171	171					171
AF Net investment		128	128					128
Community elements	1,663	5,074	3,411	0	0	2,669	2,106	299
Total cost of pathway/model	15,223	19,008	3,785	9,954	1,990	4,659	2,106	299

Notes:

- The original investment envelope was £13.1m (2017) but this has been revised upwards due to changes in the national tariff.
- Current Acute HRG spend based on 19/20 plan and as such within Provider and CCG baselines
- Community costings – taken from Provider costings

7.4.1 Inpatient Bedded Care Costs

The cost of hospital bedded care will remain the same for CCGs with the three acute providers agreeing to deliver within the current funding. All three acute provider Boards have confirmed in writing their sign up to this agreement and to jointly managing and mitigating any risks arising.

The financial impact of the proposed model was assessed through joint work with providers to agree the likely impact. The table that follows shows the position from the acute provider perspective:

Cost of Proposed Model	
£000s	
Acute Inpatient	9,312
Rehabilitation	3,980
Acute Outpatients	642
Acute elements	13,934

Funding Envelope	
£000s	
HRG Tariff	10,440
Rehabilitation	2,478
Acute Outpatients	642
Funding by CCGs	13,560

Difference	374
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Please note that the following assumptions have been made in this analysis:

- Total acute costs for UHCW, GEH and SWFT are paid on a cost and volume basis at national tariff.

- Staffing has been costed on updated pay levels.
- A risk share arrangement is in place for under/over activity based on length of stay.
- The Trust income changes (and therefore the CCG costs) have been calculated based on the effects of the change to Atrial Fibrillation anticoagulation therapy only. Evidence indicates that there is the potential to avert 230 strokes over three years across the three CCGs (NHS England Atrial Fibrillation QIPP Report 2012/13). NICE estimates the average cost of acute and community care for one stroke at between £12,228 and £40,000 per year. However, there are additional costs associated with delivering this part of the pathway in terms of prescribing and patient identification, which make this a small net cost overall.

Further assumptions have been included relating to length of stay as described in the following section.

Length of Stay Assumptions

The centralised service model improves Commissioner and Provider financial sustainability.

The baseline activity data used for modelling reflects a current average length of stay per spell of 18 days. Given the current limitations on availability of stroke rehabilitation beds, the current acute spell length is believed to include some rehabilitation level bed days, which is therefore inflating the reported average acute stay.

The proposed new model of care sets a target of 11 days for the average acute length of stay (i.e. HASU/ASU total stay). This is based on a prudent expectation of the acute length of stay reduction that will be achieved through establishing comprehensive ESD and community stroke rehabilitation. The reduction in length of stay helps to lower the bed requirement for acute stroke from the existing bedded quantum at the three sites to the equivalent of 12 additional beds at UHCW.

For Commissioners, the provision of alternative rehabilitation options will reduce the average length of stay needed within an acute setting by creating services which actively 'pull' patients who are medically stable and in need of rehabilitation into non-acute settings which are more appropriate and closer to home.

The 11 day average acute length of stay is noted as being a prudent estimate when compared with other similar models in England evidencing a 7 day average length of stay. As discussed in section 4.3, evidence from the evaluation of other systems in England that have already centralised stroke admissions supports the assumption that investment in community services will deliver a reduction in length of stay. Further, local evidence from the implementation of the ESD and community stroke rehabilitation in Coventry has already demonstrated a significant reduction in acute length of stay for Coventry patients. The three local acute providers report current average acute stroke lengths of stay of between 12 and 14 days. It is therefore recognised that a proportion of the overall reduction in length of stay required has already occurred and gives credence to the deliverability of the business case.

The development of this Business Case coincides with the release of 11 decant beds at UHCW, which were created to enable fire stopping works at the Trust. These beds will accommodate the bed requirement transfer to UHCW. The prudent assumptions on the

expected length of stay further mitigate the capacity risk at UHCW. To transact this, commissioners have agreed an unbundling methodology with UHCW.

It is important to note that there will not be any overall bed closures for the system; beds not required for stroke care will be transferred to other specialties as required by demand.

7.4.2 Commissioner Costs

As stated above, it has been agreed by all three Commissioners that they will fund the additional costs required in the community elements of the pathway.

As with the acute costs, joint work with providers has been undertaken to calculate the cost of these changes, based on activity modelling and costing of the consequent workforce model and associated service delivery costs. The resultant total investment and split between each of the three CCGs has been agreed and signed off by CCG Governing Boards as follows:

- NHS Warwickshire North CCG 17th July 2019
- NHS Coventry and Rugby CCG 17th July 2019
- NHS South Warwickshire CCG 17th July 2019

The table below compares the costs for both CCGs and community providers of the current and proposed model.

	Current Investment by CCGs	Cost of Proposed Model
	£000s	£000s
Community - ESD and Rehab	1663	4,775
Ambulance additional journeys		171
AF Community investment		128
Community elements	1,663	5,074

Additional cost of community model	3,411
Additional cost of Acute model	374
Less savings on CHC packages	-700
Net additional CCG investment required	3,085

Agreed split by CCG:

CRCCG	300	1,283
SWCCG	440	547
WNCCG	1,008	1,254
	1,748	3,085

This analysis indicates that the CCGs will be required to invest a further £3.1m in the community pathway. The agreed split of investment between the CCGs is as shown in the table above. Proposed investment levels are within CCG financial plans for 2019/20 (on a part year basis) and 2020/21 (on a full year basis). The five-year financial plan being developed will also include the impact of this service provision.

The proposed new stroke pathway is expected to improve patient outcomes, leading to a reduction in the costs of long term packages of care. Savings of £700k have been assumed

across Coventry and Warwickshire. These savings have been assumed as a source of funding for the additional community-based costs (including Atrial Fibrillation anticoagulation therapy) of the proposed pathway, reducing the additional CCG investment requirement.

The estimate of costs has been based on the following assumptions:

- It is based on a current cost breakdown received from providers. Current staffing levels will be altered in line with business case assumptions. It has been assumed that income will cover costs under the proposed model.
- ESD: up to 40% of all Coventry and Warwickshire patients would receive this service. This is consistent with what is known about the numbers of patients receiving the current Coventry service and take-up rates. Further details of the modelling used to predict ESD demand can be found in Appendix 16.
- Community stroke rehabilitation: costs have been included for the provision of a service throughout Coventry and Warwickshire which meets the Midlands and East Service Specification.
- Ambulance service: additional funding will be required as a centralised model will increase the number of emergency transports into the specialist centre following a 999 call and also the number of non-emergency journeys as a result of repatriation for rehabilitation. The estimated activity impact of this and associated costs have been worked up by WMAS.

In line with the Implementation Plan for the proposed new model, the cost of the community pathway has been assumed to start at an earlier stage than the bedded pathway, to enable the pull of patients through the system to be created and embedded before implementation of the acute centralisation.

7.4.3 Impact on Social Care Costs

The financial impact of improved stroke management on Social Care costs has not been included in the costings due to there being:

- no increase in the number of stroke patients that social care will be supporting; the new model will change the flow of patients through the system, not the volume and should reduce patients' level of dependency through the enhanced rehabilitation. Therefore, there are not expected to be any additional costs incurred by the Local Authorities
- there being net anticipated savings to the Council from improved patient outcomes that are not necessarily attributable to the CCGs.

It should be noted that similar stroke models piloted in other parts of the country have observed significant reductions in post-stroke Social Care packages. In Essex, a shift took place from 8.9% of strokes requiring a Social Care package before implementation of the new stroke pathway to 2.7% after implementation. It is estimated that this could save around £2m across all 3 CCGs if this percentage reduction is applied to the projected strokes in this business case.

7.4.4 Financial Risks and Sensitivity Analysis

A number of financial risks have been identified which are described in the table below.

Risk Number	Risk	Description	Value estimate (£m)	Provider (£m)	Commissioner (£m)	Recurrent?	Level of Risk	Basis	Mitigating actions
1	Risk Share	The proposal is that tariff is risk shared for acute length of stay at under 11 days.	1.4	1.2	0.3	R	High	Currently above 11 days as a system	Agreement has been reached that Providers will take the risk on the bedded part of the Stroke pathway. Work with Clinical leads undertaken with expectation that pathway can deliver better than 11 day length of stay. Contract approach and clauses should mitigate. Acute Length of stay will reduce with introduction of bedded rehab, which accounts for a substantial part of current Acute length of stay.
3	Bed Opportunity Cost	The movement of bed usage may not result in an income neutral equivalent service being re-provided within the Trusts.	0.4	0.4		NR	High	Trust Estimate on possible income loss	ESD already in place for CRCCG, 6-9 months implementation is anticipated at most. Clear communication of issues during implementation phase with recovery actions. Contract approach will be to pay for reasonable levels of transition with limits on reasonable adjustment set. Delay on implementation of the next phase would be the ultimate mitigation.
5	Provider Efficiency	Sensitivity analysis shows that there is a risk of additional beds in both HASU/ASU needed for peak times	1.2	1.2		R	Medium	Assumption based on additional 5 days LOS, 6 beds at £200k per bed.	Peak times will be managed through overflow and through occupancy being allowed to be greater than 85%. Sustained period of peak flow unlikely.
9	CCG Community Savings	CHC Community package investment and AF Prevalence assumptions	0.7		0.7	R	Medium	Based on NICE guidance, but without certainty as to where savings occur.	Prudent assessment of impact of AF already in place. Community package impact will be taken out of budgets as part of investment plan, but prudent assessment of valuation taken.
11	Tariff Changes	Tariff has been based on 2019/20 tariff levels and these will change impacting on commissioners/providers. As an STP this should only move the deficit.	0.0			R	Medium	Tariff changes each year. Could change as contract basis may change. Not financially valued.	Zero impact confirmed for Health Economy
TOTAL			3.7	2.8	1.0				

As described in section 7.2 above, bed capacity has been modelled on the basis of running the proposed new model with bed occupancy of 85% in HASU and 90% in all other beds, in line with accepted best practice. Sensitivity analysis has been undertaken to test the resilience of the resultant bed numbers, modelling the impact of an increase in acute length of stay and variations in the total volume of strokes through the model. In terms of acute length of stay it has already been shown that the creation of dedicated rehabilitation beds alone should reduce the required number of beds to the level for 11.5 length of stay. An increase in the overall total number of strokes is a more likely risk to the model. Planning bed capacity based on the occupancy rates used means that occupancy should be low enough to offset the sensitivity around this in the short to medium term. Increased numbers should only be needed for very high peak times as outlined within the risk table. The health economy will need further conversation if this does peak in a sustained way above this level.

The results of the sensitivity modelling are shown in Appendix 17. This has been included within the risks.

7.5 Conclusion

The financial analysis indicates that the CCGs would be required to invest £3.1m to deliver the proposed model of care. The three CCG Governing Boards have agreed to invest this level of funding and included their respective proposed investments in financial plans for 2019/20 (on a part year basis) and 2020/21 (on a full year basis).

Working together, the three acute providers have agreed to deliver the hospital bedded elements of the pathway within the national tariff and a joint risk share arrangement is in place for under/over activity based on length of stay. Some modest financial savings will accrue to the CCGs as a result of the new model (£0.7m from the impact of improved anticoagulation therapy for AF and reduction in long term NHS funded packages of care through the improved rehabilitation offer).

This is considered an appropriate investment to make to increase quality, improve outcomes and access and address the key issues outlined in this business case.

After the consultation process and as part of mobilisation, further work will be undertaken on the timing of the required investments.

8.0 IMPLEMENTATION

This section outlines the next steps for the CCGs to proceed to implementation of the proposed future clinical model for Stroke services.

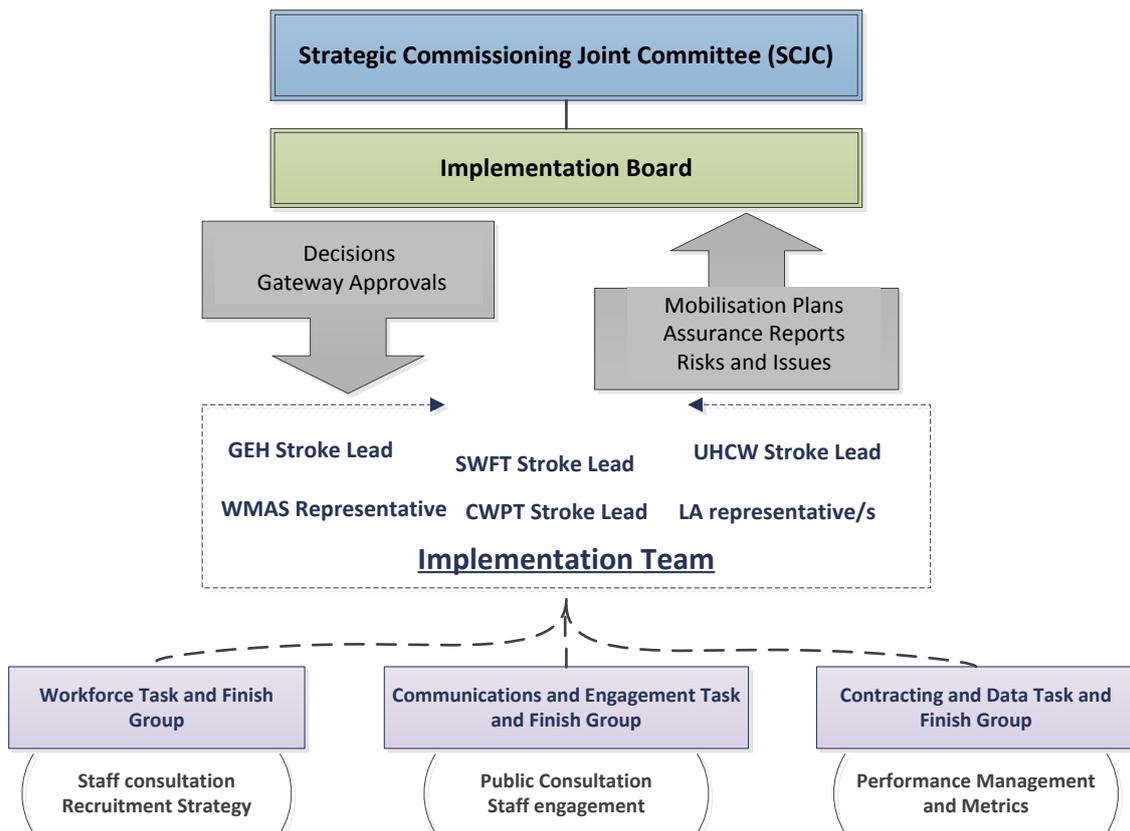
8.1.1 The Process Following Consultation

Once the final pathway has been identified following public consultation, the project will move into the contracting and implementation phase. As Commissioners commence the contract process, they will focus on the governance arrangements with accountability routed through the Strategic Commissioning Joint Committee (SCJC) formed from the three CCGs of Coventry and Warwickshire.

Implementation will be overseen by the formation of an Implementation Board, chaired by a Chief Executive of one of the provider organisations (to be nominated), with membership comprising at least one Executive from each of the provider and commissioner organisations.

It is expected that the governance structure for the implementation process will be as set out in the diagram below.

Governance Structure – Implementation Phase



The Implementation Board will meet every two months. Providers will agree arrangements for project management support and leadership at the start of the implementation phase. The Implementation Board will have responsibility and accountability for signing off progression through the implementation gateways defined. The governance responsibilities associated with implementation are in addition to the existing and ongoing duties commissioners and providers have for monitoring and performance managing the delivery of patient services.

It is proposed that the already established Stroke Clinical and Operations Group will reconfigure to become the Implementation Team, with day to day responsibility and accountability for managing the delivery of the new networked clinical model. The C&W Stroke Implementation Team membership will comprise a minimum of a Stroke project lead from each provider organisation and representation from West Midlands Ambulance Service, both Coventry and Warwickshire Local Authorities and any other key stakeholders identified as critical to the delivery of the future pathway.

In line with best practice project management, the Implementation Team will be responsible for ensuring that mobilisation plans (including timelines) are provided and adhered to, providing formal assurance reports and escalating any risks and issues to the Implementation Board and SCJC as appropriate. They will also be responsible for monitoring achievements against the benefits plan which will include; the regular performance review of patient flow through the system, outcome data, staffing skill mix effectiveness and ensuring that defined gateways are achieved before transitioning to the next phase of implementation. This is a complex programme of implementation, delivered in phases with defined “go/no go” gateways. On the basis of the performance and progress review, the Implementation Team will make recommendations to the Implementation Board for approval regarding progress and/or suggested amendments to the implementation plans.

Individual providers will be responsible for establishing their own internal governance structure and mobilisation plans for their specific elements of the model.

8.1.2 Commissioning of Future Stroke Pathway

The Commissioners have undertaken an options appraisal of the available contractual mechanisms and procurement routes in order to recommend the most effective way of commissioning the integrated stroke pathway. In assessing the contract mechanisms and procurement routes the commissioners considered the following factors:

- Local needs and profiles;
- Sustainability;
- Continuity;
- Value for money
- Affordability;
- Stability
- Deliverability, and
- Procurement Law and Guidance.

After assessing the options, the Commissioners intention is to move to a Lead Provider arrangement with mandated sub-contractors as this should give the best opportunity for an integrated model of care and an integrated workforce across the future pathway

CCG Commissioners recognise that there is further work required to underpin the future contracts with robust outcome measures, performance indicators and clinical protocols in order to support the principle of integrated care, continuous improvement and ensure

patients flow seamlessly through the pathway. These will be developed in collaboration with providers.

8.1.3 Implementation

Implementing the proposed new clinical model represents a significant change to current services and as such will be a complex process.

We are currently in the early stages of implementation planning as the focus to date has been on comprehensively engaging with all key stakeholders to design the most appropriate service delivery model. Therefore, and, acknowledging that greater detail will be provided during and following consultation, the present outline implementation timeline is provided below. A high-level project plan Gantt chart illustrating the key tasks and project gateway decision points is attached at Appendix 18.

Business Case	
Business case complete	June 2019
NHS England Assurance process commences	June 2019
Consultation period	October 2019 –January 2020
Governing Bodies consider consultation results and decision made (BC updated with consultation outcomes)	January 2020 - February 2020
Contract signed	March 2020
Proposed Mobilisation and Implementation should pathway be agreed	
Community pathway mobilisation/ implementation	
Recruitment commences to ESD and CSR posts	March 2020
Mobilisation of ESD and CSR	May 2020
ESD and CSR fully implemented	Jan 2021
Acute pathway mobilisation/ implementation	
Recruitment commences to acute posts	March 2020
Adequate acute staffing in post. Go/No Go gateway decision	Jan 2021
UHCW: additional HASU/ASU beds implemented	April 2021
SWFT: ASU beds closed / SWFT CSR implemented	
GEH: ASU beds closed / GEH CSR implemented	
Complete pathway implemented	April 2021

8.1.4 Workforce

The workforce model for the proposed new clinical model is based on ensuring that the system has the right skills to manage patients complex and varying needs, in the right setting. It has also been developed based on understanding the current local and national recruitment pressures, to seek to optimise where we are targeting workforce expansion. For example, recognising that we currently have high levels of nursing vacancies in the acute stroke pathway, Band 4 Assistant Practitioner and Band 3 Rehabilitation Technician posts in the ESD and community stroke rehabilitation services will include traditional nursing activities such as tissue viability and continence management, so that our nursing recruitment can be focussed on enhancing the acute team.

The workforce required for the future clinical model represents a significant increase in the numbers of staff in the stroke services workforce in Coventry and Warwickshire. It is recognised that this will present a significant challenge given the current difficulties faced in recruitment and is therefore identified as a key implementation risk, with mitigation plans

agreed. Critically, the implementation plan has been designed to include key clear gateway criteria for progression with the implementation of aspects of the proposed new clinical model, many of which are based on levels of recruitment to new posts achieved.

A Workforce Group has already been established as part of the STP-wide Workforce action to manage recruitment. The group will work closely with colleagues in the Cardio Vascular Disease Network and Health Education England in recruiting to and shaping the workforce. This group will take the following actions to manage the recruitment process and deliver our workforce plans:

1. Assess the **current skill mix and competencies** of the workforce against the recognised national competency frameworks, to give a clear indication of where new skills should be recruited and which new posts should be prioritised. Further to this the effectiveness of the workforce skill mix will be regularly reviewed as part of the routine review of the achievement of expected outcomes and benefits and responding to any staff turnover.
2. With regard to **nursing recruitment challenges**, we will recruit more experienced nurses from within the existing workforce. We will use targeted recruitment processes and work closely with local universities to highlight opportunities within stroke services. We will give opportunities for the development of existing staff who would like to progress into more specialist band 6 and 7 roles within the nursing team. We will put a development plan in place to offer newly qualified and less experienced nursing staff opportunities to gain experience within the specialist wards as part of a rotational training process. We will offer targeted training to ensure that the necessary competencies are readily available in both the acute and community nursing workforce. We will rotate band 5 nurses through ASU, bedded rehabilitation and community services to give them a broad understanding of the pathway and develop the skills required to deliver care in a seamless way. We will offer rotational opportunities at band 6 and 7 for nurses to enhance the ability to retain this important workforce.
3. Within **therapy services**, nationally there is no current shortage of staff at band 5, there are however challenges in retaining staff at this level and a consequential high turnover, due to limited progression opportunities, particularly noted in some fixed community posts. The presence of clinical specialism within the therapy offer can act as a draw and a clear range of skills and specialists to learn and develop from. Consideration will be given to providing rotational opportunities between services once the model is embedded and this should increase competency, neuro skill and retention at a band 5 level, at least in some posts. We will need local specific actions to recruit experienced band 6 and higher posts. We will run an internal STP wide development programme around the stroke pathway to attract and retain experienced workforce. The band 6/7 physiotherapy and occupational therapy posts in the new structure will be clearly differentiated, to allow current post holders to be clearly slotted into the roles and to attract new employees. We anticipate a shift of band 6/7 experience and clinical experts from acute services into community services as the rehabilitation offer increases in the community, this will allow flow through for

lower banded staff to move into their first Band 6 or 7 position in an environment of increased governance and support in bedded units and we would expect this trend to continue and allow a sustainable workforce from OT and PT perspective.

4. For **medical recruitment**, the role of Consultant Stroke Physician is recognised nationally as being a shortage specialty and recruitment to the proposed establishment will be a challenge. Promoting a new “stroke pathway of excellence” for the area with a minimum 1:6 on-call rotation should make the posts more attractive to new consultants in particular. The opportunity to have varied input across the whole pathway will also be attractive. Recognising the challenge in recruiting, despite our attractive service model, this has been identified as a key risk to implementation. We have designed our implementation plans to mitigate the risks to delays in implementing the future clinical model, through phased implementation of the model. We will work with HEE and the local Deanery to agree additional training placements locally at F1, STR and SPR level.
5. We will include **new and extended roles** in the pathway in the medium term. We will seek to develop extended scope practitioners, including extended scope nursing roles, therapy roles, physician’s associates and extended scope pharmacists. Having the HASU/ASU on a single site will make the mentoring and support of these roles less complicated and will offer opportunities to develop skills based, rather than qualification-based job roles. This approach could also be applied to more junior roles with the introduction of nursing associates and assistant practitioners, both within nursing and therapies, to extend the scope of skills delivery. Additionally, we will use apprenticeships to develop HCA and therapy assistant roles.
6. We will put in place **retention and reward strategies** across the health economy to help retain the workforce. This approach will help to secure additional short-term staffing, whilst the new pathways are established, and staff gain confidence in the delivery model.

Timescales for recruitment

Subject to the consideration of the outcome of public consultation and assuming that CCG Boards approve the implementation of the proposed model in February 2020, recruitment to the new workforce model would start in March 2020. The high-level project Gantt chart attached at Appendix 18 sets out the timescale for recruitment for the key workforce groups.

It is important to note that whilst the implementation of the proposed new model will be phased, with ESD and community stroke rehabilitation introduced first and centralisation of HASU/ASU occurring after these rehabilitation services are fully mobilised, recruitment to key posts within the new HASU/ASU model will start immediately after CCG Board approval, i.e. in March 2020. This is a key requirement for mitigating the risk of delays in recruitment given the national shortages of specialist staff in specific key areas such as Stroke Consultants. Recruitment to the ESD and community stroke rehabilitation teams would also start in March 2020.

A whole health economy wide induction process for those people joining the pathway, both for existing staff and for those new to the team, will be required. This will have the dual benefits of enabling everyone to have a common understanding of the pathway and where they fit within the services and support the development of an integrated networked approach across the team that is not dependent on the employing organisation, but on the delivery of the pathway.

8.1.5 Risk Analysis

This is a complex service reconfiguration and as such work has already taken place to identify the potential risks to delivery of the proposed new clinical model and to develop appropriate mitigation plans. The key risks identified are as follows:

Workforce: The inability to recruit the necessary staff and reconfigure existing staff as required by the new clinical model.

In mitigation implementation will be phased with clear thresholds for gateway progression to ensure that the service is safely mobilised and embedded. The establishment of a clinical network workforce model is seen as a key benefit for recruitment as well as quality of care and whilst initially being applied to Consultants, the principle will be reviewed with respect to its value for other major staff groups such as nurses and AHP staff. Mobilisation of the rehabilitation services will be front-loaded enabling extra time to complete Consultant recruitment before the centralisation of the HASU/ASU services. Whilst the intention is to recruit to a networked model of Stroke Consultants, recognising the recruitment challenge, alternative mitigating workforce strategies have been outlined by the providers to enable progression to centralisation should only 50% of the new consultants required be recruited. Core to these is the separation of the rehabilitation beds Consultant cover from the HASU/ASU. Establishment of a Workforce Workstream is underway to oversee the workforce challenges and proposals, also acting as the link with the West Midlands Deanery and West Midlands Health Education. The specific situation at the time of each gateway review will be considered by the Implementation Board and the relevant mitigation plan will be enacted should recruitment not be progressing as planned.

Capacity: Whether sufficient capacity at UHCW can be developed and sustained to be able to manage any peaks in demand for the HASU and ASU services and any delays in patient flow.

In mitigation, capacity planning has been completed using the latest available data and clinically agreed assumptions on the impact of the new model on patient flow. Bed occupancy of 85% for the HASU and 90% for the ASU has been assumed and sensitivity analysis completed which demonstrate that the system is resilient to expected peaks in activity. In addition, implementation will see rehabilitation services implemented first to enable the impacts on acute length of stay to embed prior to the centralisation of the HASU/ASU service. Review and oversight of the implementation of the new service model will be managed by an Implementation Board that includes all providers within the networked model, to ensure alignment and joint ownership of any issues and actions.

9.0 CONCLUSION

This document has described how stroke services are currently provided across Coventry and Warwickshire, the current gaps and inadequacies with these and our proposal for change.

It is clear from the analysis of current services that there is considerable unwarranted variation in the range and quality of service provision for patients across each CCG footprint in Coventry and Warwickshire. For example, access significantly differs to inpatient rehabilitation beds, specialist community rehabilitation and ESD dependent on where patients live within the STP footprint. Current services do not meet the Midlands and East Stroke Specification and fail to deliver against a range of key service performance indicators. National and local skill shortages have a significant impact on workforce availability and the ability to recruit and retain sufficient staff to operate high quality services across three sites.

Given this range of current, significant access, quality and workforce issues, work is clearly required to improve local stroke care across Coventry and Warwickshire so that more patients can survive their stroke and achieve their optimum level of recovery.

Considerable collaborative work has been undertaken over the last 4 years with all stakeholders to design, develop and appraise new clinical models for future stroke services. We recognise that stroke services across Coventry and Warwickshire can be better delivered to provide improved health outcomes for patients, by being set up in line with established best practice guidance.

The Business Case has identified the preferred option which is:

- A centralised HASU/ASU at UHCW which will receive all stroke patient presentations
- One bedded rehabilitation unit at South Warwickshire Foundation Trust (SWFT) in Leamington Spa;
- One bedded rehabilitation Unit at George Eliot Hospital (GEH) in Nuneaton;
- ESD and community stroke rehabilitation at home areas available across all of Coventry and Warwickshire;

In addition, actions have been agreed to improve the identification of people with Atrial Fibrillation and further improve their anticoagulation therapy for people to reduce the occurrence of stroke.

The proposed new clinical model will create a pathway of excellence for stroke services, improving the quality of services and removing the current inequities in service provision and access for our population. We believe that through delivery of this business case we will create services that contribute to a higher quality, more effective health and care system, and allow the further development of the NHS long term plan Integrated Stroke Delivery Network and mechanical thrombectomy.