Review of North Mersey Hyper Acute Stroke Services

Pre-Consultation Business Case

11/1/2021

Version 1.14 Joint Committee

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1 Foreword

As clinical leaders our aim is to deliver the best possible healthcare for our patients. People's health needs are changing and under the current way we have arranged our NHS, we are not always able to deliver care to the standards we would like. We believe we need to change our models of healthcare delivery now, so we can be in a position to provide high quality care in the long term.

To fully meet people's needs, we need a system capable of delivering the right kind of healthcare, in the right setting. When people do need hospital care, we believe that were necessary centralising key services is important, so that patients have access to the best possible care.

The North Mersey Stroke services have reviewed their current services and have developed a plan to transform its hospital services with an aim to: -

- Provide the best stroke service in the country
- Have all patients receive the right care in the right place first time
- Have a service that is sustainable clinically and financially
- Improve patient outcomes
- Give patients the best possible experience.

In our plans we have based our transformation on the following principles: -

- Services will be delivered by teams of specialist professionals whose skill will meet the needs of patients
- Services will be delivered by a sustainable workforce
- Services will meet clinical standards and best practice
- Variations in quality and standards of care will be eliminated.
- Services will be centralised whenever clinically necessary and local whenever possible.

To achieve our plans will require a significant amount of change to the stroke services of North Mersey but these are essential if we are going to deliver a better service that are sustainable.

Our plans are incorporated within this pre consultation business case. This case explains why change is necessary and what we are proposing change in the future. The change to the way we deliver services is required to improve patient outcomes and experience. We have throughout this case used clinical evidence and standards to shape our proposed new model of stroke care. The case has been developed by our clinical teams from the North Mersey Stroke Services who are fully committed to securing a better future for their services.

2 Executive Summary

A stroke is a serious life-threatening medical condition that occurs when the blood supply to part of the brain is cut off by a blood clot or bleeding from a blood vessel. Strokes are a medical emergency and urgent treatment is essential. The sooner a person receives treatment for a stroke, the better the chance of recovery. It is one of the most significant public health issues of our time, with a profound and growing impact on society, our economy, individuals, and families.

This pre-consultation business case (PCBC) sets out a proposal for an integrated model of care and the future configuration for hyper-acute stroke services for the populations of Liverpool, Sefton, Knowsley and West Lancashire.

This document provides a comprehensive representation of the case for change, a clinical vision, a proposed model of care, the process by which options were identified and appraised and it sets out a preferred option for the future delivery of these services. The PCBC contains detailed modelling to evidence the impact of the proposal on a range of factors, including activity, workforce, finance, capital and estates.

While there have been some significant improvements in stroke prevention, treatment and patient outcomes since the 2007 National Stroke Strategy, major challenges remain across the whole stroke pathway locally. A number of Acute Stroke Units do not meet national guidelines and there are gaps and unwarranted variation across the stroke care pathway.

Transforming stroke care is a priority within the NHS Long Term Plan.

The plan points to strong evidence that hyper acute interventions such as brain scanning, and thrombolysis are best delivered as part of a networked 24/7 service. The plan supports centralised hyper-acute stroke care delivered by a smaller number of well-equipped and staffed hospitals, based upon clear evidence of the greatest improvements in adopting this model of care. This would see a reduction in the number of stroke-receiving units, and an increase in the number of patients receiving high-quality specialist care, meeting seven-day standards for stroke care, which meet national clinical guidelines.

In addition, mechanical thrombectomy and clot-busting treatment (thrombolysis) can significantly reduce the severity of disability caused by a stroke. Reconfiguring stroke services into specialist centres would improve the use of thrombolysis and further roll out mechanical thrombectomy. This model of care would ensure 90 percent of stroke patients receive care on a specialist stroke unit and that all patients who could benefit from thrombolysis receive it. This combination of specialist stroke care, thrombolysis and thrombectomy would result in the NHS having the best performance in Europe for people with stroke. The North Mersey health and care system is committed to transforming hyper-acute stroke services to deliver the best possible outcomes and experience for our population.

The North Mersey Stroke Plan is part of the Cheshire and Merseyside Health and Care Partnership cardiovascular disease (CVD) programme.

The current providers of inpatient stroke services for North Mersey are Liverpool University Hospitals NHS FT, which delivers stroke services across two sites at the Royal Liverpool and Aintree Hospitals, and Southport & Ormskirk Hospitals NHS Trust (Southport & Formby District and General Hospital). Tertiary neuroscience services are provided by The Walton Centre NHS Foundation Trust, which delivers regional thrombectomy services across most of the Cheshire & Merseyside footprint.

The current provision of both acute and rehabilitation/support services across Liverpool, Knowsley and Sefton is subject to significant variation in pathways, clinical standards and health outcomes. This proposal seeks to addresses this variation, to ensure that the whole North Mersey population would have access to a gold standard, integrated, whole pathway service.

The PCBC sets out a preferred option for a single North Mersey comprehensive stroke centre, co-located with A&E and with direct access to specialist scanners in order to maximise the number of patients who are able to receive thrombectomy and thrombolysis. The proposal would see all North Mersey patients receive their care at the Liverpool University Hospitals Aintree site from a hyper-acute stroke centre, co-located with acute neurological and stroke thrombectomy services provided by the Walton Centre.

After the initial 72 hours of stroke care, patients would continue to be managed at an acute stroke unit, if not suitable for discharge. Medically stable patients requiring further in-patient rehabilitation or complex discharge planning would be transferred to a local rehabilitation unit for in-patient rehabilitation or discharged from hospital with support from uniformly delivered, gold standard, early supported discharge services, to optimise their recovery in their own homes. This model of post-acute stroke care responds to the needs and preferences of patients, carers and families, who have told us that they want to receive as much care as practicable close to home.

The process to identify and appraise options, set out in detail in this document, has been robust and inclusive, involving clinicians, patients and partners from across the North Mersey footprint.

Following appraisal of a long list, a short list of seven options have been modelled in detail and evaluated using comprehensive criteria and scoring of the impact of each option on health outcomes, patient experience, deliverability, strategic alignment, clinical standards, clinical sustainability and value for money.

The PCBC details how patients, public and key stakeholders have been engaged and involved in shaping the proposal. The document also sets out the next stages for engagement and a public consultation, which would be led by commissioners, as it is considered that the proposal may constitute a substantial variation in service.

The proposals for the future delivery of hyper-acute stroke care for the North Mersey population have been formed with strong consensus amongst clinicians, providers and commissioners. The whole health and care system is aligned behind these proposals, driven by our shared ambition to improve health outcomes for our population.

3 Introduction

This chapter provides an introduction to the North Mersey Stroke services. This chapter describes the background, purpose and scope of this pre-consultation business case.

3.1 National Context and Challenges

A stroke is a serious life-threatening medical condition that occurs when the blood supply to part of the brain is cut off by a blood clot or bleeding from a blood vessel. Strokes are a medical emergency and urgent treatment is essential. The sooner a person receives treatment for a stroke, the better the chance of recovery. Stroke strikes suddenly and can result in a devastating range of disabilities or death. It is one of the most significant public health issues of our time, with a profound and growing impact on society, our economy, individuals and families:

- Stroke is the leading cause of disability and the fourth largest cause of death in the UK.
- Stroke costs the UK economy £26 billion per year, including £3.2bn cost to NHS, £5.2bn to social care and £15.8bn in informal care. This is forecast to rise to between £61bn and £91bn by 2035. The cost of someone having a stroke over a year is over £45,000.
- There are 80,000 stroke admissions in England each year and over 1 million stroke survivors, half of whom have a disability resulting from their stroke.
- By 2035, the number of strokes will increase by almost half and the number of stroke survivors by a third.
- Half of stroke survivors are living with four or more co-morbidities.
- Nearly half of stroke survivors feel 'abandoned' after leaving hospital (Stroke Association, 2017).
- A broad pattern of psychological difficulties can also be expected to affect recovery and disability following stroke; with high rates of anxiety, depression and cognitive impairment being well established as common effects affecting function and recovery post-stroke **(ref 1);** such effects can be predicted to increase hospital re-admission and un-planned care risks **(ref 2).**

While there have been some significant improvements in stroke prevention, treatment and patient outcomes since the 2007 National Stroke Strategy, major challenges remain across the whole stroke pathway within Cheshire & Merseyside. Poorer services risk increased mortality and leave stroke survivors with significant disability. A number of Acute Stroke Units do not meet national guidelines and there are gaps and unwarranted variation across the stroke care pathway. Challenges include:

- **Ongoing rehabilitation and care:** Too many stroke survivors leave hospital with inadequate rehabilitation and ongoing care in place leading to onward disabilities (mental and/ or physical), driving onward (avoidable) health and social care costs.

- **Urgent & emergency care:** Efforts to reconfigure acute stroke services have been slow and patchy and there has been a failure to roll-out of effective new treatments such as mechanical Thrombectomy.

- **Preventing avoidable stroke:** Too many people are living with undiagnosed or poorly managed cardiovascular risk factors such as raised blood pressure and cholesterol and atrial fibrillation (AF), leaving them at high risk of stroke.

- **Workforce:** Workforce challenges exist across the pathway with too few nurses, consultants and therapists, as well as a lack of stroke awareness, to ensure all patients get the treatment and support they need. A common lack of clinical psychology/neuropsychology input into community stroke care and stroke rehabilitation support also exists, across Cheshire and Merseyside, counter to national guidelines (Royal College of Physicians, 2016).

- **System Leadership:** A lack of joined-up commissioning and provision across whole health care systems is preventing the delivery and embedding of consistent improvements in the stroke pathway.

Transforming stroke care is a priority within the NHS Long Term Plan. The plan points to strong evidence that hyper acute interventions such as brain scanning, and thrombolysis are best delivered as part of a networked 24/7 service. The plan supports centralised hyper-acute stroke care delivered by a smaller number of well-equipped and staffed hospitals, based upon evidence of the greatest improvements in adopting this model of care. This would see a reduction in the number of stroke-receiving units, and an increase in the number of patients receiving high-quality specialist care, meeting seven-day standards for stroke care which meet national clinical guidelines.

In addition, mechanical thrombectomy and clot-busting treatment (thrombolysis) can significantly reduce the severity of disability caused by a stroke. Reconfiguring stroke services into specialist centres would improve the use of thrombolysis and further roll out mechanical thrombectomy. This model of care would ensure 90 percent of stroke patients receive care on a specialist stroke unit and that all patients who could benefit from thrombolysis (about 20 percent) receive it. This combination of specialist stroke care, thrombolysis and thrombectomy would result in the NHS having the best performance in Europe for people with stroke.

The Long-Term Plan also proposes higher intensity care models for stroke rehabilitation in the community, delivered in partnership with voluntary organisations including the Stroke Association, to support improved outcomes to six months and beyond.

3.2 North Mersey Stroke Review Background

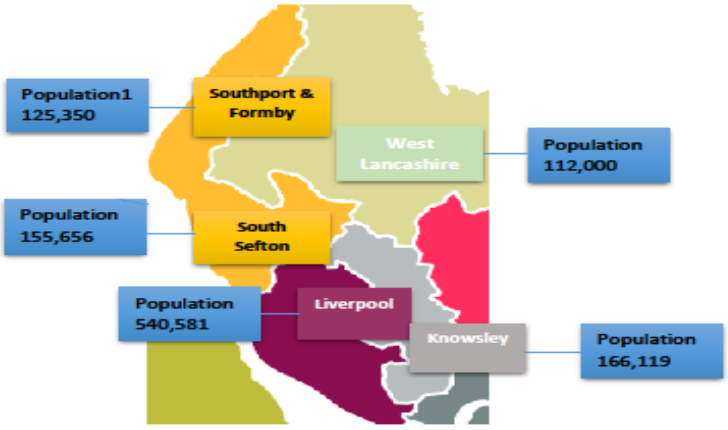
The Northwest Coast Strategic Clinical Network (NWC SCN) team (now the Cheshire and Mersey Integrated Stroke Delivery Network, C & M ISDN), were engaged to develop the Stroke Case for Change with the involvement and engagement of clinical leads and stakeholders across Cheshire and Merseyside. This work was commissioned by the Cheshire and Merseyside Healthcare Partnership as a part of the CVD Programme (2018) and was completed in May 2019. This was in response to concerns about performance and sustainability of some stroke units across the patch.

The case for change set out a clinical vision for the development of Stroke services for Cheshire and Merseyside including North Mersey reflecting national guidance and best practice. It also recognised that further clinical engagement was required to develop the new clinical model for the future. Liverpool Clinical Commissioning Group are the lead commissioner for stroke services and using the work already complete by NWC SCN have taken responsibility to develop this Pre-Consultation Business Case for North Mersey services.

In October 2019 the Royal Liverpool University Hospitals NHS Trust and Aintree University Hospital NHS Trust merged to form Liverpool University Hospitals NHS Foundation Trust.

3.3 Stroke in North Mersey

The four North Mersey Clinical Commissioning Groups: – NHS Knowsley CCG, NHS Liverpool CCG, NHS Southport & Formby CCG and NHS South Sefton CCG, have a long history of collaboration, with the majority of services they commission provided by the same NHS Trusts for their combined registered population.



North Mersey is one of the most deprived areas of the country, with more than 4 out of 10 residents living in the 10% most deprived neighbourhoods in England. Deprivation is strongly associated with poor health outcomes from childhood through to old age. People in North Mersey live shorter lives than the national average and spend a greater proportion of their life living with disability and poor health. Despite the best efforts of the health and care system, health outcomes for the population are not improving and the inequalities gap is widening. Partners across commissioning and provision are committed to greater collaboration, including joining-up commissioning to address the huge challenges we face.

The infographics below provide a clear overview of the health needs of our populations.


Knowsley
Cheshire & Merseyside Health & Care Partnership
If Knowsley was a village of just 100 people...
42
Children are overweight or obese by year 6
17
Adults suffer from depression
11
5-16 year olds have a MH disorder
31
Will die from cancer
69
Adults are over-weight or obese
3
Adults under 40 have Type 2 diabetes
59
people are living with a long term condition
12
Will die from heart disease
22
Are smokers
81
Is the average age that women will live to
26
People take less than 30 mins exercise a week
77
Is the average age that men will live to
7
People are over 75
Statistics from PHE are for the Knowsley Local Authority area, pop: 147,000


Liverpool
Cheshire & Merseyside Health & Care Partnership
If Liverpool was a village of just 100 people...
38
Children are overweight or obese by year 6
19
Adults suffer from depression
10
5-16 year olds have a MH disorder
30
Will die from cancer
64
Adults are over-weight or obese
4
Adults under 40 have Type 2 diabetes
55
people are living with a long term condition
11
Will die from heart disease
22
Are smokers
80
Is the average age that women will live to
25
People take less than 30 mins exercise a week
76
Is the average age that men will live to
6
People are over 75
Statistics from PHE are for the Liverpool Local Authority area, pop: 467,000


Sefton
Cheshire & Merseyside Health & Care Partnership
If Sefton was a village of just 100 people...
34
Children are overweight or obese by year 6
20
Adults suffer from depression
9
5-16 year olds have a MH disorder
29
Will die from cancer
68
Adults are over-weight or obese
3
Adults under 40 have Type 2 diabetes
60
people are living with a long term condition
10
Will die from heart disease
16
Are smokers
82
Is the average age that women will live to
32
People take less than 30 mins exercise a week
78
Is the average age that men will live to
10
People are over 75
Statistics from PHE are for the Sefton Local Authority area, pop: 177,000

North Mersey includes acute hospital sites at Aintree, Royal Liverpool, Broadgreen and Southport and Ormskirk.

North Mersey has a growing and ageing population. Over the next ten years plus, the largest population increase is predicted in people aged 65 and over. Southport has a particularly elderly population of around 21% of their residents are aged over 65 years old. Liverpool's over 65 population is 14%.

Research shows that atrial fibrillation increases the risk of stroke by a factor of 5 and data suggests that in North Mersey 77% of all patients with atrial fibrillation have been diagnosed. Nationally this figure is 70%.

In North Mersey there were 1372 patients diagnosed with Stroke between April 2018 and March 2019, 1477 in 2019 to 2020. In 2018 to 2019 Stroke prevalence across North Mersey is 0.18% compared to a national average of 0.12%.

Unhealthy lifestyle behaviours such as smoking, and obesity increase the risk of avoidable disease and disability such as stroke.

Smoking: despite a decline in the number of people smoking, smoking remains the main cause of preventable disease in the UK, accountable for 1 in 6 deaths in England. Mortality rates due to smoking are three times higher in the most deprived areas than in the most affluent areas. Smoking has decreased nationally from 18.4% in 2013 to 14.4% in 2018.

Obesity: obesity is a major cause of many diseases including stroke, on average, obesity deprives people of an extra nine years of life. Obesity is a serious and growing problem.

Over the next five years in North Mersey the number of people living with major health problems is projected to increase significantly.

3.4 Current Stroke services in North Mersey

The current providers of inpatient stroke services in North Mersey are the Liverpool University Hospitals NHS Foundation Trust located at: -

- Royal Liverpool hospital site - Hyper Acute Stroke Unit (HASU) and Acute Stroke Unit (ASU)
- Broadgreen Hospital - Rehabilitation
- Aintree Hospital site - HASU and ASU

Southport and Ormskirk Hospital Trust located at: -

- Southport & Formby District and General Hospital - HASU and ASU

The number of strokes recorded in the last three years for all three sites is as follows: -

		University Hospital Aintree	Royal Liverpool University Hospital	Southport and Formby District General	Total
2019/20	Number of patients (72h cohort) (Team Centred)	524	556	397	1477
2018/19	Number of patients (72h cohort) (Team Centred)	502	570	300	1372
2017/18	Number of patients (72h cohort) (Team Centred)	444	653	343	1440

Source: SSNAP 2017/18, 2018/19 and 2019/20

North Mersey hospital sites offer the following stroke services: -

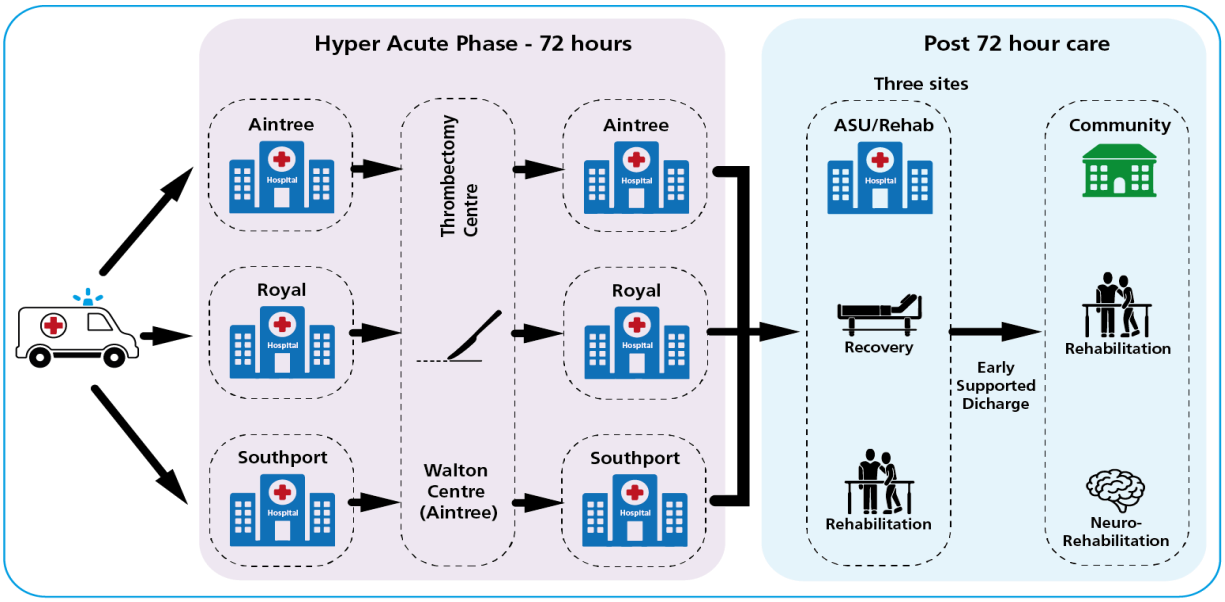
- Hyper Acute Stroke and Acute Stroke Services
- Hospital Rehabilitation
- Outpatient services

Current North Mersey Bed Model: -

North Mersey Stroke Service – Current Bed Model					
Bed Numbers	Aintree	Royal	Southport	Broadgreen	Total
< 72 hours	4	7	3		14
> 72 hours	29	7	19		55
Rehab				21	21
Total	33	14	22	21	90

There are currently **90** beds dedicated to stroke services and 14 are exclusively for the first 72 hours of critical care spread across the three sites.

Current North Mersey Stroke Services Configuration



There were in the region of 7,200 patients in 2018-19 and 7,800 patients in 2019-20 per annum who present to any of the three hospital A&E departments with suspected stroke symptoms. They can be classed into three categories: -

- Stroke patients – diagnosed as stroke patients and treated accordingly (circa 1,500 patients 2018-19 & 19-20)
- TIA – a transient ischemic attack (TIA) is like a stroke, producing similar symptoms, but usually lasting only a few minutes and causing no permanent damage (circa 2,200 patients 2018-19 and 1,900 in 19-20)
- Mimics - diagnosing stroke is not always straightforward. Stroke mimics such as Todd's paresis or hemiplegic migraine account for a significant amount of possible stroke hospital attendances (circa 3,500 patients 2018-19 and 4100 in 2019-20)

All three services provide thrombolysis to patients as part of the Hyper Acute phase of care as the delivery of this treatment is time critical. If mechanical thrombectomy is required this requires a transfer to The Walton Centre for this specialist procedure, there are only 24 accredited centres in the UK to perform this treatment.

Thrombolysis, also called fibrinolytic therapy, is the breakdown of blood clots formed in blood vessels, using medication. This restores the blood flow to the brain and prevents any further damage.

Thrombolysis is most effective if started as soon as possible after the stroke occurs and certainly within 4.5 hours. It's not generally recommended if more than 4.5 hours have passed, as it's not clear how beneficial it is when used after this time.

Before thrombolysis can be used, it's very important that a brain scan is done to confirm a diagnosis of an ischaemic stroke. This is because the medicine can make the bleeding that occurs in hemorrhagic strokes worse.

The percentage of patients receiving thrombolysis at each site is as follows: -

		University Hospital Aintree	Royal Liverpool University Hospital	Southport and Formby District General
2019/20	Percentage of all stroke patients given thrombolysis (Team Centred)	47 (8.9%)	46 (8.2%)	28 (7%)
2018/19	Percentage of all stroke patients given thrombolysis (Team Centred)	49 (9.4%)	47 (8.5%)	32 (9.7%)
2017/18	Percentage of all stroke patients given thrombolysis (Team Centred)	41 (8.5%)	76 (10.8%)	42 (11.4%)

Mechanical Thrombectomy

A small number of severe ischaemic strokes can be treated by an emergency procedure called a thrombectomy. This removes blood clots and helps restore blood flow to the brain. Thrombectomy is only effective at treating ischaemic strokes caused by a blood clot in a large artery in the brain.

It's most effective when started as soon as possible after a stroke. The procedure involves inserting a catheter into an artery, often in the groin. A small device is passed through the catheter into the artery in the brain. The blood clot can then be removed using the device, or through suction. The procedure can be done under local or general anesthetic.

Tertiary neuroscience services are provided by The Walton Centre NHS Foundation Trust which delivers regional thrombectomy services across most of the Cheshire & Merseyside footprint. The Walton Centre does not house a Hyperacute Stroke Unit, but pathways exist to transfer eligible patients for thrombectomy. This is a time critical procedure but currently requires patients from Southport and the Royal Liverpool to be transferred to the Aintree site. This is a relevantly new treatment, locally and nationally it is not currently available 24 hours a day 7 days a week due to the shortage of qualified specialists to perform the procedure. The Walton Centre is currently offering a service 8am to 11pm, 7 days per week, there are plans to expand to 24/7 cover by the end of 2021.

The number of patients receiving thrombectomy in North Mersey is summarised below: -

Thrombectomy Activity			
	2017/18	2018/19	2019/ 20
Aintree	1	4	9
Royal	5	6	7
Southport	3	3	5
Total	**9**	**13**	**21**

This activity is significantly short of the targets set in the NHS LTP (10% of stroke patients =147) and reflects the difficulties in accessing a HASU in a timely manner and the current level of service provision for thrombectomy.

3.5 Scope and purpose of the Pre-Consultation Business Case

The purpose of this PCBC is to detail the case for change for North Mersey Stroke Acute Services, describe the options appraisal process undertaken by Liverpool CCG, and to set out the preferred option for public consultation.

The scope of this PCBC is the acute stroke services that are currently provided by the two North Mersey hospitals and the impact on any co-dependent services i.e., mechanical thrombectomy and diagnostic imaging.

This service review is focused primarily on where best to deliver services effectively across the North Mersey footprint. This review considers any investment that is required to provide a safe service that is consistent and sustainable.

Due to the recent merger of Aintree University Hospital Foundation Trust and the Royal Liverpool University Hospitals NHS Trust into the newly formed Liverpool University Hospitals NHS Foundation Trust this review will also consider the organisational form of the North Mersey Stroke Services.

The PCBC recognises the importance of a standardised end to end clinical pathway for stroke patients; however, community rehabilitation and thrombectomy services are not part of the PCBC but will be referenced through this document as part of the work running alongside the acute hospital work due to their critical interdependencies.

3.6 Alignment with Local NHS plans

There are a number of strategic programmes being implemented in North Mersey that are inter-dependent with the stroke programme:

Royal Liverpool and Aintree Merger into Liverpool University Foundation Trust - The merger of the two acute trusts took place in October 2019. The business case described a vision for clinical services that comprises single service, city-wide delivery in a number of key areas including stroke alongside trauma and orthopaedics, emergency general surgery and haemato-oncology. Development of a single service, city-wide inpatient stroke service was a key component of the Patient Benefits Case for merger.

One Liverpool Plan – Liverpool's Integrated Care Partnership set out its proposal for One Liverpool, an integrated, place-based strategic plan for the city. This strategy builds upon the Healthy Liverpool Blueprint which set out ambitions to develop a single-service, city-wide acute model for stroke services**. (Ref 4)**

Sefton Health and Care Transformation Programme – Sefton Health and Care Transformation Programme has been established as a Partnership to develop 'place-based' care across Sefton, integrating acute, community, mental health, social care and primary care services around the needs of the local population. The potential impact of some of the emerging scenarios for the stroke pathway may impact upon emergency and urgent care activity at Aintree which is considered in the proposed model of care. **(Ref 5)**

West Lancashire has developed their strategy "Building for the Future" and "are committed to improving the health and well-being of people living in West Lancashire". **(Ref 6)**

The Acute Sustainability workstream, as part of the Sefton Health & Care Transformation Programme is focusing on developing sustainable solutions for acute and specialist care for the population of Southport & Formby. Stroke is a priority within this work given the age profile of the local population and the need to be able to access "first class" hyperacute care underpinned by supportive rehabilitation. There have been concerns expressed on the sustainability of stroke services at Southport due to the consultant workforce challenge; this poses a significant risk to Southport patients and the potential knock-on impact to other services. **(Ref 7)**

Thrombectomy – The NHS Long Term Plan aims to expand mechanical thrombectomy treatments from 1% to 10% of stroke patients, which will allow 1,600 more people to be independent after their stroke each year. During 2019 the plan commits to working with Royal Colleges to pilot a new programme for hospital consultants to be trained to offer mechanical thrombectomy.

NHS England Specialised Commissioning Team is working closely with the Walton Centre to develop these services and ensure they are available 24/7. This is one of the work programmes in the North Mersey Stroke Board that will enable better outcomes for patients and aligns with the redesign of acute services. The current thrombectomy pathway is included in **appendix 1.**

The C&M Health and Care Partnership – Highlighted stroke services across Merseyside and the wider region as a high priority and commissioned the Transformation Unit via the C & M CVD Board to conduct a review of services, including North Mersey services. This resulted in an "Outline Service Change Proposal". This work was the catalyst and foundation to the production of this PCBC. **(Ref 7)**

Stroke services features as a priority in the Joint Strategic Need Assessment of Liverpool, Sefton and Knowsley.

Commissioners

- There are five Clinical Commissioning Groups (CCGs) and NHS England NHSE Specialist commissioners (Medical Thrombectomy) that commission stroke services or related services (Medical Thrombectomy). The CCGs are: -
- NHS Liverpool CCG
- NHS South Sefton CCG

- NHS Southport and Formby CCG
- NHS West Lancashire CCG
- NHS Knowsley CCG

Community Rehabilitation

The current provision of both acute and rehabilitation services across Liverpool, Knowsley and Sefton is subject to significant variation in pathways, clinical standards and health outcomes. The North Mersey Stroke Board remit includes a programme to establish a consistent, best practice rehabilitation stroke pathway to address variation and to ensure that the whole North Mersey population has access to a quality service. This programme is not within the scope of this pre-consultation business case, but as a key dependency it is essential that a comprehensive single rehabilitation pathway is established alongside the proposal for a North Mersey Hyper Acute Service.

4 Clinical Case for Change

This chapter describes why change is necessary. It describes the North Mersey Stroke Service current level of standards and clinical outcomes and how the current configuration of services is not always delivering the best clinical outcomes and patient experience. The case for change shows that services need to be reconfigured to improve quality of care and for services to be clinically sustainable.

4.1 National and Local context

The NHS Long Term Plan highlights that stroke is the fourth single leading cause of death in the UK and the single largest cause of complex disability. Stroke mortality has halved in last two decades. However, without further action due to changing demographics the number of people living with a stroke will increase by almost half, and the number of stroke survivors living with a disability will increase by one third by 2035.

The plan supports centralised HASU care delivered by a smaller number of well-equipped and staffed hospitals that are networked 24/7 and can also provide thrombolysis and mechanical thrombectomy. This will increase the number of patients that receive high quality specialist care, improve clinical outcomes and the service sustainability.

The long-term plan clearly states that within the next five years all stroke units will need to meet the NHS seven-day standards for stroke care and the National Clinical Guidelines for stroke.

It stated that Integrated Stroke Delivery Networks would be established by April 2020 to reconfigure stroke services into specialist centres that will improve the use of thrombolysis and further roll out the use of mechanical thrombectomy. This would ensure that 90% of stroke patients receive care on a specialist stroke unit and that all patients that can benefit from thrombolysis (20%) receive it. Expanding mechanical thrombectomy - from 1% to 10% of all stroke patients nationally would enable an extra 1,600 patients to live independently. The combination of the specialist units, thrombolysis and thrombectomy would result in the NHS having the best outcomes for stroke patients in Europe.

NHS Long Term Plan milestones for stroke care in the acute sector: -

- In 2019 the NHS will, working with the Royal Colleges, pilot a new credentialing programme for hospital consultants to be trained to offer mechanical thrombectomy.
- By 2022 the NHS will deliver a tenfold increase in the proportion of patients who receive Thrombectomy after stroke.
- By 2025 we will have amongst the best performance in Europe for delivering thrombolysis to all patients who could benefit.

The onset of the Covid-19 pandemic in March 2020 has inevitably impacted on the achievement of these intentions within planned timescales. This is also the case for the progression of the North Mersey hyper-acute stroke proposal. The programme was paused between March and July 2020. The emergence of a second wave of COVID did not lead to a further pause but progress has been slower due to the pressure on providers and clinicians.

In reviewing best practice, the greatest improvements in outcomes have been seen in areas that have adopted a similar model of care to the one proposed in this PCBC.

A research paper based on the Manchester and London configurations was published in the BMJ in January 2019 called "*Impact and sustainability of centralising acute stroke services in English and metropolitan areas: retrospective analysis of hospital episode statistics and stroke national audit data".* This research concluded that Manchester had a significant decline 1.8% in mortality in patients treated at a hyper stroke acute unit, indicating 69 fewer deaths per year. The number of patients treated in the unit also increased from 39% in 2010-12 to 86% in 2015/16. Furthermore, in both Manchester and London hospitals length of stay reduced, in London more than 90% of patients were treated in the hyper acute stroke unit.

Conclusions from the research: - Centralised Models of acute stroke care, in which all stroke patients receive hyperacute care, can reduce mortality and length of hospital stay and improve provision of evidence, based clinical interventions. Effects can be sustained over time. **(Ref 8)**

SNNAP have completed research that advises that the optimal size of a stroke unit is at least 600 strokes per year. Units of this size achieve economies of scale and are therefore more likely to be sustainable. Currently, none of the three units in North Mersey have a patient population larger than 600. **(Ref 9)**

4.2 The Clinical Case for Change for North Mersey

There is now a wealth of evidence that the way hospital stroke services are organised can have a major impact on outcomes for stroke **(Ref 10)**. Sentinal Stroke National Audit Programme (SNNAP) measures the quality and organisation of stroke care in the NHS and is the single source of stroke data in England, Wales, and Northern Ireland.

Current North Mersey stroke services have a number of key challenges in meeting the stroke clinical standards (SSNAP) that impacts upon patient care. The clinical standards require/recognise: -

- That the most important care for people with any form of stroke is prompt admission to a Hyper Acute Stroke Unit (HASU). In North Mersey none of the three HASU admit patients to the clinical standard of 90% of patients within 4 hours; current performance is 38% based on 2019/20 data.
- That a stroke unit undertakes adequate volumes of activity to maintain clinical quality, outcomes and a sustainable unit; In North Mersey none of the three HASU's achieved the minimum recommended number of 600 strokes per annum (Based on SSNAP data).
- That 90% of stroke patients should remain on a stroke unit for 90% of their care to ensure continued specialist care. In North Mersey only 73% of patients achieve this standard in 2019/20
- That HASUs enable patients to have rapid access to the right skills and equipment and be treated 24/7 on a dedicated unit, staffed by specialist, multi-disciplinary teams; In North Mersey there are insufficient number of stroke consultants and other specialist staff to ensure that consultants assess 95% of patients within 24 hours; the current performance is 81% based on 2019/20 data.
- That following a brain scan, suitable patients should have thrombolysis as soon as possible and within 1hour on arriving at hospital. In North Mersey thrombolysis is provided to 7.2% in 2019/20 of patients and the target in the NHS LTP is 20% by 2025.
- Therapy services; including Occupational therapy, Physiotherapy and Speech and Language Therapy (SALT) are currently not delivering the recommended amount of therapy support and

the service is falling short particularly in SALT. The relatively small size of the teams in the individual Trusts can leave teams vulnerable to the impact of annual leave, sickness, and maternity leave. Posts can be spread across a variety of clinical areas due to only part time positions available in specialist areas. These factors can make recruitment, retention and resilience difficult. Vacancies that cannot be filled creating gaps in service delivery, impacting upon quality of patient and staff experience.

- That patients are transferred home as soon as possible with early supported discharge. In North Mersey there are 5 commissioner areas that have varying levels of early supported discharge that impacts the three units' current hospital length of stay. The variation is from 18 to 20 bed days based on 2019/20 data.
- That following a brain scan; suitable patients have a mechanical thrombectomy as soon as possible and within 5 hours of arriving at hospital. In North Mersey mechanical thrombectomy was provided to 1.4% of patients in 2019/20, the NHS LTP target is set at 10% by 2022.
- That ideally designated Thrombectomy Centres are co-located or networked with HASUs. In Cheshire and Merseyside, the Walton Centre is the designated Thrombectomy Centre which is located on the Aintree site. Patients from the Royal Liverpool, Southport and the rest of Cheshire and Merseyside are required to transport patients by ambulance which is difficult to achieve within the 4.5-hour window.
- If hyper acute patients cannot access a specialist stroke unit, they become a medical outlier elsewhere in the hospital, time is taken for them to access a stroke bed impacting upon the quality of intervention on the clinical pathway. Delays happen as patients do not have access to the right people at the right time.

North Mersey stroke providers do not meet all the current quality standards of SSNAP (which measures whether services are delivering quality standards) and will be required to achieve additional standards to thrombolysis and thrombectomy as defined in the NHS LTP in the future.

The provider performance against SSNAP standards is shown below for October to December 2019: -

Oct 19 - Dec 19	Case ascertainment	Audit compliance	Scanning	Stroke Unit	Thrombolysis	Specialist Assessment	Occupational Therapy	Physiotherapy	Speech & Language Therapy	MDT Working	Standards by discharge	Discharge process
University Hospital Aintree	A	A	A	D	C	B	A	C	C	B	A	A
Royal Liverpool University Hospital	A	A	B	E	D	C	A	B	C	A	B	A
Southport and Formby District General	A	B	B	E	D	D	B	B	E	C	C	B

Clinical Activity

Only the Royal Liverpool Hospital has previously treated more than 600 stroke patients up to 2017/18, however, this is now no longer the case. Overall, in Cheshire and Merseyside in the last seven years there has been a cumulative increase of 0.65% in stroke patients see **appendix 2**.

For Strokes in North Mersey, there has been a cumulative growth of 0.6% between 2013/14 and 2019/20 as seen in the table below: -

Strokes in North Mersey each year – SNNAP data				
Year	Aintree	Royal Liverpool	Southport	Total
2013-2014	421	633	362	1,416
2014-2015	495	604	370	1,469
2015-2016	476	633	339	1,448
2016-2017	452	625	361	1,438
2017-2018	446	650	343	1,439
2018-2019	502	570	300	1,372
2019- 2020	524	556	397	1,477

4.3 Workforce Challenge

Workforce is a key limiting factor in delivering and providing services 24 hours, 7 days a week. This is particularly relevant for stroke consultants as in North Mersey the number of stroke consultants is 54% under the recommended level (ref Meeting the Future Consultant Workforce Challenge: stroke Medicine – British Association of Stroke Physicians July 2019). In North Mersey there are currently 10 WTE consultants in post (although 3 of these posts are filled by locums); to meet the required standards in the existing configuration of services, an additional 10.4 WTE consultants would need to be recruited.

There are particular concerns for the Southport site that operates with only 1 substantive and 1 locum consultant.

There is also a shortage of skilled staff including speech and language therapists, clinical psychologists, stroke nurses and occupational therapists, to meet current and future demand. There is a national shortage in all of these professions, creating difficulties in recruitment. The most recent SSNAP Data shows that 40% of all stroke consultant posts across the country are vacant.

In the current configuration there is currently a shortage of the following groups of staff **(see appendix 3)** when assessed against Royal College of Physician standards: -

North Mersey Staffing shortage based on RCP standards		
Staff group	2018/19 Gap WTE	2019/20 Gap WTE
Consultants	10.4	-4.0
Nurses	23.4	20.6
Therapies	7.4	9.0
Clinical Psychologists	1.1	0.7

4.4 Length of Stay

Discharging people from hospital and into rehabilitation is crucial in delivering high quality care and better outcomes. It is also expensive to keep people in hospital if they can be safely cared for

elsewhere. In North Mersey the average length of stay varies across the three sites from 17 days to 22 days (based on 2018/19 data) and 18 days to 20 days (based on 2019/20 data), the national average is 18.4 days (SSNAP 2018/19 data) and 15 days (SSNAP 2019/20). Demand and capacity modelling has also identified a lack of beds in the current configuration of 3 HASU and 5 acute rehabilitation beds.

4.5 Organisational Form

The geographical proximity of the current three North Mersey stroke services and a good level of collaboration facilitated by the Trusts, CCGs' and the Strategic Clinical Network (now ISDN) have enabled the teams to work closely and develop this business case. However, organisational boundaries still exist that in many ways still challenge collaborative working, mainly due to different policies, processes and financial and contractual arrangements. To enable the three services to operate effectively in the future and operate in a network will require a different model.

To ensure that the patients in North Mersey receive an equitable and sustainable service that manages all risks across the geographical patch will require an even more integrated approach.

4.6 Conclusion

The immediate challenges facing stroke services in North Mersey mean that patients and carers are experiencing: -

- Poorer health outcomes
- Poorer long-term quality of life
- Increased likelihood of admission to residential or nursing home
- Poorer patient experience
- Unsustainable services

These challenges will only increase as demand for services grow. The case for change is overwhelming and services need to change as quickly as possible.

5 Clinical Vision for the Future

This chapter will describe the overall vision and the ambition for stroke services setting out the new clinical pathways.

5.1 Clinical Vision for Stroke Services

The North Mersey vision for the whole stroke pathway is to prevent ill health, provide outstanding urgent and acute care and consistently provided, integrated community care closer to home.

For Hospital acute stroke services in North Mersey, the ambition is to deliver high quality, clinically sustainable and accessible services 24 hours a day, 7 days per week. The objectives to be achieved are:

- Improve earlier access to specialised hyper acute stroke care and ensure patients receive 90% of care on a stroke unit
- 24 hours 7 day a week access to treatments like thrombolysis and mechanical thrombectomy
- Reduce mortality for stroke patients (more people will live)
- Reduce the impact of disability to stroke survivors
- Improve quality of life by patients being able to return home rather than receive care in a residential or nursing home
- Fulfil the best practice recommendations as set out in the National Stroke Strategy 2007 (**Ref 11)** and the NHS Long Term Plan
- The service to achieve to achieve an overall A grade for SSNAP performance
- That patients will be able to return home earlier from hospital with Early Supported Discharge package
- The service will be fully integrated across Hype-acute, Acute and hospital rehabilitation

The Benefits Realisation Plan at **appendix 4** quantifies, with timescales, the extent of the improvements expected.

5.2 Hospital Acute Care

This business case is primarily focused on acute hospital care; however, it is recognised that to improve the quality of the service requires improvements in the provision of mechanical thrombectomy and community rehabilitation (including Early Supported Discharge). In North Mersey both these services are being reviewed with an ambition to improve access and overall quality of service at the same time as improving acute care.

5.3 Urgent Stroke services

The National Stroke Strategy 2007 and the most recent 2016 edition provide guidance on recommended best practice. This is also supported by the NHS Long Term Plan and recent research undertaken on the redesign services in Manchester and London **(Ref 8)**.

It shows that if stroke patients receive specialist assessment and intervention in the hyperacute phase (the first 72 hours after a stroke) this reduces mortality and improves long term outcomes. To achieve this hyperacute stroke services need to provide high quality rapid access to specialist stroke physicians and diagnostics that results in interventions taking place as quickly as possible.

A meta-analysis of stroke studies showed that treatment with thrombolysis had an average increase in survival of about 10% for patients treated within 3 hours. Treatment within 3 hours resulted in good outcomes for 32.9% versus 23.1% who did not receive treatment (**Ref 12**). Centralised hyperacute stroke services have also reduced mortality rates (between 1.6% and 2.8%) and the length of hospital stay (-1.4 and 2 days) (**Ref 13)**.

Centralised HASUs have also been proven to be more sustainable in the longer term due to consolidation of specialist clinicians, rather than specialist staff spread thinly over a number of smaller units.

The North Mersey vision is to create a Comprehensive Stroke Centre that takes patients directly from ambulances and will deliver the following to provide the best outcomes **(Ref 14 & 15)**: -

- Access 24 hours 7 days a week
- Rapid and accurate diagnosis (CT perfusion and MRI imaging)
- Clinical expertise 7 days per week
- Direct access to CSC (100% on arrival)
- Treat a minimum of 600 patients per year
- Provide thrombolysis to **95%** of patients who require the treatment
- Co-located with a designated thrombectomy centre
- First 72 hours of care provided on the CSC
- Access to a full MDT to SSNAP standards
- Step down of post 72-hour care to a hospital close to home or home if clinically fit
- Imaging within 1 hour and arrival to needle (thrombolysis) within 30 minutes
- All patients will have seen a stroke consultant, stroke nurse and therapist within 24 hours
- Thrombectomy within 5 hours for 10% of patients
- Consistent Early Supported discharge to Community Rehabilitation

5.4 Mechanical Thrombectomy

Patients requiring a mechanical thrombectomy will be assessed in the Comprehensive Stroke Centre, which would be integrated and co-located on the same site with thrombectomy services. The service will be available to patients 24 hours 7 days per week.

5.5 Community Rehabilitation

Rehabilitation has been recognised by both patients and clinicians as just as important as acute care if the very best outcomes are to be achieved for patients. Stroke teams from Cheshire and Merseyside have produced a vision for an integrated community stroke team model (**appendix 13.5).** This described access to full rehabilitation support including occupational therapy, physiotherapy and speech and language therapies, psychology and emotional wellbeing, social work, orthotics, orthoptics and wheelchair services, spasticity clinics, vocational support and support family and carers, available for as long as clinically indicated. Life after stroke services, including social groups and peer support; exercise, health and fitness; and family and carer support are part of the model. The model describes holistic reviews at 6 months, 12 months and annually thereafter, with the option of re-referral into the integrated team if needed. This model is in line with the new national service specifications published in October 2020.

Although this business case focus is on the acute hospital care, the North Mersey Stroke Board has identified rehabilitation as a priority and new services will align with the hospital care. In order to support the development of a programme of work with a focus on developing Integrated Community Stroke Teams in North Mersey, a separate Clinical Reference Group has been established in February 2021. This CRG will report to the North Mersey Stroke Board, the terms of reference will be taken to the North Mersey Board for ratification once agreed. A gap analysis of current services, staffing and referral criteria is currently being undertaken. This will form the foundation of a "Case for Change" paper describing the gaps and inequalities in Integrated Community Stroke provision.

5.6 Prevention

Although the focus of this business case is on hospital acute care of stroke, it is acknowledged that the prevention of stroke is a key priority for North Mersey. The vision is to make every contact count and ensure that every part of the health system views prevention as part of their business. The aim is to support people so they can improve their lifestyles and therefore improve health outcomes. Clinicians have identified the following factors as crucial to improving stroke prevention: -

- Reduction in smoking rates
- Improvements in diabetes detection and care
- Better identification and management of high blood pressure and atrial fibrillation
- More widespread use of statins
- Initiatives to address obesity and increase physical activity

Several initiatives are beginning to have an impact on primary and secondary prevention of stroke and other non-communicable diseases. These include: -

5.6.1 Cheshire & Merseyside

The Health Care Partnership is the lead sustainability and transformation partnership in the North Region for the Public Health England CVD Prevention Programme. The Prevention Board has overseen the introduction of blood pressure testing guidelines for use outside general practice; training for non-clinical community partners to test blood pressures in community settings; training for community pharmacists; embedding Making Every Contact Count within provider organisations; working with the Academic Health Science Network to promote adoption of atrial fibrillation testing devices in general practice and elsewhere. An easy to use and information rich, public and professional facing Happy Hearts website has been set up. **(Ref 16)**

The National Diabetes Prevention Programme (Healthier You) is now available to all people across Cheshire and Merseyside who are at risk of developing diabetes, defined as those with an HbA1c reading of 42-47 mmol/mol or have previously been diagnosed with gestational diabetes. This is a nine-month programme of support to lose weight, make healthier food choices and increase activity. Sessions are delivered virtually or face to face in groups across community settings. (**Ref 17)**

The NHS Digital Weight Management Programme offers a 12-week digital support programme via their smartphone or computer, for adults living with obesity (BMI of 30+ kg/m2-adjusted appropriately for ethnicity) plus either diabetes, or hypertension, or both, to help manage their weight and improve their health. Patients are referred by their GP practice and offered one of three levels of intervention.

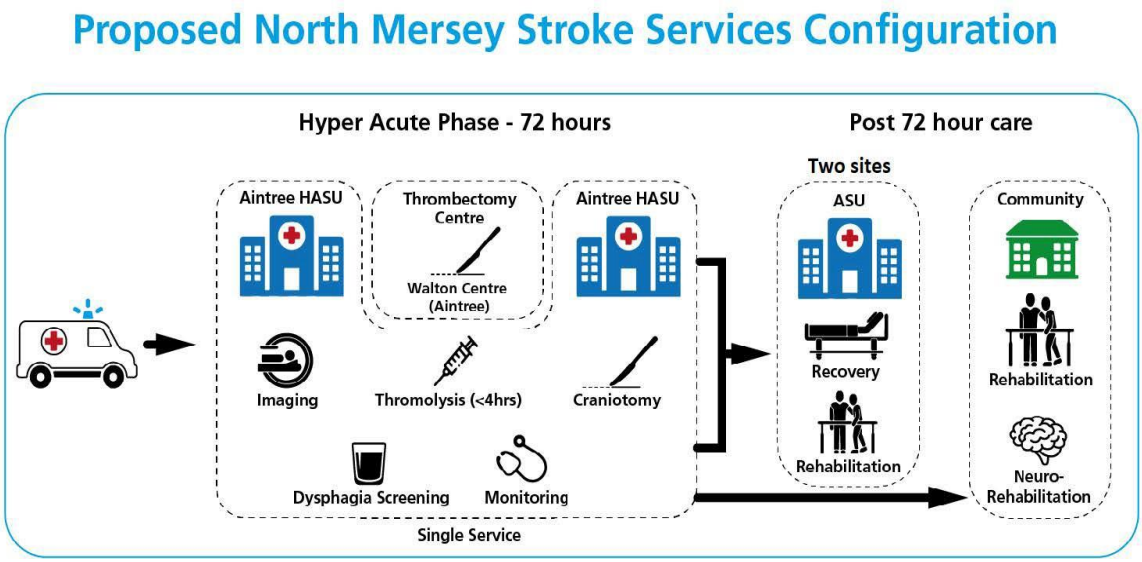
5.6.2 Local

Local partners (PSS, Stroke Association and Liverpool Diabetes Partnership) maximised delivery of opportunistic blood pressure and atrial fibrillation testing in work and other community settings; GPs check pulses of over-65s attending for any reason to identify and treat atrial fibrillation; increased use of newer anti-coagulant drugs (historically Liverpool has a low performance on this); medicines management reviews of people on atrial fibrillation register to encourage uptake of anticoagulation; work with practices who are 'outliers' in identification and management of atrial fibrillation to increase performance in this area; commissioned Stroke Association to do holistic post-stroke reviews – this increased uptake of the reviews from a baseline of 19% to 75% in 2018/19, identifying 1,672 unmet needs, 77 of which related to management of atrial fibrillation and blood pressure and a further 53 to medication issues.

6 Proposed Model of Care

This section will describe the proposed model of care and will describe with evidence the impact the proposals will have on the safety, effectiveness and experience of care.

The Stroke service configuration in the new proposed model is illustrated below: -

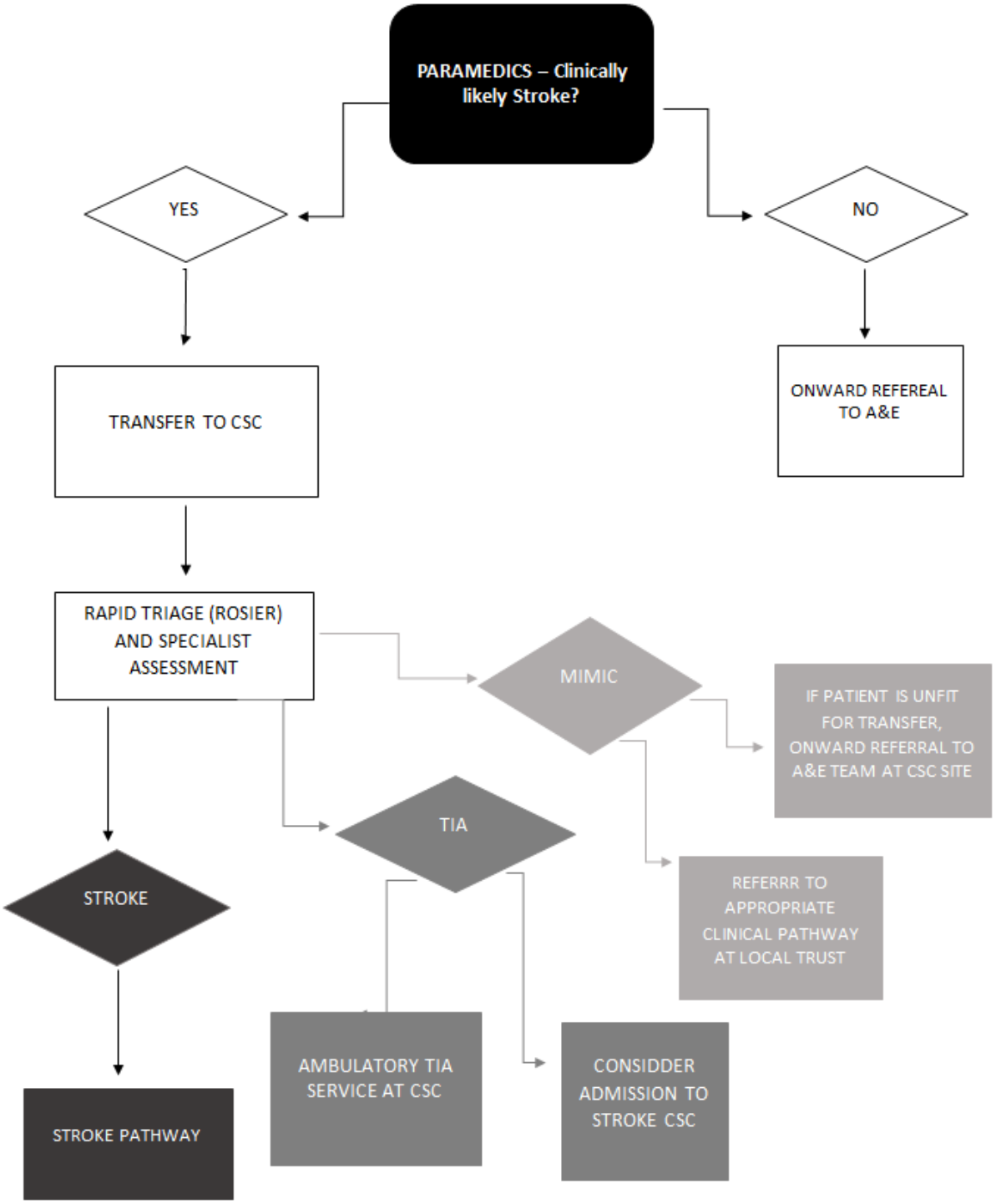


A Comprehensive Stroke Centre is where a hospital meets the standard to treat the most complex stroke cases. This would include:

- Availability of advanced imaging techniques, including MRI, MRA, CTA, CT and CTP
- Availability of personnel trained in vascular neurology, neurosurgery and endovascular procedures
- 24/7 access to thrombolysis and thrombectomy
- 24/7 availability of personnel, imaging, operating room and endovascular facilities
- ICU/neuroscience ICU facilities and capabilities
- Experience and expertise treating patients with large ischemic strokes, intracerebral haemorrhage and subarachnoid haemorrhage

Acute stroke patients (FAST + patients ref) would be taken by ambulance or referred by GP directly to a new comprehensive stroke centre co-located with acute neurosurgical and stroke thrombectomy services based on the Aintree Hospital site, which is co-located with the Walton Centre, the regional provider of the thrombectomy service. This will be the North Mersey Comprehensive Stroke Centre (CSC).

The Acute stroke patients proposed pathway: -



To enable thrombolysis to be administered quickly the ambulance or GP will notify the CSC that the patient is in transit.

The Royal Liverpool and Southport sites would no longer provide the first 72 hours of care (hyper acute phase of treatment) as this would all be centralised on the Aintree site. However, Southport and Broadgreen sites would provide post 72-hour care that would enable patients to be closer to home for their rehabilitation phase of treatment. The Royal Liverpool would also not provide any post 72-hour care, there would be no inpatient stroke care provided on this site. However, it is recognised that patients in other specialities may have strokes and support will be required from stroke clinicians.

6.1 Urgent Care in the Comprehensive Stroke Centre

The Comprehensive Stroke Centre (CSC) would review all acute (<72 hours from onset) stroke patients. The CSC would be co-located with A&E and accept patients directly at the front door without the need for pre-referral. The centre would have direct and priority access to a CT scanner including CT angiograms and CT perfusion studies to ensure patients are rapidly assessed and managed. There would also be rapid access to an MRI scanner and to ultrasound carotid doppler imaging.

Patients deemed not to have had a stroke and to need other specialist care would be referred to another appropriate clinical pathway, facilitated by co-location with ED and AMAU. All other patients would move on through the stroke pathway.

There would be 7 days a week on site consultant presence to support the hyper acute work; 8am to 8pm, 7 days a week to meet the requirements of 7-day standards. This would be supported by 7-day therapies support, made possible by the pooling of clinical resources. At all other times the hyperacute service would be supported by a middle grade doctor on site, with support from an on-call consultant available over the telephone or via telemedicine video link.

The Aintree site will benefit from co-location and collaborative working with Walton Centre colleagues to develop a new 19 bedded CSC that includes an ambulatory facility, full therapy rooms that are located close to the current A&E, Radiology services and Thrombectomy centre. The current Aintree HASU and ASU will become the post 72-hour care centre with 35 beds.

6.2 Thrombectomy and Thrombolysis

The centre would benefit from direct access to specialist scanners in order to maximise the number of patients who are able to receive thrombectomy and thrombolysis. These treatments significantly reduce disability and death and are cost effective for stroke patients. Co-location with the Thrombectomy service, within the Walton Centre, would significantly increase the number of patients that are able to access thrombectomy within the appropriate time window and would also significantly reduce the time to treatment for thrombectomy, which is crucial as outcomes are better the sooner this treatment is delivered.

The Walton Centre is currently offering a service 8am to 11pm, 7 days per week, there are plans to expand to 24/7 cover by the end of 2021.

Good Practice Example: Mechanical thrombectomy for large vessel occlusion stroke

University Hospitals of North Midlands NHS Trust has implemented a pathway to offer mechanical thrombectomy to treat large vessel occlusive strokes in suitable people. After implementing the pathway 94% of people with severe strokes due to large vessel occlusion, who received mechanical thrombectomy, were discharged to their own homes rather than to a nursing home; 23% were discharged home within 1 week. Before implementing the treatment pathway, when only intravenous tissue alteplase was used, 70% of patients were discharged to inpatient rehabilitation, with significant annual costs. There has been £0.8 million savings from a reduction in the length of stay in hospital and £1.6 million savings from a reduction in social care costs. **(Ref 18 & 19)**

6.3 Acute Stroke Care

After the initial 72 hours of stroke care patients from the North Mersey catchment area would continue to be managed at an acute stroke unit, where possible close to their home if they are not suitable for discharge. The acute stroke units are essentially wards with access to acute stroke medical and nursing care as well as rehabilitation space and expertise.

The following sites will have the following number of post 72-hour care beds: -

Aintree - 36 beds (mixture ASU and Rehabilitation)

Southport - 16 beds (mixture ASU and Rehabilitation)

Broadgreen - 23 beds (Rehabilitation)

The units will provide **(Ref 20)**: -

- Specialist nursing staff trained in urgent management of people with stroke
- Stroke specialist rehabilitation staff
- Access to diagnostics, imaging and cardiology investigations
- Access to tertiary services for neurosurgery and vascular surgery
- Consultant reviews 5 days a week
- Senior advice available from CSC via telemedicine out of hours
- Medical cover (junior doctor) 24/7
- Consultant Nurse support at Broadgreen

In the patient engagement events with post stroke survivors, they stated that patients would be prepared to travel further for specialist and hyperacute care but would want to be closer to home for their acute or rehabilitation treatment.

Aintree and Broadgreen sites are part of Liverpool University Hospitals and so repatriation should be easy to achieve. Repatriation from the CSC to Southport will be made possible by an agreement under the collaborative network model.

6.4 Post-Acute Care

Medically stable patients that require further in-patient rehabilitation or complex discharge planning would be transferred to a rehabilitation unit for in-patient rehab. It is expected that up to 50% of

patients would be discharged from hospital with support from the ESD (Early Supported discharge) team, supporting patients to optimise their recovery in their own homes.

6.5 Early Supported Discharge Team

In order for the above model to be effective, it is essential that an effective and uniformly delivered ESD service is embedded across North Mersey. This would ensure that discharges from inpatient beds happened in a timely manner and ensure a reduced length of stay.

In January 2020 a new national service specification was published for early supported discharge and community care following a stroke. The North Mersey CCGs have compared their currently commissioned services with this specification the ISDN has completed a gap analysis. There are significant differences both when compared with the national specification and between the CCG areas. The North Mersey CCGs will incorporate their intention to develop a consistent, gold standard stroke rehabilitation service in 2021/22 commissioning plans.

6.6 Psychological Care

Stroke survivors are often challenged by a broad pattern of psychological difficulties, which can impact on recovery following stroke; with high rates of anxiety, depression and cognitive impairment being well established as common effects affecting function and recovery post-stroke **(Ref 1);** and such effects can be predicted to increase hospital re-admission and un-planned care risks **(Ref 2).**

RCP guidance indicates the need for clinical psychology input to support an optimal rehabilitation model of care, across stages of care (including ward-based care) and new National Stroke Programme rehabilitation guidance recommends, even more strongly, that clinical psychology input must be a core consideration in routine MDT rehabilitation (also providing service design and workforce planning guidance in this).

Accordingly access to clinical psychology across all stages of rehabilitation is necessary to be embedded in North Mersey service redesign; with access to lower-level emotional support as part of the Stroke Association offer also being seen to be of value to support best outcomes.

6.7 Post in-patient care: Life After Stroke Support

All patients would be able to access Stroke Association support, including conducting 6-month reviews. Patients are currently offered 6 weeks, 6 months and 12 months follow up hospital appointments. Such periodic follow ups (up to and including at 12 months post-stroke) have been demonstrated to be of value in providing necessary touch points to identify ongoing support needs, requiring support planning; recognising, for example, that ongoing psychological and social effects can progress and exacerbate ongoing disability, if not identified and intervention/ support not offered. Access to such follow up reviews should continue to be made available, with the possibility made more accessible by the provision of telephone and video consultations also. Access to follow up support (including access to ongoing emotional support and formal psychological care, where such need is raised) and should also continue to be made available.

6.8 End of Life Care

For those patients who require palliative care there would be agreed pathways to optimise care, designed with the palliative care teams of the 3 adult acute hospital trusts across North Mersey and with community services.

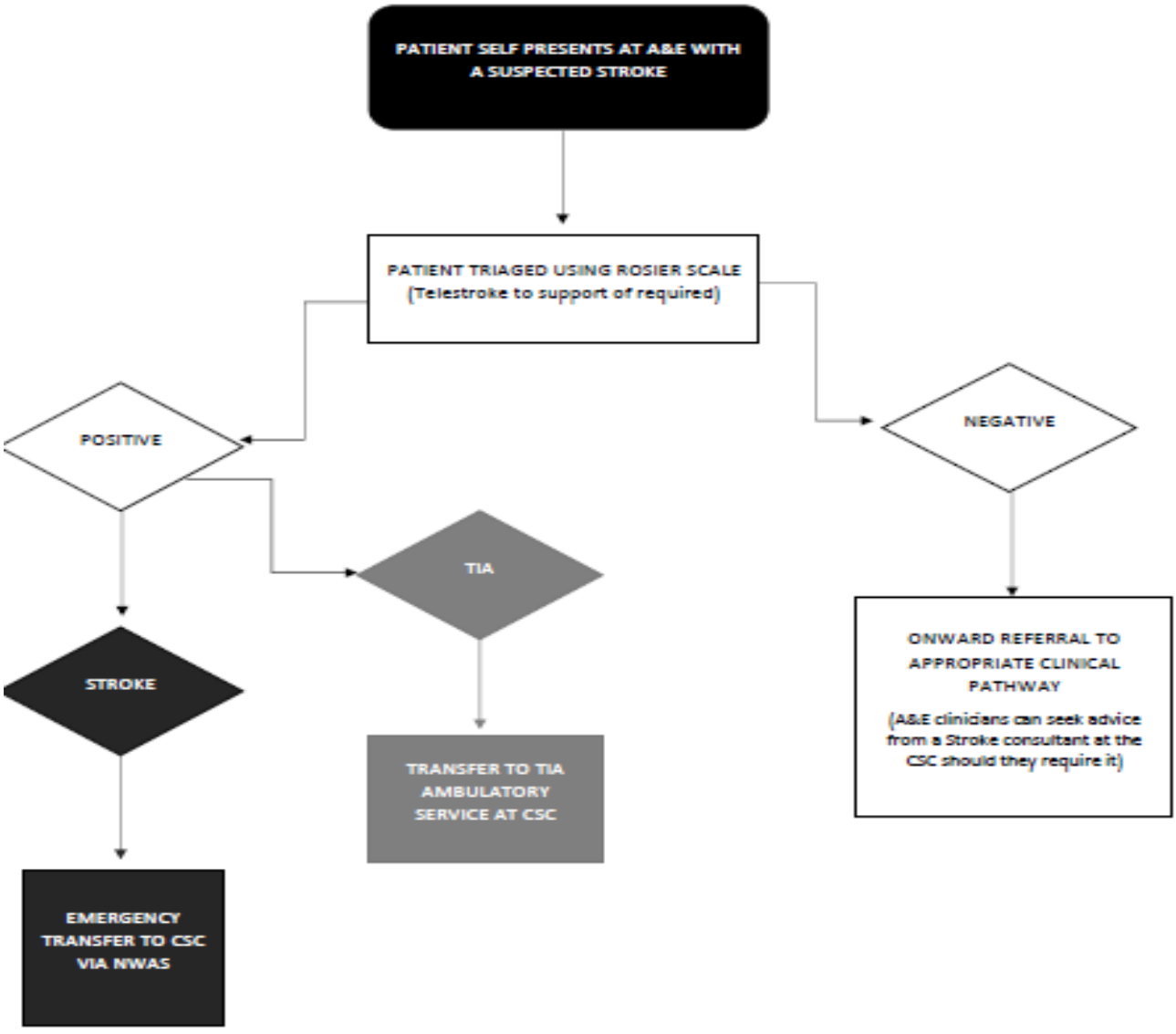
6.9 Treatment in a non-CSC Hospital

Patients self-presenting to surrounding A&Es (Southport and Royal Liverpool) would be reviewed, with an on-site stroke specialist nurse, before being transferred to the Comprehensive Stroke Centre, if required.

Some patients who are brought to hospital with suspected strokes have not actually had a stroke. This includes patients with mimic symptoms, TIAs and some that require neurology input. In the new model of care the clinicians at non-CSC hospitals (Southport and the Royal Liverpool) would be able to link with the CSC by telemedicine. If the patient needs the care of the CSC they will transferred immediately, if they require any other care this will be delivered from the receiving hospital site.

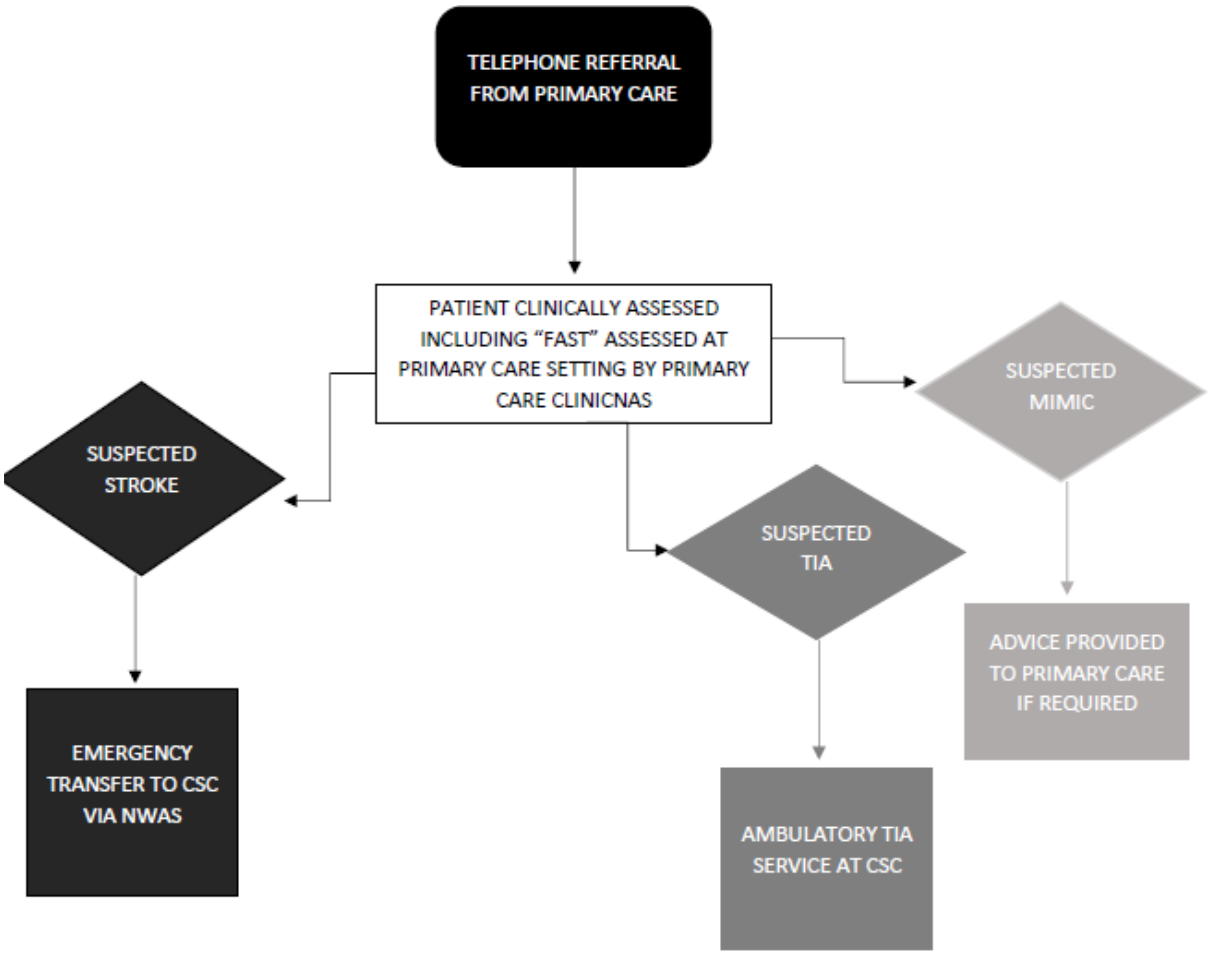
It is expected that the majority of TIA patients identified by paramedics would go directly to the CSC for assessment and treatment if required.

Proposed pathway for treatment in a non-Comprehensive Stroke Centre Hospital:



The CSC will also accept direct GP stroke / TIA urgent referrals for an immediate see and treat service. Due to travel time for Southport patients their TIA patients will attend the local hospital for initial assessment but transfer to the CSC if they require urgent treatment.

Proposed pathway for telephone referral from Primary Care:



If a mimic does not require further hospital care, the patient will be discharged with appropriate follow up care in the local hospital. If the condition requires the support of the CSC, then the patient will be transferred accordingly.

Assumptions to the scale of transfers from hospitals have been built into capacity models (based on 2018/19 and 2019/20 data) see **appendix 13.6.**

6.10 Research and Academia

As this transformation will create the regions (and one of the countries) largest stroke services it would present excellent opportunities to deliver high quality research.

Existing local research teams will be able to work more efficiently from a single acute receiving site to identify and recruit potential research candidates, ensuring more patients than ever are able to take part and benefit from acute stroke research.

Close links with our neighbouring neuroscience centre, rehabilitation wards, community rehabilitation services, regional specialist cardiothoracic trust, the Stroke Association and Liverpool and Lancaster Universities will also enhance the range of research studies that can be undertaken. Research opportunities are specifically seen in the fields of stroke-related psychological and quality of life research, where doctoral clinical psychology and PhD relationships can provide potential opportunities and in hyper-acute stroke care reflecting the benefits of being co-located with the regional neuroscience centre.

The expectation is that the new North Mersey Acute Stroke Service will apply for Hyperacute Research Centre status, whilst working closely with all of the other stroke services in the region to enhance research.

6.11 Digital and Technology Innovation

Currently each acute stroke service in North Mersey has access to their own telemedicine service where consultants can be contacted virtually out of hours to assess patients when they are in A&E and may require thrombolysis. None of the telemedicine solutions have the ability to link with another system. In Spring 2019, The Clinical Network together with the CVD R Board were successful in a bid for innovation funds to procure and implement a telemedicine solution with the potential to link for MDT meetings and cross site working in the future.

This upgrade of telemedicine and the software's ability to link in with other stroke Services virtually will support the proposals for North Mersey. If a suspected stroke patient presents to either Royal Liverpool or Southport site where there is no hyperacute stroke service, a consultant at the Comprehensive Stroke Centre at Aintree can assess the patient virtually using telemedicine. This assessment will dictate whether a patient will be transferred to the Comprehensive Stroke Centre or if they remain at the original presenting Trust. This digital solution will ensure that all suspected stroke patients that attend a non-Comprehensive Stroke Centre will receive a consultant assessment and reduce unnecessary transfer of patients between Trusts. It will also allow the teams across the North Mersey patch to hold MDT meetings to discuss operational issues, patient pathways and general service issues.

In line with the NHS Long Term Plan, we will use advanced and innovative technology in order to ensure we maximise our consultant decision making and patient safety and ensure the highest number possible of patients are able to access the most effective treatments in a timely manner.

An example of this is the ongoing work funded through the Stroke Strategic Clinical Network, in conjunction with the Radiology Network in Cheshire and Mersey to implement artificial intelligence technology to assist clinician reviews of CT angiograms. This will help to ensure timely diagnoses of large vessel occlusion and so identify patients potentially suitable for intra-arterial thrombectomy at the Walton centre. Similarly, CT perfusion imaging will identify patients with salvageable brain tissue that may have previously been outside of the appropriate treatment time window but may now also benefit from such intervention.

6.12 Organisational Form

There are many different organisational forms that the North Mersey Stroke Service could operate under, from joint venture to single provider model. All of which have their advantages and disadvantages.

A light touch approach at this stage may deliver the desired outcomes of managing clinical risk effectively across the footprint. This could be an agreement of a networking approach, covered by a Memorandum of Understanding, appropriate Service Level Agreements and governance structure.

This could include agreement of: -

- Recruitment and retention (including joint appointments)
- Pathway agreements
- Repatriation of patients
- Management and mitigation of risks collectively

The organisational form will be developed in the first phase of implementation.

6.13 Risks

There are a number of risks to implementing the new stroke model of care. The risk register is set out in **appendix 13.7.**

7 Impact of Proposed Model of Care

This section will describe the impact that the proposed model of care will have on where clinical activity is undertaken and what changes will be required to the estate, workforce, patients travel and interdependent services.

7.1 Clinical Activity

Clinical activity volumes have been assessed using both SSNAP and Trusts HES data. The Clinical Reference Group had undertaken a number of audits to support some of the assumptions. The aim was to gain the most accurate level of clinical demand on the stroke services inpatient, A&E and clinical support services **(appendix 13.6).**

The only way to ascertain the number of suspected stroke patients attending any of the three A&E departments was from stroke nurse referral records.

The table shows the level of activity for suspected stroke by site: -

A&E attendances for suspected stroke				
	Southport	Aintree	Royal Liverpool	Total
Attendances 2018/19	1,380	3,380	1,923	6,683
Attendances 2019/20	1,905	3,464	2,506	7,875

The above highlights that Aintree has a far higher referral rate from A&E for a stroke nurse assessment. Aintree also has a higher ratio of suspected stroke referrals compared to confirmed stroke. A&E attendances are a mixture of ambulance attendance and patient walk-ins. There is an opportunity to work more closely and train A & E departments to improve the quality of referrals for stroke patients using FAST and ROSIER tools for the accurate identification of stroke patients.

For the purposes of modelling; the following clinical activity has been used from both SSNAP and HES data and shows the summary of stroke, TIA and mimic inpatient admissions per site based on

2018/19 data: -

Summary of Stroke, TIA and Mimic Inpatient Admissions				
	Aintree	Royal Liverpool	Southport	Total
Strokes	547	624	350	1,521
TIA	60	92	88	240
Mimics	201	90	100	391
Admission to CSC	808	806	538	2,152

2019/20 data: -

Summary of Stroke, TIA and Mimic Inpatient Admissions				
	Aintree	Royal Liverpool	Southport	Total
Strokes	593	597	426	1,616
TIA	86	58	88	232
Mimics	201	90	100	391
Admission to CSC	**880**	**745**	**614**	**2,239**

There are assumptions to the amount of the current unmet demand built into this activity. In **appendix 13.6** assumptions have been made to the likely demand of Stroke, TIA and other / mimic patients excluding any other medical inliers on the stroke units/ wards. The above is assumed to the base year demand for future modelling.

A large number of suspected strokes were admitted to the three hospitals however, later confirmed not to be a stroke. Only a small number were admitted to the three stroke units as identified above. **The average length of stay (ALOS) for each of the sites was as follows based on:**

2018/19 data: -

North Mersey Stroke Services Inpatient Average Length of Stay			
Average Length of Stay	Aintree	Royal Liverpool	Southport
Stroke	22	18	16.6
TIA	2.4	3	2.2
Other	6	5.8	5.4

2019/20 data: -

North Mersey Stroke Services Inpatient Average Length of Stay			
Average Length of Stay	Aintree	Royal Liverpool	Southport
Stroke	19.4	20.2	18.6
TIA	2.2	3	6.2
Other	4.8	6.1	5.4

Note: The Royal Liverpool ALOS also includes time spent in the Rehabilitation unit at the Broadgreen site.

Southport has the lowest length of stay and this is due to: -

- Discharge process for patients who require assessment for long term nursing or residential home, this has significantly reduced the time waited for assessment.
- ESD outreach service has been introduced for Southport and Formby residents (not West Lancashire) since August 2019.

- Relocation to a new ward area which has much improved the environment and the ability to accept stroke patients in a timely manner and treat earlier and thereby discharge earlier.

The SNNAP national average was 18.4 in 2018/19 and 15 in 2019/20 for comparison purposes.

For all future modelling purposes, the ALOS of stroke patients is at 18.4 for Aintree, 18 for the Royal Liverpool and 16.6 for Southport. It is assumed that Aintree will be able to reduce ALOS due to a review of processes and additional nursing and therapy staffing.

All TIA patients and mimics have been modelled at 2.4 and 6 days respectively.

7.2 Impact on Bed Configuration

The clinical activity from 7.1 has been used to calculate the demand on the CSC, beds and clinical support services.

It is assumed that all emergency stroke patients and the majority of TIA patients and a proportion of mimics would attend the centralised CSC for initial assessment. It is assumed that the current large volumes of mimics being referred as suspected stroke patients would be reduced with the introduction of training to A & E teams.

There would also be a percentage of GP referrals for TIAs that would be assessed at the centre for Aintree and Royal Liverpool patients, Southport patients would be seen locally and if required redirected to the CSC.

Modelling this information into the future state identifies the required bed configuration based on 2018/19 data:-

North Mersey Stroke Service – Required Beds					
Bed Numbers	Aintree	Royal	Southport	Broadgreen	Total
< 72 hours	19	0	0	0	19
> 72 hours	35	0	15	0	50
Rehab	0	0	0	23	23
Total	54	**0**	**15**	**23**	**92**
Current Beds	33	**14**	**22**	**21**	**90**
Change in bed base	21	**-14**	**-7**	**2**	**2**

*Stroke activity has significantly increased between 2018/19 and 2019/20 data sets. Whilst it is not expected that growth at this level will be a continued trend (*Table – SSNAP activity in North Mersey over 6 years* on Page 25 shows that 2018/19 was a lower rate of strokes across north Mersey and the updated data for 2019/20 is more in line with the figures that would be expected, based on activity over the last 6 years), it's important to have a Stroke service that meets the demand of the population.

Based on the new data it has been determined the CSC needs to be built to accommodate 20 Hyper Acute beds.

Overall, demand and capacity highlights the requirement for North Mersey to increase HASU beds by 5 and reduce ASU rehabilitation.

This will result in a CSC with 19 Hyper acute beds (an increase of 5 overall) at Aintree with a 35 bedded post 72-hour care facility. The Royal Liverpool would close 14 beds on site leaving 15 gerontology / neurological beds on the ward. Southport would also be required to reduce 5(4 based on 19/20 data) stroke beds on site, however, it is expected that two beds will remain for neurological patients. Broadgreen requires an additional 2 rehabilitation beds to improve flow from the CSC and ensure patients are rehabilitated closer to home.

7.3 Estates Configuration

The stroke services estate would need to be developed to facilitate the new service model. This will require a new CSC on the Aintree site that has a Stroke A&E admission area, ambulatory area, therapy assessment & treatment rooms and a 20-bed ward (with flexibility to move to 23 beds due to modelled increase in demand in future years).

Four potential areas have been identified to accommodate the new CSC and two of them are located adjacent to the A & E department, close to radiology services and the Thrombectomy centre. There is also direct ambulance access to those buildings. The current occupants of these areas' will be required to move to another location on site. A further option to create a new build alongside the ED and AMAU is also being explored. This will require capital investment both in creating the new CSC and relocating other services to new a location. The exact location of the HASU is dependent on the complex integration programme for the new Liverpool University Hospitals NHS Foundation Trust that is only part way through the 5-year plan. The estimated capital cost of £4M is included in the financial section. Stroke is recognised in the integration programme as a priority.

The Broadgreen site has already increased the ward by two beds for winter pressures with the potential to maintain a 23-bed facility all year around to meet demand.

The Southport site will accommodate the 16 designated stroke beds and 2 Neurological beds in its current ward space.

7.4 Impact on Workforce

Stroke services are composed of several different staff groups working together as a multidisciplinary team to deliver care to stroke patients. Stroke is a consultant led service supported by medical staff, nursing, physiotherapy, occupational therapy; speech and language therapy, dieticians, orthoptics and clinical psychologists. The baseline whole time equivalent workforce numbers in post for stroke service in each site is shown in **appendix 8**.

The workforce model required has been modelled (Appendix 14 – Option C3) using Royal College of Physicians guidelines as is summarised as follows: -

North Mersey Stroke Services Workforce Gaps – using RCP Guidelines					
Staff Type	2018/19 WTE	2019/20 WTE	Required WTE	2018/19 Gap WTE	2019/20 Gap WTE
Medical	10.0	10.0	14.0	-4.0	-4.0
Nursing	158.3	161.57	174.6	-16.3	-13.03
Therapy	57.8	56.5	69.2	-11.4	-12.7
Management and administration	14.7	14.7	14.7	0.0	0.0
Grand Total	240.8	242.87	272.5	-31.7	-29.63

Based on RCP guidelines there would be staffing gaps of nearly 30 WTE's in all aspects of the multidisciplinary team.

The Clinical Reference Group considered all the identified gaps in all the staff groups and concluded that recruitment would be difficult due to national shortages. Therefore, the professional leads reviewed the staffing models and using RCP guidelines and their professional judgement developed an alternative staffing model. This would include developing new roles at assistant level to support the qualified grades to create a North Mersey Staffing Model that would complement the service configuration. The service still aspires to achieve RCP staffing standards in the future when staff supply meets demand.

The service would aspire to recruitment to all 14 consultant posts but recognise the difficult in achieving this aim. Therefore, a target of 12 consultants with the support of a mix of staff grades and nurse consultants has been agreed in the first phase of recruitment. The staff grade and consultant nurse posts would be new posts in the structure but would reduce the need for consultant from 14 posts to 12. Although these posts cannot fully replace the consultant role, they can provide vital support and skill working alongside consultants. There are further opportunities to develop Advanced Practitioner roles to support the new configuration of services.

A full review of nurse staffing has enabled the clinicians to agree a different skill mix of qualified and unqualified that has created a more realistic nursing model for recruitment purposes. There are currently new Band 4 Nursing roles being developed in LUHFT that would potentially fit this model of care. This in turn would increase the overall staff numbers which would improve patient care.

The Therapy teams conducted a similar review that again has resulted in a skill mix change that would enhance staff numbers and thereby the quality of care.

The full staff analysis using North Mersey staffing standards are included in **appendix 13.19.**

The use of North Mersey staffing standards results in much improved staffing numbers that would be realistic to achieve and would improve patient care.

The table shows the staffing gap using North Mersey Staffing Standards: -

Staff Type	2018/19 WTE	2019/20 WTE	Required WTE	2018/19 Gap WTE	2019/20 Gap WTE
Medical	10.0	10.0	12.0	-2.0	-2.0
Nursing	158.3	161.57	169.2	-10.9	-7.63
Therapy	57.8	56.5	66.2	-8.4	-9.7
Management and Administration	14.7	14.7	14.7	0.0	0.0
Grand Total	**240.8**	**242.87**	**262.1**	**-21.3**	**-19.23**

A workforce strategy will be developed to plan the recruitment and retention taking into consideration the requirements and sustainability of each site.

There will be a requirement to transfer resources from the Royal Liverpool and Southport to the centralised unit that will be managed through staff engagement and organisation change methodology.

7.5 Implication to Patient Travel Times

This section describes the impact of the preferred option on travel times.

The first part of this section covers ambulance journey times and is applicable to the whole patient population.

The second part covers public transport and car travel. Because of the way that local public transport planning is organised, it has not been possible to model the public transport and car travel implications in the same way across the whole of Knowsley, Liverpool, Sefton and West Lancashire. Therefore, this information only covers Liverpool City Region residents.

It's important to stress that the majority of patients travel to hospital by ambulance following a stroke, and therefore public transport and/or car travel implications of the preferred option would be most likely to impact on patients and visitors. Equally, where this did mean an increased journey compared to current arrangements, in most cases this would only be for the first 72-hours of care – at this point patients would either be discharged to continue their recovery at home or transferred to Broadgreen or Southport if this was closer to home than Aintree.

Ambulance journeys to hospital

Using Northwest Ambulance Service (NWAS) data from previous ambulance transfers, the tables below show the postcode areas that would be likely to see an increase of more than ten minutes (rounded up or down to the nearest minute) because patients would be taken to the Comprehensive Stroke Centre at Aintree Hospital, rather than the Royal Liverpool or Southport hospitals. These times are averages, and will depend on the exact addresses, and road conditions on the day, so they're only meant to give a rough indication of the change.

Liverpool postcodes which would see an increase of more than ten minutes journey time if patients were taken to Aintree rather than the Royal:

Postcode	Journey time to the Royal Liverpool Hospital	Journey time to Aintree Hospital
L1	9 minutes	20 minutes
L3	8 minutes	20 minutes
L7	9 minutes	19 minutes
L8	11 minutes	27 minutes

West Lancashire and Southport & Formby postcodes which would see an increase of more than ten minutes journey time if patients were taken to Aintree rather than Southport Hospital:

Postcode	Journey time to Southport Hospital	Journey time to Aintree Hospital
L40	20 minutes	32 minutes
PR4	26 minutes	39 minutes
PR8	9 minutes	36 minutes
PR9	13 minutes	44 minutes

Some other areas would also see increases – or decreases – in journey times, however we have only highlighted those where the change would mean an increase of more than ten minutes. Although patients are currently more likely to be taken to a hospital closer to where they live, ambulance crews make decisions based on a number of different factors – there aren't set rules about which hospitals people in each area are taken to.

It is important to set into context that any increase in travel times would be offset against the benefits of the new clinical model, which would see suspected stroke patients received directly into a stroke assessment unit which would enable quicker access to diagnostics and the right care.

Travel by public transport and car (Liverpool City Region residents)

Using the postcodes from stroke and TIA patients from 2018/19, travel times have been mapped to current hospital sites and then to the new proposed Comprehensive stroke centre at Aintree. This information shows the difference in travelling times for these cohorts of patients.

Travel by car: Travel times to access acute stroke services are shown at appendix 13.9 for both current state and proposed future state. This shows that 100% of these patients can access one of the three current HASUs within 30 minutes using a vehicle during morning and evening peak traffic (7-9am and 4-7pm) i.e., this journey is likely to be quicker during non-peak hours and weekends. It also shows that

the majority of patients (95% in the morning and 96% in the evening) at all three current centres can access services within 20 minutes. It is important to remember that the three services are not currently meeting the required clinical standards.

The travel times for the future state are also shown at appendix 13.9 and show that 100% of patients using a vehicle would access stroke services within 45 minutes. Access to the Aintree site within 30 minutes would be achievable for 87% of patients in the morning and 90% in the evening, a reduction of 13% and 10% respectively.

Currently it takes people in the most deprived parts of West Lancashire over 60 minutes to travel to Southport Hospital on public transport. Car access to Southport Hospital from Skelmersdale is around 20-30 minutes.

Some practical examples of car travel implications: People in some other areas of south Liverpool can currently travel to the Royal Liverpool Hospital in 10 – 20 minutes, but the journey to Aintree would take around 20 – 30 minutes. For Speke residents, travel times to Aintree and the Royal are broadly the same. The journey to Aintree takes around 30 - 40 minutes for Southport residents.

Travel by public transport: The travel times using public transport (bus and rail) for families visiting relatives is as follows: currently 99% of visitors can access the three HASUs within 60 minutes. In the new proposed model, over 80% of patients would access the Aintree site within 60 minutes. Almost 100% of visitors would have arrived at Aintree within 90 minutes on public transport.

Some practical examples of public transport implications: People in Toxteth can currently access stroke services at the Royal Liverpool in 20 – 30 minutes by public transport, while Aintree is a 30 – 60-minute journey. Speke residents can currently access the Royal Liverpool in 45 – 60 minutes, and Aintree in 60 – 90 minutes. Southport residents can reach Southport Hospital in 20 – 45 minutes, while Aintree is up to a 90-minute journey.

It is important to note that the majority of stroke patients receiving hyper acute care would be repatriated to a local hospital or tom home after 72 hours.

7.6 Interdependent Services

The following services have been fully engaged in the redesign process and have supported an impact assessment of stroke redesign on their services.

7.6.1 Northwest Ambulance Services (NWAS)

The major impact on NWAS is the number of extra journeys and in some cases the length of those journeys.

- Patients from Southport to Aintree is an increase length of journey
- Patients from South of the Royal Liverpool site to Aintree is an increase length of journey
- Repatriation to Southport is a new journey
- Repatriation to Broadgreen is an increase in length of journey
- Transfer of walk-in patients from Emergency Departments to CSC will be a new journey.

An overall estimate to the increase in the number of journeys and additional cost has been included in the financial model **Appendix 10**. An indicative additional financial cost has been included at £175,000 based on 2018/19 data.

7.6.2 Radiology

The major impact on the radiology service will be to the services at Aintree, it is envisaged that an extra 2,562 patients and will attend the CSC which will require an additional 3,884 extra radiology tests which include MRI, CT and carotid Doppler (using 2018/19 data). Based on 2019/20 data the estimated number of additional patients attending the CSC is 2,506, which will require an additional 3,906 tests. Currently there is an assumption only 10% of TIA GP referrals from Southport & Ormskirk Hospital will transfer, however, depending on the resources available at Southport site, there may be the need for all of these patients to transfer to the CSC. This would increase the total number of additional radiology tests to 4,167. See **appendix 6** for details.

The additional workload at Aintree is a result of patient transfers from Southport and Royal Liverpool and therefore an expectation of resource transfers from each of the sites. However, there is a significant risk that due to pressures on all existing services that there will be no ability to transfer staff or fully meet the required financial resources on each site. This is reflected on the PCBC risk register and will require careful management and negotiation.

The Radiology department is currently undertaking a full demand and capacity review and will incorporate this transfer workload into their plans for the future. Currently, all capacity is committed to current demand and any further work would require an expansion of space and equipment.

An indicative financial value of an additional £90,000 over and above transferred resources has been built into the financial model to reflect strokes share of the step cost changes. If resources do not transfer from other sites, then additional costs will be incurred.

7.6.3 Pharmacy

The pharmacy department have assessed their impact on the service and have identified improved efficiencies and productivity due to centralisation. This will need some management and negotiation due to the impact on the workforce across all three sites. The financial section reflects an indicative value of efficiencies that requires further exploration into what is releasable.

The transfer of extra pharmacy drugs will be a direct transfer from site to the central unit. The most expensive drug usage is for the thrombolysis drug (alteplase) which is classed as a “high-cost drug” and therefore is financially reimbursed from the department of health as a pass-through charge. This will therefore have no financial impact on any of the Trusts with regard to transfers.

7.6.4 Pathology

The pathology services on both the Aintree and Royal Liverpool sites are provided by Liverpool Clinical Laboratories (LCL), so the service will be the same regardless of where the blood is taken in the future.

The Southport service receives pathology from Whiston hospital, and this would need to be a transfer of resources. LCL have assessed the impact of the additional tests at Aintree and confirmed that they can absorb the workload with the transfer costs.

7.6.5 Orthoptics

Visual impairment can be one of the only problems or may be one of several disabilities caused by stroke. Stroke related visual impairment occurs in about 60% of acute stroke survivors. Currently, there is very little orthoptics input to stroke acute service nationally and locally. The Royal College of Physicians recommends that every stroke patient has a practical assessment of vision and an examination of the visual field and eye movements. Orthoptists should form part of the acute core stroke disciplinary team.

To provide an orthoptics service to North Mersey stroke service would require investment in 1.8 WTE Orthoptists. Providing orthoptics across 3 sites would require considerable investment and is likely to be unsustainable.

7.6.6 Psychology

RCP and National Stroke Programme guidance strongly recommends that clinical psychology input must be a core consideration in routine MDT rehabilitation. Indicating the need for stroke clinical psychology access to provide specialist assessment, clinical guidance, training and clinical support to staff and to provide direct patient treatments and onward care facilitation: in order to support optimal clinical rehabilitation outcomes. National Stroke Programme guidance; further provides clear recommendations on how this input into MDT care should best be provided.

2.1 WTE additional Clinical Psychologists for the North Mersey system are recommended to enable this need (then supporting provision of 1.0 Broadgreen / Royal based; 0.7 WTE Aintree based; and 0.5 Southport based), this then bringing the North Mersey system total to 2.2 WTE.

7.7 Quality Impact

The quality impact assessment was undertaken on all of the shortlisted options and is included at **appendix 13.11.** The assessment consistently demonstrates that the preferred option will have the positive impacts on patient care categories including: -

- Patient Safety
- Patient experience
- Clinical effectiveness
- Equitable
- Efficient

The evidence from the reconfigurations from London and Manchester who also centralised specialised hyper acute care is overwhelming in terms of: -

- Preventing people dying prematurely; reducing mortality by between 1.8% (69 lives), and 1% (96 lives) in London. This would represent in North Mersey 26 lives if achieved similar levels.
- Enhancing the life of people with long term-term conditions; the increased use of thrombolysis and thrombectomy will reduce the impact of disability on patients and allow patients to return home (rather than a nursing home) or even resume a normal life.
- Helping people to recover from episodes of ill health following injury; providing rehabilitation services that are appropriately staffed, closer to the patient's home with managed early supported discharge and community rehabilitation services.

- Ensuring that people have a positive experience of care; providing specialised care in a Comprehensive Stroke Centre with all the appropriate stroke experts and equipment and then providing recovery and rehabilitation closer to home.
- Treating and caring for people in a safe environment and protecting them from avoidable harm; providing the right people in the right place at the right time to provide specialised stroke treatment will prevent avoidable harm. Receiving thrombolysis and thrombectomy within specified time frames improves outcomes. Patients receiving a successful thrombectomy are less likely to have serious disability within the first 90 days after stroke.

The research also demonstrated that a centralised stroke centre provided financial savings of £811 per stroke patient within the first 90 days. The scale of savings for each area will be dependent on the scale of improvements based upon the before and after centralisation. The starting position and the potential for improvement amongst other factors will drive the size of the financial benefit. However, using the £811 as a guide for financial efficiencies this would represent £1.1 million for North Mersey. These financial savings would mainly be achieved in the community and social care as on average only the first 18 days of 90 days are within the acute hospital setting. However, there is an opportunity to reduce length of stay in the acute hospitals due to improved outcomes.

The Benefits Realisation plan **(appendix 13.4)** highlights the areas that North Mersey clinical teams have targeted for improvement and the impact on metrics that will ultimately improve patient care.

7.8 Equality Impact

The purpose of this assessment is to explore the potential positive and negative consequences of the proposal on protected characteristic groups

The whole purpose of the redesign is to improve access to specialist care for people who suffer the life-threatening condition of stroke. The assessment at **appendix 13.12** demonstrates that the improved access is for all people including those with protected characteristics.

7.9 Sensitivity Analysis

7.9.1 Growth

In assessing the likely growth of stroke services in North Mersey the following issues have been considered: -

- The major impact on the service in the future is a growing and ageing population. North Mersey and particularly in Southport has an already large elderly population
- There is also an emerging theme of younger people having strokes linked to lifestyle choices
- Prevention programmes to detect and treat those at risk of stroke
- There has been a cumulative growth of 0.6% in Strokes numbers in North Mersey in the last seven years
- Stroke numbers in North Mersey have not increased year on year, however 2019/20 data shows the highest number of recorded strokes in the last 7 years
- Risk that North Southport patients are treated at Preston.

Taking the above into consideration for the purposes of this business case a growth factor of 0.5% a year has been considered. This has been modelled in **appendix 13.13** using 2018/19 data and 2019/20 data

A 5-year projection at growth of 0.5% using 2018/19 data would see the inpatient admission of an extra 38 stroke patients, 6 TIAs and 10 mimics. This would require the bed base across the three sites to increase by 2 to 3 beds in total. However, 2019/20 data shows a significant increase in stroke patients across North Mersey (mainly in Southport), which when compared to 2018/19 data (shown in the table below),

difference between 18/19 and 19/20	Aintree	Royal	Southport	Total
strokes	46	-27	76	95
TIA	26	-34	0	-8
mimics	0	0	0	0
total	72	-61	76	87

The additional 87 patients are already higher than the planned growth over 5 years based on the 18/19 data. Factoring this information into the bed modelling, this would require an additional 3-4 beds across the three sites in the next 5 years.

This would require 6 extra staff and would cost an additional £190k per annum plus non pay costs. This would only cover direct stroke costs; further costs would be incurred in clinical support services.

The new HASU development requires 20 beds at 90% capacity however plans are to build the unit big enough to expand to 23 beds. Southport's current ward allows for 22 beds and will reduce to 18 (including Neuro beds) beds leaving capacity of 4 to grow. Therefore, a 5-year growth would be consumed within the planned footprint, but further work will be required to plan for the following 5 years.

7.9.2 Average Length of Stay

The average length of stay (ALOS) will have a massive impact on beds and resources. The plans for centralisation and staffing should have a positive impact in reducing the ALOS to the planned 18.4 days for the centralised unit with opportunities to reduce further. This is linked to two major enablers a 24/7 thrombectomy service and a to specification ESD and Community Rehabilitation service. The impact of increasing or reducing the ALOS by 1 day is: -

- Beds increase/decrease 3.5 beds
- Staff numbers increase/decrease by 6.4 WTE
- Costs increase/decrease by £254k per annum

Annual capacity and demand reviews should be undertaken as part of annual operational planning to effectively manage the service.

7.10 Patient Stories

To illustrate the potential impact this change in service will have on patients' outcomes this section provides some patient stories looking at the before and after reconfiguration.

Angela Patient Story 1

Before

Angela a 70-year-old female had a sudden onset of loss of speech and right arm and leg paralysis at 07:30 on a Saturday morning, family rang 999 at 08:00 FAST positive, category 2 ambulance with paramedic sent arrived within 15 minutes, on scene 40 minutes transferred to local HASU travel time 20 minutes.

Pre-hospital call by paramedics, arrived Resus assessed by Stroke Nurse ROSIER positive 09:15, urgent CT Brain performed 15 minutes post arrival at ED (09:30).

Telestroke Consultant contacted (10:00), assessed patient and confirmed diagnosis of left middle cerebral artery ischaemic stroke with an NIHSS of 27 indicating a severe stroke, there were no contra-indications to thrombolysis which was commenced at 45 minutes post arrival at ED (10:00; 2 hours post event).

1 hour post thrombolysis no improvement (11:00), re-contacted and advised CT angiogram performed at 11:20 reviewed by Telestroke consultant 12:00 identified a large vessel occlusion of left middle cerebral artery advised contact Thrombectomy centre. Thrombectomy Centre accepted patient for Thrombectomy at 12:20. NWAS contacted, and category 2 paramedic ambulance arrived at 12:40, left ED at 12:50, arrived at Thrombectomy Centre 13:20, nursed in corridor as no bed available at Thrombectomy centre and patient was outside time window 13:30 (within 6 hours of event) for Thrombectomy so not performed and then awaited transfer back to local HASU arrived back at HASU at 17:00 with persistent symptoms and signs of a severe stroke.

After

Angela 70-year-old female sudden onset of loss of speech and right arm and leg paralysis at 07:30 on a Saturday morning, family rang 999 at 08:00 FAST positive, category 2 ambulance with paramedic sent arrived within 15 minutes, on scene 15 minutes transferred Comprehensive Stroke Centre 40 minutes.

Pre-hospital call by paramedics, arrived Resus assessed by Stroke Nurse ROSIER positive 09:05, urgent CT Brain performed 15 minutes post arrival at ED (09:20). Seen by Stroke Consultant in CT identified no haemorrhage, commenced thrombolysis as no contraindications at 09:20 1 hour 50 mins post event) and CT angiogram performed at same time 09:20 which confirmed large vessel occlusion of left middle cerebral artery. Patient transferred to monitored bed in HASU, Thrombolysis continued, co-located thrombectomy centre contacted and accepted patient for thrombectomy at 09:30. Patient transferred for thrombectomy at 09:45, thrombectomy commenced at 10:00, clot retrieved, transferred back to HASU at CSC at 11:00.

Patient transferred home from CSC if well enough or repatriated to local hospital for acute care and rehabilitation.

Benefits
Thrombolysis: 1 hour 50 post event versus 2 hours post event.

Thrombectomy at 2 hours 30 mins post event rather than missing thrombectomy window of 6 hours.

Single ambulance transfer to CSC compared to 2 for local HASU and thrombolysis and then further transfer for thrombectomy leading to significant delays.

Patient monitored in appropriate bed in CSC throughout acute phase including thrombolysis, thrombectomy and transfer back to co-located HASU bed from thrombectomy suite.

Therefore
Right treatment right time in right place with competent staff leading to better clinical outcome and better patient experience.

Fred Patient Story 2

Before
Fred was a previously well 41-year-old man. He was at home with his family one Saturday afternoon when he developed a sudden weakness of his left side and slurred speech. His family called an ambulance, and he was transferred to his local AED. On arrival he was immediately assessed by the stroke nurse, it was clear that Fred was having a big stroke. A CT brain scan was organised. The CT scan showed a clot in the right middle cerebral artery and with support from the consultant at home via telemedicine; Fred received thrombolysis treatment with 35 minutes. The team felt Fred would probably need thrombectomy treatment however this wasn't available at weekends.

Fred didn't improve with the thrombolysis treatment and for over a week his condition remained critical as he suffered with the effects of cerebral oedema. Fred spent many weeks' tube fed and dependant.

Against the odds Fred began to improve and started a journey of over six months of rehabilitation in hospital with support from doctors, nurses, physiotherapists, speech therapist, psychologists and occupational therapists as well as countless others.

Fred was able to return home and able to walk with further support from community teams and the stroke association. The physical and psychological effects of his stroke were profound. Longer term Fred continued to struggle with pain and seizures as a consequence of his stroke. Fred was unable to return to his job.

After
The team reflected on how life could have been different for Fred had stroke services been centralised. He may have had his thrombolysis treatment even quicker, with rapid access to specialist CT scans including CT Angiogram. He would have been able to be transferred directly for thrombectomy. His time in hospital and complications could have been reduced. His level of disability would have been less, and he may have returned to work and all his usual activities.

8 Finances

This chapter sets out the financial modelling undertaken for the short-listed options and then provides an analysis of the additional costs to be met to implement the preferred option.

8.1 Financial overview

Due to the complexities of tariff and the "Acting as One" contract agreement the financial section will focus purely on the change in the costs.

North Mersey providers and commissioners have worked under the "Acting as One" contract agreement in recent years, prior to the introduction of the temporary financial regime currently in place to support COVID arrangements and recovery. These arrangements have followed a "block contract" style approach linked to a fixed allocation supported by additional direct payments to address the impact of COVID.

It is anticipated that providers and commissioners will revert to a similar style contract as "Acting as One" from 22/23 onwards to enable the health and care system to focus upon ensuring that value for money is provided for taxpayer funds.

The proposed changes within this business case will see activity moving from one Trust to another and across sites. Whatever financial framework exists in the future, there will be a requirement to transfer income across provider contracts without destabilising Trusts or services. It is recognised that this is not a simple process, and a detailed understanding of current and future service delivery models will be required to reach agreement of impact between collaborating Trusts.

The price tariff is not always helpful in determining the fair amount that should be paid for a given activity and it is recommended that it should not be used as the currency for transfer of income across provider contracts.

The only true way to understand the costs of the proposed service is to determine the change in costs. The financial analysis in this section has determined the changes in the cost base as the additional cost of implementing the proposed model of care. This principle is consistent with a system approach to healthcare provision.

Current North Mersey stroke services, across three providers, cost in the region of £9.2 million, employing 242 WTE staff.

The COVID pandemic may have a long-term impact on service delivery models across a broad range of pathways, including Stroke services. It is too early to assess this with any degree of accuracy and therefore the financial consequences of the new model may be subject to change as these become clearer.

Financial implications of the short-listed options

The financial implications of the shortlisted options are set out in appendix 14. The summary includes costs from the proposed enhancement in workforce using RCP standards plus the impact of new building and NWAS running costs. It also provides an estimated cost of the capital build for each of the options. This analysis shows that the preferred option C3 is the second most cost effective to A2 "Do nothing with enhancements". This was a like for like comparison used for scoring the appraisal.

Costs of the Preferred Option

The preferred option was then reviewed further by clinicians in terms of staffing and what could be achieved to improve the service. This resulted in the development of the North Mersey Staffing Standard (NMSS). The service still aspires to RCP standards and the National Stroke Programme but accepts that due to workforce capacity constraints this will not be possible in the short term. The preferred option has then been modelled using the North Mersey Stroke Standard (NMSS).

The assessment of full cost of the proposed service indicates additional investment of £2.182m at 18/19 prices in terms of increased annual revenue costs to meet North Mersey Stroke Standard workforce levels. The cost to meet the RCP proposed model has been estimated at £2.763m using the same price basis. It is anticipated that the new service model will be introduced during 22/23 and costs are assumed to be c. 10% higher than modelled at this stage, leading to a revised requirement of c. £2.400m for the North Mersey Stroke Standard and c. £3.040m for the introduction of the RCP model.

The introduction of similar service models has demonstrated that wider savings are delivered through improved recovery and avoidance of ongoing support costs for patients. It is unlikely that any reduction in hospital bed days will result in tangible savings, given the underlying pressures that exist in the NHS at present. The cost of developing the existing building footprint to meet the specification for a hyper acute stroke service is estimated at £2.5m. Further diagnostic and relocation costs totalling £1.5m have also been identified. The total anticipated capital requirement for this proposal is £4.0m and this has provisionally been included within future capital plans.

The Cheshire and Merseyside Integrated Care System (ICS) Exec Team have reviewed the outline financial implications and have recommended that revenue funding support for the proposal is prioritised from the 22/23 growth allocation. The ICS and LUHFT are working closely to understand the timing of capital requirements and inclusion of resource within overall ICS capital allocations.

8.2 Financial implications of the short-listed options

The financial implications of the shortlisted options are set out in **appendix 14.** The summary includes costs from the changes in workforce using RCP standards plus the impact of new building and NWAS running costs. It also provides an estimated cost of the capital build for each of the options. This analysis shows that the preferred option C3 is the second most cost effective to A2 “Do nothing with enhancements”. This was a like for like comparison used for scoring the appraisal.

8.3 Costs of the Preferred Option

The preferred option was then reviewed further by clinicians in terms of staffing and what could actually be achieved to improve the service. This resulted in the development of the North Mersey Staffing Standard (NMSS). The service still aspires to RCP standards and National Stroke Programme but accepts that due to staff shortages this will not be possible in the short term. The preferred option has then been modelled using the NMSS.

The table below provides a comparison between RCP cost and NMSS costs based on activity and workforce data from 2018/19: -

North Mersey Stroke Services option appraisal costs		
Financial Impact of each option	**Preferred Option RCP Standards**	**Preferred Option NMSS**

	£'000	£'000
Direct Staffing Revenue Costs	£2,100	£1,100
NWAS	175	175
Radiology	90	90
Pharmacy	-107	-107
Capital Charges	250	250
Estates Soft and Hard FM	375	375
Total Revenue	**2,883**	**1,883**
Capital Costs	**4,000**	**4,000**

In summary, the total additional cost for the preferred option is £1.5M revenue and £4M capital. It is possible to phase these costs over a two-year period as part of a staged implementation programme.

The Quality Impact section 7.7 highlights from previous research the potential to achieve financial savings across a 90-day pathway. Using this research information shows a potential £1.2 million saving which is more likely to be in the community and care settings.

9 Option Development and Appraisal

This chapter summarises the options appraisal process for this service review. It discusses the different steps of the options appraisal process and then details the governance arrangements put in place to ensure the robustness and transparency of the options appraisal process.

9.1 Options Appraisal process

The options appraisal process for this service review consisted of four discrete steps: -

- Develop and agree the options appraisal framework
- Determine the long list of options
- Appraise the options and create short lists of options
- Appraise the short list and select a preferred option

9.2 Governance Arrangements

This service review falls into the acute hospital service review within the Health Care Partnership via the Cardiovascular Disease Board and led by Liverpool CCG. The governance arrangements have been designed to reflect the stakeholder led nature of the options appraisal process.

The North Mersey Stroke Board was established to consider proposals put forward by the Clinical Reference Group and make recommendations to the Committee's in Common (CIC) and the provider Trust Boards. The chair of the Board is the Director of Strategy for Liverpool CCG. The Board has a defined membership of both clinical and non-clinical stakeholders. The terms of Reference are shown at **appendix 15.**

The Joint CIC was responsible for agreeing proposals from the Stroke Board and sharing with the Joint Governing Body of Liverpool CCG, Knowsley CCG, South Sefton CCG, Southport and Formby CCG and West Lancashire CCG for final approval.

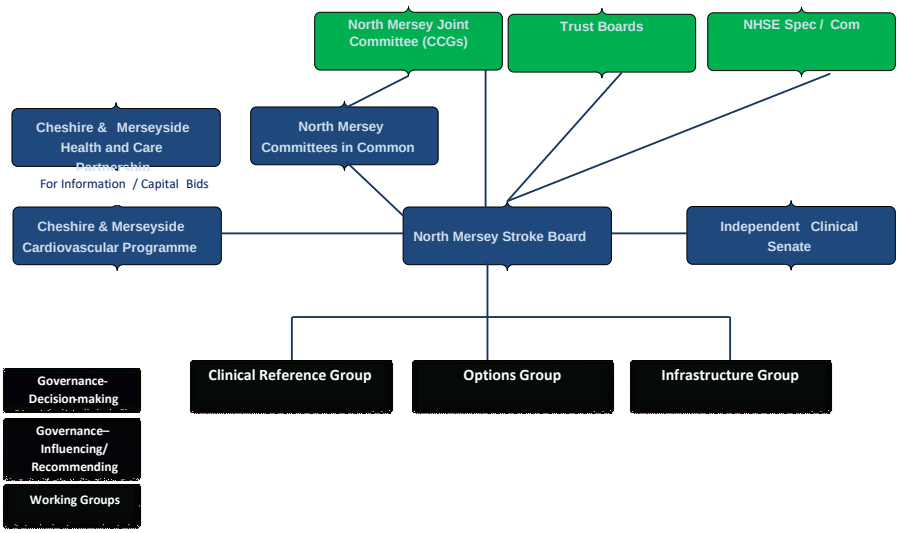
Two groups were established to support the review and selection of the preferred clinical model option: -

Options Group was an open stakeholder forum that convened at workshops held at different locations. The objective of the workshops was to gather views from across the North Mersey stroke care system on clinical models of care and the selection of a preferred model of care. The workshops scored the long list and the short list of options. These formed a recommendation for the Clinical Reference Group to consider.

The Clinical Reference Group is a clinical body with defined membership that met monthly to develop the options appraisal framework and the long list of options. It considers its feedback from the Options Group and recommended a preferred model of care option to the North Mersey Stroke Board. The CRG chair is Dr Paddy McDonald, Clinical Lead for stroke services from Southport and Ormskirk NHS Trust. The terms of Reference are shown at **appendix 16.**

The infrastructure group never formally met but information was provided to CRG by the programme lead from corporate services and clinical support services with regard to the short-listed options impact on clinical activity, demand and capacity, workforce and estates.

Governance Arrangements for North Mersey Stroke Services:



The main three working groups met regularly through the development of the preferred option**.**

Meetings of the Key Working Groups		
Date of Meeting	**Name of Meeting**	**Purpose**
31st July 2019	Workshop 1	To develop and agree the case for change
3rd September 2019	CRG 1	Develop terms of reference and programme team Agreed case for change
12th September 2019	NMSB 1	Agreed terms of reference Agreed case for change
13th September 2019	Workshop 2	Agreed option appraisal criteria Developed long list of options Agreed short list of options
1st October 2019	CRG 2	Reviewed scoring of long list Agreed short list of options Reviewed modelling information
10th October 2019	NMSB 2	Agreed short list of options Reviewed Thrombectomy action plan Reviewed ESD analysis
8th November 2019	CRG 3	Developing current sustainability plans Reviewing & modelling activity information Agreed Estates Specification
18th November 2019	CRG (away day)	Developed modelling information
27th November 2019	Workshop 3	Developed the short list options Agreed staff engagement methods Patient engagement feedback
12th December 2019	NMSB 3	Patient engagement feedback Options development
9th January 2020	NMSB 4	Presented current sustainability plans Options development
13th January 2020	CRG 4	Modelling of Options Plan the next Workshop Agree Interdependent Services
3rd February 2020	CRG 5	Activity and modelling options Plan of final workshop
12th February 2020	Workshop 4	Selected preferred option
13th February 2020	NMSB 5	Presented current sustainability Presented preferred option
15th December 2020	CRG Workshop	Review of Emergency Stroke Pathway
7th January 2021	CRG Workshop	Confirmation of Emergency Stroke Pathway

9.3 Developing the options appraisal framework

Evaluation criteria are an important component of any options appraisal process, pre- agreed criteria help assess the relative merits of options in a structured and objective way. The CRG considered a number of different appraisal criteria but consider that a “critical success factor “(CSF) framework was the most appropriate. Options would be assessed in terms of whether or how well they would meet criteria that are by definition “critical” to the success of the programme.

The CSF framework was agreed at Workshop 2 on 13/09/2019.

There were six CSF's

- **Patient Outcomes and Experience** – delivery of a high-quality stroke service that would improve mortality, morbidity, reduce disability and provide access and equity of service at the right time
- **Deliverability** – the practicality of the implementation including feasibility, estates and equipment and competition factors if any
- **Alignment and Strategic Fit** – alignment with strategic aims of all stakeholders and the NHS long term plan
- **Risk Execution** – ability to maintain and improve performance in terms of any regulatory, statutory requirement and clinical standards (SNNAP)
- **Clinical Sustainability** – will this improve recruitment retention, critical mass, rota sustainability, contributions to training and research
- **Value for Money** – ability to reduce duplication and waste, standardise pathways, site optimisation and cross cover.

The score was to compare to the current service provision. The scoring matrix used was as follows:

Score	Description
3	A significant improvement of the service high level of certainty – substantial evidence
2	An improvement of the service with some certainty and some evidence
1	A slight improvement of the service but lacks evidence
0	No change in service delivery
-1	Slightly worse than the current service but the case is weak and lacks significant evidence
-2	Worse than the current service but there is evidence to support
-3	Significantly worse than the current service and supported by substantial evidence

9.4 Determining the long list of options

The long list of options were developed at workshop 2 held on 13/09/2019 with careful consideration of clinical quality requirements, sustainability challenges and service co-dependencies. The CRG to ensure that every possible option could at least be consider produced 26 different clinical models. Although they at an early stage recognised weakness in some of the options that had been developed CRG agreed it would be prudent to assess all options against the agreed appraisal criteria. To develop the long list of options the CRG consider every possible permutation of service delivery on the four current sites.

The long lists of options were as follows: -

A. Do Nothing

A1 – Current configuration of services
A2 – Current configuration of services – with enhancements

B. Consolidate 3 HASU's into 2

This option consolidates 3 HASU's onto two sites: leaving one of the current HASU's untouched. Creating in total 2 HASU's with 3 post 72 hours acute and rehabilitation services.

B1 – Consolidate Aintree and Royal (on to Aintree) leave S & O. (creates CSC on Aintree)
B2 – Consolidate Aintree and Royal (onto Royal) leave S & O. (creates CSC on Royal site)
B3 – Consolidate Aintree and S & O (onto Aintree site) leave Royal Liverpool. (creates a CSC on Aintree)
B4 – Consolidate Aintree and S & O (onto S & O site) leave Royal Liverpool. (creates a CSC on S & O site)

C. Consolidate 3 HASU's into 1, creating a CSC

Merge all 3 HASU's onto one site and 2 post ASU's.

C1- One Comprehensive Stroke Centre on the Royal Liverpool site plus 2 Acute rehab
C2- One Comprehensive Stroke Centre on S & O site plus 2 Acute rehabs
C3- One Comprehensive Stroke Centre on Aintree site plus 2 Acute rehabs
C4- One Comprehensive Stroke Centre on Broadgreen site plus 2 Acute rehabs

D. Consolidate 3 HASU and ASU into 1 CSC

Merge all 3 HASU's and ASUs onto one site – total centralisation

D1- One Comprehensive Stroke Centre on Aintree site - no repatriation
D2- One Comprehensive Stroke Centre on Royal Liverpool site - no repatriation
D3- One Comprehensive Stroke Centre on S & O - no repatriation
D4 - One Comprehensive Stroke Centre on Broadgreen site - no repatriation

E. Consolidate 3 HASU into CSC and 1 other ASU

Merge all 3 HASU's and have only one other ASU

E1-One Comprehensive Stroke Centre at Aintree site and 1 other ASU at Broadgreen site
E2-One Comprehensive Stroke Centre at Royal Liverpool site and 1 other ASU at Aintree site
E3-One Comprehensive Stroke Centre at Royal Liverpool site and 1 other ASU at S & O site
E4-One Comprehensive Stroke Centre at Aintree site and 1 other ASU at S & O site
E5-One Comprehensive Stroke Centre at Broadgreen site and 1 other ASU at Aintree site
E6-One Comprehensive Stroke Centre at Broadgreen site and 1 other ASU at S & O site

F. Create comprehensive Stroke Centre on more than one site any permutation of options.
Create full CSC on any of the three sites – with full services

9.5 Determining the short list of options

The long list of options was appraised against the CSFs at a workshop on the 13/09/2019. This produced a short list of options for a full appraisal.

The workshop appraisal is shown at **appendix 17.**

The finalised short list of options shown in order of ranking: -

C3 - One Comprehensive Stroke Centre on Aintree site plus 2 Acute rehabs
E4 - One Comprehensive Stroke Centre at Aintree site and 1 other ASU at S & O site
E1 - One Comprehensive Stroke Centre at Aintree site and 1 other ASU at Broadgreen site
B3 – Consolidate Aintree and S & O (onto Aintree site) leave Royal Liverpool site (creates a CSC on Aintree)
B1 – Consolidate Aintree and Royal (on to Aintree) leave S & O (creates CSC on Aintree)
A2 – Current Configuration of services – with enhancements
A1 – Current Configuration of services

CRG reviewed the outcome from the workshop and the short-listed options on the 01/10/2019. The group agreed with the workshops findings and reported to NMSB on the 10/10/2019.

9.6 Description of short-listed options

The short-listed options have been modelled (based on activity and workforce data from 18/19) to understand the impact on clinical activity, beds, estates, workforce, quality, equity and finance this was used to inform the appraisal process.

9.6.1 Option A1 – Do nothing - current service configuration

This is the do-nothing option - all services continue to operate unchanged.

The clinical teams note the following: -

Patient Outcomes and experience

- This would not improve the patient outcomes
- This option would not fully support access to thrombolysis and thrombectomy

Deliverability

- There would be minimum impact on estates and equipment

Alignment and Strategic Fit

- This option would not meet the strategic aims of local commissioners, HCP and the NHS Long Term Plan

Risk Execution

- North Mersey stroke service would not improve performance against the clinical standards

Clinical Sustainability

- This option does not address the sustainability issues of operating three small stroke units
- None of the stroke units would be compliant with recommended levels of stroke patients above 600
- The difficulty in recruiting specialist staff to three units would still persist. The requirement under RCP for the number of consultant posts in this option is 20.4 WTE; currently only 10 WTE in post (3 of which are locums)

- Creating a North Mersey network would help manage risks across the four sites and aid recruitment and short-term sustainability

Value for Money

- The consequence of poor outcomes would impact on length of stay, disability, extra support in the community and mortality. This option would provide no value for money

Clinicians felt that the service performance would worsen as even more difficult to recruit to sub-standard service and the longer term would see poor patient outcomes, experience and poor staff satisfaction.

9.6.2 Option A2 – Do nothing – current service configuration with enhancements

This option would address some of the deficiencies in clinical standards identified in the current service. This option would introduce enhancements to the current service on all four sites.

The following additional enhancements are incorporated into this option: -

- Increase HASU beds at Aintree site by 3 to a total of 7
- Create a dedicated stroke unit at the Royal Liverpool site on ward 2Y with 7 HASU and 7 ASU beds that are protected
- Create 2 extra HASU beds and reduce 2 ASU beds at Southport site
- Create 2 extra beds on Broadgreen site
- Invest in staffing to provide care and rehabilitation to the new bed base
- Create a North Mersey Stroke Services Network that manages all risks on all sites.

Considerations

Enhancing services on all four sites and improved staffing levels is likely to improve performance against clinical standards and thereby improve some outcomes.

However, it was noted by clinicians that: -

Patient outcomes and Experience –

- This option would not fully support access to thrombolysis and thrombectomy
- This option should improve access to HASU with increased capacity therefore proving better outcomes

Deliverability –

- There would be minimum impact on estates and equipment
- Financial investment required both Revenue and Capital

Alignment and Strategic Fit –

- This option would not meet the strategic aims of local commissioners, HCP and the NHS LTP
- Commissioner would accept this as a short-term solution

Risk Execution –

- North Mersey stroke service may improve performance against some of the clinical standards, however, it still may not fully achieve them or other standards

Clinical Sustainability –

- This option does not address the sustainability issues of operating three small stroke units. However, it is recognised that it would improve the sustainability issues in the short term
- None of the stroke units would be compliant with recommended levels of stroke patients above 600
- The difficulty in recruiting specialist staff to three units would still persist. The requirement under RCP for the number of consultant posts in this option is 20.4 WTE; currently only 10 WTE in post (3 of which are locums)
- Creating a North Mersey network would help manage risks across the four sites and aid recruitment and short-term sustainability

Value for Money

The additional staffing costs to recruit to RCP for the new bed configuration would be £2.3M.

See **appendix 14** for the detail activity, bed and financial monitoring.

9.6.3 Option B1 – Consolidate Aintree site and Royal Liverpool site (on to Aintree site) leave S & O **(creates CSC on Aintree)**

This option merges the Royal Liverpool and Aintree HASU units onto the Aintree site, but Southport remains as a HASU. Acute hospital stroke services would operate at Aintree, Broadgreen and Southport.

The beds from the Royal Liverpool site would transfer to Aintree requiring an additional 7 HASU and 7 ASU on site. The current stroke unit would be unable to accommodate this number of beds, and this would require the development of a 15 bedded HASU. The beds at Southport site would be unchanged.

Considerations

This option would improve the service significantly for those patients accessing Aintree but have limited impact on Southport patients.

However, it was also noted by clinicians that: -

Patient outcomes and Experience

- This option would not fully support access to thrombolysis and thrombectomy as Southport patients would still have to transfer to Aintree for thrombectomy services
- Patient from Liverpool would have to travel further to Aintree but travel time in most cases is minimal
- This would improve access to some patients to Hyper Acute Care quicker but not all the population

Deliverability

- Requires significant investment into finding and developing the estate, it would displace some services currently on Aintree site

Alignment and Strategic Fit

- This option would not fully meet the strategic aims of local commissioners, HCP and the NHS LTP
- It would provide an improved option for part of the population of North Mersey

Risk Execution

- Only some of the clinical standards would be met for the services consolidated onto one site
- Inequitable service across North Mersey

Clinical Sustainability

- This option does not address the sustainability issues of the most fragile stroke unit at Southport. It could destabilise Southport further as staff move to the bigger centralised unit or leave the service
- Only one of the stroke units would be compliant with recommended levels of stroke patients above 600
- The difficulty in recruiting specialist staff to two units would still be an issue. The requirement under RCP for the number of consultant posts in this option is 17 WTE; currently only 10 WTE in post (3 of which are locums).
- Creating a North Mersey network would help manage risks across the three sites and aid recruitment and short-term sustainability

Value for Money

- This would require a purpose built HASU/CSC on the Aintree site that would require a capital investment of £3M revenue
- The additional staffing costs to recruit to RCP for the new bed configuration would be £3.1M

See **appendix 14** for the detail activity, bed and financial monitoring.

9.6.4 Option B3 – Consolidate Aintree and Southport (on to Aintree site) leave Royal Liverpool HASU (creates CSC on Aintree)

This option merges the Royal Liverpool and Southport HASU units onto the Aintree site, but the Royal Liverpool remains as a HASU. Acute hospital stroke services would operate at Aintree, Broadgreen and Southport.

The beds from the Southport would transfer to Aintree requiring an additional 5 HASU on site. The current stroke unit would be unable to accommodate this number of beds, and this would require the development of a 12 bedded HASU. The beds at the Royal Liverpool would be unchanged.

Considerations

However, it was noted by clinicians that: -

Patient Outcomes and Experience

- This option would not fully support access to thrombolysis and thrombectomy as the Royal Liverpool site would still have to transfer to Aintree and would not have direct access to HASU
- Patient from Southport would have to travel further to Aintree but travel time in most cases is not excessive
- This would improve access to some patients to Hyper Acute Care quicker but not all the population

Deliverability

- Considerable investment in estate and the ability to find buildings on site
- Recruitment of additional staff when there is a national shortage

Alignment and Strategic Fit

- This option would not fully meet the strategic aims of local commissioners, HCP and the NHS LTP

Risk Execution

- North Mersey stroke service may improve performance against the clinical standards for the Aintree site. However, this would not be true for patients on the Royal Liverpool site
- Inequitable service across North Mersey

Clinical Sustainability

- This option addresses the sustainability issues of the most fragile stroke unit at Southport. However, it could destabilise the Royal Liverpool as staff may choose to move to the bigger centralised unit or leave the service
- Only one of the stroke units would be compliant with recommended levels of stroke patients above 600

- The difficulty in recruiting specialist staff to two units would still persist. The requirement under RCP for the number of consultant posts in this option is 17 WTE; currently only 10 WTE in post
- Creating a North Mersey network would help manage risks across the three sites and aid recruitment and short-term sustainability

Value for Money

- The additional staffing costs to recruit to RCP for the new bed configuration would be £3.0M
- This would require a purpose built HASU/CSC on the Aintree site that would require a capital investment of £3M revenue.

See **appendix 14** for the detail activity, bed and financial monitoring.

9.6.5 Option C3 – One Comprehensive Stroke Centre on Aintree Site plus 2 Acute rehabs

This option would see all three HASU's coming together to create a Comprehensive Stroke Centre on the Aintree site having a total of 19 beds plus an acute stroke ward with 35 beds. Acute stroke ward would also be located at Broadgreen site (23 beds) and Southport site (15 beds).

This option provides a centralised CSC to provide direct access to specialist urgent care and acute / rehabilitation close closer to home for patients.

Considerations

However, it was noted by clinicians that: -

Patient outcomes and Experience

- This option would fully support access to thrombolysis and thrombectomy in a timely manner and increasing numbers of patients receiving treatment thereby improve patient outcomes
- The increase travelling time for Southport patients and any south Liverpool patients would be offset by the direct access to specialist treatment that will improve outcomes
- Reduce the pressure in A&E departments due to direct access to CSC

Deliverability

- Considerable investment in estate and the ability to find buildings on site
- Recruitment of additional staff when there is a national shortage

Alignment and Strategic Fit

- This option will meet the strategic aims of local commissioners, HCP and the NHS LTP

Risk Execution

- The clinical standards would improve and therefore improve patient outcomes
- This option will meet best practice guidelines

Clinical Sustainability

- North Mersey stroke service is likely to improve performance in all aspects of clinical standards and therefore patient outcomes and experience
- This option addresses the sustainability issues of the most fragile stroke unit at Southport. However, there is still a risk of destabilising one of the ASUs
- The CSC would be compliant with recommended levels of stroke patients above 600
- The difficulty in recruiting specialist staff will still exist however the new service would be attractive to potential employees. The requirement under RCP for the number of consultant posts in this option is 14 WTE; currently only 10 WTE in post. However, this is more achievable and places fewer burdens on current post holders
- Creating a North Mersey network would help manage risks across the three sites and aid recruitment and short-term sustainability

Value for Money

- This would require a purpose-built CSC on the Aintree site that would require a capital investment of £4M revenue
- The additional staffing costs to recruit to RCP for the new bed configuration would be £2.8M
- There are potential significant savings due to the reduced mortality and disability due to improved outcomes. In the acute sector this is likely to be in the length of stay.

9.6.6 Option E1 - One Comprehensive Stroke Centre at Aintree and 1 other ASU at Broadgreen

This option would merge the three HASUs into one CSC but also merge either one of the ASUs onto the Aintree site, with an additional ASU at Broadgreen site.

This option provides a centralised CSC to provide direct access to specialist urgent care and acute/ rehabilitation closer to home for some patients but not all.

However, it was noted by clinicians that: -

Patient outcomes and Experience

- This option would fully support access to thrombolysis and thrombectomy in a timely manner and increasing numbers of patients receiving treatment thereby improve patient outcomes
- The increase travelling time for Southport patients and any south Liverpool patients would be offset by the direct access to specialist treatment that will improve outcomes
- Reduce the pressure in A&E departments due to direct access to CSC
- This option will not meet the needs of all patients; in all engagement events patients have been clear that they are willing to travel for specialised care, but rehabilitation needs to be closer to home

Deliverability

- The Estate requires to build both CSC and extended ASU may be difficult to deliver both in terms of available estate and financially

- The recruitment of additional staff when there is a national shortage will be difficult. This option would have the added complication of trying to relocate staff to a central site, this has proved difficult in other redesigns locally

Alignment and Strategic Fit

- This option will meet the strategic aims of local commissioners, HCP and the NHS LTP

Risk Execution

- North Mersey stroke service is likely to improve performance in all aspects of clinical standards and therefore patient outcomes and experience

Clinical Sustainability

- This option addresses the sustainability issues of the most fragile stroke unit at Southport. However, there is still a risk of destabilising one of the ASUs.
- The CSC would be compliant with recommended levels of stroke patients above 600
- The difficulty in recruiting specialist staff to two units would still persist but made easier if the new service is attractive to potential employees as meets standards. The requirement under RCP for the number of consultant posts in this option is 14 WTE; currently only 9 WTE in post. However, this is more achievable than any of the other options
- Creating a North Mersey network would help manage risks across the three sites and aid recruitment and short-term sustainability

Value for Money

- This would require a purpose-built CSC on the Aintree site that would require a capital investment of £10M
- The additional staffing costs to recruit to RCP for the new bed configuration would be £3.1M.

9.6.7 Option E4 - One Comprehensive Stroke Centre at Aintree and 1 other ASU at Southport

This option would merge the three HASUs into one CSC but also merge either one of the ASUs onto the Aintree site, with an additional ASU at Southport site.

This option provides a centralised CSC to provide direct access to specialist urgent care and acute/ rehabilitation closer to home for some patients but not all.

However, it was noted by clinicians that: -

Patient outcomes and Experience

- This option would fully support access to thrombolysis and thrombectomy in a timely manner and increasing numbers of patients receiving treatment thereby improve patient outcomes
- The increase travelling time for south Liverpool patients would be offset by the direct access to specialist treatment that will improve outcomes
- Reduce the pressure in A&E departments due to direct access to CSC

- This option will not meet the needs of all patients; in all engagement events patients have been clear that they are willing to travel for specialised care, but rehabilitation needs to be closer to home

Deliverability

- The Estate requires to build both CSC and extended ASU may be difficult to deliver both in terms of available estate and financially
- The recruitment of additional staff when there is a national shortage will be difficult. This option would have the added complication of trying to relocate staff to a central site, this has proved difficult in other redesigns locally

Alignment and Strategic Fit

- This option will meet the strategic aims of local commissioners, HCP and the NHS LTP

Risk Execution

- North Mersey stroke service is likely to improve performance in all aspects of clinical standards and therefore patient outcomes and experience

Clinical Sustainability

- This option addresses the sustainability issues of the most fragile stroke unit at Southport. However, there is still a risk of destabilising one of the ASUs.
- The CSC would be compliant with recommended levels of stroke patients above 600
- The difficulty in recruiting specialist staff to two units would still persist but made easier if the new service is attractive to potential employees as meets standards. The requirement under RCP for the number of consultant posts in this option is 14 WTE; currently only 9 WTE in post. However, this is more achievable than any of the other options
- Creating a North Mersey network would help manage risks across the three sites and aid recruitment and short-term sustainability

Value for Money

- This would require a purpose-built CSC on the Aintree site that would require a capital investment of £10M
- The additional staffing costs to recruit to RCP for the new bed configuration would be £3.1M.
- 9.6.7 Option E4 - One Comprehensive Stroke Centre at Aintree and 1 other ASU at S & O

9.7 Determining the preferred option

The short-listed options were modelled to determine their impact on clinical activity, beds, estate, workforce, quality, equality and finance and this was provided in summary form at the workshop on the 12/02/2020. Modelling information for each option is shown in **appendix 14.**

The short-listed options were appraised at the workshop on the 12/02/2020 using the same appraisal criteria and scoring system. The workshop recommended a preferred option of: -

C3 One Comprehensive Stroke Centre on the Aintree Site with acute rehabilitation on Aintree, Southport and Broadgreen.

The scoring was conclusive and is shown at **appendix 18.**

10 Pre-Consultation Engagement

This chapter will outline how stakeholders, patients and the public have been involved in the development of options.

10.1 Stakeholder engagement

Stakeholders have been engaged in the development of the PCBC through a number of different routes. These include: -

- **Overview and Scrutiny Committees (OSCs)** – the case for change was presented to Liverpool City Council's Social Care and Health Select Committee and Sefton OSC during autumn 2019, in preparation for the development of the PCBC.

- **Joint Committees in Common** – the Committee in Common brings members of each CCG's governing body together for decision making on issues that affect North Mersey. The case for change and an interim report has been presented to the Joint CIC of North Mersey CCGs and a further presentation took place in March 2021.

- **North Mersey Stroke Board (NMSB**) – This is a formal monthly meeting whose membership includes senior managers from the 3 acute provider Trusts, 5 CCG's, The Stroke Association and NHSE specialist commissioners.

- **North Mersey Stroke Clinical Reference Group** –. A group of clinical experts who work in the North Mersey stroke services and the Strategic Clinical Network who have designed all workshops and provided clinical expertise to the PCBC.

- **North Mersey Co-Design Workshops** – Four workshops were held between July 2018 and February 2019. These workshops were open to all staff working in stroke services in North Mersey, including teams from Liverpool University Hospitals NHS Trust, Southport & Ormskirk Hospitals NHS Trust, and The Walton Centre NHS Trust.

Stakeholder mapping was undertaken prior to commencing the workshops to identify which groups of staff were involved in the delivery of stroke services. This supported the ambition of the workshops being co-design and ensured relevant participation based on insights and experience of service delivery. The mapping also took into account staff working in co-dependent services. Based on the mapping, staff were directly invited to participate in each workshop.

A group of stroke survivors, identified by The Stroke Association, were also involved in the workshops. The workshops agreed the case for change before undertaking a process of options development

including appraising a long list and short list of options before recommending a preferred clinical model.

After each workshop a written briefing was produced for all staff working in stroke services, which line managers and those who attended in person were tasked with cascading across their organisations. This was supplemented through inclusion in corporate communication channels. Through this process, workshop attendees were able to keep wider teams informed of the development work but also gather their thoughts and ideas to share at the following workshops.

An overview of each workshop and how the engagement informed the options development process is provided below.

North Mersey Co-Design Workshops Workshop 4: February 2019

During the session, attendees discussed and scored the shortlisted options for the proposal for the future stroke service model.

Key feedback obtained from the workshop included:

- There is a strong preference for the option of centralising hyper acute stroke services from the current three sites onto the Aintree site
- Acute stroke care and rehabilitation would need to be provided by Aintree Hospital, Broadgreen Hospital and Southport Hospital.

As a result:

- Feedback was considered by the CRG and used to develop this PCBC.

North Mersey Co-Design Workshops Workshop 1: July 2019

The workshop provided an opportunity to discuss the current challenges in delivering hyper-acute stroke services, share ideas about service provision and begin the process of mapping out the possibilities for future stroke care.

Colleagues joined in conversations and tabletop activities to share expertise and knowledge and debate ways on how to improve care and develop and improve stroke services.

During the workshop, participants focused on a variety of issues from current challenges, through to staffing issues and how long it would take to establish the new services models at different hospitals across the area.

Key feedback obtained from the workshop included:

- More access to thrombectomy treatment is required
- Community Rehabilitation, including Early Supported Discharge (ESD), is an integral part of a good stroke service and there is a need to develop these services alongside acute services
- If we don't work together as a North Mersey Stroke Service, we are doing our patients a dis-service and will fail to make stroke outcomes better
- New ways of delivering stroke services have been introduced across other parts of the country through the creation of comprehensive stroke units (hubs) in a central location with a link to local acute trusts (spoke) which have delivered significant improvement in outcomes for patients
- There was a strong view across clinicians, commissioners, support services and patients, that stroke care could and should be improved. There was also a strong commitment to making consistently high-quality care available for all stroke patients, regardless of where they live, or are treated.

As a result:

- The case for change was validated
- Opportunities were identified which informed the options appraisal and a long list of potential options were developed for what the new service could look like.

North Mersey Co-Design Workshops Workshop 2: September 2019

The session was used to score a number of potential options for how stroke services in North Mersey could be delivered in the future. It was a complex task but proved useful as the session generated lots of important feedback which needed to be considered when deciding the best options for how the services could be delivered.
Key feedback obtained from the workshop included:

- Potential solutions have all been captured accurately and the process being undertaken is considered thorough
- More detail, including looking at the estates and workforce implications, is required to understand impact and feasibility
- Detailed exploration of the impact of potential solutions on co-dependent services is needed
- Further exploration of improvement opportunities from an expanded patient perspective should be considered.

As a result:

- Further engagement sessions were delivered with stroke survivors and their families alongside the Stroke Association to capture feedback from direct users of the services to help inform the development process

- Project leads from co-dependent service considered as critically linked to the delivery of stroke care we appointed into the project team to offer further specialist advice and input into the development of the PCBC.

North Mersey Co-Design Workshops Workshop 3: November 2019

The event brought together clinicians from the three acute trusts delivering stroke services across North Mersey, commissioners, stroke patients and representatives from the Stroke Association to discuss the various proposals that had been suggested for how services could be delivered. Feedback from engagement sessions with stroke survivors and their families was shared, alongside how it applied to the review and the options development work. The discussions centred on the pros and cons for each of the service models recommendations and encouraged teams to consider which would deliver the best experience and care for stroke patients and their relatives.

Key feedback obtained from the workshop included:

- Patients and representatives highlighted that they felt that the immediate aftercare following discharge could be greatly improved. There was strong support for bringing local stroke services together in a single location; however some concerns were raised around distance to travel and the ability for emergency teams to get the patient to hospital in time
- Some also highlighted issues around the lack of consistent support for family and friends
- The group agreed to shortlist 5 clinical models of care that would be modelled for the impact on patients, quality, workforce, finance, activity and estate.

As a result:

- A steering group (MDT) from the three organisations was established to explore how the system can work closer together as the model for the future is developed.

The financial implications of the shortlisted options are set out in **appendix 14.** The summary includes costs from the changes in workforce using RCP standards plus the impact of new building and NWAS running costs. It also provides an estimated cost of the capital build for each of the options. This analysis shows that the preferred option C3 is the second most cost effective to A2 “Do nothing with enhancements”. This was a like for like comparison used for scoring the appraisal.

Lived experience engagement sessions - During autumn 2019 commissioners worked with the Stroke Association to visit six local groups for stroke survivors, to talk about the review and gather feedback from those with lived experience of hospital stroke services. The sessions involved 80 stroke survivors and more than 20 carers/volunteers. The information gathered from discussions with stroke survivors, their families and carers was written up into a report.

10.2 How pre consultation has informed options

This development of the preferred option and the PCBC has been clinically driven by the CRG and the workshops. The workshops have also had strong and consistent attendance from stroke survivors. The outcomes from these events have informed the engagement with NMSB and Joint CIC. So fundamentally, the clinicians and patients have not just informed the development of the preferred option but actually co-designed the option.

The engagement with stroke survivors provided an opportunity to test the case for change and some of the clinical views with a group of people who had lived experience of local stroke service and carers who were able to offer a different but equally important perspective. Headlines from the report were presented to the third stroke workshop on 27 November 2019 and have influenced not only the options development process but also the awareness of areas to consider and where further insights and potential mitigation may be required. These areas will be explored further during the formal consultation process.

The key themes from this engagement were as follows:

- A majority of both stroke patients and their carers were in favour of bringing stroke services together in one single location. They could see the benefit of developing a 'centre of excellence' staffed by specialists and providing a comprehensive range of support services at one centralised location.
- However, there was both concern and some scepticism from stroke survivors and their carers that such a centre could operate without substantial changes being made to the current structure relating to admissions and post stroke support services. Much of the criticism about the treatment of stroke patients was about getting to the hospital in the first place and what happened immediately after being discharged in terms of quality, quantity and a range of support services.
- The families of stroke patients made the point that any centralised centre must have good communication/transport links and adequate car parking facilities.
- Stroke patients and their families viewed the treatment of stroke survivors as a process that should move smoothly from one phase to the next. The current treatment of stroke patients does not achieve that objective for all patients. Whilst the engagement was originally designed to get specific feedback about the potential for centralising hospital stroke services, the conversations ranged over a much broader set of issues. Respondents wanted to talk about their experiences of stroke care and life after stroke, which highlighted opportunities for improvements across several areas. Some stroke patients experienced delays in getting to hospital once stroke symptoms were confirmed and others complained about the lack of aftercare and support after leaving hospital. These shortcomings can have long lasting impacts.
- The experience of stroke survivors and their families was not defined by their hospital care alone. The review should also consider how these wider issues impact on patient outcomes, including rehabilitation support, and how they plan to be addressed.
- There are a minority of stroke patients who disagree with the concept of centralisation, favouring instead the existing provision of the three providers of stroke services. They were concerned about the elimination of stroke services close to home and doubted that ability of a centralised unit to cope with the volume of demand, particularly at a time of financial constraints and staffing shortages. They favoured increased investment in existing provision.

The principles of realigning hospital services based on an integrated city-wide approach, has been part of ongoing discussions with local communities across North Mersey over the last few years under the

umbrella of the Healthy Liverpool Programme, the One Liverpool Plan, the Shaping Sefton Plan and Liverpool University Hospitals NHS Foundation Trust's Integration Programme.

Priorities around hospital treatment have been a recurring theme within most engagement activities delivered within recent years and people have consistently ranked being offered the same, high standard of treatment regardless of where treatment takes place as their priority, very closely followed by being seen by the right staff who are experts in the treatment/management of their condition. Short travel time for one off appointment such as surgery has been the least important priority. However, wanting to travel as little as possible has been highlighted to patients and local communities on several occasions. The recent trauma and orthopaedics consultation identified willingness to travel for the majority of participants as a maximum of 45 minutes for an elective admission.

The consensus generally from system wide engagement has been that having the highest standard of treatment and being seen by the best staff for their health care needs is more important to people than the location of treatment. However, generally people do want care as close to home as possible. This has been shown as especially important for the elderly, those with multiple/long term conditions and those without transport.

Collectively, the existing system feedback and the feedback obtained from those with lived experience of stroke services highlight the importance of an integrated end to end pathway for stroke patients; which has been referred to throughout this document. The North Mersey Stroke Board is focussed on the three key work streams of Acute Care, Thrombectomy services and Community Rehabilitation.

10.3 Cheshire and Merseyside Engagement

The NM Board and the CRG membership includes the Cheshire & Merseyside ISDN lead and the Clinical Network Manager who throughout the development of this PCBC have advised on the work undertaken both locally and nationally to ensure the North Mersey plans are aligned.

A meeting with the lead clinician at St Helens and Knowsley took place on the 3rd February 2020 to discuss North Mersey plans and lessons learnt from the Mid Mersey merger of stroke services. The North Mersey plans have also been presented to the NW SCN Stroke Leaders meeting held on the 18th February 2020.

10.4 Future Stakeholder Engagement and Consultation

Staff

Structured staff engagement plans for Liverpool University Hospitals NHS FT, Southport and Ormskirk NHS Trust and The Walton Centre NHS FT will be developed to ensure that communication and engagement remains a strong focus as the project continues to the next phase. This will provide staff with an opportunity to receive information and updates, but also enable them to further contribute to shaping and influencing plans for the future. The intention is to continue workshop events through the process of development and approval of a full business case.

Patients, the public and wider stakeholders

Subject to approval from NHS regulators, Trust boards and the Joint Committee of North Mersey CCGs, the preferred option would be put to public consultation. The consultation will provide opportunities for people to share their views and highlight whether there is any other information that needs to be considered in decision-making. As part of this process CCGs will also engage with Overview and Scrutiny Committees (OSCs) in the four local authority areas, in line with statutory requirements. Detailed plans for public consultation, including timescales for communicating with OSCs and other stakeholders, will be developed over the coming months.

11 Clinical Senate Review

This section will discuss the review undertaken by the clinical senate and the feedback provided.

Liverpool CCG (on behalf of Knowsley CCG, South Sefton CCG, Southport & Formby CCG and West Lancashire CCG) commissioned the NW Clinical Senate to undertake an independent clinical review, in line with the NHS England & Improvement stage 2 assurance process of proposed models of care for the future delivery of stroke services in the North Mersey area.

The review was held on 26th and 27th April 2021.

The review considered the future provision of hyper acute and acute stroke care across the North Mersey Area. This included the case for change, preferred model and decision-making process.

The panel fully support the direction of travel and agree the preferred option will benefit patients and services; additional evidence is required to enable the review team to provide the clinical assurance required. The evidence will be provided as the work progresses and the full business case is written.

Additional information is required on the following areas:

- Clinical governance arrangements
- Recruitment and retention plan
- IT and digital plans
- Funding of Early Supported Discharge across all CCGs.

12 Programme Management

This section will discuss the business continuity plans and implementation timelines.

12.1 Business Continuity Plan

A stroke business continuity plan (SBCP) has been developed to ensure that the current services can be sustained and improved throughout the lifecycle of the proposed reconfiguration programme. The fragility of some of the services and the length of time for the new build means there may need to be a phased approach to implementation.

Sustainability of services is key; these actions will improve the sustainability of the service in the short term.

The current governance arrangements will remain in place to monitor and support the implementation of the SBCP and continued development of the long-term business case.

The CRG with the support of operational managers from S & O NHS Trust and LUHFT with additional support from the LUHFT Integration Team (PMO) will provide the necessary programme support through the life cycle of the project.

12.2 Outline plans for Implementation

The current governance arrangements would be maintained to manage the implementation. This will be multi-disciplinary approach using the CRG as the main driver.

The CRG with the support of operational managers from S & O NHS Trust and LUHFT with additional support from the LUHFT Integration Team (PMO) will provide the necessary programme support through the life cycle of the project. The clinicians' involvement will continue in the implementation phase via workshops and staff engagement events as set out in the staff engagement plan. There are also plans to provide additional training to the leaders of the service with regard to managing change and staff engagement.

When the North Mersey Stroke network is established a Partnership Board having senior leadership representation from both Trusts would be created to manage the overall implementation. The Partnership Board would report back into Trusts governance and also the North Mersey Board.

The implementation of the SBCP will provide a solid foundation before moving to the new centralised CSC with ASU and rehabilitation.

13 References

Ref 1 Stroke Association 2013; Lesniak, 2008

Ref 2 Williams, 2005; Pohiasvaara et al, 2001

Ref 3 Royal College of Physicians 2016

Ref 4 One Liverpool

https://www.liverpoolccg.nhs.uk/about-us/publications/one-liverpool-2019-2024/

Ref 5 Sefton Care and Transformation Programme – Shaping Sefton

https://www.southseftonccg.nhs.uk/what-we-do/our-5-year-strategy/

Ref 6 West Lancashire – Building for the Future

https://www.westlancashireccg.nhs.uk/building-for-the-future/

Ref 7 Acute Sustainability Programme – Cheshire and Merseyside Health Care Partnership

https://www.cheshireandmerseysidepartnership.co.uk/our-work/delivering-care-more-efficiently/acute-sustainability

Ref 8 was ref 6 National stroke strategy 2007 page 23

Ref 8 Impact and sustainability of centralised acute stroke services in English Metropolitan areas: retrospective analysis of hospital episode statistics and stroke national audit

Ref 9 Recommended by SNNAP and also in research "Feasibility of a hyper-acute stroke unit model of care across England: a modelling analysis"

1. Michael Allen1,
2. Kerry Pearn1,
3. Emma Villeneuve1,
4. Thomas Monks2,
5. Ken Stein1,
6. Martin James3

https://bmjopen.bmj.com/content/7/12/e018143

Ref 10 Stroke Services: Configurations Decision Support Guide, Tony Rudd and Nighat Hussain, 2015

Ref 11 National Stroke Strategy 2007

Ref 12 Emberston et al (2014) Lancet. https://doi/10.1016/S0140-6736(14)60584-5

Ref 13 Morris et al (2014) impact on centralising acute stroke services in English metropolitan areas on mortality and length of stay: difference-in-difference analysis BMJ2014;349: g4757

Ref 14 Standards for providing safe acute ischaemic stroke and thrombectomy services P White et al (September 2015)

Ref 15 National Clinical guidelines for stroke, Intercollegiate Stroke Working Party

Ref 16 https//www.happy-hearts.co.uk

Ref 17 2016 National Clinical Guidelines for Stroke

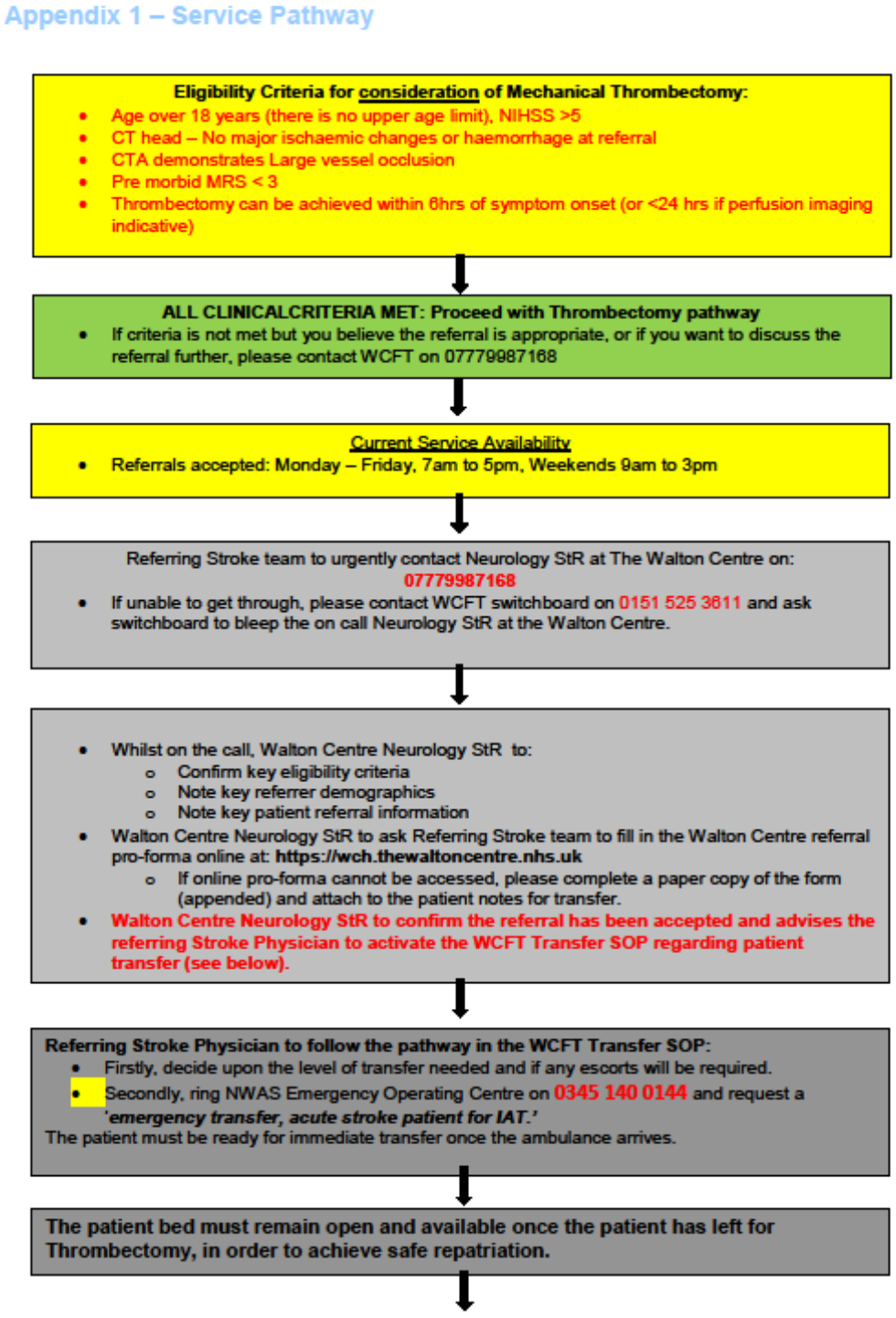
Ref 18 Page 15 of this document sets out the case study:

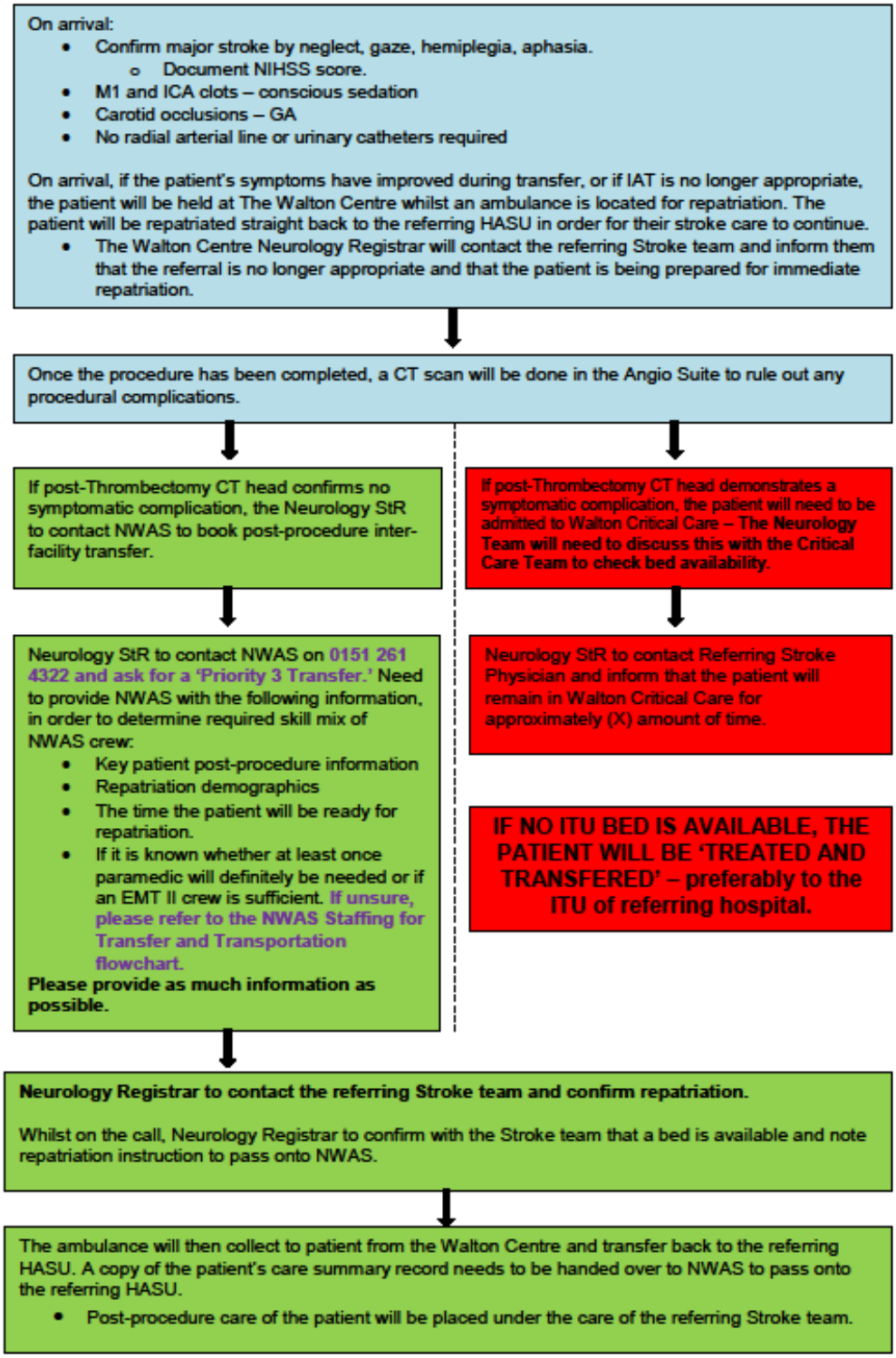
https://www.nice.org.uk/Media/Default/About/what-we-do/Into-practice/measuring-uptake/NICE-Impact-stroke.pdf

Ref 19 Wider context of Long-Term Plan and Specialised Services
https://www.england.nhs.uk/wp-content/uploads/2018/09/spotlight-on-specialised-services.pdf

14 Appendices

14.1 Appendix 1 – Service Pathway




On arrival:
Confirm major stroke by neglect, gaze, hemiplegia, aphasia.
Document NIHSS score.
M1 and ICA clots – conscious sedation
Carotid occlusions – GA
No radial arterial line or urinary catheters required
On arrival, if the patient's symptoms have improved during transfer, or if IAT is no longer appropriate, the patient will be held at The Walton Centre whilst an ambulance is located for repatriation. The patient will be repatriated straight back to the referring HASU in order for their stroke care to continue.
The Walton Centre Neurology Registrar will contact the referring Stroke team and inform them that the referral is no longer appropriate and that the patient is being prepared for immediate repatriation.
Once the procedure has been completed, a CT scan will be done in the Angio Suite to rule out any procedural complications.
If post-Thrombectomy CT head confirms no symptomatic complication, the Neurology StR to contact NWAS to book post-procedure inter-facility transfer.
If post-Thrombectomy CT head demonstrates a symptomatic complication, the patient will need to be admitted to Walton Critical Care – The Neurology Team will need to discuss this with the Critical Care Team to check bed availability.
Neurology StR to contact NWAS on 0151 261 4322 and ask for a 'Priority 3 Transfer.' Need to provide NWAS with the following information, in order to determine required skill mix of NWAS crew:
Key patient post-procedure information
Repatriation demographics
The time the patient will be ready for repatriation.
If it is known whether at least once paramedic will definitely be needed or if an EMT II crew is sufficient. If unsure, please refer to the NWAS Staffing for Transfer and Transportation flowchart.
Please provide as much information as possible.
Neurology StR to contact Referring Stroke Physician and inform that the patient will remain in Walton Critical Care for approximately (X) amount of time.
IF NO ITU BED IS AVAILABLE, THE PATIENT WILL BE 'TREATED AND TRANSFERED' – preferably to the ITU of referring hospital.
Neurology Registrar to contact the referring Stroke team and confirm repatriation.
Whilst on the call, Neurology Registrar to confirm with the Stroke team that a bed is available and note repatriation instruction to pass onto NWAS.
The ambulance will then collect to patient from the Walton Centre and transfer back to the referring HASU. A copy of the patient's care summary record needs to be handed over to NWAS to pass onto the referring HASU.
Post-procedure care of the patient will be placed under the care of the referring Stroke team.

14.2 Appendix 2 Cheshire and Merseyside Stroke numbers 2013-2020

Strokes in Cheshire and Merseyside - SNNAP								
	Aintree	Chester	Royal Liverpool	Southport	Whiston	Warrington (non-routinely admitting)	Wirral	Total
Apr 2013 – Mar 2014	421	256	633	362	645	393	680	3390
Apr 2014 – Mar 2015	495	398	604	370	679	383	711	3640
Apr 2015 – Mar 2016	476	382	633	339	661	396	637	3524
Apr 2016 – Mar 2017	452	371	625	361	738	320	642	3509
Apr 2017 – Mar 2018	446	332	650	343	822	223	641	3457
Apr 2018 – Mar 2019	502	382	570	300	819	263	645	3481
Apr 2019- Mar 2020	524	384	556	397	1055	N/A	614	3530
Diff 2013 - 2019	103	128	-77	35	410	N/A	-66	359

14.3 Appendix 3 North Mersey Stroke Services Current Workforce Gaps for 2018/19 and 2019/20

North Mersey Stroke Services Workforce Gaps – using RCP Guidelines, based on 18/19 staffing figures					
Staff Type	**2018/19 WTE**	**19/20 WTE**	**Required WTE**	**2018/19 Gap WTE**	**2019/20 Gap**
Consultant	10.0	10.0	20.4	-10.4	10.4
Medical	**10.0**	**10.0**	**20.4**	**-10.4**	**-10.4**
Ward Manager	3.0	4.0	3.4	0.0	0.0
Consultant Nurse	1.0	2.0	1.0	0.0	+1.0
Specialist Stroke Nurses	22.3	22.3	22.3	0.0	0.0
Nursing Registered	70.8	70.22	109.2	-41.94	-42.52
Nursing Unregistered	60.9	63.05	45.8	15.1	+17.25
Nursing	**158.3**	**161.57**	**182.1**	**-23.36**	**-20.53**
Physiotherapy	16.3	16.1	21.2	-4.9	-5.1
Occupational Therapist	15.1	14.6	20.1	-5.0	-5.5
Speech & Language Therapist	6.9	6.9	10.0	-2.9	2.9
Clinical Psychologist	0.1	0.5	1.2	1.1	0.7
Dietician	4.3	4.3	3.8	+0.3	+0.3
Therapy Assistant/Assistant Practitioners	15.1	14.1	9.2	+5.9	+4.9
Therapy	**57.8**	**56.5**	**65.5**	**-7.7**	**-9.0**
Management	1.5	1.5	1.5	n/a	n/a
Administration	13.2	13.2	13.2	n/a	n/a
Management and Administration	**14.7**		**14.7**	**n/a**	**n/a**
Grant Total	**240.8**	**242.87**	**282.7**	**41.9**	**39.83**

14.4 Appendix 4 Benefits Realisation Plan

SSNAP Domain	Description	Expected Impact					Attribution	Measurement		Interdependencies
		What	Current SSNAP Score	Expected SSNAP Score	Source of Standard	When		What	How often	
	Activity at HASU to be optimal numbers	HASU site to admit at least 600 stroke patients per year			1) RCP National Clinical guideline for stroke, Fifth edition (2016) 2) Stroke services; configuration decision support guide	Within 12 months of implementation	HASU	Confirmed Stroke activity (patient centred 72-hour cohort, SSNAP)	Reviewed quarterly	NWAS
	Meet safe staffing guidelines	HASU, ASU and rehabilitation sites to be safely staffed			North Mersey Staffing Standards National Clinical Guideline for Stroke 2016	Within 12 months of implementation within 5 years	HASU	Review staffing numbers of consultants, nurse, therapy numbers and ratios per bed	Reviewed quarterly	HR Recruitment and retention
	Increase the number of patients who receive thrombectomy	Increase the number of patients who receive thrombectomy from 1.4% to 10% over time	1.4% (19/20)	To be in the National top quartile	NHSE Long term Plan Jan 2020	Within 24 12 months of implementation	HASU	% of patients receiving thrombectomy (SSNAP)	Reviewed quarterly	Diagnostics Non HASU sites if patients present there initially The Walton Centre
	Requirement of Locum and agency staff to cover rotas	Negate the requirement of locum and agency staff by utilising the current staff who are in			Current locum and agency staff requirements to fulfil rotas across the 3 sites in North Mersey	Within 24 months of implementation	HASU, ASU and rehabilitation sites	Understand gaps in work force and recruit to vacancies	Reviewed quarterly	HR Recruitment and retention

		permanent positions across the 3 sites in North Mersey and recruit to new posts created for the North Mersey Stroke Network								
Domain 1	Scanning	Assessing indictors regarding the timeliness of scanning, such as proportion of patients scanned within 12 hours	Aintree B Royal L'Pool B Southport A	Within 12 months: **A**	SSNAP	Within 12 months and 24 months	HASU	Domain 1 in SSNAP	Reviewed quarterly	Radiology
Domain 2	Stroke Unit	Assessing indicators regarding the timeliness of admission to a stroke unit such as proportion of patients directly	Aintree D Royal L'Pool E Southport E	Within 12 months: B Within 24 months: A	SSNAP	Within 12 months, 24 months	HASU	Domain 2 in SSNAP	Reviewed quarterly	Bed capacity and patient flow

		admitted to a stroke unit within 4 hours								
Domain 3	Thrombolysis	Assessing indicators regarding the timeliness of thrombolysis received, such as proportion of patients given thrombolysis and proportion who received thrombolysis within 1 hour	Aintree C Royal L'Pool D Southport D	Within 12 months: B Within 24 months: A	SSNAP	Within 12 months, 24 months and 36 months	HASU	Domain 3 in SSNAP	Reviewed quarterly	Bed capacity and patient flow
Domain 4	Specialist Assessments	Assessing indicators regarding review by specialists such as consultant physicians, nurse trained in stroke managemen	Aintree B Royal L'Pool D Southport C	Within 12 months: B Within 24 months: A	SSNAP	Within 12 months and 24 months	HASU	Domain 4 in SSNAP	Reviewed quarterly	HR Recruitment and retention

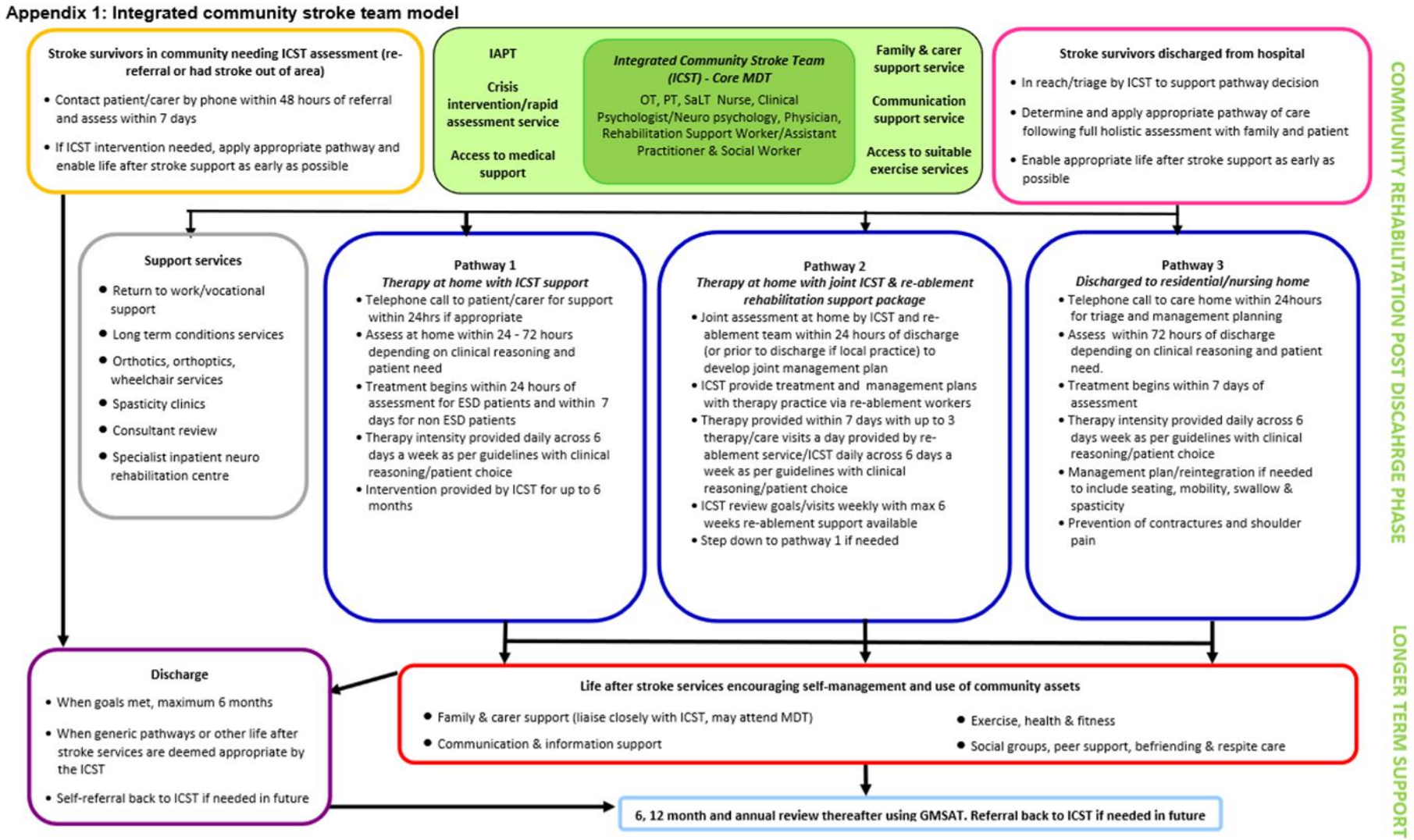
		t and stroke consultants within 24 hours								
Domain 5	Occupational Therapy	Assessing indicators regarding the access to therapy such as median percentage in days an inpatient received occupational therapy	Aintree C Roya Liverpool A Southport B	Within 12 months: B Within 24 months: A	SSNAP	Within 12 months, 24 months	HASU	Domain 5 in SSNAP	Reviewed quarterly	HR Recruitment and retention
Domain 6	Physiotherapy	Assessing indicators regarding the access to therapy such as median percentage in days an inpatient received physiotherapy	Aintree C Royal L'Pool A Southport B	Within 12 months: B Within 24 months: A	SSNAP	Within 12 months, 24 months s	HASU	Domain 6 in SSNAP	Reviewed quarterly	HR Recruitment and retention
Domain 7	Speech and Language Therapy	Assessing indicators regarding the access to therapy such as median percentage in days an	Aintree E Royal LPool D Southport E	Within 12 months: C Within 24 months: B	SSNAP	Within 12 months, 24 months and 36 months	HASU	Domain 7 in SSNAP	Reviewed quarterly	HR Recruitment and retention

		inpatient received speech and language therapy								
Domain 8	Multidisciplinary Team Working	Assessing the use of multidisciplinary teams such as proportion of patients reviewed by occupational therapist, physiotherapist and speech and language therapist	Aintree C Royal LPool B Southport C	Within 12 months: B Within 24 months: A	SSNAP	Within 12 months and 24 months	HASU	Domain 8 SSNAP	Reviewed quarterly	HR Recruitment and retention
Domain 9	Discharge	Assessing indicators regarding the appropriate discharge of patients such as proportion of patients screened for nutrition and seen by a dietician	Aintree C Royal LPool B Southport A	Within 12 months: A	SSNAP	Within 12 months	HASU	Domain 9 in SSNAP	Reviewed quarterly	HR Recruitment and retention

Domain 10	Discharge processes	Assessing indicators regarding the appropriate process of discharge such as proportion of patients referred to a stroke specific ESD	Aintree A Royal LPool B Southport D	Within 12 months: B Within 24 months: A	SSNAP	Within 12 months and 24 months	HASU	Domain 10 in SSNAP	Reviewed quarterly	HR Recruitment and retention Availability and capacity of ESD/ Community rehab team
	Reduce average length of stay for stroke patients	Length of stay at each site is currently: Aintree: 22 days Royal: 18 days Southport: 17 days			In SSNAP the national average length of stay is 18 days	On implementation	HASU	Reduce the average length of stay to 18 days initially with a target of 17 days after full programme of work is complete	Reviewed quarterly	Bed capacity and patient flow
	Reduce the mortality rates of stroke patients in North Mersey	Standardised Mortality rate for North Mersey =1.13 - national Average 1.05 based on 2017-2019	Current 1.13	Within 12 months 1.10, within 24 months 1.05	HES data	Within 24 months of implementation	HASU	Review the annual HES data to identify the decrease in stroke deaths in North Mersey	Reviewed Annually	

	Patients who are suspected TIA patients to been triaged and seen on arrival at HASU	All suspected TIA patients to be triaged, receive diagnostics and be assessed on arrival at HASU			National Clinical Guidance states that all suspected TIA patients should be seen in clinic within 24 hours of triage	On implementation	HASU	Reduce the number multiple visits to hospital for patients with suspected TIA by having access to diagnostics and specialist nurses on admission to hospital	Reviewed monthly	Electronic patient records Stroke specialist nurses Diagnostics
	Increasing patient satisfaction	An increase in staff who would recommend stroke services in North Mersey				Within 12 months of implementation	HASU	% of patients who would recommend stroke services in North Mersey	Reviewed monthly	
	Increasing staff satisfaction	An increase in staff who would recommend stroke services in North Mersey				Within 12 months of implementation	HASU	% of staff who would recommend stroke services in North Mersey	Reviewed monthly	

14.5 Appendix 5 Integrated Stroke Team Model



14.6 Appendix 6 Clinical Activity Assumptions 2018/19 and 2019/20 Activity Data

Suspected stroke patients attend all three A&E departments. Coding or recording those attendances to a stroke speciality is not possible. Therefore, it is not possible to ascertain the number of suspected strokes from this data source.

The only source of data for suspected stroke in A&E is from stroke nurses paper records. This data provided the following number for suspected strokes per A&E

Table: 18/19 and 19/20 A&E attendances for suspected stroke

A&E attendances for suspected stroke				
	Southport	Aintree	Royal Liverpool	Total
Attendances 2018/19	1,380	3,380	1,923	6,683
Attendances 2019/20	1,905	3,464	2,506	7,875

To ascertain the number of inpatient strokes, data from SSNAP and HES diagnostic coding (ICD10) was utilised. TIA's data was calculated using internal coding data and A&E sample data. It is much more difficult to calculate mimic attendances and mimics patients that go on to be admitted. As mimics attending A&E could be coded against a wide range of specialities.

Therefore, to calculate the number of mimic attendances in A&E at each site, a sample was taken at each site and extrapolated to provide the total number of mimic attendances for suspected stroke.

A & E attendances for suspected stroke					
	Southport No	Aintree No	Royal No	Total	%
Attendances	1,380	3,380	1,923	6,683	
Sample size	124	286	1,282	1,692 -	
Stroke	35	72	505	612	36.17
TIA	17	29	125	171	10.11
Other	72	185	652	909	53.72
	*	**	***		
* Sample size 9%					
** Sample size 8%					
*** Sample size 67%					

This sample tells us that for every patient that attends A&E 53% fall into the category mimic/other. This percentage has then been applied to the 3 sites total A&E attendances to give the total number of mimics that attend a&e with suspected stroke. 2019/20 data has also applied this same assumption.

Table: Total number of mimics 2018/19

A&E attendances for suspected stroke 18/19				
	Southport	Aintree	Royal Liverpool	Total
Attendances 2018/19	1,380	3,380	1,923	6,683
Total number of Mimics	731	1,791	1,019	3,542

Table: Total number of mimics 2019/20

A&E attendances for suspected stroke 19/20				
	Southport	Aintree	Royal Liverpool	Total
Attendances 2019/20	1,905	3,464	2,506	7,875
Total number of Mimics	1010	1836	1328	4174

Stroke, TIA's and Mimics admitted into Hospital – 18/19 and 2019/20 data

To identify the number of strokes admitted into hospital a combination of SSNAP and coding data was used. From the totals each of these data sources produced, the average was taken.

Table: 18/19 strokes admitted

strokes admitted - 18/19				
	Aintree	Royal	Southport	Total
SSNAP 19/20 reported stroke numbers	502	570	300	1372
ICD10 coded strokes in each site	592	677	401	1670
Average number of strokes form two sources	**547**	**624**	**351**	**1521**

Table: 19/20 strokes admitted

strokes admitted - 19/20				
	Aintree	**Royal**	**Southport**	**Total**
SSNAP 19/20 reported stroke numbers	524	556	397	1477
ICD10 coded strokes in each site	662	637	454	1753
Average number of strokes form two sources	**593**	**597**	**426**	**1616**

TIA patients admitted into hospital was calculated using TIA's admitted to a stroke ward(coding), TIA admitted to any other ward within the hospital(coding) and a review of A&E sample data. For the 19/20 TIA data, we have utilised the same a&e sample review from 18/19. From the 3 data sources the median figure is taken.

Table: 2018/19 TIA patients admitted

TIA admitted to stroke ward				
	Aintree	The Royal	Southport	Total
TIA ICD coded to any ward	190	203	80	473
TIA ICD10 coded to stroke ward	50	92	48	190
A & E sample coded to stroke ward	60	40	88	188
Assumption from data sources	60	92	88	240

Table: 2019/20 TIA patients admitted

TIA's admitted - 19/20				
	Aintree	**Southport**	**Royal**	**total**
TIA coded to stroke ward	86	58	58	202
TIA coded to any ward	264	188	185	637
a& e sample (from 18/19)	60	88	40	188
Assumption from data sources	**86**	**88**	**58**	**232**

To calculate the number of mimic patients, a sample of A&E patients was taken, and patients were reviewed to see if they were admitted to the stroke unit. Only mimics admitted to the stroke unit have been included in the baseline numbers. It is assumed that providing better training to A&E staff that mimics referred to the stroke team will reduce.

Table: 2018/19 and 2019/20 Mimic patients admitted

Mimics admitted				
	Aintree	**Royal**	**Southport**	**Total**
18/19 A&E sample review of mimics admitted to stroke ward	201	90	100	391
Assumption from data source	201	90	100	391

This has allowed us to produce the following number for patients admitted that fall under the three categories across the three sites.

Summary of Stroke, TIA and Mimic patients' admissions

Table: 2018/19 Stroke, TIA and mimic patients admitted summary

Summary of Stroke, TIA and Mimic Inpatient Admissions 18/19				
	Aintree	Royal Liverpool	Southport	Total
Strokes	547	624	350	1,521
TIA	60	92	88	240
Mimics	201	90	100	391
Admission to CSC	**808**	**806**	**538**	**2,152**

Table: 2019/20 Stroke, TIA and mimic patients admitted summary

Summary of Stroke, TIA and Mimic Inpatient Admissions 19/20				
	Aintree	Royal Liverpool	Southport	Total
Strokes	593	597	426	1,616
TIA	86	58	88	232
Mimics	201	90	100	391
Admission to CSC	**880**	**745**	**614**	**2,239**

Transfer of patients to the Comprehensive Stroke Unit.

Using all of the data collected has allowed the following table to be produced, which estimates the number of attendances the CSC can expect.

***Note: In the original version of the PCBC, a different mimic figure was calculated based on the 18/19 data. This figure has been reinterpreted (still using the 18/19 data) and the data is shown below alongside the original interpretation of the 2018/19 data. The 2019/20 updated figures are also presented below.**

Table: Attendances at CSC based on 18/19 data (Original version used throughout business case)

Transfer of patients to the Comprehensive Stroke Unit - 2018/19 data

Attendances to Centralised site	Attend	Notes
Activity currently at Aintree A & E	3,380	Current activity
The Royal Strokes	624	100% of assumed strokes transfer
The Royal TIA's	791	See below - from outpatients
The Royal Mimics	180	20% of A & EAttendances
Southport Strokes	350	100% of assumed strokes transfer
Soutport TIA's	417	See below - from outpatients
Southport Mimics	200	20% of A&E attendnaces
Transfer of patients	2,562	additional patients
Grand Total	5,942	
Patients per day	16	

Table: Attendances at CSC based on 18/19 data (new interpretation of data version)

Attendances at centralised site 2018/19	Attend	Notes
Activity currently at AUH A&E	3,780	Current nurse referral total (3,380) & the additional estimated 400 TIA referrals from GP's
Royal Strokes	624	stroke modelled figure - 100% of patients would transfer
Royal TIA	791	100% of TIA A&E and GP refs would transfer. (391 and 400)
Royal Mimics	204	Assumed 20% of A&E mimic attendances would transfer
Southport Strokes	350	stroke modelled figure - 100% of patients would transfer

Southport TIA	417	current assumption is all A&E referrals would transfer to csc (377) and 10% of GP referrals would also transfer (40). It is also being considered that all GP TIA referrals also transfer, which would increase this figure.
Southport Mimics	146	Assumed 20% of A&E mimic attendances would transfer
Transfer of patients	**2532**	Additional patients
Grand Total	**6,312**	
Patients Per day	17.29	

Table: Attendances at CSC based on 19/20 data

Attendances at centralised site 19/20	**Attend**	**Notes**
Activity currently at AUH A&E	3,864	Current nurse referral total (3,464) & the additional estimated 400 TIA referrals from GP's
Royal Strokes	597	stroke modelled figure - 100% of patients would transfer
Royal TIA	627	100% of TIA A&E and GP referrals would transfer.
Royal Mimics	266	Assumed 20% of A&E mimic attendances would transfer
Southport Strokes	426	stroke modelled figure - 100% of patients would transfer
Southport TIA	391	current assumption is all A&E referrals would transfer to csc (366) and 10% of GP referrals would also transfer (251), which is 25. It is also being considered that all GP TIA referrals also transfer, which would increase this figure by 240 patients
Southport Mimics	201	Assumed 20% of A&e mimic attendances would transfer
Transfer of patients	**2508**	
Grand Total	**6,372**	
Patients Per day	17.46	

Radiology – Additional Tests

Table: Additional radiology test based on patients that would transfer across to the CSC at Aintree site – 18/19 data

Transferred patients impact on Aintree radiology 18/19 data						
	%	Stroke	%	TIA	Mimic	Total
patients transferring		974		1208	350	2532
carotid Doppler	75	731	33	399	116	1245
MRI	28	273	15	181	53	506
CT	100	974	50	604	175	1753
CT Angio	15	146	15	181	53	380
additional tests		2123		1365	396	3884

Table: Additional radiology test based on patients that would transfer across to the CSC at Aintree site – 19/20 data

Transferred patients impact on Aintree radiology 19/20 data						
	%	Stroke	%	TIA	Mimic	Total
patients transferring		1023		1018	466	2507
carotid Doppler	75	767	33	336	154	1257
MRI	28	286	15	153	70	509
CT	100	1022	50	509	233	1764
CT Angio	15	153	15	153	70	376
additional tests		2229		1150	527	3906

*Note: If all TIA GP referrals from Southport were to transfer over to the CSC at Aintree site, this would increase the total number of additional tests to 4167

14.7 Appendix 7– Risk Register

Work stream	Interdependencies	Risk Type	Risk Description			Likelihood	Consequence	Current Risk Score	Score Trend: No change Increased Score Decreased Score	Mitigating Action	Likelihood	Consequence	Current Risk Score	Risk Owner	Risk Manager
Stroke	Development of PCBC	Lack of Programme Manager	No funding for the programme support	Not enough resources to complete programme of work	The PCBC will not be developed to indicative timeframe	3	4	12	Increased	Bid for programme support costs with clear rationale submitted to CCG. Interim arrangements in place to maintain current team but not to develop any further. Bid made by SRO to C & M Health and Care Partnership. Support from Network lead and LUHFT Integration PMO	2	4	8	Jan Ledward	Carole Hill
Stroke	Communications and Engagement Plan	Stakeholder Engagement	Lack of support from stakeholders	Not enough expertise (staff, public & patients) to design and agree new models of care	Inability to redesign the Stroke model of care and unable to meet the NHSEI assurance framework for service change	3	4	12	Unchanged	North Mersey Stroke Board and CRG in place to oversee the project. Clinical workshops held at start of review with good attendance. Stroke Association engaged in the process. Communications and engagement sub group established to oversee development of consultation plans, including approach for different stakeholder audiences. Early engagement with Overview and Scruting Committees (OSCs) has started.	2	4	8	C Hill	H Johnson Trust Comms Leads
Stroke	Delivery of new model of care	Lack of workforce and configuration of services	Shortage of appropriately trained workforce to provide required services - out of hours cover, thrombectomy service.	Care not provided to the appropriate clinical standards	Sub optimal patient care	4	4	16	Unchanged	Establish workstream to mitigate the short term sustainability issues, workforce group to be set up once Programme Manager support is in place	4	4	16	N Holland M Carmichael J Ross	Helen Murphy
Stroke	Developing PCBC	Reputational	Concerns raised by local politicians that has a negative impact on the project	Active campaigns against the service change	Delays or stops the service change process	3	3	9	Unchanged	One to one meetings with politicians. Invite politicians to public and patient reference group	2	3	6	Jan Ledward/ Carole Hill	Trust Comms leads
Stroke	Developing PCBC with all stakeholders involved in the service change	Legal	West Lancashire not engaged in the project and impact on their patients and any subsequent claim of lack of public engagement and consultation	Population in West Lancashire not engaged or consulted in process	Does not meet NHSEI assurance process, therefore PCBC would not be approved. Potential for judicial review	3	4	12	Decreased	Meeting with West Lancashire management team 19.08.19 to confirm part of programme. Agreement to how public consultation is undertaken still to be confirmed. Joint Committee to be established January 2021, West Lancs joining the committee, this has been agreed by all GBs.	1	4	4	Jan Ledward	Carole Hill
Trauma and Orthopaedics	Patient access and booking	Delivery	No definitive decision has been made regarding registrar clinic templates and if they need to have their own template and patients or share with their consultant.	If the registrar has their own clinic it means twice the number of patients can be seen. Without knowing this the minimum number of patients are being booked into clinics.	Capacity will be reduced considerably and patients wait times will be increased.	3	3	9	Unchanged	The hub has decided not to open any registrar templates until the new year to give the team further time to plan. The team require confirmation from the hub to understand when these templates will be open.	2	2	4	A Penketh	C Mountfield
Trauma and Orthopaedics	Patient access and booking	Delivery	The current week 2 clinics plan is still not clear, the patient access team are always running 3 weeks behind.	The patient access team cannot properly plan their workload as the plans keep changing and clinics are being moved and cancelled.	Risk of patient appointments will not be booked in on time and risk of complaints, DNA's and patients turning up to an appointment that has actually been cancelled.	4	3	12	Unchanged	The hub need to ratify the plans thoroughly to avoid any further changes and release the plans to patient access.	1	2	2	A Penketh	L Black
Haematology	Workforce	Resource	Lack of management in speciality.	Operationally there are no service leads to support operational management of the service or the project.	Delays to decision making and escalation of issues.	5	4	20	Closed	Deputy Director of Ops is making arrangements to second a manager into the Haematology service. This will not mitigate the risk immediately as there may be a delay in timescales for appointment, the appointment will also need a period to embed themselves into the service.	4	3	12	L Yung D Simcox	L Yung D Simcox
Stroke	Finance	Estates	Estates specification requires additional estate in prime location	Not enough space for all services to be on prime location. Cost and requirement for capital funding could be prohibitive.	Estate will not support the clinical model	3	4	12	Unchanged	Work with Estates team and other services to produce a plan that provides the best overall outcome for patients and VFM. Estates group to be established as per revised meeting and governance structure, Programme Manager support needed to progress this work.	3	3	9	Carole Hill	Helen Murphy
Stroke	Workforce	Workforce risk	A change to service at this scale and centralisation of Hyper Acute Stroke services may destabilise neighbouring stroke units	Staff leave the service during the period of change to work in neighbouring services	The stroke unit become unsustainable due to lack of workforce	3	4	12	Unchanged	Strong comms and engagement with all Trusts and stroke teams. Joint recruitment across sites. Develop single service model to manage associated risks	2	4	8	N Holland M Carmichael J Ross	Trust Workforce Leads
Clinical Haematology - Anticoagulation Service	Sefton CCG	Commissioner Support	Lack of ICE interface in Southport, Sefton, Formby	Sefton GPs do not have full access ICE system for results, they have read-only rights.	Sefton GPs will not have access to the same systems available to others, the service would be operating 2 systems. Financial savings will be impacted	3	3	9	New	Requires a request to Sefton Commissioners to make funding available for the system to be extended to Sefton GPs. Dave Simcox progressing.	3	3	9	D Simcox	D Simcox
Stroke	Digital	Digital	Different patient systems across Trusts	Inability to share patient information across provider Trusts	Unable to access patient history, duplication of tests	3	3	9	New risk	Digital working group to be established reporting to the North Mersey Board, this group will be set up when Programme Manager is in post.	2	3	6	tbc	Programme Manager
Stroke	Workforce	Workforce	Lack of a developed recruitment and retention plan	Inability to recruit the appropriate workforce with the necessary skills to support the comprehensive stroke centre	Unable to deliver the proposed model of care with North Mersey stroke standards, services do not integrate	3	3	9	New risk	Workforce group to be established reporting to the North Mersey Board, this group will be set up when Programme Manager is in post.	2	3	6	tbc	Programme Manager
Stroke	Finance	Finance	Lack of capital and revenue funding to deliver the proposed stroke model of care	Unable to fund the development of the estate required at AUH, unable to fund the recruitment of additional s taffing to deliver the model	CSC to be delivered from current state which is not fit for purpose with inappropriate staffing model	3	4	12	New risk	Finance work to be established, reporting to North Mersey Board, inaugral meeting taking place on 24/06/21. This group will progress funding the proposed model.	2	4	8	DOFs from CCGs and Provider Trusts	C Hill
Stroke	Early Supported Discharge	ESD	Differences in ESD service across the North Mersey footprint	Inequity of service across the NM area.	ESD package received may be improved or lesser depending on the CCG area that you live	3	3	9	New risk	North Mersey ESD group established chaired by T O'Keefe, reporting into NM Stroke Board. All areas now have an ESD service, a gap analysis is underway to identify differences in service provision.	2	3	6	C Hill	P O'Keefe
Stroke	Changes to CCGs	Organisational form	Change of organsiational from from CCG to ICS by April 2022	Lack of clarity and decision making while changes are taking place	Governance routes become unclear whilst CCGs will be aligning to ICS model	3	4	12	New risk	Regular discussions with Commissioners taking place, LCCG linking in to C & M ICS, including invitation to Joint Committee. AO & Chair appointments planned for Sept 21	2	4	8	J Ledward	C Hill

Risk Key		Likelihood				
		1 Rare	2 Unlikely	3 Possible	4 Likely	5 Almost Certain
Conseq	5 Catastrophic	5	10	15	20	25
	4 Major	4	8	12	16	20
	3 Moderate	3	6	9	12	15
	2 Minor	2	4	6	8	10
	1 Negligible	1	2	3	4	5

Grading Risk: 1-3 Low Risk; 4-6 Moderate Risk; 8-12 High Risk; 15-25 Extreme Risk

14.8 Appendix 8 Workforce – WTE in post per Site

North Mersey Stroke Services – Baseline Workforce Baseline Staffing								
Staff Type	**Aintree 2018/19**	**Aintree 2019/20**	**Royal L'Pool & Broadgreen 2018/19**	**Royal L'Pool & Broadgreen 2019/20**	**Southport 2018/19**	**Southport 20**	**Total 2018/19**	**Total 2019/20**
Consultant	4.0	4.0	4.0	4.0	2.0	2.0	10.0	10.0
Staff Grade								
Medical	**4.0**	**4.0**	**4.0**	**4.0**	**2.0**	**2.0**	**10.0**	**10.0**
Ward Manager	1.0	1.0	1.4	2.0	1.0	1.0	3.4	4.0
Consultant Nurse	0.0	1.0(ANP)	1.0	1.0	0.0	0.0	1.0	2.0
Specialist Stroke Nurses	8.0	8.0	8.3	8.3	6.0	6.0	22.3	22.3
Nursing Registered	27.9	27.9	26.7	26.22	16.1	16.1	70.8	70.22
Nursing Unregistered	21.2	21.2	23.5	25.55	16.3	16.3	60.9	63.05
Nursing	**58.1**	**59.1**	**60.8**	**63.07**	**39.4**	**39.4**	**158.3**	**161.57**
Physiotherapy	5.6	5.6	6.7	6.7	4.0	3.8	16.3	16.1
Occupational Therapist	5.8	5.8	5.3	5.3	4.0	3.5	15.1	14.6
Speech & Language Therapist	2.0	2.0	3.6	3.6	1.3	1.3	6.9	6.9
Clinical Psychologist	0.1	0.1	0.0	0.0	0.0	0.4	0.1	0.5
Dietician	1.0	1.0	3.3	3.3	0.0	0.0	4.3	4.3
Assistant Practitioners	5.7	4.8	6.8	6.8	2.5	2.5	15.1	14.1
Therapy	**20.2**	**19.3**	**25.7**	**25.7**	**11.8**	**11.5**	**57.8**	**56.5**
Management	0.5	0.5	0.5	0.5	0.5	0.5	1.5	1.5
Administration	5.7	5.7	6.8	6.8	0.8	0.8	13.2	13.2
Management and Administration	**6.2**	**6.2**	**7.3**	**7.3**	**1.3**	**1.3**	**14.7**	**14.7**
Grant Total	**88.6**	**88.6**	**97.8**	**100.07**	**54.9**	**54.2**	**240.8**	**242.87**

14.9 Appendix 9 - Travel times

Current Situation

Southport Public Transport (AM)

HOSPITAL Southport

Time Band	Count	%age
0	8	1.35%
20	41	6.94%
30	168	28.43%
40	104	17.60%
50	96	16.24%
60	71	12.01%
70	36	6.09%
80	28	4.74%
90	21	3.55%
120	18	3.05%
Grand Total	**591**	**100.00%**

Southport Public Transport (PM)

HOSPITAL Southport

Time Band	Count	%age
0	8	1.35%
20	44	7.45%
30	126	21.32%
40	165	27.92%
50	79	13.37%
60	75	12.69%
70	30	5.08%
80	43	7.28%
90	15	2.54%
120	6	1.02%
Grand Total	**591**	**100.00%**

Southport Drive Time

HOSPITAL Southport

Time Band	Count	%age
0	8	1.35%
5	81	13.71%
10	219	37.06%
15	143	24.20%
20	105	17.77%
25	30	5.08%
30	4	0.68%
35	1	0.17%
Grand Total	**591**	**100.00%**

Aintree Public Transport (AM)

HOSPITAL Aintree

Time Band	Count	%age
0	5	0.54%
10	31	3.37%
20	228	24.76%
30	266	28.88%
40	238	25.84%
50	89	9.66%
60	25	2.71%
70	12	1.30%
80	11	1.19%
90	9	0.98%
120	7	0.76%
Grand Total	**921**	**100.00%**

Aintree Public Transport (PM)

HOSPITAL Aintree

Time Band	Count	%age
0	5	0.54%
10	32	3.47%
20	198	21.50%
30	299	32.46%
40	268	29.10%
50	65	7.06%
60	17	1.85%
70	14	1.52%
80	11	1.19%
90	6	0.65%
171	6	0.65%
Grand Total	**921**	**100.00%**

Aintree Drive Time

HOSPITAL Aintree

Time Band	Count	%age
0	5	0.54%
5	238	25.84%
10	576	62.54%
15	68	7.38%
20	18	1.95%
25	13	1.41%
30	2	0.22%
35	1	0.11%
Grand Total	**921**	**100.00%**

Royal Public Transport (AM)

HOSPITAL Royal

Time Band	Count	%age
0	35	4.16%
10	7	0.83%
20	169	20.07%
30	250	29.69%
40	245	29.10%
50	78	9.26%
60	37	4.39%
70	7	0.83%
80	7	0.83%
90	4	0.48%
120	3	0.36%
Grand Total	**842**	**100.00%**

Royal Public Transport (PM)

HOSPITAL Royal

Time Band	Count	%age
0	35	4.16%
10	7	0.83%
20	168	19.95%
30	251	29.81%
40	264	31.35%
50	63	7.48%
60	36	4.28%
70	6	0.71%
80	6	0.71%
90	6	0.71%
Grand Total	**842**	**100.00%**

Royal Drive Time

HOSPITAL Royal

Time Band	Count	%age
0	35	4.16%
5	260	30.88%
10	429	50.95%
15	94	11.16%
20	12	1.43%
25	6	0.71%
30	6	0.71%
Grand Total	**842**	**100.00%**

Future Situation

Aintree Public Transport (AM)

HOSPITAL (All)

Time Band	Count	%age
0	50	2.12%
10	31	1.32%
20	243	10.32%
30	389	16.53%
40	394	16.74%
50	360	15.29%
60	295	12.53%
70	258	10.96%
80	170	7.22%
90	92	3.91%
120	72	3.06%
Grand Total	**2354**	**100.00%**

Aintree Public Transport (PM)

HOSPITAL (All)

Time Band	Count	%age
0	48	2.04%
10	32	1.36%
20	211	8.96%
30	413	17.54%
40	446	18.95%
50	319	13.55%
60	326	13.85%
70	238	10.11%
80	166	7.05%
90	81	3.44%
171	74	3.14%
Grand Total	**2354**	**100.00%**

Aintree Drive Time

HOSPITAL (All)

Time Band	Count	%age
0	48	2.04%
5	253	10.75%
10	978	41.55%
15	510	21.67%
20	216	9.18%
25	286	12.15%
30	52	2.21%
35	11	0.47%
Grand Total	**2354**	**100.00%**

14.10 Appendix 10 - Northwest Ambulance Service increase in activity (Based on 18/19 Activity data)

Stroke Resign impact upon the ambulance service

Activity numbers

	Stroke	TIA	Mimic /other	Total	76% NWAS	24% Walk In
Southport	350	189	100	639	486	153
Royal	624	188	90	902	686	216
Total	974	377	190	1,541	1,171	370

The options being explored:-

Option B1 - All southports suspected strokes go to Aintree
Option B3 - All Royals suspected strokes go to
Option C3 - All Southport and Royals Strokes go to Aintree
Option E1 All Southport and Royals Strokes go to Aintree but only Southport go back after 72hrs
Option E4 All Southport and Royals Strokes go to Aintree but only Royal go back after 72hrs
We need to understand how NWAS would be able to respond to the service reconfiguration

Option B1 - All southports suspected strokes go to Aintree			
967 patients from the Southport area would go directly in the ambulance to Aintree rather than Southport			
153 patients who walk-in would need to be transferred from Southport to Aintree			New
67% of the 486 = 325 would return to Southport after their first 72 hours of treatment.			New
	Extra 478 journeys @£250	**£119,500**	

Option B3 - All Royals suspected strokes go to			
1595 patients from the Royal area would go directly in the ambulance to Aintree rather than Southport			
216 patients who walk-in would need to be transferred from Royal to Aintree			New
67% of the 686 = 460 would go to Broadgreen after their first 72 hours of treatment. These transfers currently happen from Royal to Broadgreen - so are not new.			
	Extra 216 patients @250	**£54,000**	

Option C3 - All Southport and Royals Strokes go to Aintree			
So the addition of the transfers above			
	Extra 694patients @250	**£173,500**	

Option E1 All Southport and Royals Strokes go to Aintree but only Southport go back after 72hrs			
486 patients from the Southport area would go directly in the ambulance to Aintree rather than Southport			
153 patients who walk-in would need to be transferred from Southport to Aintree			New
67% of the 486 = 325 would return to Southport after their first 72 hours of treatment.			New
686 patients from the Royal area would go directly in the ambulance to Aintree rather than Southport			
216 patients who walk-in would need to be transferred from Royal to Aintree			New
	Extra 694 patients @250	**£173,500**	

Option E4 All Southport and Royals Strokes go to Aintree but only Royal go back after 72hrs			
486 patients from the Southport area would go directly in the ambulance to Aintree rather than Southport			
153 patients who walk-in would need to be transferred from Southport to Aintree			
67% of the 686 = 460 would go to Broadgreen after their first 72 hours of treatment. These transfers currently happen from Royal to Broadgreen - so are not new.			
686 patients from the Royal area would go directly in the ambulance to Aintree rather than Southport			
216 patients who walk-in would need to be transferred from Royal to Aintree			
	Extra 694 patients @250	**£173,500**	

14.11 Appendix 11 Quality Impact Assessment

Stage 1 Quality Impact Assessments Tool

Scheme that this QIA relates to	North Mersey Stroke Services – hyperacute/acute redesign	**Strategic Programme**	Stroke	**Scheme Overview/ Headline KPI**	Increased access to specialist interventions and care
QIA completed by (name(s))	Paula Guest	**Designation of person (s) completing QIA**	Head of Planning	**Date Completed**	10 January 2020
Name of Managerial Lead	Jan Ledward	**Name of Clinical Lead (if applicable)**	Dr Nik Sharma	**Name of Executive/SMT Lead**	Jan Ledward
Brief Description of the scheme	Transforming stroke care is a priority within the NHS Long Term Plan (LTP). There is strong evidence that hyper-acute interventions such as brain scanning, and thrombolysis are best delivered as part of a networked service available 24/7. The LTP supports centralising hyperacute stroke care (the first 72 hours after a stroke) to be delivered in a smaller number of well-equipped and staffed hospitals. Evidence from London, Manchester and other centralised services shows that more patients survive and with better outcomes if care is planned and delivered in this way. The Cheshire & Merseyside Health Care Partnership (C&MHCP) has identified the transformation of stroke services as a priority for the North Mersey health economy. There are significant specialist stroke workforce issues locally, nationally and internationally. To ensure sustainability of services, 24/7 access to services and to meet clinical standards, there is a need for reconfiguration. A clinically led case for change and service change proposal was endorsed by the C&MHCP; the North Mersey Committees in Common; North Mersey Leadership Group; C&M Acute Sustainability Board; C&M Collaborative Commissioning Forum; C&M Provider Chief Executives Group. Liverpool CCG, working with all North Mersey CCGs and providers, was requested to lead the planning process for the redesign of acute stroke services in the North Mersey area through the development of a pre-consultation business case (the PCBC). The work on the PCBC identified 26 possible models for reconfiguration. Following wide clinical and patient consultation, five shortlisted models have been selected to be fully evaluated for workforce, estates, financial, quality and equality implications. This information will be used to identify a preferred model for recommendation within the PCBC.				

	In the description of the models below, the term HASU means hyperacute stroke unit providing care in the first 72 hours. ASU means acute stroke unit, providing acute care after 72 hours. Comprehensive stroke unit provides both HASU, ASU and access to thrombectomy and thrombolysis. The current configuration of services in North Mersey is that thrombectomy is provided at the Walton Centre; this is a specialised service commissioned by NHSE and cannot be provided at another unit in Cheshire & Merseyside. There are three HASUs (at Aintree, Royal Liverpool and Southport hospitals) which currently provide access to thrombolysis and care for the hyperacute and acute phases and inpatient rehab beds at Aintree, Southport and Broadgreen. The models are: 1. Do nothing to configuration of services but work more collaboratively within the current service. This would mean retaining three HASU/ASUs and rehab beds at Broadgreen, patients needing to be transferred to another site for thrombectomy 2. Consolidate Aintree and Royal Liverpool HASUs on the Aintree site, retain Southport HASU. This would mean two HASU/ASUs and rehab beds at Broadgreen, patients at Aintree site having direct access to thrombectomy but those at Southport needing to be transferred 3. Consolidate Aintree and Southport HASUs on the Aintree site, retain Royal Liverpool HASU. This would mean two HASU/ASUs and rehab beds at Broadgreen, patients at Aintree site having direct access to thrombectomy but those at Royal Liverpool needing to be transferred 4. Comprehensive stroke unit at Aintree, post-72 hours care at Aintree, Broadgreen and Southport. This would mean one HASU with direct access to thrombectomy and ASU/rehab beds remaining at Southport; rehab beds at Broadgreen. This is the preferred clinical option and also the option preferred by the stroke survivors and their families/carers. 5. Comprehensive stroke unit at Aintree, post-72 hours care at either Southport or the Royal Liverpool. This would mean one HASU with direct access to thrombectomy and one other unit, with no beds for rehab at the third unit. **To note: in the responses to the descriptors below, M1 refers to model 1, M2 to model 2 etc.**

	The preferred option of the clinicians and of the stroke survivors and their carers/families is Model 4. It is the only one of the options which gives equality of access to comprehensive stroke centre services to patients across the whole North Mersey system while maintaining post-hyperacute inpatient care equitably across the area.
Intended Quality Improvement Outcome/s:	Increase in number of patients receiving high quality specialist care, meeting seven-day standards for stroke care and national clinical guidelines – 90% of patients receiving care on a specialist stroke unit (currently c.40%) 20% receiving thrombolysis (currently c.10%) 10% receiving thrombectomy (currently c.1%)
Methods to be used to monitor quality impact (including frequency of monitoring):	Sentinel Stroke National Audit Project (SSNAP) data – national dataset, reports quarterly

Descriptor		**Positive/ negative/neutral**	**Risk score (if negative)**	**Comments/rationale for the response (Include reason for identifying impact as positive, negative or neutral)**
Patient Safety	**Is there any identified impact on patient safety? If yes, please detail the impact(s)**	M1 Negative M2 Negative M3 Negative M4 Positive M5 Neutral	12 12 12	M4 identified as positive because it equitably increases access to specialist care for all patients from across North Mersey. M1 is not sustainable because of workforce issues. M2 & 3 would improve access to specialist care for some parts of North Mersey but would be inequitable and may have a further negative impact on staffing at the smaller unit M5 would have the same benefits for the hyperacute phase of care as M4 but the impact of providing subsequent acute care further from home is not fully understood. It may make it difficult for families, who play a significant part in the patient's recovery journey, to visit; the psychosocial/wellbeing aspect of this may affect physical recovery.
	Are there any impact(s) on Provider organisations and any aspect of shared risk?	M1 Negative M2 Negative M3 Negative	12 12 12	One of the three current units is a fragile service with only one permanent consultant. Should this service be unable to continue there would be

	If yes, please detail the impact(s)	M4 Positive M5 Negative	 12	impacts on the other providers which, if not planned for, will affect patient outcomes, patient flows and ability to meet clinical standards. M4 enables equality of access to 24/7 specialist cover and the opportunity to improve patient outcomes and to meet clinical standards
	Are there any impact(s) on any safety, systems in place to safeguard patients and prevent harm? If yes, please detail the impact(s)	M1 Negative M2 Negative M3 Negative M4 Positive M5 Negative	12 12 12 12	One of the three current units is a fragile service with only one permanent consultant. Should this service be unable to continue there would be impacts on the other providers which, if not planned for, will affect patient outcomes, patient flows and ability to meet clinical standards. M4 enables equality of access to 24/7 specialist cover and the opportunity to improve patient outcomes and to meet clinical standards
	Will this change impact on any systems and processes in place to ensure that the risk of healthcare acquired infections to patients is reduced? If yes, please detail the impact(s)	M1 Neutral M2 Neutral M3 Neutral M4 Neutral M5 Neutral		
	Will this change impact on clinical workforce levels, capability and/or skills? If yes, please detail the impact(s)	M1 Negative M2 Negative M3 Negative M4 Positive M5 Negative	12 12 12 12	M1 – current workforce issues in all units meaning clinical standards cannot be met 24/7 for all patients M2, M3 – may improve workforce issues at the larger unit but likely to be at the cost of further negative impact on the smaller unit M4 – can provide 24/7 access to specialist services, opportunities for workforce development and training and greater likelihood of opportunities for research M5 – likely to improve access to specialist medical care but prove more difficult to recruit to therapy roles
	Will this change have any impact on safeguarding children or adults? If yes, please detail the impact(s)	M1 Neutral M2 Neutral M3 Neutral M4 Neutral M5 Neutral		
Patient Experience	**Will this change impact on patient experience including consent and**	M1 Negative M2 Negative M3 Negative	12 12 12	M1, M2, M3 do not provide equitable improved access to specialist care, meaning those patients who do not benefit from this care could potentially

	confidentiality? If yes, please detail the impact(s)	M4 Positive M5 Negative	12	suffer worst outcomes, thereby having a negative impact on their experience. M4 improves access to specialist care while providing subsequent care closer to the patient's home and family. M5 may make it difficult for families, who play a significant part in the patient's recovery journey, to visit; the psychosocial/wellbeing aspect of this may affect physical recovery.
	Will this change impact on patients who lack capacity or require advocates to support them? If yes, please detail the impact(s)	M1 Neutral M2 Neutral M3 Neutral M4 Neutral M5 Neutral		
	Will this change impact on patients with any recognised disability including the blind, deaf or those with a learning disability? If yes, please detail the impact(s)	M1 Neutral M2 Neutral M3 Neutral M4 Neutral M5 Neutral		This is considered fully in the equality impact assessment (copy attached)
	Will this change impact on self-reported experience of patients and service uses? Consider: response to national or local surveys, complaints, PALS and incidents. If yes, please detail the impact(s)	M1 Not known M2 Not known M3 Not known M4 Not known M5 Not known		There has been a full pre-consultation engagement programme with stroke survivors and families/carers in all boroughs of North Mersey. A significant majority of the feedback was that at the time of crisis – when the stroke happens – patients want access to the best possible care and accept that this may be further from home. For their recovery, they prefer to be closer to home. Experiences of acute care varied widely - probably because of the extreme challenges currently faced in all three HASU/ASU units. By creating a centre of excellence, it is hoped to improve patient experience of the service.
	Will this change have any impact on the patient choice agenda? If yes, please detail the impact(s)	M1 No M2 No M3 No M4 No M5 No		Choice does not apply in urgent care services

	Will this change have any impact on patient/family/carer equality (if yes please also complete a full Equality Impact Assessment in liaison with the CCG Equality Leads). If yes, please detail the impact(s)	M1 M2 M3 M4 Positive M5		An Equality Impact Assessment has been completed and feedback is awaited from the equality lead. M4 is identified as positive because it is the only one of the models which gives equitable access to specialist care whilst retaining local access to inpatient rehab.
	Will this change have any impact on waiting times, RTT, length of stay, access to treatments including medications? If yes, please detail the impact(s)	M1 Negative M2 Negative M3 Negative M4 Positive M5 Negative	12 12 12 12	M1 would mean current performance on acute SSNAP indicators (which is on a downward trajectory) would not improve M2 and M3 may improve some performance indicators at the bigger unit but there would be a likely decline in the smaller unit M5 would improve performance on the acute indicators but likely to decrease performance on the rehab indicators M4 is identified as positive because improvement would be expected against all indicators
Clinical Effectiveness	**Will this change impact on the delivery of evidence-based practice, clinical leadership, clinical engagement and/or quality standards? If yes, please detail the impact(s)**	M1 Negative M2 Negative M3 Negative M4 Positive M5 Negative	12 12 12 12	M4 is identified as positive as it would improve delivery of evidence-based practice, clinical engagement and quality standards. This is the preferred clinical model. M1 would lead to no change on these areas. M2, M3 and M5 may lead to inequitable change in these areas, some of which may be positive and some negative.
	Will this change have any impact on the implementation of any NICE guidance etc. including the use of nationally approved treatments or drugs? If yes, please detail the impact(s)	M1 Negative M2 Negative M3 Negative M4 Positive M5 Negative	12 12 12 12	As above
	Will this change have any impact on clinical leadership? If yes, please detail the impact(s)	M1 Negative M2 Negative M3 Negative M4 Positive M5 Negative	12 12 12 12	As above

	Will this change reduce or impact on variation in care provision? If yes, please detail the impact(s)	M1 Negative M2 Negative M3 Negative M4 Positive M5 Negative	12 12 12 12	As above
Timely	**Will this change have any impact on reducing waits for treatment or services? If yes, please detail the impact(s)**	M1 Negative M2 Negative M3 Negative M4 Positive M5 Negative	12 12 12 12	M1 would mean current access to treatment will not improve and may worsen. M2, M3 and M5 would all improve access to some elements of care for some patients but not others. M4 is identified as positive because it is the model which will enable 24/7 staffing; which in turn enables timely delivery of the diagnostic tests and access to subsequent specialist treatment and care.
	Will this change result in harmful delays for both those who receive and those who give care? If yes, please detail the impact(s)	M1 Negative M2 Negative M3 Negative M4 Positive M5 Negative		As above
Efficient	**Will this change impact on avoiding waste, including waste of equipment, supplies, ideas, and energy? If yes, please detail the impact(s)**	M1 Neutral M2 Neutral M3 Neutral M4 Neutral M5 Neutral		
Equitable	**Will this change be equitable so that care does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status?**	M1 Negative M2 Negative M3 Negative M4 Positive M5 Negative	12 12 12 12	M1 does not improve access to care for any patients in the North Mersey locality. M2, M3 and M5 all improve access to care for some patients from some part of the North Mersey locality. M4 is identified as positive because it is the model which equitably improves access to hyperacute, acute and inpatient rehab care across the whole North Mersey area.
Other	***Partnerships / Integration*** **How does the change impact on partnership working and or integration?**	M1 Neutral M2 Neutral M3 Neutral M4 Positive		M4 is identified as positive as it creates one North Mersey stroke service, requiring all current partners to work together to deliver a seamless, integrated pathway

		M5 Neutral		
	Prevention **How does the change promote self-care and reduce inequality?**	M1 Neutral M2 Neutral M3 Neutral M4 Neutral M5 Neutral		This change is to a hyperacute/acute service so does not impact on prevention
	Access **Could the change impact positively or negatively on any of the following:** **a) Patient Choice** **b) Access** **c) Integration**	M1 Negative M2 Negative M3 Negative M4 Positive M5 Negative	12 12 12 12	As this is an urgent pathway, patient choice does not apply. For access, M1 makes no change to the current state and M2, M3 and M5 improve access for some patients from some parts of North Mersey but this is inequitable. M4 is identified as positive because it equitably improves access and requires integration of current provision into one North Mersey system.
Do any of the criteria above score 8 or more against the CCG matrix?				**Yes**

In all cases the completed QIA must be sent to the Quality Team for review by the Managerial Lead via the following email address: lccgcontract.reporting@nhs.net					
Reviewed by clinical lead	Yes/No	**Date Reviewed**			
Reviewed by Management lead	Yes/No	**Date Reviewed**		**Date Sent to Quality Team by Management lead**	
Quality Team Use Only					
Date Received and Logged	15.01.20	**Reviewed by Quality Team (name)**	Jan Lloyd	**Date Reviewed**	29.01.20
Date sent to Deputy Chief Nurse by Quality Team	29.01.20	**Approved by Deputy Chief Nurse**	Yes/No	**Response sent back to Management Lead**	Yes/No
Comments or feedback following review (As appropriate)	29.01.20: a comprehensive QIA that is easy to follow/understand and identifies the 5 options being considered for the redesign of the North Mersey service. Based on the option chosen for this service it may or may not need escalating to QSOC. If option 4 is chosen it will not need escalation to QSOC. If any of the others are selected this will need escalating to QSOC for review. Sent to Deputy Chief Nurse for review and approval as appropriate (JL)				

NB if a score of 8 is agreed for any area of the QIA it must be returned to the managerial lead to complete the escalation report to QSOC	Approved for onward escalation to QSOC if appropriate – but given this is a NM programme, unsure of governance fit (Kerry Lloyd 03/2/20).

14.12 Appendix 12 Equality Impact Assessment

Equality Analysis Stroke Pre-Consultation Business Case

Stroke services reconfiguration and service integration preferred model

Knowsley CCG, Liverpool CCG, South Sefton CCG, Southport and Formby CCG, West Lancashire CCG

Start Date:	July 2021	
Equality and Inclusion Service Signature and Date:	Andy Woods	15th July 2021-10.08.21
CCG Officer Signature and Date:		
Finish Date:		
Senior Manager Sign Off Signature and Date		
Committee Date:		

To support the PCBC and ensure we are pay 'due regard' to our Public Sector Equality Duty (PSED), s149 Equality Act 2010, we have developed a 'pre-consultation Equality Analysis: its purpose is to highlight and advise the engagement/ commissioner teams as to any particular question that needs to be asked linked to the needs of different protected characterises. Section 1 and 2 reiterates the case for change and how this will affect patients. Section 3 identifies equality concerns and the differential table linking particular protected characteristics to particular support needs. Sections 5 and 6 identify the engagement process and any concerns that the engagement/ commissioner teams need to take into consideration. Section 7 onwards are to be completed post consultation.

Details of service / function:
Guidance Notes: Clearly identify the function & give details of relevant service provision and or commissioning milestones (review, specification change, consultation, procurement) and timescales.
A stroke is a serious life-threatening medical condition that occurs when the blood supply to part of the brain is cut off by a blood clot or bleeding from a blood vessel. Strokes are a medical emergency and urgent treatment is essential. The sooner a person receives treatment for a

stroke, the better the chance of recovery. It is one of the most significant public health issues of our time, with a profound and growing impact on society, our economy, individuals, families and our life chances.

Stoke services across North Mersey CCGs and West Lancashire CCG are currently provided by the following Trusts:

- Royal Liverpool hospital site - Hyper Acute Stroke Unit (HASU) and Acute Stroke Unit (ASU)
- Broadgreen Hospital - Rehabilitation
- Aintree Hospital site - HASU and ASU
- Southport & Formby District and General Hospital - HASU and ASU

The Northwest Coast Strategic Clinical Network (NWC SCN) team (now the Cheshire and Mersey Integrated Stroke Delivery Network C & M ISDN), were engaged to develop the Stroke Case for Change with the involvement and engagement of clinical leads and stakeholders across Cheshire and Merseyside. This work was commissioned by the Cheshire and Merseyside Healthcare Partnership as a part of the CVD Programme (2018) and was completed in May 2019. This was in response to concerns about performance and sustainability of some stroke units across the patch.

The case for change set out a clinical vision for the development of Stroke services for Cheshire and Merseyside including North Mersey reflecting national guidance and best practice. It also recognised that further clinical engagement was required to develop the new clinical model for the future. Liverpool Clinical Commissioning Group are the lead commissioner for stroke services and using the work already complete by NWC SCN have taken responsibility to development this Pre-Consultation Business Case for North Mersey services.

The North Mersey Stroke services have reviewed their current services and have developed a plan to transform its hospital services with an aim to: -

- Provide the best stroke service in the country
- Have all patients receive the right care in the right place first time
- Have a service that is sustainable clinically and financially
- Improve patient outcomes
- Give patients the best possible experience.

In our plans we have based our transformation on the following principles: -

- Services will be delivered by teams of specialist professionals whose skill will meet the needs of patients
- Services will be delivered by a sustainable workforce
- Services will meet clinical standards and best practice
- Variations in quality and standards of care will be eliminated.

- Services will be centralised whenever clinically necessary and local whenever possible.

What is the **legitimate aim** of the service change / redesign ?

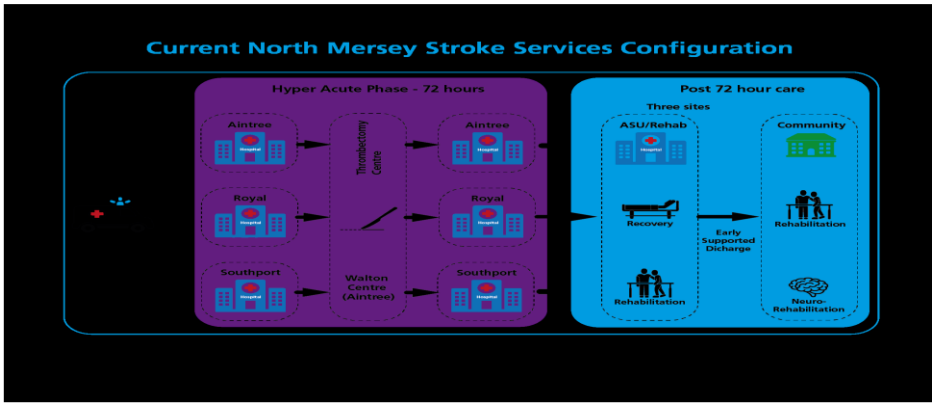
- While there have been some significant improvements in stroke prevention, treatment and patient outcomes since the 2007 National Stroke Strategy, major challenges remain across the whole stroke pathway locally. A number of Acute Stroke Units do not meet national guidelines and there are gaps and unwarranted variation across the stroke care pathway.
- Transforming stroke care is a priority within the NHS Long Term Plan.
- The plan points to strong evidence that hyper acute interventions such as brain scanning, and thrombolysis are best delivered as part of a networked 24/7 service. The plan supports centralised hyper-acute stroke care delivered by a smaller number of well-equipped and staffed hospitals, based upon clear evidence of the greatest improvements in adopting this model of care. This would see a reduction in the number of stroke-receiving units, and an increase in the number of patients receiving high-quality specialist care, meeting seven-day standards for stroke care, which meet national clinical guidelines.
- Access to mechanical thrombectomy and clot-busting treatment (thrombolysis) co located at the Aintree site via the Walton Centre, can significantly reduce the severity of disability caused by a stroke. Reconfiguring stroke services into specialist centres would improve the use of thrombolysis and further roll out mechanical thrombectomy.
- This model of care would ensure 90 percent of stroke patients receive care on a specialist stroke unit and that all patients who could benefit from thrombolysis receive it. This combination of specialist stroke care, thrombolysis and thrombectomy would result in the NHS having the best performance in Europe for people with stroke.
- The North Mersey health and care system is committed to transforming hyper-acute stroke services to deliver the best possible outcomes and experience for our population.
- Effective and efficient use of current resources
- Clinically driven
- Sustainability of services (workforce issues)
- Reduction in variation
- geographical proximity
- That a stroke unit undertakes adequate volumes of activity to maintain clinical quality, outcomes and a sustainable unit; In North Mersey none of the three HASU's achieved the minimum recommended number of 600 strokes per annum. The breakeven number of strokes is 900 and the recommended maximum is 1500.

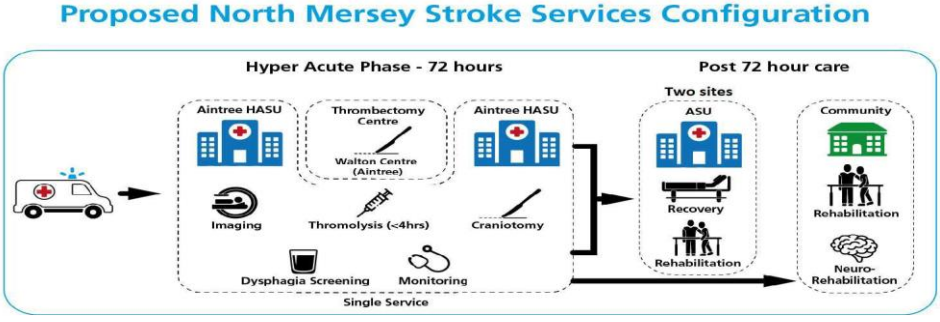
Change to service

The preferred option for a single North Mersey comprehensive stroke centre, co-located with A&E and with direct access to specialist scanners in order to maximise the number of patients who are able to receive thrombectomy and thrombolysis. The proposal would see all North Mersey patients receive their care at the Liverpool University Hospitals (LUH) Aintree site from a hyper-acute stroke centre co-located with acute neurological and stroke thrombectomy services provided by the Walton Centre.

Stoke services across North Mersey CCGs and West Lancashire CCG are currently provided by the following Trusts:

- Royal Liverpool hospital site - Hyper Acute Stroke Unit (HASU) and Acute Stroke Unit (ASU)
- Broadgreen Hospital - Rehabilitation
- Aintree Hospital site - HASU and ASU
- Southport & Formby District and General Hospital - HASU and ASU





First 72 hours

The proposed model would mean patients who have had a stroke will spend their first 72 hours at a centralised and hyper acute stroke unit at **Aintree, which will act as the HASU Comprehensive Stroke Centre (CSC).** This will mean a significant increase in the number of patients who will receive Stroke care at Aintree, which will be a well-equipped and staffed site, networked 24/7 and

can also provide thrombolysis and mechanical thrombectomy (co located with the Walton Neurological Centre). This proposal intends to increase the number of patients that receive high quality specialist care, improve clinical outcomes and the service sustainability.

The number of strokes recorded in the last two years for all three sites is as follows: -

		University Hospital Aintree	**Royal Liverpool University Hospital**	**Southport and Formby District General**	**Total**
2019/20	Number of patients (72h cohort) (Team Centred)	524	556	397	1477
2018/19	Number of patients (72h cohort) (Team Centred)	502	570	300	1372
2017/18	Number of patients (72h cohort) (Team Centred)	444	653	343	1440

Source: SSNAP 2017/18, 2018/19 and 2019/20

- **After 72 hours care will be provided by Liverpool University Hospital -Aintree site, Southport & Formby District and General Hospital or Broadgreen Hospital (rehabilitation only).**

After the initial 72 hours of stroke care, patients would continue to be managed at an acute stroke unit, if not suitable for discharge. Medically stable patients requiring further in-patient rehabilitation or complex discharge planning would be transferred to a local rehabilitation unit for in-patient rehabilitation or discharged from hospital with support from uniformly delivered, gold standard, early supported discharge services, to optimise their recovery in their own homes. This model of post-acute stroke care responds to the needs and preferences of patients, carers, and families, who have told us that they want to receive as much care as practicable close to home (see engagement reports supporting the development of the PCBC).

<u>Proposed change</u>

a. **Extra travel will impact on the timeliness of a patient's admission to the CSC HASU and treatment for impacted CCGs (see page 4 below).**

Reduction in number of units will mean certain CCGs populations for the initial 72 hours (listed below) will experience further travel (by ambulance, though some patients may self -present by car or taxi) and this depending on the CCG population in question, may impact on the timeliness of admission and cause unease and anxiety, as the sooner a person receives treatment for a stroke, the better the chance of recovery.

Changes broken down to each CCG area in North Mersey footprint

- Southport & Formby CCG population- further travel and timelines of admission and access to treatment
- West Lancashire CCG - further travel and timelines of admission and access to treatment
- Knowsley CCG area (Patient flow associated with the LUH Royal site, though some of these patients may access St Helens & Knowsley teaching Hospital). - further travel and timelines of admission
- Liverpool CCG population ((Patient flow associated with the LUH Royal site will experience a change, though some of these patients may access St Helens & Knowsley teaching Hospital)- further travel and timelines of admission. North Liverpool patents flow to Aintree will experience no change
- South Sefton CCG – no change

b. Changes to treatments at Southport & Ormskirk and LUH Royal site

Some patients who have had a stroke whilst already in the Royal site or Southport and Ormskirk may not be able to be transferred to Aintree for the initial 72-hour care on clinical grounds (complex clinical conditions, end of life). These patients will continue to have access to Thrombolysis if required.

c. Post 72 hours, travel and its implications, specifically for family, carers and friends who have a psychological impact on a patient's recovery

Families of patients (key social contributor to a patient's recovery) from Liverpool CCG and KCCG populations flow associated with the LUH Royal site may experience further travel for post 72-hour care if they continue to need acute stroke care (Aintree site or Southport & Ormskirk) as opposed to rehabilitation care only (Broadgreen site). Please page 92 of the PCBC.

Barriers relevant to the protected characteristics.

Barriers to service provision and proposed changes from a patient's perspective, linked to protected characteristics can be.

a. travel time and its impact on the timeliness of admission for life saving treatments. During the early involvement and engagement sessions outlined in the engagement section below and on page 65 of PCBC stroke survivors supported bringing local stroke services together in

a single location; however, some concerns were raised around distance to travel and the ability for emergency teams to get the patient to hospital in time.

b. Inequalities of treatment by race, age and disability (people receiving lesser treatments or experiencing discrimination).

c. Broader areas of inequalities faced by certain demographics in relation to stroke care, prevention and symptoms (consultation may want to consider access to information for participants).

Please note that this document in a North Mersey Impact assessment and individual CCGs need to apply it accordingly to their own populations.

Protected Characteristic	**Issue**	**Remedy/Mitigation**
Age:	Strokes can and do occur at any age; however, nearly three-quarters of all strokes occur in people over the age of 65 and the risk of having a stroke more than doubles each decade after the age of 55. Extra travel to HASU will impact on the timeliness of a patient's admission and treatment for impacted CCGs see page 5 above.	All adult age ranges need to be part of the consultation process. Ensure Older citizens are targeted. Any images used as part of the PR campaign must be inclusive and show different age ranges. Depending on the CCG impacted the consultation to provide necessary information to public during the consultation period on further travel and its impact on the timeliness of admission to the CSC in comparison to their current local HASU. The information should include times and distance for ambulance and by car/ taxi (for self-presenting patients) Consultation should clearly outline the significant benefits of the proposed model, including the rational for the change (sustainability, risks etc.) Consider clinician led workshops or multimedia video to support

	Older people given lesser priority and service. According to Access to stroke care in England, Wales and Northern Ireland: the effect of age, gender and weekend admission (https://academic.oup.com/ageing/article/36/3/247/40499) Older patients are less likely to be treated in a stroke unit than younger patients (risk ratio comparing 85 + years with those <65 years 0.82 (95% CI 0.75–0.90). Seventy-one per cent of patients under 65 years were scanned within 24 h compared to 51% aged over 85 years. Older patients were also less likely than younger ones to receive secondary prevention and some aspects of rehabilitation, especially around higher functioning. Nearly half of stroke survivors feel 'abandoned' after leaving hospital (Stroke Association, 2017). Patients who displayed stroke symptoms but have a range of complex conditions which means they are unable to be transferred to Aintree on clinical grounds for the first 72-hour care	information giving and the need for change. Ensure older citizens /patients are targeted and their experience /worries are captured as part of the re-organisation. Older people who have survived a Stroke need to be targeted to understand their previous experience. Currently this is out of scope, but consultation may consider broader questions on this point during workshops or specific targeted work with older citizens Ensure this is clearly communicated in the consultation
Disability.	Stroke is the largest cause of complex disability – over half of all stroke survivors are left with a disability. Stroke has a greater disability impact on an individual than any other chronic disease. Over a third (41%) of stroke survivors are discharged from hospital requiring help with activities of daily living. Hence, it is important that stroke services are organised to reduce this risk of disability as	Ensure disabled communities are part of the consultation and their experience /worries are captured as part of the re-organisation. It is important that stroke services are organised to reduce this risk of disability as well as being able to meet the needs of patients with disabilities.

	well as being able to meet the needs of patients with disabilities. Extra travel will impact on the timeliness of a patient's admission to the CSC HASU and treatment for impacted CCGs (see page 4)	Depending on the CCG impacted the consultation needs to provide necessary information to public on further travel and its impact on the timeliness of admission to the CSC in comparison to their current local HASU. The information should include times and distance for ambulance and by car/ taxi (for self-presenting patients) Consultation should clearly outline the significant benefits of the proposed model, including the rational for the change (sustainability, risks etc.) Consider clinician led workshops or multimedia video to support information giving and the need for change.
	Disabled people are more likely to experience health inequalities due to their communication and information need not being met.	Ensure that disabled people's information and communications needs are met through the use of a range of inclusive tools and consultation methods as re the duty to provide reasonable adjustments (Equality Act 2010) and regulatory requirement to meet the Accessible Information Standard. Disabled people (Sensory, physical, learning who have survived a stroke need to be targeted to understand their previous experience.
	Disabled people are given less of a service compared to non-disabled people Deaf/deaf people – high blood pressure is one of the major causes of heart attacks and strokes. Deaf people are twice as likely as everyone else to have high blood pressure and not know it. The *Sick of It*	Ensure consultation covers pan disability and support organisations are targeted.

	report (http://signhealth.org.uk/wp-content/uploads/206/09/Sick-Of-It-Report.pdf) and local engagement have identified misdiagnosis and diagnostic overshadowing as key reasons behind this. Visual impairment and blindness – two thirds of people may experience sight loss as a result of a stroke and need access to support. Many people who have experienced a stroke experience mental ill health and it is essential that there is good access to services. Mental health -links with depression and stroke https://www.bhf.org.uk/what-we-do/news-from-the-bhf/news-archive/2020/december/symptoms-of-depression-linked-to-increased-risk-of-heart-disease-and-stroke People with learning disabilities die, on average, more than 14 years younger than the general population, and are significantly more likely to have certain conditions and diseases. They were also 3 times more likely to suffer with hypothyroidism and almost twice as likely to suffer diabetes, heart failure, chronic kidney disease or stroke.	
Gender reassignment	Trans-gender people experience poorer health outcomes and barriers to accessing services. It is not known whether there is a greater or lesser risk of stroke amongst people that have undergone or are going through gender reassignment. Though some reports suggest that Older transgender women who have used hormone therapy for years to help make their outward appearance match their	Ensure Trans community part of consultation process. Consider specific workshop with Trans community Ensure that any PR material, if using images, are inclusive of Trans people.

	gender identity are at increased risk for cardiovascular events like stroke and potentially fatal blood clots than cisgender women (women who identify as the sex they were assigned at birth), according to a paper by a group of cardiologists, gynaecologists, and endocrinologists published in January 2021 in the *European Heart Journal*.	
Marriage and Civil Partnership	No impact	
Pregnancy and maternity	Pregnancy and the postpartum period are associated with increased risk of stroke, although incidence estimates vary. There are several causes of stroke that are unique to pregnancy and the postpartum period, such as preeclampsia and eclampsia, amniotic fluid embolus, postpartum angiopathy and postpartum cardiomyopathy.	Important for stroke service to have effective, efficient access to obstetric specialist advice and support for pregnant women who have a stroke. Ensure pregnant women and support groups are targeted during the consultation.
Race	Black people are twice as likely to have a stroke at a younger age as white people; this is partly due to a higher prevalence of the risk factors of high blood pressure, diabetes and sickle cell disease than white people. South Asian people have strokes at a significantly younger age than white people, primarily because of greater prevalence of the risk factors of high blood pressure, high cholesterol and diabetes than white people. White people are more likely to have the risk factors of irregular heartbeat, smoking and excess alcohol consumption.	Ensure that Black, Asian and other Minority Ethnic communities are part of the consultation. Ensure that any PR material, if using images, are inclusive of different races. Consider language needs and formats for the consultation.

	• people of a South Asian background, may be at a higher risk of developing coronary heart disease, which could lead to a heart attack • people over 65 and of a South Asian background, are at a greater risk of having a stroke • people of an African Caribbean background, may be more likely to have high blood pressure people of African Caribbean and South Asian ethnicity are more likely to get type 2 diabetes than the white population https://pubmed.ncbi.nlm.nih.gov/15637317/ Extra travel to HASU will impact on the timeliness of a patient's admission and treatment for impacted CCGs see above. Racial discrimination can result in inequalities in health and have an impact on opportunities in and quality of life. People from Black ethnic and minority communities consider they receive a lesser service Current stroke activity data is not disaggregated to understand any possible correlation between stroke and ethnicity. Research suggests that black, Asian and other ethnic minorities may have difficulty recognising symptoms of a stroke and experience high levels of prevalence.	Depending on the CCG impacted the consultation needs to provide necessary information to public on further travel and its impact on the timeliness of admission to the CSC in comparison to their current local HASU. The information should include times and distance for ambulance and by car/ taxi (for self-presenting patients) Consultation should clearly outline the significant benefits of the proposed model, including the rational for the change (sustainability, risks etc.) People from Black Asian Ethnic Minority who have survived a Stroke need to be targeted to understand their previous experience. North Mersey key officers to investigate current disparity in data, re ethnicity.

		Targeted consultation with our black minority and ethnic community and consider workshop style approach 'CCGs may want to ask question about the uptake of early intervention services and understanding of stroke related literature about symptoms. Providing inclusive information and coms of symptoms targeting Black Asian ethnic and minority communities and support organisations Post consultation Dealing with ethnic disparities in stroke will be served by sustained attention to quality improvement in high-impact areas in stroke care, complemented by initiatives that promote cultural competence.
Religion and belief	A person's religion and/ or belief may impact on how they access medical services or their decisions on treatment options. There is evidence of people being 'fatalistic' when facing medical problems, turning to prayer or other forms of 'spiritual help' as opposed to medical intervention.	Ensure that religious groups are part of the consultation (and consider that information is given to them as to what the stroke service can do and how lifestyle can affect health).
Sex (Male /Female)	Men are at 25% high risk of having a stroke and at a younger age compared with women. However, as women live longer	Consultation needs to cover both men and women and ensure there is a strong spread of responses from both sexes.

	than men, there are more total incidences of stroke in women. Extra travel to HASU will impact on the timeliness of a patient's admission and treatment for impacted CCGs see page 5 above.	Depending on the CCG impacted the consultation needs to provide necessary information to public on further travel and its impact on the timeliness of admission to the CSC in comparison to their current local HASU. The information should include times and distance for ambulance and by car/ taxi (for self-presenting patients) Consultation should clearly outline the significant benefits of the proposed model, including the rational for the change (sustainability, risks etc.)
Sexual orientation	Members of the lesbian, gay, bisexual and transgender communities (LGBT) have been found to have higher levels of certain health behaviours which increased risk of stroke, such as excess alcohol consumption, drug use and smoking, and lower uptake of screening programmes.	Ensure LGBQ+ community engaged in consultation. Consider specific network meetings/ events to gather information. Evidence suggests that the gay community is unresponsive to messages and media images that show heteronormative images. Any images used as part of the PR campaign must be inclusive are show same sex couples.
Whilst currently out of scope of Equality legislation it is also important to consider issues relating to socioeconomic status to ensure that any change proposal does not widen health inequalities. Socioeconomic status includes factors such as social exclusion and deprivation, including those associated with geographical distinctions (e.g. the North/South divide, urban versus rural). *Examples of groups to consider include:* *refugees and asylum seekers, migrant, unaccompanied child asylum seekers, looked-after children, homeless people, prisoners and young offenders, veterans*		

Health inequalities Socio economic factor	North Mersey is one of the most deprived areas of the country, with more than 4 out of 10 residents living in the 10% most deprived neighbourhoods in England. Deprivation is strongly associated with poor health outcomes from childhood through to old age. People in North Mersey live shorter lives than the national average and spend a greater proportion of their life living with disability and poor health Extra travel to HASU will impact on the timeliness of a patient's admission and treatment for impacted CCGs see page 5 above. Poverty can have long-term implications on an individual's health as well as their general 'life chances' (i.e., their opportunities to improve their socio-economic status and quality of life). Those growing up in poverty as children are more likely to suffer poor physical and mental health in adulthood, and are at increased risk of severe, long-term and life-limiting illnesses. Longitudinal studies have shown that children growing up in poverty have a higher risk of death as adults. This has been studied across almost all conditions including for example, stomach cancer, lung cancer, haemorrhagic stroke, coronary heart disease, respiratory diseases and alcohol-related death.31 https://www.bma.org.uk/media/2084/health-at-a-price-2017.pdf People from the most economically deprived areas of the UK are around twice as likely to have a stroke, and three times as likely to die from a stroke, then those in the least deprived.	Target impacted areas with high levels of deprivation. Gather postcode details as well as information on their socio-economic situation. Depending on the CCG impacted the consultation to provide necessary information to public during the consultation period on further travel and its impact on the timeliness of admission to the CSC in comparison to their current local HASU. The information should include times and distance for ambulance and by car/ taxi (for self-presenting patients) Consultation should clearly outline the significant benefits of the proposed model, including the rational for the change (sustainability, risks etc.) For relevant impacted CCGs consider questions as to whether the cost of transport put the family under financial pressure. Ask questions as to whether the patient being hospitalised/undergoing treatment put the family under financial pressure. Ensure a number of VCF organisations who support inclusion

Asylum seeker and refugees People leaving the criminal justice system	Disadvantage is that patients may have to travel further for their hyperacute care. Although this may be perceived as disadvantaging older people, in reality people who have had a stroke are in a life-threatening situation and likely to use ambulance services or be driven to the hospital for the first stage of care. The potential improvement in patient outcomes from this model also needs to be considered. People who are seeking asylum are not a homogeneous population. Coming from different countries and cultures, they have had, in their own and other countries, a wide range of experiences that may affect their health and nutritional state. In the United Kingdom they face the effects of poverty, dependence, and lack of cohesive social support.[1] All these factors undermine both physical and mental health. Additionally, racial discrimination can result in inequalities in health and have an impact on opportunities in and quality of life.[2] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1119741/ People in contact with the criminal justice system face significant health inequalities: mortality rate for prisoners is 50% higher than the rest of the population people in and out of the criminal justice system are four times more likely to be smokers 15% of prisoners had been homeless immediately prior to custody, compared to a lifetime experience of homelessness of 3.5% in the wider population	health groups take part in the consultation

	42% of men and women in prison and 17.3% on probation suffered from depression, compared to just over 10% of the rest of the population it is broadly recognised that many prisoners have the biological characteristics of those who are 10 years older than them	

1. **Does this service go the heart of enabling a protected characteristic to access health and wellbeing services?**
Yes
2. **Consultation**
Guidance note: How have the groups and individuals been consulted with? What level of engagement took place. (If you have a consultation plan insert link or cut/paste highlights)
Stakeholders have been engaged in the development of the PCBC through a number of different routes. These include **North Mersey Stroke Board (NMSB**) – This is a formal monthly meeting whose membership includes senior managers from the 3 acute provider Trusts, 5 CCG's, The Stroke Association and NHSE specialist commissioners. **North Mersey Stroke Clinical Reference Group** –. A group of clinical experts who work in the North Mersey stroke services and the Strategic Clinical Network who have designed all workshops and provided clinical expertise to the PCBC. **North Mersey Co-Design Workshops** – Four workshops were held between July 2018 and February 2019. These workshops were open to all staff working in stroke services in North Mersey, including teams from Liverpool University Hospitals NHS Trust, Southport & Ormskirk Hospitals NHS Trust, and The Walton Centre NHS Trust. A group of stroke survivors, identified by The Stroke Association, were also involved in the workshops. The workshops agreed the case for change before undertaking a process of options development including appraising a long list and short list of options before recommending a preferred clinical model.

During the session, attendees discussed and scored the shortlisted options for the proposal for the future stroke service model.

Key feedback obtained from the workshop included:

- There is a strong preference for the option of centralising hyper acute stroke services from the current three sites onto the Aintree site
- Acute stroke care and rehabilitation would need to be provided by Aintree Hospital,

There was a strong view across clinicians, commissioners, support services and **patients**, that stroke care could and should be improved. There was also a strong commitment to making consistently high-quality care available for all stroke patients, regardless of where they live, or are treated.

Feedback from engagement sessions with stroke survivors and their families was shared, alongside how it applied to the review and the options development work. The discussions centred on the pros and cons for each of the service models recommendations and encouraged teams to consider which would deliver the best experience and care for stroke patients and their relatives.

Key feedback obtained from the workshop included:

- Patients and representatives highlighted that they felt that the immediate aftercare following discharge could be greatly improved. There was strong support for bringing local stroke services together in a single location; ***however, some concerns were raised around distance to travel and the ability for emergency teams to get the patient to hospital in time***
- Some also highlighted issues around the lack of consistent support for family and friends

Lived experience engagement sessions - During autumn 2019 commissioners worked with the Stroke Association to visit six local groups for stroke survivors, to talk about the review and gather feedback from those with lived experience of hospital stroke services. The sessions involved 80 stroke survivors and more than 20 carers/volunteers. The information gathered from discussions with stroke survivors, their families and carers were written up into a report.

3. Have you identified any key gaps in service or potential risks that need to be mitigated

No – not at this stage in the process.

Risk	Required Action	By Who/ When
The consultation may not secure feedback from a cross	Part consultation strategy. Responses from written	Comms team / EDI team

section of protected characteristics.	questionnaires to be analysed by protected characteristic.	
Responses from consultation need to be disaggregated for equality analysis	Design consultation process so protected characteristics are easily identified	Comms team/EDI team Meeting on disaggregation of data between equality and comms team to agree process and timescales.
Consultation processes need to include questions about quality-of-service patients received for stroke survivors Views on relocation of specific service element and any impact patients may have felt., specifically the timeliness and impact on treatment Information about potential impact of moving inpatient beds (e.g., travel) and possible mitigations post 72 hours	Design of consultation process	Comms team

Section 7,8 & 9 to be completed post consultation

4. Is there evidence that the Public Sector Equality Duties will be met (give details) Section 149: Public Sector Equality Duty (review all objectives and relevant sub sections)
PSED Objective 1: Eliminate discrimination, victimisation, harassment and any unlawful conduct that is prohibited under this act: (check specifically sections 19, 20 and 29)
Analysis post consultation
PSED Objective 2: Advance Equality of opportunity. (Check Objective 2 subsection 3 below and consider section 4)
Analysis post consultation
PSED Objective 2: Section 3. sub-section a) remove or minimise disadvantages suffered by people who share a relevant protected characteristic that are connected to that characteristic.

Analysis post consultation
PSED Objective 2: Section 3. sub-section b) take steps to meet the needs of people who share a relevant protected characteristic that are different from the needs of people who do not share it
Analysis post consultation
PSED Objective 2: Section 3. sub-section c) encourage people who share a relevant protected characteristic to participate in public life or in any other activity in which participation by such people is disproportionately low.
Analysis post consultation
PSED Objective 3: Foster good relations between persons who share a relevant protected characteristic and persons who do not share it. (Consider whether this is engaged. If engaged, consider how the project tackles prejudice and promotes understanding -between the protected characteristics)
Analysis post consultation
Health Inequalities: Have regard to the need to reduce inequalities between patients in access to health services and the outcomes achieved (s.14T);
[ENTER RESPONSE HERE]
PSED Section 2: Consider and make recommendation regards implementing PSED in to the commissioning process and service specification to any potential bidder/service provider (private/ public/charity sector)
Analysis post consultation
5. **Recommendation to Board**
Guidance Note: will PSED be met?
[ENTER RESPONSE HERE]
6. Actions that need to be taken
[ENTER RESPONSE HERE]

14.13 Appendix 13 Sensitivity Analysis

Table: Growth in Stroke Mimic and TIA patients at 0.5% year on year. – Based on 2018/19 data

Growth in 5 years @0.5% per year				
Grand Total				
Strokes	561	640	359	1,559
TIA	62	94	90	246
Mimics	206	92	103	401
Total	828	826	552	2,206

Table: Growth in Stroke Mimic and TIA patients at 0.5% year on year. – Based on 2019/20 data

Growth in 5 years @ 0.5% a year growth rate - against 19/20 data				
Patients admitted	Aintree	Royal Southport	Southport	Totals
Stroke	608	612	437	**1657**
TIA	88	59	90	**237**
Mimic	206	92	103	**401**
Total	**902**	**763**	**630**	**2295**

C3 Comprehensive Stroke Unit on Aintree site – rehab on S & O and Royal site

If growth was 0.05% over 5 years - extra activity

		Aintree				Royal				Southport				Grand Total
		Stroke	TIA	Other	Total	Stroke *	TIA *	Other *	Total	Stroke *	TIA	Other	Total	
Agreed Activity		38	6	10	**54**	-	-	-	-			-	-	54
Repatriate		-25		-	**- 25**	16			16	**9**		-	9	
Post >72 hours		13	6	10	**29**	16	-	-	16	**9**		-	9	54
Expected length of stay														
< 72 hours		3	2.4	3		0	0	0		**0**		0		
> 72 hours		4	0	3		0	0	0		**0**		0		
Rehab		12.4				12				**13.6**				
Bed days														
< 72 hours		114	14	30	158	-	-	-	-	-		-	-	
> 72 hours		116	-	30	146	-	-	-	-	-		-	-	
Rehab		161				192				**122**				
Beds required														
	90% occupancy													
< 72 hours		0.3	0.0	0.1	0.5	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
> 72 hours		0.4	0.0	0.1	0.4	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Rehab		0.5			0.5	0.6			0.6	0.4			0.4	
Total Beds		1.2	0.0	0.2	1.4	0.6	0.0	0.0	0.6	**0.4**		**0.0**	0.4	

Bed Numbers		Aintree		Royal		Southport		Broadgreen		Total	
	< 72 hours	0.5		0.0		0.0				0.5	1 bed for Tiertary
	> 72 hours	0.4		0.0		0.0				0.4	
	Rehab	0.5				0.4		0.6		1.4	3 days creates too many beds at aintree
	Total	1.4		0.0		0.4		0.6		2.4	

Staffing Levels								
Staff Type	TBA		Staff Numbers					
	Miniumum		Aintree	Royal	Southport	Broadgreen	Total	
<72 hours stroke	Per 5 beds	NMSS	Aintree	Royal	Southport	Broadgreen	Total	
WTE Nurses (Ratio 80:20) per bed	2.9	2.52	1.4	0.0	0.0		1.4	
WTE Physioterapist	1.02		0.1	0.0	0.0		0.1	
WTE OT	0.95		0.1	0.0	0.0		0.1	
WTE Speech Therapist	0.48		0.0	0.0	0.0		0.0	
WTE Clinical Psychologist	0.28		0.0	0.0	0.0		0.0	
WTE Dietician	0.21		0.0	0.0	0.0		0.0	
Therpay assistants	0.5		0.0	0.0	0.0		0.0	
Sub Total < 72 hours			1.7	0.0	0.0	0.0	1.7	
>72 hours stroke								
WTE Nurses (Ratio 65:30) per bed	1.35		0.6	0.0	0.0	0.0	0.6	
WTE Physioterapist	1.18		0.1	0.0	0.0	0.0	0.1	
WTE OT	1.13		0.1	0.0	0.0	0.0	0.1	
WTE Speech Therapist	0.56		0.0	0.0	0.0	0.0	0.0	
WTE Clinical Psychologist	0.28		0.0	0.0	0.0	0.0	0.0	
WTE Dietician	0.21		0.0	0.0	0.0	0.0	0.0	
Therapy Assistant	0.5		0.0	0.0	0.0	0.0	0.0	
Sub Total > 72 hours			0.9	0.0	0.0	0.0	0.9	
Rehab								
WTE Nurses (Ratio ?:?) per bed	1.35		0.7	0.0	0.5	0.8	2.0	
WTE Physioterapist	1.18		0.1	0.0	0.1	0.1	0.3	
WTE OT	1.13		0.1	0.0	0.1	0.1	0.3	
WTE Speech Therapist	0.56		0.1	0.0	0.0	0.1	0.2	
WTE Clinical Psychologist	0.28		0.0	0.0	0.0	0.0	0.1	
WTE Dietician	0.21		0.0	0.0	0.0	0.0	0.1	
Therpay Assistants	0.5		0.0	0.0	0.0	0.1	0.1	
Sub Total Rehab			1.0	0.0	0.8	1.2	3.1	
Grand Total			3.7	0.0	0.8	1.2	5.7	

RCP Standards

Workforce requirements	Band	Current Funding		RCP Staffing	Gap	Midpoint Pay per WT	Current Funding (£)	RCP Staffing (£)	Variance (£)
Consultants	Cons	10	****	0.0	10.0	130,000	0	0	0
Consultant Nurses	B8A	1.0	*	0.0	1.0	58,225	0	0	0
Stroke Nurses	B7	20.3		0.0	20.3	48,526	0	0	0
Band 7 Nurses	B7	3.4	**	0.0	3.4	48,526	0	0	0
Qualified Nurses	B5	70.8		2.8	68.0	32,446	0	90,172	-90,172
UnQualified Nurses	B3	60.9		1.2	59.7	22,952	0	26,940	-26,940
Consultant Therapists (new	B8A				0.0	58,225	0	0	0
WTE Physioterapist	B7	16.2		0.5	15.7	48,526	0	26,444	-26,444
WTE OT	B7	14.9		0.5	14.4	48,526	0	25,198	-25,198
WTE Speech Therapist	B7	7.1		0.3	6.8	48,526	0	12,531	-12,531
WTE Clinical Psychologist	B8A	1.2	***	0.0	1.2	58,225	0	0	0
WTE Dietician	B7	4.1		0.1	4.0	48,526	0	4,839	-4,839
Therapy Assistants	B3	App17		0.2	#VALUE!	22,952	0	5,450	-5,450
Total Staffing		209.9		5.6	204.3		0	191,574	-191,574

14.14 Appendix 14 Model data - see sheets on attached – Based on 18/19 staffing and activity data

Model A2, Model B1, Model B3 etc

Financial Impact of each option	Option 1a Do nothing	Option 1b Enhancements	Option 2a Merge A &S	Option2b Merge A & R	Option3 Merge 3 + 3 Rehab	Option4 a Merge 3 + 2 Rehab	Option 4b Merge 3 + 2 Rehab	Comment
Direct Staffing Revenue costs	0	2,500,000	2,300,000	2,300,000	1,900,000	1,800,000	1,800,000	See next slide
Junior doctors 1 SPR			58,652	58,652	58,652	58,652	58,652	
Porters			14,386	17,250	23,000	23,000	23,000	Extra patients CT/MRI/ultrasound
NWAS	0	0	120,000	54,000	175,000	175,000	95,000	
Radiology			33,300	65,700	90,000	90,000	90,000	MRI - van capacity
Create ANNP's			100,000	100,000	100,000	100,000	100,000	Pay differential
Estates for sfm / hfm	0	0	375,000	375,000	375,000	875,000	875,000	Soft and Hard FM
Orthopdists	0	58,403	58,403	58,403	58,403	58,403	58,403	Band 5 1.8
Total Revenue	**0**	**2,558,403**	**3,059,740**	**3,029,004**	**2,780,054**	**3,180,054**	**3,100,054**	
Capital costs	**0**	**80000**	**3,000,000**	**3,000,000**	**4,000,000**	**10,000,000**	**10,000,000**	

A2 Do Nothing to configuration of services but work more collaboratively as a networked service

Protect beds - ie, 80% occupied

Activity and beds

	Aintree				Royal				Southport				Grand
	Stroke	TIA	Other	Total	Stroke	TIA	Other	Total	Stroke	TIA	Other	Total	Total
Agreed Activity	547	60	201	808	624	92	90	806	350	88	100	538	2152
Expected length of stay													
< 72 hours	3	2.4	3		3	3	3		**3**	**2.2**	**3**		
> 72 hours	15.4	0	3		3	0.75	2.8		**13.6**		**2.4**		
Rehab	0				12				**0**				
Bed days													
< 72 hours	1,641	144	603	2,388	1,872	276	270	2,418	1,050	194	300	1,544	
> 72 hours	8,424	-	603	9,027	1,872	69	252	2,193	4,760		240	5,000	
Rehab					7,488								
Beds required 90% occupancy													
< 72 hours	5.0	0.4	1.8	7.3	5.7	0.8	0.8	7.4	3.2	0.6	0.9	4.7	
> 72 hours	25.6	0.0	1.8	27.5	5.7	0.2	0.8	6.7	14.5		0.7	15.2	
Rehab					22.8			22.8					
Total Beds	30.6	0.4	3.7	34.7	34.2	1.1	1.6	36.8	17.7	0.6	1.6	19.9	

Bed Numbers	Aintree		Royal		Southport		Broadgreen		Total
< 72 hours	7.3		7.4		4.7				19.3
> 72 hours	27.5		6.7		15.2				49.4
Rehab							22.8		22.8
Total	34.7		14.0		19.9		22.8		91.5

Staffing Levels								
Staff Type	TBA		Staff Numbers					
	Miniumum		Aintree	Royal	Southport	Broadgreen	Total	
<72 hours stroke	Per 5 beds	NMSS	Aintree	Royal	Southport	Broadgreen	Total	
WTE Nurses (Ratio 80:20) per bed	2.9	2.52	21.1	21.3	13.6		56.1	
WTE Physioterapist	1.02		1.5	1.5	1.0		3.9	
WTE OT	0.95		1.4	1.4	0.9		3.7	
WTE Speech Therapist	0.48		0.7	0.7	0.5		1.9	
WTE Clinical Psychologist	0.28		0.4	0.4	0.3		1.1	
WTE Dietician	0.21		0.3	0.3	0.2		0.8	
Therapy Assistants	0.5		0.7	0.7	0.5		1.9	
Sub Total < 72 hours			26.1	26.4	16.9	0.0	69.4	
>72 hours stroke								
WTE Nurses (Ratio 65:30) per bed	1.35	1.35	37.1	9.0	20.5	0.0	66.7	
WTE Physioterapist	1.18		6.5	1.6	3.6	0.0	11.7	
WTE OT	1.13		6.2	1.5	3.4	0.0	11.2	
WTE Speech Therapist	0.56		3.1	0.7	1.7	0.0	5.5	
WTE Clinical Psychologist	0.28		1.5	0.4	0.9	0.0	2.8	
WTE Dietician	0.21		1.2	0.3	0.6	0.0	2.1	
Therapy Assistants	0.5		2.7	0.7	1.5	0.0	4.9	
Sub Total > 72 hours			58.3	14.2	32.3	0.0	104.3	
Rehab								
WTE Nurses (Ratio ?:?) per bed	1.35		0.0	0.0	0.0	30.8	30.8	
WTE Physioterapist	1.18		0.0	0.0	0.0	5.4	5.4	
WTE OT	1.13		0.0	0.0	0.0	5.2	5.2	
WTE Speech Therapist	0.56		0.0	0.0	0.0	2.6	2.6	
WTE Clinical Psychologist	0.28		0.0	0.0	0.0	1.3	1.3	
WTE Dietician	0.21		0.0	0.0	0.0	1.0	1.0	
Therapy Assistants	0.5		0.0	0.0	0.0	2.3	2.3	
Sub Total Rehab			0.0	0.0	0.0	48.4	48.4	
Grand Total			84.4	40.6	49.2	48.4	222.4	

RCP Standards

Workforce requiremen	Band	Current Funding (WTE)		RCP Staffing (WTE	Gap	Midpoint Pay per WTE	Current Funding (£)	RCP Staffing (£)	Variance (£)
Consultants	Cons	10.0	****	19.4	-9.4	130,000	1,300,000	2,522,000	-1,222,000
Consultant Nurses (nev	B8A	1.0	*	1	0.0	58,225	58,225	58,225	0
Stroke Nurses	B7	22.3		22.3	0.0	48,526	1,082,140	1,082,140	0
Band 7 Nurses	B7	3.4	**	3	0.4	48,526	164,990	145,579	19,411
Qualified Nurses	B5	70.8		108.2	-37.4	32,446	2,296,224	3,509,796	-1,213,572
UnQualified Nurses	B3	60.9		45.3	15.6	22,952	1,397,776	1,039,980	357,796
Consultant Therapists (	B8A				0.0	58,225	0	0	0
WTE Physioterapist	B7	16.3		21.0	-4.7	48,526	790,981	1,017,853	-226,872
WTE OT	B7	15.1		20.0	-4.9	48,526	732,750	969,700	-236,950
WTE Speech Therapist	B7	6.9		9.9	-3.0	48,526	334,833	482,286	-147,453
WTE Clinical Psycholog	B8A	0.1	***	2.2	-2.1	58,225	5,822	128,094	-122,272
WTE Dietician	B7	4.3		3.8	0.5	48,526	208,664	186,485	22,179
Therapy Assistants	B3	15.1		9.1	6.0	22,952	346,575	210,008	136,567
Total Staffing		226.2		265.3	-39.1		8,718,979	11,352,147	-2,633,167

B1 Consolidate Aintree and the Royal (onto Aintree Site) and leave S & O as an HASU

Activity and beds

	Aintree				Royal				Southport				
	Stroke	TIA	Other	Total	Stroke *	TIA *	Other *	Total	Stroke *	TIA	Other	Total	Grand Total
Agreed Activity	**1,171**	**152**	**291**	**1,614**	-	-	-	-	**350**	**88**	**100**	**538**	2,152
Repatriate	- **624**		-	- **624**	**624**			**624**	-		-	-	-
Post >72 hours	**547**	**152**	**291**	**990**	**624**	-	-	**624**	**350**		**100**	**538**	2,152
Expected length of stay													
< 72 hours	3	2.4	3		0	0	0		3	2.2	3		
> 72 hours	3	0	3		0	0	0		13.6		2.4		
Rehab	12.4				12				0				
Bed Days													
< 72 hours	3513	364.8	873	4750.8	0	0	0	0	1050	264	300	1614	
> 72 hours	3513	0	873	4386	0	0	0	0	4760		240	5000	
Rehab	6782.8				7488								
Beds required													
90% occupancy													
< 72 hours	10.7	1.1	2.7	14.5	0.0	0.0	0.0	0.0	3.2	0.8	0.9	4.9	
> 72 hours	10.7	0.0	2.7	13.4	0.0	0.0	0.0	0.0	14.5		0.7	15.2	
Rehab	20.6			20.6	22.8			22.8					
Total Beds	42.0	1.1	5.3	48.5	22.8	0.0	0.0	22.8	**17.7**		**1.6**	19.3	

Bed Numbers	Aintree		Royal		Southport		Broadgreen		Total
< 72 hours	14.5		0.0		4.9				19.4
> 72 hours	13.4		0.0		15.2				28.6
Rehab	20.6						22.8		43.4
Total	48.5		0.0		20.1		22.3		91.4

Staffing Levels							
Staff Type	TBA	Staff Numbers					
	Miniumum		Aintree	Royal	Southport	Broadgreen	Total
<72 hours stroke	Per 5 beds	NMSS	Aintree	Royal	Southport	Broadgreen	Total
WTE Nurses (Ratio 80:20) per bed	2.9	2.52	41.9	0.0	14.2		56.2
WTE Physioterapist	1.02		3.0	0.0	1.0		4.0
WTE OT	0.95		2.7	0.0	0.9		3.7
WTE Speech Therapist	0.48		1.4	0.0	0.5		1.9
WTE Clinical Psychologist	0.28		0.8	0.0	0.3		1.1
WTE Dietician	0.21		0.6	0.0	0.2		0.8
Therapy Assistants	0.5		1.4	0.0	0.5		1.9
Sub Total < 72 hours			51.9	0.0	17.6	0.0	69.5
>72 hours stroke							
WTE Nurses (Ratio 65:30) per bed	1.35		18.0	0.0	20.5	0.0	38.6
WTE Physioterapist	1.18		3.2	0.0	3.6	0.0	6.7
WTE OT	1.13		3.0	0.0	3.4	0.0	6.5
WTE Speech Therapist	0.56		1.5	0.0	1.7	0.0	3.2
WTE Clinical Psychologist	0.28		0.7	0.0	0.9	0.0	1.6
WTE Dietician	0.21		0.6	0.0	0.6	0.0	1.2
Therapy Assistants	0.5		1.3	0.0	1.5	0.0	2.9
Sub Total > 72 hours			28.3	0.0	32.3	0.0	60.6
Rehab							
WTE Nurses (Ratio ?:?) per bed	1.35		27.9	0.0	0.0	30.8	58.6
WTE Physioterapist	1.18		4.9	0.0	0.0	5.4	10.3
WTE OT	1.13		4.7	0.0	0.0	5.2	9.8
WTE Speech Therapist	0.56		2.3	0.0	0.0	2.6	4.9
WTE Clinical Psychologist	0.28		1.2	0.0	0.0	1.3	2.4
WTE Dietician	0.21		0.9	0.0	0.0	1.0	1.8
Therpay Assistants	0.5		2.1	0.0	0.0	2.3	4.3
Sub Total Rehab			43.8	0.0	0.0	48.4	92.2
Grand Total			124.0	0.0	49.9	48.4	222.3

Workforce requirements	Band	Current Funding		RCP Staffing	Gap	Midpoint Pay per WTE	Current Funding (£)	RCP Staffing (£)	Variance (£)
Consultants	Cons	10	****	17.1	-7.1	130,000	1,300,000	2,223,000	-923,000
Consultant Nurses (new)	B8A	1.0	*	1.0	0.0	58,225	58,225	58,225	0
Stroke Nurses	B7	22.3		22.3	0.0	48,526	1,082,140	1,082,140	0
Band 7 Nurses	B7	3.4	**	3.4	0.0	48,526	164,990	164,990	0
Qualified Nurses	B5	70.8		108.1	-37.3	32,446	2,297,197	3,508,858	-1,211,662
UnQualified Nurses	B3	60.9		45.3	15.6	22,952	1,397,776	1,038,913	358,864
Consultant Therapists (new	B8A				0.0	58,225	0	0	0
WTE Physioterapist	B7	16.3		20.9	-4.6	48,526	790,981	1,016,533	-225,552
WTE OT	B7	15.1		20.0	-4.9	48,526	732,750	968,424	-235,674
WTE Speech Therapist	B7	6.9		9.9	-3.0	48,526	334,833	481,658	-146,825
WTE Clinical Psychologist	B8A	0.1	***	2.2	-2.1	58,225	5,822	128,094	-122,272
WTE Dietician	B7	4.3		3.8	0.5	48,526	208,664	186,263	22,401
Therapy Assistants	B3	15.1		9.1	6.0	22,952	346,575	209,758	136,817
Total Staffing		226.2		263.2	-37.0		8,719,953	11,066,856	-2,346,903

B3 Aintree and Southport and Ormskirk consolidate HASU –Royal HASU

	Aintree				Royal				Southport			
	Stroke	TIA	Other	Total	Stroke *	TIA *	Other *	Total	Stroke *	TIA	Other	Total
Agreed Activity	897	148	301	1,346	624	92	90	806			-	-
Repatriate	- 350		-	- 350					**350**		-	350
Post >72 hours	547	148	301	996	624	92	90	806	350		-	350
Expected length of stay												
< 72 hours	3	2.4	3		3	3	3		**0**		0	
> 72 hours	3	0	3		3	0.75	2.8		**0**		3	
Rehab	12.4				12				**13.6**			
Bed days												
< 72 hours	2,691	355	903	3,949	1,872	276	270	2,418	-		-	-
> 72 hours	1,641	-	903	2,544	1,872	69	252	2,193	-		-	-
Rehab	6,783				7,488				**4,760**			
Beds required												
90% occupancy												
< 72 hours	8.2	1.1	2.7	12.0	5.7	0.8	0.8	7.4	0.0		0.0	0.0
> 72 hours	5.0	0.0	2.7	7.7	5.7	0.2	0.8	6.7	0.0		0.0	0.0
Rehab	20.6			20.6	22.8			22.8	**14.5**			14.5
Total Beds	33.8	1.1	5.5	40.4	34.2	1.1	1.6	36.8	**14.5**		0.0	14.5

Bed Numbers	Aintree		Royal		Southport		Broadgreen		Total
< 72 hours	12.0		7.4		0.0				19.4
> 72 hours	7.7		6.7		0.0				14.4
Rehab	20.6				14.5		22.8		57.9
Total	40.4		14.0		14.5		22.8		91.7

Staffing Levels							
Staff Type	TBA		Staff Numbers				
	Miniumum		Aintree	Royal	Southport	Broadgreen	Total
<72 hours stroke	Per 5 beds	NMSS	Aintree	Royal	Southport	Broadgreen	Total
WTE Nurses (Ratio 80:20) per bed	2.9	2.52	34.9	21.3	0.0		56.2
WTE Physioterapist	1.02		2.5	1.5	0.0		4.0
WTE OT	0.95		2.3	1.4	0.0		3.7
WTE Speech Therapist	0.48		1.2	0.7	0.0		1.9
WTE Clinical Psychologist	0.28		0.7	0.4	0.0		1.1
WTE Dietician	0.21		0.5	0.3	0.0		0.8
Therapy Assistant	0.5		1.2	0.7	0.0		1.9
Sub Total < 72 hours			43.1	26.4	0.0	0.0	69.5
>72 hours stroke							
WTE Nurses (Ratio 65:30) per bed	1.35		10.5	9.0	0.0	0.0	19.5
WTE Physioterapist	1.18		1.8	1.6	0.0	0.0	3.4
WTE OT	1.13		1.8	1.5	0.0	0.0	3.3
WTE Speech Therapist	0.56		0.9	0.7	0.0	0.0	1.6
WTE Clinical Psychologist	0.28		0.4	0.4	0.0	0.0	0.8
WTE Dietician	0.21		0.3	0.3	0.0	0.0	0.6
Therpay Assistant	0.5		0.8	0.7	0.0	0.0	1.4
Sub Total > 72 hours			16.4	14.2	0.0	0.0	30.6
Rehab							
WTE Nurses (Ratio ?:?) per bed	1.35		27.9	0.0	19.6	30.8	78.2
WTE Physioterapist	1.18		4.9	0.0	3.4	5.4	13.7
WTE OT	1.13		4.7	0.0	3.3	5.2	13.1
WTE Speech Therapist	0.56		2.3	0.0	1.6	2.6	6.5
WTE Clinical Psychologist	0.28		1.2	0.0	0.8	1.3	3.2
WTE Dietician	0.21		0.9	0.0	0.6	1.0	2.4
Therapy Assistant	0.5		2.1	0.0	1.4	2.3	5.8
Sub Total Rehab			43.8	0.0	30.7	48.4	122.9
Grand Total			103.4	40.6	30.7	48.4	223.1

Workforce requirements	Band	Current Funding		RCP Staffing	Gap	Midpoint Pay per WTE	Current Funding (£)	RCP Staffing (£)	Variance (£)
Consultants	Cons	10	****	17.1	-7.1	130,000	1,300,000	2,223,000	-923,000
Consultant Nurses (new)	B8A	1.0	*	1.0	0.0	58,225	58,225	58,225	0
Stroke Nurses	B7	22.3		22.3	0.0	48,526	1,082,140	1,082,140	0
Band 7 Nurses	B7	3.4	**	3.4	0.0	48,526	164,990	164,990	0
Qualified Nurses	B5	70.8		108.5	-37.7	32,446	2,297,197	3,519,029	-1,221,832
UnQualified Nurses	B3	60.9		45.4	15.5	22,952	1,397,776	1,042,674	355,102
Consultant Therapists (new	B8A				0.0	58,225	0	0	0
WTE Physioterapist	B7	16.3		21.0	-4.7	48,526	790,981	1,020,475	-229,494
WTE OT	B7	15.1		20.0	-4.9	48,526	732,750	972,197	-239,448
WTE Speech Therapist	B7	6.9		10.0	-3.1	48,526	334,833	483,528	-148,696
WTE Clinical Psychologist	B8A	0.1	***	2.0	-1.9	58,225	5,822	116,449	-110,627
WTE Dietician	B7	4.3		3.9	0.4	48,526	208,664	186,966	21,697
Therapy Assistants	B3	15.1		9.2	5.9	22,952	346,575	210,550	136,025
Total Staffing		226.2		263.7	-37.5		8,719,953	11,080,225	-2,360,272

E4/1 Aintree CSC only one other rehab unit @ S&O or Royal

		Aintree				Royal				Southport				
		Stroke	TIA	Other	Total	Stroke *	TIA *	Other *	Total	Stroke *	TIA		Other	Total
Agreed Activity		1,521.0	240.0	391.0	**2,152.0**	-	-	-	-		-		-	-
Repatriate		- 624.0		-	- **624.0**	624.0	-	-	624.0	-			-	
Post >72 hours		897.0	240.0	391.0	1,528.0	624.0	-	-	624.0	-	-		-	-
Expected length of stay														
< 72 hours		3	2.4	3		0	0	0		**0**	0		0	
> 72 hours		3	0	3		0	0	3		**0**	0		0	
Rehab		12.4				12				**0**				
Bed days														
< 72 hours		4,563	576	1,173	6,312	-	-	-	-	-	-		-	-
> 72 hours		4,563	-	1,173	5,736	-	-	-	-	-	-		-	-
Rehab		11,123				7,488								
Beds required	90% occupancy													
< 72 hours		13.9	1.8	3.6	19.2	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
> 72 hours		13.9	0.0	3.6	17.5	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Rehab		33.9			33.9	22.8			22.8					
Total Beds		61.6	1.8	7.1	70.5	22.8	0.0	0.0	22.8	**0.0**	**0.0**		**0.0**	0.0

Bed Numbers		Aintree		Royal		Southport		Broadgreen		Total	
	< 72 hours	19.2		0.0		0.0				19.2	
	> 72 hours	17.5		0.0		0.0				17.5	Beds go up due to Los at Aintree
	Rehab	33.9						22.8		56.7	
	Total	70.5		0.0		0.0		22.8		93.3	

Staffing Levels							
Staff Type	TBA	Staff Numbers					
	Miniumum	Aintree	Royal	Southport	Broadgreen	Total	
<72 hours stroke	Per 5 beds	Aintree	Royal	Southport	Broadgreen	Total	
WTE Nurses (Ratio 80:20) per bed	2.9	55.7	0.0	0.0		55.7	
WTE Physioterapist	1.02	3.9	0.0	0.0		3.9	
WTE OT	0.95	3.7	0.0	0.0		3.7	
WTE Speech Therapist	0.48	1.8	0.0	0.0		1.8	
WTE Clinical Psychologist	0.28	1.1	0.0	0.0		1.1	
WTE Dietician	0.21	0.8	0.0	0.0		0.8	
Therapy Assistant	0.5	1.9	0.0	0.0		1.9	
Sub Total < 72 hours		68.9	0.0	0.0	0.0	68.9	
>72 hours stroke							
WTE Nurses (Ratio 65:30) per bed	1.35	23.6	0.0	0.0	0.0	23.6	
WTE Physioterapist	1.18	4.1	0.0	0.0	0.0	4.1	
WTE OT	1.13	3.9	0.0	0.0	0.0	3.9	
WTE Speech Therapist	0.56	2.0	0.0	0.0	0.0	2.0	
WTE Clinical Psychologist	0.28	1.0	0.0	0.0	0.0	1.0	
WTE Dietician	0.21	0.7	0.0	0.0	0.0	0.7	
Therpay Assistant	0.5	1.7	0.0	0.0	0.0	1.7	
Sub Total > 72 hours		37.1	0.0	0.0	0.0	37.1	
Rehab							
WTE Nurses (Ratio ?:?) per bed	1.35	45.7	0.0	0.0	30.8	76.5	
WTE Physioterapist	1.18	8.0	0.0	0.0	5.4	13.4	
WTE OT	1.13	7.7	0.0	0.0	5.2	12.8	
WTE Speech Therapist	0.56	3.8	0.0	0.0	2.6	6.3	
WTE Clinical Psychologist	0.28	1.9	0.0	0.0	1.3	3.2	
WTE Dietician	0.21	1.4	0.0	0.0	1.0	2.4	
Therpay Assistant	0.5	3.4	0.0	0.0	2.3	5.7	
Sub Total Rehab		71.8	0.0	0.0	48.4	120.2	
Grand Total		177.8	0.0	0.0	48.4	226.2	

Workforce requirements	Band	Current Funding		RCP Staffing	Gap	Midpoint Pay per WTE	Current Funding (£)	RCP Staffing (£)	Variance (£)	
Consultants	Cons	10	****	14.3	-4.3	130,000	1,300,000	1,859,000	-559,000	
Consultant Nurses (new)	B8A	1.0	*	1.0	0.0	58,225	58,225	58,225	0	
Stroke Nurses	B7	20.3		15.3	5.0	48,526	985,087	742,455	242,632	
Band 7 Nurses	B7	3.4	**	3.0	0.4	48,526	164,990	145,579	19,411	
Qualified Nurses	B5	70.8		109.6	-38.8	32,446	2,297,197	3,556,563	-1,259,366	-1259365.919
UnQualified Nurses	B3	60.6		46.2	14.4	22,952	1,390,891	1,059,552	331,339	331338.5112
Consultant Therapists (ne	B8A				0.0	58,225	0	0	0	0
WTE Physioterapist	B7	16.2		21.4	-5.2	48,526	786,129	1,038,997	-252,868	-252868.3513
WTE OT	B7	14.9		20.4	-5.5	48,526	723,044	989,978	-266,933	
WTE Speech Therapist	B7	7.1		10.1	-3.0	48,526	344,538	492,325	-147,787	
WTE Clinical Psychologist	B8A	1.2	***	2.2	-1.0	58,225	69,869	128,094	-58,225	
WTE Dietician	B7	4.1		3.9	0.2	48,526	198,959	190,216	8,742	
Therapy Assistants	B3	15.8		9.3	6.5	22,952	362,641	214,210	148,431	
Total Staffing		225.4		256.8	-31.4		8,681,570	10,475,194	-1,793,624	

C3 Comprehensive Stroke Unit on Aintree site – rehab on S & O and Royal site

	Aintree				Royal				Southport				Grand Total
	Stroke	TIA	Other	Total	Stroke *	TIA *	Other *	Total	Stroke *	TIA	Other	Total	
Agreed Activity	1521	240	391	**2,152**	-	-	-	-			-	-	2,152
Repatriate	-974		-	**974**	624			624	**350**		-	350	
Post >72 hours	547	240	391	**1,178**	624	-	-	624	**350**		-	350	2,152
Expected length of stay													
< 72 hours	3	2.4	3		0	0	0		**0**		0		
> 72 hours	3	0	3		0	0	0		**0**		0		
Rehab	12.4				12				**13.6**				
Bed days													
< 72 hours	4,563	576	1,173	6,312	-	-	-	-	-		-	-	
> 72 hours	3,513	-	1,173	4,686	-	-	-	-	-		-	-	
Rehab	6,783				7,488				**4,760**				
Beds required													
90% occupancy													
< 72 hours	13.9	1.8	3.6	19.2	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
> 72 hours	10.7	0.0	3.6	14.3	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Rehab	20.6			20.6	22.8			22.8	14.5			14.5	
Total Beds	45.2	1.8	7.1	54.1	22.8	0.0	0.0	22.8	**14.5**		**0.0**	14.5	

Bed Numbers	Aintree		Royal		Southport		Broadgreen		Total	
< 72 hours	19.2		0.0		0.0				19.2	1 bed for Tiertary
> 72 hours	14.3		0.0		0.0				14.3	
Rehab	20.6				14.5		22.8		57.9	3 days creates too many beds at aintree
Total	54.1		0.0		14.5		22.8		91.4	

Staffing Levels							
Staff Type	TBA		Staff Numbers				
	Miniumum		Aintree	Royal	Southport	Broadgreen	Total
<72 hours stroke	Per 5 beds	NMSS	Aintree	Royal	Southport	Broadgreen	Total
WTE Nurses (Ratio 80:20) per bed	2.9	2.52	55.7	0.0	0.0		55.7
WTE Physioterapist	1.02		3.9	0.0	0.0		3.9
WTE OT	0.95		3.7	0.0	0.0		3.7
WTE Speech Therapist	0.48		1.8	0.0	0.0		1.8
WTE Clinical Psychologist	0.28		1.1	0.0	0.0		1.1
WTE Dietician	0.21		0.8	0.0	0.0		0.8
Therpay assistants	0.5		1.9	0.0	0.0		1.9
Sub Total < 72 hours			68.9	0.0	0.0	0.0	68.9
>72 hours stroke							
WTE Nurses (Ratio 65:30) per bed	1.35		19.3	0.0	0.0	0.0	19.3
WTE Physioterapist	1.18		3.4	0.0	0.0	0.0	3.4
WTE OT	1.13		3.2	0.0	0.0	0.0	3.2
WTE Speech Therapist	0.56		1.6	0.0	0.0	0.0	1.6
WTE Clinical Psychologist	0.28		0.8	0.0	0.0	0.0	0.8
WTE Dietician	0.21		0.6	0.0	0.0	0.0	0.6
Therapy Assistant	0.5		1.4	0.0	0.0	0.0	1.4
Sub Total > 72 hours			30.3	0.0	0.0	0.0	30.3
Rehab							
WTE Nurses (Ratio ?:?) per bed	1.35		27.9	0.0	19.6	30.8	78.2
WTE Physioterapist	1.18		4.9	0.0	3.4	5.4	13.7
WTE OT	1.13		4.7	0.0	3.3	5.2	13.1
WTE Speech Therapist	0.56		2.3	0.0	1.6	2.6	6.5
WTE Clinical Psychologist	0.28		1.2	0.0	0.8	1.3	3.2
WTE Dietician	0.21		0.9	0.0	0.6	1.0	2.4
Therpay Assistants	0.5		2.1	0.0	1.4	2.3	5.8
Sub Total Rehab			43.8	0.0	30.7	48.4	122.9
Grand Total			143.0	0.0	30.7	48.4	222.1

RCP Standards

Workforce requirements	Band	Current Funding		RCP Staffing	Gap	Midpoint Pay per WTE	Current Funding (£)	RCP Staffing (£)	Variance (£)
Consultants	Cons	10	****	14.0	-4.0	130,000	1,300,000	1,820,000	-520,000
Consultant Nurses	B8A	1.0	*	1.0	0.0	58,225	58,225	58,225	0
Stroke Nurses	B7	22.3		17.3	5.0	48,526	1,082,140	839,508	242,632
Band 7 Nurses	B7	3.4	**	3.0	0.4	48,526	164,990	145,579	19,411
Qualified Nurses	B5	70.8		107.9	-37.1	32,446	2,297,197	3,501,960	-1,204,763
UnQualified Nurses	B3	60.9		45.3	15.6	22,952	1,397,776	1,038,754	359,022
Consultant Therapists (new	B8A				0.0	58,225	0	0	0
WTE Physioterapist	B7	16.3		21.0	-4.7	48,526	790,981	1,017,034	-226,052
WTE OT	B7	15.1		20.0	-4.9	48,526	732,750	968,945	-236,196
WTE Speech Therapist	B7	6.9		9.9	-3.0	48,526	334,833	481,902	-147,069
WTE Clinical Psychologist	B8A	0.1	***	3.3	-3.2	58,225	5,822	192,141	-186,319
WTE Dietician	B7	4.3		3.8	0.5	48,526	208,664	186,308	22,356
Therapy Assistants	B3	15.1		9.1	6.0	22,952	346,575	209,808	136,767
Total Staffing		226.2		255.6	-29.4		8,719,953	10,460,163	-1,740,210

14.15 Appendix 15 North Mersey Stroke Board Terms of Reference

North Mersey Stroke Board

Terms of Reference

Document Control	
Title	North Mersey Stroke Board
Purpose / Target Audience	To document the Terms of Reference of the North Mersey Stroke Board
Governance Route / Approved By	Committee in Common (Liverpool, Knowsley, South Sefton, Southport & Formby CCG's)
Author	Karl McCluskey, Director of Strategy & Outcomes South Sefton & Southport and Formby CCG.
Date Created	6.7.19
Date Approved	July 2019
Version	V0.7
Date Last Amended	05.01.21
Review Date	August 2021

Document History			
Date	**Version**	**Author(s)**	**Description of Amendments**
3.4.19	V0.1	Karl McCluskey, Director of Strategy & Outcomes	Creation of initial draft
6.7.19	V0.2	Karl McCluskey, Director of Strategy & Outcomes	Amended to reflect CIC Proposal
15.7.19	V0.3	Karl McCluskey, Director of Strategy & Outcomes	Amended following NM Stroke Board Meeting and feedback on 11th July 2019
22.7.19	V0.4	Sylvia Jerabek, PA to Karl McCluskey	Membership changes – addition of Cheshire and Merseyside at 2.2 and 4.3
	V0.5	Sylvia Jerabek, PA to Karl McCluskey	Membership changes
27.9.19	V0.6	Sylvia Jerabek, PA to Karl McCluskey	NM Board Change request - Amendment re addition of box for NHSE Spec /Com in the chart at 5.3 page four
05.01.21	V.07	Julie Byrne, PA to Carole Hill	Updated membership

1. Purpose of the Terms of Reference

1.1 This document describes the Terms of Reference of the North Mersey Stroke Board for the footprint served by Liverpool CCG, Knowsley CCG, South Sefton CCG and Southport & Formby CCG.

1.2 This document describes the purpose, responsibilities, membership, authority and governance role of the Board in relation to the review of Stroke Services across North Mersey.

1.3 The Terms of Reference will be kept under review as the Stroke programme of work develops and progresses.

2. Purpose of the North Mersey Stroke Board

2.1 The North Mersey healthcare system and its partners, in collaboration between the local health and care organisations has prioritised a review of Stroke services and the needs of the local population and to redesign how Stroke Care (End to End) will be delivered.

The Stroke Programme aims to develop a strategic case for change for stroke services to ensure the sustainable delivery of those services, by developing clinically led models of care within the context of the wider system. And informed by national best practice and guidelines.

The Stroke Board has been established to: -

- Have overall oversight of the Stroke Programme and portfolio of projects.
- Be assured of the delivery of the outputs from the portfolio of projects
- Assure the outputs of the programme are delivered
- Address any programme risks and issues.
- Ensure that the programme is progressed to PCBC and public consultation.

2.2 The Stroke Board and its members will: -

- Act as ambassadors for the Stroke Programme, including representing at clinical and public events, to the media and to relevant bodies as required.
- Provide programme oversight for the work of the Stroke Programme and contribute to the development of a strategic case for change and supporting business case.
- Provide non-partisan leadership to the programme, ensuring the programme develops robust proposals for system-wide models of end-to-end care and for making recommendations to the Joint Committee and Committee in Common, CCG Governing Bodies and respective Trust Boards.
- Manage the interdependencies and resolve any conflicts between portfolios of projects.
- Ensure that the needs of patients and communities are understood.
- Seek external clinical and professional advice where specialist or independent review is required.
- Provide leadership and oversight of the emerging and final proposals for service changes.

- Ensure alignment with related programmes across the Cheshire and Merseyside Health System.
- Disseminate developments in the Stroke Programme to the Cheshire & Merseyside Healthcare Partnership so that these can be shared.

3. Responsibilities

3.1 Lead the development of implementable plans for a sustainable (clinical, finance, workforce) stroke service across North Mersey.

3.2 Establish the required governance to enable decision-making in a manner that follows the necessary Commissioning and NHS England approval routes.

3.3 Review and endorse the outputs developed and produced by the Project Team and Clinical Reference Group

3.4 Review the plans for the programme and direct and inform the content of these plans as appropriate.

3.5 Manage conflicts and interdependencies between programme workstreams in order to create a cohesive plan for services currently provided to the population of North Mersey.

3.6 Prioritise and recommend options for the future configuration of services.

3.7 Ensure the outputs are focused upon "place-based" population needs for access to appropriate services rather than organisational needs.

4. Portfolio of Projects

4.1 The Stroke Board will provide oversight of the programme projects that are tasked with the design and delivery of the programme priorities:

- **Hyperacute Services**:
  - Clinically led model of care
  - Formalised network agreements with partner organisations
  - Agreement of financial frameworks, engagement and if required, consultation processes
- **End to End Services**
  - Joint commissioning view of future of community provision e.g., ESD and standardisation of services to be commissioned.
  - Integration of acute and community provision model of care agreed irrespective of organisational structures.
- **New models of care**
  - Clinically led models of care to address the Case for Change

4.2 The Stroke Board will regularly review the membership, structure and plans of the workstream sub-groups to ensure that they remain relevant to the objectives of the Programme, making changes as required.

4.3 The Stroke Board will function to align, co-ordinate and unify the Stroke work of the Cheshire and Merseyside Health and Care Partnership. Proposals and recommendations will also reflect, and be based upon, the plans emerging from the wider Cheshire & Merseyside Acute Sustainability Programme and any other co-dependent programmes.

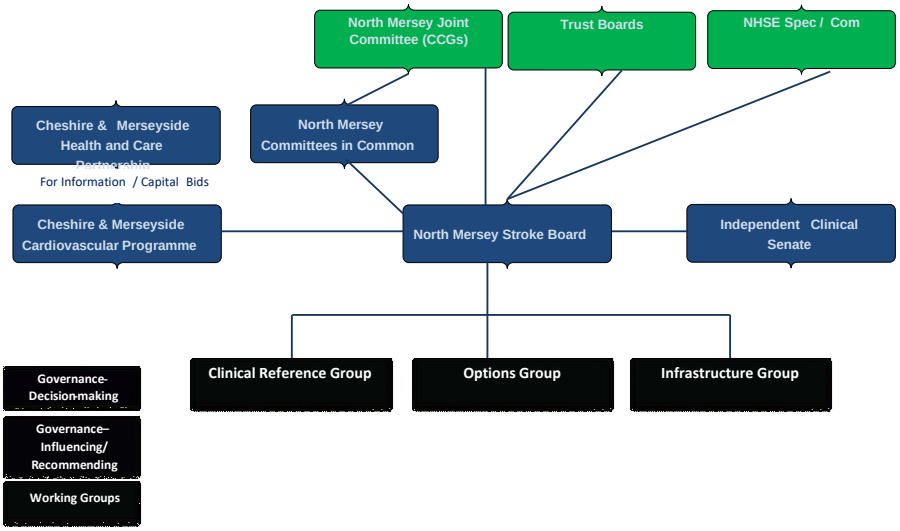
5. Governance

5.1. The Board is accountable to the North Mersey Joint CCG Committee and Committee in Common,
CCG Governing Bodies and respective Trust Boards.

5.2. The Board will report on a monthly basis to the Joint Committee and Committee in Common through the SRO.

5.3. The Governance structure within which the Stroke Board will operate is set out below.

STROKE GOVERNANCE STRUCTURE



5.4. A risk register will be maintained by the Board.

6. Co-dependencies

6.1 The Programme and the workstream sub-groups will need to design, model, test and assure proposals for service reconfiguration that take into consideration the impact of and on a number of other transformation programmes as appropriate.

7. Accountability and Authority

7.1. The Board is authorised to instigate any activity within its Terms of Reference.

7.2. Members of the Board are required to participate as representatives of health, care and wellbeing services for the populations of North Mersey.

7.3. Members of the Board will act as ambassadors of the Programme within their own organisations enabling support for any approvals required and ensuring barriers to change are effectively mitigated.

8. Membership of the North Mersey Stroke Board

8.1 This is a strategically important function. Senior representatives will be sought as members of the Board and adequate representation from the required specialties and professions will be sought.

8.2 The Board reserves the authority to amend the membership of the Group if required, to ensure that it can discharge its responsibilities adequately.

8.3 Members of the Board are required to attend at least 9 meetings per annum and in the event of a member not being able to attend a meeting, feedback on key agenda items will be provided by the member prior to the meeting.

8.4 The Board is proposed to comprise the following members: -

Name	Organisation
Carole Hill (Chair)	Director of Strategy, Communications and Integration, Liverpool CCG
Jan Ledward (SRO)	Stroke SRO C&M HCP, Liverpool CCG
Nik Sharma	Clinical Lead Strategic, NWCSCN &Divisional Medical Director, LUHFT
Patricia O Keefe	Integrated Stroke Delivery Network Programme Manager, Northwest Coast Clinical Network, NHSIE
Billie Dodd	Deputy Director of Commissioning & Delivery, Southport & Formby CCG, Sefton CCG
Mark Carmichael	Assistant Director of Operations for Urgent Care, Southport & Ormskirk NHS Trust
Ian Jones	Director of Finance and Information, LUHFT
John Collins	Consultant Paramedic, NWAS
Jennifer Gardner	Associate Director, Stroke Association (Northwest)
Jan Ross	Director of Operations and Strategy, WCNN
Beth Weston	Chief Operating Officer, Aintree University Hospital
Patrick McDonald	Clinical Lead, Clinical Reference Group, Southport & Ormskirk NHS Trust
Stephen Astles	Head of Commissioning - Knowsley CCG
Joanne Furlong	Service Redesign Manager, West Lancashire CCG
Helen Murphy	Assistant Director of Integration, LUHFT
Neil Holland	Deputy Chief Operating Officer, LUHFT
Roz Jones	Acute Transformation Lead, Specialised Commissioning
Paula Guest	Head of Planning and Delivery, Liverpool CCG
Shaun Curran	Director of Operations, Specialist Medicine, LUHFT
Nina Russell	Director of Strategy, Southport and Ormskirk NHS Trust

8.5. The attendance of additional Clinical and Local Authority representatives will be requested as and when required.

9. Quorum

9.1. The Board will not be a decision-making forum. It will make recommendations to Joint Committee and Committee in Common, CCG Governing Bodies and respective Trust Boards.

9.2. The Board shall be considered quorate when one representative or deputy is present from each organisation.

10. Meetings

10.1. It is expected that the Programme Board will meet monthly initially.

10.2. The meetings will be run by the Chair. In the event of the Chair's absence the meeting shall be chaired by the Vice Chair.

10.3. The Chair may at any time convene extraordinary meetings to consider business that requires urgent attention or when required to manage significant risks.

10.4. Representatives from other organisations may be invited to attend meetings to speak on specific matters.

10.5. Access to meetings may be granted to other professional colleagues with the permission of the Chair.

11. Agendas and Minutes

11.1. Supporting papers for agenda items are required to be with the meeting Administrator 5 working days prior to the meeting for agreement and consultation with the Chair.

11.2. The agenda and supporting papers will be circulated 3 working days prior to the meeting to all members of the Delivery Group.

11.3. Minutes of the meetings will be taken by administration support and distributed to the members of the Board within 7 working days after the meeting.

12. Declarations of Interests

12.1. Individuals contracted to work with or appointed to the Programme or workstream sub-groups will comply with the necessary standard of business conduct and policy including the requirements for declaring conflicts of interest.

12.2. "Declaration of Interests" will be a standing item on all agendas and any declarations will be recorded within the minutes of that meeting.

13. Confidentiality and Information Governance

13.1. All papers for the North Mersey Stroke Board Group should be considered as confidential.

13.2. Members of the Board may be asked to sign a confidentiality agreement.

14.16 Appendix 16 Clinical Reference Group Terms of Reference

North Mersey Stroke Review – Clinical Reference Group

Terms of Reference

Document Control	
Title	North Mersey Stroke Review – Clinical Reference Group
Purpose / Target Audience	To document the Terms of Reference of the North Mersey Stroke Review Clinical Reference Group
Governance Route / Approved By	North Mersey Stroke Board
Author	Jeff Johnston, Associate Director Merger Team
Date Create	13.7.19
Date Approved	
Version	V0.2
Date Last Amended	23.2.21
Review Date	23.8.21

Document History			
Date	**Version**	**Author(s)**	**Description of Amendments**
16.4.19	V0.1	Jeff Johnston, Associate Director Merger Team	Creation of initial draft
25.7.19	V0.2	Jeff Johnston, Associate Director Merger Team	Amended after feedback from informal meeting CRG
23.2.21	V0.3	Trish O'Keefe Programme Lead C&M ISDN	Amended membership Amended purpose of group

1. Purpose of the Terms of Reference

1.1 This document describes the purpose, responsibilities, membership, authority and governance role of the Clinical Reference Group in relation to the review of Stroke Services across North Mersey.

1.2 The Terms of Reference will be kept under review as the Stroke programme of work develops and progresses.

2. Purpose of the North Mersey Stroke Clinical Reference Group

2.1 The North Mersey healthcare system and its partners, in collaboration between the local health and care organisations has prioritised a review of Stroke services and the needs of the local population and to redesign how stroke Care will be delivered.

The Stroke Programme aims to develop a strategic case for change for stroke services to ensure the sustainable delivery of those services, by developing clinically led models of care within the context of the wider system. And informed by national best practice and guidelines.

The Clinical Reference Group will provide the clinical expertise to the Programme team to enable the production of a Pre-Consultation Business Case for Acute Stroke Services, which will consider all possible options, using robust methodology which can provide sufficient assurance to Commissioners and NHSE.

Commissioners are required to follow the structured assurance process when conducting service reconfiguration, as set out in the NHSE document; *"Planning, assuring and delivering service change for patients: A good practice guide for commissioners on the NHS England assurance process for major service changes and reconfigurations"* 250. The CRG will follow this process in all of its work.

The North Mersey Stroke Clinical Reference Group will provide support to the programme of work by: -

- Reviewing the work completed to date in terms of the Outline Service Change Proposal;
- Establish a robust case for change
- Conduct a robust options appraisal process for the future delivery of Stroke services;
- Ensure that all stakeholders are engaged in the development of options and the PCBC;
- Make recommendations for the future delivery of these services; and
- Produce a pre-consultation business case.
- Review activity and provide oversight to the North Mersey Integrated Stroke Community CRG.

2.2 The North Mersey Stroke Clinical Reference Group and its members will: -

- Act as ambassadors for the Stroke Programme, including representing at clinical and public events, and to relevant bodies as required.
- Provide programme oversight for the work of the Stroke Programme and provide clinical expertise to the development of a strategic case for change and supporting business case.
- Provide non-partisan leadership to the programme, ensuring the programme develops robust proposals for system-wide models of end-to-end care and for making recommendations to the North Mersey Stroke Board.
- Seek external clinical and professional advice where specialist or independent review is required; clinical senate.

3. Responsibilities

3.1 Report into the North Mersey Stroke Board

3.2 Provide clinical expertise to the review of the outline service change proposal

3.3 Design and support workshops generated from the options group

3.4 Ensure the work stream work is completed to agreed timeframes.

3.5 Scrutinise the work and ensure the clinical component is robust.

3.6 Participate in the options development and appraisal process.

3.7 Ensure the outputs are focused upon "place-based" population needs for access to appropriate services rather than organisational needs.

3.8 Make recommendations to the North Mersey Board on the future delivery of stroke services

4. Governance

4.1 The Group is accountable to the North Mersey Stroke Board.

4.2 The Board will report to the North Mersey Stroke Board after each meeting.

4.3 The Governance structure within which the Group will operate is set out below.

4.4 A risk register will be maintained by the Group.

5. Co-dependencies

5.1 The Clinical Reference Group will need to design, model, test and assure proposals for service reconfiguration that take into consideration the impact of and on a number of other services and transformation programmes as appropriate.

6. Accountability and Authority

6.1 The Group is authorised to instigate any activity within its Terms of Reference.

7. Membership of the North Mersey Clinical Reference Group

7.1 This is an important function. Senior representatives will be sought as members of the Group and adequate representation from the required professions will be sought.

7.2 The Group reserves the authority to amend the membership of the Group if required, to ensure that it can discharge its responsibilities adequately.

7.3 Members of the Group are required to attend at **least 9 meetings** per annum and in the event of a member not being able to attend a meeting, feedback on key agenda items will be provided by the member prior to the meeting.

7.4 The Board is proposed to comprise the following members: -

Name	Organisation
Chair	Rotating Clinical Lead, North Mersey
Claire Cullen	Care Group Director, LUHFT
Fatima Hussain	Clinical Lead, LUHFT
Patrick McDonald	Clinical Lead, Southport and Ormskirk NHS Trust
Martin Wilson	Clinical Lead, Walton Centre NHS Trust
Patricia O'Keefe	Programme Lead, C&M ISDN
Paula Guest	Programme Manager, Liverpool CCG
Rachel Lucidarme	Lead Therapist, LUHFT
Steph Clay	Lead Therapist, LUHFT
Debbie Martin	Lead Nurse, LUHFT
Helen Murphy	Assistant Director of Integration, LUHFT
Alan Burke	Senior Project Manager, LUHFT
Nik Sharma	Clinical Lead C&M ISDN
Mark Griffiths	Clinical Psychologist, LHCH

8. Quorum

8.1 The Group will not be a decision-making forum. It will make recommendations to North Mersey Stroke Board.

8.2 The Group shall be considered quorate when one representative or deputy is present from each professional group.

9. Meetings

9.1 It is expected that the Group will meet once to agree the scope of work and leaders and then twice more to monitor progress and finalise information.

9.2 The meetings will be run by the Chair. In the event of the Chair's absence the meeting shall be chaired by the Vice Chair (alternate clinical lead).

9.3 The Chair may at any time convene extraordinary meetings to consider business that requires urgent attention or when required to manage significant risks.

9.4 Representatives from other organisations may be invited to attend meetings to speak on specific matters.

9.5 Access to meetings may be granted to other professional colleagues with the permission of the Chair.

10. Agendas and Minutes

10.1 Supporting papers for agenda items are required to be with the meeting Administrator 5 working days prior to the meeting for agreement and consultation with the Chair.

10.2 The agenda and supporting papers will be circulated 3 working days prior to the meeting to all members of the Clinical Reference Group.

10.3 Minutes of the meetings will be taken by administration support from ISDN and distributed to the members of the Board within 7 working days after the meeting.

11. Declarations of Interests

11.1 Individuals contracted to work with or appointed to the workstream sub-groups will comply with the necessary standard of business conduct and policy including the requirements for declaring conflicts of interest.

11.2 "Declaration of Interests" will be a standing item on all agendas and any declarations will be recorded within the minutes of that meeting.

12. Confidentiality and Information Governance

12.1 All papers for the Group should be considered as confidential.

12.2 Members of the Group may be asked to sign a confidentiality agreement.

14.17 Appendix 17 Long List of Options Appraisal

Scoring Table - Long List of options																						
	Options																					
	Current Configuration		Consolidate three units to two HASU's				Create CSc and 2 Rebab units				Create one CSC				Create one CSC and one Rebab						3 CSC's
Criteria	A1	A2	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4	E1	E2	E3	E4	E5	E6	F1
Patient Outcomes & experience	-4	0	4	-3	1	-6	-1	-8	6	-2	-3	-4	-6	-8	-1	-4	0	3	-9	-9	2
Clinical Sustainability	-7	-0.5	-1	-5.5	0	-7	-2	-6	6	-6	-2	-3	-8	-9	4	1	1	4	-9	-9	-8
Alignment and Strategic fit	-12	-6.5	-3	-5	-1	-8	-2	-6	6	-7	-4	-5	-5	-6	0	-5	-1	4	-9	-9	-3
Deliverability	-8	-3	-5	-9	-3	-8	-4	-9	5	-7	-9	-9	-8	-9	1	-9	-5	0	-9	-9	-9
Execution and Risk	-9	-5.5	-1	-6	-1	-8	-4	-8	2	-5	-3	-4	-8	-9	0	-5	-1	4	-9	-9	2
Value for Money	-8	-2	-2	-5	2	-7	-3	-8	3	-6	-5	-5	-8	-9	3	-2	-2	3	-6	-6	-9
Grand Total	-48	-17.5	-8	-33.5	-2	-44	-16	-45	28	-33	-26	-30	-43	-50	7	-24	-8	18	-51	-51	-25
Ranked	7	6	5		4				1						3			2			

14.18 Appendix 18 Short list scoring for preferred option

North Mersey Stroke Short List Appraisal	A1	A2	B1	B3	C3	E4	E1
	Do Nothing	Do Nothing Enhancements	Merge Aintree/ Royal HASU's	Merge Aintree Southport HASU's	Merge all HASU's 3 rehabs	Merge all HASU's 2 rehab southport	Merge all HASU's 2 rehab Broadgreen
Patient Outcomes and Experience	-8	2	0.5	4	17	8	7
Clinical Sustainability	-13	-4	-3	0	16	11	8
Value for Money	-11	-11	0	0	16	-2	-2
Strategic Fit	-15	-12	-4	-3	18	11	11
Deliverability	1	-2	-9	-8	-1	-12	-12
Execution and Risk	-9	-6	1	2	15	7	7
Total	-55	-33	-14.5	-5	81	23	19
Ranking	**7**	**6**	**5**	**4**	**1**	**2**	**3**

14.19 RCP and North Mersey Staffing Standards

Staffing Standards - RCP and North Mersey Standard			
<72 hours stroke	**Per 5 beds**		
	RCP	NMS	
WTE Nurses per bed	2.9	2.52	*
WTE Physioterapist	1.02	1.02	
WTE OT	0.95	0.95	
WTE Speech Therapist	0.48	0.48	
WTE Clinical Psychologist	0.28		***
WTE Dietician	0.21	0.21	
Therapy Assistants	0.5	0.5	
Sub Total < 72 hours			
>72 hours stroke			
WTE Nurses per bed	1.35	1.35	**
WTE Physioterapist	1.18	1.18	
WTE OT	1.13	1.13	
WTE Speech Therapist	0.56	0.56	
WTE Clinical Psychologist	0.28		***
WTE Dietician	0.21	0.21	
Therapy Assistants	0.5	0.5	
Sub Total > 72 hours			
Notes			
Nurses per bed			
Therapist per 5 beds			
***Psychologists region wide assessment			
* RCP split Qualified to Un Qualified 80:20			
* NMSS split Qualified to Un Qualified 80:20			
**RCP split Qualified to Un Qualified 65:35			
** NMSS split Qualified to Un Qualified 47:53			