Manchester Health and Wellbeing Board
Report for Resolution

Report to: Health and Wellbeing Board – 27 April 2016

Subject: Single Hospital Service Review

Report of: Sir Jonathan Michael, Independent Director, Single Hospital Service Review

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Summary

The first stage of the Single Hospital Service Review has been completed. A report outlining this work, with a covering letter from Sir Jonathan Michael, is attached for the consideration of the Manchester Health and Wellbeing Board.

Feedback, from the Boards of Central Manchester University Hospitals NHS Foundation Trust (CMFT), Pennine Acute NHS Trust (PAT) and University Hospital of South Manchester NHS Foundation Trust (UHSM) is also attached for consideration.

Recommendations

The Board is asked to:

- Endorse the First Stage Report and accept the recommendations provided in section 6.1 of the report (Page 74).
- Consider the feedback provided by the Boards of CMFT (Page 417), PAT (Page 418) and UHSM (Page 422).
- Recommend that the Review progresses to Stage Two and considers the governance and organisational arrangements that might best deliver these benefits.

Board Priority(s) Addressed:

Health and Wellbeing Strategy priority	Summary of contribution to the strategy
Getting the youngest people in our communities off to the best start	The Manchester Locality Plan aims to support the health and Wellbeing Strategy by identifying the most effective and sustainable way to improve health and social care of Manchester people
Educating, informing and involving the community in improving their own health and wellbeing	
Moving more health provision into the community	
Providing the best treatment we can to people in the right place at the right time	

Lead board member: Lorraine Butcher, Director of Health and Social Care

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Background documents (available for public inspection):

The following documents disclose important facts on which the report is based and have been relied upon in preparing the report. Copies of the background documents are available up to 4 years after the date of the meeting. If you would like a copy please contact one of the contact officers above.

- The Manchester Locality Plan
- Single Hospital Service Review Terms of Reference

1.0 Introduction

The Single Hospital Service Review commenced in January 2016. The first stage of this review, which identifies the benefits of adopting a Single Service Model, has been completed and is ready for consideration by the Manchester Health and Wellbeing Board. The second phase of the review is due to complete in June 2016.

2.0 Background

The proposal to establish a Single Hospital Service for the City of Manchester forms one of the three pillars of the Manchester Locality Plan and provides opportunities to improve health outcomes for the city population through:

- A partnership between the three current acute hospital providers PAT, CMFT and UHSM
- Development of single service models for a range of specific services
- A clear Manchester focus
- Standard operating procedures/patient pathways
- Reduced duplication/triplication and elimination of service gaps or weaknesses
- Improved opportunities to attract staff with specialist skills
- Improved use of estate
- Support services
- Back office functions
- Information management and technology, including electronic patient record systems
- Improved planning
- Opportunities to enhance patient care through research and innovation

The work will take account of Healthier Together and the North East Sector Transformation Programme. It will also recognise the impact that a Single Hospital Service might have on neighbouring populations (e.g. Trafford).

The Terms of Reference for the review outlined a two phase approach.

Phase 1 – Benefits Assessment
Phase 2 – Governance and Organisational Arrangements

The first phase of the review is due to complete on the 27th April 2016; phase two is scheduled for completion by 8th June 2016.

3.0 Progress

Since the last meeting of the Manchester Health and Wellbeing Board, good progress has been made in relation to the development of a potential single hospital service for the City of Manchester:

- The first stage of the Review has been completed and a report finalised for consideration by the Manchester Health and Wellbeing Board.
- A draft version of this report has been considered by each Board of the three current acute hospital providers and feedback provided.

4.0 Next Steps

Additional work is required to:

- Commence the second stage of the review

5.0 Conclusion

The Independent Review Director is pleased to present the Single Hospital Service Review Stage One Report for consideration by the Manchester Health and Wellbeing Board. The Board is also requested to consider the feedback provided by the Board of each of the acute hosptial providers.

City of Manchester Single Hospital Service Review

Sir Richard Leese
Chairman
Manchester Health and Wellbeing Board
19th April 2016

Dear Sir Richard

Tackling Inequalities in Hospital Services in Manchester

In January 2016 I was appointed to undertake an independent review of the potential benefits and mechanisms for the development of a single hospital service for the City of Manchester. This review was commissioned by the Manchester Health and Wellbeing Board and was designed to take place in two stages. The first part of the review sought to consider the potential benefits of developing a single hospital service, the second will provide an appraisal of the most appropriate and effective governance arrangements to deliver the identified benefits.

I'm very pleased to say that the first stage of the review has been completed and I enclose a copy of this report for formal consideration by the Manchester Health and Wellbeing Board on the 27th April 2016. It is important to note that, although a number of individuals and organisations have contributed to the review process, the opinions expressed and the recommendations made are my sole responsibility.

The hospitals whose services I was asked to review are all different yet share much in common and play an important role in the Health Services of the city, across Greater Manchester and the Region.

Wythenshawe Hospital, run by University Hospitals of South Manchester NHS Foundation Trust is a major University Teaching Hospital with important and highly regarded regional and indeed national specialist clinical services and associated academic activities, alongside a large and important general hospital service providing care to the population of South Manchester and beyond.

The Manchester Royal Infirmary and the associated hospitals run by Central Manchester University Hospitals NHS Foundation Trust form one of the country's major academic health centres in close partnership with the University of Manchester. They provide a range of specialist clinical services together with general hospital services to the population of Manchester and beyond.

North Manchester General Hospital is a large district General Hospital run by the Pennine Acute Hospitals NHS Trust that also runs services in Oldham, Bury and Rochdale. Although predominately providing general hospital services to the relatively socio-economically deprived population of North Manchester it does also provide specialist services to Greater Manchester and beyond, most notably in Infectious Diseases.

However much I respect the organisations and individuals providing care for patients from these hospitals, I do not believe that existing arrangement for hospital services in the City of Manchester serves the best interests of the population. The three distinct acute hospital complexes in the City are each run by separate NHS organisations. The different hospitals have different mixes of specialist and general services, different priorities and different ways of working. This has led to duplication, indeed triplication in some services, variations in clinical outcomes, variation in patient experience and access to services. There is

inefficiency and waste due to duplication and all hospitals are experiencing recruitment difficulties in shortage clinical staff groups. These difficulties and the poor infrastructure on some sites impact the working experience for staff. This variability between services is illustrated in the Appendices to my report and applies to a range of measures including clinical outcome data, length of stay, the number of consultants in each service, audit results, access to specialist opinion and opportunity to participate in clinical research trials. There is variation in mortality in different services, as measured by the summary hospital-level mortality index (SHMI) which is designed to account for variation in clinical complexity of cases. The average hospital stay, adjusted for case mix complexity for children admitted to hospital varies from just on the national average to 50% over the average. Case mix adjusted lengths of hospital stay for patients with heart conditions vary from 13% below to 34% above the national average in the different hospitals in the city.

To put it simply, patients with the same severity of the same condition are less likely to survive or more likely to stay in hospital for an unduly long time depending on which part of the hospital system in Manchester they first attend.

In my opinion, it is unacceptable that patients, who live within 10 miles of each other, potentially receive a different type, quality and experience of services, depending on where they live and the part of the system that they first attend. This is not to suggest that all hospital services are sub-standard; each hospital site in Manchester is able to point to examples where outstanding care is being delivered and I have been extremely impressed by the number of high quality services that there are within the city. However, current organisational and geographical boundaries have prevented the type of integrated and 'joined-up' working that is needed to ensure patients always receive the best level of care for their condition, regardless of the hospital they attend.

This variation in services must also be considered in the context of other challenges that are facing the city. The health outcomes for the population of the City of Manchester are poor, in many cases the worst in England; all hospital organisations are facing significant workforce issues and, in some areas, are relying on expensive temporary staff to provide services because of difficulties recruiting to certain roles. Financial pressures across health organisations in Manchester are evident and significant. There is a growing acceptance that, if nothing changes, these will only worsen over time. Using existing funding more efficiently will be essential in order to balance future demand with resources.

I believe that introducing an integrated Single Hospital Service across the City of Manchester will address the variation in services that is currently experienced and will also help to address some of the other challenges that Manchester's health service is facing. By working together the three hospitals in Manchester can ensure that *all* patients are able to access high quality, efficiently run services that best meet their needs. Only by working together can the hospitals ensure that all services are raised to the standard of the best.

Improving co-operation between the hospital sites would also mean that the local workforce would be able to consistently access the same opportunities for training/education. Working together with the Universities in Manchester, integrated hospital services would assist Manchester in establishing its rightful place as a major academic health centre providing the best in clinical care, education and research opportunities. The current competition that exists between hospitals when recruiting staff would be removed and, together, the hospitals would be able to offer a working environment that enhances Manchester's reputation as a place to work and to be trained.

My report details the recommendations that I would like the Health and Wellbeing Board to consider. In my opinion a key factor is the pace of change, which I believe is needed to address the current let alone future threats. I know that the fragmentation of care and

variations that I have identified have been discussed before within the City. Although some progress has been made I believe the challenges facing health and social care services within Manchester are significant, they are pressing and should be addressed as a matter of urgency. Enabling this change will require a significant realignment of the priorities and processes of the Manchester hospitals, and I do not believe we can expect the existing arrangements to achieve this.

Manchester has set an ambitious plan for the future of its health and social care services. I fully support the aim to develop a single hospital service that sits alongside the development of a single commissioning voice and a single Local Care Organisation providing primary, community and social care services across the city. These significant and challenging changes really need to be implemented together to be effective.

I have met a range of enthusiastic and dedicated individuals who work across a variety of organisations and I have no doubt that, by working together, you have the potential to develop healthcare services that are regarded as amongst the best in the country.

I look forward to discussing the content of my Stage One report with the Health and Wellbeing Board on the 27th April.

Yours sincerely

Sir Jonathan Michael FRCP
Independent Review Director,
City of Manchester Single Hospital Service Review

Manchester Single Hospital Service Review

Stage One Report

April 2016

Sir Jonathan Michael

Independent Review Director

Acknowledgments

This report would not have been possible without the support of a range of individuals from across the health and social care systems in Manchester and the surrounding areas.

I would like to express my thanks to all those who have been involved in the process of completing stage one of the review. In particular I would like to acknowledge the contribution of the clinical working group members who enthusiastically welcomed the challenge of developing city-wide single service models for their specialties and fully acknowledged the advantages of collaborative working across the city.

I am grateful for the commitment of the three Trusts involved in the work and the support that I have received from the Trust Chairmen, Chief Executives and Executive Teams.

I have been ably supported by an analytical team from McKinsey and Co and could not have completed the task without the support of Alison Olivant, who was seconded from her post at the University Hospital of South Manchester NHS Foundation Trust to act as Project Manager.

I have been extremely impressed with the dedication and ambition of staff that I have met from across the health and social care sector in Manchester. I have no doubt that together they can realise the goal of providing world-class healthcare services within their city.

Whilst I could not have delivered the report without the assistance and enthusiastic engagement of so many people from across Manchester, in line with the Terms of Reference for the review, the opinions expressed and the recommendations made in the report are my responsibility alone.

Sir Jonathan Michael, Independent Review Director

18th April 2016

Contents

Executive Summary

This is Stage One Report of the Manchester Single Hospital Service Review. It identifies a range of benefits that would result from the hospitals in Manchester providing services in an integrated "single service" model. The second stage of the Single Hospital Service Review will consider the governance/organisational arrangements that could best deliver these benefits.

The Single Hospital Service Review was commissioned by the Manchester Health and Wellbeing Board at the end of 2015. The Manchester Locality Plan was developed as a response to the devolution of health and social care budgets to Greater Manchester from central government. It outlines the need for a Single Hospital Service model to end the culture of competition between hospital services and to focus on a collaborative approach to tackle some of the challenges that health and social care services in Manchester are facing. The review was asked to explore integrated working of services provided by University Hospital of South Manchester NHS Foundation Trust [UHSM], Central Manchester University Hospitals NHS Foundation Trust [CMFT] and those provided by the Pennine Acute Hospitals NHS Trust [PAT] from its site at the North Manchester General Hospital. Whilst the Christie NHS Foundation Trust is located in the City of Manchester its services were not subject to the review, but given the importance of cancer services to the population and the range of cancer related activities undertaken in the three Trusts that were involved in the review, reference will be made to the provision of cancer services to the City.

The proposal for a Single Hospital Service sits alongside plans for integrated commissioning of health and social care services and a Local Care Organisation to provide integrated community and primary care across the city. Separately, mental health services to the city are under discussion in the context of a review of mental health services across Greater Manchester.

The challenges faced by the health and social care system across Manchester are significant. Population health outcomes in Manchester are poor, in some cases the worst in England. Care across the city is fragmented resulting in unacceptable variations in the provision and quality of care provided. Although duplication (and even triplication) exists across some clinical services, in other specialties patients still struggle to access healthcare that is appropriate to their need. All services are facing workforce challenges and the national imperative to move to more even service provision across all seven days of the week will only exacerbate the staffing and financial pressures. Operational performance across all three Trusts is sub-optimal, as demand for hospital services increases in the face of staffing and financial constraints. All three Trusts covered by the review are predicting financial deficits for 2016/17 and the projected deficit for healthcare services in Manchester, if nothing changes, is a deficit of at least £163m by 2021.

There is however a great deal of the healthcare system about which the city should rightly be proud. Each hospital site can point to individual clinical services that provide exemplary care to patients, some of which have national and international reputations. The city houses one of the largest and most highly regarded universities in the UK and there are huge numbers of talented and dedicated individuals providing high quality

healthcare to patients across the conurbation. All now recognise that collaboration and integration is the only way that these areas of outstanding care can be enhanced and replicated elsewhere so that the population of Manchester consistently has access to the best quality care at the right time and in the right place.

This review was started in January 2016. The Review Director and the review itself have had the full support of each of the three Acute Trusts: Central Manchester University Hospitals NHS Foundation Trust (CMFT), Pennine Acute Hospitals NHS Trust (PAT) and University Hospital of South Manchester NHS Foundation Trust (UHSM). The review has sought to ensure that all key stakeholders have had the chance to contribute including a large number of clinicians, managers, patient groups, commissioners, public officers and elected representatives. Engagement has been achieved with over 140 individuals through a variety of methods including 1:1 meetings, workshops, written correspondence and group discussions.

The review was tasked with identifying the potential benefits of operating hospital services in an integrated manner across the city. Early in the review process it became evident that time and resource constraints would not permit a detailed analysis and illustration of benefits to be undertaken for every clinical specialty. Instead eight 'exemplar' services were selected, representing a variety of different service types ranging from those requiring the full panoply of hospital based infrastructure, to those that were more often delivered in an outpatient and ambulatory manner. These service areas comprised: Cardiac Services, Respiratory Services, Radiology, Infectious Diseases, Rheumatology, Critical Care, Maternity Services and Secondary Paediatrics. A clinical working group, comprising around nine senior clinicians from across the three hospital Trusts, was established for each exemplar service. Where possible these groups were joined by local GPs/clinical commissioners. Together these clinicians were tasked with developing high-level single service models and identifying the potential benefits of working in this way. Full analytical and facilitation support, provided by consultants from McKinsey & Co, was given to these groups to help with this process. These groups came together in person, on at least three occasions, to progress this work. All recognised that the term 'single service' could be used to describe a spectrum of service delivery models that is likely to vary between and even within a particular service area. For some areas a single service model might comprise standardised pathways/protocols in others it might involve a hub and network model, differentiated sites or even delivering services to patients from across the city from a single site.

Benefits of single service models were assessed in a range of different areas. To extrapolate the benefits of a Single Hospital Service this work was added to the views of a range of other individuals who had relevant contributions including colleagues from research, training, finance and back office services. A summary of the benefits of a Single Hospital Service, as identified by this review, are shown below in Table (1).

Table (1): Summary of Single Service Hospital Benefits

Category	Benefits
Quality of Care	• Reduce variation in the effectiveness of care • Reduce variation in the safety of care • Develop appropriately specialised clinicians and reduce variation in the access to specialist care, equipment and technologies
Patient Experience	• Provide more co-ordinated care across the city (and reduce fragmentation) • Enhance the work of the Local Care Organisation to transfer care closer to home • Improve patient access and choice • Improve access to services and reduce duplication (and thus unnecessary trips to hospital)
Workforce	• Improve the recruitment and retention of a high quality and appropriately skilled workforce • Support the requirement to provide a seven day service • Reduce the reliance on bank and locum/agency staff • Support teams to meet the needs of current and future demand for services
Financial and operational efficiency	• Reduce costs in supplies and services (including drug costs) • Reduce staff costs through improvement in productivity and changes in skill mix • Limit future capital outlay and ongoing fixed costs assets • Improve operational performance
Research and Innovation	• Increase research activity and income • Create a single point of entry to all clinical trials thereby improving access • Ensure new research and best practice guidelines are implemented consistently to improve services
Education and Training	• Optimise curriculum delivery, clinical exposure and reduce the variability in the student and trainee experience • Widen student and trainee exposure to different clinical environments • Enhance the reputation of Manchester as a place to come to be trained and to work

Recommendations

1) Given the nature and scale of the benefits that have been identified across the "exemplar" clinical specialties, I recommend that the Trusts continue to progress discussions on the potential shape of service delivery models for other specialties and to seek opportunities to realise early benefits from the work done by the "exemplar specialties". The second stage of the review will recommend the governance and organisational arrangements that are most likely to deliver these benefits.

2) The Manchester Health and Wellbeing Board are asked to endorse the findings of this first stage report and accept the recommendations in section 6.1.

Sir Jonathan Michael

18th April 2016

7

1.0 Introduction and Background

1.1 Introduction

In 2015 the Manchester Health and Social Care Transformation Oversight Group, working on behalf of the Manchester Health and Wellbeing Board, developed a proposal for the establishment of a 'single hospital service' for Manchester. This proposal is consistent with the aspiration of commissioners within the City of Manchester, and supports the delivery and development of the Greater Manchester Devolution Plan.

The proposal for a single hospital service within Manchester seeks to create a mechanism for closer collaborative working to deliver consistent and complementary arrangements between the three acute hospital sites within the City of Manchester. This includes hospital services provided by:

- Central Manchester University Hospitals NHS Foundation Trust (CMFT)[1]
- Pennine Acute Hospitals NHS Trust (PAT) on the North Manchester General Hospital site (NMGH)[2]
- University Hospital of South Manchester NHS Foundation Trust (UHSM)[3]

The geography of these hospital sites and their relative location in Greater Manchester is shown below in Figure (a).

Figure (a) : Map of boroughs and Hospital Sites in Greater Manchester

Each hospital site in Manchester provides a range of core District General Hospital services and a variety of specialist/tertiary care services to patients. The UHSM and CMFT sites are both well established University teaching hospitals with associated, and embedded, educational and research activities.

[1] CMFT also provide hospital services at the Trafford General Hospital site and at Altrincham Hospital
[2] PAT also provides hospital services at the Royal Oldham Hospital, Fairfield General Hospital and Rochdale Infirmary. These services are not included within the scope of this review.
[3] UHSM provide hospital services on the Wythenshawe Hospital site and at Withington Hospital

The aim of a 'single hospital service' is to provide a fully aligned model of hospital care, which would encompass a range of clinical services, support services, estates utilisation, back office function, education, research and innovation.

In order to progress this proposal, the Manchester Health and Wellbeing Board commissioned an independent review. This was undertaken with the full support of the three Acute Trusts in the City of Manchester. It was agreed that this review would comprise two stages; the first would identify the potential benefits of a fully aligned hospital service model, the second would appraise the most effective governance and organisational arrangements to deliver the identified benefits.

The review commenced in January 2016 and has been ongoing since this time. This document seeks to outline the process that has been undertaken to complete stage one of the review process and to provide an assessment of the potential benefits of a single hospital service model.

The review is principally limited to focus on the full range of hospital-based services provided to the population of the City of Manchester. However, it is acknowledged that, given the geography of hospital sites within Greater Manchester, there will be implications for populations/CCGs outside of those covered by the City of Manchester CCGs. In addition, the interactions that the NMGH site has with other hospitals within the PAT footprint need to be considered.

1.2 Background

It is well recognised that, despite economic growth and infrastructure improvements, the residents of Manchester continue to have poor health outcomes compared to the rest of the country. Figures from the Public Health Outcomes Framework (updated February 2016) show that, in Manchester, the under 75 mortality rates for cardiovascular disease, cancer, respiratory disease and communicable disease are all higher than both the UK and regional averages. For many of these indicators Manchester has the worst health outcomes in England. The devolution of health and social care budgets from central government, and the ability for Manchester to make local decisions about local services, are recognised by many as the key mechanism by which this situation might be addressed.

Devolution seeks to 'forge a partnership between the NHS, social care, universities, science and knowledge industries for the benefit of the population'[4]. Collaboration and integration is paramount. A number of significant transformation programmes have already been delivered within Greater Manchester and these have sought to foster collaborative working for the benefit of patients. Examples include the 'Making It Better' reconfiguration of maternity, neonatal and paediatric services and the reconfiguration of stroke services. More recently the 'Healthier Together' programme introduced the notion of hospitals working together in sectors to create four 'single services' for emergency abdominal surgery across Greater Manchester.

The proposal of a single hospital service within the City of Manchester builds on the good work already completed. However, it goes further as it relates to the full range of hospital services provided to the populations served by the Manchester hospitals.

[4] http://www.gmhealthandsocialcaredevo.org.uk/assets/GM-Devolution-September-2015-Booklet.pdf

1.3 Why Change?

The City of Manchester hosts a wide variety of very high quality hospital services, some with national and international reputations. There is much for which the city should be proud. The residents of Manchester however, still have poor health outcomes compared to the rest of the country. Specifically:[5]

- The city has the lowest life expectancy at birth for women and the second lowest life expectancy at birth for men in England.
- Premature deaths from cancer, heart disease, stroke and respiratory disease account for most of the life expectancy gap between Manchester and the rest of the country.
- Adults in the city have much higher rates of obesity, alcohol misuse and smoking related conditions and the average of 750 smoking related deaths in Manchester[6] each year is the highest in the country.
- The latest national GP Survey shows that around 19% of patients in North Manchester, 15% in Central, and 15% in South, report moderate or extreme anxiety or depression compared to 12% nationally, with a high number of adults prescribed antidepressant medication.
- Manchester has a higher % of children classified as obese in Reception and Year 6 compared to national levels;
- Manchester has higher levels of dental decay for 5 year olds, with 40.8% having one or more decayed, missing or filled teeth compared to the national average of 27.9%.
- There are significantly higher rates of hospital admission for chronic ambulatory care sensitive conditions per 100,000 of the registered population in each of the three Manchester CCGs (1,523.3 in central, 1,568.8 in North, and 1,407.5 in South, compared to the national average of 808.5).
- Manchester has higher rates of hospital stays for self-harm and alcohol related harm and emergency admissions for hip fracture (65+).

In addition, it is well recognised that health and social care services in the City of Manchester are under huge operational pressure and facing significant financial challenges. In total Manchester spends £1.1bn on health and social care services, excluding specialist services. It has been predicted that if the system takes no action to address current challenges, and assuming expected changes in demographics take place, the system will face a £284m deficit by 2020/21. £163m of which will be in healthcare services.[7]

Current operational challenges include:[8]

- Approximately 80% of A & E attendances are walk-in presentations
- Even though Manchester has a relatively young population, the over 65s make up a disproportionately high percentage of non-elective admissions to hospital.
- Compared to the national picture, emergency admissions of patients are high. Over the past 3 years there has been an 11% increase in admissions to Central Manchester University Hospitals, and a 13% increase in admissions to the University Hospital of South Manchester.
- There are high levels of admissions to residential and nursing homes.
- The wider urgent care system in Manchester is not functioning effectively leading to huge demand and pressure on the acute hospitals.

[5] Source: Manchester Locality Plan
[6] Per 100,000 population
[7] Source: Manchester Locality Plan
[8] Source: Manchester Locality Plan

The scale of these challenges is illustrated by the Manchester hospitals performance against national access targets. In Quarters 3 and 4 of 2015/16 no hospital in Manchester consistently achieved the 4 hour accident and emergency target and performance against the 18-week referral to treatment time is variable across specialties (see Table (2)).

Table (2). Access target performance[9]

Indicator	Standard	CMFT	PAT[10]	UHSM
A&E 4hr Access Target (Q3)	>95%	92.7%	80.7%	82.1%
RTT Incomplete Pathway (Jan 16)	>92%	92.0%	96.1%	86.3%

The main hospital services used by the residents of Manchester are provided by three different NHS Trusts (CMFT, PAHT, and UHSM). Each of these hospitals can identify areas of excellent patient care and each hospital hosts certain services that provide care on a regional, as well as a city-wide basis. However, real collaboration is limited; previous national policy has encouraged provider organisations to compete and the structure of contracts, payment mechanisms and competitive tendering has made it difficult to behave in any other way.

This approach has resulted in duplication of services and has created barriers that stop Trusts working together to improve services. Areas of particular concern include:

- For some services there is a duplication (or triplication) of services across the city while in others there are service gaps that make it difficult for patients to access care.
- Some clinical services risk becoming unsustainable and having to be discontinued in an unplanned or reactive way.
- All trusts are competing to attract staff with specialist skills, many of whom are difficult to recruit on a national basis. Once recruited these individuals may not always be deployed as effectively as they might be.
- Expensive fixed assets may be duplicated across the city but not always utilised to optimal efficiency.
- Opportunities to work together to improve patient care through enhanced research and innovation are missed.
- Different operational patient pathways and protocols are used in various provider organisations and so a consistent care pathway is not delivered across the city.
- Different standards of care are provided to people in different parts of the city

The variability between services is demonstrated by the differing performance against national access targets, in the Friends and Family Test and in Staff Survey results. Some of this data is shown in Appendix (I).

Manchester commissioners have given a very clear indication that the existing structures and arrangements for providing hospital services in Manchester are no longer acceptable. The focus of work, across health and social care within the city, over coming years will have to be on 'partnerships, collaboration and working together'[11]. The Manchester Locality Plan outlines the requirement to develop 'a single commissioning voice' and to create 'one team'

[9] https://www.england.nhs.uk/statistics/statistical-work-areas/
[10] PAT figure encompasses all PAT sites
[11] Source: Manchester Locality Plan

delivering integrated community, primary and social care services within Manchester. For Hospital services commissioners have defined their minimum requirements as creating a single system with a unified focus for authority and accountability and a single contractual arrangement for hospital services in the city. All are clear that no medical services will be lost to Manchester. Instead, a single hospital service will strengthen the provision of healthcare within the city and increase the numbers of services that are regarded as world class.

The Acute Trusts within Manchester fully support the need to improve collaboration and closer working in order to improve services and health outcomes for local residents. Their determination to see this through, and to implement the necessary changes, is illustrated by the importance they have placed on this review.

1.4 Review Scope and Aims

This review relates to acute hospital services provided to residents within the City of Manchester. However, consideration has been given to neighbouring populations such as those in Trafford and within the North East Sector of Greater Manchester. In addition, the review has recognised the importance of the interface that acute hospital services have with community, primary, cancer, mental health and social care services.

This first stage of the review has focused on the potential benefits of a fully aligned hospital service model across Manchester. This work was done in conjunction with senior clinicians from the three acute Trusts and from CCGs and considered how certain services could be best configured to provide high quality and efficient care for patients with effective links to other health and social care services. The potential benefits to patients, and to the local health and social care system, of a single service model were very much the focus of this work. The specific location of services was not considered.

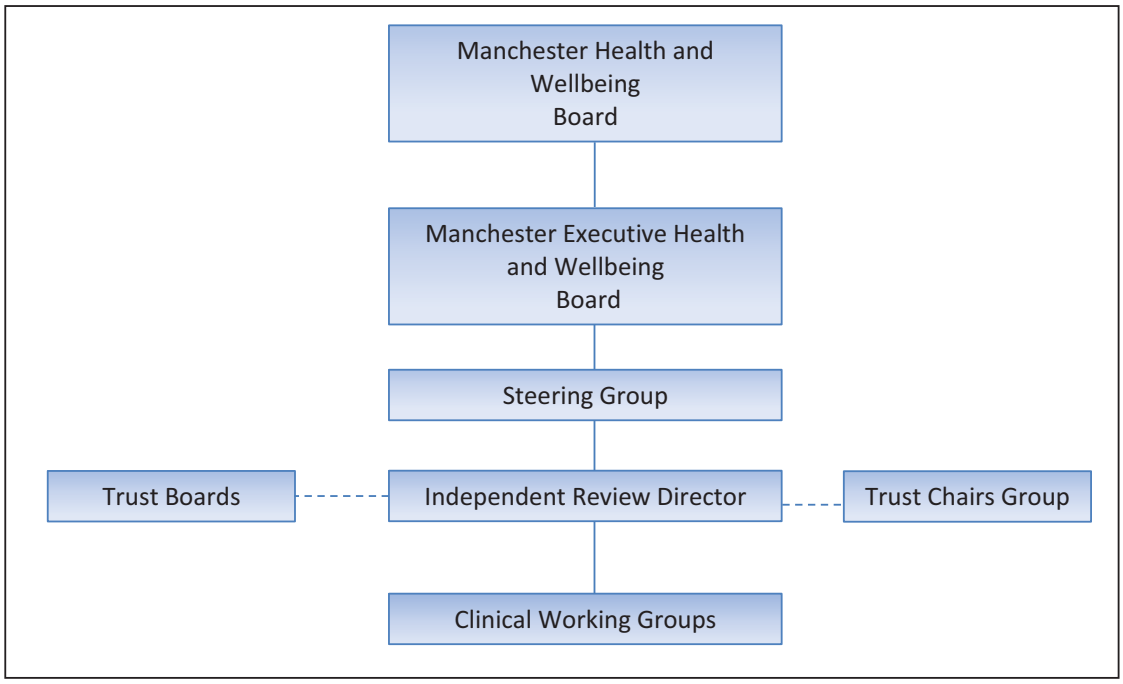
The second part of the review will appraise the options for governance and organisational arrangements in order to ascertain which would best deliver the identified benefits. The outputs of this work will be contained within the final report due for completion in June 2016.

1.5 Governance and Assurance

The review was commissioned by the Manchester Health and Wellbeing Board (HWBB) with oversight from the HWBB Executive. The Review was led by the Independent Review Director, Sir Jonathan Michael, with analytical supported provided by McKinsey & Company. The Terms of Reference for the Review, and the Job Description for the Independent Review Director are shown in Appendix (II).

A governance structure for the review is shown below, in Figure (b).

Figure (b): Governance Structure for Single Service Review



A Review Steering Group was established to oversee the delivery of the review and to make decisions to ensure timely delivery of the Single Hospital Service Review work plan. The Steering Group met fortnightly, throughout the process and was made up of:

- Single Hospital Service Review Team
- An equal number of Chief Executive and Executive Director representatives from each of the three Acute Trusts
- Senior commissioning representation, nominated by the Manchester HWBB

In addition, the chair of Trafford Clinical Commissioning Group was invited to attend.

Terms of Reference for this group can be found in (Appendix III).

The review has sought to ensure that all key stakeholders, including patient groups, elected public bodies/individuals, clinicians and managers have all had a chance to contribute. This is described further in section (2.0).

2.0 Stakeholder Engagement

2.1 Approach

From the outset this review has endeavoured to ensure that key stakeholders were engaged and involved in the process of identifying the implications of a single hospital service model. This engagement was achieved through a variety of methods including:

- 1:1 interviews
- Group discussions
- Workshops
- Formal meetings
- Written correspondence

The Single Hospital Service review team understood that it was important to take feedback from key stakeholders, as the review process unfolded, and to consider this feedback when designing each stage of the review process.

A list of people who provided information/feedback to the review is shown in Appendix (IV). This list totals over 140 individuals. A summary of the key stakeholder groups who were able to contribute is provided below.

- Elected public officials/bodies
- Clinicians
- CEO and Executive Directors (CMFT, UHSM, PAT)
- Chairs (CMFT, UHSM, PAT)
- CEO and Executive Directors (GM provider organisations)
- Chairs and Chief Officers, Central Manchester CCG, South Manchester CCG, North Manchester CCG
- Chairs and Chief Officers, GM CCGs
- GP Federation Chairs (City of Manchester)
- Greater Manchester Devolution Team
- Greater Manchester Academic Health Science Network Team
- Manchester University
- Health Education North West
- Healthwatch in Manchester and Trafford

2.2 Clinical Engagement

Clinicians have been fundamental to the process of considering how single service models might be configured and to assess the potential implications of these.

In January 2016, the review established a Clinical Advisory Group. Four senior clinicians, from CMFT, PAT and UHSM were selected by their respective Medical Directors to work within this group. This group provided valuable feedback on a range of process-related topics including the list of services selected for in-depth analysis and consideration.

The review chose to select a limited number of services for detailed consideration and analysis. Clinical Working Groups were established for each of these areas and were made up of senior clinicians from each of the Acute Trusts and a

number of local GPs. Each group met, in person, on at least three occasions, to work through high level proposals for single service models and to identify the implications of these. These meetings were each over 3 hours in length and were carefully facilitated to ensure the Clinical Working Groups (CWGs) had the opportunity to consider increasingly ambitious service models. Each member of the clinical working groups was tasked with reporting progress to their wider clinical team and for ensuring feedback from the full multidisciplinary team could be provided to the working group.

Clinicians from the full range of hospital services, outside of those selected for in-depth review, were also encouraged to initiate city wide conversations to determine how they might start working in more collaborative and integrated ways. Outcomes of these conversations will be fed back to Medical Directors and passed through to the Single Hospital Service Review Steering Group.

The names of all the clinicians who contributed to the Clinical Working Groups are listed in Appendix (IV).

2.3 Communication Processes

The need to ensure accurate and timely information was available to all with an interest in the Single Hospital Service Review was recognised at an early stage and so communication with stakeholders, was prioritised by the review team. The communications plan and approach is outlined in Appendix (V).

Key messages, following each of the Steering Group meetings, were circulated to all members of the Steering Group for distribution, within their organisations, as appropriate. In addition, the Independent Review Director wrote to all medical consultants in the three Trusts on a regular basis informing them of progress and outcomes. Processes were also established to ensure engagement and communication took place with non-medical clinicians. Progress reports were provided to the Manchester Health and Wellbeing Board and to the Manchester Health and Wellbeing Executive. In addition the review team ensured the team managing implementation of the Manchester Locality Plan was kept informed of progress.

Regular correspondence was sent to Manchester and Trafford MPs. Formal correspondence and press releases were sent out in line with review milestones.

3.0 Approach and Methodology

3.1 Stock-take of Services and Selection of 'Exemplar' Services

In order to assess the potential implications of a Single Hospital Service it was necessary to understand current service provision and activity by conducting a full clinical stock-take. This stock-take was undertaken using publicly available HES (Hospital Episode Statistics) data to create a long list of all services and to estimate activity at each hospital site. Individual providers were then asked to check this list to ensure all services were incorporated. The results of this work are shown in Appendix (VI a).

The stock-take highlighted the large number of distinct services provided within each hospital and across the city. The Steering Group recognised that time and resource constraints would not allow a detailed review and illustration of benefits for each individual clinical service. It was therefore decided that the Steering Group would select a group of 'exemplar services' that would be the subject of in depth analysis and consideration regarding single service models and associated implications. It was thought that the outcomes of work with the exemplar services could be used to illustrate possible benefits for a range of other similar services and scaled to consider the implications of a Single Hospital Service.

The outputs of the clinical stock take were used to help guide the selection of exemplar services. This is described, in more detail, in section (3.1.1).

3.1.1 Quantitative Analysis

Using the outputs of the clinical stock take, a quantitative approach was used to attempt to provide guidance on which specialties might be considered suitable for in-depth analysis.

The complete list of specialties identified through the stocktake was ranked by scoring them against a range of criteria. The criteria used covered quality of care, finances and deliverability. These are detailed in Table (3). Any specialties that were addressed within the Healthier Together process were removed to avoid duplication of work that had already gone through public consultation.

Each specialty was scored against the various criteria. Scoring was low (-1), medium (0), high (1) and no data (02). Weightings were then applied to combine the scores with the quality metrics given a double weighting to reflect their overall importance (see Table (4)).

This analysis was designed to help inform the decision of the steering group. As such weightings were used only to help understand the cumulative impact of different criteria; they did not represent the definitive importance of each metric.

Table (3) : Criteria to score specialties in quantitative analysis

Selection criteria for choosing specialties for detailed review[1]

Category	Selection criteria	Unit of measurement	Notes
Duplicated service	▪ Service activity at >1 site	▪ Trust activity data present in at least 2 of 3 sites	▪ Any specialty that is already a single service is scored 'low'
Quality	▪ Quality of care opportunity	▪ SHMI data by specialty and by **Trust**	▪ If SHMI>100[2] at any Trust then this may demonstrate a quality issue, so service is scored 'high'
	▪ High complexity specialty	▪ Qualitative assessment of whether specialty is highly complex and so outcomes could be improved with consolidation	▪ Paediatrics, maternity and A&E that don't meet national guidelines on minimum volumes score 'high'[3] ▪ Specialties that are complex are scored 'high' (low volumes of highly complex activity within specialties are not considered)
Financial	▪ Potential to share rotas	▪ Qualitative assessment of whether rotas could be shared	▪ If a clinical team could feasibly be shared across multiple sites a specialty is scored 'high'
	▪ Operational efficiency opportunity	▪ Case mix adjusted ALOS by specialty and by **site**	▪ If case mix adjusted ALOS >0[4] at any site then this may demonstrate operational inefficiency, so service is scored 'medium'; if ALOS > 50% it is scored 'high'
	▪ Potential to reduce fixed costs	▪ Qualitative assessment of whether a specialty requires expensive equipment so costs could be reduced with consolidation	▪ If fixed costs can feasibly be reduced a specialty is scored 'high'
Deliverability	▪ Feasibility of reorganisation	▪ Qualitative assessment of strategic feasibility and risk of service reorganisation	▪ If clinical and managerial leadership are aligned, engaged and capable of delivering change in that specialty it is scored 'high'

1 To understand the possible beneficial impact of a single service model within a specialty, metrics were identified based on the potential benefits that could quickly test for opportunities and so highlight areas for further investigation
2 SHMI (Summary Hospital-level Mortality Indicator) >100 means that the observed mortality was greater than expected for that specialty
3 Obstetrics units requires >5000 births/yr to staff 24/7 consultant cover (RCOG), paediatric units require >1500 non elective admission/yr (RCPCH), 24/7 A&Es that are within 10km of each other should consider merging (CEM)
4 ALOS (Average Length of Stay) >0 means that the observed length of stay was greater than expected for that specialty (expected length of stay determined by the national average for that case mix). A cut off level of ALOS>50% has been set to distinguish between a high opportunity and medium opportunity.

Table (4): Criteria weighting in quantitative analysis

Optional for use as metric

To rank specialties the scores of each selection criteria have been added together according to the following weightings

Category	Metric	Weighting
Duplicated service	▪ Service activity at >1 site	▪ Services not duplicated not considered for selection
Quality	▪ Quality of care opportunity	▪ 20%
	▪ High complexity specialty	▪ 20%
Financial	▪ Potential to share rotas	▪ 10%
	▪ Operational efficiency opportunity	▪ 10%
	▪ Potential to reduce fixed costs	▪ 10%
Size of service line	▪ Tariff income[1]	▪ 20%
Deliverability	▪ Feasibility of reorganisation	▪ 10%

- Weightings have been used only as a guide to help understand the cumulative impact of different criteria; they do not represent the definitive importance of each metric
- Quality metrics have been given a double weighting to reflect the overriding importance of quality of care
- Scoring of criteria is low = -1, medium = 0, high = 1, no data = 0[2]

1 HES 2013/14
2 Size of service line has additional categories: Very low = -1, low = -0.5, medium = 0, high = 0.5, very high = 1

The results of this scoring process were combined to create an overall rank of specialties. This work is shown in Appendix (VI b). The top ten specialties, by rank, with and without the size of service line considered are shown in Table (5).

Table (5): Ranked Specialties

With these shortlisting metrics applied to specialties, the top ten specialties are:

WITHOUT size of the service line considered[1]	WITH size of the service line considered	Clinical support and back office functions
1. Gynaecological oncology	1. Cardiothoracic surgery	1. Radiology
2. Breast surgery	2. Paediatric medicine	2. Back office
3. Interventional radiology	3. Gynaecological oncology	
4. Cardiothoracic surgery	4. Breast surgery	
5. Paediatric medicine	5. Trauma & orthopaedics	
6. Critical care medicine	6. Urology	
7. Infectious diseases	7. Oral surgery	
8. Transplantation surgery	8. Interventional radiology	
9. Oral surgery	9. Critical care medicine	
10. Hepatobiliary & pancreatic surgery	10. Infectious diseases	

Note: this ranking of services is from the analytical approach only, it is a guide only and does not represent the final ranking of options

1 Size of service line is defined as the sum of tariff spend for that service across all 3 sites (UHSM, CMFT minus Trafford and NMG) – unfairly biases against those specialties that are largely off tariff
SOURCE: HES data 2013/14; team analysis

3.1.2 Qualitative Analysis

The quantitative analysis outlined in section 3.1.1 was not considered in isolation when determining the services that should be selected as exemplars. A more qualitative approach was also undertaken via a series of interviews, with key stakeholders, to gather opinions on the best options for exemplar specialties.

A large number of interviews were conducted with key stakeholders, including organisational and clinical leaders at all three acute providers, leaders of commissioning groups and representatives from strategic healthcare initiatives currently taking place across both the City of Manchester and Greater Manchester.

These interviews *consistently* highlighted that the following services should be considered as exemplars:

- Cardiac services
- Vascular surgery
- Clinical support services (radiology, interventional radiology, pathology)

These interviews *often* highlighted the following services as exemplars:

- Elderly care
- Paediatrics
- Infectious disease
- Breast cancer
- Oncology
- Thoracic medicine
- Urology
- Back office services

Example quotes from interviews

"Opportunities in pathology and radiology, interventional radiology is particularly problematic as we can't find staff"

"Priority is cardiology and cardio thoracic surgery, clinicians understand the urgency"

"Pathology and radiology as we need to start with something that will see real change happen"

"Cardiac surgery are probably key to consider but we need to demonstrate that success is possible so also radiology or pathology should be considered"

"We should look at small number of services, 3-5 in depth rather than a lot"

"Care of the elderly is highly fragmented"

3.1.3 Selection of Exemplar Services

Exemplar services were selected to allow the pros and cons of various single service models to be discussed and evaluated. It was important that these exemplars represented a range of service types, given the differing nature of service provision across different specialties, but also that they allowed the impact of single service models to be illustrated.

Certain factors were used to help determine which specialties would act as an exemplar specialty. Factors that would increase the selection chances of a specialty included:

- Duplication of services across sites
- Variation in quality of care
- High complexity of specialty
- Potential to share rotas
- Operational efficiency opportunity
- Potential to reduce fixed costs
- Feasibility of reorganisation
- Not included within the Healthier Together consultation

Noting the quantitative and qualitative data (outlined in sections (3.1.1) and (3.1.2)) and considering the factors outlined above, the Steering Group, with input from the Clinical Advisory Group, selected the following service areas for in-depth analysis within the Review:

- Cardiac Services (including Cardiac Surgery and Cardiology)
- Respiratory Services
- Maternity Services (excluding Gynaecology)
- Secondary care paediatrics

- Radiology, including interventional radiology
- Infectious Diseases
- Rheumatology
- Critical Care
- Back Office Services

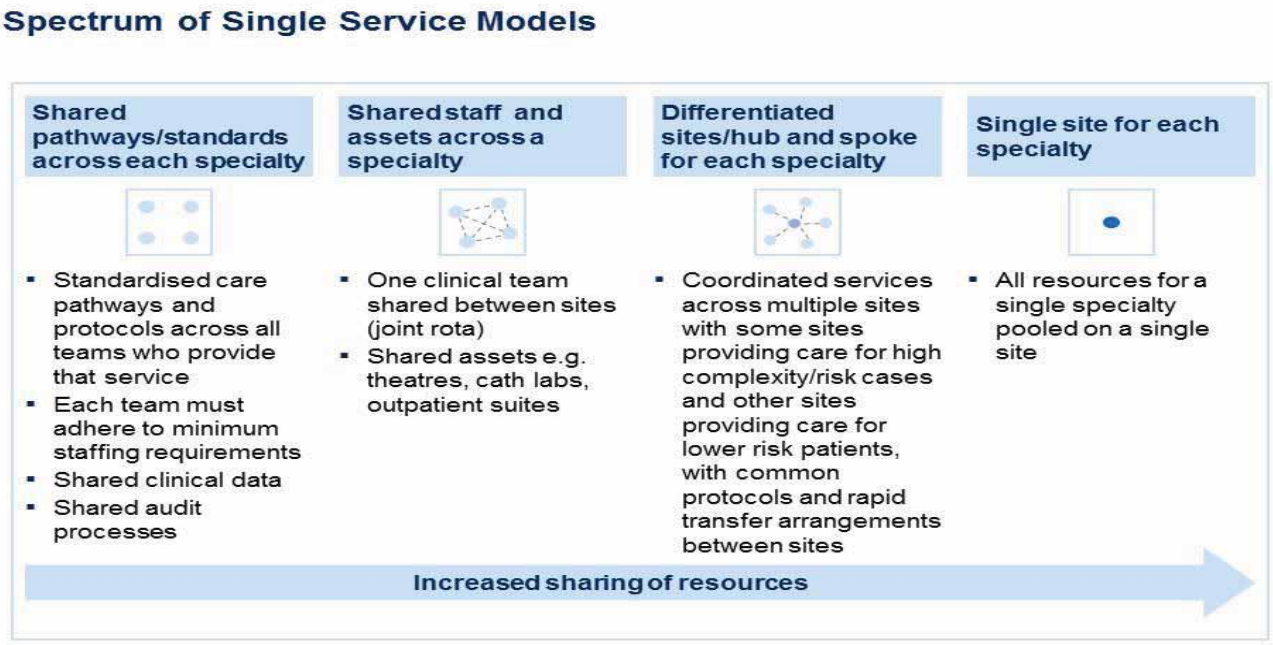
In addition, the Steering Group recommended that separate groups be set up to consider the overall impact that a Single Hospital Service might have on the healthcare related Research and on healthcare related Education/Training functions across the City. The Chief Nurses from across the Acute Hospital Trusts in the City also met as a group to provide formal feedback to the Review. This feedback is contained within Appendix (VII).

3.2 Single Service Models

The review seeks to establish the implications of implementing a single hospital service. However, the term 'single service' could be used to describe a spectrum of service delivery models, which might range from existing clinical teams across the city simply working to agreed and standardised clinical policies/procedures, to the development of a service delivered to patients from across the city from a single site. The range of options for single service provision is illustrated in Figure (b).

It is highly likely that the ways in which a single hospital service might best be configured (in order to give the highest quality of care to patients, and to maximise efficiency), will vary greatly between and even within specialties. It was therefore crucial that clinical working groups were established, for each of the exemplar specialties, to consider the ways in which their service might best operate within a single service framework and to identify the associated implications of these. Consequently, clinical working groups were set up in early February to undertake this work, the outputs of which are set out in Section (4.0).

Figure (b): Spectrum of single service models



3.3 Illustrating the implications of Single Service Models

The focus of stage one, of the Single Hospital Service Review, is to outline the benefits that might be realised by a Single Hospital Service. The terms of reference for the Single Service Review outline that any benefits should be assessed based on the following themes:

Theme	Scope
Clinical	Patient safety, clinical effectiveness
Patient	Patient experience, patient satisfaction
Research	Research, innovation and biomedical infrastructure
Workforce	Recruitment and retention of staff, staff satisfaction, education and training
Operational	Performance, operational effectiveness, integration
Financial	Financial savings, productivity/efficiency, investment requirements

Following discussion with the Steering Group and the Clinical Advisory Group this list of benefits was modified to create categories by which the implications for proposed single service models could be assessed. These are illustrated in Table (6).

Table (6): Benefit Categories for assessing Single Service models

Criteria to illustrate the impact of the single service model

Category	Criteria to help assess benefits
Quality of care	• Reduced variation in the effectiveness of care; raise to the standard of the best
	• Reduced variation in the safety of care; raise to the standard of the best
	• Development of highly specialised clinicians and equitable access to the best technology within the service
Patient experience	• More co-ordinated care
	• Transfer of care into the community
	• Degree of patient choice available
	• Patient access to the service
Workforce	• Ability to attract and retain staff
Financial and operational efficiency	• Cost savings achieved
	• Initial capital outlay plus ongoing capital requirements
	• Improved operational performance
Research and innovation	• Greater research activity
	• Better adoption of research and innovation
Education and training	• Improved learning and education of staff and students

It was agreed that the Single Service Models developed by the Clinical Working Groups would be evaluated against these categories in order to assess the benefits/dis-benefits of proposals. It was recognised that each area would not necessarily be reviewed exhaustively within each of the exemplar services. Instead the key areas of impact for each model would be identified and described using examples where possible.

4.0 Single Service Models

The Clinical Working Groups for each of the exemplar services met on at least three occasions to develop high level single service models and to identify the benefits that might be realised from working in this way. The working groups were asked to consider a variety of issues when developing their single service models that included:

- Capital: No significant capital available for new developments
- Revenue: no significant additional revenue funding available to invest permanently in new service models
- Productivity: to be future proofed service models need to be able to achieve 20% more productivity over the next 5 years (i.e. deliver 20% more activity for the same funding)
- Transformational Funding: GM has been allocated £450m transformation funding over 5 years. An average return on investment of 3:1 is expected in order to access the fund
- Out-of-hospital care: one of the key objectives of commissioners is to provide less care in hospital, and more care in community-based settings

Some of the groups had started conversations about working in a more collaborative way before the Single Hospital Service Review began and so were able to articulate ambitious and transformational single service models with a high degree of benefits. Other groups came together for the first time at the beginning of February and so, at the time of writing, have not had as much time to develop their thinking. Although these teams have been able to develop single service models, and to identify the benefits of working in such ways, it is expected that they will continue to meet over coming weeks and months to further enhance and develop their models of care.

The remainder of section 4.0 outline the single service models agreed by each of the exemplar groups and the benefits associated with working in this way. As outlined in section (3.2) the models vary between specialties in order to best serve their particular group of patients. In certain areas the Review Director has indicated areas of opportunity that the teams way wish to consider when developing their models further. These areas are based on national and international evidence and best practice; in some cases, these potential models have been considered but not, as yet, agreed by the whole Clinical Working Group. The high level benefits of working in these ways, should the teams decide that this model can be adopted locally, are described. Discussions within the Clinical Working Groups will continue over coming weeks.

4.1 Infectious Diseases (ID): Single Service Model, benefits and implementation considerations

Inpatient ID care is provided in various settings across the City of Manchester (see Appendix VIII). The regional specialist inpatient ID unit is at NMGH and provides infection services to a large part of the North West region. Transplant infection specialists and the National Aspergillosis centre are based at UHSM. There are no inpatient ID consultants at CMFT but this site has specialist joint HIV/neurology/obstetric/renal expertise. Outpatient HIV services are provided across the three hospital sites.

The ID services across the city are facing a number of challenges, which are outlined in Appendix (VIII). In summary:

- Although some successful collaborative pathways across the city are in operation (e.g. for Hepatitis C), the current model of service delivery leads to significant variations in the provision of care.
- Patients flow between acute and community services but their data does not follow them. This creates delays in the provision of care, duplication of effort and safety issues.
- Manchester, as a health economy, is performing worse than average on the prevention and diagnosis of Infectious Diseases: The annual rate of TB cases per 100,000 is higher than the UK average in North and Central Manchester CCGs and these areas are also in the lowest quartile of performance for the prevention of admissions for vaccine preventable diseases
- The service will, in the near future, have to address some key workforce issues

The Clinical Working Group (CWG) for ID team came together to discuss these challenges and to devise a single service model for the future provision of care. A summary of this high-level model is shown below in figure (c).

Figure (c): ID proposed single service model

Infectious diseases (ID): model

Description	How this would work
 Hub and spoke model	▪ A fully branded, single service for the whole of Manchester (unique branding for the service in the same way that The Christie is a brand) ▪ **One inpatient unit** co-located with level 3 critical care that accepts referrals for the whole region ▪ National Aspergillosis Centre located alongside complex respiratory, but provided by ID physicians ▪ Single research office located at the hub, through which all clinical trials are registered ▪ Shared clinical pathways and protocols for the whole service for both outpatient and inpatient activity ▪ **24/7 on-call advice service** for acute clinicians and a telephone advice line for GPs, using video-conferencing to assist these consultations as needed ▪ **In-person ID consultations** for all acute in-patients across the City ▪ **Extend the outreach community clinics** for blood borne viruses to cover the whole of the City of Manchester ▪ Upskilling of local healthcare workers (including specialist nurses and GPs) to enable transfer of care to the community ▪ **A single outpatient parenteral antimicrobial therapy (OPAT) service** for the whole of the City, with shared clinical pathways, protocols and governance ▪ Co-location of the OPAT service with plastic surgery and orthopaedics to enable the establishment of a **new specialist bone infection unit** ▪ **Shared antimicrobial stewardship** across the City, joint with microbiology and pharmacy, with shared pathways and protocols underpinning service delivery

SOURCE: Clinical working group

The CWG concluded that this model had a number of benefits. A description of each of these is shown below in Figure (d) and Table (7) with a full description in Appendix (VIII).

Figure (d): Infectious Disease Impact Summary

Infectious diseases – impact summary

Category	Unified team based at the hub with shared on-call	Shared pathways and protocols	Joint Abx[1] steward-ship	More outreach BBV[2] clinics	Unified OPAT[3] service	ID consult service	Phone advice line for GPs	Virtual reviews with Patients Know Best ®	Develop ment of sub-specialty interests	New bone infection unit	Shared research agenda and office	Branding of service
Quality of care	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Patient experience	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Workforce	✓	✓	✓		✓		✓	✓	✓			✓
Financial and operational efficiency	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
Research and innovation		✓		✓	✓	✓			✓	✓	✓	
Education and training	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	

1 Abx = Antibiotic; 2 Blood Borne Virus; 3 Outpatient Parenteral Antimicrobial Therapy

SOURCE: Clinical working group

Table (7). Infectious Diseases impact description

Infectious diseases (ID): impact

✓ Strong evidence 〰 Some evidence

Category	Impact	Evidence	
Quality of care	▪ Improved outcomes through enhanced access to ID consult service	▪ Multiple research papers that show that ID consults improve outcomes	✓
	▪ Consistent outpatient parenteral antimicrobial therapy (OPAT) service across all sites **(also under finance and operational efficiency)**	▪ The OPAT service in UHSM has saved >2500 bed days across all specialties in 2014/15, and 2209 bed days in North Manchester CCG ▪ If all sites performed to this level, there would be an additional ~ 600 bed days saved per year (this equates to ~£0.14M)	✓
	▪ Consistent approach to antimicrobial stewardship service	▪ Evidence from NMGH shows that their antimicrobial stewardship service has reduced C Difficile infection and improved antimicrobial adherence	〰
	▪ Improved medication compliance and reduction of transmission due to sharing of best practice, particularly BBV outreach clinics	▪ Evidence from NMGH shows that their outreach BBV clinics improve attendance, thus improve medication compliance and prevent transmission	〰
	▪ Better outcomes from creation of new specialist services, e.g. specialist bone/joint infection centre	▪ NHS Commissioning Guidance 13/14 recommends that care for complex bone/joint infections in adults is provided by networks with a specialist centre	✓
Patient experience	▪ Branding of the service improves patient trust	▪ Evidence from research that branding matters	✓
	▪ Reduced fragmentation of care (no repeat tests and immediate access to health records) due to joined up IT	▪ Commonwealth fund reports that 6% of adults in the UK are sent for duplicative tests	〰
Workforce	▪ Greater ability to staff a full 24/7 ID rota by sharing workload across bigger group of staff ▪ Greater staff retention from creating a hub of research and education activity	▪ Full 24/7 ID cover is currently provided by 6 WTE at NMGH and 4WTE at UHSM and 0 WTE at CMFT. GUM currently provide on call cover for HIV inpatients at CMFT. Assuming ID physicians numbers are increased, cover would be provided at all 3 hospitals, with collaborative working with GUM. 24/7 cover would probably require 2 consultants for the city.	✓
Financial and operational efficiency	▪ Reduced NEL admissions due to shared use of Patients Know Best® for 'virtual reviews', and a telephone advice line for specialist ID advice for GPs	▪ Estimate of unnecessary NEL admissions and how much this would reduce by	
	▪ Reduced follow-up rates due to standardised pathways	▪ First to FU ratio could be reduced from 3.2 (current weighted average across all sites) to 2.2 (national median)[2]	✓
	▪ Consistent outpatient parenteral antimicrobial therapy (OPAT) service across all sites, leading to reduced inpatient activity	▪ The OPAT service in UHSM has saved >2500 bed days across all specialties in 2014/15, and 2209 bed days in North Manchester CCG. ▪ If all sites performed to this level, there would be an additional ~ 600 bed days saved per year (this equates to ~£0.14M)	✓
	▪ Reduction in the average length of stay (ALOS) due to standardised pathways	▪ If the case mix adjusted ALOS was standardised to the best across all sites then there would be a potential efficiency saving of ~£0.07M	✓
	▪ Reduced cost of consumables due to: – Reduced duplication of blood tests as data shared across sites (and into primary care) – Greater clinical trial enrolment (trial medication is free)	▪ Commonwealth fund reports that 6% of adults in the UK are sent for duplicative tests ▪ Carter Report estimates that ~9.5% efficiency savings can be made from joint procurement	〰
Research and innovation	▪ Opportunity to access £10M public-private partnership to research antimicrobial resistance at Alderley Park, due to single research hub/joint application etc.	▪ Total current research activity is 61 clinical trials with an income of £483K ▪ Evidence that trial organisers seek single point of access sites for research	〰
Education and training	▪ Opportunity for all staff to benefit from sharing best practice and expertise	▪ There is some evidence that inter-professional education can improve patient outcomes and collaboration between staff (Reeves S, et al, 2013)	〰

1 Genito-urinary medicine; 2 Note that the feasibility to rationalising follow-up ratios is difficult in ID, where some follow-up ratios are set by national guidance (e.g. for hepatitis patients)

SOURCE: Clinical working group

In summary the CWG agreed that:

- Adopting a hub and spoke model would reduce the variation in the provision of care across the city and improve the quality of care provided.
- Implementing this model would achieve more co-ordination in the way care is provided and the proposal to transfer some services into community settings would improve efficiency and patient experience.
- Standardising the provision of OPAT and antimicrobial stewardship services across the city would improve both the quality of care given to patients and also the efficiency of services by increasing the quantum of service that could be delivered in the community.
- Removing duplication of services would not only produce financial and operational benefits but would also reduce the need for patients having to access health services unnecessarily.
- Bringing the three hospital teams together would provide an opportunity to create a 24/7 consultant rota (currently not in operation on any site) and to develop new subspecialists services (e.g. a bone infection unit). Access to specialist advice and expertise would benefit education and training as well as the quality of care delivered to patients.
- A single service across the City of Manchester would allow the team to boost the research profile for ID in Manchester including the ability to access a £10m public-private partnership to research antimicrobial resistance at Alderley Park.
- Analysis shows that the financial efficiencies generated from a single ID service are in the region of £0.5m.

The CWG highlighted that the key enablers for this integrated model would be a common IT platform, robust referral pathways and transport systems for patients being referred to the hub. Standardised diagnostics would also be important and consideration would need to be given to the interdependencies with other services. The CWG also highlighted the need for any Inpatient ID service to be located on the same site as a level-3 critical care unit.

4.1.1 ID: opportunities for further development

The review process has also identified that additional benefits might be realised by further integrating hospital ID services with the city wide Local Care Organisation. Ensuring that appropriate community services are in place to manage stable ID patients in the community will deliver additional financial and quality benefits but will also provide an opportunity to address some of the wider population health challenges. A scheme in Dundee illustrates the improvements that can be made to the detection of patients with Blood Bourne Viruses by the close working and sharing of knowledge between hospital based and primary care teams[12]

The CWG members have started to develop the ways in which integration with community services might be further enhanced and will continue to consider these issues in coming weeks.

[12] Quality in Care Connect – Improving outcomes for patients with Blood Bourne Virus in Dundee. 2014.

4.2 Radiology: Single Service Model, benefits and implementation considerations

Radiology services currently operate independently on each of the three hospital sites within the City of Manchester. The NMGH site works in conjunction with the rest of PAT and there is a combined vascular interventional radiology rota across UHSM and CMFT.

The Radiology services across the city are facing a number of challenges which are outlined in Appendix (IX). In summary:

- A national shortage of radiologists has led to recruitment challenges across all organisations.
- This means that all services have difficulties meeting reporting requirements; ensuring the right sub-specialist is available at the right time and are having challenges in meeting education and training requirements.
- Barriers to shared working currently exist due to the lack of a joint PACS system

The Clinical Working Group (CWG) for Radiology came together to discuss these challenges and to devise a single service model for the future provision of care. A summary of this high level model is shown below in figure (e).

Figure (e): Radiology proposed single service model

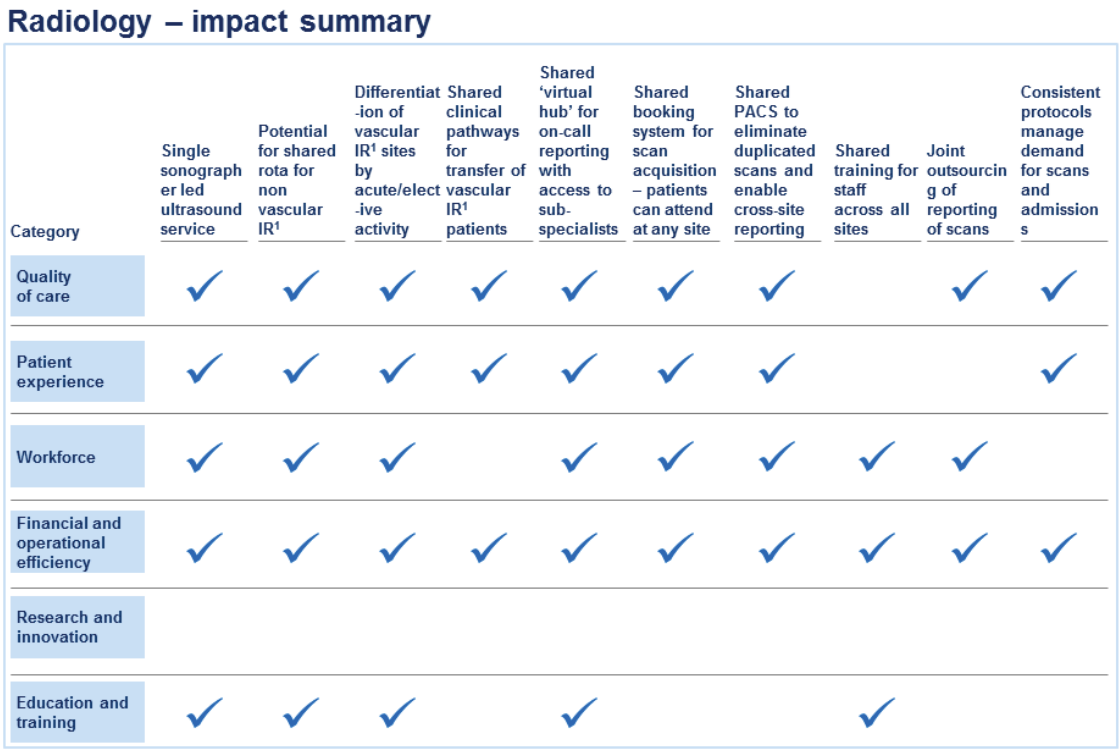
Radiology: model

Description	How this would work
Shared clinical staff for on call rotas and routine scanning acquisition	• The on call-rota would be staffed by registrars who would then triage to a set of on-call consultants sub-specialised in different fields • There would be a single sonographer led ultrasound service held to common standards and protocols • Scan acquisition would continue to take place at all sites with pooled waiting lists so that patients can access all sites – Pooled waiting lists could be combined with a shared booking systems where patients (or admin teams) could book anywhere in the city where there is a space, including options for openings due to last minute cancelations • Vascular interventional radiology would share staff and assets and continue with combined rotas as currently takes place – One service operating on several sites, with pooled reporting lists of studies and pooled waiting lists for Interventional Procedures. • A combined rota may be put in place for non-vascular interventional radiology • Training of registrars would be linked between site with rotations as required to access subspecialties • Consistent protocols for demand management with rapid centralised gatekeeping and vetting of requests with financial incentives for clinicians to consider whether a scan is needed or not
Differentiated sites for vascular IR and Hub model for complex reporting	• There would be a centralised system for outsourcing of reporting, this service would be monitored with a high degree of accountability[1] • Collaborative or possible combined recruitment of agency staff and sonographers • Complex reporting that could not be outsourced would be sent to a virtual hub via an integrated I.T. system where sub-specialist consultants would report scans within their area of expertise

1 This excludes MRI/CT scans for vascular radiology, which will not be outsourced
SOURCE: Clinical working group

The CWG concluded that this model had a number of benefits. A description of each of these is shown below in Figure (f) and Table (8) with a full description in Appendix (IX).

Figure (f): Radiology Impact Summary



Radiology – impact summary

Category	Single sonographer led ultrasound service	Potential for shared rota for non vascular IR[1]	Differentiation of vascular IR[1] sites by acute/elective activity	Shared clinical pathways for transfer of vascular IR[1] patients	Shared 'virtual hub' for on-call reporting with access to sub-specialists	Shared booking system for scan acquisition – patients can attend at any site	Shared PACS to eliminate duplicated scans and enable cross-site reporting	Shared training for staff across all sites	Joint outsourcing of reporting of scans	Consistent protocols manage demand for scans and admissions
Quality of care	✓	✓	✓	✓	✓	✓	✓		✓	✓
Patient experience	✓	✓	✓	✓	✓	✓	✓			✓
Workforce	✓	✓	✓		✓	✓	✓	✓	✓	
Financial and operational efficiency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Research and innovation										
Education and training	✓	✓	✓		✓			✓		

1 Interventional Radiology

SOURCE: Clinical working group

Table (8): Radiology impact description

Radiology: impact

✓ Strong evidence 〰 Some evidence

Category	Impact	Evidence	
Quality of care	▪ A combined consultant rota across sites would enable registrar triage to a set of sub-specialist on-call consultants, by enabling the registrar to contact the right specialist at the right time, this could reduce variation between sites and enable sub-specialist cover 7 days a week	▪ European Society of Radiology 2009 support the need to subspecialise to keep up with rapid technological development, disease complexity and a closer role of the radiologist with the referring clinical team	✓
	▪ A combined non-vascular IR rota could ensure day cover across all sites		
	▪ Equity of access for all patients to vascular interventional radiology, due to shared pathways	▪ Evidence that time to treatment for vascular IR improves outcomes (NHS commissioning guidelines for vascular services)	✓
	▪ A centralised system for outsourcing of reporting of scans with high levels of audit and accountability will ensure a consistently high standard of care	▪ Case study from Imaging Advantage shows the benefits of pooled outsourcing	〰
Patient experience	▪ Patients gain rapid access to diagnostics through, increased utilisation of diagnostics, shared waiting lists and a booking system that enables them to attend the site with the shortest wait	▪ Patient Choice Case study (A Report from the National Imaging Clinical Advisory Group) supports rapid access to scans for all patients	✓
	▪ A single sonographer led service could enable equal access to patients for ultrasound across the City of Manchester.		
	▪ Sharing of information via a joined up I.T. system will reduce duplication of tests, for example in the event of patient transfer between sites	▪ Duplication in testing between acute hospitals and community and primary care may be as much as 6% of tests (Commonwealth Fund report)	〰
Workforce	▪ Triage to the correct sub-specialist improves productivity as a specialist is able to read scans in their field more quickly		
	▪ Transfer of activity from radiologists to sonographers frees up time for radiologists		
	▪ Increased use of reporting radiographers	▪ Variation in the number of reporting radiographers and all services are very low compared to some other trusts eg University Hospital of North Midlands (Stoke) has 60 reporting radiographers	〰
Financial and operational efficiency	▪ The faster reporting of scans through the correct use of subspecialists described above will mean fewer radiologists are required for the same volume of activity.	▪ Numbers of radiology consultants vary between 10 and 22.23 across sites, combining rotas would give access to a total pool of 49.23 radiology consultants	〰
	▪ A sonographer led service for ultrasounds and increased outsourcing of scans will free up radiologists for other complex activity enabling a skill mix shift	▪ Collaborative or combined recruitment of agency staff and sonographers reduces competition that drives up price	〰
	▪ Shared on-call rotas could also be used in both vascular and non-vascular interventional radiology IR help to achieve 24x7 coverage	▪ Numbers of radiology consultants vary between 10 and 22.23 across sites, combining rotas would give access to a total pool of 49.23 radiology consultants	✓
	▪ Centralising the outsourcing of the reporting of scans could generate saving in procurement as could collaborative procurement of equipment	▪ The Carter report recommended that trusts "should collaborate with at least five other trusts to share data and resources to modernise their procurement functions"	✓
	▪ Reduced activity through consistent pathways and protocols, centralised vetting of scans, improved access to daycase beds and rapid access to scans avoiding the need to admit patients		
Research and innovation	▪ No benefits identified	▪ No benefits identified	
Education and training	▪ By linking training of junior doctors across sites trainees are exposed to sub-specialties and interesting cases that they would not otherwise have had access to, this improves quality of training and attracts additional trainees	▪ Networked training of radiologists in Australia has increased access to subspecialties compared to sites operating alone *(The Radiology Training Site Review)*	✓

SOURCE: Clinical working group

In summary, the CWG agreed that:

- A citywide model where sub-specialist consultants could report scans through a virtual hub, and within their areas of expertise, would be able to offer rapid access to specialist opinions thereby ensuring that the right work goes to the right person at the right time.
- A shared on-call rota for the reporting of scans would further enhance these benefits. Clinical outcomes and operational efficiency would also be improved through a reduction in duplication and in turnaround times.
- A more efficient service could also lead to shorter waiting times for patient's investigations, thereby improving patient experience. In addition a single service would enable standardised protocols to help manage demand for scans and admissions.
- A single service model would allow more equitable service for patients who require interventional radiology, by enabling the creation of a single interventional radiology service model across the City.
- A single service model would provide the opportunity to pool training. This would improve the training offer but also ensure it could be delivered in a way that would not detrimentally impact on service provision.
- Improved training opportunities could further help address workforce shortages by enabling a skill mix shift and the development of a single sonographer led service/reporting radiographers.
- Analysis shows that the financial efficiencies generated from a single Radiology service are in the region of £1-2m.

The CWG highlighted the current difficulties that exist because of the lack of a joint PACS system. The provision of an integrated IT system was deemed vital to the success of collaborative working in the future and it was noted that a joint procurement for a shared PACS system is already being pursued. It was also noted that any proposed single service model within the City of Manchester would need to compliment the delivery of Radiology services across the wider Greater Manchester conurbation.

5.2.1 Radiology: opportunities for further development

The review has identified that additional benefits might be realised within Radiology by thinking further about the ways in which expensive fixed assets might be used. In particular, it is possible that expanding the utilisation and efficiency of scanners across the city may reduce the need for purchasing additional scanner capacity in the future. The potential financial and operational efficiency benefits of reducing the need for this cost are clear. A case study from the USA[13] outlines the work that can be done to harness cloud based technology to upload radiology scans from 400 centres to a remote pool of over 550 reporting clinicians, thereby improving turnaround times, reducing inappropriate x-ray examinations and generating financial savings.

The Radiology CWG will consider these issues, in the context of the Greater Manchester work regarding Radiology, in coming weeks.

[13] Industry case study. http://www.imagingadvantage.com/

4.3 Respiratory Services: Single Service Model, benefits and implementation considerations

Inpatient and outpatient respiratory services are provided on the three separate hospital sites and the individual services have a recent history of collaboration and cooperation. Care for complex respiratory patients, such as difficult asthma, is already mostly arranged as a hub and network model with the hub located at UHSM. Some respiratory care is also currently arranged as a single site model focused on UHSM (e.g. cystic fibrosis and lung transplant services).

However, the Respiratory services across the city are facing a number of challenges, which are outlined in Appendix (X). In summary:

- The population in the City of Manchester has poor respiratory health outcomes in relation to smoking and social deprivation.
- Patients do not currently have access to consistently high quality care for acute and chronic general respiratory at all hospital sites and there is variability in access to tertiary services
- There is much work to be done to integrate respiratory services across community and hospital settings.

The Clinical Working Group (CWG) for Respiratory came together to discuss these challenges and to devise a single service model for the future provision of care. A summary of this high level model is shown below in figure (g).

Figure (g): Respiratory Service proposed single service model

Respiratory: model

Description	How this would work
Shared clinical protocols for • Acute • Chronic	• Acute and chronic respiratory cases are treated locally using the same clinical protocols and care pathways, with shared governance over these pathways for example: – A shared pathway non-invasive ventilation. A comprehensive Manchester Respiratory Service would have agreed and audited pathways to ensure all patients can access NIV in a timely and equitable manner – Patients with Respiratory problems are seen by a Respiratory Physician within 24 hours – either by being admitted to a bed on a Respiratory ward, or by an arrangement for Respiratory Physicians to outreach into other areas – Optimal inpatient service provision is then daily ward rounds to ensure active management and progression • Seamless integration of care across the city so that care can be transferred out of hospital when appropriate, and access to services such as community rehabilitation is strengthened • Single, integrated, smoking cessation service providing care for all patients in the City of Manchester • Rotas are not shared: – Respiratory Physicians will remain central to the acute medical take arrangements at MRI and NMGH for the foreseeable future – UHSM will continue to operate a triage system and a separate Respiratory rota
Hub and network model • Complex	• Differentiated sites within the service, with complex activity focused at the 'hub' e.g. severe asthma and interstitial lung disease • Complex patients from anywhere within the network have their management discussed with sub-specialist multidisciplinary teams at the hub via videoconference, and transfers are made when necessary • Clinicians within the network can practice at the hub, which means that their specialist interest will have a consistent standard for those patients who remain outside the hub • Common research agenda across the whole service (note that Manchester-wide collaboration already exists for respiratory)

SOURCE: Clinical working group

The CWG felt these models had a number of benefits. A description of each of these is shown below in Figure (h) and Table (9) with a full description in Appendix (X).

Figure (h). Respiratory Services Impact Summary

Respiratory – impact summary

Category	Shared pathways and protocols with shared audit	Integrated care across the whole City	Single smoking cessation service	Outreach of staff to provide early respirato-ry review	Hub & network for complex care	Video-conference MDTs across the City	Clinicians can maintain specialist interests at the hub (in-reach)	Development of more sub-specialty expertise by pooling population-s	Shared research agenda and office	Joined up EPR[1] for 'real world' research studies
Quality of care	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Patient experience	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Workforce	✓	✓		✓	✓	✓	✓	✓	✓	
Financial and operational efficiency	✓	✓	✓	✓	✓	✓		✓	✓	✓
Research and innovation		✓		✓	✓			✓	✓	✓
Education and training	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

1 Electronic Patient Record

SOURCE: Clinical working group

Table (9): Respiratory Services Impact Description

Respiratory: impact

✓ Strong evidence ~ Some evidence

Category	Impact	Evidence	
Quality of care	Reduced variation in the quality of care for acute and chronic patients across sites using shared pathways	Quality of care for COPD and lung cancer vary across sites (national audit data) Evidence that variations in care have been eradicated through use of shared pathways (Clinical pathways: effects on professional practice, patient outcomes, length of stay and hospital costs" *Cochrane Review* 2010)	✓ ✓
	Creation of a shared smoking cessation service for the whole City	Evidence that NHS smoking cessation services are effective in helping smokers quit	✓
	All complex patients (and their clinicians) to have access to expert MDT management	NHS England has endorsed this model of care by commissioning networked models for a number of complex respiratory conditions (e.g. *NHS England Standard Contract for Respiratory: Severe Asthma, 2013/14)*	✓
	Creation of seamless integrated care across the City of Manchester	Respiratory ACS[1] conditions currently being admitted as inpatients Evidence that integrated respiratory care can improve patient outcomes and satisfaction, and operational efficiency (Case Study – King's Health Partners)	✓
	All patients have access to a respiratory review within 24 hours of admission	Evidence that early respiratory input helps to improve the outcomes for respiratory inpatients	✓
Patient experience	Equity of access to the same respiratory expertise at all sites	As above	✓
	More coordinated care closer to home through seamless integrated care	As above	✓
Workforce	Greater ability to support primary and community care and 24/7 access by sharing workload across bigger group of staff	Currently individual rotas are too small for a 1 in 8 on call rota at each site (4.8 to 46 WTE consultants each), but together there are enough WTEs to staff a joint rota *[Note that the feasibility of sharing staff for all rotas is limited due to interlinks between respiratory and general medicine]*	~
Financial and operational efficiency	Reduced NEL admissions due to proactive care in the community Early discharge facilitated by community intervention teams	Cost saving of ~ £0.06-0.4M if performance for respiratory ACS conditions was improved to the ONS demographic group median	✓
	Expensive treatments for complex patients (e.g. biologics for asthma) are targeted at the appropriate patients, and high value (low cost per QALY) interventions such as community pulmonary rehabilitation are promoted by using hub & network	Estimate of current cost savings from difficult asthma pathway – 7/75 patients (9%) of patients were not approved for omalizumab, saving ~£420K[2] Estimate of size of saving if used throughout the single service for other respiratory conditions	~
	Reduced first to follow-up ratio	There are existing variations in the first-to-follow up ratios across sites. Some of this may be due to different case complexity. If this ratio could be standardised to the UK median, there would be potential efficiency savings	~
	Reduced variation in the case-mix adjusted average length of stay (ALOS) for inpatients	There could be a maximum of 19% reduction in bed days if the best ALOS across all sites was achieved	✓
	Greater sustainability of the workforce by sharing workload across a bigger group of staff	As above	~
Research and innovation	Opportunity to attract more research funding because of a linked EPR system	Estimate of the potential increase in research funding using the Salford Lung Study as a case example	✓
Education and training	Opportunity for clinicians within the network to practice at the hub		

1 ACS = Ambulatory Care Sensitive ;2 Based on internally collected data. Assumes that omalizumab costs £12K per year, and the average treatment duration is 5 years. NOTE this figure will be an underestimate of the initial savings if the scheme were extended, because the quality of referrals improve over time.
SOURCE: Clinical working group

In summary, the CWG agreed that:

- The current collaborative arrangements in place would provide an ideal platform to develop a single service model and deliver the benefits outlined in Appendix (X).
- Developing a hub and network model with shared and audited protocols/pathways for acute and chronic general respiratory conditions would improve the quality of care provided to patients and the operational efficiency of services.
- In order to tackle the poor health outcomes the creation of a shared smoking cessation service that would outreach into community settings was advocated. A city wide service of this kind would minimise the risk of duplication and so promote financial and operational efficiency.
- A single service model would allow the expansion of MDTs across the city, which would improve quality of care but also improve patient access because the range of services provided across the sites could increase.
- The proposed single service model would work closely with community and primary services to deliver more community based integrated care. This would deliver a range of benefits including quality of care, improved patient experience and financial/operational benefits.
- The existing pan-Manchester approach to respiratory research could be enhanced by the provision of a common Electronic Patient record (EPR) to attract investment for 'real world' research.
- Analysis shows that the financial efficiencies generated from a single Respiratory service are in the region of £3m.

The CWG felt that a key enabler would be mechanisms for ensuring consistent implementation of shared pathways including audit and incident investigation but also joint managerial oversight. A common IT platform and processes to allow clinicians to work across all sites (e.g. joint contracts, video conferencing facilities) would also need to be in place.

4.3.1 Respiratory Services: opportunities for further development

The review process has also identified that additional benefits might be realised by further integrating, on a city wide basis, hospital respiratory services with community/primary care based services. Plans are in place to deliver an integrated community-hospital respiratory service across the central and south areas of the city (via CMFT and UHSM) but a city-wide model has not yet been agreed. A fully integrated service is likely to deliver a range of benefits including a reduction in hospital admissions, reduction in inpatient length of stay and increased use of high value interventions[14] .

The Respiratory CWG has started thinking about the ways in which integration with community services might be further enhanced and will continue to develop these ideas in coming weeks.

[14] Integrated Respiratory Services: Hospitals without walls. The Royal College of Physicians. June 2015

4.4 Rheumatology Services: Single Service Model, benefits and implementation considerations

General rheumatology services are provided at each of the hospital sites in the city; the majority of activity being delivered through outpatient clinics. A small amount of inpatient rheumatology is provided at each hospital although this is generally provided by the general medical teams. Thus there are no dedicated rheumatology beds within the city. A small amount of tertiary rheumatology is provided at the CMFT site and pathways across the city are in place to transfer patients accordingly.

Rheumatology services across the city are facing a number of challenges, which are outlined in Appendix (XI). In summary:

- There is currently variation in the provision and efficiency of rheumatology services provided across the city.
- The financial governance around the provision of high cost rheumatology drugs (biologics) is inconsistent.
- There is also a lack of integration with community and primary care services with many patients attending hospital for routine blood tests and care that should be delivered in a primary/community care setting.

The CWG for Rheumatology came together to discuss these challenges and to devise a single service model for the future provision of care. A summary of this high level model is shown below in figure (i).

Figure (i): Rheumatology proposed single service model

Rheumatology: model

Description	How this would work
▪ Shared clinical pathways and protocols	▪ Care ideally delivered as locally as possible due to difficulty of mobility in this patient population ▪ Continued sharing of clinical protocols across the service to reduce the variation in quality of care ▪ Sharing of best practice, such as the virtual biologics clinic, across all sites – Could lead to the creation of a single virtual biologics network for the City with research studies linked to this service ▪ Shared learning of research across sites, via regular research meetings ▪ Continued centralisation of some highly complex rheumatology care, such as Behcet's disease, at sites that are co-located with necessary specialties (for Behcet's, this means specialist ophthalmology and oral surgery input at CMFT)
▪ Shared staff and assets, shared patients ▪ Single 'virtual' coordination centre	▪ Shared staff and shared patients, with a single 'virtual' coordination centre – Services to continue to be provided at all hospital sites and in community settings – A single service coordination centre matches capacity and demand so that resources are deployed efficiently (e.g. buildings/rooms can be contracted on an 'as needed' basis and staff are deployed to sites subject to minimum scale (enough work to fully deploy team for a day to minimise travel)) – The coordination centre acts as a single point of entry to the system that takes all referrals, triages them, and directs patients to the most appropriate part of the service – Email/phone advice line to GPs – Shared records of all patients with proactive 'virtual' monitoring instead of outpatient appointments. Patients and their carers can view/monitor the results of investigations online ▪ Patients are able to access investigations and treatment at any site, based on capacity and waiting lists (for example, patients can access physiotherapy services wherever is most convenient for them within the single service) ▪ Single management structure with single budget ▪ A shared IT system that both patients and staff can interact with is vital to ensure this model is deliverable

SOURCE: Clinical working group

The CWG agreed these models had a number of benefits. A description of each of these is shown below in Figure (j) and Table (10) with a full description in Appendix (XI).

Figure (j): Rheumatology Impact Summary

Rheumatology – impact summary

Category	Shared clinical pathways and protocols	A single Virtual Biologics Clinic	Shared best practice – Blueteq	Access for patients to investiga-tions and treatment at any site	Some shared staff	Joint research meetings	Shared use of computer-ised blood test monitoring to reduce follow-up	GP advice line with share triage of all referrals	Working with commissio-ners to improve community services	Potential for pooled resources managed in a virtual coordinat-ion centre
Quality of care	✓	✓	✓	✓	✓		✓	✓	✓	✓
Patient experience	✓	✓	✓	✓	✓		✓	✓	✓	✓
Workforce	✓	✓		✓	✓		✓	✓	✓	✓
Financial and operational efficiency	✓	✓	✓	✓	✓		✓	✓	✓	✓
Research and innovation	✓	✓			✓	✓				
Education and training	✓	✓			✓	✓		✓		

SOURCE: Clinical working group

Table (10): Rheumatology Impact Description

Rheumatology: impact

✓ Strong evidence ~ Some evidence

Category	Impact	Evidence	
Quality of care	▪ Variations in the quality of care across sites would reduce by using shared pathways. Also, patient safety would be improved and delays to treatment will be reduced	▪ There are existing variations in quality of care ▪ Evidence from the high-cost drug pathway at UHSM that variations have been reduced by use of a shared pathway	✓ ✓
	▪ Use of technology to proactively monitor blood test results	▪ There is evidence that patient initiated self-monitoring for stable patients reduces healthcare use (McBain et al, 2015)	✓
Patient experience	▪ Shared resources improve patient access, as they could choose to have physio/OT/investigations/day case procedures at wherever is most convenient for them (which would include knowledge of current waiting times)		
	▪ Work with commissioners to improve community based support services	▪ Evidence from case study (Haywood rheumatology centre) of the benefits of more integrated working with community teams	✓
Workforce	▪ Virtual reviews using the biologics pathway frees up staff time ▪ Potential to share staff across sites	▪ There are currently 1 to 4 WTE consultants and 1.8 to 2.8 WTE specialist nurses at each site. Together, there would be a combined workforce of 8.35 WTE consultants and 7.4 specialist nurses, who would be able to cover a joint rota more flexibly.	✓
Financial and operational efficiency	▪ Reduced non elective admissions from a GP advice line, proactive computerised monitoring of bloods and closer working with commissioners to strengthen the community services		
	▪ Potential for shared staff across sites	▪ As above	✓
	▪ Reduced ratio of first to follow-up outpatient appointments through more proactive, virtual monitoring, and shared referral pathways and protocols	▪ There are existing variations in first to follow-up ratios across sites	✓
	▪ Reduction in the average length of stay from shared protocols and pathways for inpatient care	▪ There are existing variations in the average length of stay for patients across sites	✓
	▪ Shared use of the Virtual Biologics Clinic (VBC) for rheumatoid arthritis and Blueteq software for individual funding requests would: — Save cost of drugs due to improved adherence to pathway (only prescribed to appropriate patients and stopped when ineffective) and enhanced research recruitment (trial drugs are free) — Improve recruitment of patients to clinical trials	▪ In CMFT, use of the VBC has resulted in annual cost savings of ~£113K	✓
	▪ Reduction in fixed costs due to allocation of resources on an 'as needs' basis		
Research and innovation	▪ Research staff would move between sites helping to enable patient equity of access to clinical trials between sites; this could also increase study recruitment	▪ Current research activity varies across sites, from 8 to 30 trials ▪ Evidence that trial organisers seek single point of access sites for research	✓
Education and training	▪ No significant benefits identified		

SOURCE: Clinical working group

In summary, the CWG agreed that:

- Shared pathways and protocols would eliminate the current variations in care across the city and would ensure all services are brought up to the standard of the best.
- The creation of a single Biologics clinic across the city would improve patient access, improve the quality and safety of this service and generate financial savings.
- A single service could recruit a larger number of patients into clinical trials, enhancing the research and commercial opportunities.
- A single service model would improve access to diagnostics and treatment across the whole city which would enhance patient experience and increase operational efficiency.
- A single service model would allow the sharing staff across sites which would promote the stability of services across the whole city.
- Analysis shows that the financial efficiencies generated from a single Rheumatology service are in the region of £1m.

The CWG highlighted the need to ensure patient access was optimised particularly for rheumatology patients who may have poor mobility secondary to physical disability. Shared IT and diagnostic standards would also need to be in place to enable the successful delivery of a single service model. In addition, appropriate governance arrangements would need to be in place to ensure the agreed pathways and protocols were implemented across the city.

4.4.1 Rheumatology Services: opportunities for further development

The review process has also identified that additional benefits might be realised by increasing the community/primary care provision of rheumatology services and also by considering the centralisation of inpatient services within the City. Rheumatology is primarily an ambulatory specialty with most patients requiring local diagnostic, treatment and rehabilitation services but there are a small number of highly complex patients with multi-system disease that would benefit from centralised care and expertise.

The Rheumatology CWG will consider these issues in coming weeks.

4.5 Maternity Services: Single Service Model, benefits and implementation considerations

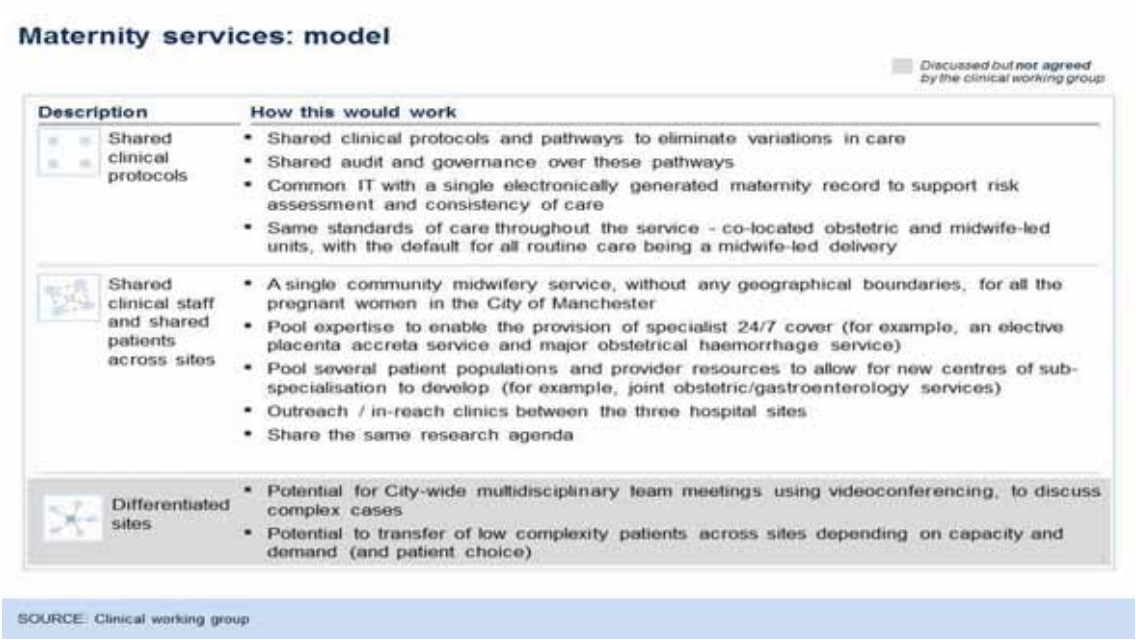
Obstetric care is currently provided at all of the three hospital sites. CMFT has a level 3 neonatal intensive care unit and provides some tertiary services for highly complex deliveries. Fetal medicine is currently shared across the three sites but, outside of this, there is no significant collaboration. Community midwife services are run by each hospital and are limited by geographical boundaries although women from any geographical area can choose to have their baby at any hospital.

Maternity Services across the city are facing a number of challenges, which are outlined in Appendix (XII). In summary:

- There are variations in the standard of care provided to women across the city and fragmentation of care, between the services, exists due to geographical, IT and cultural barriers.
- There is duplication of imaging and diagnostic tests across pathways.
- Rotas for specialist services are not currently staffed in a robust way.
- Underutilisation of midwife led care exists at all sites with over-medicalisation of uncomplicated deliveries.
- There are problems recruiting and retaining midwives with competition for staff between sites
- Because of service segregation there is little opportunity for shared learning and continuous education.

A summary of the single service model proposed by the CWG for Maternity Services is shown below in Figure (k).

Figure (k) Maternity Services proposed single service model



The CWG agreed that these models had a number of benefits. A description of each of these is shown below in Figure (l) and Table (11) with a full description in Appendix (XII).

Figure (l): Maternity Services Impact Summary

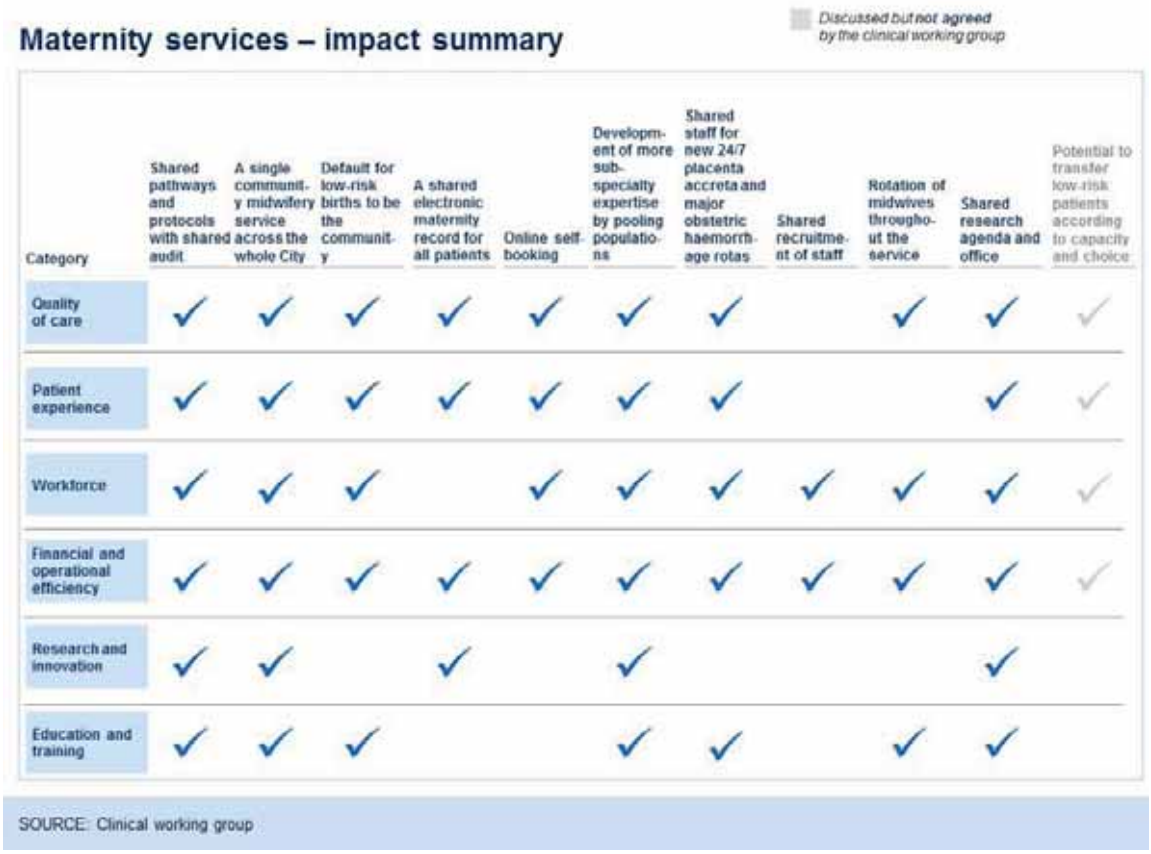


Table (11): Maternity Services Impact Description

Maternity services: impact

✓ Strong evidence ✓ Some evidence

Category	Impact	Evidence	
Quality of care	▪ Shared pathways and protocols reduce variations in the quality of care across sites ▪ Improved patient safety because of shared patient records and diagnostic results across all sites, including the community	▪ There are existing variations in quality of care and barriers to coordinated care because of fragmented IT systems ▪ Cochrane review shows that variations in care have been eradicated through use of shared pathways	✓
	▪ Creation of a single community midwifery service enables transfer of care out of hospital ('defaulting to the community')	▪ Evidence that joined up community services improve the quality of care (National Maternity Review, 2016)	✓
	▪ Development of new specialist obstetrics services (e.g. joint obstetric/ medical clinics, an oncology service for obstetric patients and a morbidly adherent placenta service) because of some sharing of staff and patients across sites – e.g. outreach sub-specialist clinics	▪ Evidence that patient outcomes improve under a specialist obstetrics services	✓
Patient experience	▪ Low complexity patients could be transferred according to capacity demands and patient choice. In this scenario, patients would receive the same high quality care without any associated delays. This facilitates better staffing to demand and less use of agency cover.		
	▪ Use of technology to speed up booking visits	▪ The National Maternity Review (2016) endorses the use of technology to improve the patient experience, particularly at booking visits	✓
Workforce	▪ Shared sub-specialist staff across sites enables the staffing of a 24/7 placenta accreta rota and major haemorrhage rota	▪ Currently there are not enough sub-specialist consultants at each site to sustain 3 separate 24/7 rotas but by pooling resources, a single 24/7 rota could be created to cover all sites	✓
	▪ Single community midwifery service with joint recruitment and rotations across sites/into the community leads to better utilisation of midwives and better retention of staff **(also under finance and operational efficiency)**	▪ The National Maternity Review (2016) highlights that one of the elements to ensuring continued professional development for midwives is rotations of midwives between hospital and community	✓
Financial and operational efficiency	▪ Reduced non-elective admissions due to transfer of care to single community midwifery service ▪ A more effective community midwifery service could also enable more follow-ups to take place out of hospital, therefore reducing outpatient activity	▪ The National Maternity Review (2016) supports the vision for greater community care: "Local maternity systems should have as their central principle the concept of 'defaulting to the community'"	✓
	▪ Potential for reduced cost of obstetric on-call cover if rotas shared across differentiated sites	▪ Currently individual rotas are too small (13 to 22 WTE consultants) - together there would be 50.64 WTE consultants to cover 24/7 emergency access *(Note this was not agreed by the CWG)*	✓
	▪ Reduced average length of stay through the use of shared pathways and protocols	▪ There are variations in the case mix adjusted average length of stay across sites. If all providers could perform to the standard of the best, this could deliver a 9% reduction in the average length of stay = ~£0.9M	✓
	▪ Reduced duplication of tests between the community and hospitals because of joined up IT	▪ An estimate of the current level of duplication of tests is ~6% (Commonwealth Fund report)	✓
Research and innovation	▪ Equity of access for all patients to research trials	▪ There are variations in the number of clinical trials across sites, and evidence of improved outcomes in research active centres (Ozdemir et al)	✓
	▪ Establishment of a single research office would help to attract more research income	▪ Trial organisers seek research sites with a streamlined, single point of access for administration, access to a large pool of patients, and trial coordination support (The Academy of Medical Sciences, 2011)	✓
Education & training	▪ Rotational posts for midwives could provide greater clinical exposure and new career development opportunities	▪ There is some evidence that inter-professional education can improve patient outcomes and collaboration between staff (Reeves, et al)	✓

SOURCE: Clinical working group

In summary the CWG concluded that:

- The creation of shared pathways and protocols would reduce the variation in the quality of care and fragmentation of services. Extending these arrangements to diagnostics would ensure that results from one site could be considered to be as reliable as results from another.
- A single community midwife service would remove current boundaries to improve quality of care and patient experience and would deliver operational and financial efficiencies.
- If midwife-led delivery became the default option of care, this would enable capacity at all sites to be better used, improving the quality of care provided and enhancing patient experience.
- A single midwifery service could also deliver a range of investigations and interventions into community settings thereby moving care closer to home.
- A single service would allow the development of a new 24/7 placenta accreta service to be established across the city. This would improve the quality of care provided for this group of patients.
- A single service model would promote staff opportunities to training and education which would improve staff retention; the single service model would also reduce the need for competitive recruitment.
- Analysis shows that the financial efficiencies generated from a single Maternity service are in the region of £5-10m.

The CWG highlighted the inextricable link between obstetrics and gynaecology and the need to include gynaecology in further discussions that take place regarding a single service model. In addition, they identified shared IT, common diagnostic requesting and reporting and organisational processes to allow the development of a single community midwife service as key enablers for their model. It was also felt that robust governance structures would be required to ensure consistent implementation of the shared pathways and to provide clear accountabilities for patients throughout the service.

4.5.1 Maternity Services: opportunities for further development

The need to develop a single service model is highlighted in the recent National Maternity review (2016)[15].

> *"Providers and commissioners should work together in local maternity systems covering populations of 500,000 to 1.5 million, with all providers working to common agreed standards and protocols."*

The review process has identified that further benefits might be delivered by the differentiation of care across hospital sites within the city. Centralising expertise into a hub for women whose pregnancies are identified as 'high risk', and ensuring that these deliveries take place with all appropriate support services for mothers and babies in place, will improve the quality of services provided and also patient experience.

[15] Better Births: Improving outcomes of maternity services in England. 2016.

The proposal of the CWG to ensure that midwife led delivery becomes the default for all patients is supported and it is thought that this change could help release obstetric staff in order to provide 24/7 sub specialist care to those women who need really need it. Examples from Sweden highlight the potential to improve the care currently provided[16]. In Sweden midwife led care is the norm and maternity services follow a tiered model where lower acuity units can provide care to low risk patients and the care of high risk pregnancies centralised in high acuity centres. Clear referral and transfer arrangements are in place to facilitate these tiered services and to ensure patients are able to move seamlessly between them, should the need arise.

The CWG will consider these issues in coming weeks.

[16] Regelbokförförlossningsenheter, 2013 (Swedish language publication); Gottvall et al, Safety of birth centre care: perinatal mortality over a 10 year period, BJOG, 2004, Vol111, 71-8

4.6 Critical Care: Single Service Model, benefits and implementation considerations

All levels of critical care are currently provided at each hospital site. These units function independently with some collaborative arrangements in place for highly specialised resources such as the ECMO (Extra Corporeal Membrane Oxygenation) service. CMFT run a retrieval service for Trafford hospital. The Clinical Working Group (CWG) for Critical Care highlighted the interdependency of service provision with other specialties such as Infectious Disease and surgical specialties.

Critical Care services across the city are currently facing the challenges outlined in Appendix (XIII). In summary:

- All units are performing in line with expectation set out by the ICNARC audit but there are variations in the provision of care provided.
- Shared pathways developed by the Critical Care Network exist across the whole of Greater Manchester but their implementation is not consistent.
- All units are under significant pressure with capacity and staff shortages impacting, to different degrees, across the City.

A summary of the single service model proposed by the Clinical Working Group (CWG) for Critical Care Services is shown below in Figure (m).

Figure (m): Critical Care proposed single service model

Critical care: model

*Discussed but **not agreed** by the clinical working group*

Description	How this would work
Horizon 1 • Shared clinical pathways and protocols	• Shared clinical protocols and pathways to reduce the variations in quality of care • Sharing of best practice and learning (for example, a shared discharge protocol to limit the number of delayed discharges) • Shared audit process with shared ownership of performance data by all within the service, to encourage consistent implementation of these pathways • Shared research and education agenda • Joint procurement for the whole service
Horizon 2 • Shared clinical staff	• Create a pool of "bank" staff across the service that can be used to fill short-term rota gaps (rather than using locums) • Shared transfer and retrieval process/team • Potential for nursing staff to be shared across sites • Potential to share staff to meet capacity requirements – if a patient cannot be transferred, additional beds could be opened at that site, and staff from other sites would move to provide appropriate cover
Horizon 3 • Differentiated sites	• Differentiation of case mix across the sites, with shared transfer and retrieval arrangements of patients between sites as needed • Development of sub-specialisation at the hub • 24/7 access for the whole service to specialist advice • Potential to consolidate to 2 sites, depending on the configuration of other services

SOURCE: Clinical input

The CWG described a service model with 3 stages (horizons), with the notion that progression from horizon 1 to horizon 3 could happen over time. They concluded that these models had a number of benefits. A description of each of these is shown below in Figure (n) and Table (12) with a full description in Appendix (XIII).

Figure (n): Critical Care Impact Summary

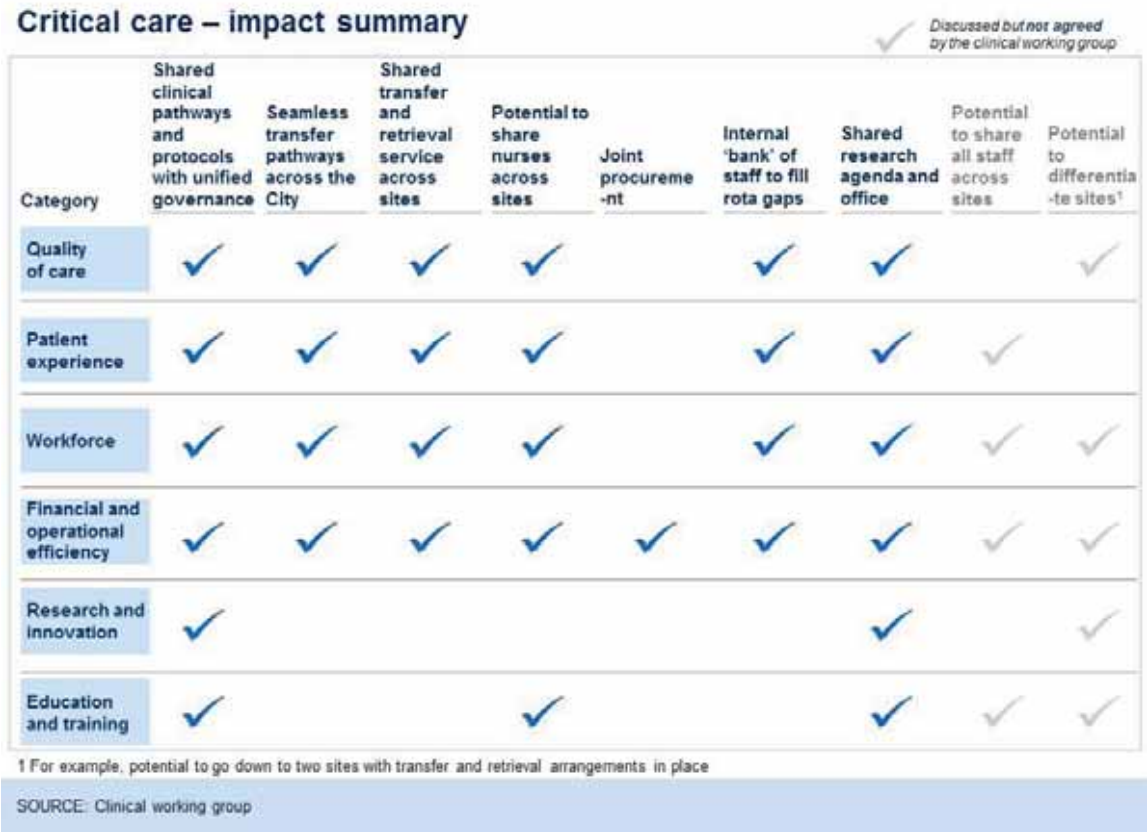


Table (12): Critical Care Impact Description

Critical Care: impact

✓ Strong evidence ✓ Some evidence

Category	Impact	Evidence	
Quality of care	• Reduced variation in the quality of care for patients across sites because of use of shared pathways and protocols with shared audit of these (horizon 1)	• The ICNARC audit shows some variation in the performance of units • There is evidence from a Cochrane Review that the use of shared pathways can improve patient outcomes by delivering consistently high quality care, and reduce length of stay	✓
	• Shared transfer and retrieval process across all sites ensures safe transfers for all patients (only relevant if sites became more differentiated which was **not** agreed)	• Evidence that single retrieval teams can safely transfer patients between sites, and that patient outcomes are not compromised (Intensive care society guidelines for the transport of critically ill patients)	✓
	• Differentiation of sites to maintain and develop sub-specialist care, as suggested in Model 3 (discussed by **not** agreed)	• There are some countries that recommend minimum ICU volumes based on the need to maintain staff expertise and cost efficiency (examples from Australia and the Netherlands)	✓
Patient experience	• Equity of access to the best expertise within the service		
Workforce	• Potential to create an internal "bank" of staff to fill vacancies		
	• Potential to share staff across sites, which could ease the pressures to staff 3 sites and improve the learning experience of the workforce (Model 2) • Opportunity to maintain skill sets and pursue areas of clinical interest by further differentiation of sites (Model 3)	• Currently individual rotas support 60-220 nurses per site – together this would be ~400 pooled workforce • There are currently insufficient staff to cover a 1 in 8 rota at each site at present – if sites were consolidated and rotas were shared, there would be enough staff to cover a joint rota, without the need for additional WTEs	✓
Financial and operational efficiency	• Improved processes and operational efficiency from shared learning around delayed discharges	• 0.2 to 3.3% of bed days are occupied by delayed discharges (of 24 hrs or more) across sites – therefore all sites could share learning to improve this • There is evidence from a Cochrane Review that the use of shared pathways can reduce length of stay	✓
	• Single retrieval team across all sites (only relevant if sites became more differentiated which was **not** agreed)	• A single retrieval team is already in place for Trafford hospital so there would be minimum financial investment needed to extend it	✓
	• Joint procurement	• Joint procurement of consumables across the service could reduce costs, in line with recommendations from the Carter Review (Feb, 2016)	✓
	• Reduced locum spend (as above)		
	• Potential to share staff across differentiated sites (Model 3)	• As above	✓
Research and innovation	• Registering as a single research office would give all patients equal access to research trials and enable the service to attract more trials/funding	• Total current research activity is 23 clinical trials with an annual trial income of £366K – this varies across sites • Commercial (and non-commercial) trial organisers seek research sites with a streamlined, single point of access for administration, access to a large pool of patients, and trial coordination support (The Academy of Medical Sciences, 2011)	✓
Education and training	• Opportunity for nursing staff to rotate across sites, gaining greater clinical exposure	• A survey of critical care rotation programmes for nursing staff in Newcastle reported improved clinical skills and experience, improved inter-departmental relations and heightened staff motivation *(Richards A, et al.)*	✓

SOURCE: Clinical working group

In summary, the CWG agreed that:

- The use of shared pathways and protocols would reduce current variations in care and therefore improve quality of care, patient experience and efficiency. However, given that some shared pathways are already in existence shared audit and governance of these pathways would further assist in their implementation.
- New pathways and arrangements for collaborative working would create seamless pathways across the city which would derive a number of benefits including helping to reduce some current operational pressures.
- A single service might, in the future, allow specialised staff to be shared across the city. In addition a collaborative model would allow the creation of a 'bank' to help fill vacancies would help ensure consistency of care across the city.
- A single service would also provide additional opportunities for education and training.
- Analysis shows that the financial efficiencies generated from a single Critical Care service are in the region of £2m.

The CWG did discuss the differentiation of care provided on different sites and felt that a retrieval team would need to be in place to support this way of working. However, the CWG were unable to commit to this model of care in the absence of detailed plans for the distribution of other services across the city and therefore the detail of critical care support requirements at each site.

The CWG felt that shared governance and ownership of the protocols/pathways would be an essential enabler. In addition, arrangements would need to be put in place to ensure staff could work over multiple sites. To move to any form of service differentiation the team highlighted that appropriate transport systems, for critically unwell patients, and shared diagnostics would need to be in place.

4.6.1 Critical Care Services: opportunities for further development

The review process acknowledges the interdependency that critical care has with other acute hospital services and the need to provide critical care services that are appropriate to the other activities that are undertaken on a particular site. The review agrees with the CWG that, depending on the overall configuration of services between sites in the future, there could be an opportunity to develop a model providing differential critical care services between sites across the city, if appropriate retrieval and transfer processes are put in place.

The CWG will continue their discussions in coming weeks.

4.7 Secondary Paediatrics: Single Service Model, benefits and implementation considerations

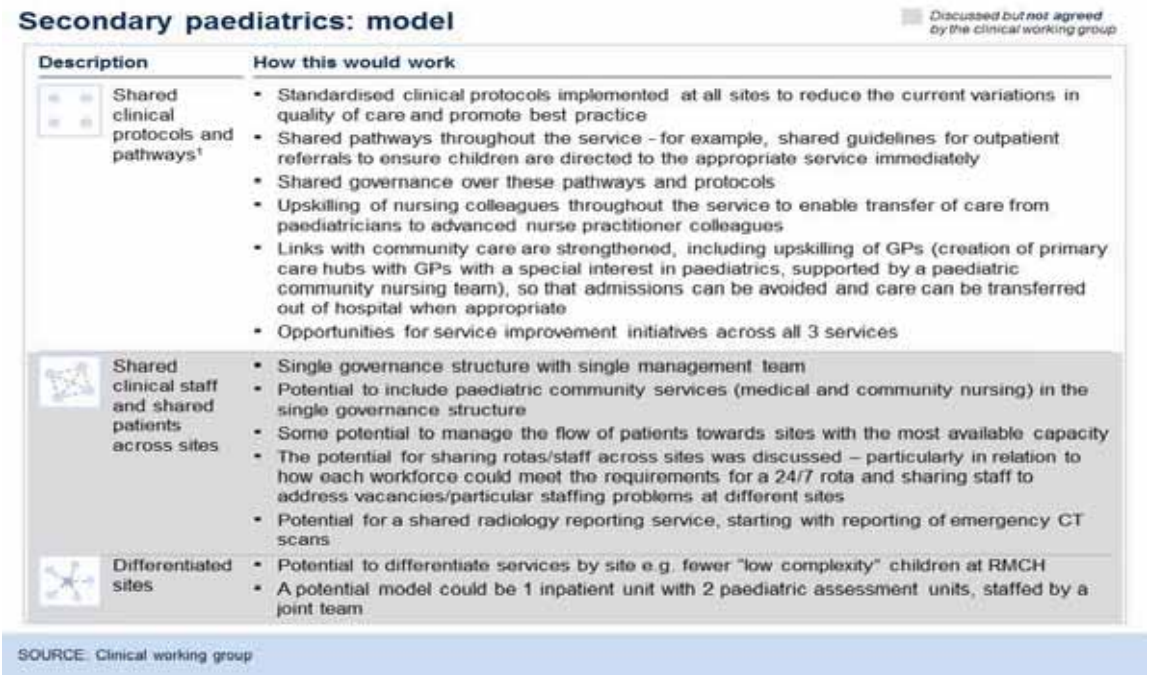
General paediatric care is provided at all three sites with tertiary care provided at the Royal Manchester Children's Hospital (CMFT). Significant collaboration exists between the Children's Hospital and its referring sites for the relevant tertiary conditions but outside of this there is little cross-site working.

Secondary paediatric services across the city are facing a number of challenges, which are outlined in Appendix (XIV). In summary:

- Manchester currently has poor paediatric population health compared to UK average, with child mortality rate being significantly worse than UK average.
- The quality of care given between sites is currently variable as is the provision of consultant cover.
- The number of children who attend A&E is greater than the UK average with high numbers of non-elective admissions for conditions that might be more appropriately managed in an ambulatory care setting.
- There are a number of areas experiencing recruitment difficulties with many hospitals struggling to attract and retain highly skilled paediatric nurses. It is also highly likely that it will be become increasingly difficult to recruit sufficient medical staff to cover 3 separate 24/7 rotas.

A summary of the single service model proposed by the CWG for Secondary Paediatric Services is shown below in figure (o).

Figure (o): Secondary Paediatrics proposed single service model



The CWG concluded that these models had a number of benefits. A description of each of these is shown below in Figure (p) and Table (13) with a full description in Appendix (XIV).

Figure (p): Secondary Care Paediatrics Impact Summary

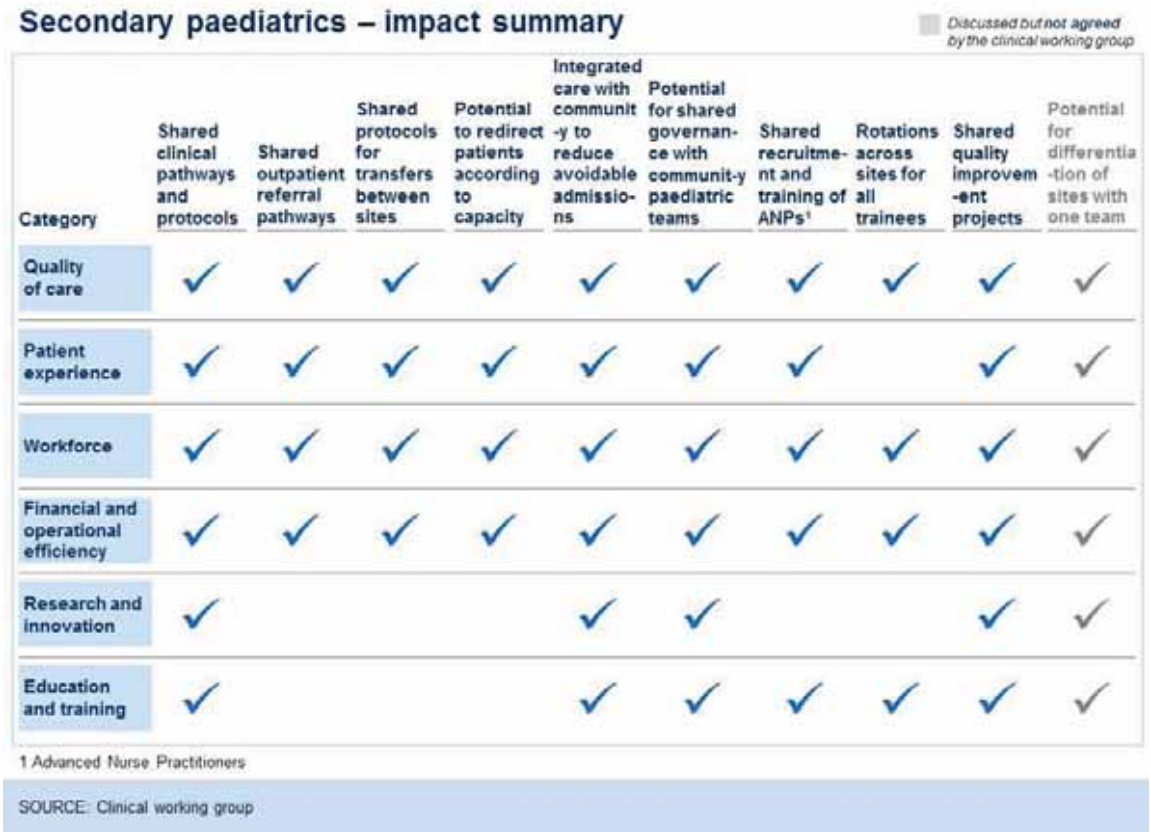


Table (13): Secondary Care Paediatrics Impact Description

Secondary paediatrics: impact

✓ Strong evidence ~ Some evidence

Category	Impact	Evidence	
Quality of care	▪ Reduced variation in the quality of care using shared pathways ▪ Shared referral pathways to enable children to be rapidly directed to the most appropriate specialist service	▪ Quality of neonatal and paediatric diabetes care vary across sites, according to national audit data ▪ Evidence from a Cochrane Review that use of shared pathways can improve patient outcomes by reducing the variation in care, and reduce length of stay ▪ Description from the CWG that the use of High Flow oxygen therapy for respiratory distress varies across sites (at some site, it is administered on the ward whereas in others it is administered in HDU. If all sites could implement the same clinical protocol for High Flow oxygen, then the pressure on HDU capacity could be eased)	✓
	▪ Reduced NEL admissions and A&E attendance due to proactive care in the community through upskilling and reorganisation of community care into 'hubs' (**also under finance and operational efficiency)**	▪ Variation across sites in rates of admission, average length of stay and consultant presence ▪ The British Association for Community Child Health (BACCH) supports integration across the whole pathway ▪ There are examples of successful integration of children's services from across the UK (Imperial Child Health Hubs, Homerton Hospital)	✓
Patient experience	▪ More coordinated care due to shared IT, and shorter waiting times from use of a shared patient flow system so that patients are directed to the site with the most available capacity		
Workforce	▪ Greater ability to support 24/7 access and primary and community care by sharing workload across bigger group of staff – *this was discussed but not agreed by the clinical working group*	▪ Currently individual rotas are too small (9 to 11 WTE consultants) - together there would be 30.74 WTE consultants to cover 24/7 emergency access. *Note that this would have a significant impact on neonatal rotas as consultants in North and South Manchester cover both* ▪ One team could reduce competition for staff between sites and create more career development and training opportunities	~
	▪ Greater ability to recruit/train and retain Advanced Paediatric Nurse Practitioners (APNPs). ▪ Transfer of activity to APNPs.	▪ Recognition from the Royal College of GPs Commissioning a Good Child Health Service guidelines (2013) of the importance of the advanced nurse practitioner role	~
Financial and operational efficiency	▪ Reduced NEL admissions due to proactive care in the community through upskilling primary care and enhanced access to advice	▪ Case study of the impact on admissions of integrated paediatric care – Imperial Child Health Hub Case Study	✓
	▪ Reduced follow-up rates due to standardised pathways	▪ First to FU ratio could reduce from 1.3 (weighted average across all sites) to 0.99 (average of the top quartile UK Trusts)	✓
	▪ Greater ability to support 24/7 access and primary and community care by sharing workload across bigger group of staff (see also under workforce)	▪ As above	✓
	▪ Reduced average length of stay from shared protocols and pathways	▪ There are variations in the case mix adjusted average length of stay across sites. If the same standard of care could be achieved across all sites, this would be equivalent to an 11% reduction in the average length of stay = ~ £1M	✓
Research and innovation	▪ No significant benefits identified		
Education & training	▪ Rotational posts for the whole workforce could improve clinical exposure and offer new career development opportunities	▪ There is some evidence that inter-professional education can improve patient outcomes and collaboration between staff *(Reeves S, et al)*	✓

SOURCE: Clinical working group

53

In summary, the CWG agreed that:

- Shared pathways and protocols across the city would reduce variation in care.
- A single service model would provide an opportunity to support more care being provided by advanced nurse practitioners and by clinical colleagues working in community/ primary care.
- The CWG felt that a crucial part of the single service model would be to strengthen links with community so that early intervention helps avoid unnecessary admissions and care can be provided closer to home.
- A single service model would allow referral pathways to be standardised and protocols for transferring patients between hospital sites to be improved. This would improve efficiency, patient experience and the quality of care provided.
- A single service model would also enhance the provision of Advanced Nurse Practitioner, across the city. The CWG felt that a pooled training offer would help attract and retain such highly skilled staff.
- Analysis shows that the financial efficiencies generated from a single Secondary Paediatric service are in the region of £4m.

The team identified the need for a robust governance structure, which incorporated both acute and community paediatric services, to ensure pathways are implemented consistently and to enable cross-site working for clinicians. In addition, a common IT system would be needed. The team were supportive of the ambition to move more care to community settings but recognised that this would have to be managed in conjunction with primary care colleagues.

4.7.1 Paediatric Services: opportunities for further development

The review process has also identified that additional benefits might be delivered by differentiating the type of clinical activity undertaken at each hospital site. For example, having a single in-patient service supported by two 12-15 hour ambulatory paediatric assessment and treatment centres with diagnostic and treatment capability and close working relationships with community based paediatric services.

Pooling expertise, for certain groups of paediatric patients may improve the provision of consultant cover, which would enhance the quality of care delivered and also promote efficiency. Working in this way may also help mitigate against future workforce shortages.

The review identified that significant quality, patient experience, financial and efficiency benefits may be derived by further integrating with the Local Care Organisation so that specialist paediatric care could be delivered in the community by a range of health care professionals.

A Case study from Ontario, Canada[17], illustrates a situation where primary and out-of-hospital care is provided by Family Practitioners and community based Paediatricians. Some of these are organised into multi-specialty polyclinics so that a range of paediatric services are provided at a single community site. Inpatient care is then provided by a limited number of acute hospital providers. Crucially, most providers are connected via a single electronic Child Health Record.

The Paediatric CWG will consider these issues in coming weeks.

[17] Electronic Child Health Network website; Ontario Ministry of Finance; Ontario Ministry of Health and Long Term Care; Guttmann A et al, Primary care physician supply and children's health care use, access and outcomes: findings from Canada, Pediatrics.

4.8 Cardiac Services: Single Service Model, benefits and implementation considerations

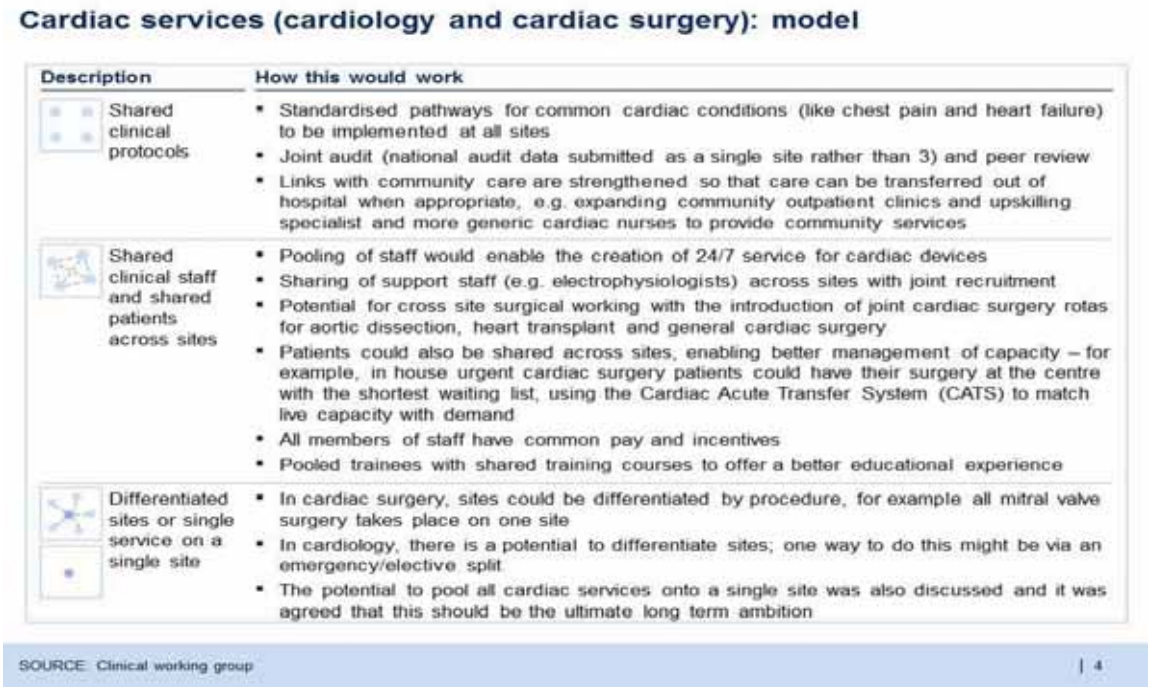
Cardiology care is currently provided at all hospitals within Manchester with specialist heart attack centres in operation at CMFT and UHSM. There are also two tertiary cardiac surgery centres at CMFT and USHM with a cardiothoracic transplant centre at Wythenshawe – one of only five in the UK.

However, Cardiac services are facing a number of challenges which are outlined in Appendix (XV). In summary:

- Manchester has some of the poorest population health outcomes for cardiovascular disease in the country and there is variation in the clinical practice and performance between sites.
- There is currently a lack of consistent 24/7 cardiology cover across the sites and variations in waiting times for cardiac surgery are evident.
- No single site can currently support a 7 day cardiac device rota and there are significant challenges, across the whole of Manchester, to recruit and retain support staff.
- Despite the range and provision of cardiac services provided in Manchester the Clinical working group for cardiac services felt it was difficult to attract clinical academics to Manchester because there is insufficient infrastructure to support research across all sites.

A summary of the single service model proposed by the Clinical Working Group (CWG) for Cardiac Services is shown below in Figure (q).

Figure (q): Cardiac Services proposed Single Service model



The CWG agreed that these models had a number of benefits. A description of each of these is shown below in Figure (r) and Table (14) with a full description in Appendix (XV).

Figure (r). Cardiac Services Impact Summary

Cardiac services – impact summary

Category	Shared pathways and protocols with shared audit	Integrated care across the whole City	Shared staff for a new 24/7 cardiac device service	Pooled waiting list for urgent in-house cardiac surgery with cross site working	Expansion of CATS[1] to match demand and capacity	Potential to share surgical rotas for aortic dissection/ heart transplant	Shared recruitment and rotation of support staff (ECHO/EP[2])	Developme-nt of more sub-specialty expertise by pooling populations	Shared research agenda and office	Potential to consolidate sites
Quality of care	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Patient experience	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Workforce	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Financial and operational efficiency	✓	✓	✓	✓	✓		✓			✓
Research and innovation	✓	✓						✓	✓	✓
Education and training	✓	✓	✓	✓		✓	✓	✓	✓	✓

1 Cardiac Acute Transfer System; 2 ECHO (Echocardiography), EP (Electrophysiology)

SOURCE: Clinical working group

Table (14): Cardiac Service Impact Description

Cardiac services (cardiology and cardiac surgery): impact

✓ Strong evidence Some evidence

Category	Impact	Evidence	
Quality of care	▪ Shared clinical pathways and protocols throughout the service for common cardiac conditions reduce variation in care and facilitate an increase in the overall quality of care to the standards set by national audit committees	▪ NICOR audit data shows variations in care across sites ▪ Cochrane Review shows that variations in care have been eradicated through use of shared pathways	✓
	▪ Closer integration with community care to reduce non elective admissions and address the population health challenges	▪ Examples from Liverpool/Kaiser Permanente of integrated care in practice ▪ Evidence from managed disease networks closer integration can reduce emergency admissions for angina *(Guthrie et al)*	✓
	▪ Potential to eventually pool all cardiac services on a single site	▪ There is some evidence that high-volume cardiac surgery programs deliver improved outcomes at lower cost *(Auerbach et al)*	✓
Patient experience	▪ Faster access to specialist care: – Single, pooled waiting list for all elective cardiac surgery would enable patients to be directed to the site with the shortest waiting time – Joint rota for 24/7 cardiac device service	▪ Evidence that pooled elective waiting lists can reduce waiting times [A guide to commissioning cardiac surgical services – Lancashire and Cumbria cardiac network case study] ▪ The Heart Rhythm UK standards (2011) recommends that arrangements for 24-hour cover should be in place for all cardiac device patients	✓
Workforce	▪ Shared rotas are more sustainable and hence better workforce retention. Also enable joint recruitment of shortage staff, like echocardiologists	▪ Together, there would be a combined workforce of 13 cardiac surgeons and 28 cardiologist consultants, who would be able to cover a shared rota more sustainably then if 3 individual rotas were required	✓
Financial and operational efficiency	▪ Reduction in average length of stay by standardising clinical pathways	▪ There are existing variations in the case-mix adjusted average length of stay across sites ▪ Shared pathways can reduce these variations (Cochrane Review)	✓
	▪ Standardised clinical pathways could be implemented in the outpatient setting, reducing variation in the ratio of follow-up to first appointments across all sites.	▪ First to FU ratio could reduce from 2.4 (current weighted average) to 1.5 (national median)	✓
	▪ Reduction in avoidable hospital admissions because of more integrated care with the community – For example, a single heart failure protocol for the whole City could incorporate a community rapid response team to assess patients prior to admission, and facilitate early discharges	▪ Cardiac ACS conditions currently being admitted as inpatients ▪ Evidence that hospital at home/telemedicine/aggressive case management avoids hospital admissions for CCF patients [The Kings Fund – avoiding hospital admissions]	✓ ✓
	▪ Greater ability to create 24/7 device service by sharing workload across bigger group of staff	▪ Together, there would be a combined workforce of 13 cardiac surgeons and 28 cardiologist consultants, who would be able to cover a shared rota more sustainably then if 3 individual rotas were required	✓
	▪ Reduced duplication of tests and activity	▪ There is existing duplication of investigations and activity due to lack of a joined up IT system for patient notes and diagnostics.	~
	▪ Consolidation of activity onto fewer sites would allow the exiting of fixed costs and duplicate staffing rotas	▪ Exiting one mid-tier rota could save ~ £1.5M. Consolidation of activity on one site could save 50% of fixed costs = ~ £1.1M	~
Research and innovation	▪ Equity of access for all patients to research	▪ There are existing variations in the number of cardiology trials across sites, from 20 to 38. There is evidence of improve patient outcomes in research active centres (Ozdemir et al)	✓
	▪ Establishment of a single research office would help to attract more research income	▪ Trial organisers seek research sites with a streamlined, single point of access for administration, access to a large pool of patients, and trial coordination support (The Academy of Medical Sciences, 2011)	✓
Education and training	▪ Single service offers a more varied education and training environment to all professionals as they rotate through sites or as consultants rotate through sites	▪ There is some evidence that inter-professional education can improve patient outcomes and collaboration between staff *(Reeves S, et al)*	~

SOURCE: Clinical working group

In summary, the CWG concluded that:

- The creation of standardised pathways and protocols across the city would reduce variation in care, improve quality and also facilitate the transfer of appropriate services to community settings.
- By creating agreed thresholds for 'step-up' services from community providers and 'step-down' criteria from hospital care more work can be delivered closer to home.
- A single service model would allow expertise to be pooled to create a new 24/7 joint cardiac device service, which would provide specialist advice as well as seven day pacing.
- A single pooled waiting list for cardiac surgery would improve the quality of services provided and patient access/experience.
- There is a need to differentiate the services provided at each site within Manchester in order to improve quality and efficiency; discussions are still ongoing as to how this clinical differentiation might occur.
- A single service model would also prevent the competition for staff between sites and also allow rotational posts to be developed, which would improve training and development opportunities.
- A single research office would allow the opportunity to remove duplication and to make best use of existing research grants; in addition, a single point of access would ensure access to a large pool of patients, which would potentially attract new research interest/income.
- Analysis shows that the financial efficiencies generated from a single Cardiac service are in the region of £5-6m.

The Cardiac CWG expressed a longer term aspiration to provide all cardiac surgery from a single site. They agreed that physically combining surgical services would provide the best platform to provide a quality focused, efficient service that had a nationally, and internationally, recognised research reputation and attracted/retained the best staff. The CWG felt current organisational boundaries and capital implications were the limiting factors to achieving this. They indicated that the plans they have developed thus far (shared protocols, cardiac device rotas, pooling of staff, pooling of waiting lists, single rotas, differentiated sites) are the essential steps along the way to achieving the above vision of the future.

In the interim the CWG felt that a common IT platform and organisational processes, which would allow staff to work across multiple sites, would be essential to deliver this single service model.

4.8.1 Cardiac Services: opportunities for further development

The review process has also identified that additional benefits might be delivered by consolidating cardiac surgery onto a single site and is entirely supportive of the cardiac CWG's ambition to deliver this. A single cardiac surgery centre in Manchester would mean that expertise was focused in a particular place therefore driving better patient outcomes. The resulting cardiac centre would become the biggest in the north of the UK and would therefore offer better opportunities for research, learning and training. Financial and efficiency gains would also be delivered as fixed costs could be reduced and duplication of services (for example middle tier on-call rotas) would be removed. It is recognised that some capital investment would probably be required to allow this opportunity to be realised but it is hoped that the CWG will consider how this might be minimised by better utilisation of existing infrastructure.

The Cardiac Services CWG will consider these issues in coming weeks.

4.9 Back Office services

The closer alignment of hospital services in the City of Manchester could present opportunities to achieve savings in the current overhead cost base, including corporate support, facilities management and "top office" functions. This issue was considered by the Trust Directors of Finance, as part of the Single Hospital Service Review process, and the full version of their report is available in Appendix (XVI).

They concluded that all three organisations have been actively addressing back office savings over the last two years as part of turnaround, or cost saving, programmes. Further plans are also in place to deliver more savings in these areas going forward.

A back office services work programme has also been developed in the context of Greater Manchester Devolution. This work programme is focused on addressing all aspects of corporate services where economies of scale might exist. A similar programme is under way to identify and pursue relevant Estates opportunities.

The current uncertainties around organisational/governance arrangements, that might be recommended to best deliver a Single Hospital Service, currently limit the extent to which City-wide back office and estate savings can be predicted. Indeed, it is likely that the back office savings that might be generated will vary depending on the organisational/governance arrangements that are finally agreed. The second stage of the Single Hospital Service Review will consider these issues in more detail and will seek to provide an indication of the back office savings that might be generated for different models.

5.0 What are the benefits (or implications) of a single hospital service?

The single service models and the benefits identified by the Clinical Working Groups (outlined in section (4.0)) go some way to describe the implications of developing a single hospital service across the City of Manchester. However, extrapolating the work done in these areas, and adding in thoughts from colleagues working in finance, research and education allows for a more comprehensive assessment. This is outlined in section (5.1).

5.1 Benefits of a single hospital service.

5.1.1 Quality of Care

The CWG have identified that single service models could lead to a number of improvements in the quality of care provided across the city. The review has concluded that a single hospital service is therefore likely to provide the opportunity to:

- Reduce variation in the effectiveness of care
- Reduce variation in the safety of care
- Develop appropriately specialised clinicians and reduce variation in the access to specialist care, equipment and technologies

In particular:

- Shared pathways and protocols across the city will ensure all hospital sites are conforming to best practice helping to raise standards. All of the eight clinical working groups agreed that standardised pathways and protocols should be adopted across the city.
- Sharing staff across a single hospital service could help ensure that rotas are optimised across all sites, particularly with the need to move to seven day working. Examples from the CWGs include proposals to pool staff to create a joint “placenta accreta” rota in maternity services and the potential introduction of a joint 24/7 cardiac device rota in cardiology.
- Sharing staff across a single hospital service will also ensure equity of access for all patients to the same sub-specialist expertise, which will increase patient safety and reduce variations in care. Examples from the clinical working groups include the recommendation to create a new bone infection service and ensuring patient access to subspecialist radiology opinions via a virtual ‘hub’.
- A single hospital service allows the opportunity to differentiate the care provided on different hospital sites in order to ensure that patients are always treated in the right setting of care and by staff with the expertise appropriate to their condition. Examples from the CWGs include the idea of creating a single Inpatient Infectious Disease hub which would consolidate expertise and accept referrals for the whole region.

5.1.2 Patient Experience

The CWGs have identified that single service models could lead to a number of improvements to the experience that patients across the city have when they access health services. The review has concluded that a single hospital service is therefore likely to offer the opportunity to:

- Provide more co-ordinated care across the city (and reduce fragmentation)
- Enhance the work of the Local Care Organisation and transfer care closer to home
- Improve patient choice and patient confidence
- Improve access to services and reduce duplication (and thus unnecessary trips to the hospital)

In particular:

- Operating as a Single Hospital Service ensures patients have equal access to the same high quality care and that their journey through the system will be coordinated rather than fragmented. Where services may be differentiated, consistent and effective protocols will help coordinate care between sites and, where necessary, transfer patients.
- Patient confidence will be increased by the knowledge they are getting consistently high care from a Single Hospital Service. An example from the Infectious Disease Clinical Working Group outlines the ambition to have a single 'brand' that would instill as much confidence as 'The Christie' does for cancer services.
- A Single Hospital Service could provide consistent thresholds for out of hospital care and could work with the Local Care Organisation to deliver care closer to home. Examples include the potential development of a seamless city-wide integrated care for acute and chronic respiratory conditions and the idea to create a telephone advice lines for GPs in Infectious Diseases.
- A Single Hospital Service will allow waiting lists to be pooled which will improve access to services and reduce waiting times (see examples in Rheumatology and Cardiac Services). Choice will be enhanced by patients being more readily able to choose when and how they access care. Examples include the recommendation to create a city-wide community midwifery team and deliver an associated increase in the number of community provided midwifery services. In addition, the idea to have a single booking system for elective scans would allow patients to have their scan at the right time and place for them.

5.1.3 Workforce

The CWGs have identified that single service models could lead to a number of benefits in relation to workforce. The review has concluded that a single hospital service is therefore likely to provide the opportunity to:

- Improve the recruitment and retention of a high quality and appropriately skilled workforce
- Support the requirement to provide a seven day service
- Reduce the reliance on bank and locum/agency staff
- Support teams to meet the needs of current and future demand for services

In particular:

- A single hospital service will remove competition between providers to attract staff therefore increasing retention within the city. The ideas to create a single community midwifery service or to pool the teams of cardiac electrophysiologists provide examples of where this might reduce current competition.
- A single hospital service would promote innovative ways of working that could reduce the reliance on expensive bank and agency staff. Current national shortages of staff could be addressed by sharing expertise across the city and by enabling appropriate skill mix changes. The radiology proposals for sonographer led reporting provide a good example in this area.
- A single hospital service will provide improved education, training and research opportunities, which will ensure the best individuals are attracted to come and work in the City. The cardiac services clinical working group articulated a vision for a single service where they become a national leader in clinical research thereby attracting high calibre staff.
- The pooling of staff within a single hospital service supports the requirement to provide a 7 days service. The Radiology, Cardiac Services and Infectious Diseases teams all identified that operating single service models would allow them to provide a 7 day service, across the city.

5.1.4 Finance and operational efficiency

The CWGs have identified a range of financial savings that could be made in their particular service areas by operating single service models. These are described below, (see Table (15)) in more detail and indicate that in the eight exemplar service areas the total gross financial savings might be in the region of £22m-£29m (8-10% of cost in these specialties). Similar levels of savings would be expected to be replicated for all other hospital services if a fully aligned single hospital service is delivered. It may also be possible to realise additional back office savings dependent on the organisational option chosen. The best local comparator in recent times is the savings achieved in integrating Trafford Hospitals into CMFT. Corporate cost savings of £5.5m were delivered in that example case.

Details of the financial analysis are availble in Appendix XVII.

Table (15). Illustrative potential financial benefits of single service models.

ILLUSTRATIVE

Illustrative potential financial benefits of a single service model can be shown across the following categories

X% Calculated based on variation between sites
X% Illustrative, based on clinical view a saving could be made

	Potential to reduce activity and duplication of effort (%)	Potential to reduce unit cost of activity (%)					Approx. saving off current baseline (including illustrative savings) (£M)
		Medical staff cost	Nursing staff cost (ALOS)[1]	Other staff cost	Consumables	Fixed cost	
Cardiac Services	5-10% NEL 7-10% outpatient	*50% mid-tier rota*	10% ALOS[2]	…	*10% consumables*	*5% assets*	5-6
Respiratory services	1-6% NEL 12% outpatient	5% staff	19% ALOS	…	5-10% consumables	…	3
Maternity services	*5-20% NEL* *5% outpatient*	*5% staff*	9% ALOS	…	*10% consumables*	…	5-10
Secondary care paediatrics	*10% NEL* 6% outpatient	*10% staff*	11% ALOS	…	*10% consumables*	…	4
Radiology, including interventional radiology	*6% Reduction in tests*	*5-10% staff*	…	…	*10% consumables*	…	1-2
Infectious disease	*5-7% NEL* 8% outpatient	…	4% ALOS	…	*10% consumables*	…	0.5
Rheumatology	10% outpatient	*10% staff*	*Unquantified*[3]	…	*10% consumables*	*Unquantified*	1
Critical care	…	12% staff	2% ALOS	…	*10% consumables*	…	2
Back office cost	£5.5m of back office savings were made in the Trafford merger (dependent on organisational options and not included in the total)						
Total	*Value is highly dependent on other changes to the model of care, most notably in integrated care and therefore will double count integrated care savings substantially:*						22 - 29

Savings illustrated need to be considered against future increases in costs, for example if activity were to increase by 20% in the future, in the new single service model there may only be a need for 10% more staff not the 20% that would be required with no change in the model

1 Savings calculations use case mix adjusted ALOS variation analysis, a unified OPAT service is an example mechanism for these savings; 2 weighted average saving of cardiology and cardiac services; 3 Variation suggests a 41% potential ALOS saving, this has not been used as the low number of inpatient spells makes accurate calculation of case mix adjusted ALOS inaccurate

A precise assessment of the financial savings that could be made by the creation of a single hospital service is difficult to quantify at this stage. However, it is likely that financial and operational efficiencies will be realised in the following areas:

- Drugs and other consumables. These savings will primarily be made through improvements to procurement. The Carter report recommends that provider organisations come together to improve their procurement and a Single Hospital Service will enable this.
- Workforce. Savings in workforce costs will be made through productivity and efficiency improvements.
- Estates and assets. There may be opportunities to reduce the cost of estate and assets by consolidating activity to increase the utilisation of some assets and thereby reducing the requirement for others.

It should also be highlighted that if current activity increases and length of stay reductions continue, and the Local Care Organisations meets its objective of reducing non-elective admissions by 10-20%, there will be approximately 200-650 beds of spare capacity within the hospitals. This equates to £20-£50m of stranded fixed costs. This will inevitably mean that providers will need to work together to ensure the sustainability of hospital services.

5.1.5 Research and innovation

The Clinical Working Groups and representatives from the research departments of CMFT, PAT and UHSM have identified a range of benefits that could be derived from a single hospital service. The outputs of their work can be seen in Appendix (XVIII). All agreed that current arrangements limit both the quality of care provided to patients and the ability of Manchester to 'punch it's weight' academically both national and globally. In particular they point to:

- Current variation in access to research which may impact on patient outcomes
- Separate pools of patients that limit trial recruitment
- The lack of knowledge, within the city, regarding the work of individual research groups
- Barriers to the adoption of innovations into clinical practice

A single hospital service could address some of these issues by enabling the creation of a single research hub and the third largest research network in the country. In particular the Single Hospital Service would provide the opportunity to:

- Create a single portal and point of entry to all clinical trials within the same process to deliver this to patients
- Combine research governance, strategy, finance and communications to enable common pathways, protocols and joint sponsorship
- Ensure research is linked across specialties and sub specialties
- Create a pool of researchers who are able to learn from and support each other
- Ensure research generated in Manchester is owned and carried forward by Manchester
- Ensure new research and best practice guidelines are implemented in consistently across the city
- Undertake 'real world' studies using joined up Electronic Patient Pathways

It is acknowledged that some of this work will be facilitated through the 'Health Innovation Manchester' agenda but it is thought that collaborative working in the City of Manchester will greatly assist in this process.

5.1.6 Education and training

The Clinical Working Groups and representatives from the education teams across the city have identified a range of benefits that could be derived from a single hospital services. The outputs of this work can be seen in Appendix (XIX). It was highlighted that current arrangements pose a number of challenges including:

- Duplication of training efforts
- Varied access to sub-specialties and interesting cases, and differential student experiences
- High attrition from nursing, medical and allied health professional roles
- Gaps in medical training rotations (when trainees are out of programme for maternity leave, research time etc) place workload pressures on all staff and adversely affect the trainees learning experiences - this will be exacerbated by the removal of locum training appointments from this year.

A single service model will increase collaboration between provider education departments. This will support:

- Optimised curriculum delivery, clinical exposure and reduced variability in the student and trainee experience
- Widen student and trainee exposure to different clinical environments
- Financial efficiencies due to a reduction in training duplication
- Enhancing the reputation of Manchester as a place to come to be trained and to work
- Development of a city wide training faculty in line with MMU and HENW standards
- Equal access to apprenticeships across the city of Manchester which could improve recruitment of AHPs and nurses,
- The collaborative use of funding from the Apprentice Levy for the development of bespoke Higher Apprentices such as non-medical prescribing and mentoring to up skill staff

To ensure clinical and financial sustainability and support the changes of a single hospital service the nature of the workforce will need to change. Education and training are key enablers, particularly of the shift towards more care being delivered in the community.

A single hospital service will support multi-professional/cross professional training and a focus on the team. It will help enable a move away from competition towards collaboration and team working. Ideally, it needs to be considered in education as early as possible. There may be opportunities to do this through challenging educators; schools through GM devolution and Higher Education Institutions through direct engagement. It then needs to continue in training with students based in strong teams where they feel looked after and learn consistently from a multidisciplinary approach.

5.2 Implementation Issues

All of the Clinical Working Groups highlighted a range of enablers that they felt would need to be in place to ensure the most effective delivery of the benefits of their single service models. They are described below in Table (16).

Table (16): Enablers of single service working

Enablers of single service working

	Technical enablers							Out of hospital		
	Shared IT	Shared diagnostics	Central communication	Ability to transfer patients and specimens	Processes for clinicians to work cross site	Joint HR	Deanery approval for training	Updated model of care to improve skill mix	Improved sharing of information	Effective triage to the correct centre or specialist
Infectious diseases	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rheumatology	✓	✓	✓							
Respiratory	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Cardiac services	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Maternity services	✓	✓	✓		✓	✓		✓	✓	
Secondary paediatrics	✓	✓	✓					✓	✓	
Critical care[1]	✓	✓	✓	✓	✓	✓	✓			
Radiology	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

1 Horizon 1

These issues are likely to be indicative of the enablers that will need to be in place to provide an effective Single Hospital Service.

The need for a shared IT system/platform across the city, with links to primary and community care IT systems was highlighted by all the groups. The Chief Information Officers from CMFT, PAT and UHSM have recently come together to consider this requirement and are expected to continue to work together to assess how IT systems can be best configured to support the delivery of single service models.

The development of primary and community care services that are able to work collaboratively with acute single service teams, in order to deliver integrated care that is closer to home, was highlighted by a number of groups. It is expected that the development of single service models will enhance the

development of the Local Care Organisation but some aspects of the single service models are also reliant on the Local Care organisation being ready to support care moving out of a hospital setting.

All CWGs also identified a range of organisational or governance measures that would need to be in place to deliver a single service model. These vary from the ability to monitor and manage the implementation of agreed protocols, to the HR processes that will need to be in place to facilitate cross site working. Some of the CWGs indicated the need to have a shared management function in order to fully optimise the way that single service models might deliver benefits. Stage Two of the Single Hospital Service Review will undertake an appraisal of which organisational arrangements might best support the delivery of single service models and therefore the delivery of Single Hospital Service benefits.

6.0 Conclusion and Recommendations

The City of Manchester has three major hospitals within a close geographical proximity. These facilities provide a comprehensive range of hospital services to the people of Manchester. Some of these services have national and international standing and examples of exceptional care can be seen across all hospital sites. There is a great deal about which the city should be proud.

However, the three sites are operated by three separate organisations each with different priorities and ways of working. In recent years national policy has encouraged provider organisations to act as rivals; as a result there have been significant boundaries to collaborative working between teams. This situation has also led to duplication (or triplication) of services in some areas while in others there are service gaps. There is clear evidence of unacceptable variations in the provision and quality of care provided to patients in the city. Manchester has some of the poorest health outcomes in the UK and it is a failing of current arrangements that the city cannot guarantee the same access to appropriate healthcare professionals/equipment, or indeed the same clinical outcomes, for patients who live within 10 miles of each other.

There is much that needs to be done to rectify this situation. For their part, hospitals need to work together to standardise the care that is offered across the city, ensuring all services are raised up to the standard of the best. The current levels of variation across Manchester with respect to patient experience, operational performance and the workplace environment must also be addressed. For too long Trusts have been competing to attract staff with specialist skills instead of working together to ensure high calibre individuals are attracted and then deployed effectively, within the city. The priority to ensure high quality care is provided seven days a week further emphasises the need for organisations to work collaboratively to make best use of their shared workforce.

Barriers between Trusts have also limited the extent to which Manchester can meet its potential in the fields of research and education/training. The hospitals in Manchester sit alongside one of the biggest universities in the UK and the local population is large and demographically varied. However, many local clinicians and researchers agree that current arrangements do not allow this opportunity to be realised. All have indicated that a co-operative approach to education and research will not only enhance the quality of services provided to patients but will also give Manchester an opportunity to become a nationally and internationally recognised centre for training, research and innovation.

Healthcare organisations in Manchester are facing enormous financial and operational pressures. In recent months no hospital in Manchester has consistently met the 4-hour A&E target and performance against the 18 week referral to treatment time is variable. The city experiences high rates of hospital admissions for chronic ambulatory care sensitive conditions (compared to the national average) and emergency admissions to hospital have increased by approximately 10% over the past three years. The pressures experienced in hospitals may be eased by the proposal to provided care in community settings and it is vital that the hospitals work together to support the development of the Manchester Local Care Organisation (LCO). However, this alone is unlikely to completely address the problem. Only by working

together can the Manchester hospitals reduce fragmentation and duplication of care, therefore increasing efficiency and reducing the need for patients to access healthcare services.

The financial pressure on Acute Trusts is well recognised. All organisations are currently forecasting financial deficits for next year. In revenue terms the predicted "do nothing" deficit for health services in Manchester has been assessed in the Locality Plan at £163m between now and 2021 and there is a further £121m deficit in social care. If anything, these estimates are likely to be conservative. Service models that operate at considerably less cost for providers, commissioners, and ultimately the taxpayer are required. In addition, as access to capital funding is also extremely tight, and this likely to remain so for the foreseeable future, attention needs to be given to ensuring existing facilities as used as productively as possible.

The challenge to Manchester is real and it is facing the healthcare system right now. This first stage of the Single Hospital Service Review seeks to address this challenge by identifying the benefits that might be realised from developing a Single Hospital Service within the City. These benefits have been derived from the input of the eight clinical working groups that were set up to consider single service models for their areas but also from the feedback of the many other individuals who have contributed to the Single Hospital Service Review. This work has identified that the following benefits could be delivered though the hospitals in Manchester working in a more collaborative way:

Category	**Benefits**
Quality of Care	• Reduce variation in the effectiveness of care • Reduce variation in the safety of care • Develop appropriately specialised clinicians and reduce variation in the access to specialist care, equipment and technologies
Patient Experience	• Provide more co-ordinated care across the City (and reduce fragmentation) • Enhance the work of the Local Care Organisation to transfer care closer to home • Improve patient access and choice • Improve access to services and reduce duplication (and thus unnecessary trips to hospital)
Workforce	• Improve the recruitment and retention of a high quality and appropriately skilled workforce • Support the requirement to provide a seven day service • Reduce the reliance on bank and locum/agency staff • Support teams to meet the needs of current and future demand for services
Financial and operational efficiency	• Reduce costs in supplies and services (including drug costs) • Reduce staff costs through improvement in productivity and changes in skill mix • Limit future capital outlay and ongoing fixed costs assets • Improve operational performance

Category	Benefits
Research and Innovation	• Increase research activity and income • Create a single point of entry to all clinical trials therefore improving access • Ensure new research and best practice guidelines are implemented consistently to improve services
Education and Training	• Optimise curriculum delivery, clinical exposure and reduce the variability in student and trainee experience • Widen student and trainee exposure to different clinical environments • Enhance the reputation of Manchester as a place to come to be trained and to work

The review has also identified a range of enablers or 'implementation issues' that would need to be addressed in order to successfully deliver these benefits. The need to share information effectively across a Single Hospital Service and the changes to existing IT systems needed to support this process have been highlighted. As a minimum it is expected that IT systems will need to be able to 'talk' to each other and exchange data between the hospital sites. In addition, the interdependency between the Manchester Local Care organisation and a Single Hospital Service cannot be understated. Crucially, many in the Clinical Working Groups also highlighted the need for appropriate organisational arrangements to support the development of a Single Hospital Service. These include the ability to monitor and manage the implementation of agreed protocols, processes to ensure staff can operate effectively across all sites, arrangements to ensure the safe and timely transfer of patients and joint HR processes. Stage Two of the Single Hospital Service Review will undertake an appraisal of which organisational arrangements might best address these requirements.

The benefits set out above, and the potential to successfully address some of the challenges facing health services in the City of Manchester, highlight the need to deliver a Single Hospital Service. However, it is important that this kind of service provision has an appropriate interface with the primary, community, tertiary, mental health and ambulance services. In addition, it is essential that commissioning arrangements are in place to support its successful development. It is therefore vital that the processes to develop a Local Care Organisation and a single commissioning function with the city are timed to mutually support the creation of a Single Hospital Service.

The single service models so far developed by the clinical teams also need to be further explored to fully understand their impact and interdependencies. All clinical models outlined in this report have resulted from discussions between senior clinicians across the city. Some clinicians have articulated ambitious and transformational single service models with a high degree of benefits. In other areas the review process has identified additional ideas that the services could consider to further develop the range of benefits a single service might offer. However, in both cases much more detailed work is required to ascertain the full range of implications and to involve a wider range of stakeholders, including patient/ public representatives and clinical commissioners, in the future discussions about how services might best be delivered.

During the process of the review it was also highlighted that a fourth hospital site, The Christie NHS Foundation Trust, also resides within the City of Manchester. The Christie provides services across Greater Manchester, and beyond, and so was excluded from the remit of this review. However, the way the Trust provides radiotherapy and chemotherapy services across the region, provides an excellent example of how a high quality single integrated service can be delivered. The review did hear that the provision of surgical oncology varies across the conurbation with care being distributed between the Christie, UHSM and CMFT. In the light of proposals regarding a Single Hospital Service it is thought that there might be some merit in separately discussing the optimum distribution of surgical oncology services across the city.

6.1 Recommendations

The Recommendations of the first stage of the Single Hospital Service Review are listed below:

- A Single Hospital Service model should be developed within Manchester to deliver the benefits identified by this review. The Single Hospital Service Review will consider the appropriate organisational/governance arrangements to deliver these benefits in the second stage of the review.

- Single service models described within this first stage review should be further developed with a range of other stakeholders, including patient/public representatives and clinical commissioners. Work to produce more detailed operational models, and to understand the full implications and interdependencies of these models, should be undertaken at the earliest opportunity.

- Single service models in other clinical areas should be developed by the creation of additional Clinical Working Groups with appropriate arrangements established to support this work.

- Processes to develop a Local Care Organisation and to see more care delivered in a community setting should be timed to support the delivery of Single Service models and vice versa.

- Processes to develop a single commissioning function within the city should be timed to support the delivery of a Single Hospital Service

- In the light of a proposed Single Hospital Service across the City, commissioners should pursue discussions with all parties regarding the most appropriate configuration of surgical oncology.

7.0 Next Steps

1) The Manchester Health and Wellbeing Board is asked to endorse the First Stage Report and accept the recommendations provided in section 6.1.

2) Given the nature and scale of the benefits identified by the first stage of the Single Hospital Service Review it is recommended that the review progresses to Stage Two and considers the governance and organisational arrangements that might best deliver these benefits.

Sir Jonathan Michael

Independent Review Director

18th April 2016

8.0 Appendicies

Appendix Number	Title
Appendix I	Performance Information
Appendix II	Terms of Reference for SHS Job Description for SHS Review Director
Appendix III	Terms of Reference for SHS Steering Group
Appendix IV	List of people who contributed to the SHS Stage One Review Process
Appendix V	Communications Plan
Appendix VI	Stocktake and scoring of Services
Appendix VII	Feedback from Chief Nurses
Appendix VIII	Infectious Disease Single Service Model
Appendix VIII (a)	Infectious Diseases Data Pack
Appendix IX	Radiology Single Service Model
Appendix IX (a)	Radiology Data Pack
Appendix X	Respiratory Services Single Service Model
Appendix X (a)	Respiratory Data Pack
Appendix XI	Rheumatology Single Service Model
Appendix XI (a)	Rheumatology Data Pack
Appendix XII	Maternity Single Service Model
Appendix XII (a)	Maternity Data Pack
Appendix XIII	Critical Care Single Service Model
Appendix XIII (a)	Critical Care Data pack
Appendix XIV	Secondary Paediatrics Single Service Model
Appendix XIV (a)	Secondary Paediatrics Data Pack
Appendix XV	Cardiac Services Single Service Model

Appendix XV (a)	Cardiac Service Data Pack
Appendix XVI	Back Office Services
Appendix XVII	Financial Analysis
Appendix XVIII	Outputs from Research Group
Appendix XIX	Outputs from Education and Training Group

Appendix I Performance Information

The tables below provide an indication of individuals Trust performance in a range of measures. The data below is all publicly available on the NHS England, Health and Social Care Information Centre website and represents the most recent published data. It should be noted that performance data is not available specifically for the North Manchester General Hospital site and so information for the whole of Pennine Acute Hospitals Trust is shown. This may limit the comparisons that can be drawn across the City of Manchester.

1.0 Access Targets

Indicator	Standard	CMFT	PAHT	UHSM
A&E 4 Hour Performance (Quarter 3 2015/16)	**>95%**	92.7%	80.7%	82.1%
RTT Incomplete Pathways (January 2016)	**>92%**	92.0%	96.1%	86.3%
Cancer 62 Day Performance (Quarter 3 2015/16)	**>85%**	86.7%	94.8%	88.4%

2.0 Friends and Family Test

Indicator		CMFT	PAHT	UHSM
Extremely Likely or Likely % (OPD) (Jan 2016)		88%	87%	97%
Extremely Likely or Likely % (Inpatient) (Jan 2016)		93%	93%	96%
Extremely Likely or Likely % (A&E) (Jan 2016)		91%	81%	85%

3.0 Staff Survey

Indicator		CMFT	PAHT	UHSM
Staff Engagement Score (2014)		3.76	3.61	3.83
Staff Engagement Score (2015)		3.89	3.67	3.76

4.0 SHMI (Summary Hospital Level Mortality Indicator) (Oct 14 – Sept 15)

Provider code	Provider name	SHMI value	SHMI banding	Number of spells	Observed deaths	Expected deaths	95% over-dispersion lower control limit	95% over-dispersion upper control limit
RGT	CENTRAL MANCHESTER UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	0.978	2	104,242	1,725	1,763.298	0.904	1.107
RJL	UNIVERSITY HOSPITAL OF SOUTH MANCHESTER NHS FOUNDATION TRUST	0.993	2	64,733	1,950	1,963.272	0.905	1.106
RRF	PENNINE ACUTE HOSPITALS NHS TRUST	1.049	2	122,951	4,044	3,856.598	0.909	1.100

Single Hospital Service Review Stage One Report. Appendix I

Single Hospital Service for Manchester

Terms of Reference

1. Background

The Manchester Oversight Group, working on behalf of the Health and Wellbeing Board, has developed a proposal for the establishment of a "single hospital service" for Manchester. This proposal is consistent with Manchester commissioners' aspirations for hospital services in Manchester, and is a key theme within the Manchester Locality Plan.

The key commissioner and provider organisations confirmed their commitment to the proposal at a special meeting on 3 November 2015, and again at the Manchester Health and Wellbeing Board meeting on Wednesday 11 November 2015.

This document provides a provisional plan for the range of actions that need to be undertaken to design the single hospital service agreement.

2. Current challenges

As other reports provided to the Health and Wellbeing Board demonstrate, whilst Manchester hosts a wide variety of very high quality hospital services, some with national and international reputations, it continues to be the case that the residents of Manchester generally have poor health outcomes compared to the rest of the country.

The main hospital services that are used by the residents of Manchester are provided by three different provider organisations (Pennine Acute NHS Trust (PAT), Central Manchester University Hospitals NHS FT (CMFT), and University Hospitals of South Manchester NHS FT (UHSM)). Previous national policy has encouraged provider organisations to compete, and the structure of contracts, payment mechanisms and competitive tendering processes has made it difficult for Trusts to behave in any other way.

This approach has resulted in duplication of services, and has created barriers that stop Trusts working together to improve services for local people. A variety of difficulties are encountered:

- For some services there is unproductive duplication (or triplication) of services, and in others there are service gaps that make it difficult for patient to access the care they need.
- Trusts find themselves competing with each other to attract staff with specialist skills, but these individuals are not always then deployed as effectively as they might be.
- Opportunities to work together to improve patient care or enhance research and innovation are missed
- Some clinical services run the risk of becoming unsustainable, and having to be discontinued in an unplanned or reactive way.
- There is no clear Manchester focus for acute hospital care, or for the relationship between providers and commissioners.
- Different operational protocols and patient pathways are used in the various provider organisations
- Different standards of care are provided to people in different parts of the city,

The proposal for a single hospital service for Manchester seeks to create a mechanism for closer collaborative working and to deliver consistent and complementary arrangements for providing acute hospital services across Manchester, with the aim of eventually achieving a fully-aligned hospital model. This would encompass a comprehensive range of clinical single services, and optimised arrangements for support services, estates utilisation, and back office functions. Further, innovation is essential to drive the change necessary in health outcomes and care pathways. Integrating research and innovation, along with education of the workforce, will be fundamental to deliver a high quality service that will attract investment for research and innovation.

Manchester commissioners have given a very clear indication that the existing structures and arrangements for providing hospital services in Manchester are no longer acceptable. They have defined their minimum requirements as creating a single system with a unified focus for authority and accountability and a single contractual arrangement for hospital services in the city.

3. Review structure

It is proposed to progress the project through a two stage review. Firstly, this would review the service, research and innovation, and educational portfolios of the three Trusts and develop a detailed exposition of the potential benefits of a fully aligned hospital service model, including its alignment with the proposed structure for integrated care in Manchester based on Living Longer Living Better/One Team. Secondly, the review would then undertake a detailed appraisal of the most appropriate and effective governance and organisational arrangements to deliver the identified benefits.

The review structure will need to recognise the significant transformation programme currently being progressed by North East sector commissioners and Pennine Acute Hospitals NHS Trust and the Healthier Together programme.

4. Resources and Funding

This review is a significant piece of work which will require substantial analytical and project management resources to complete it in the planned timeframe. The following resources will be procured to support the review:

- Review Director
- Analytical Support. External management consultancy support will be obtained
- Project Management. A full time, independent project manager will be employed by the three trusts to project manage the review.

Recognising the importance of the review, the system, both commissioners and providers, has agreed to fund the review, including the above posts. Funding will be shared on a 60/40 basis between providers and commissioners (CCGs and MCC), with each provider contributing 20% and each commissioner 10%. Where possible, external funding sources such as CSR funding will be sought.

5. High-level Timeline

The high-level timeline for the two stages of the review is as follows:

Stage 1: 16 Nov 2015 – 6 March 2016 (Report to HWBB on 9 March)
Stage 2: 10 March – 31 May 2016 (Report to HWBB on 8 June)

This allows 16 weeks for the first stage, and 12 weeks for the second stage.

6. Governance and Reporting Arrangements

- **a.** The review has been commissioned by the Manchester Health and Wellbeing Board (HWBB). It will receive regular progress reports via the Exec HWBB. The final review reports will be presented to the HWBB in March and June.
- **b.** The Executive HWBB will oversee the review on behalf of the HWBB. It will receive monthly progress reports from the Review Director.
- **c.** The Review Steering Group will oversee the delivery of the review, acting as a project board. Chaired by the Review Director, it will meet at least fortnightly and more often if necessary. The Review Steering Group will provide monthly progress reports to the Executive HWBB.
- **d.** Until the new Manchester governance arrangements are in place in which Trust Chairmen become members of the HWBB, the Review Director will hold interim reviews with Trust Chairs to update them on the progress of the review.
- **e.** The Review Director will also meeting informally with each Trust Board, or an appropriate strategic sub-committee, to keep them abreast of progress and the emerging themes.

See Appendix 1 for a diagram of the governance structure. Appendix 2 provides a timetable of HWBB, Executive HWBB and Trust Board meetings for reference.

7. Structures and Roles

a. Review Steering Group.

The Review Steering Group will oversee the Review process on behalf of the Health and Wellbeing Board and Trust Boards. The Steering Group will be chaired by the Review Director and the membership will include the Chief Executives, Medical Directors and one other nominee from each of the three hospital service providers in Manchester. Consideration will be given to commissioner and other Manchester stakeholder members. The group will meet on a fortnightly basis as a minimum, and more frequently if required.

The Steering Group will also have the option of convening a clinical “Star Chamber” to consider any key clinical issues that have not been resolved in the clinical workstream groups

b. Independent Review Director. The role of the Review Director is to undertake an independent review of hospital services in Manchester, to advise on the potential benefits of closer alignment between the existing services (focused on clinical, patient, research, workforce, operational and financial benefit themes), and on the most effective governance and organisational arrangements to deliver these benefits. Amongst other responsibilities, the Review Director will: ensure the review proceeds

effectively and on time; chair the Review Steering Group; engage with clinicians in the three Trusts and facilitate resolution of differing views about the potential benefits of service alignment; and review options for alternative governance and organisational arrangements. He/she will produce independent reports, informed by the Trust Boards, at the end of each phase of the review.

c. **Review Project Manager.** The Project Manager will provide senior project management in support of the Review Director and external consultancy report. He/she will be responsible for developing an overall project plan and workstream plans including a clear timeline (Gantt Chart) with a critical path. He/she will develop a communications plan for the review, working with the three Trust communications teams to develop common internal and external messages. He/she will ensure the project is delivered on time and to cost, reporting progress regularly to the Review Steering Group, Trust Boards and the Executive HWBB. He/she will liaise with the three Trusts and the external consultancy at senior level to ensure that tasks are completed on time and to high quality, influencing and unblocking issues as they arise. In addition he/she will provide direct support to the Review Director, including supporting the drafting of the review reports by the Review Director.

d. **External consultancy & Analytical Support.** External consultancy support will be procured to provide analytical capacity and workstream facilitation support. The tasks of the consultancy support will be:

Stage 1 – Benefits Assessment

- Analysis of the existing service portfolios of all three trusts. This will include data on all 6 benefits assessment themes. It will also include consideration of activity flows into and out of Manchester.
- Establishment and facilitation of the specialty (or specialty group) based clinical work-streams. This will involve supporting the clinicians to review and assess the data provided for each specialty to identify the potential benefits of increased alignment for each benefit them.
- Facilitation of the Clinical Conferences including provision of analysis to support discussion and debate.
- Integration of the data, analysis and potential benefits developed through each clinical work-stream into an overall package of analysis and potential benefits for a fully-aligned single hospital service for Manchester.

Stage 2 – Governance & Organisational Arrangements

- Research on the potential options for governance and organisational arrangements, considering both UK and international examples.
- Generation of a long list of governance and organisational arrangement options
- Development options for assessment criteria, identifying the evidence base for different criteria and what has been used successfully elsewhere.
- Data gathering and analysis of the long list options against the chosen assessment criteria
- Facilitate assessment of the options in two stages:
    - Short list of options based on key hurdle criteria

- Final assessment to identify the preferred options to deliver the benefits identified in stage 1 most rapidly and most reliably, potentially including a staged process through other intermediate arrangements if necessary.

A Request for Proposals is attached at Appendix 2.

e. Communications Support. Communications support will be provided by the three Trust communications teams, with coordination from the Review Project Manager. At key times, additional communications support may be engaged through commissioners or via GM Devolution.

8. Review Reports. The Review Director will produce two independent reports, one for each phase of the review. The reports will be shared with and informed by the Review Steering Group during their drafting. The final drafts will be formally shared with the three Trust Boards in order to be informed by their views. The final reports will, however, by the sole responsibility of the Review Director and no individual or Trust Board will have a right of veto over their content.

The final reports will be presented to the HWBB at their meetings on 9 March 2016 (for stage 1) and 8 June 2016 (for stage 2). Each Trust Board will be invited to submit a statement to the HWBB detailing its support or otherwise for each report and its recommendations.

9. Communications

As well as engaging the key clinical teams, there will be a requirement to communicate very widely, both within the three Trusts, and with key stakeholders and audiences in the wider community. Early and ongoing engagement with Monitor and TDA will be essential.
A communications plan will be developed to run throughout the Review process, ensuring communication of accurate and relevant messages to all appropriate audiences. This plan will also need to dovetail with constituent Trust communications plans.

This review will be a major piece of work with potentially wide ranging implications for the three trusts, the health and social care system in Manchester and most importantly the patients and population of Manchester. As such, the communications required to support it must not be underestimated.

10. Stage 1 – Benefits Assessment

a. Scope

The scope of stage 1 includes:

- Clinical Services.
- Clinical Support Services.
- Education.
- Research.
- Back-office Services.
- Estates.

For clinical services all Trust services (but taking account of the NE Transformation Programme and Healthier Together) will initially be in scope, not just those services delivered from sites within Manchester. This is to ensure that patient flows into and out of Manchester are captured.

Community health services provided for Manchester patients are not in scope except in consideration of their alignment to hospital based services. These services will be considered through the Living Longer, Living Better strategy and One Team project. In particular the review must take into account the proposals being developed through the One Team programme for "DGH Services in One Team"

For estates the review should include all sites in Manchester and any nearby estate which delivers or supports services for Manchester patients. Where possible existing estates data captured through GM Devolution should be used.

b. **Benefits Assessment.**

The benefits identified in Stage 1 of the review process will be assessed based on the following themes:

Theme	**Scope**
Clinical	Patient safety, clinical effectiveness
Patient	Patient experience, patient satisfaction
Research	Research, innovation and biomedical infrastructure
Workforce	Recruitment and retention of staff, staff satisfaction, education and training
Operational	Performance, operational effectiveness, integration
Financial	Financial savings, productivity/efficiency, investment requirements

Examples of the potential benefits expected to be identified are:

- Opportunities to improve outcomes through increased sub-specialisation
- The ability to improvement recruitment and retention through more sustainable and flexible service models eg improved management of on-call rotas
- More sustainable service models through a single service approach
- Improve performance by better management of capacity and demand in the same service across multiple sites

This stage in the process will need to be mindful of Monitor and the Competition and Markets Authority requirements in relation to demonstrating that the patient benefits of new service models will outweigh any loss of choice or competition.

For the avoidance of doubt, this stage of the process will not seek to identify the future locations for the delivery of services.

11. Stage 2 – Governance & Organisational Arrangements

a. Scope

Stage 2 will consider a wide range of options for the governance and organisation of hospital services in Manchester in order to deliver the benefits identified in stage 1 most rapidly and most reliably. A non-exhaustive list of options could include arrangements such as:

- Do nothing
- Partnership underpinned by multiple SLAs
- Strategic partnership/alliance contract
- Multiple lead providers (service specific)
- Single lead provider
- Organisational mergers

The options may include proposals which would evolve or develop over time.

b. **Assessment of Options.**

The purpose of the assessment of options is to determine what sort of governance and organisational arrangements can deliver the identified benefits most rapidly and most reliably. Based on this overall objective, a set of assessment criteria will be developed. In developing the assessment criteria, it will need to be borne in mind that the Commissioners' minimum requirement is for a solution that provides a binding single point of authority and accountability for hospital service provision, and that the Commissioners will seek to achieve this through a procurement process if it is not delivered through collaborative working.

Depending on the outcome of the initial process to generate options, and advice from the Review Steering Group, the assessment process may be undertaken in two stages (initial shortlist followed by full assessment) or as a one stage process, but the options involved in the final analysis will need to be developed in some detail.

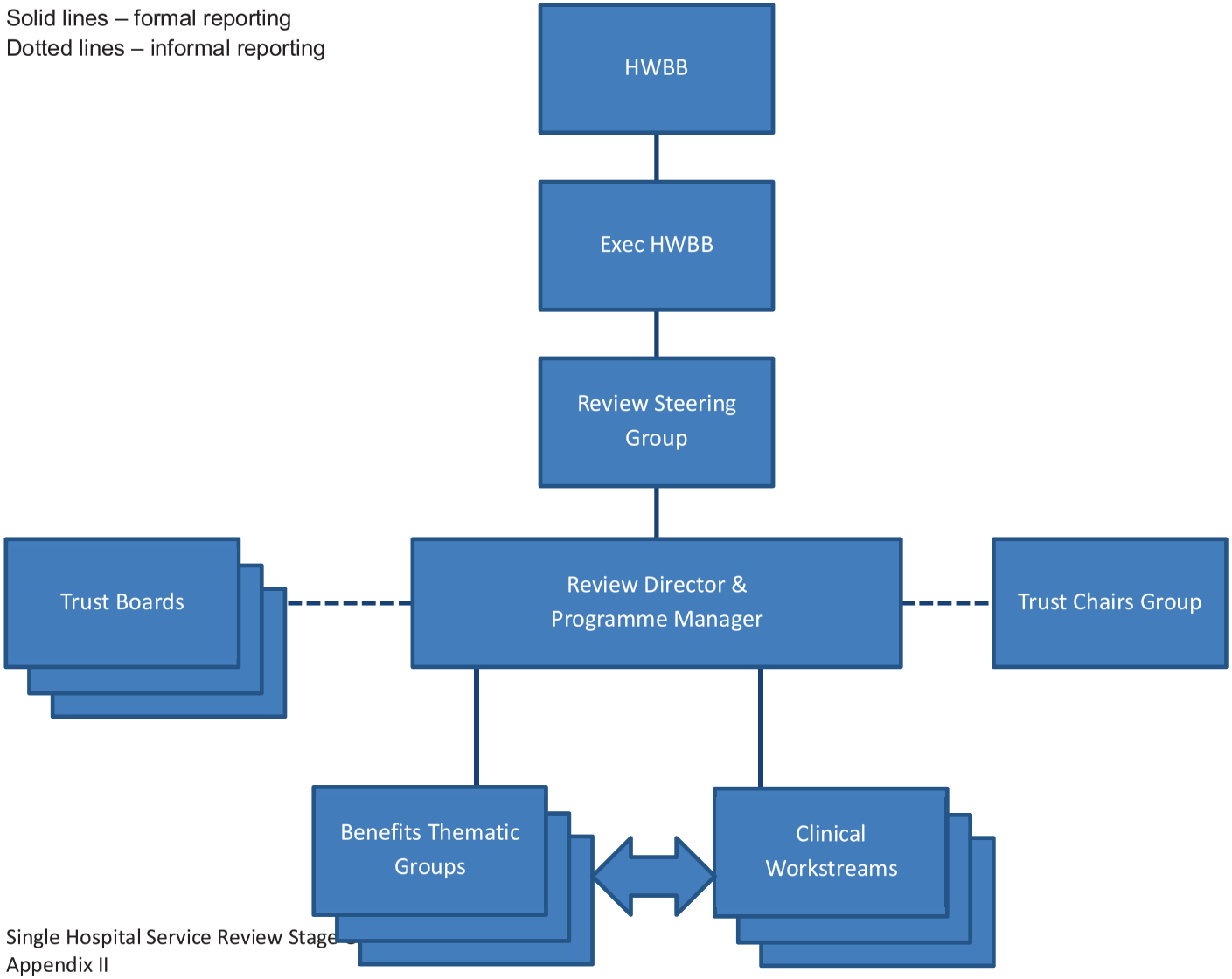
The assessment process will identify the preferred options to deliver the benefits identified in stage 1 most rapidly and most reliably, potentially including a staged process through other intermediate arrangements if necessary. It will draw on relevant evidence from elsewhere in the UK and internationally. Attention will be paid to how rapidly any alternative arrangements could be put in place, how rapidly benefits could be delivered, and how sustainable those arrangements would be in the longer term. Relevant considerations will include the need for any consultative processes, governance issues, the role of regulators, and aspects relating to competition law.

APPENDICES

1. Governance Structure
2. HWBB, Executive HWBB and Trust Board dates, Dec 15 to Jun 16
3. Job Description and Person Specification for the Review Director

Appendix 1 – Governance Structure

Solid lines – formal reporting
Dotted lines – informal reporting



Single Hospital Service Review Stage
Appendix II

Appendix 2 – HWBB, Executive HWBB and Trust Board dates, Dec 15 to Jun 16

Month	Trust Boards			HWBB	Exec HWBB
	CMFT	PAT	UHSM		
Dec 15	14 Dec	17 Dec	17 Dec	---	16 Dec
Jan 16	11 Jan	28 Jan (1)	28 Jan	13 Jan	27 Jan
Feb 16	8 Feb	25 Feb	25 Feb	---	24 Feb
Mar 16	14 Mar	31 Mar	24 Mar	9 Mar	23 Mar
Apr 16	11 Apr	28 Apr	28 Apr	---	tba
May 16	9 May	26 May	26 May	---	tba
Jun 16	13 Jun	30 Jun	30 Jun	8 Jun	tba

Notes

(1) Short due to Confirm & Challenge

Single Hospital Service Review Stage One Report
Appendix II

Appendix 3

Job Description and Person Specification for the Review Director

CITY OF MANCHESTER SINGLE HOSPITAL SERVICE REVIEW

INDEPENDENT REVIEW DIRECTOR

ROLE DESCRIPTION

Contracting organisation:	Central Manchester University Hospitals NHS Foundation Trust
Title:	Independent Review Director
Accountable to:	Chair, Central Manchester University Hospitals NHS FT Chair, University Hospitals of South Manchester NHS FT Chair, Pennine Acute NHS Trust
Duration:	Six months

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1. Background:

This post will provide overall leadership to the City of Manchester Single Hospital Service Review, and produce reports identifying the potential benefits of closer alignment of hospitals services in Manchester, and the most effective governance and organisational arrangements to deliver those benefits.

2. Key working relationships:

- Chairs of the three acute Trusts in Manchester
- Chair of the Manchester Health and Wellbeing Board

Single Hospital Service Review Stage One Report
Appendix II

- Chair of the Manchester Health and Wellbeing Executive Group
- Members of the Review Steering Group
- Members of the Manchester Health and Wellbeing Board and Executive Group
- Leads for key clinical workstreams
- Corporate links for benefits assessment themes
- Key leaders in academic health sciences in Manchester
- Project management support lead
- Analytical support lead

3. Job summary

The City of Manchester hosts a wide variety of very high quality hospital services, some with national and international reputations, but it continues to be the case that the residents of Manchester generally have poor health outcomes compared to the rest of the country.

The main hospital services that are used by the residents of Manchester are provided by three different provider organisations (Pennine Acute NHS Trust (PAT), Central Manchester University Hospitals NHS FT (CMFT), and University Hospitals of South Manchester NHS FT (UHSM)). Previous national policy has encouraged provider organisations to compete, which has resulted in duplication of services, and has created barriers that stop Trusts working together to improve services for local people.

The proposal for a single hospital service for Manchester seeks to create a mechanism for closer collaborative working and to deliver consistent and complementary arrangements for providing acute hospital services across Manchester, with the aim of eventually achieving a fully-aligned hospital model. Working with Commissioners through the Manchester Health and Wellbeing Board, the three hospital Trusts have now agreed to establish a Single Hospital Service Review.

The role of the Independent Review Director is to undertake an independent review of hospital service in City of Manchester, to advise on the potential benefits of closer alignment between the existing services (focused on clinical, patient, research, workforce, operational and financial benefit themes), and on the most effective governance and organisational arrangements to deliver these benefits.

4. Key responsibilities

The key responsibilities of the post are as follows:

- to facilitate the effective and timely operation of the Review processes
- to review and confirm the Review timescales
- to convene and Chair the Review Steering group
- to organise and manage the work of the analytical support and project management team
- to undertake an initial clinical stock-take encompassing the full range of hospital services provided by each of the three Trusts, including details relating to scale and scope, and identifying areas of overlap and duplication
- to engage effectively with clinicians in the three Trusts, including through:
  - the facilitation of two large-scale clinical conference events, with appropriate participation from across relevant services and organisations
  - the establishment and maintenance of a series of clinical workstreams (including identifying workstream leads and membership) to look at particular areas of clinical service provision
- to manage debate and facilitate resolution of differing views around the potential benefits of optimal service alignment
- to establish processes to aggregate the benefits identified through the clinical engagement processes
- to produce an integrated report on the potential benefits of closer alignment of hospital services in Manchester
- to review a wide range of options for alternative governance and organisational arrangements for hospital services, including approaches utilised elsewhere in the UK and internationally, and any innovative or emerging models

- to develop appropriate evaluation criteria (consistent with Commissioners' requirements) for determining the governance and organisational arrangements with the greatest potential to deliver the identified benefits

- to complete an appraisal process and produce a report making recommendations on optimal governance and organisational arrangements for hospital service in Manchester

- to liaise effectively throughout the Review process with key stakeholders

- to ensure, particularly, that regular reports are provided to the Health and Wellbeing Board (through the HWB Executive Group) and the Boards of the three Trusts, and that three interim review sessions are undertaken with the Chairs of the three Trusts

- to maintain a wider communications process throughout the review, ensuring effective and consistent messaging to key audiences including the public in Manchester

5. General

Key aspects of general behaviour and conduct are as follows:

- The Independent Review Director will maintain an independent position at all times, being entirely objective and showing no favour or preference to any particular organisation, clinical service or individual.

- The Independent Review Director will display the highest standards of personal and professional behaviour, consistent with the NHS Code of Conduct for Managers.

- The Independent Review Director will comply with the normal operational and other policies of the three Trusts, including in respect of health and safety, confidentiality and equality, diversity and inclusion.

CITY OF MANCHESTER SINGLE HOSPITAL SERVICE REVIEW

REVIEW DIRECTOR

PERSON SPECIFICATION

Criteria	Attribute	Evidence (eg CV/Interview)
Qualifications	Qualified medical practitioner Management/leadership qualification at Masters level or other evidence of developing leadership skills	
Experience and knowledge	National standing and credibility as a leader in healthcare policy and management Extensive experience of NHS management at the highest level, preferably in hospital service provision Experience of leadership in a complex, multi-agency health and social care environment, preferably in a major conurbation Track record of success in leading major change programmes in the organisation and provision of health services Detailed knowledge and experience of models of health service provision, preferable on an international basis Successful track record of developing academic health sciences and building collaboration between the NHS and academic institutions Experience of providing effective leadership and management	

	of an independent review, with proven competency in engaging, listening, and balancing conflicting viewpoints Experience of clinical leadership (eg in a senior clinical management role), and in working with groups of senior clinicians to develop a shared vision for the future of clinical services Experience of working with Trust Chairs and Boards of Directors to manage conflicting perspectives	
Skills and abilities	Excellent communication skills including ability to listen constructively, negotiate, persuade and challenge appropriately High levels of personal and professional credibility with peers and colleagues Ability to inspire others and to motivate others to share in a joint enterprise Excellent strategic thinking ability Ability to relate successfully and to have a positive impact with a wide range of stakeholders Ability to develop a compelling clinical service vision, working closely with colleagues and stakeholders	
Personal attributes	High level of personal integrity, truthfulness and trustworthiness	

City of Manchester Single Hospital Service Review

Steering Group

Terms of Reference

Background

The Manchester Oversight Group, working on behalf of the Health and Wellbeing Board has developed a proposal for the establishment of a 'single hospital service' for Manchester. The key commissioner and provider organisations confirmed their commitment to the proposal at the Manchester Health and Wellbeing Board on Wednesday 11th November 2015.

An Independent Review Director was appointed to lead this work in December 2015. This document outlines the Terms of Reference for the Steering Group which will oversee the Review process.

Purpose

The Review Steering group is responsible for bringing all key stakeholders together to oversee the review process on behalf of the Health and Wellbeing Board and Trust Boards.

The Steering group will:

- Have authority to make decisions to ensure timely delivery of the Single Hospital Service Review work plan.
- Be accountable for developing the content of the work programme including the stocktake of clinical services, the identification of the benefits of single service models and the options for developing single service models.
- Ensure collaborative working across all partner organisations and consensus decision making in respect of holding work groups accountable for delivery
- Secure and commit resources and agree and monitor their utilisation in line with agreed priorities
- Lead the communication of the work of the Single Hospital Service Review to partner organisations and staff
- Ensure that existing clinical pathways, across organisations, are identified and reconciled with single service proposals.

Chair

The Steering Group will be chaired by the City of Manchester Single Hospital Service Independent Review Director, Sir Jonathan Michael.

Membership and Quoracy

Organisation	Role	Name
Single Hospital Service Review Team	Independent Review Director	Sir J. Michael
	Project Manager	A. Olivant
McKinsey Consultants	Accountable Partner	P. Dash
	Partner	M. Feigelman
Central Manchester NHS Foundation Trust	Chief Executive	M. Deegan
	Medical Director	R. Pearson
	Director of Strategy	D. Banks
Pennine Acute Hospitals NHS Trust	Chief Executive	G. Fairfield
	Medical Director	A. Sinniah
	Director of Strategy	S. Good
South Manchester Hospital NHS Foundation Trust	Interim Chief Executive	D. Whittingham
	Medical Director	J. Crampton
	Director of Strategy	M. Graham
Clinical Commissioning Group	Chief Operating Officer, South Manchester CCG	C. Kurzeja

Deputies will be permitted provided they have delegated decision making responsibility.

The meeting will be quorate if a representative from the Single Hospital Review Team and from each of the Acute Trusts is present. Colleagues from McKinsey will attend the meeting but will not hold any decision making rights.

Reporting arrangements

The Review Director will report progress to the Executive Manchester Health and Wellbeing Board. Representatives on the Steering Group will also report progress to their respective Trust Board/Executive Team.

Frequency of Meetings

Steering Group meetings will be held approximately every 2 weeks for the duration of the review process.

Appendix IV. Single Hospital Service Review Stage One report.

The list below is not exhaustive but provides an indication of the indiviudals who have contributed to the Stage One Single Hospital Service Review Process

Name	Title	Organisation
Sir Mike Deegan	CEO	Central Manchester University Hospitals NHS Foundation Trust
Steve Mycio	Chair	Central Manchester University Hospitals NHS Foundation Trust
Prof Bob Pearson	Medical Director	Central Manchester University Hospitals NHS Foundation Trust
Darren Banks	Director of Strategy	Central Manchester University Hospitals NHS Foundation Trust
Gill Heaton	Deputy CEO	Central Manchester University Hospitals NHS Foundation Trust
Cheryl Lenney	Chief Nurse	Central Manchester University Hospitals NHS Foundation Trust
Adrian Roberts	Director of Finance	Central Manchester University Hospitals NHS Foundation Trust
Diane Whittingham	CEO	University Hospital of South Manchester NHS Foundation Trust
Barry Clare	Chair	University Hospital of South Manchester NHS Foundation Trust
Dr John Crampton	Medical Director	University Hospital of South Manchester NHS Foundation Trust
Matt Graham	Director of Strategy	University Hospital of South Manchester NHS Foundation Trust
Mandy Bailey	Chief Nurse	University Hospital of South Manchester NHS Foundation Trust
Tim Barlow	Director of Finance	University Hospital of South Manchester NHS Foundation Trust
Gillian Fairfield	CEO	Pennine Acute Hospitals NHS Trust
Damien Finn	Interim CEO	Pennine Acute Hospitals NHS Trust
John Jesky	Chair	Pennine Acute Hospitals NHS Trust
Chris Mayer	Interim Chair	Pennine Acute Hospitals NHS Trust
Dr Anton Sinniah	Interim Medical Director	Pennine Acute Hospitals NHS Trust
Prof Matt Makin	Medical Director	Pennine Acute Hospitals NHS Trust
Sandra Good	Director of Strategy	Pennine Acute Hospitals NHS Trust
Sir Howard Bernstein	Chief Executive	Manchester City Council
Cllr Richard Leese	Leader	Manchester City Council
Lorraine Butcher	Joint Director of Health and Social Care Integration	Manchester City Council
Teresa Grant	Chief Executive	Trafford Council
Prof Dame Nancy Rothwell	President and Vice Chancellor	Manchester University
Prof Ian Greer	Dean of the Faculty of Medicine and Human Sciences	Manchester University
Dr Bill Tamkin	Chair	South Manchester CCG
Caroline Kurzeja	Chief Operating Officer	South Manchester CCG
Dr Mike Eeckelaers	Chair	Central Manchester CCG
Ed Dyson	Chief Operating Officer	Central Manchester CCG
Martin Whiting	Chair	North Manchester CCG
Dr Nigel Guest	Chief Operating Officer	Trafford CCG
Gina Lawrence	Chief Operating Officer	Trafford CCG
Ian Williamson	Interim Chief Officer	Greater Manchester Devolution Team
Leila Williams	Director of Service Transformation, GM	Greater Manchester Devolution Team
Dr Jane Eddleston	Chief Medical Advisor to the Healthier Together Programme	Greater Manchester Devolution Team
Mike Farrar	Independent Chair	Manchester Health and Social Care Transformation Oversight Group
Mike Burrows/Donal O'Donoghue	Managing Director	Greater Manchester Academic Health Science Network
Dr Donal O'Donoghue	Medical Director	Greater Manchester Academic Health Science Network
Roger Spencer	Chief Executive	Christie NHS Foundation Trust
Derek Cartwright	InterimChief Executive	North West Ambulance Service
Michelle Moran	Chief Executive	Manchester Mental Health Trust
Sir David Dalton	Chief Executive	SRFT
Vish Mehra	Chair	Central Manchester GP Federation
Prof Jackie Hayden	Dean of Postgraduate Medical Studues	Health education North West
Andrew Foster	CEO	Wigan Wrightington and Leigh FT
Bev Humphrey	CEO	Greater Manchester West Mental health Trust
Ranjit Gill	Chair	Stockport CCG
Ann Day	Chair	Trafford Healthwatch
Andy Latham	COO	Trafford Healthwatch
Neil Walbran	COO	Manchester Healthwatch
Kate Green	MP	Stretford and Urmston
Mike Kane	MP	Wythenshawe and Sale East
Graham Brady	MP	Altrincham and Sale West

Appendix IV. Single Hospital Service Review Stage One report.

Clinical Advisory Group

Name	Title	Organisation
Richard Levy	Divisional Medical Director	UHSM
Toli Onon	Divisional Medical Director	UHSM
Susan Beards	Divisional Medical Director	UHSM
Mandy Bailey	Chief Nurse	UHSM
Alaistair Hutchison	Clinical Head of Division	CMFT
Jim Bruce	Clinical Head of Division	CMFT
Sarah Vause	Clinical Head of Division	CMFT
Sue Ward	Director of Nursing	CMFT
James Stewart	Divisional Medical Director	PAT
Ian Sheppard	Divisional Medical Director	PAT
Jonathan Moise	Divisional Medical Director	PAT
Gill Harris	Chief Nurse	PAT

Clinican Working Groups

	Cardiac Services	Respiratory Services	Maternity Services	Paediatrics	Infectious Diseases	Critical Care	Rheumatology	Radiology	Research	Education
CMFT	Faz Ordubadi (Consultant) Danny Keenan (Consultant) Sam Chapman (Cath Lab Manager) Ragheb Hasan (Consultant) Nial O Keffee (Cardiac Critical Care)	Mark Woodhead (Consultant) Shane O'Reilly (Physio) Christine Bell (Nurse)	Clare Tower (Consultant) Kathy Murphy (Midwife) Lesley Lorimer (Sonographer) Fiona Reid (Consultant Gyanecologist)	Ian Doughty (Consultant) Lisa Kauffman (Community Paediatrician) Rachael Whittington (Nurse)	Ash Sukthankar (Consultant) Andrew Dodgson (Consultant) Kelly Alexander (Pharmacist)	John Moore (Consultant) John Logan (Nurse)	Rachel Gorodkin (Consultant) Melissa Aris (Nurse) Sarah Houghton (Physio)	Sara O'Shea (Consultant) Rishi Sethi (Consultant) Alison Maw (Directorate Manager) Fin Farquharson (Interventional Consultant)	Neil Hanley Kathy Evans	Margaret Kingston Mark Forrest
PAT	Tim Gray (Consultant) Janette Broome (Cardiac Physiologist) Lynne Walsh (Nurse)	Jenny Hoyle (Consultant) David Weir (Consultant) Karl Balance (Nurse)	Gaity Ahmad (Consultant) Cathy Trinnick (Midwife) Morag Preston (Consultant)	Prakash Kamath (Consultant) Yvonne Tunstall (Nurse)	Katherine Ajdukiewicz (Consultant) Helen Rilet (Nurse) Paul Main (OT)	Nick Tierney (Consultant) Mark Longshaw (Consultant) Allison Keegan (ANP)	Masroor Ahmad (Consultant) Shona McCallum (Consultant) Aviva Richards (OT)	Carolyn Allen (Consultant) Paul Barker (Directorate Manager)	Steve Woby tbc	Sharon Taylor Iain Lawrie
UHSM	Rajesh Shah (Consultant) Neil Davidson (Consultant) Nizar Yonan (Consultant) Caron Crumbleholme(Nurse) Ignacio Malagon	Ashley Woodcock (Consultant) Richard Barraclough (Consultant) Cherril Watts (Matron)	Sean Burns (Consultant) Helen Thompson (Midwife) Andy Pickersgill (Consultant)	Clare Wilkins (Consultant) karl Monoghan (Nurse) Keeley Heggarty (Directorate Manager)	David Denninig (Consultant) Eavan Muldoon Liz Wilson (Nurse)	Andrew Bentley (Consultant) Steven Knight Daniela Shackcloth	Paul Sanders (Consultant) Sahena Haque (Consultant) Sharon Christy-Kilner (AHP)	Richard Sawyer (Consultant) Dare Seriki (Interventional Consultant) Charlotte Smith (radiographer) Stephanie Carney	Simon Ray Martin Stout Debbie Smith	Anne-Marie Kelly Roger Hunt Kevin Bayley

CCG Representatives who attended CWG meeting

Dr Mike Eeckelaers
Dr Kiran Patel
Dr Chris Duffy
Dr Murugesan Raja
Dr Manisha Kumar
Dr Faizan Ahmed
Dr Denis Collighan
Dr Mike Gregory
Dr Philip Burns

Single Hospital Service for the City of Manchester

Communication Plan (v5)

1. Context

The Manchester Locality Plan sets out a commitment to achieve a single hospital service for Manchester. As an initial step towards this, an Independent Review of hospital services in Manchester has been commissioned. A review Director, Sir Jonathan Michael, was appointed in December 2015, it is expected the review was take approximately six months. The review relates to hospital services provided by CMFT, UHSM and by PAHT on the North Manchester General Hospital site.

This document describes a plan for communicating information about the review to key audiences. It is anticipated that each organisation will be responsible for communicating key messages to their internal audiences. A collaborative approach, between organisations, will be adopted for communications to external audiences in order to ensure consistency and to avoid duplication.

Full details of the arrangements for the review can be found in the Review Terms of Reference.

2. Key messages

A full set of key messages is given in the Briefing attached at appendix 1. Important underlying themes include:

- The Review is a key element of delivering the single hospital service ambition described in the Manchester Locality Plan, in the context of GM Devolution of responsibility for health and social care.
- The three acute provider Trusts, the three CCGs, and Manchester City Council are all fully supportive of the Review.
- Sir Jonathan Michael will bring relevant external expertise and knowledge and will be completely independent in the advice he gives.
- There will be extensive engagement with key clinicians and clinical teams from the three Trusts.
- Better coordination and alignment of hospital services in Manchester will provide better hospital care and better outcomes for the communities and residents of the City of Manchester.
- It is planned to turn the Review process round in approximately six months.
- Decisions about what action to take in respect of hospital services in Manchester will be for the partner organisations to determine, once the Review has been completed.

3. Key audiences

- Manchester partner organisations (ie members of Manchester Health and Wellbeing Board)
- Trafford CCG
- Trafford Council
- Other Trusts in Greater Manchester
- Manchester University

- Manchester Councillors
- Manchester MPs
- Staff in UHSM, PAT and CMFT
- Staff-side organisations in UHSM, PAT and CMFT
- Foundation Trust Governors and Members
- Volunteers in UHSM, PAT and CMFT
- Manchester GPs/Practice Managers
- Patients using Manchester hospitals
- The public in the City of Manchester
- The media (local, regional and specialist/trade)
- Manchester Healthwatch
- NHS Improvement (Monitor/TDA)
- NHS England

4. Communication routes

It is expected that regular updates to key messages, including the progress and content of the Review, will be agreed at the Review Steering Group. Thereafter each organisation will be responsible for 'localising' and communicating these messages to internal audiences. A collaborative approach will be taken for communicating with external audiences in order to avoid duplication and inconsistency.

Detailed arrangements for briefing key audiences will need to be agreed and coordinated, but communications routes are likely to include the following:

- Briefing note to key partner organisations
- Correspondence/meetings with Trafford CCG and Trafford Council
- Briefing at key GM Devolution meetings
- Briefing through MAHSC
- Staff briefing content for use in staff newsletters/team brief/website/etc
- Discussion at JNCC or other meetings with staff-side organisations
- Briefing content for use in GP newsletters
- Press Release
- Social media

5. Briefing materials

Following the agreement of key messages, from the Steering Group it is anticipated that a core briefing note will be completed.

- Core Briefing Note
  A briefing note is intended to be suitable for use with Trust staff, either as it stands, or with extracts being used in staff newsletters/team briefs and as intranet content. Although different formats and presentation will be used in each organisation, it is important that briefing to staff is as consistent as possible.

The briefing note could also be used to provide information to key stakeholders such as Councillors and MPs, sent out as an attachment to a suitable covering e-mail.

It is anticipated that press releases will only be required when key milestones are completed. At this point press releases will be drafted.

- Press Release

  A Press Release is intended to provide information to local and regional news media services in Manchester, and to specialist health service sector media.

If required a 'Frequently Asked Questions' document will be produced

Appendix 1

Single Hospital Service for the City of Manchester

Briefing – December 2015

Background

- The City of Manchester hosts a wide variety of very high quality hospital services, some with national and international reputations
- Currently, health outcomes in Manchester are still poor compared with the rest of the country - and as health care providers we are determined to address this.
- Previous national policy has encouraged Trusts to compete with each other for patients and services, and this has made it harder for Trusts to work together to improve services.
- In the context of Greater Manchester Devolution, all public services now need to work together to provide the best care and services for the people they serve.

Trusts	Manchester hospitals
Pennine Acute NHS Trust (PAT)	**North Manchester General Hospital** [NB: PAT also runs The Royal Oldham Hospital, Rochdale Infirmary and Fairfield Hospital in the North East of Greater Manchester]
University Hospital of South Manchester NHS Foundation Trust (UHSM)	**Wythenshawe Hospital** Withington Community Hospital
Central Manchester University Hospitals NHS Foundation Trust (CMFT)	**Manchester Royal Infirmary** Royal Manchester Children's Hospital St Mary's Hospital for Women and Children Manchester Royal Eye Hospital University Dental Hospital of Manchester [NB: CMFT also runs Trafford General Hospital and Altrincham Hospital in Trafford]

A need for change

- There is a real need to work together so that we can drive consistency in the way hospital services are provided across the city to improve care standards and clinical outcomes, reduce service and access gaps, and in some cases avoid unnecessary service overlaps. Opportunities to work together to improve patient care or enhance research and innovation are currently being missed.
- Trusts find themselves competing with each other to attract staff with specialist skills, but these individuals are not always then used as best they can be. In the future, some clinical services run the risk of becoming unsustainable.
- Different operational protocols and patient pathways are used in our hospitals, so best clinical practice is not implemented consistently across the city. Patients may receive different standards of care and clinical outcomes depending on which hospital in Manchester they go to.

Single Hospital Service for the City of Manchester

- The Manchester Health and Wellbeing Board has recently developed the Manchester Locality Plan, and this includes an expectation that the Manchester hospital Trusts will work together to provide a single set of coordinated hospital services for the City of Manchester.
- University Hospital of South Manchester NHS FT (UHSM), Central Manchester University Hospitals NHS FT (CMFT) and The Pennine Acute NHS Trust (PAT) have now agreed to

establish an Independent Review to look at how hospital services in the City of Manchester could be delivered more effectively through closer collaborative working.

- The Review will be structure around two phases:
  - From December 2015 through to March 2016, the Review will develop an assessment of the potential benefits of a fully aligned hospital service model. This stage will involve extensive engagement with clinical teams from across all three hospitals, including large-scale clinical conference events, and a range of service-specific work streams.
  - The second phase will continue through to June 2016, and will focus on a detailed appraisal of the most appropriate and effective governance and organisational arrangements to deliver the identified benefits.
- The Independent Review will be led by Sir Jonathan Michael, who has previously been the Chief Executive of three major hospitals in London, Oxford and Birmingham. Before his career in NHS leadership, Sir Jonathan was a Consultant Physician at Queen Elizabeth Hospital, Birmingham. Sir Jonathan will be supported by a project team and expert analytical input.
- The proposal for a single hospital service for the City of Manchester is intended to create a mechanism for closer collaborative working and to deliver consistent and complementary arrangements for providing acute hospital services across Manchester, with the aim of eventually achieving a fully-aligned hospital model.
- This model would encompass a comprehensive range of clinical single services, and optimised arrangements for support services and better use of our estates.
- Innovation is recognised as being essential to this process, to drive the change necessary in care pathways and health outcomes. Integrating research and innovation, along with workforce education, will also be fundamental to delivering a high quality service that will attract investment for research and innovation.

The way forward

- Having gathered evidence and opinions from local clinical teams and a variety of other sources, and tested his findings with the Boards of the three Trusts, Sir Jonathan will provide his independent advice through two reports (phase 1 and phase 2) to the Manchester Health and Wellbeing Board.
- The Health and Wellbeing Board will then consider the findings and determine the actions that need to be taken, both by the Trusts and by the Manchester Commissioners, to achieve the future vision described by Sir Jonathan.
- Further briefings and updates will be provided at key points throughout the Review period.

Appendix 2

Press Statement

Date:

Manchester Hospitals join forces to improve care for local residents

The three main hospitals which provide services for the City of Manchester have agreed to look at ways they can work together to provide more effective and efficient care for local people.

The three Trusts that run Manchester Royal Infirmary, Wythenshawe Hospital and North Manchester General Hospital have recognised that there is a real need to work together to drive consistency in the way hospital services are provided across the city, and have agreed to work together on a joint review of hospital care.

The review will be undertaken by Sir Jonathan Michael, who has previously been the Chief Executive of three major hospital Trusts in London, Birmingham and Oxford, and before that worked as a Consultant Physician and Medical Director at Queen Elizabeth Hospital, Birmingham. Sir Jonathan will provide an independent assessment of the potential benefits of aligning hospital services in Manchester more effectively, and of the best way to manage hospitals to achieve these benefits.

Accepting the role of Independent Review Director, Sir Jonathan said: "Manchester hosts a wide variety of hospital services, some with national and international reputations, but at the same time the residents of Manchester generally have poor health outcomes compared to the rest of the country. With three main hospitals, each being run by different Trusts, it is likely that there are different ways of doing things. I want to bring together the clinical teams from across the city to ensure that best practice is consistently applied, and that we are making the most effective use of key staff with specialist skills. This way, we can offer consistently high standards of care to patients across the city, no matter which hospital they use."

Barry Clare, Chairman of University Hospital of South Manchester (which runs Wythenshawe Hospital) said: "This review is extremely important for the long term future of hospital services in Manchester, and we are extremely fortunate to have attracted someone with Sir Jonathan's wealth of experience to give us independent expert advice on these matters. The Chairs of the three hospital Trusts will support Sir Jonathan to ensure he has full engagement from our clinical teams, but still remains truly independent."

Steve Mycio, Chairman of Central Manchester University Hospitals NHS Foundation Trust (which runs Manchester Royal Infirmary) said: "The local CCGs and the City Council have clearly indicated that they want the three hospital Trusts to work together to create a single hospital service for the City of Manchester. This review will be a major step in that direction and will show how, through closer collaboration, the hospital services in Manchester can be made more effective and efficient."

John Jesky, Chairman of The Pennine Acute Hospitals NHS Trust (which runs North Manchester General Hospital) welcomed the review: "In Manchester, we have many excellent clinicians, providing some of the finest care in the world. We need to organise hospital care so that it is provided to the same consistently high standard across the city. Getting our clinical teams to work more closely together will be the best way to serve the people of Manchester. We look

forward to ensuring that this city work forms an integral part of our wider Trust transformation plans."

The Review will be structured around two phases. From December 2015 through to March 2016, the Review will develop an assessment of the potential benefits of a fully aligned hospital service model. This stage will involve extensive engagement with clinical teams from across all three hospitals. The second phase will continue through to June 2016, and will focus on a detailed appraisal of the most appropriate and effective governance and organisational arrangements to deliver the identified benefits.

Having gathered evidence and opinions from a wide variety of sources, and tested his findings with the Boards of the three Trusts, Sir Jonathan will provide his independent advice through two reports (phase 1 and phase 2) to the Manchester Health and Wellbeing Board. The Health and Wellbeing Board will then consider the findings and determine the actions that need to be taken, both by the Trusts and by the Manchester Commissioners, to achieve the future vision described by Sir Jonathan.

City of Manchester Single Hospital Service

Clinical Stocktake

Appendix VI (a)

Contents

Total HES 2013/14 activity across 3 sites – medical specialties

POD	Specialty	Number of spells: Wythenshawe	CMFT (minus Trafford)	North Manchester General
All	General medicine	7,803	12,552	15,113
	Gastroenterology	6,615	11,736	2,701
	Cardiology	5,870	4,391	501
	Clinical haematology	6	6,650	1,578
	Thoracic medicine	4,906	513	818
	Pain management	2,872	0	1,269
	Geriatric medicine	3,551	214	11
	Medical oncology	2,895	0	5
	Infectious diseases	102	0	2,406
	Rheumatology	579	662	207
	Nephrology	27	1,577	0
	Allergy	891	0	0
	Diabetic medicine	589	0	10
	Endocrinology	86	283	2
	Clinical immunology and allergy	0	217	0
	Rehabilitation	62	20	2
	Neurology	59	5	0
	Stroke Medicine	0	37	0
	Chemical pathology	0	19	0
	Hepatology	0	4	0
	Dermatology	2	0	0
	Genito-urinary medicine	0	2	0
	Medical ophthalmology	0	1	0
	Palliative medicine	0	0	1
	Physiotherapy	1	0	0
	Clinical genetics	0	6	0

NOTE: Points to consider – how to aggregate long list (e.g. consolidate geriatrics and general medicine?), discrepancy in ID activity may be caused by coding under GUM (GUM services are mostly provided as outpatient, which is not captured here).

SOURCE: HES data 2013/14 | 4

Total HES 2013/14 activity across 3 sites – women/children, anaesthetics and surgical specialties

		Number of spells		
POD	Specialty	Wythenshawe	CMFT (minus Trafford)	North Manchester General
All	Paediatric medicine	6,433	21,816	8,729
	Paediatric surgery	173	11,689	785
	Neonatology	4	671	0
	Obstetrics	1,265	10,564	1,697
	Births	4,258	7,967	4,354
	Gynaecology	4,540	6,337	4,659
	General surgery	6,494	5,617	4,691
	Urology	5,791	4,799	4,918
	Ophthalmology	0	12,776	0
	Trauma & orthopaedics	5,078	3,632	3,721
	Oral surgery	2,028	2,617	2,563
	Plastic surgery	5,933	2	0
	Ear, nose and throat (ENT)	2,323	2,231	438
	Vascular surgery	1,446	1,235	20
	Breast surgery	1,655	0	683
	Colorectal surgery	0	0	1,954
	Cardiac surgery	1,083	865	0
	Transplantation surgery	24	1,513	0
	Cardiothoracic transplantation	27	0	0
	Thoracic surgery	1,475	0	0
	Cardiothoracic surgery	115	18	1
	Gynaecological oncology	534	400	4
	Hepatobiliary & pancreatic surgery	0	0	711
	Neurosurgery	0	29	0
	Maxillo-facial surgery	24	0	0
	Burns care	550	0	0
	Interventional radiology	478	0	0
	Critical care medicine	0	368	0
	Restorative dentistry	0	64	17
	Adult mental illness	0	1	0
	Child and adolescent psychiatry	0	26	0

NOTE: activity for critical care, breast surgery, colorectal surgery and HPB surgery appear too low - will need to be reconciled with Trust own data

SOURCE: HES data 2013/14

HES 2013/14 day case activity across 3 sites – medical specialties

POD	Specialty	Number of spells: Wythenshawe	CMFT (minus Trafford)	North Manchester General
Day case	General medicine	35	208	3,338
	Gastroenterology	4,725	10,745	1,593
	Cardiology	1,934	933	159
	Clinical haematology		6,128	1,388
	Thoracic medicine	892	320	630
	Pain management	2,841	0	1,261
	Geriatric medicine	2	1	6
	Medical oncology	2,254	0	1
	Infectious diseases	22	0	952
	Rheumatology	545	616	200
	Nephrology	19	700	
	Allergy	862	0	
	Diabetic medicine	1	0	4
	Endocrinology	76	218	
	Clinical immunology and allergy		215	
	Rehabilitation		0	
	Neurology	18	3	
	Stroke Medicine		0	
	Chemical pathology		19	
	Hepatology		0	
	Dermatology		0	
	Genito-urinary medicine		2	
	Medical ophthalmology		0	
	Palliative medicine		0	1
	Physiotherapy		0	
	Clinical genetics		4	

SOURCE: HES data 2013/14

HES 2013/14 day case activity across 3 sites – women/children, anaesthetics and surgical specialties

		Number of spells		
POD	Specialty	Wythenshawe	CMFT (minus Trafford)	North Manchester General
Day case	Paediatric medicine	133	14,444	146
	Paediatric surgery	160	5,309	168
	Neonatology		3	
	Obstetrics	1	1	23
	Births		0	
	Gynaecology	2,578	3,642	562
	General surgery	2,605	738	270
	Urology	2,969	2,203	1,052
	Ophthalmology		9,826	
	Trauma & orthopaedics	1,936	1,148	842
	Oral surgery	1,383	1,258	1,473
	Plastic surgery	3,868	0	
	Ear, nose and throat (ENT)	765	839	87
	Vascular surgery	299	520	18
	Breast surgery	637	0	314
	Colorectal surgery		0	1,624
	Cardiac surgery		10	
	Transplantation surgery		556	
	Cardiothoracic transplantation		0	
	Thoracic surgery	6	0	
	Cardiothoracic surgery		0	1
	Gynaecological oncology	335	76	
	Hepatobiliary & pancreatic surgery		0	82
	Neurosurgery		2	
	Maxillo-facial surgery		0	
	Burns care	1	0	
	Interventional radiology	138	0	
	Critical care medicine		0	
	Restorative dentistry		61	14
	Adult mental illness		0	
	Child and adolescent psychiatry		1	

SOURCE: HES data 2013/14

HES 2013/14 elective inpatient (ELIP) activity across 3 sites – medical specialties

	Number of spells			
POD	Specialty	Wythenshawe	CMFT (minus Trafford)	North Manchester General
ELIP	General medicine	17	220	182
	Gastroenterology	284	832	1,051
	Cardiology	1,249	1,341	64
	Clinical haematology	1	379	179
	Thoracic medicine	1,221	9	76
	Pain management	31	0	8
	Geriatric medicine	6	2	1
	Medical oncology	284	0	4
	Infectious diseases	38	0	107
	Rheumatology	31	39	7
	Nephrology	8	249	
	Allergy	29	0	
	Diabetic medicine	2	0	
	Endocrinology	10	28	
	Clinical immunology and allergy		2	
	Rehabilitation	3	9	
	Neurology	40	0	
	Stroke Medicine		0	
	Chemical pathology		0	
	Hepatology		0	
	Dermatology	2	0	
	Genito-urinary medicine		0	
	Medical ophthalmology		0	
	Palliative medicine		0	
	Physiotherapy		0	
	Clinical genetics		0	

SOURCE: HES data 2013/14

HES 2013/14 elective inpatient (ELIP) activity across 3 sites – women/children, anaesthetics and surgical specialties

		Number of spells		
POD	Specialty	Wythenshawe	CMFT (minus Trafford)	North Manchester General
ELIP	Paediatric medicine	56	2,040	220
	Paediatric surgery	11	3,285	562
	Neonatology		5	
	Obstetrics	3	3	1
	Births	9	0	9
	Gynaecology	707	1,111	675
	General surgery	1,175	1,402	349
	Urology	1,588	1,078	1,965
	Ophthalmology		1,932	
	Trauma & orthopaedics	1,509	811	1,384
	Oral surgery	305	630	559
	Plastic surgery	872	0	
	Ear, nose and throat (ENT)	773	466	257
	Vascular surgery	751	438	2
	Breast surgery	955	0	359
	Colorectal surgery		0	296
	Cardiac surgery	855	687	
	Transplantation surgery	9	487	
	Cardiothoracic transplantation	9	0	
	Thoracic surgery	1,243	0	
	Cardiothoracic surgery	40	0	
	Gynaecological oncology	188	323	1
	Hepatobiliary & pancreatic surgery		0	521
	Neurosurgery		1	
	Maxillo-facial surgery	5	0	
	Burns care	37	0	
	Interventional radiology	262	0	
	Critical care medicine		5	
	Restorative dentistry		3	3
	Adult mental illness		0	
	Child and adolescent psychiatry		23	

SOURCE: HES data 2013/14

HES 2013/14 non elective inpatient (NEIP) activity across 3 sites – medical specialties

		Number of spells		
POD	Specialty	Wythenshawe	CMFT (minus Trafford)	North Manchester General
NEIP	General medicine	7,751	12,124	11,593
	Gastroenterology	1,606	159	57
	Cardiology	2,687	2,117	278
	Clinical haematology	5	143	11
	Thoracic medicine	2,793	184	112
	Pain management		0	
	Geriatric medicine	3,543	211	4
	Medical oncology	357	0	
	Infectious diseases	42	0	1,347
	Rheumatology	3	7	
	Nephrology		628	
	Allergy		0	
	Diabetic medicine	586	0	6
	Endocrinology		37	2
	Clinical immunology and allergy		0	
	Rehabilitation	59	11	2
	Neurology	1	2	
	Stroke Medicine		37	
	Chemical pathology		0	
	Hepatology		4	
	Dermatology		0	
	Genito-urinary medicine		0	
	Medical ophthalmology		1	
	Palliative medicine		0	
	Physiotherapy	1	0	
	Clinical genetics		2	

SOURCE: HES data 2013/14

HES 2013/14 non elective inpatient (NEIP) activity across 3 sites – women/children, anaesthetics and surgical specialties

		Number of spells		
POD	Specialty	Wythenshawe	CMFT (minus Trafford)	North Manchester General
NEIP	Paediatric medicine	6,244	5,332	8,363
	Paediatric surgery	2	3,095	55
	Neonatology	4	663	
	Obstetrics	1,261	10,561	1,673
	Births	4,249	7,966	4,345
	Gynaecology	1,255	1,584	3,422
	General surgery	2,714	3,477	4,072
	Urology	1,234	1,518	1,901
	Ophthalmology		1,018	
	Trauma & orthopaedics	1,633	1,673	1,495
	Oral surgery	340	729	531
	Plastic surgery	1,193	2	
	Ear, nose and throat (ENT)	785	926	94
	Vascular surgery	396	277	
	Breast surgery	63	0	10
	Colorectal surgery		0	34
	Cardiac surgery	228	168	
	Transplantation surgery	15	470	
	Cardiothoracic transplantation	18	0	
	Thoracic surgery	226	0	
	Cardiothoracic surgery	75	18	
	Gynaecological oncology	11	1	3
	Hepatobiliary & pancreatic surgery		0	108
	Neurosurgery		26	
	Maxillo-facial surgery	19	0	
	Burns care	512	0	
	Interventional radiology	78	0	
	Critical care medicine		363	
	Restorative dentistry		0	
	Adult mental illness		1	
	Child and adolescent psychiatry		2	

SOURCE: HES data 2013/14

Total HES 2013/14 tariff spend across 3 sites – medical specialties

POD	Specialty	Tariff payment, £ Wythenshawe	CMFT (minus Trafford)	North Manchester General
All	General medicine	14,834,488	25,969,117	21,344,575
	Cardiology	16,288,239	12,889,229	1,029,634
	Gastroenterology	6,114,424	6,932,764	2,191,363
	Thoracic medicine	8,524,049	1,000,958	1,011,644
	Geriatric medicine	7,911,551	1,180,388	29,181
	Clinical haematology	13,739	4,375,390	653,252
	Infectious diseases	251,978	0	4,284,589
	Nephrology	16,260	3,811,916	0
	Diabetic medicine	1,289,837	0	23,860
	Medical oncology	1,078,724	0	11,308
	Rehabilitation	380,941	696,423	5,453
	Rheumatology	472,466	456,387	105,044
	Allergy	489,523	0	0
	Endocrinology	57,854	257,996	2,071
	Stroke Medicine	0	170,652	0
	Neurology	38,596	9,619	0
	Hepatology	0	19,944	0
	Chemical pathology	0	8,962	0
	Clinical genetics	0	5,663	0
	Palliative medicine	0	0	1,298
	Genito-urinary medicine	0	1,188	0
	Medical ophthalmology	0	1,138	0
	Dermatology	338	0	0
	Hepatobiliary & pancreatic surgery	0	0	0
	Physiotherapy	0	0	0

NOTE: biases against those specialtiesthat are largely off-tariff (e.g. medical oncology)

SOURCE: HES data 2013/14 | 12

Total HES 2013/14 tariff spend across 3 sites – women/children, anaesthetics and surgical specialties

POD	Specialty	Tariff payment, £ Wythenshawe	CMFT (minus Trafford)	North Manchester General
All	Trauma & orthopaedics	14,817,110	9,980,258	12,551,856
	General surgery	9,867,309	13,880,688	8,529,486
	Urology	5,525,674	5,764,808	5,899,000
	Cardiac surgery	8,536,830	6,684,548	0
	Cardiothoracic surgery	0	0	0
	Cardiothoracic transplantation	0	0	0
	Transplantation surgery	0	0	0
	Ophthalmology	0	10,687,626	0
	Gynaecology	3,694,470	4,158,292	2,697,220
	Vascular surgery	5,439,155	4,161,764	17,399
	Plastic surgery	9,019,760	1,651	0
	Oral surgery	1,994,533	3,771,501	2,896,526
	Ear, nose and throat (ENT)	3,272,594	3,756,132	707,497
	Thoracic surgery	6,331,386	0	0
	Gynaecological oncology	927,553	1,104,591	11,080
	Neurosurgery	0	68,774	0
	Maxillo-facial surgery	29,713	0	0
	Breast surgery	0	0	0
	Colorectal surgery	0	0	0
	Hepatobiliary & pancreatic surgery	0	0	0
	Obstetrics	205,472	1,612,829	173,205
	Births	7,968,926	15,692,663	7,825,364
	paediatric medicine	5,476,324	7,217,548	7,445,172
	paediatric surgery	173,719	4,914,520	0
	Neonatology	4,512	2,635,131	0
	Interventional radiology	690,745	0	0
	Burns care	0	0	0
	Adult mental illness	0	0	0
	Child and adolescent psychiatry	0	0	0
	Critical care medicine	0	0	0
	Pain management	0	0	0
	Restorative dentistry	0	0	0

NOTE: biases against those specialtiesthat are largely off-tariff (e.g. medical oncology)

SOURCE: HES data 2013/14

HES 2013/14 day case tariff spend across 3 sites – medical specialties

POD	Specialty	Tariff payment, £ Wythenshawe	CMFT (minus Trafford)	North Manchester General
Day case	General medicine	24,991	105,951	1,484,635
	Cardiology	3,597,707	1,257,789	153,814
	Gastroenterology	2,238,286	4,953,901	730,516
	Thoracic medicine	1,123,669	419,784	557,093
	Geriatric medicine	1,035	584	3,073
	Clinical haematology		2,920,527	501,609
	Infectious diseases	21,566	0	939,132
	Nephrology	11,836	709,235	
	Diabetic medicine	429	0	1,908
	Medical oncology	307,708	0	474
	Rehabilitation		0	
	Rheumatology	428,320	381,175	101,013
	Allergy	475,225	0	
	Endocrinology	52,855	129,978	
	Stroke Medicine		0	
	Neurology	14,048	1,630	
	Hepatology		0	
	Chemical pathology		8,962	
	Clinical genetics		4,931	
	Palliative medicine		0	1,298
	Genito-urinary medicine		1,188	
	Medical ophthalmology		0	
	Dermatology		0	
	Hepatobiliary & pancreatic surgery		0	
	Physiotherapy		0	

NOTE: biases against those specialtiesthat are largely off-tariff (e.g. medical oncology)

SOURCE: HES data 2013/14

HES 2013/14 day case tariff spend across 3 sites – women/children, anaesthetics and surgical specialties

POD	Specialty	Wythenshawe	CMFT (minus Trafford)	North Manchester General
		Tariff payment, £		
Day case	Trauma & orthopaedics	2,898,463	1,713,298	1,223,992
	General surgery	1,410,362	780,077	184,884
	Urology	1,483,663	793,717	380,428
	Cardiac surgery		5,676	
	Cardiothoracic surgery		0	
	Cardiothoracic transplantation		0	
	Transplantation surgery		0	
	Ophthalmology		6,616,495	
	Gynaecology	1,595,781	891,878	346,296
	Vascular surgery	319,847	467,841	15,463
	Plastic surgery	4,108,790	0	
	Oral surgery	813,988	895,414	834,742
	Ear, nose and throat (ENT)	862,011	1,096,798	90,069
	Thoracic surgery	6,199	0	
	Gynaecological oncology	202,200	65,637	
	Neurosurgery		2,418	
	Maxillo-facial surgery		0	
	Breast surgery		0	
	Colorectal surgery		0	
	Hepatobiliary & pancreatic surgery		0	
	Obstetrics	453	677	2,516
	Births		0	
	paediatric medicine	91,838	1,335,720	101,522
	paediatric surgery	157,089	1,181,341	0
	Neonatology		3,257	
	Interventional radiology	122,683	0	
	Burns care		0	
	Adult mental illness		0	
	Child and adolescent psychiatry		0	
	Critical care medicine		0	
	Pain management		0	
	Restorative dentistry		0	

NOTE: biases against those specialtiesthat are largely off-tariff (e.g. medical oncology)

SOURCE: HES data 2013/14

HES 2013/14 elective inpatient (ELIP) tariff spend across 3 sites – medical specialties

		Tariff payment, £		
POD	Specialty	Wythenshawe	CMFT (minus Trafford)	North Manchester General
ELIP	General medicine	14,352	133,039	206,394
	Cardiology	3,917,405	3,914,988	141,566
	Gastroenterology	392,910	1,439,802	1,278,759
	Thoracic medicine	1,618,935	20,195	134,639
	Geriatric medicine	12,776	1,908	474
	Clinical haematology	2,181	870,233	134,415
	Infectious diseases	127,340	0	191,756
	Nephrology	4,424	770,358	
	Diabetic medicine	8,314	0	
	Medical oncology	310,223	0	10,834
	Rehabilitation	29,471	292,548	
	Rheumatology	34,328	53,123	4,030
	Allergy	14,298	0	
	Endocrinology	4,999	30,417	
	Stroke Medicine		0	
	Neurology	22,917	0	
	Hepatology		0	
	Chemical pathology		0	
	Clinical genetics		0	
	Palliative medicine		0	
	Genito-urinary medicine		0	
	Medical ophthalmology		0	
	Dermatology	338	0	
	Hepatobiliary & pancreatic surgery		0	
	Physiotherapy		0	

NOTE: biases against those specialtiesthat are largely off-tariff (e.g. medical oncology)

SOURCE: HES data 2013/14 | 16

HES 2013/14 elective inpatient (ELIP) tariff spend across 3 sites – women/children, anaesthetics and surgical specialties

POD	Specialty	Tariff payment, £ Wythenshawe	CMFT (minus Trafford)	North Manchester General
ELIP	Trauma & orthopaedics	6,133,968	2,778,403	5,527,575
	General surgery	2,897,703	4,743,981	707,262
	Urology	2,210,376	2,515,389	2,837,700
	Cardiac surgery	6,910,415	5,411,805	
	Cardiothoracic surgery		0	
	Cardiothoracic transplantation		0	
	Transplantation surgery		0	
	Ophthalmology		2,019,242	
	Gynaecology	1,260,414	1,984,035	984,445
	Vascular surgery	2,906,518	1,749,489	1,936
	Plastic surgery	2,102,539	0	
	Oral surgery	670,997	1,675,766	1,109,069
	Ear, nose and throat (ENT)	1,359,358	1,275,003	409,916
	Thoracic surgery	5,324,678	0	
	Gynaecological oncology	710,424	1,034,217	2,314
	Neurosurgery		1,030	
	Maxillo-facial surgery	8,542	0	
	Breast surgery		0	
	Colorectal surgery		0	
	Hepatobiliary & pancreatic surgery		0	
	Obstetrics	1,054	1,611	1,444
	Births	16,256	0	16,096
	paediatric medicine	43,994	482,837	186,349
	paediatric surgery	16,005	1,434,504	0
	Neonatology		3,386	
	Interventional radiology	380,847	0	
	Burns care		0	
	Adult mental illness		0	
	Child and adolescent psychiatry		0	
	Critical care medicine		0	
	Pain management		0	
	Restorative dentistry		0	

NOTE: biases against those specialtiesthat are largely off-tariff (e.g. medical oncology)

SOURCE: HES data 2013/14

HES 2013/14 non elective inpatient (NEIP) tariff spend across 3 sites – medical specialties

POD	Specialty	Tariff payment, £ Wythenshawe	CMFT (minus Trafford)	North Manchester General
NEIP	General medicine	14,795,144	25,730,127	19,653,546
	Cardiology	8,773,127	7,716,452	734,254
	Gastroenterology	3,483,229	539,062	182,088
	Thoracic medicine	5,781,444	560,979	319,913
	Geriatric medicine	7,897,740	1,177,896	25,633
	Clinical haematology	11,558	584,630	17,228
	Infectious diseases	103,072	0	3,153,701
	Nephrology		2,332,323	
	Diabetic medicine	1,281,095	0	21,952
	Medical oncology	460,793	0	
	Rehabilitation	351,470	403,876	5,453
	Rheumatology	9,818	22,088	
	Allergy		0	
	Endocrinology		97,601	2,071
	Stroke Medicine		170,652	
	Neurology	1,631	7,989	
	Hepatology		19,944	
	Chemical pathology		0	
	Clinical genetics		732	
	Palliative medicine		0	
	Genito-urinary medicine		0	
	Medical ophthalmology		1,138	
	Dermatology		0	
	Hepatobiliary & pancreatic surgery		0	
	Physiotherapy		0	

NOTE: biases against those specialtiesthat are largely off-tariff (e.g. medical oncology)

SOURCE: HES data 2013/14 | 18

HES 2013/14 non elective inpatient (NEIP) tariff spend across 3 sites – women/children, anaesthetics and surgical specialties

POD	Specialty	Tariff payment, £ Wythenshawe	CMFT (minus Trafford)	North Manchester General
NEIP	Trauma & orthopaedics	5,784,679	5,488,557	5,800,289
	General surgery	5,559,243	8,356,631	7,637,339
	Urology	1,831,635	2,455,702	2,680,872
	Cardiac surgery	1,626,415	1,267,067	
	Cardiothoracic surgery		0	
	Cardiothoracic transplantation		0	
	Transplantation surgery		0	
	Ophthalmology		2,051,889	
	Gynaecology	838,276	1,282,379	1,366,479
	Vascular surgery	2,212,789	1,944,435	
	Plastic surgery	2,808,432	1,651	
	Oral surgery	509,548	1,200,321	952,715
	Ear, nose and throat (ENT)	1,051,225	1,384,331	207,513
	Thoracic surgery	1,000,509	0	
	Gynaecological oncology	14,928	4,737	8,766
	Neurosurgery		65,326	
	Maxillo-facial surgery	21,171	0	
	Breast surgery		0	
	Colorectal surgery		0	
	Hepatobiliary & pancreatic surgery		0	
	Obstetrics	203,965	1,610,541	169,244
	Births	7,952,670	15,692,663	7,809,268
	paediatric medicine	5,340,492	5,398,991	7,157,301
	paediatric surgery	625	2,298,675	0
	Neonatology	4,512	2,628,488	
	Interventional radiology	187,215	0	
	Burns care		0	
	Adult mental illness		0	
	Child and adolescent psychiatry		0	
	Critical care medicine		0	
	Pain management		0	
	Restorative dentistry		0	

NOTE: biases against those specialtiesthat are largely off-tariff (e.g. medical oncology)

SOURCE: HES data 2013/14

City of Manchester Single Hospital Service

Selection of Exemplar Specialties

Appendix VI (b)

Contents

- **Appendix**
  - **Full ranking of specialties**
  - Detailed selection of specialties
  - ALOS and SHMI data
  - A&E data presented by Trust

With these shortlisting metrics applied to specialties, the top ten specialties are:

WITHOUT size of the service line considered[1]	WITH size of the service line considered	Clinical support and back office functions
1. Gynaecological oncology	1. Cardiothoracic surgery	1. Pathology
2. Breast surgery	2. Paediatric medicine	2. Radiology
3. Interventional radiology	3. Gynaecological oncology	
4. Cardiothoracic surgery	4. Breast surgery	
5. Paediatric medicine	5. Trauma & orthopaedics	
6. Critical care medicine	6. Urology	
7. Infectious diseases	7. Oral surgery	
8. Transplantation surgery	8. Interventional radiology	
9. Oral surgery	9. Critical care medicine	
10. Hepatobiliary & pancreatic surgery	10. Infectious diseases	

Note: this ranking of services is from the analytical approach only, it is a guide only and does not represent the final ranking of options

1 Size of service line is defined as the sum of tariff spend for that service across all 3 sites (UHSM, CMFT minus Trafford and NMG) – unfairly biases against those specialties that are largely off tariff

SOURCE: HES data 2013/14; team analysis

With these shortlisting metrics applied to specialties, the next 24 specialties are:

WITHOUT size of the service line considered[1]		WITH size of the service line considered	
11. Neonatology	25. Medical oncology	11. A&E	25. Ear, nose and throat
12. Restorative dentistry	26. Hepatology	12. Transplant surgery	26. Child psychiatry
13. Dermatology	27. Genitourinary medicine	13. HPB[2] surgery	27. Gastroenterology
14. Trauma & orthopaedics	28. General surgery	14. Obs - deliveries	28. Medical oncology
15. Urology	29. Gynaecology	15. Neonatology	29. Dermatology
16. Maxillo-facial surgery	30. Ear, nose and throat	16. Restorative dentistry	30. Maxillo-facial surgery
17. Colorectal surgery	31. Cardiology	17. Thoracic medicine	31. Geriatric medicine
18. Obstetrics	32. Adult mental illness	18. Clinical haematology	32. Adult mental illness
19. Clinical haematology	33. Gastroenterology	19. General surgery	33. Hepatology
20. A&E	34. Geriatric medicine	20. Gynaecology	34. Genitourinary medicine
21. Vascular surgery		21. Vascular surgery	
22. Obs - deliveries		22. Colorectal surgery	
23. Child psychiatry		23. Obstetrics	
24. Thoracic medicine		24. Cardiology	

Note: this ranking of services is from the analytical approach only, it is a guide only and does not represent the final ranking of options

1 Size of service line is defined as the sum of tariff spend for that service across all 3 sites (UHSM, CMFT minus Trafford and NMG)
2 HPB – hepatobiliary pancreatic

SOURCE: HES data 2013/14; team analysis

With these shortlisting metrics applied to specialties, the last 21 service lines are:

WITHOUT size of the service line considered[1]		WITH size of the service line considered	
35. Neurology	49. Neurosurgery	35. General medicine	49. Clinical immunology
36. Rehabilitation	50. Burns care	36. Rehabilitation	50. Stroke Medicine
37. Palliative medicine	51. Chemical pathology	37. Pain management	51. Neurosurgery
38. Pain management	52. Allergy	38. Rheumatology	52. Chemical pathology
39. General medicine	53. Clinical genetics	39. Neurology	53. Allergy
40. Rheumatology	54. Medical ophthalmology	40. Palliative medicine	54. Clinical genetics
41. Endocrinology	55. Ophthalmology	41. Endocrinology	55. Medical ophthalmology
42. Physiotherapy		42. Physiotherapy	
43. Diabetic medicine		43. Diabetic medicine	
44. Nephrology		44. Plastic surgery	
45. Clinical immunology		45. Paediatric surgery	
46. Plastic surgery		46. Nephrology	
47. paediatric surgery		47. Burns care	
48. Stroke Medicine		48. Ophthalmology	

Note: this ranking of services is from the analytical approach only, it is a guide only and does not represent the final ranking of options

1 Size of service line is defined as the sum of tariff spend for that service across all 3 sites (UHSM, CMFT minus Trafford and NMG)

SOURCE: HES data 2013/14; team analysis | 6

Contents

Shortlisting based on these metrics with size of service line included – medical specialties (1/2)

Level of priority
High
Medium
Low

		Duplicated	Quality		Financial			Deliverability	
	Total size of service, £K[1]	Activity at >1 site	Quality of care opportunity	High complexity specialty	Potential to share rotas	Operational efficiency opportunity	Potential to reduce fixed costs	Feasibility of reorganisat-ion	Overall priority
General medicine	62,148	High	No data	Low	Low	Medium	Low	Low	Low
Cardiology	30,207	High	Low	High	Medium	Medium	Medium	Low	Medium
Gastroenterology	15,239	High	Low	Medium	Medium	High	Medium	Low	Medium
Thoracic medicine	10,537	High	Medium[2]	Medium	Medium	High	Medium	Low	Medium
Geriatric medicine	9,121	High	No data	Low	Low	High	Low	High	Medium
Clinical haematology	5,042	High	Low	High	High	Medium	High	Low	Medium
Infectious diseases	4,537	High	Low	High	High	Medium	High	Medium	High
Nephrology	3,828	Low	No data	High	High	High	High	Low	Low
Diabetic medicine	1,314	High	Low	Low	Low	Medium	Low	Low	Low
Medical oncology	1,090	High	Low	High	High	Medium	Medium	Low	Medium
Rehabilitation	1,083	High	No data	Low	Low	High	Low	Low	Low
Rheumatology	1,034	High	No data	Low	Low	Medium	Low	Low	Low
Allergy	490	Low	No data	High	Medium	Medium	Medium	Low	Low
Endocrinology	318	High	Medium[2]	Low	Low	Medium	Low	Low	Low
Stroke Medicine	171	Low	High[3]	Medium	High	High	Medium	Low	Low
Neurology	48	High	Low	Medium	High	Low	Medium	Low	Low
Hepatology	20	High	No data	High	High	Low	Low	Low	Medium
Chemical pathology	9	Low	No data	High	High	No data	Medium	Low	Low

1 Sum of tariff spend across all 3 sites (UHSM, CMFT minus Trafford and NMG);
2 SHMI>100 at Pennine Trust only - unable to differentiate if this represents a quality opportunity at North Manchester Hospital specifically, therefore scored as medium;
3 Despite quality opportunity, stroke services are already being centralised for Manchester, therefore low priority in scope

SOURCE: HES data 2013/14

Shortlisting based on these metrics with size of service line included – medical specialties (2/2)

Level of priority
High
Medium
Low

		Duplicated	Quality		Financial			Deliverability	
	Total size of service, £K[1]	Activity at >1 site	Quality of care opportunity	High complexity specialty	Potential to share rotas	Operational efficiency opportunity	Potential to reduce fixed costs	Feasibility of reorganisat-ion	Overall priority
Clinical genetics	6	Low	No data	High	High	No data	Low	Low	Low
Palliative medicine	1	High	No data	Low	Medium	No data	Low	Low	Low
Genito-urinary medicine	1	High	No data	Medium	Medium	No data	Medium	Medium	Medium
Medical ophthalmology	1	Low	No data	Medium	High	No data	Medium	Low	Low
Dermatology	TBC	High	No data	High	High	No data	Medium	Low	Medium
Clinical immunology and allergy	TBC	Low	High	High	High	No data	Medium	Low	Low
Physiotherapy	TBC	High	No data	Low	Low	No data	Low	Low	Low
A&E	54,337	High	No data	High[2]	High	Low	Low	Medium	Medium

1 Sum of tariff spend across all 3 sites (UHSM, CMFT minus Trafford and NMG)
2 All 3 sites operate 24/7 A&Es and NMG is within 10km of CMFT, therefore according to CEM guidelines should consider merging

SOURCE: HES data 2013/14

Shortlisting based on these metrics with size of service line included – surgical specialties

Level of priority
High
Medium
Low

		Duplicated	Quality		Financial			Deliverability	
	Total size of service, £K[1]	Activity at >1 site	Quality of care opportunity	High complexity specialty	Potential to share rotas	Operational efficiency opportunity	Potential to reduce fixed costs	Feasibility of reorganisat-ion	Overall priority
Trauma & orthopaedics	37,349	High	No data	Medium	Medium	Medium	High	High	High
General surgery	32,277	High	No data	Low	Medium	Medium	High	High	Medium
Cardiothoracic surgery	21,553	High	Medium[2]	High	High	Low	High	High	High
Urology	17,189	High	No data	Medium	Medium	Medium	High	High	High
Transplantation surgery	TBC	High	No data	High	High	Low	High	Low	Medium
Ophthalmology	10,688	Low	Low	High	High	Medium	High	Low	Low
Gynaecology	10,550	High	No data	Medium	Medium	High	High	Low	Medium
Vascular surgery	9,618	High	Low	Medium	Medium	High	High	High	Medium
Plastic surgery	9,021	Low	No data	High	High	Medium	High	Low	Low
Oral surgery	8,663	High	No data	High	High	Medium	High	Low	High
Ear, nose and throat (ENT)	7,736	High	Low	Medium	Medium	Low	High	High	Medium
Gynaecological oncology	2,043	High	High	High	High	Medium	High	Low	High
Neurosurgery	69	Low	No data	High	High	No data	High	Low	Low
Maxillo-facial surgery	30	High	No data	High	High	Low	High	Low	Medium
Breast surgery	TBC	High	No data	High	High	Medium	High	Medium	High
Colorectal surgery	TBC	High	High	Medium	Medium	Low	High	Medium	Medium
Hepatobiliary & pancreatic	TBC	High	No data	High	High	Medium	High	Low	Medium

1 Sum of tariff spend across all 3 sites (UHSM, CMFT minus Trafford and NMG)
2 SHMI>100 at Pennine Trust only - unable to differentiate if this represents a quality opportunity at North Manchester Hospital specifically, therefore scored as medium

SOURCE: HES data 2013/14

Shortlisting based on these metrics with size of service line included – women & children, anaesthetics and psychiatry

Level of priority
High
Medium
Low

	Total size of service, £K[1]	Duplicated	Quality		Financial			Deliverability	
		Activity at >1 site	Quality of care opportunity	High complexity specialty	Potential to share rotas	Operational efficiency opportunity	Potential to reduce fixed costs	Feasibility of reorganisat-ion	Overall priority
Obstetrics	1,992	High	No data	High	Medium	Low	High	Medium	Medium
Births	31,487	High	No data	High[2]	Medium	Medium	High	Medium	Medium
Paediatric medicine	20,139	High	No data	Low[3]	Medium	High	High	Medium	High
Paediatric surgery	5,088	Low	No data	High	Medium	High	High	Medium	Low
Neonatology	2,640	High	No data	High	Medium	Medium	High	Medium	Medium
Interventional radiology	691	High	No data	High	High	Medium	High	High	High
Burns care	TBC	Low	No data	High	High	Medium	High	Low	Low
Adult mental illness	TBC	High	No data	Medium	High	No data	Low	Low	Medium
Child and adolescent psychiatry	TBC	High	No data	High	High	Medium	Low	Low	Medium
Critical care medicine	TBC	High	No data	High	Medium	Medium	High	Medium	High
Pain management	TBC	High	No data	Low	Medium	Low	Medium	Low	Low
Restorative dentistry	TBC	High	No data	High	High	No data	High	Low	Medium

1 Sum of tariff spend across all 3 sites (UHSM, CMFT minus Trafford and NMG)
2 UHSM and NMG each have <5000 births/yr therefore are below recommended activity level needed to staff 24/7 consultant cover
3 All 3 sites have >5000 non elective admissions/yr and are therefore likely to be clinically at scale

SOURCE: HES data 2013/14

Shortlisting based on these metrics – clinical support and back office functions

Level of priority
High
Medium
Low

	Total size of service, £K[1]	Duplicated	Quality		Financial			Deliverability	Overall priority
		Activity at >1 site	Quality of care opportunity	High complexity specialty	Potential to share rotas	Operational efficiency opportunity	Potential to reduce fixed costs	Feasibility of reorganisat-ion	
Radiology	TBC	High	No data	Medium	High	No data	Medium	High	High
Pathology	TBC	High	No data	Medium	High	No data	Medium	High	High
Pharmacy	TBC	High	No data	Low	High	No data	Medium	High	Medium
Therapies	TBC	High	No data	Low	High	No data	Medium	High	Medium
Back office functions	TBC	High	No data	Low	High	No data	Medium	High	Medium

Note: as clinical support services and back office functions do not have the same data available as the medical specialties they have not been included in the quantitative ranking of the medical specialties

1 Sum of tariff spend across all 3 sites (UHSM, CMFT minus Trafford and NMG)

SOURCE: HES data 2013/14

Contents

- **Appendix**
  - Full ranking of specialties
  - Detailed selection of specialties
  - **ALOS and SHMI data**
  - A&E data presented by Trust

Case-mix adjusted ALOS explained

Service line: The specialty in which the patient the patient was treated (Treatment Function code), except for composite specialties: e.g. Maternity[1] Deliveries, Maternity non-Deliveries, Cardiothoracic Surgery[2]

HRG Observed ALOS: Total inpatient bed days (elective and non-elective, excluding elective day case) for the HRG, in the service line, at the site, divided by total spells (as above) for the HRG, in the service line at the site.

HRG Expected ALOS: Total inpatient bed days (elective and non-elective, excluding elective day case) for the HRG, in the service line, at all acute NHS Trusts in England, divided by total spells (as above) for the HRG, in the service line, at all acute NHS Trusts in England.

HRG Spell Volume: The number of inpatient spells (admissions), elective and non-elective excluding elective day case, for the HRG in the service line, at the site.

For each service line (and site):

$$\sum\left(\left(\frac{\text{HRG Observed ALOS} - \text{HRG Expected ALOS}}{\text{HRG Expected ALOS}}\right) \times \text{HRG Spell Volume}\right) \times 100 = \text{\% difference in ALOS adjusted for case mix}$$

Q: What does this tell us?

A: The % difference between the ALOS in the service line and the ALOS that could be achieved if the site performed at national average level for its case mix.

1 Obstetrics and Midwife Episodes combined, split into delivery HRGs (NZ11 to NZ15) and all other HRGs.
2 Cardiothoracic surgery = Cardiac Surgery, Thoracic Surgery and Cardiothoracic Surgery

Differences in ALOS show areas for potential efficiency improvements(1/2)

ALOS >50% above expected for case mix (based on national average)

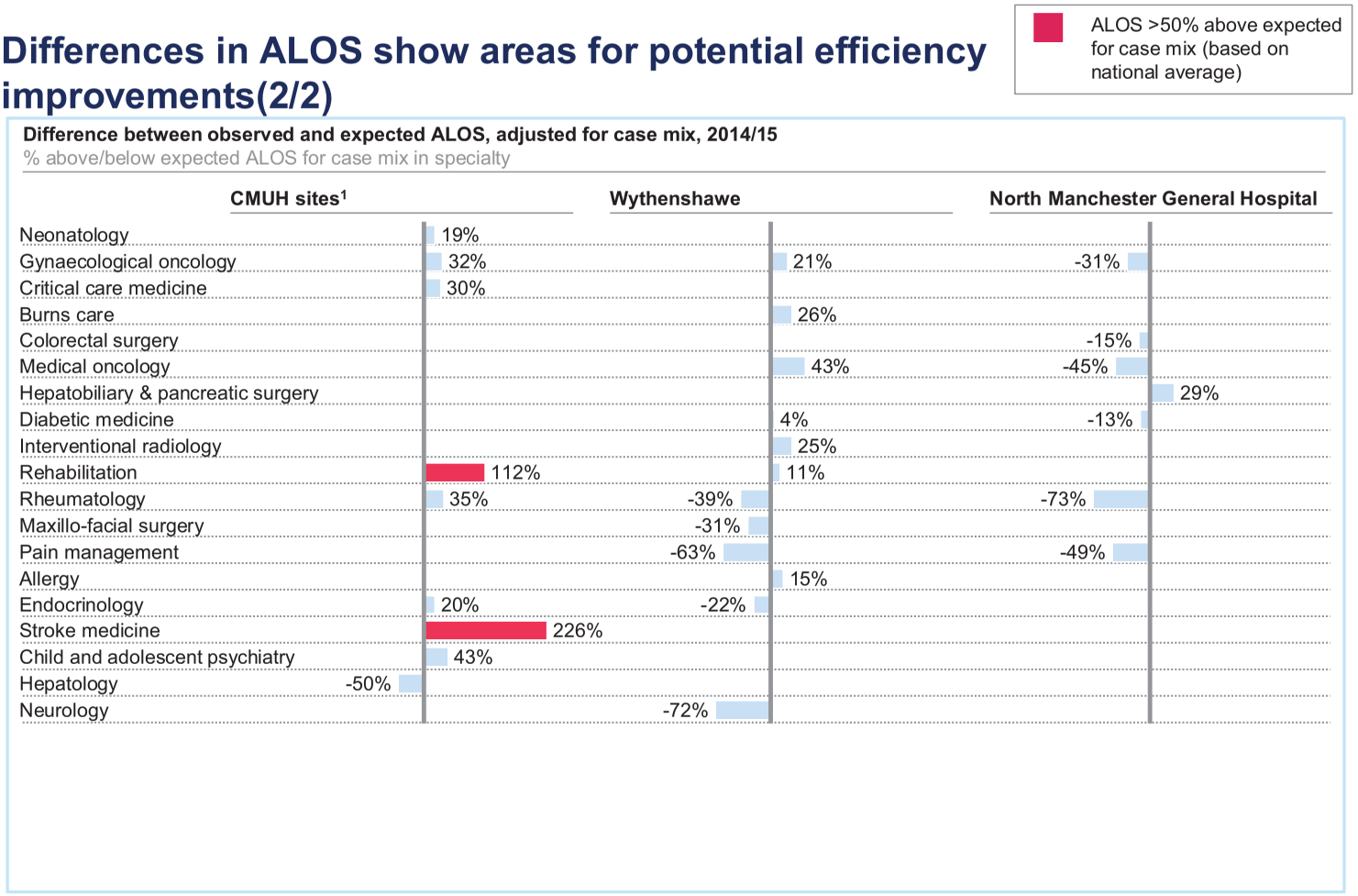
Difference between observed and expected ALOS, adjusted for case mix, 2014/15
% above/below expected ALOS for case mix in specialty

	CMUH sites[1]	Wythenshawe	North Manchester General Hospital
General medicine	42%	13%	-21%
Obstetrics	-3%	-3%	-7%
Births	14%	-2%	-4%
Paediatrics	53%	17%	7%
A&E	1%	-6%	-8%
General surgery	27%	11%	0%
Urology	24%	28%	-18%
Trauma/orthopaedics	35%	19%	-3%
Gynaecology	18%	3%	-33%
Cardiology	17%	-13%	34%
Thoracic medicine	116%	-3%	-15%
ENT	12%	-3%	30%
Oral surgery	0%	15%	5%
Gastroenterology	56%	29%	-21%
Geriatric medicine	195%	-13%	-5%
Ophthalmology	1%		
Plastic surgery	110%	31%	
Vascular surgery	65%	19%	-43%
Cardiothoracic surgery	-2%	1%	
Paediatric surgery	18%	55%	
Infectious diseases		17%	-20%
Breast surgery		29%	-4%
Transplantation surgery	17%	-2%	
Clinical haematology	36%	-28%	29%
Nephrology	54%	16%	-2%

Notes: Specialties ranked by combined volume of spells across all sites included in the analysis; only specialties with >10 inpatient admissions (elective and non-elective, excluding day cases) across all sites shown.
1 Manchester Royal Infirmary, St Mary's, Royal Manchester Children's and Manchester Royal Eye Hospital combined

SOURCE: Hospital Episode Statistics, 2014/15

Differences in ALOS show areas for potential efficiency improvements(2/2)

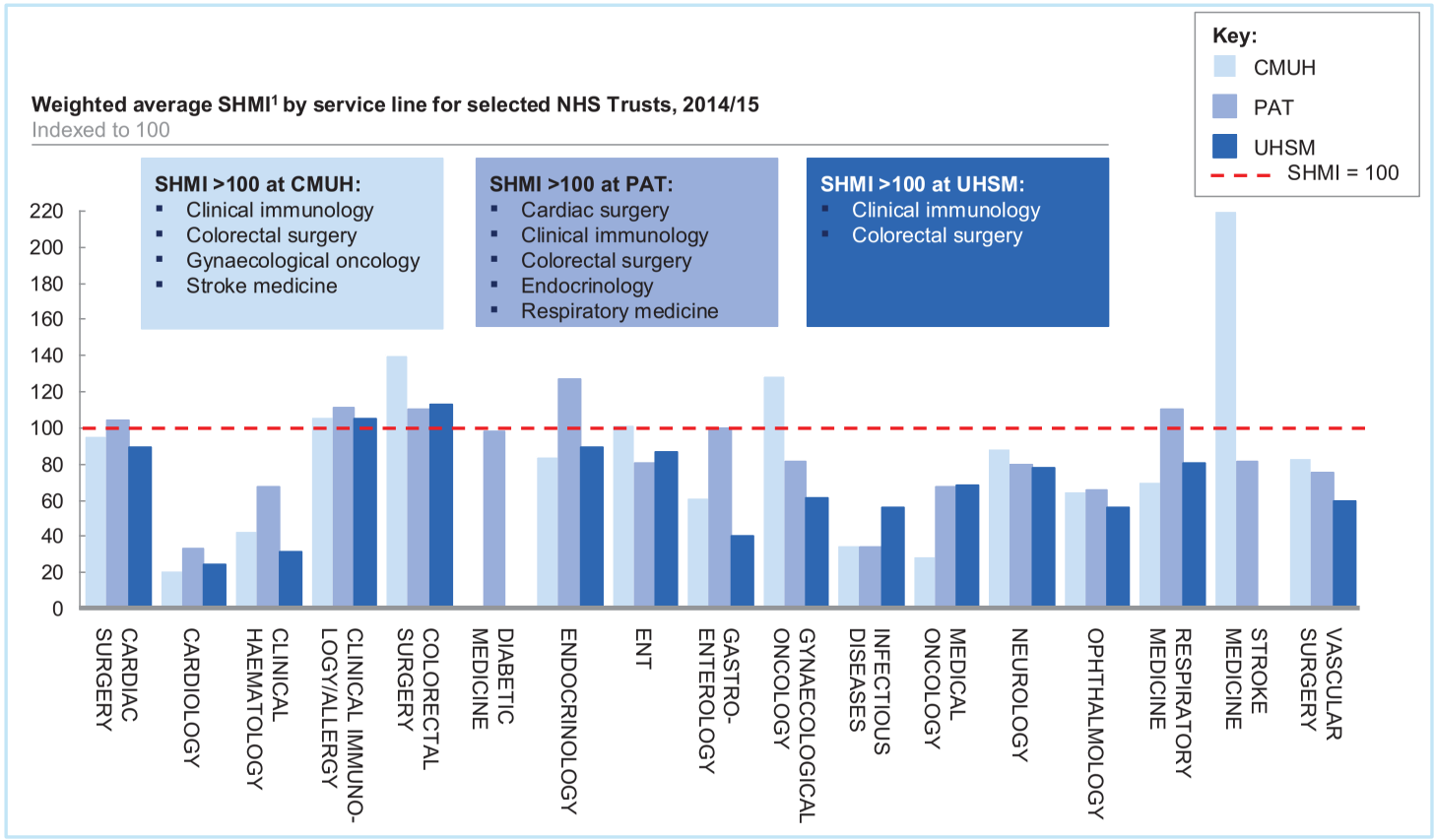


Notes: Specialties ranked by combined volume of spells across all sites included in the analysis; only specialties with >10 inpatient admissions (elective and non-elective, excluding day cases) across all sites shown.
1 Manchester Royal Infirmary, St Mary's, Royal Manchester Children's and Manchester Royal Eye Hospital combined

SOURCE: Hospital Episode Statistics, 2014/15

SHMI[1] data by service line suggests some areas for further investigation into the quality and safety of care provided

RESULTS BY TRUST NOT BY SITE



1 SHMI = summary hospital-level mortality index. Data at diagnosis level allocated to the best fit specialty (note all solid tumour cancer diagnoses, excluding gynaecological cancers, allocated to medical oncology). Diagnoses with <5 deaths in the period excluded from the analysis.

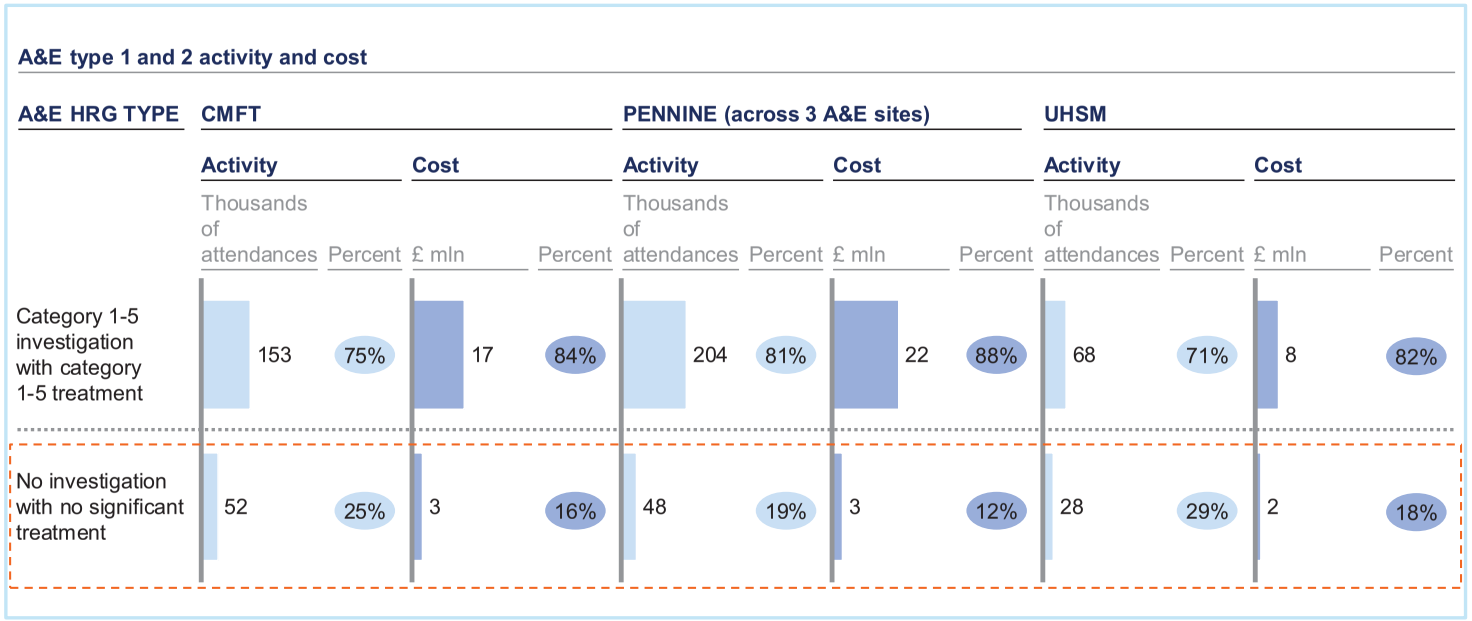
SOURCE: HSCIC,

17

Contents

- **Appendix**
  - Full ranking of specialties
  - Detailed selection of specialties
  - ALOS and SHMI data
  - **A&E data presented by Trust**

There is a 2X difference in A&E activity and tariff spend between sites



NOTE:
A&E Type 1: Emergency departments are a consultant led 24-hour service with full resuscitation facilities and designated accommodation for the reception of accident and emergency patients
A&E Type 2: Consultant-led mono specialty accident and emergency service (eg ophthalmology, dental) with designated accommodation for the reception of patients
Excludes Type 3 and 4 – Minor Injury Units and Walk-in clinics

SOURCE: HES 2013/14

Briefing from Chief Nurses, CMFT, PAHT & UHSM
Re Single Hospital service – Manchester

Following a discussion with Sir Johnathan Michaels with the Chief Nurses it was agreed that the Chief Nurses would provide a short briefing to inform Sir Jonathan's consideration for the publication of the phase one report. This briefing would consider how nursing, midwifery and the AHP work force can support this programme.

- It is considered vital that any report recognises the excellent practice undertaken by all three organisations; whilst noting that there are areas for improvement and opportunities for shared learning and improved patient experience as a result of much closer collaboration.

- There is no desire for a separate clinical nursing work stream. However, there will need to be some consideration of a workforce group that specifically looks at recruitment and retention of each of the professional groups and the opportunities for different ways of working as well as the opportunity to develop new practitioners using a single risk framework. It is important that nurses and AHPs are connected into the work around the 8 exemplar areas and the future clinical pathways which are identified.

- The initial focus of the work should be on the desired outcomes for patients, then on the pathways, followed by planning and developing the workforce to deliver the outcomes - including shared education and training delivery.

- It may be appropriate to develop a single workforce employed by one organisation for some services examples provided were infection control, tissue viability, pain management and continence services including research and education, where they are predominantly nurse led whilst supported by the wider MDT.

- Once the pathways are clear for the exemplar areas then development of shared nursing/midwifery policies, procedures and governance would be necessary and appropriate.

- Heads of Midwifery should be supported to develop and lead the discussions around maternity services in particular the low risk and community maternity services, as currently the work is focused on obstetrics and gynaecology.

  There is a current opportunity to respond to the *Better Births* (2016) report and forward a joint Expression of Interest for Manchester - there may be some real benefit to the pressures on each of the services to consider a Manchester model which includes home/community births where appropriate as well as a joined up service across each of the units including neonatology

- It is essential that there are linkages now with emergent Local Care Organisation to develop a community nursing offer across the city, as many of the pathways will work across the health and social care continuum.

- There are opportunities to join recruitment and retention models and offer flexibility for staff across all organisations making it easier for nurses to transfer rather than leave one organisation to join another. There are examples of specialist nurses accessing patients across each of the sites requiring time consuming honorary contracts and issues with accountability. There is an opportunity to create a 'one organisation' approach or even lead employer that enables staff to work across boundaries for the benefit of patients

- Work has already commenced looking at new roles/practitioners including the apprenticeship models and a single service would enable agreement as to how we will govern practice that is currently outside of scope of practice. As well as benefitting patients there would be one pay scale which would prevent pay drift when people move around the city.

- Opportunities to work with HEI, MAHSC, AHSN and Health Innovation Manchester to respond to care needs for the future model of care and how we influence education, training, research and innovation collectively.

- Both UHSM and CMFT have chairs in nursing and there are opportunities to lead GM in the application of Clinical Academic Career pathways and to focus on the benefits of translational research across the bigger campus

C A Lenney CMFT
M Bailey UHSM
G Harris PAHT

City of Manchester Single Hospital Service

Infectious diseases

Appendix VIII (a)

- **Single service model and benefits**
- Case study
- Activity and audit data

Infectious diseases (ID): summary

Current model	▪ Individual services operating independently on separate sites ▪ Some collaboration in the form of disease specific regional networks (e.g. Hepatitis C) and teaching (years 3 and 4 medical students are jointly taught by UHSM and NMGH)
Current challenges	▪ Variations in the provision of care (no inpatient ID consult service at CMFT, patchwork of OPAT[1] providers in the City, each with different pathways and some with no ID input) ▪ Services provided at each site are slightly different but complement each other if offered under a single service model. ▪ Patients flow between sites (and between acute and community services) but their data does not – creates delays in provision of care, duplication of effort and safety issues (such as inaccessibility to vital information such as CD4 counts on admission) ▪ Fragmented laboratory reporting systems ▪ If there was lack of level 3 critical care at NMGH, this would in effect mean that inpatient ID treatment would have to be relocated to where there is a level 3 critical care unit ▪ Increasing integration of ID and microbiology training to create 'infection specialists' ▪ Lack of seamless community services prevents full integration of acute and community care
Proposed model	▪ A fully branded hub & spoke model with a single inpatient ID unit, able to cater for tropical infection patients (with level 3 critical care on site) as the hub, accepting referrals from the region ▪ Single research office located at the hub ▪ Clinicians at the hub offer on call to GPs and acute hospitals as well as in-person consults ▪ Outreach clinics in communities for blood borne viruses (BBV), with upskilling of GPs and local providers to take over stable cases ▪ A single OPAT[2] service for the whole of the city (shared pathways) with a specialist bone infection unit (created by co-location of ID and plastic surgery) ▪ National Aspergillosis Centre co-located with complex respiratory care, but run by ID physicians
Opportunities	▪ Potential to improve quality of patient care across Manchester, which is currently variable ▪ Opportunity to tackle infection public health issues as a whole health system ▪ Financial and operational efficiencies, for example, from OPAT, outreach BBV clinics and ID consults ▪ Opportunity to attract further research income
Implementation considerations	▪ Potential capital requirements if the inpatient ID unit needs to relocate ▪ Common IT across acute and community services is essential ▪ Impact on interdependent specialties such as public health, microbiology and immunology

1 Outpatient parenteral antimicrobial therapy

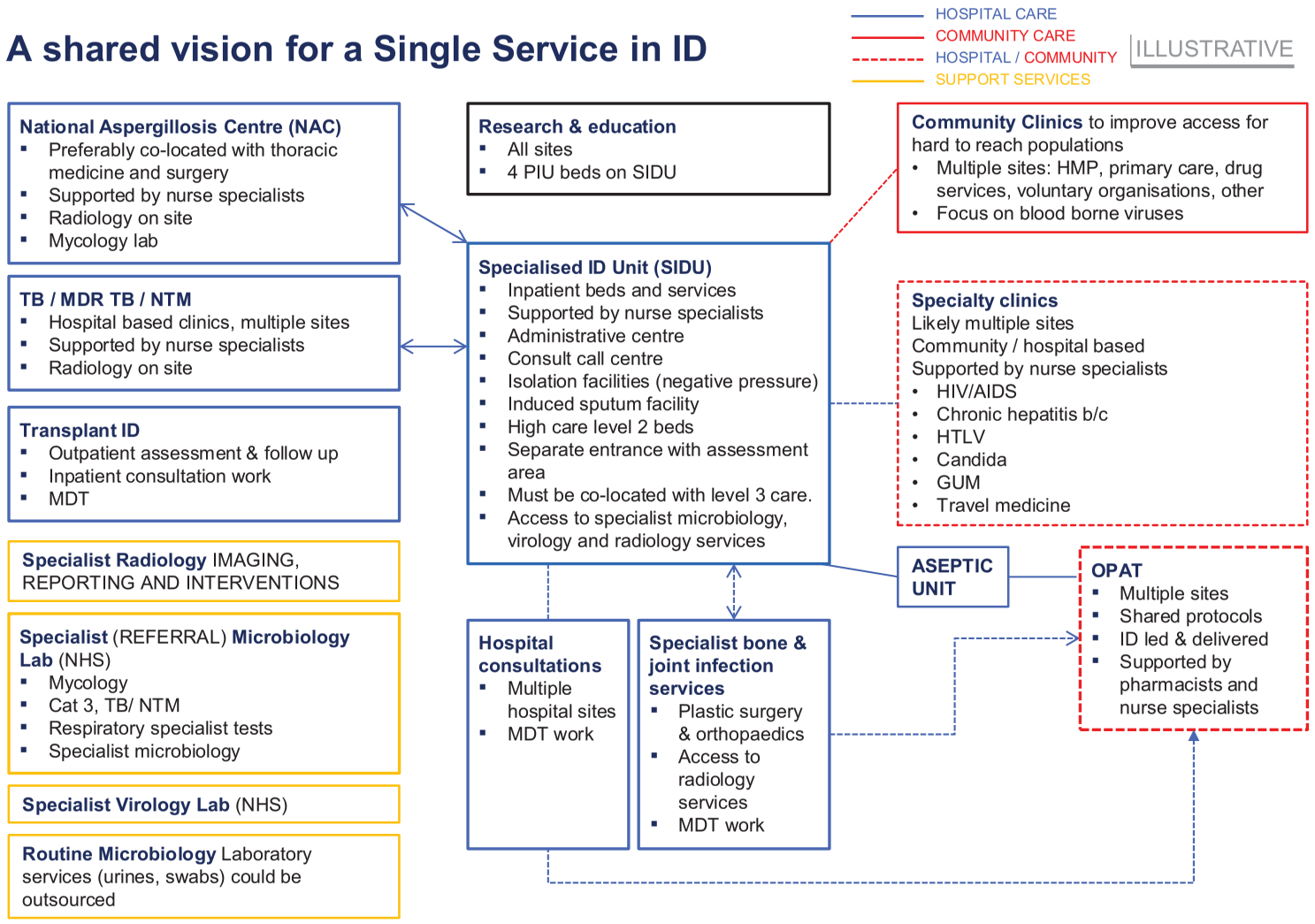
SOURCE: Clinical working group

Infectious diseases (ID): model

Description	How this would work
 Hub and spoke model	▪ A fully branded, single service for the whole of Manchester (unique branding for the service in the same way that The Christie is a brand) ▪ **One inpatient unit** co-located with level 3 critical care that accepts referrals for the whole region ▪ National Aspergillosis Centre located alongside complex respiratory, but provided by ID physicians ▪ Single research office located at the hub, through which all clinical trials are registered ▪ Shared clinical pathways and protocols for the whole service for both outpatient and inpatient activity ▪ **24/7 on-call advice service** for acute clinicians and a telephone advice line for GPs, using video-conferencing to assist these consultations as needed ▪ **In-person ID consultations** for all acute in-patients across the City ▪ **Extend the outreach community clinics** for blood borne viruses to cover the whole of the City of Manchester ▪ Upskilling of local healthcare workers (including specialist nurses and GPs) to enable transfer of care to the community ▪ **A single outpatient parenteral antimicrobial therapy (OPAT) service** for the whole of the City, with shared clinical pathways, protocols and governance ▪ Co-location of the OPAT service with plastic surgery and orthopaedics to enable the establishment of a **new specialist bone infection unit** ▪ **Shared antimicrobial stewardship** across the City, joint with microbiology and pharmacy, with shared pathways and protocols underpinning service delivery

SOURCE: Clinical working group

A shared vision for a Single Service in ID



SOURCE: Clinical working group

Infectious diseases (ID): impact

✓ Strong evidence ✓ Some evidence

Category	Impact	Evidence	
Quality of care	▪ Improved outcomes through enhanced access to ID consult service	▪ Multiple research papers that show that ID consults improve outcomes	✓
	▪ Consistent outpatient parenteral antimicrobial therapy (OPAT) service across all sites **(also under finance and operational efficiency)**	▪ The OPAT service in UHSM has saved >2500 bed days across all specialties in 2014/15, and 2209 bed days in North Manchester CCG ▪ If all sites performed to this level, there would be an additional ~ 600 bed days saved per year (this equates to ~£0.14M)	✓
	▪ Consistent approach to antimicrobial stewardship service	▪ Evidence from NMGH shows that their antimicrobial stewardship service has reduced C Difficile infection and improved antimicrobial adherence	✓
	▪ Improved medication compliance and reduction of transmission due to sharing of best practice, particularly BBV outreach clinics	▪ Evidence from NMGH shows that their outreach BBV clinics improve attendance, thus improve medication compliance and prevent transmission	✓
	▪ Better outcomes from creation of new specialist services, e.g. specialist bone/joint infection centre	▪ NHS Commissioning Guidance 13/14 recommends that care for complex bone/joint infections in adults is provided by networks with a specialist centre	✓
Patient experience	▪ Branding of the service improves patient trust	▪ Evidence from research that branding matters	✓
	▪ Reduced fragmentation of care (no repeat tests and immediate access to health records) due to joined up IT	▪ Commonwealth fund reports that 6% of adults in the UK are sent for duplicative tests	✓
Workforce	▪ Greater ability to staff a full 24/7 ID rota by sharing workload across bigger group of staff ▪ Greater staff retention from creating a hub of research and education activity	▪ Full 24/7 ID cover is currently provided by 6 WTE at NMGH and 4WTE at UHSM and 0 WTE at CMFT. GUM currently provide on call cover for HIV inpatients at CMFT. Assuming ID physicians numbers are increased, cover would be provided at all 3 hospitals, with collaborative working with GUM. 24/7 cover would probably require 2 consultants for the city.	✓
Financial and operational efficiency	▪ Reduced NEL admissions due to shared use of Patients Know Best® for 'virtual reviews', and a telephone advice line for specialist ID advice for GPs	▪ Estimate of unnecessary NEL admissions and how much this would reduce by	
	▪ Reduced follow-up rates due to standardised pathways	▪ First to FU ratio could be reduced from 3.2 (current weighted average across all sites) to 2.2 (national median)[2]	✓
	▪ Consistent outpatient parenteral antimicrobial therapy (OPAT) service across all sites, leading to reduced inpatient activity	▪ The OPAT service in UHSM has saved >2500 bed days across all specialties in 2014/15, and 2209 bed days in North Manchester CCG. ▪ If all sites performed to this level, there would be an additional ~ 600 bed days saved per year (this equates to ~£0.14M)	✓
	▪ Reduction in the average length of stay (ALOS) due to standardised pathways	▪ If the case mix adjusted ALOS was standardised to the best across all sites then there would be a potential efficiency saving of ~£0.07M	✓
	▪ Reduced cost of consumables due to: – Reduced duplication of blood tests as data shared across sites (and into primary care) – Greater clinical trial enrolment (trial medication is free)	▪ Commonwealth fund reports that 6% of adults in the UK are sent for duplicative tests ▪ Carter Report estimates that ~9.5% efficiency savings can be made from joint procurement	✓
Research and innovation	▪ Opportunity to access £10M public-private partnership to research antimicrobial resistance at Alderley Park, due to single research hub/joint application etc.	▪ Total current research activity is 61 clinical trials with an income of £483K ▪ Evidence that trial organisers seek single point of access sites for research	✓
Education and training	▪ Opportunity for all staff to benefit from sharing best practice and expertise	▪ There is some evidence that inter-professional education can improve patient outcomes and collaboration between staff (Reeves S, et al, 2013)	✓

1 Genito-urinary medicine; 2 Note that the feasibility to rationalising follow-up ratios is difficult in ID, where some follow-up ratios are set by national guidance (e.g. for hepatitis patients)

SOURCE: Clinical working group

Infectious diseases – impact summary

Category	Unified team based at the hub with shared on-call	Shared pathways and protocols	Joint Abx[1] steward-ship	More outreach BBV[2] clinics	Unified OPAT[3] service	ID consult service	Phone advice line for GPs	Virtual reviews with Patients Know Best ®	Develop ment of sub-specialty interests	New bone infection unit	Shared research agenda and office	Branding of service
Quality of care	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Patient experience	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Workforce	✓	✓	✓		✓		✓	✓	✓			✓
Financial and operational efficiency	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
Research and innovation		✓		✓	✓	✓			✓	✓	✓	
Education and training	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	

1 Abx = Antibiotic; 2 Blood Borne Virus; 3 Outpatient Parenteral Antimicrobial Therapy

SOURCE: Clinical working group

- Single service model and benefits
- **Case study**
- Activity and audit data

Case Study: closer integration with GPs to improve BBV[1] screening in Dundee

CASE STUDY

Service delivery model

Dundee has a high burden of undiagnosed hepatitis B and C in at-risk groups, poor attendance rates at hepatitis clinics, and poor data records to track patients.

The solution

- Lead GP engaged as many Dundee GP practices as possible
- Established a credible BBV team to support clinical engagement and give GPs access to current clinical knowledge
- Used patient education 'Fast Track' cards to encourage screening
- Reconciled the BBV Managed Clinical Network (MCN) hepatitis B database with GP practice registers, using read codes to allow call/recall of patients

Impact

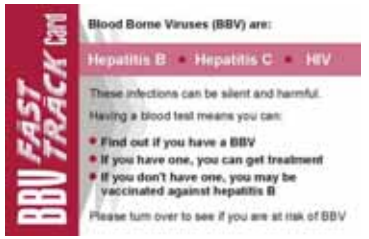
- HIV, hepatitis B and hepatitis C testing increased by 62 per cent, 16 per cent and 18 per cent respectively, year on year
- 26 of the 64 hepatitis C patients known lost to follow-up were referred back to the hospital service

Key learnings

- Reconciliation of data between the MCN and GPs created safer, more effective care
- The project highlighted the variability in BBV prevalence across practices, and demonstrated the importance of engaging directly with GPs in reaching this population.

Comparison to Manchester

- The Dundee initiative was led by GP health practices, in close collaboration with hospital colleagues
  - Together, they jointly tackled the issue of low detection and referral rates
  - Data sharing between acute and community providers was key to their success
- In Manchester, there are outreach BBV clinics in North Manchester, with some GP collaboration



1 Blood Borne Virus

SOURCE: Quality in Care Connect - Improving Outcomes for patients with Blood Borne Virus in Dundee

- Single service model and benefits
- Case study
- **Activity and audit data**

Inpatient infectious diseases care

Sum of activity across all sites

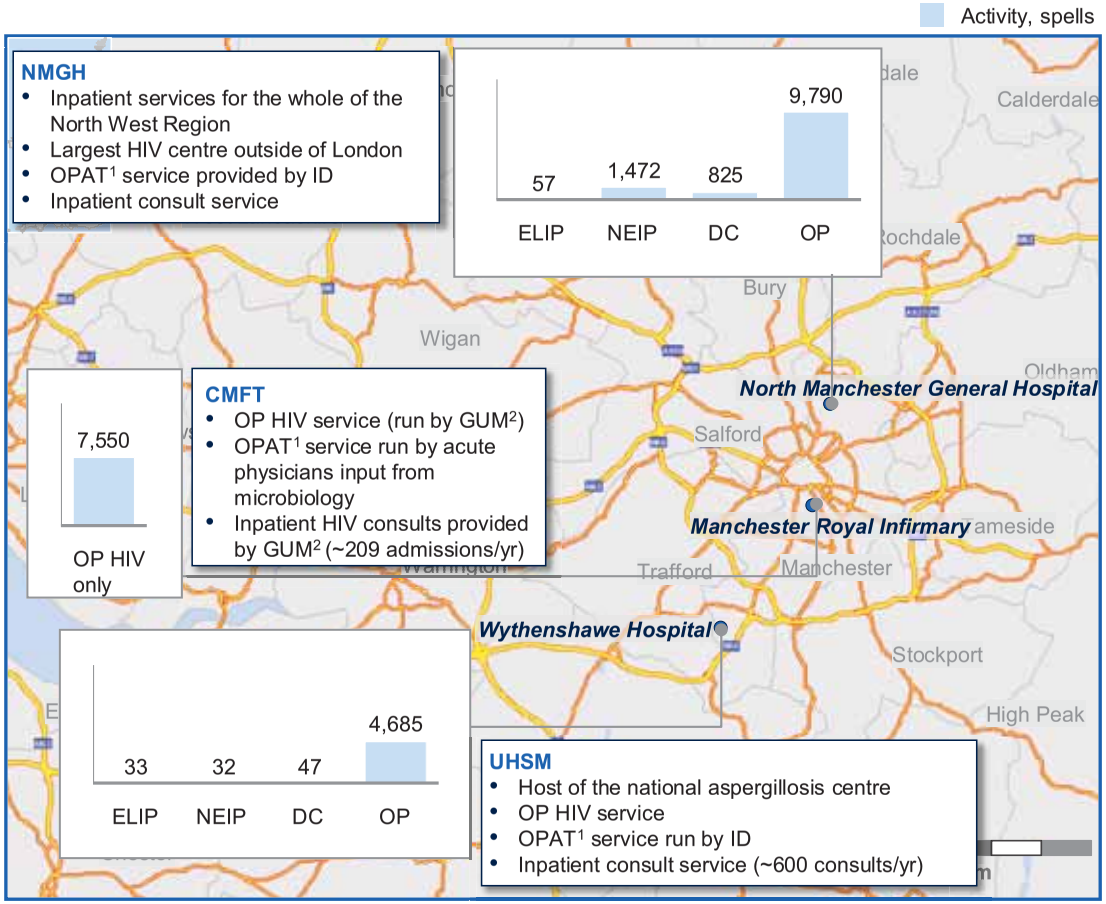
- 1,504 non-elective in-patient spells
- 90 elective in-patient spells
- 872 day case spells
- 14,475 outpatient spells for ID (7,550 outpatient HIV appointments provided by GUM[2] at CMFT)

Inpatient care delivered by

- 4.8 whole time equivalent (WTE) ID consultants at Wythenshawe and 5.97 WTE ID consultants at North Manchester (NMG)[3]

Using

- 26 inpatient beds at NMG, including 2 high dependency beds and 4 negative pressure rooms, with a separate entrance for highly infectious cases
- No dedicated beds at UHSM but shared beds with respiratory (~5-10 ID inpatients at a time)
- No dedicated inpatient beds at CMFT



1 Outpatient parenteral antimicrobial therapy; 2 Genito-urinary medicine; 3 outpatient sexual health service with inpatient HIV consults delivered by 6.3 GUM clinicians at CMFT (~209 HIV related admissions/yr with an average length of stay of 10.2 days)

SOURCE: Trust data 2014/15, clinical working group

Pennine Acute Trust (PAHT) provides infectious disease services to the whole of the North West Region

Infectious disease services provided by PAHT

Inpatient	
NM	• 26 ward beds, 2 HDU beds • 4 negative pressure beds • Separate entrance for highly infectious patients • Consult service to other inpatient wards • Outpatient parenteral antimicrobial therapy (OPAT) service for all inpatients
Outpatient clinics	
NM	• ~ 20 consultant led lists/week • ~ 15 registrar led lists/week • ~ 3 HIV specialist nurse lists/week • ~ 6 Hepatitis specialist nurse lists/week • ~ 3 TB specialist nurse lists/week
ROH	• 1 weekly ID clinic • 1 weekly Hepatitis clinic
RI	• 1 weekly ID clinic and • 1 fortnightly Hepatitis clinic
Outreach clinics	• Clinics in Bolton (fortnightly), Ancoats (1/week) and Stockport (1/week) • 4 prison services (~1 per 2 weeks)

NM (North Manchester), ROH (Royal Oldham Hospital), RI (Rochdale Infirmary)

SOURCE: NHS Choices, 2014 & Hospital Episode Statistics 2013/14 | 12

Infectious diseases: current workforce and asset utilisation

Medical WTEs, #	NMGH	UHSM	CMFT	Total
Consultants	5.97	4.8	(6.3[1])	**10.77**
Junior doctors (all grades)[2]	15	4	(7[1])	**19**
Ward nurses	31	0	0	**31**
Specialist nurses	8	5	0	**13**
				73.77

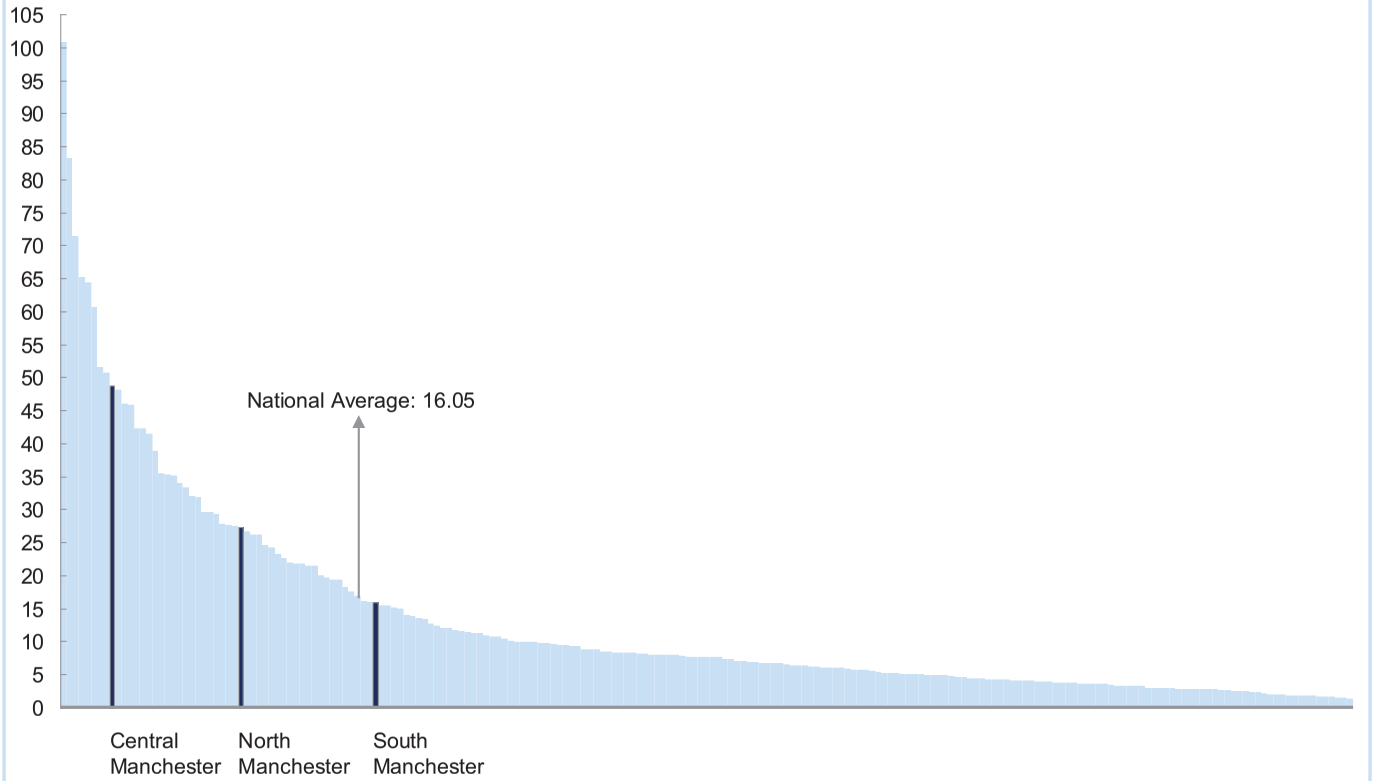
Utilisation of assets, #	NMGH	UHSM	CMFT	Total
Number of beds	26	0[3]	0	**26**
Average bed days per week	160	17.2	0	
Average length of stay	5.4	15.4	0[4]	

1 These are GUM clinicians who deliver an outpatient sexual health service and inpatient HIV advice – there are no dedicated ID physicians at CMFT;
2 Includes trust grade doctors
3 No dedicated inpatient beds for ID, but some ID inpatients are admitted to respiratory beds under the care of the ID team (~5-10 patients at a time);
4 There were ~209 inpatient HIV related admissions in CMFT in 2014/15, with an average length of stay of 10.2 days

SOURCE: Trust data 14/15

TB case notifications and rates by Clinical Commissioning Group (CCG)

Average annual rate of TB cases per 100,000 by CCG in England (based on three-year average annual numbers 2012-14)



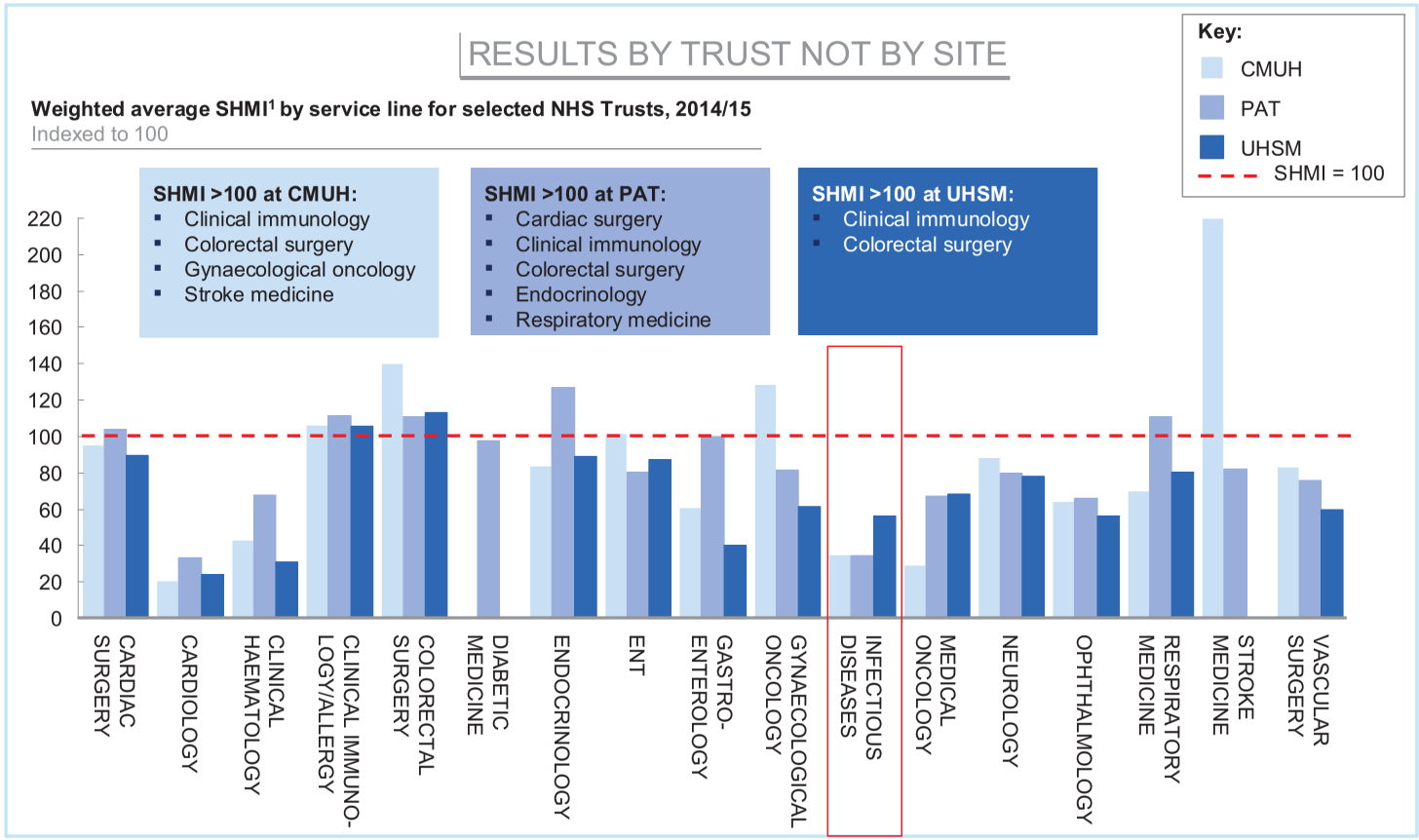
SOURCE: Public Health England, Tuberculosis (TB) in England: surveillance data, October 2015

HIV testing across Greater Manchester Local Authorities

1. Number of 'Eligible new GUM Episodes' where a HIV test was accepted as a proportion of those where a HIV test was offered
2. The proportion of 'Eligible new GUM Attendees' in whom a HIV test was accepted.
3. % of adults (aged 15 years or more) diagnosed with a CD4 cell count less than 350 cells per mm3

SOURCE: Public health England, Sexual health fingertips profile, 2013-2014 | 15

SHMI[1] data for infectious diseases varies across Trusts



1 SHMI = summary hospital-level mortality index. Data at diagnosis level allocated to the best fit specialty (note all solid tumour cancer diagnoses, excluding gynaecological cancers, allocated to medical oncology). Diagnoses with <5 deaths in the period excluded from the analysis.

SOURCE: HSCIC,

16

There are differences in ALOS (average length of stay) across sites

ALOS >50% above expected for case mix (based on national average)

Difference between observed and expected ALOS, adjusted for case mix, 2014/15
% above/below expected ALOS for case mix in specialty

	CMUH sites[1]	Wythenshawe	North Manchester General Hospital
General medicine	42%	13%	-21%
Obstetrics	-3%	-3%	-7%
Births	14%	-2%	-4%
Paediatrics	53%	17%	7%
A&E	1%	-6%	-8%
General surgery	27%	11%	0%
Urology	24%	28%	-18%
Trauma/orthopaedics	35%	19%	-3%
Gynaecology	18%	3%	-33%
Cardiology	17%	-13%	34%
Thoracic medicine	116%	-3%	-15%
ENT	12%	-3%	30%
Oral surgery	0%	15%	5%
Gastroenterology	56%	29%	-21%
Geriatric medicine	195%	-13%	-5%
Ophthalmology	1%		
Plastic surgery	110%	31%	
Vascular surgery	65%	19%	-43%
Cardiothoracic surgery	-2%	1%	
Paediatric surgery	18%	55%	
Infectious diseases		17%	-20%
Breast surgery		29%	-4%
Transplantation surgery	17%	-2%	
Clinical haematology	36%	-28%	29%
Nephrology	54%	16%	-2%

Notes: Specialties ranked by combined volume of spells across all sites included in the analysis; only specialties with >10 inpatient admissions (elective and non-elective, excluding day cases) across all sites shown.

1 Manchester Royal Infirmary, St Mary's, Royal Manchester Children's and Manchester Royal Eye Hospital combined

SOURCE: Hospital Episode Statistics, 2014/15

CITY OF MANCHESTER SINGLE HOSPITAL SERVICE
SINGLE SERVICE MODELS – SUMMARY OF MODELS

Appendix VIII Infectious diseases

Summary

Current model
- Individual services operating independently, with some unique services currently only available at certain sites

Current challenges
- Variation in provision of care for infectious diseases patients across the City
- Lack of joined up IT presents barriers to patient care
- Potential for further fragmentation of care due to tender for sexual health services

Proposed model
- A single, branded, hub and spoke model for all of ID care across the city

Opportunities for benefits
- Equity of access to the best care for all patients
- Financial and operational efficiencies from sharing of best practice
- New research opportunities

Implementation considerations
- Common IT
- Capital requirements may be needed if the inpatient unit requires relocation
- National Aspergillus Centre should be co-located with tertiary respiratory service but the care should be delivered by ID physicians
- ID is closely linked with genitourinary medicine (GUM), medical microbiology and immunology – the impact of the single service model on these needs to be considered

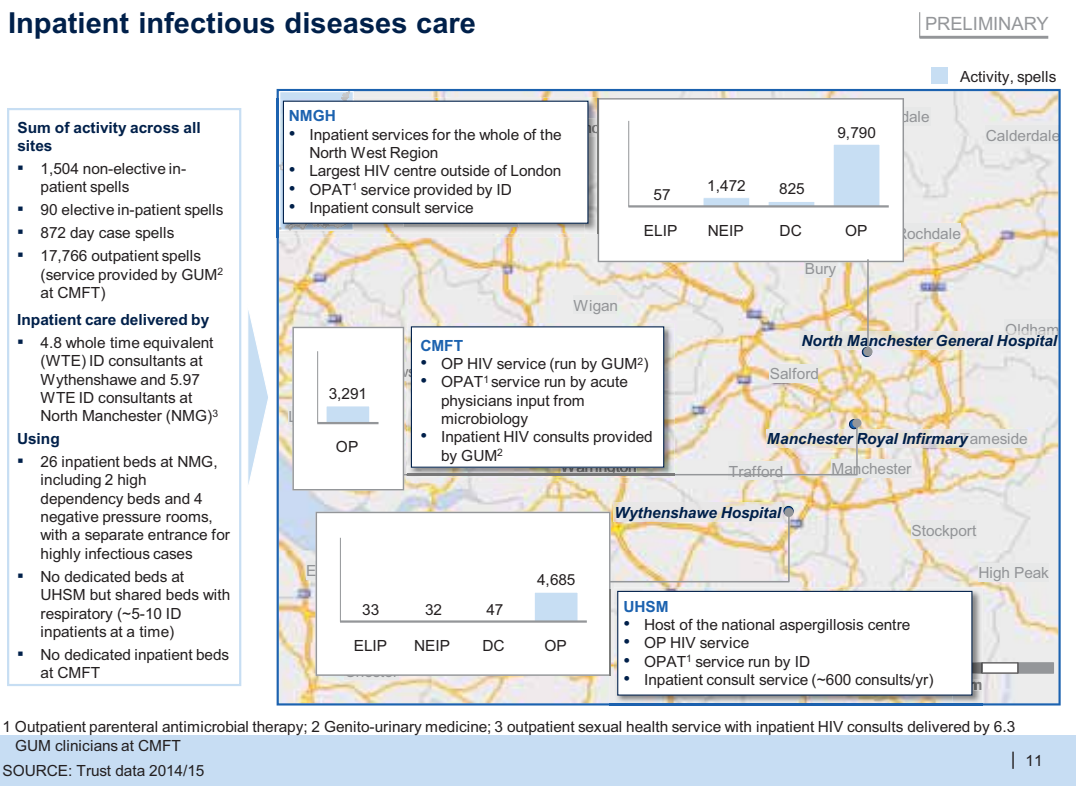
Outline of the current model

Inpatient ID care is provided in various capacities across the City of Manchester. The regional inpatient ID unit is at NMGH, and provides infection services to a large part of the North West region. Some infection services are unique to each site and others are common. Examples of unique services include:
- Transplant infection specialism in UHSM
- UHSM has an about ~45 strong basic science group allied to the National Aspergillosis Centre, with its own associated Masters programme
- Tropical disease and multi-drug resistant TB expertise at NMGH.
- Joint HIV/neurology/obstetrics/renal expertise at CMFT
- Inpatient ID consultations are only available at UHSM and NMGH

There are currently no inpatient ID consultants at CMFT:
- Inpatient HIV care is provided by GUM (consult service)
- Antimicrobial stewardship is provided by microbiology
- OPAT services are provided by acute physicians with microbiology input
- There is no dedicated infectious disease support for the Children's Hospital

Whilst the current situation leads to significant variations in access to care, it also provides an opportunity to pull these complementary facets together under a single service model. In addition, there are already a number of successful collaborative pathways across the City of Manchester that could be expanded, such as the regional hepatitis pathway for patients treated with highly expensive antivirals.

A summary of current activity and staffing levels across sites is shown below. Note that inpatient infectious diseases activity at CMFT has not been able to be disaggregated from existing data, as there are no ID consultants looking after dedicated ID patients at CMFT:



Outline of current and future challenges

1. Quality of care

- **Current variations in the provision of care for infectious diseases patients**
  - There is currently significant variation in the provision of ID care across the City of Manchester, with multiple pathways and clinical practices (for example, outpatient parenteral antimicrobial therapy (OPAT) is provided by a number of different sites, with different referral processes into the service, different antimicrobial advice for the same infections and different levels of ID input).
  - There is inequity of access for all patients to the same standard of care across the City – for example, patients in UHSM have access to transplant expertise that those elsewhere do not.
  - There is overlap in the provision of infection/antibiotic advice by microbiologists and ID physicians
  - There is currently overlap in the provision of HIV care by genitourinary (GU) medics and ID physicians, which is being further complicated by the provision of contraception and sexual health (CASH) services by private companies (tenders

for CASH have been awarded to private companies but HIV care has **not** been included in the process, meaning that the provision of HIV care has become more fragmented)

- **Currently, the Manchester local health economy is performing worse than average on prevention and diagnosis of infectious diseases** [see Appendix VIII (a)]
  - Eight out of ten of the Manchester Local Authorities are below the UK average for HIV testing uptake.
  - Six out of ten Manchester Local Authorities have a higher than UK average rate of HIV late diagnosis.
  - The annual rate of TB cases per 100,000 is higher than the UK average in North and Central Manchester CCGs.
  - North and Central Manchester CCGs are in the lowest quartile of performance for the prevention of admissions for vaccine preventable diseases.

- **Future challenges to the provision of infectious diseases care**
  - The current inpatient ID unit at NMGH requires co-location with level three critical care – the future of which remains uncertain. Absence of level three critical care at NMGH would in effect mean that inpatient ID treatment cannot be maintained at NMGH and the capacity will have to be provided at a site with a level three critical care unit.

2. Patient experience

- **Lack of joint IT systems leads to disjointed care for patients**
  - Patients flow across sites but their data does not, resulting in duplicated tests and delayed treatment.

3. Workforce

- **Future challenges to staffing**
  - It will become increasingly difficult for each site to recruit sufficient staff to cover three separate 24/7 on-call rotas.
  - Seven day provision of ID care will require supporting laboratories to be more accessible, which may require centralisation of laboratories.
  - Joint core infection training for trainees means that traditional microbiologists will cease to be produced and future consultants will be amalgamated under the umbrella of ‘infection specialists’.
  - Prisons in Manchester are moving to an ‘opt out’ system for blood borne virus testing, which will likely result in an increase in the number of new diagnoses without the existing resources in place to meet this need.
  - Care for stable HIV patients is likely to be provided in the community in the future.

4. Financial and operational efficiency

- **Opportunities for all providers to perform to the standards of the best**
  - There is a variation in the average length of stay (adjusted for case mix) across sites [see Appendix XVII].

5. Research and innovation

- **Currently, there is inequity of access for patients to clinical trials**

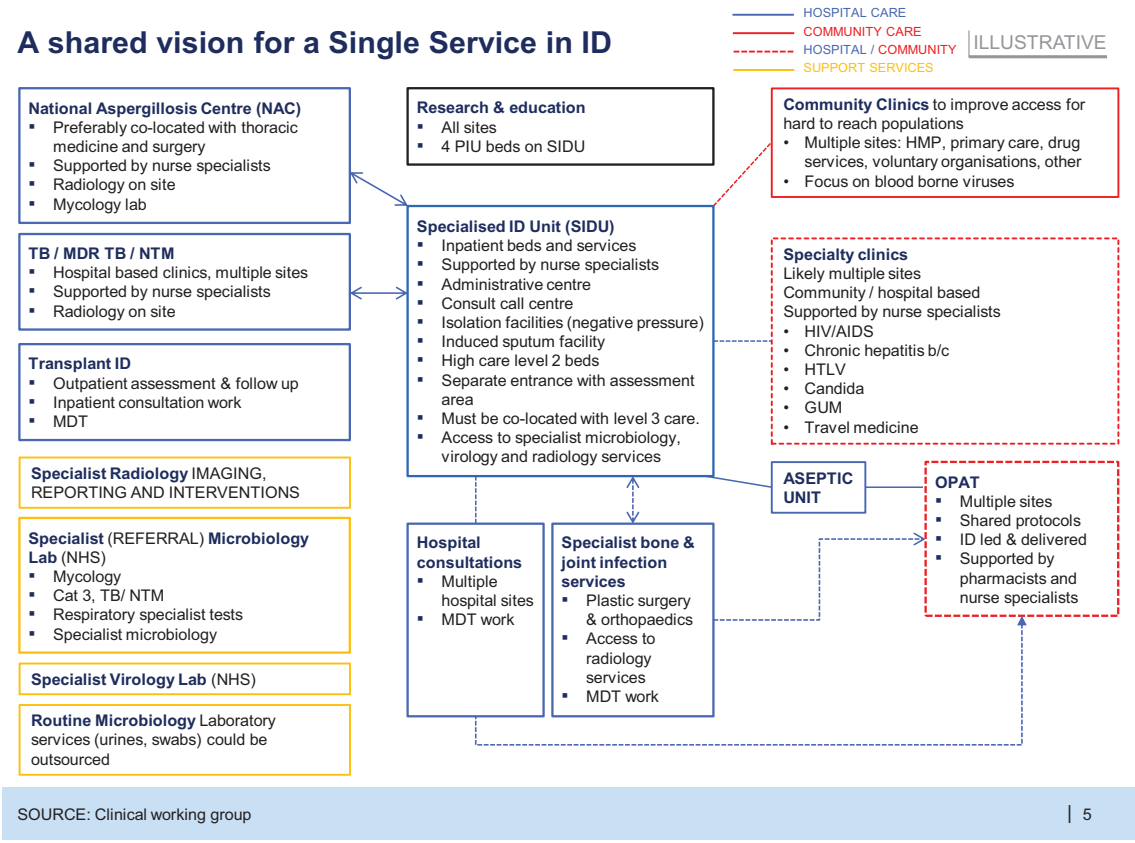
- The number of research trials varies from 5 to 43 across sites, meaning that patients have an increased chance of being recruited to a study if they are cared for at particular sites (excluding the small number of existing cross-site studies).

6. Education and training

- **There are untapped training opportunities**
  - Siloed expertise are inaccessible to other staff in the existing service.

The CWG (clinical working group) have proposed the following single service model for infectious diseases (ID)

Description	How this would work
 Hub and spoke model	▪ A fully branded, single service for the whole of Manchester (unique branding for the service in the same way that The Christie is a brand) ▪ **One inpatient unit** co-located with level 3 critical care that accepts referrals for the whole region ▪ National Aspergillosis Centre located alongside complex respiratory, but provided by ID physicians ▪ Single research office located at the hub, through which all clinical trials are registered ▪ Shared clinical pathways and protocols for the whole service for both outpatient and inpatient activity ▪ **24/7 on-call advice service** for acute clinicians and a telephone advice line for GPs, using video-conferencing to assist these consultations as needed ▪ **In-person ID consultations** for all acute in-patients across the City ▪ **Extend the outreach community clinics** for blood borne viruses to cover the whole of the City of Manchester ▪ Upskilling of local healthcare workers (including specialist nurses and GPs) to enable transfer of care to the community ▪ **A single outpatient parenteral antimicrobial therapy (OPAT) service** for the whole of the City, with shared clinical pathways, protocols and governance ▪ Co-location of the OPAT service with plastic surgery and orthopaedics to enable the establishment of a **new specialist bone infection unit** ▪ **Shared antimicrobial stewardship** across the City, joint with microbiology and pharmacy, with shared pathways and protocols underpinning service delivery



Description of potential impact of the single service model

Benefits

1. Quality of care

1.1 Reduced variation in the provision of care

Description

- The single service model for ID includes a unified outpatient parenteral antimicrobial therapy (OPAT) service for the whole city, which is currently available from a variety of providers and in a number of different forms across part of the city. The service would use the same clinical pathways and protocols throughout to ensure standardised care, and be administrated from a central hub.

Evidence

- The OPAT service at UHSM has been designed to meet the British Society of Antimicrobial Chemotherapy guidelines.

- Since inception in 2014, it has saved 2534 inpatient bed days across multiple specialties.
- The home IV therapy team (HITT) commissioned by North Manchester CCG to provide domiciliary IV antibiotics has looked after 250 patients and saved 2209 bed days over 12 months (between December 2014 and 2015).
- At CMFT, the OPAT service is 'underpowered', saving ~2,600 bed days per year, so there is an opportunity for a unified service to unlock further efficiencies and deliver greater benefits for patients.
- Unifying the existing, fragmented, OPAT services under a single, ID-led service with common protocols and standards could see similar benefits across the whole of Manchester.
- Review by an ID physician prior to OPAT initiation has been shown to result in an IV to oral antibiotic switch in 27 to 40percent of cases, which is estimated to save ~£622 per patient *(Dryden M, Saeed K, Townsend R, et al. Antibiotic stewardship and early discharge from hospital: impact of a structured approach to antimicrobial management. J Antimicrob Chemother 2012; 67:2289-2296; Gray A, Dryden M, Charos A. Antibiotic management and early discharge from hospital: an economic analysis. J Antimicrob Chemother)*
- By discharging patients home, OPAT services have been shown to facilitate faster physical and psychological recovery *(Goodfellow AF, Wai AO, Frighetto L, et al. Quality-of-life assessment in an outpatient parenteral antibiotic program. Ann Pharmacotherapy 2002; 36:1851-1855)*
- For further detail, see OPAT case study and **financial and operational efficiencies section**

Outpatient parenteral antimicrobial therapy (OPAT) case study

ID physicians at UHSM have been running a single OPAT service since the start of 2015, using 1 specialist nurse, 0.5 WTE pharmacist and 2 ID consultants (outside of current job plan).

The service broadly complies with the standards set by the British Society for Antimicrobial Chemotherapy, 2012, and allows patients to ambulate on one of three pathways to receive their antimicrobials (hospital, community or self-administration).

Since inception:

- **2534 inpatient bed days have been saved**, from early discharges and admission avoidance
- The **average rate of line infections is 0.07%** per month (nil proven to date)
- The **average number of readmissions is 1** per month (out of an average number of 22 patients having OPAT per month)

Description

- At present, antimicrobial stewardship services are fragmented across all sites, with variable ID input. The single service model would enable the creation of a single Antimicrobial Stewardship programme across the city, working in conjunction with microbiology and pharmacy, using the same clinical protocols to ensure standardisation of care.
- This would benefit all patients on antimicrobials, by ensuring they receive the right antimicrobial at the right time, with the right dose and via the right route.

Evidence

- Many antimicrobial prescriptions in the hospital are inappropriate *(Hecker MT, Aron DC, Patel NP, et al. Unnecessary use of antimicrobials in hospitalized patients: current patterns of misuse with an emphasis on the antianaerobic spectrum of activity. Arch Intern Med 2003; 163:972-978)*

- There is evidence *(McQuillen et al, (2008), The Value of Infectious Diseases Specialists: Non patient care activities. Clinical Infectious Diseases, 47:1051-63)* that effective antimicrobial stewardship services lead to:
    - Reductions in adverse events from antimicrobial administration (such as C.difficile infection)
    - Improved infection cure rates and reduced colonisation/infection with resistant bacteria
    - Reduced costs of excess antimicrobial use (the drugs themselves) and the cost of associated complications (increased length of stay in hospital and additional treatment)
- Working conjointly with microbiology and infection control at North Manchester has led to a significant reduction in C.difficile infection and improved antimicrobial adherence outcomes within Pennine Acute Trust.

1.2 Equity of access for patients to the best standard of care available within the service

Description

- Patients at CMFT do not currently have access to inpatient ID consultations. A single service model would aim to provide an inpatient ID consultation service for the whole of the City of Manchester, with ID specialists at the hub receiving referrals, triaging them, and a team of ID clinicians then travelling to the spokes to carry out these reviews in person.

Evidence

- There is evidence *(Schmitt et al. (2014), Infectious Diseases Specialty Intervention Is Associated With Decreased Mortality and Lower Healthcare Costs. Clinical Infectious Diseases, 58(1):22-8)* that ID consultations for acute inpatients lead to:
    - Significantly lower mortality
    - Shorter length of stay in an intensive care unit
- For patients who receive early ID input (within two days of admission), the impact of these benefits is even greater
- There is evidence *(Vogel M, Schmitz RP, Hagel S, et al. Infectious disease consultation for Staphylococcus aureus bacteremia - A systematic review and meta-analysis. J Infect 2016; 72:19-28)* that ID consults for patients with Staphylococcus Aureus bacteraemia lead to:
    - Lower 30-day mortality
    - Reduced relapse risk of bacteraemia
    - More frequent adherence to management guidelines for follow-up blood cultures and echocardiography
- There is evidence *(Farmakiotis D, Kyvernitakis A, Tarrand JJ, et al. Early initiation of appropriate treatment is associated with increased survival in cancer patients with Candida glabrata fungaemia: a potential benefit from infectious disease consultation. Clin Microbiol Infect 2015; 21:79-86)* that involvement of ID physicians in patients with fungal bloodstream infection:
    - Increases the early initiation of therapy
    - Improves 28 day survival, and potentially all cause in-hospital mortality

Description

- Outreach blood borne virus (BBV) clinics for hard-to-reach patients in prisons and other locations are currently provided by North Manchester clinicians. There are outreach HIV clinics also provided in Central Manchester by GUM clinicians. These clinics are specifically designed to engage hard-to-reach patients, who are specifically at risk of medication non-adherence and subsequent complications:

        - Clinicians outreach to patients, in the community, GP practices and prisons
        - Visits are usually coincided with drug worker visits and methadone collection
        - Blood tests can be done when it suits patients
        - There is active management of non-attenders with MDT input and a written GP plan for each patient
    - Sharing of this practice across the City could improve public health outcomes for the whole population, rather than just in the North.
    - Upskilling of GPs and community colleagues to help deliver these clinics helps to ensure the sustainability of the service.

Evidence

- There is evidence from the service in North Manchester that these clinics improve the rates of attendance and therefore, implicitly, improve medication compliance and reduce onward BBV transmission:
    - Since inception, the follow-up attendance rates at all outreach sites in North Manchester are significantly better than the previous hospital follow-up rates – with one clinic achieving **83 percent** attendance rate compared to **32 percent** previously.

1.3 Development of new specialist infection services, which could improve the quality of care provided to all patients, and enable Manchester to attract and retain excellent staff

Description

- This is achieved by pooling patient populations to create sufficient need, and the creation of new links between ID and other specialties.
- For example, under a single service model, ID, microbiology, orthopaedics and plastic surgery could come together to form a specialist bone infection unit, providing expert care for patients who suffer from osteomyelitis and its associated complications. There is no such service available currently.
- Not only could this improve the quality of care available for these patients, but it would allow clinicians to pursue new specialist interests, creating career development opportunities. This, in turn, would help to attract and retain excellent staff in the service.

Evidence

- NHS Commissioning Guidance 2013/14 recommends that complex bone and joint infections for adults are best serviced by three to six networks nationally, each with a specialist centre
- This is in recognition of the complexity of such cases and the need for specific multidisciplinary team expertise. Non specialist treatment has previously resulted in significant morbidity to patients and excess cost to the health system (2013/14 NHS Standard Contract for Bone and Join Infection Service Specification (Adult) - https://www.england.nhs.uk/wp-content/uploads/2013/06/b07-bone-joint-infec.pdf).

2. Patient experience

2.1 Removing duplicated activities from the system – also under financial benefits – and smoothing out the flow of patients through the service

Description

- One of the current challenges is that patients frequently access services across the city, but their health records remain isolated in one site and inaccessible to other users.

- This means that on admission, clinicians are unable to access written notes and latest pathology results, causing delays in care and duplicated tests.
- Working as a single service would remove these geographical and technical barriers, therefore improving the flow of patients, reducing total length of stays, avoiding duplicated tests and improving the safety of patients by avoiding potential errors.

2.2 Branding of the service could enhance patient trust

Description

- Branding of the single service model could enhance patient trust in the service, as it reinforces to patients that they are accessing the same reliable service wherever they go, thus improving the patient experience. It would also give the staff who worked in the service a greater sense of identity.

Evidence

- Evidence suggests that branding can engender a sense of loyalty towards a service amongst patients, commissioners and staff.
- It also helps to attract potential employees and new income streams (for example, from additional services)
- [Branding Matters, A guide to NHS Foundation Trusts, 2009 http://www.nhsconfed.org/~/media/Confederation/Files/Publications/Documents/Branding_matters_ftn220909.pdf]

3. Workforce

3.1 Greater ability to meet the staffing needs of the future

Description

- No site will be able to staff a one in eight 24/7 consultant rota individually (four ID consultants at UHSM, six at NMGH, zero at CMFT), but combined, there would be a sufficient workforce to do so. Assuming ID physician numbers are increased, cover would be provided at all three hospitals, with collaborative working with GUM. 24/7 cover would probably require two consultants for the city because of the skill mix needed to provide an on-call service for ID.
    - By pooling staff together, this would also allow consultants and nurses to sub-specialise, which would make them more efficient at reviewing their particular patients.
    - It would also mean that there would be clinicians available to cover in the event of sickness absence or leave, which ensures that the service is staffed robustly.
    - Creating a service that has ID, GUM and microbiology colleagues working in a shared team ensures that the next generation of jointly trained ‘infection specialists’ are able to work within this service.
- However, with the proposed increase in workload in the single service model (mostly from ID consults for CMFT), more staff will be required.
    - A single service may be more able to recruit these new staff (including specialist nurses), because it removes competition for staff between providers.

4. Financial and operational efficiency [see Appendix XVII]

4.1 Prevention on non-elective admissions

Description

- This could be achieved by:
  - Establishing a telephone or videoconference advice line for GPs to access an ID specialist opinion, therefore either preventing an admission entirely or enabling patients to be triaged to the most appropriate part of the ID service immediately.
  - Enabling more clinics (apart from podiatry and respiratory) and GPs to refer into OPAT, instead of admitting patients for IV antibiotics
  - Use of new technology, such as Patients Know Best® (or similar software), to give "virtual advice" directly to patients without the need for an admission. Patients Know Best ® is an on-line encrypted portal through which patients and clinicians can communicate confidentially and safely in between clinic appointments. It has been utilised effectively for HIV patients at North Manchester where virtual review with up to date blood results has meant that those with stable HIV need only see a clinician annually.
  - Joint outpatient clinics for routine patients with GPs and specialist nurses, leading to upskilling of community clinicians and eventually transferring care out of hospitals.

High level estimate of cost saving

- Five to seven percentreduction in the cost of non-elective admissions = ~£0.1-0.2 million

4.2 Reduced variation in first-to-follow up outpatient appointment ratio

Description

- There are existing variations in the first-to-follow up ratios across sites. If this ratio could be standardised to the median of all UK trusts, then there is a potential efficiency saving.
- The degree to which variations in first to follow-up ratios could be reduced is somewhat limited in ID, because there are some national standards for follow-up appointments set by NHS England, such as for hepatitis C.

High level estimate of cost saving

- A conservative estimate of this is an eight percent reduction in the cost of outpatient activity = ~£0.1 million

4.3 A single, ID-led OPAT service across the City enables all sites to make similar savings in bed days by reducing the length of stay of eligible patients

Description

- The OPAT service at UHSM alone saved 2,500 bed days (~ one percent of all inpatient bed days) in 2014/15, through early discharges
- The home IV therapy team (HITT) commissioned by North Manchester CCG to provide domiciliary IV antibiotics has looked after 250 patients and saved 2209 bed days over 12 months (between December 2014 and 2015).
- At CMFT, the OPAT service is 'underpowered', saving ~2,600 bed days per year (equivalent to ~ 0.8 percent of all inpatient bed days), so there is an opportunity for a unified service to unlock further efficiencies and deliver greater benefits.

High level estimate of cost saving

- If the same standard of care could be achieved across all sites, ~6,900 bed days *in total* could be saved across all specialties (not just ID), delivering a maximum cost saving of ~£1.5 million.

- The actual cost savings delivered will be significantly lower, because this estimate assumes that there are no OPAT services at NMGH and CMFT, which is not the case. A more realistic cost saving is ~£0.14 million
- However, this figure does not include the additional cost savings from targeting the use of the correct antimicrobials to the most appropriate patients (preventing the use of expensive third line drugs) and preventing complications associated with insufficiently treated infections.

4.4 Reduced variation in the average length of stay for inpatients due to shared clinical protocols and pathways

Description

- At present, there are variations in the case-mix adjusted average length of stay across UHSM and NMGH
- Evidence from a Cochrane Review of clinical pathways found that 11 out of 15 studies showed significant reduction in length of stay for patients on standardised pathways compared to usual care (T Rotter et al., "Clinical pathways: effects on professional practice, patient outcomes, length of stay and hospital costs" Cochrane Database of Systematic Reviews 2010 7(3).

High level estimate of cost saving

- If the same standard of care could be achieved across all sites, this could deliver a four percent reduction in the average length of stay = ~£0.07 million

4.5 Reduced duplication of tests due to shared IT and diagnostic standards across all sites and increased recruitment to clinical trials delivers savings in cost of consumables

Description

- There is existing duplication of investigations and activity due to lack of a joined up IT system for patient notes and diagnostics
- The benefits of removing duplication of effort could be realised in primary care too, by synchronising the acute and community IT systems. This would enable rapid communication of pathology results so that blood tests would not have to be repeated in the community if they had recently been done in hospital. It would also alert GPs to changes in management, for example changes to antiviral medication made by the acute physician. The new antiviral regimen may interact with other repeat prescriptions, so early notice of this could enable GPs to adjust medication appropriately and prevent potentially harmful interactions from occurring.
- At present, there are significant variations in the level of clinical trial activity across sites (ranging from 5 to 43 trials per site)
- If a single research office could be established across sites, then the number of patients recruited to trials could increase (due to a larger pool of eligible patients, and a greater ability to attract more research trials to Manchester).

High level estimate of cost saving

- ~ ten percent reduction in the cost of consumables = £0.1 million

5. Research and innovation

5.1 Equity of access for all patients to participation in clinical trials

Description

- There is currently unequal trial activity across sites (see current challenges)
- By working as a single service, patients could be recruited to research trials irrespective of where they were cared for as inpatients

- This could improve outcomes for all patients

Evidence

- There is evidence that patient outcomes are improved if they are cared for in research active trusts, even after controlling for size and staffing level of Trusts (Ozdemir BA, Karthikesalingam A, Sinha S, Poloniecki JD, Hinchliffe RJ, Thompson MM, et al. (2015) Research Activity and the Association with Mortality. PLoS ONE 10(2): e0118253. doi:10.1371/journal.pone.0118253).

5.2 An opportunity to boost the research profile for ID in Manchester

Description

- New research opportunities could arise from the pooling of several patient populations, greater sub-specialisation into new areas and the establishment of a single research office, located at the ID hub.
- There is also the opportunity to improve the strength of the link between ID and the University of Manchester and the BioHub at Alderley Park (a collaborative research and development centre for private life science companies hosted by AstraZeneca). Whilst there are strong links in certain areas (such as the MSc programme in medical mycology currently offered at UHSM), there is an opportunity to greatly improve this relationship through joint academic posts and new training programmes. There is a major opportunity to access a £10 million private-public partnership to research antimicrobial resistance at Alderley Park, which could be jointly bid for under the single service model.
- This, in turn, could help to attract more ID/microbiology trainees to the area, creating a national hub of research, training and education excellence.

Evidence

- Commercial (and non-commercial) trial organisers seek research sites with a streamlined, single point of access for administration, access to a large pool of patients, and trial coordination support (The Academy of Medical Sciences, 2011).
- This would also be in keeping with the recognised need for more research including randomised control trials in infectious diseases (NICE).

5.3 The single service model also makes it easier to translate research findings and innovative practices into the NHS

Description

- Shared pathways and protocols can be rapidly updated and disseminated to reflect changes in the evidence.

6. Education and training

6.1 An opportunity for all staff to benefit from shared learning

Description

- By bringing together existing siloes of expertise, all staff can benefit from sharing of best practice and expert knowledge.

Evidence

- There is some evidence that inter-professional education can improve patient outcomes and collaboration between staff *(Reeves S, et al. Interprofessional education: effects on professional practice and healthcare outcomes (update). Cochrane Database of Systematic Reviews 2013, Issue 3. Art. No.: CD002213)*

Implementation considerations

Key **enablers** would need to be in place for the single service model to function – most notably, a **common IT platform**. It also requires robust referral pathways and transport systems to be in place for patients being referred to the hub, processes to allow clinicians to work cross site, and standardised diagnostics throughout the service.

For seven day working to be fully functional, microbiology and imaging services need to be provided to the same level at the weekend as during the week.

The National Aspergillosis Centre at UHSM is an integral part of the ID service, although it should be co-located with tertiary respiratory services. Similarly, there are a number of co-dependent services at CMFT whose interaction with the single service model would need to be considered, such as the joint immunology service for Salford and CMFT, and the comprehensive microbiology service including a public health reference laboratory at CMFT. On balance, patient access to ID services would probably improve under the single service model, because of more outreach into the community and into CMFT.

City of Manchester Single Hospital Service

Radiology

Appendix IX (a)

- **Single service model and benefits**
- Case studies
- Activity and audit data

Radiology: summary

Current model	▪ Individual services operating independently on separate sites within the City of Manchester, NMGH operates in conjunction with the rest of Pennine trust ▪ Combined interventional radiology rota across Wythenshawe and Manchester Royal Infirmary
Current challenges	▪ Shortage of radiologists (reflective of national shortage of radiologists) – Difficulties meeting reporting requirements – Ability to provide access to the right radiology sub-specialist at the right time – Challenging to train new staff whilst meeting reporting requirements ▪ Barriers to shared working due to lack of joint PACS system
Proposed model	▪ Range of models depending on acute or planned activity ▪ Shared on call rota for reporting of scans – Rota operates within a virtual hub – Rota supports multiple sub-specialised consultants who can be contacted as needed by the on call registrar ▪ Pooled waiting lists for scanning and reporting ▪ Training of radiology registrars linked between sites ▪ Pooled outsourcing of scans ▪ Single ultrasound sonographer led service (longer term – requires updated training to increase numbers) ▪ Vascular interventional radiology would run as one service operating on several sites, with pooled reporting lists of studies and pooled waiting lists for Interventional Procedures. Sites could potentially be differentiated into elective and acute sites.
Opportunities	▪ Enhanced education and training causes less disruption ▪ Rapid access to specialist opinions ensures the right work goes to the right consultant at the right time – Improved outcomes due to accurate reporting – Improved efficiency and outcomes as a sub specialist consultant can report their relevant scans faster than if they were given a mixture of scans to interpret ▪ Reduced activity through consistent pathways and protocols, centralised vetting of scans, improved access to daycase beds and rapid access to scans avoiding the need to admit patients
Implementation considerations	▪ Common, integrated IT system to allow pooling of resource ▪ The need to train additional Sonographers to support a Sonographer led service ▪ Increased sub-specialism of clinicians risks deskilling and demotivation ▪ Disruption to existing models of care overlapping with sites in the City of Manchester

SOURCE: Clinical working group

Radiology: model

Description	How this would work
 Shared clinical staff for on call rotas and routine scanning acquisition	▪ The on call-rota would be staffed by registrars who would then triage to a set of on-call consultants sub-specialised in different fields ▪ There would be a single sonographer led ultrasound service held to common standards and protocols ▪ Scan acquisition would continue to take place at all sites with pooled waiting lists so that patients can access all sites – Pooled waiting lists could be combined with a shared booking systems where patients (or admin teams) could book anywhere in the city where there is a space, including options for openings due to last minute cancelations ▪ Vascular interventional radiology would share staff and assets and continue with combined rotas as currently takes place – One service operating on several sites, with pooled reporting lists of studies and pooled waiting lists for Interventional Procedures. ▪ A combined rota may be put in place for non-vascular interventional radiology ▪ Training of registrars would be linked between site with rotations as required to access subspecialties ▪ Consistent protocols for demand management with rapid centralised gatekeeping and vetting of requests with financial incentives for clinicians to consider whether a scan is needed or not
 Differentiated sites for vascular IR and Hub model for complex reporting	▪ There would be a centralised system for outsourcing of reporting, this service would be monitored with a high degree of accountability[1] ▪ Collaborative or possible combined recruitment of agency staff and sonographers ▪ Complex reporting that could not be outsourced would be sent to a virtual hub via an integrated I.T. system where sub-specialist consultants would report scans within their area of expertise

1 This excludes MRI/CT scans for vascular radiology, which will not be outsourced
SOURCE: Clinical working group

Radiology: impact

✓ Strong evidence ✓ Some evidence

Category	Impact	Evidence	
Quality of care	▪ A combined consultant rota across sites would enable registrar triage to a set of sub-specialist on-call consultants, by enabling the registrar to contact the right specialist at the right time, this could reduce variation between sites and enable sub-specialist cover 7 days a week ▪ A combined non-vascular IR rota could ensure day cover across all sites	▪ European Society of Radiology 2009 support the need to subspecialise to keep up with rapid technological development, disease complexity and a closer role of the radiologist with the referring clinical team	✓
	▪ Equity of access for all patients to vascular interventional radiology, due to shared pathways	▪ Evidence that time to treatment for vascular IR improves outcomes (NHS commissioning guidelines for vascular services)	✓
	▪ A centralised system for outsourcing of reporting of scans with high levels of audit and accountability will ensure a consistently high standard of care	▪ Case study from Imaging Advantage shows the benefits of pooled outsourcing	✓
Patient experience	▪ Patients gain rapid access to diagnostics through, increased utilisation of diagnostics, shared waiting lists and a booking system that enables them to attend the site with the shortest wait	▪ Patient Choice Case study (A Report from the National Imaging Clinical Advisory Group) supports rapid access to scans for all patients	✓
	▪ A single sonographer led service could enable equal access to patients for ultrasound across the City of Manchester.		
	▪ Sharing of information via a joined up I.T. system will reduce duplication of tests, for example in the event of patient transfer between sites	▪ Duplication in testing between acute hospitals and community and primary care may be as much as 6% of tests (Commonwealth Fund report)	✓
Workforce	▪ Triage to the correct sub-specialist improves productivity as a specialist is able to read scans in their field more quickly		
	▪ Transfer of activity from radiologists to sonographers frees up time for radiologists		
	▪ Increased use of reporting radiographers	▪ Variation in the number of reporting radiographers and all services are very low compared to some other trusts eg University Hospital of North Midlands (Stoke) has 60 reporting radiographers	✓
Financial and operational efficiency	▪ The faster reporting of scans through the correct use of subspecialists described above will mean fewer radiologists are required for the same volume of activity.	▪ Numbers of radiology consultants vary between 10 and 22.23 across sites, combining rotas would give access to a total pool of 49.23 radiology consultants	✓
	▪ A sonographer led service for ultrasounds and increased outsourcing of scans will free up radiologists for other complex activity enabling a skill mix shift	▪ Collaborative or combined recruitment of agency staff and sonographers reduces competition that drives up price	✓
	▪ Shared on-call rotas could also be used in both vascular and non-vascular interventional radiology IR help to achieve 24x7 coverage	▪ Numbers of radiology consultants vary between 10 and 22.23 across sites, combining rotas would give access to a total pool of 49.23 radiology consultants	✓
	▪ Centralising the outsourcing of the reporting of scans could generate saving in procurement as could collaborative procurement of equipment	▪ The Carter report recommended that trusts "should collaborate with at least five other trusts to share data and resources to modernise their procurement functions"	✓
	▪ Reduced activity through consistent pathways and protocols, centralised vetting of scans, improved access to daycase beds and rapid access to scans avoiding the need to admit patients		
Research and innovation	▪ No benefits identified	▪ No benefits identified	
Education and training	▪ By linking training of junior doctors across sites trainees are exposed to sub-specialties and interesting cases that they would not otherwise have had access to, this improves quality of training and attracts additional trainees	▪ Networked training of radiologists in Australia has increased access to subspecialties compared to sites operating alone *(The Radiology Training Site Review)*	✓

SOURCE: Clinical working group

Radiology – impact summary

Category	Single sonographer led ultrasound service	Potential for shared rota for non vascular IR[1]	Differentiation of vascular IR[1] sites by acute/elective activity	Shared clinical pathways for transfer of vascular IR[1] patients	Shared 'virtual hub' for on-call reporting with access to sub-specialists	Shared booking system for scan acquisition – patients can attend at any site	Shared PACS to eliminate duplicated scans and enable cross-site reporting	Shared training for staff across all sites	Joint outsourcing of reporting of scans	Consistent protocols manage demand for scans and admissions
Quality of care	✓	✓	✓	✓	✓	✓	✓		✓	✓
Patient experience	✓	✓	✓	✓	✓	✓	✓			✓
Workforce	✓	✓	✓		✓	✓	✓	✓	✓	
Financial and operational efficiency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Research and innovation										
Education and training	✓	✓	✓		✓			✓		

1 Interventional Radiology

SOURCE: Clinical working group

- Single service model and benefits
- **Case studies**
- Activity and audit data

CASE STUDY

Case Study: A virtual radiology hub across Cheshire and Merseyside

Service delivery model

Context

- Challenges faced:
  - Lack of critical mass of trainees at each site to fully staff rotas
  - No sickness cover
  - Non compliant rotas and missed training

Solution

- 7 acute trusts joined up to share a single virtual PACS with a **single regional on-call centre** from one 'base'
- Shared pathways and protocols for the whole service
- On call consultants available at all times
- Now introducing routine cross site specialist reporting (e.g. for head and neck)

Benefits

- Trainee rotas are now compliant with EWTD
- Significant reduction in missed training (education days lost reduced from 27 to 14)
- MDTs have instant access to imaging from any site
- Equal access to specialist reporting at all sites
- *"Would never go back to the old system"*

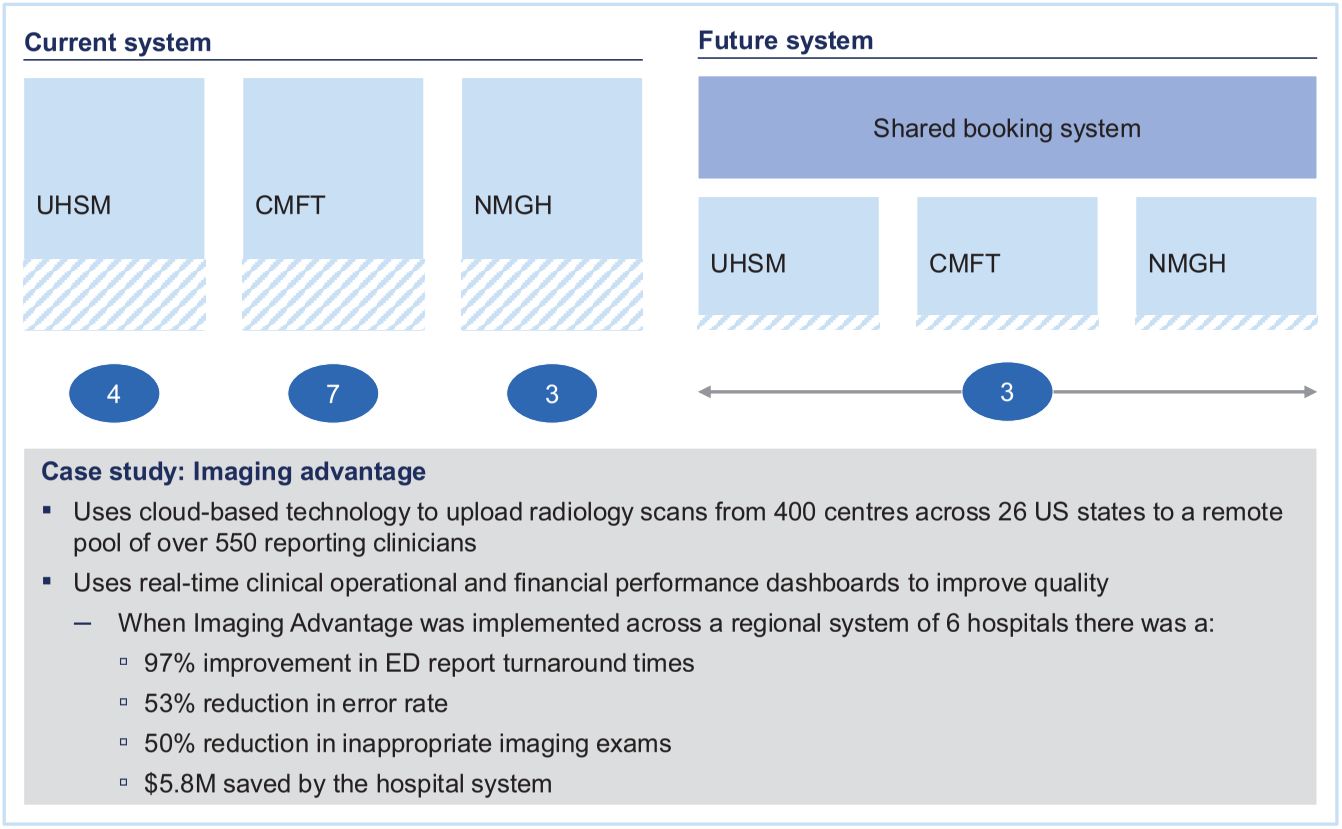
Comparison to Manchester

- On-call rotas are shared across the region, with radiologists based in a virtual 'hub'
- Image acquisition still takes place at each site, but 'virtual' reporting can take place because of joint PACS
- This is in contrast to the radiology services in Manchester, where images are acquired and reported locally

SOURCE: UK Radiological Congress June 2015 – Implementing a PACS global worklist across multiple hospitals

A single service model could potentially improve patient access to diagnostics

ILLUSTRATIVE



Case study: Imaging advantage

- Uses cloud-based technology to upload radiology scans from 400 centres across 26 US states to a remote pool of over 550 reporting clinicians
- Uses real-time clinical operational and financial performance dashboards to improve quality
  - When Imaging Advantage was implemented across a regional system of 6 hospitals there was a:
    - 97% improvement in ED report turnaround times
    - 53% reduction in error rate
    - 50% reduction in inappropriate imaging exams
    - $5.8M saved by the hospital system

SOURCE: Industry case study: http://www.imagingadvantage.com/

- Single service model and benefits
- Case studies
- **Activity and audit data**

Interventional Radiology (IR) care

Sum of activity across all sites

- 3,021 vascular IR procedures
- 5,314 other IR procedures

Delivered by

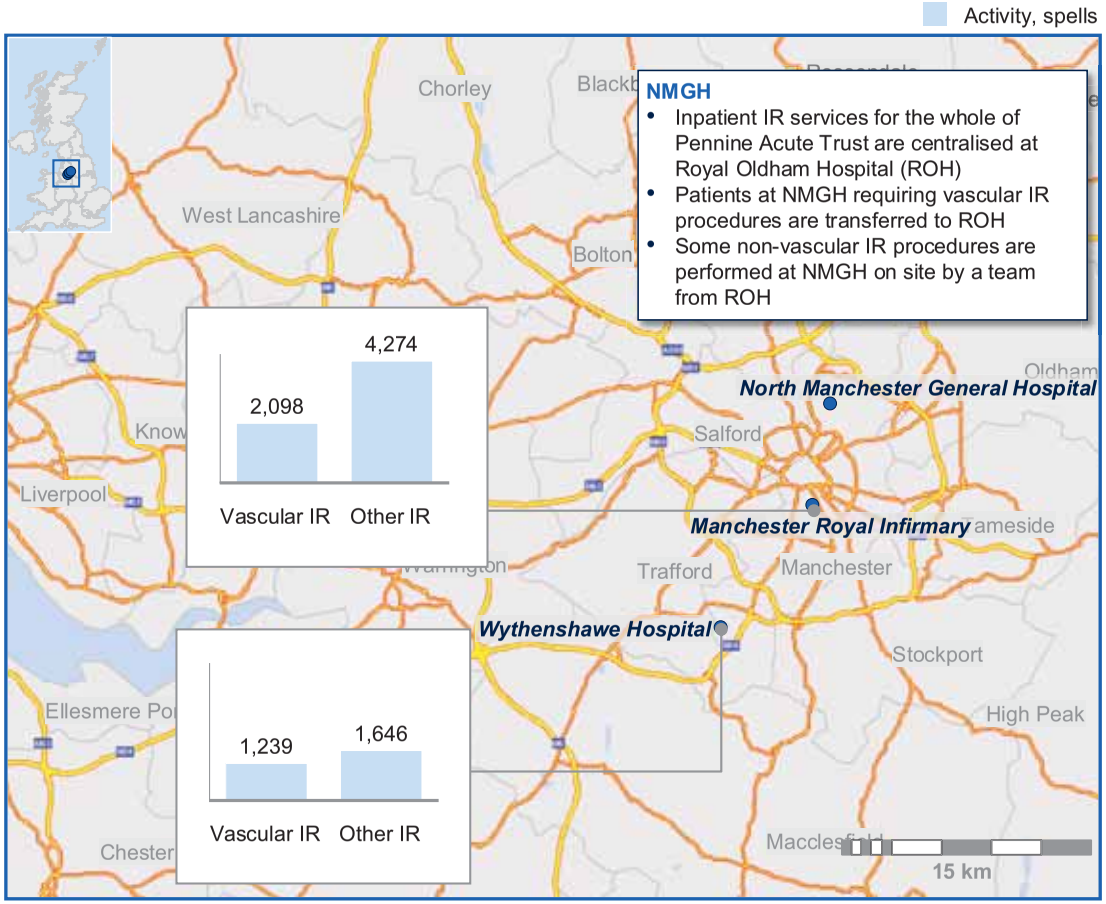
- 4 WTE vascular IR consultants at University Hospital of South Manchester (UHSM)[1]

Using

- 3 IR suites at CMFT (+1 hybrid theatre)
- 3 IR suites at UHSM (+2 hybrid theatres from April 2016)

Providing

- 24/7 access for urgent care and 10 sessions/week/suite for non-urgent care (9-5pm, Mon-Fri) at CMFT
- 10 sessions/week/suite for all care at UHSM



1 Unable to disaggregate the number of non-vascular IR WTEs. CMFT unable to provide IR consultant figures

SOURCE: NHS Radiology benchmarking data, provided by Trusts – 2014/15 for CMFT, 2013/14 for UHSM (2014/15 data not representative due to reporting error)

General Radiology : current workforce and asset utilisation

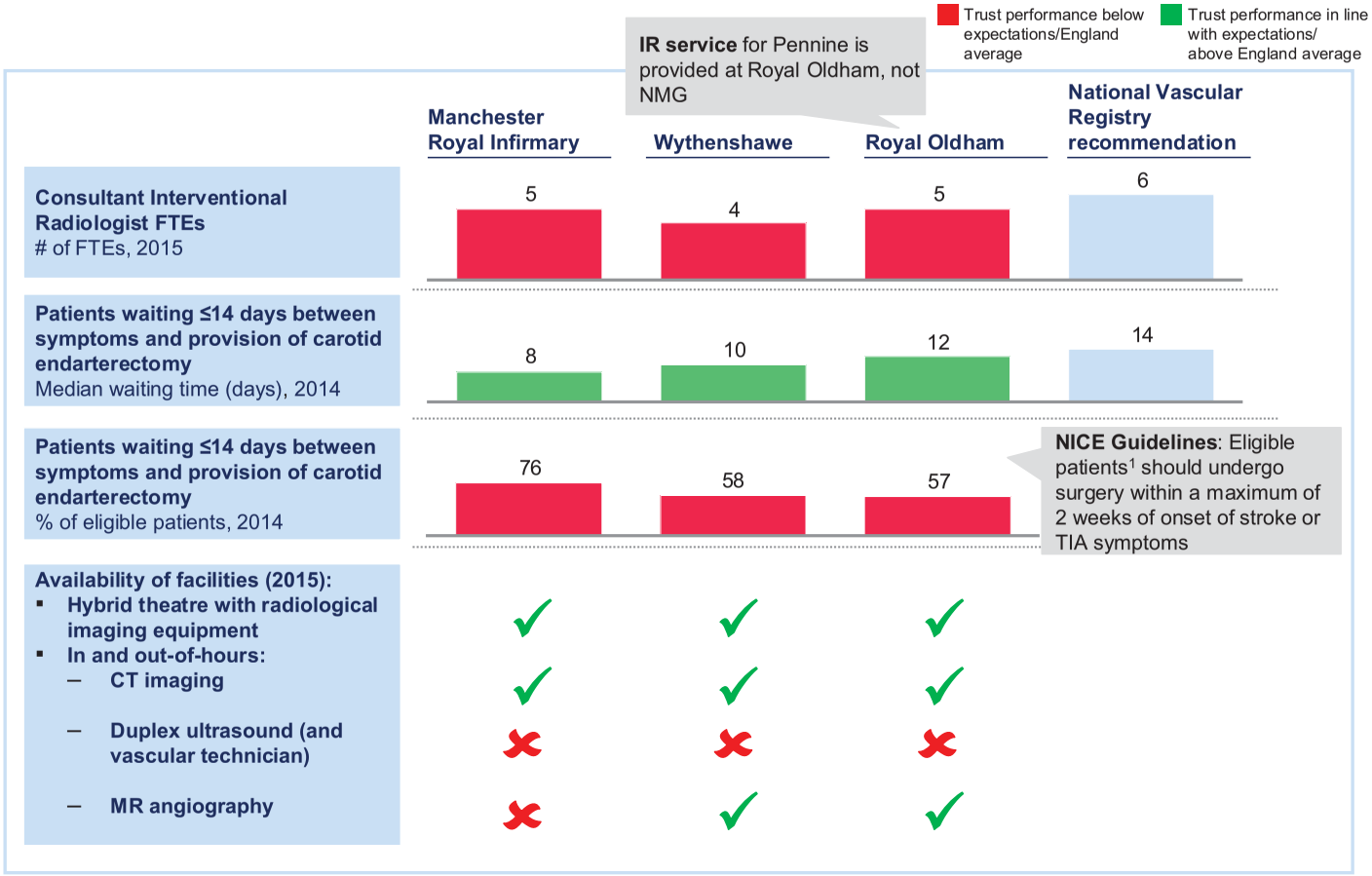
PRELIMINARY DATA – awaiting Trust validation

		Utilisation of radiology equipment and resource			
		CMFT	UHSM	NMGH	Total
Staff	▪ Consultants	22.23	17	10	**49.23**
	▪ Junior doctors	9	9	8[1]	**26**
	▪ Radiographers[2]	96	54	52[1]	**202**
	▪ Sonographers	21	7	0	**28**
Equipment Number of machines	▪ X-ray machines	35	10	5	**50**
	▪ CT-scanners	3	3	2	**8**
	▪ MRI scanners	2	1	1	**4**
Activity Average # scans per day[3]	▪ X-rays	508	339	89	**935**
	▪ CT-scans	103	93	44	**240**
	▪ MRI scans	52	28	17	**97**
Utilisation Average # scans per machine	▪ X-rays	15	34	18	-
	▪ CT-scans	34	31	22	-
	▪ MRI scans	26	28	17	-

1 Trust wide figures for Pennine – unable to disaggregate the numbers for NMGH;
2 Excludes mammographers;
3 Based on annual figures, assuming scans take place 7 days per week

SOURCE: Trust data FY 2014-15 for NMGH, radiology benchmarking data for CMFT (2015) and UHSM (2014)

Performance of interventional radiology services



1 Eligible patients are: "People with stable neurological symptoms from acute non-disabling stroke or TIA who have symptomatic carotid stenosis of 50–99% according to the NASCET (North American Symptomatic Carotid Endarterectomy Trial) criteria, or 70–99% according to the ECST (European Carotid Surgery Trialists' Collaborative Group) criteria."

SOURCE: National Vascular Registry, Annual Report, 2015; NICE Clinical Guideline CG68
http://www.nice.org.uk/guidance/cg68/chapter/1-recommendations#imaging-in-people-who-have-had-a-suspected-tia-or-non-disabling-stroke

CITY OF MANCHESTER SINGLE HOSPITAL SERVICE

SINGLE SERVICE MODELS – SUMMARY OF MODELS

Appendix IX Radiology

Summary

Current model

- Individual imaging and reading services operating individually on the three separate sites (NMGH, CMFT, UHSM) within the City of Manchester
- NMGH operates as part of the rest of Pennine Acute Hospitals Trust
- Combined interventional radiology rota across UHSM and CMFT

Current challenges

- There is a shortage of consultant radiologists (reflective of the national shortage of radiologists) which leads to:
    - Difficulties meeting reporting requirements which results in spend on WLI (Waiting List Initiatives) leading to financial strain on the three hospitals
    - Ability to provide access to the right radiology sub-specialist at the right time
    - Challenging to train new staff whilst meeting reporting requirements, where all three hospitals have teaching duties
- Inequality of access for patients to vascular interventional radiology

Proposed model

A range of models was proposed by the CWG (Clinical Working Group) depending on this being either acute or planned clinical activity

- A shared on call rota for reporting of scans
    - Rota operates within a virtual hub
    - Rota supports multiple sub-specialised consultants who can be contacted as needed by the on-call registrar
- Pooled waiting lists for scanning and reporting (for elective work)
- Pooled training of radiology registrars
- Pooled outsourcing of scans for out of hours coverage
- Single ultra-sonographer led service
- Acute and elective vascular interventional radiology split by site (e.g. acute interventional radiology on one site, and elective on the other)

Benefits

- Rapid access to specialist opinions ensures the right work goes to the right specialist consultant at the right time, leading to
    - Improved outcomes due to accurate reporting
    - Improved efficiency and outcomes as a sub-specialist consultant can report their relevant scans faster than if they were given a mixture of scans to interpret
- Equity of access to all patients for vascular interventional radiology regardless of site
- Reduced activity through consistent pathways and protocols, centralised vetting of scans, improved access to day-case beds and rapid access to scans avoiding the need to admit patients
- Consultants are able to dedicate time to enhance the training of junior doctors in radiology, and pooled training causes less disruption to consultant working

Implementation considerations

- Common, Integrated IT system is required to allow pooling of resource
- Increased sub-specialism of clinicians risks deskilling in other areas, over time

Outline of the current model

At present, radiology services function independently at each of the three sites, with the exception of interventional radiology, which functions as a shared staff model across UHSM and CMFT.

NMGH radiology is closely and inextricably linked with the rest of PAHT, as it shares radiology (including interventional radiology) staff across all four sites.

A summary of interventional radiology activity is shown below:

Interventional Radiology (IR) care

PRELIMINARY

Sum of activity across all sites
- 3,021 vascular IR procedures
- 5,314 other IR procedures

Delivered by
- 4 WTE vascular IR consultants at University Hospital of South Manchester (UHSM)[1]

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- 24/7 access for urgent care and 10 sessions/week/suite for non-urgent care (9-5pm, Mon-Fri) at CMFT
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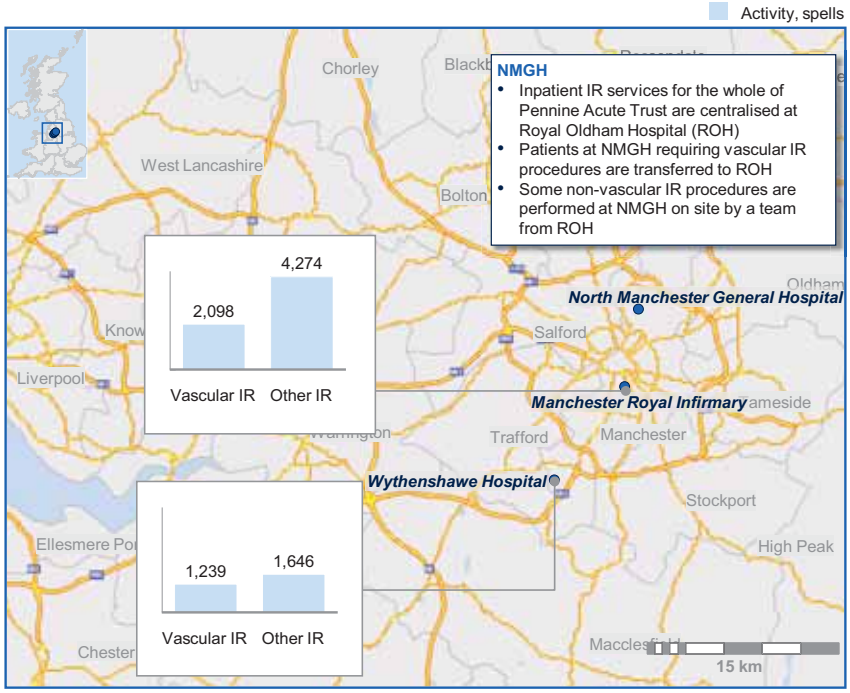


1 Unable to disaggregate the number of non-vascular IR WTEs. CMFT unable to provide IR consultant figures

SOURCE: NHS Radiology benchmarking data, provided by Trusts – 2014/15 for CMFT, 2013/14 for UHSM (2014/15 data not representative due to reporting error)

| 11

1. **Quality of care**
   - **Current variations in access to care**
     - There are challenges in the access to Interventional radiology care. This is particularly the case for patients admitted to NMGH which doesn't have onsite vascular interventional capabilities.

2. **Patient experience**
   - **Variations in waiting times**
     - There is variation in time to access imaging services

3. **Workforce**
   - **Challenges in recruiting and retaining staff**

- There is a national shortage of radiologists which is reflected locally, for example CMFT has a 10% vacancy rate for consultants and there is a 7% vacancy rate across all radiology staff at UHSM. This leads to difficulty meeting reporting requirements which in turn leads to spend on WLI, leading to financial pressures.
- Where radiologists are struggling to meet reporting requirements it becomes even more challenging to train new staff. The lack of radiologists means it is not always possible to access the right radiology sub-specialist at the right time.
- In the future there will be additional challenges of seven day working. As well as variation in weekend sub-specialty cover not all sites have seven days non-vascular interventional radiology cover.

4. **Finance and operational efficiency**
   - **Opportunities to improve the efficiency of all sites**
     - There are cost pressures due to competition for clinical support staff and agency staff
     - 24/7 rotas in interventional radiology and other radiology sub-specialties will, over time, be financially unsustainable for each Trust to maintain individually

5. **Education and training**
   - **Variations in training and education experiences across sites**
     - Challenges in direct sonographer recruitment mean sonographers often need to first train as radiographers. This limits sonographer recruitment as the proposition is not attractive to many potential candidates

The CWG (clinical working group) have proposed the following single service model for radiology

Description	How this would work
 Shared clinical staff for on call rotas and routine scanning acquisition	▪ The on call-rota would be staffed by registrars who would then triage to a set of on-call consultants sub-specialised in different fields ▪ There would be a single sonographer led ultrasound service held to common standards and protocols ▪ Scan acquisition would continue to take place at all sites with pooled waiting lists so that patients can access all sites – Pooled waiting lists could be combined with a shared booking systems where patients (or admin teams) could book anywhere in the city where there is a space, including options for openings due to last minute cancelations ▪ Vascular interventional radiology would share staff and assets and continue with combined rotas as currently takes place – One service operating on several sites, with pooled reporting lists of studies and pooled waiting lists for Interventional Procedures. ▪ A combined rota may be put in place for non-vascular interventional radiology ▪ Training of registrars would be linked between site with rotations as required to access subspecialties ▪ Consistent protocols for demand management with rapid centralised gatekeeping and vetting of requests with financial incentives for clinicians to consider whether a scan is needed or not
 Differentiated sites for vascular IR and Hub model for complex reporting	▪ There would be a centralised system for outsourcing of reporting, this service would be monitored with a high degree of accountability[1] ▪ Collaborative or possible combined recruitment of agency staff and sonographers ▪ Complex reporting that could not be outsourced would be sent to a virtual hub via an integrated I.T. system where sub-specialist consultants would report scans within their area of expertise

1 This excludes MRI/CT scans for vascular radiology, which will not be outsourced

Description of potential impact of the single service model

Benefits

1. Quality of care

1.1 A combined set of consultant sub-specialty rotas across sites including vascular and non-vascular interventional radiology

Description

- The proposed single service model would enable registrar triage to a set of sub-specialist on-call consultants. By enabling the registrar to contact the right specialist at the right time, variation in outcomes and performance will be reduced, sub-specialist cover seven days a week will be enabled and also support the development of centres of excellence within sub-specialties
- Vascular interventional radiology already has shared rotas in place between CMFT and UHSM with NMGH linking in with the rest of PAHT
- Not all sites have enough staff to enable them to run separate non vascular interventional radiology rotas that would enable seven day working. Shared rotas between sites could enable this
- The larger pool of staff available would also help in the event of disruptions such as staff sickness. There would also be more on call staff available to cover peaks in activity.

Evidence

- The future role of radiology in healthcare (European Society of Radiology 2009: "The subject is now too broad and complex for an individual to remain a comprehensive provider. As a result radiologists need to group themselves as specialists in particular systems or disease-based areas while finding a mechanism to provide a high-quality service"). The paper provides four key reasons for the need to subspecialise:
  - Information overload "Our field has become so complex that no individual can maintain the level of expertise needed to practice the entire field of radiology"
  - Rapid technological development
  - Clinicians in secondary and tertiary referral centres are all specialised and radiologists must keep abreast with new ways of addressing diseases in specialist areas
  - The referring clinician's role changed by imaging: requiring closer collaboration between radiologists and referring specialist clinicians

1.2 Equity of access for all patients to vascular interventional radiology, due to shared pathways

Description

- Currently patients admitted to centres with no vascular interventional radiology on site may suffer from delayed treatment. Shared pathways and protocols within a single service Vascular IR Group should eliminate these problems as there will be systems in place for rapid movement of patients to a site providing vascular interventional radiology.

Evidence (The royal college of radiologists - Standards for providing a 24-hour interventional radiology service)

- Clear pathways should be in place for treating patients appropriately when the interventional radiology service is not available.
- Onward referral pathways must be clear. When a service is not provided on a 24-hour basis, and when this usually results in patients being transferred to other trusts, this pattern of referral requires clarification with the clinical governance committees and agreement on the part of the receiving trust. It is not sufficient to assume that another trust will accept patients without such agreements. When there is a clinical need for a service on a routine or emergency basis but this cannot be provided locally and patients are transferred elsewhere:
  - Formal contractual agreements should be in place with any trust to which patients are transferred
  - Protocols should be in place describing the arrangements for transfer
  - Transfer must be in a timely fashion
  - Arrangements for appropriate funding need to be in place.

1.3 A centralised system for the outsourcing of reporting of scans

Description

- Trusts will combine to procure and manage one system. High levels of audit and accountability could help ensure a consistently high standard of reporting of all outsourced scans

2. Patient experience

2.1 Patients gain rapid access to diagnostics through, increased utilisation of diagnostics, shared waiting lists and a booking system that enables them to attend the site with the shortest wait

Description

- Sharing waiting lists for elective scans across sites enable patients to attend the site with the shortest wait.
- Elective scans could take place in “One Stop” models in which patients can have their outpatient attendance, scans and reading done all on the same day
- This could be facilitated by a shared booking system where patients (or administrative teams) could book anywhere across the City of Manchester where there is a space, including options for openings due to last minute cancelations.
- This could improve patient choice, allowing people with limited mobility to quickly access their nearest sites whilst enabling other people who could move, but are busy during the day to travel further for weekend or evening slots
- By ensuring rapid access to diagnostics and the results, not only will quality of care be improved, but patient experience as well.

Patient Choice Case study *(A Report from the National Imaging Clinical Advisory Group)*

When a patient is referred by their GP either for a scan or to a consultant who subsequently refers them for a scan, that patient will be worried. Their priority will be to get the scan as soon as possible. In my view many patients will be prepared to attend out of what might be considered ‘normal hours’ to produce a quicker resolution. The same would apply to geography and they may be prepared to travel further for an earlier appointment. The period between having the scan and getting the result is the period of highest anxiety. In my case my consultant’s secretary has phoned me at home in the evening when she was typing the letter to say all was well! This was appreciated. Thus, both the time from referral to scan and time from scan to result are important but from the patient perspective, the latter is even

more important. When it comes to treatment, geography is perhaps more important. If the patient is to have an operation, then being close to friends and family is a benefit. However, that benefit could be outweighed by the availability of specialist treatment further from home, offering a better chance of a successful outcome.
Where there is regular follow up out-patient treatment then again a local solution becomes very desirable.

A patient

2.2 A centralised system for the outsourcing of reporting of scans

Description

- Outsourced scans can be reported quickly reducing long waits for patients and enabling staff to take clinical decisions more expediently

Case study: Imaging advantage

- Uses cloud-based technology to upload radiology scans from 400 centres across 26 U.S. states to a remote pool of over 550 reporting clinicians
- Uses real-time clinical operational and financial performance dashboards to improve quality
  - When Imaging Advantage was implemented across a regional system of 6 hospitals there was a:
    - 97% improvement in ED report turnaround times
    - 53% reduction in error rate
    - 50% reduction in inappropriate imaging exams
    - $5.8M saved by the hospital system

Case study: A virtual radiology hub across Cheshire and Merseyside

Service delivery model	Comparison to Manchester
Context ▪ Challenges faced: – Lack of critical mass of trainees at each site to fully staff rotas – No sickness cover – Non compliant rotas and missed training **Solution** ▪ 7 acute trusts joined up to share a single virtual PACS with a **single regional on-call centre** from one 'base' ▪ Shared pathways and protocols for the whole service ▪ On call consultants available at all times ▪ Now introducing routine cross site specialist reporting (e.g. for head and neck) **Benefits** ▪ Trainee rotas are now compliant with EWTD ▪ Significant reduction in missed training (education days lost reduced from 27 to 14) ▪ MDTs have instant access to imaging from any site ▪ Equal access to specialist reporting at all sites ▪ *"Would never go back to the old system"*	▪ On-call rotas are shared across the region, with radiologists based in a virtual 'hub' ▪ Image acquisition still takes place at each site, but 'virtual' reporting can take place because of joint PACS ▪ This is in contrast to the radiology services in Manchester, where images are acquired and reported locally

SOURCE: UK Radiological Congress June 2015 – Implementing a PACS global worklist across multiple hospitals

2.3 A single sonographer led service

Description

- A single sonographer led service could enable equal access to patients for ultrasound across the City of Manchester
- Sonographers would be offered the same package regardless of site, with the same support and accountability and the option to move between sites, this would help ensure patients will always getting the same high standard service

2.4 Joined up IT system to reduce duplication of tests

Description

- Sharing of information via a joined up IT system will reduce duplication of tests, for example in the event of patient transfer between sites. Reduced duplication of activity, in X-rays and CTs may further improve patient experience as well as patient safety by reducing exposure to radiation.
- A joined up IT system may also improve the efficiency of reporting, because previous images and reports are available for comparison.

Evidence

- Duplication in testing between acute hospitals and community and primary care may be as much as 6% of tests, but will require further integration with out of hospital care to reduce: (*http://www.commonwealthfund.org/~/media/files/publications/fund-report/2014/jun/1755_davis_mirror_mirror_2014.pdf*, 3 A preliminary look at duplicate testing associated with lack of electronic health record interoperability for transferred patients, J Am Med Inform Assoc. 2010 May-Jun; 17(3): 341–344.
- Duplication when moving between hospitals does occur, but as this happens less frequently the total cost savings are likely to be low.

3. Workforce

3.1 Ensuring appropriate skill mix for acquisition and reporting of scans

Description

- Transfer of activity from consultant radiologists to sonographers and increased outsourcing of reporting and consistent use of reporting radiographers for less complex cases frees up time for consultant radiologists.
- Triage to the correct sub-specialist improves productivity as a specialist is able to read scans in their sub-specialist field more quickly.
- By enabling the registrar to contact the right specialist at the right time, reporting is always to the highest standard. Furthermore, as a specialist is able to read scans in their field more quickly, higher rates of reporting can be achieved.
- By reducing time spent by consultants on activity that could be done by others and enabling them to quickly report scans in their sub-specialty consultants can focus on the most complex cases.

3.2 Increased use of reporting radiographers

Description

- Making better use of our reporting radiographers, and increasing their numbers, (alongside decisions on what scans are reported and by who) could increase efficiency.
- There could be a pooled, city wide reporting radiographer service, potentially for “hot” reporting of A&E scans.

Evidence

- There is variation in the number of reporting radiographers in the different trusts (and all services are very low compared to some other trusts e.g. University Hospital of North Midlands has ~60 reporting radiographers).

4. Financial and operational efficiency [see Appendix XVII]

4.1 Reduction in activity through reduced unnecessary and duplicated scans and fewer admissions

Description

- As described in the patient experience section, joined up IT could reduce duplication of tests by up to ~6%.
- A shared booking system and PACS maintenance team could reduce the need for additional support staff.
  - A combined booking system could hold slots for urgent scans so patients can be sent home with guarantee of scan in 24 hours. Currently clinicians lack confidence that this will happen so admit patients to ensure that they will get the scan (although even then it often takes more than 24 hours) - centralised, rapid vetting would also be required to support this approach.
- Increased day-case rates could be achieved by a single radiology day-case unit on a single site, this could reduce the variation in numbers of patients being admitted to wards for inpatient treatment.
- Shared pathways and protocols could further reduce in hospital activity
  - Consistent links with GPs throughout the whole service to ensure effective gatekeeping of the need for scans.
  - Requests need to be rapidly and consistently vetted using the correct pathways (this should be done centrally) e.g. the Pelvic Pain Pathway where patients are not admitted and not scanned until 3rd visit with pelvic pain.
- There needs to be a financial incentive for clinicians to consider whether scans are really needed or not.
  - Currently there is no cost to the requesting specialty for additional scans so demand on radiology increases without increased resources.
  - A service line approach could ensure that income follows the patient to radiology and incentivises other specialties to think about what scans they request.

4.2 Combined sub-specialist rotas and changes in staff skill mix may reduce the need for additional radiology WTEs in the future

Description

- The faster reporting of scans through the correct use of subspecialists described above will mean fewer radiologists are required for the same volume of activity.
- A sonographer led service for ultrasounds and increased outsourcing of scans will free up radiologists for other complex activity enabling a skill mix shift
- Shared on-call rotas could also be used to increase cover of subspecialties including both vascular and non-vascular interventional radiology IR help to achieve 24x7 coverage.
- Numbers of radiology consultants vary between 10 and 22.23 across sites, combining rotas would give access to a total pool of 49.23 radiology consultants *(breakdown of consultants by subspecialty could be used to further demonstrate opportunity).*

High level estimate of cost saving

- ~ 5-10% improvement in staffing costs = ~ £1-2M

4.3 *Centralising the outsourcing of the reporting of scans and collaborative recruitment of agency staff and sonographers*

Description

- Trusts working more closely together can combine procurement to improve their buying power, and reduce unit cost.
- Collaborative or combined recruitment of agency staff and sonographers reduces competition that drives up price.

High level estimate of cost saving

- The Carter report recommended that trusts "should collaborate with at least five other trusts to share data and resources to modernise their procurement functions".
- The report estimated a 9.5% reduction in spend on clinical services and supplies if such changes were made.
- A 10% reduction in the cost of consumables = ~£0.5M.

5. Education and training

5.1 Linked training of junior doctors and training of sonographers

Description

- Training of junior doctors is linked across sites and provided through a cohesive and uniform training program that rotates between sites.
- Trainees are exposed to sub-specialties and interesting cases that they would not otherwise have had access to, this improves quality of training and attracts additional trainees.
  - Networked training of radiologists in Australia has increased access to subspecialties compared to sites operating alone (The Radiology Training Site Review - The Royal Australian and New Zealand college of radiologists).
- There is a shortage of sonographers and current training makes direct access without first training as a radiographer challenging.
- Combined training of Sonographers may enable more direct entry into training courses without needing to first train as a radiographer, this could increase the speed of recruitment and the number of applications.

<u>Implementation considerations</u>

There is already collaboration between sites, but one of the key challenges to further shared working is that there is no integrated IT system, in particular a lack of a joint PACS system ("whilst clinicians are able to view outsourced scans in Australia, it is often not possible to share a scan with colleague in a hospital 14km away")

A sonographer led service may be impractical at the moment due to lack of sonographers. Training and recruitment of sonographers will need to be updated to ensure that there are adequate sonographers to form the service. As sonographers take time to train this will inevitably be a longer term approach.

A further consideration when moving to increased specialisation of staff is the possible impact on their motivation. This is because while specialists will be able to report scans faster and more accurately in their given specialty, there will be reduced variety in their work.

Impact on existing networks of across Pennine covering NMGH would need to be considered to ensure sites outside the City of Manchester are not destabilised.

City of Manchester Single Hospital Service

Respiratory medicine

Appendix X (a)

- **Single service model and benefits**
- Case study
- Activity and audit data

Respiratory: summary

Current model	▪ Individual services operating independently on separate sites but with lots of collaboration – disease specific regional networks, which essentially function as a single service model already (e.g. difficult asthma) – Joint (pan-Manchester) Biomedical Research Centre bid for respiratory ▪ Existing services are different but complementary – Some key building blocks of an optimal service already in place (e.g. integrated care services in North Manchester, single site tertiary services at Wythenshawe Hospital, dedicated respiratory takes for patients at Wythenshawe)
Current challenges	▪ Variations in the quality of care and access to the same standards of services across all sites ▪ Barriers to collaborative working because of lack of joined up IT and lack of joint consultant contracts to work across sites ▪ Withdrawal of smoking cessation service
Proposed model	▪ Acute and chronic: Shared protocols and pathways with shared audit of these; support to primary care to transfer activity to community (e.g. shared care of bronchiectasis patients in the community) and focus on the most effective interventions per QALY (smoking cessation and community rehab) – create city-wide seamless integrated care. Potential for joint posts across sites so that clinicians can provide outreach clinics into the community and at other sites. ▪ Complex: Move patients or move specialists to a "hub" with more MDT input ▪ Cancer: Lung cancer is the leading cause of premature death in Manchester. GM-wide discussions taking place on the optimum model of care. ▪ Single, city-wide smoking cessation service
Opportunities	▪ Reduce variations in the quality of care through shared protocols and pathways - some of these pathways could, if effectively managed, significantly reduce the number of patients who need to be admitted as inpatients (eg adult bronchiectasis) and reduce their length of stay ▪ Provide equity of access to all respiratory patients to a respiratory review within 24 hours ▪ Provide equity of access to all patients to tertiary expertise ▪ Fully integrated acute and community respiratory care across the City ▪ Further develop and standardise community services (e.g. community sleep studies) to enable patinets to have care closer to home when possible
Implementation considerations	▪ Common IT between Trusts, and between acute and primary care, high quality video conferencing facilities, tariff needs to be aligned to costs (income should be managed for best outcomes), integrated job planning and contractual arrangements, consistent diagnostic support functions (e.g. pathology, radiology) with well-developed sub-specialist expertise, consistent access to support from other relevant specialties

SOURCE: Clinical working group

Respiratory: model

Description	How this would work
Shared clinical protocols for ▪ Acute ▪ Chronic	▪ Acute and chronic respiratory cases are treated locally using the same clinical protocols and care pathways, with shared governance over these pathways for example: – A shared pathway non-invasive ventilation. A comprehensive Manchester Respiratory Service would have agreed and audited pathways to ensure all patients can access NIV in a timely and equitable manner – Patients with Respiratory problems are seen by a Respiratory Physician within 24 hours – either by being admitted to a bed on a Respiratory ward, or by an arrangement for Respiratory Physicians to outreach into other areas. – Optimal inpatient service provision is then daily ward rounds to ensure active management and progression ▪ Seamless integration of care across the city so that care can be transferred out of hospital when appropriate, and access to services such as community rehabilitation is strengthened ▪ Single, integrated, smoking cessation service providing care for all patients in the City of Manchester ▪ Rotas are not shared: – Respiratory Physicians will remain central to the acute medical take arrangements at MRI and NMGH for the foreseeable future – UHSM will continue to operate a triage system and a separate Respiratory rota
 Hub and network model ▪ Complex	▪ Differentiated sites within the service, with complex activity focused at the 'hub' e.g. severe asthma and interstitial lung disease ▪ Complex patients from anywhere within the network have their management discussed with sub-specialist multidisciplinary teams at the hub via videoconference, and transfers are made when necessary ▪ Clinicians within the network can practice at the hub, which means that their specialist interest will have a consistent standard for those patients who remain outside the hub ▪ Common research agenda across the whole service (note that Manchester-wide collaboration already exists for respiratory)

SOURCE: Clinical working group

Respiratory: impact

✓ Strong evidence ✓ Some evidence

Category	Impact	Evidence	
Quality of care	▪ Reduced variation in the quality of care for acute and chronic patients across sites using shared pathways	▪ Quality of care for COPD and lung cancer vary across sites (national audit data) ▪ Evidence that variations in care have been eradicated through use of shared pathways (Clinical pathways: effects on professional practice, patient outcomes, length of stay and hospital costs" *Cochrane Review* 2010)	✓
	▪ Creation of a shared smoking cessation service for the whole City	▪ Evidence that NHS smoking cessation services are effective in helping smokers quit	✓
	▪ All complex patients (and their clinicians) to have access to expert MDT management	▪ NHS England has endorsed this model of care by commissioning networked models for a number of complex respiratory conditions (e.g. *NHS England Standard Contract for Respiratory: Severe Asthma, 2013/14)*	✓
	▪ Creation of seamless integrated care across the City of Manchester	▪ Respiratory ACS[1] conditions currently being admitted as inpatients ▪ Evidence that integrated respiratory care can improve patient outcomes and satisfaction, and operational efficiency (Case Study – King's Health Partners)	✓
	▪ All patients have access to a respiratory review within 24 hours of admission	▪ Evidence that early respiratory input helps to improve the outcomes for respiratory inpatients	✓
Patient experience	▪ Equity of access to the same respiratory expertise at all sites	▪ As above	✓
	▪ More coordinated care closer to home through seamless integrated care	▪ As above	✓
Workforce	▪ Greater ability to support primary and community care and 24/7 access by sharing workload across bigger group of staff	▪ Currently individual rotas are too small for a 1 in 8 on call rota at each site (4.8 to 46 WTE consultants each), but together there are enough WTEs to staff a joint rota *[Note that the feasibility of sharing staff for all rotas is limited due to interlinks between respiratory and general medicine]*	✓
Financial and operational efficiency	▪ Reduced NEL admissions due to proactive care in the community ▪ Early discharge facilitated by community intervention teams	▪ Cost saving of ~ £0.06-0.4M if performance for respiratory ACS conditions was improved to the ONS demographic group median	✓
	▪ Expensive treatments for complex patients (e.g. biologics for asthma) are targeted at the appropriate patients, and high value (low cost per QALY) interventions such as community pulmonary rehabilitation are promoted by using hub & network	▪ Estimate of current cost savings from difficult asthma pathway – 7/75 patients (9%) of patients were not approved for omalizumab, saving ~£420K[2] ▪ Estimate of size of saving if used throughout the single service for other respiratory conditions	✓
	▪ Reduced first to follow-up ratio	▪ There are existing variations in the first-to-follow up ratios across sites. Some of this may be due to different case complexity. If this ratio could be standardised to the UK median, there would be potential efficiency savings	✓
	▪ Reduced variation in the case-mix adjusted average length of stay (ALOS) for inpatients	▪ There could be a maximum of 19% reduction in bed days if the best ALOS across all sites was achieved	✓
	▪ Greater sustainability of the workforce by sharing workload across a bigger group of staff	▪ As above	✓
Research and innovation	▪ Opportunity to attract more research funding because of a linked EPR system	▪ Estimate of the potential increase in research funding using the Salford Lung Study as a case example	✓
Education and training	▪ Opportunity for clinicians within the network to practice at the hub		

1 ACS = Ambulatory Care Sensitive ;2 Based on internally collected data. Assumes that omalizumab costs £12K per year, and the average treatment duration is 5 years. NOTE this figure will be an underestimate of the initial savings if the scheme were extended, because the quality of referrals improve over time.
SOURCE: Clinical working group

Respiratory – impact summary

Category	Shared pathways and protocols with shared audit	Integrated care across the whole City	Single smoking cessation service	Outreach of staff to provide early respirato-ry review	Hub & network for complex care	Video-conference MDTs across the City	Clinicians can maintain specialist interests at the hub (in-reach)	Development of more sub-specialty expertise by pooling population-s	Shared research agenda and office	Joined up EPR[1] for 'real world' research studies
Quality of care	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Patient experience	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Workforce	✓	✓		✓	✓	✓	✓	✓	✓	
Financial and operational efficiency	✓	✓	✓	✓	✓	✓		✓	✓	✓
Research and innovation		✓		✓	✓			✓	✓	✓
Education and training	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

1 Electronic Patient Record

SOURCE: Clinical working group

- Single service model and benefits
- **Case study**
- Activity and audit data

Case Study: Integrated respiratory services in South London

CASE STUDY

Service delivery model

Care for ~ 600,000 patients is provided by an MDT integrated care team at King's Health Partners, covering 2 acute hospitals (King's College Hospital and Guy's and St Thomas') and 2 CCGs (Lambeth and Southwark).

The MDT consists of:

- A respiratory pharmacist, respiratory nurses, physiotherapists, smoking cessation advisor and a respiratory consultant, rotating across sites

Provide:

- 7 day respiratory review to ensure accurate diagnosis and management, and prioritise inpatients for respiratory beds
- Rapid Response Team facilitates early discharges with community support
- Joint 'virtual clinics' between primary care and specialist teams to review the diagnosis and long-term management plan of respiratory patients

Impact of the service:

- **100 fewer acute COPD admissions (34% less)** after 1 year
- The number **of total COPD admissions** has also **decreased by 8%**
- Reduction in average length of stay for COPD admissions from **4.45 days to 3.7 days (a 17% decrease)**
- Reduced used of inappropriate high dose steroid inhalers, estimated to have **saved ~£200K** in 1 CCG in 1 year
- **Increased use of high value interventions**, such as community pulmonary rehabilitation, due to awareness raising through the virtual clinics

Comparison to Manchester

- Respiratory services are fully integrated across primary and acute care
- Specialist providers work within a large MDT to jointly deliver 7 day acute respiratory services to a large catchment population covering 2 large acute hospitals and the community surrounding them
- There are ambitions to create seamless integrated care across the whole of the City of Manchester

SOURCE: Integrated Respiratory Services: Hospitals without walls – The Royal College of Physicians

- Single service model and benefits
- Case study
- **Activity and audit data**

Inpatient respiratory medicine care

Sum of activity across all sites

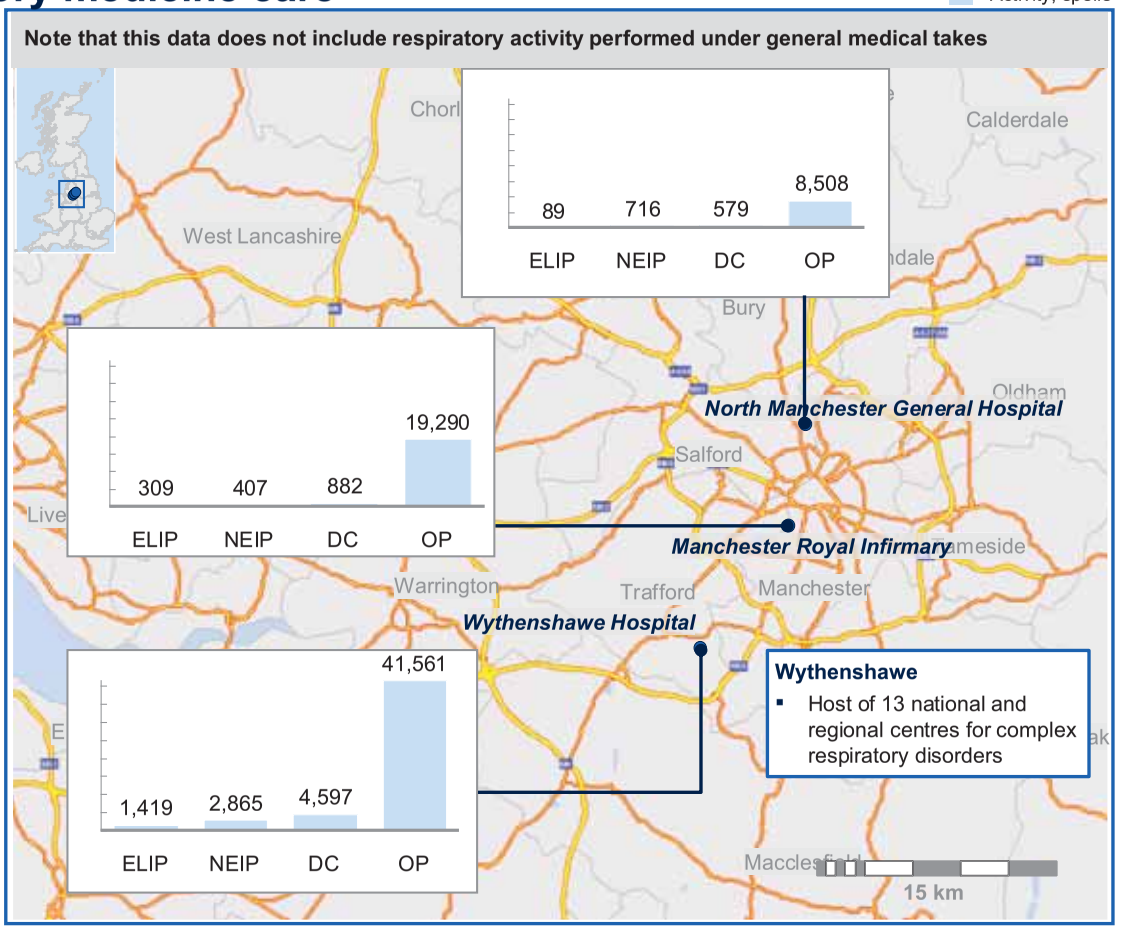
- 3,988 non-elective in-patient spells
- 1,817 elective in-patient spells
- 6,058 day case spells
- 69,359 outpatient spells

Delivered by

- 46 whole time equivalent (WTE) consultants at Wythenshawe[1]
- 8.1 WTE consultants at Manchester Royal Infirmary (MRI)
- 4.82 WTE consultants at North Manchester (NMG)

Using

- 97 beds at Wythenshawe
- 56 beds at MRI
- 19 beds at NMG



NOTE: Specialities are assigned to consultants. Respiratory activity has been included from the respiratory specialty code only but this will fail to take account of the fact that respiratory consultants do general medical takes. Trusts were unable to provide an estimate of respiratory activity from general medical activity. Data shown will therefore be an underestimate of respiratory activity at each site.

1 These are consultants who work exclusively in respiratory medicine and its subspecialties. This includes 10 professors who work ~50% clinically alongside NHS clinicians

SOURCE: Trust data 2014/15

Inpatient respiratory medicine can be subdivided into 4 main categories

Category	Description	Current service arrangement
Acute	▪ Acute general respiratory conditions that are admitted via A&E, such as exacerbations of asthma	▪ Care available at all sites
Chronic	▪ Chronic long-term respiratory conditions that cause recurrent admissions, such as COPD[1]	▪ Care available at all sites ▪ Ongoing work to integrate acute care with the community
Complex	▪ Complex respiratory disorders that require specialist input, such as interstitial lung disease, chronic ventilatory failure, cystic fibrosis etc.	▪ Care mostly already centralised at Wythenshawe, but patients still seen at NMGH and MRI ▪ Collaboration already exists across the City of Manchester via disease-specific regional networks (e.g. difficult asthma network)
Cancer	▪ Lung cancer diagnosis and management	▪ Care available at all sites

1 Chronic Obstructive Pulmonary Disease

SOURCE: Initial clinical interviews

Respiratory medicine: current workforce and asset utilisation

PRELIMINARY DATA – awaiting Trust validation

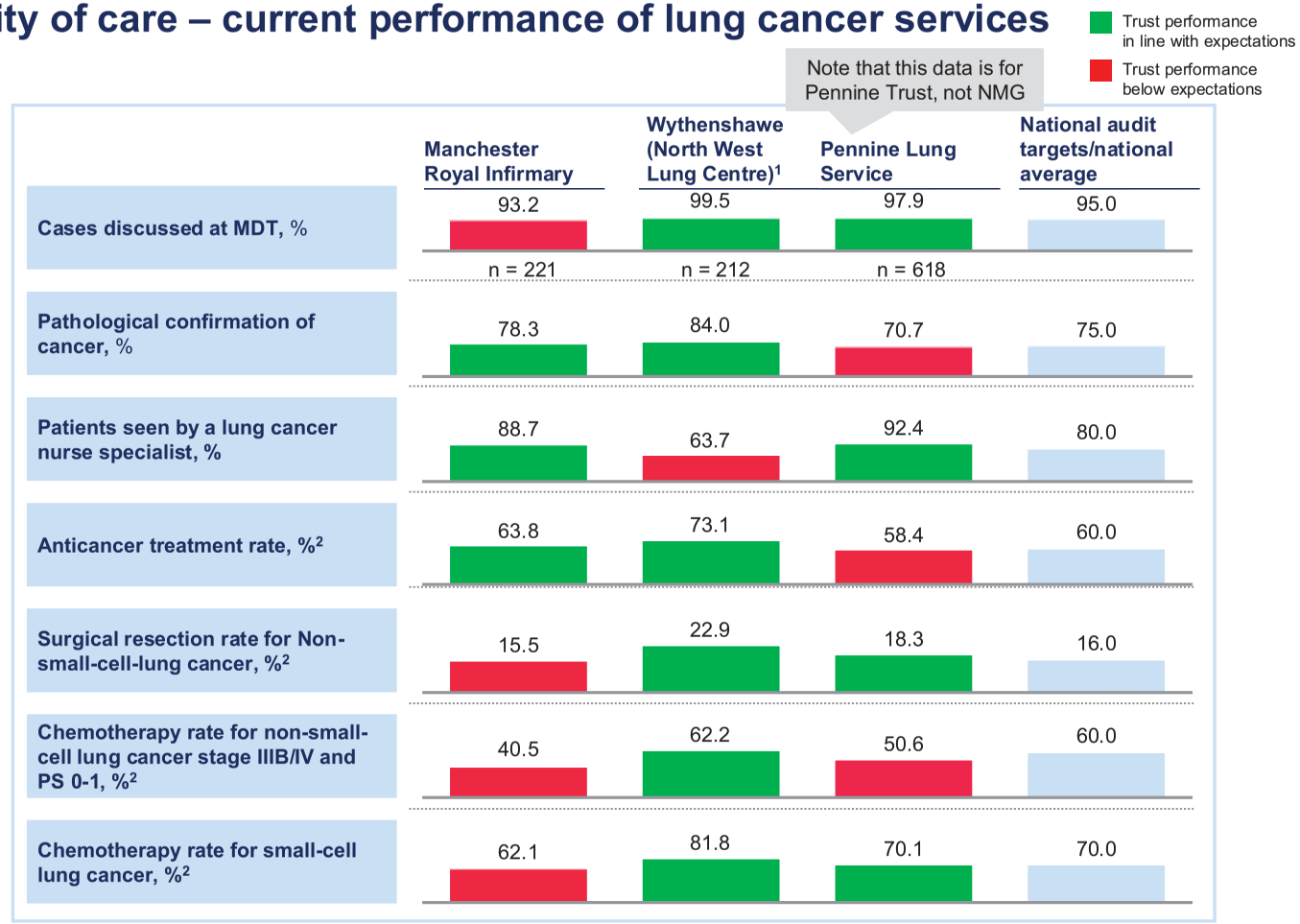
Medical WTEs, #	NMGH	UHSM	CMFT	Total
Consultants	4.82	46[3]	8.1	**58.92**
Junior doctors (all grades)[1]	0	31	1	**32**
Ward nurses	19	117	60	**196**
Specialist nurses	0	22	0	**22**
				308.02

Utilisation of assets, #	NMGH	UHSM	CMFT	Total
Number of beds	19[2]	97	56	**172**
Average bed days per week	101	639.5	355	
Average length of stay	6.5	5.8	11.2	

1 Includes trust grade doctors
2 This is a cardiorespiratory ward, so respiratory bed allocations may vary
3 Includes academic consultants who work ~50% clinically. Data provided by clinical working group

SOURCE: Trust data 14/15

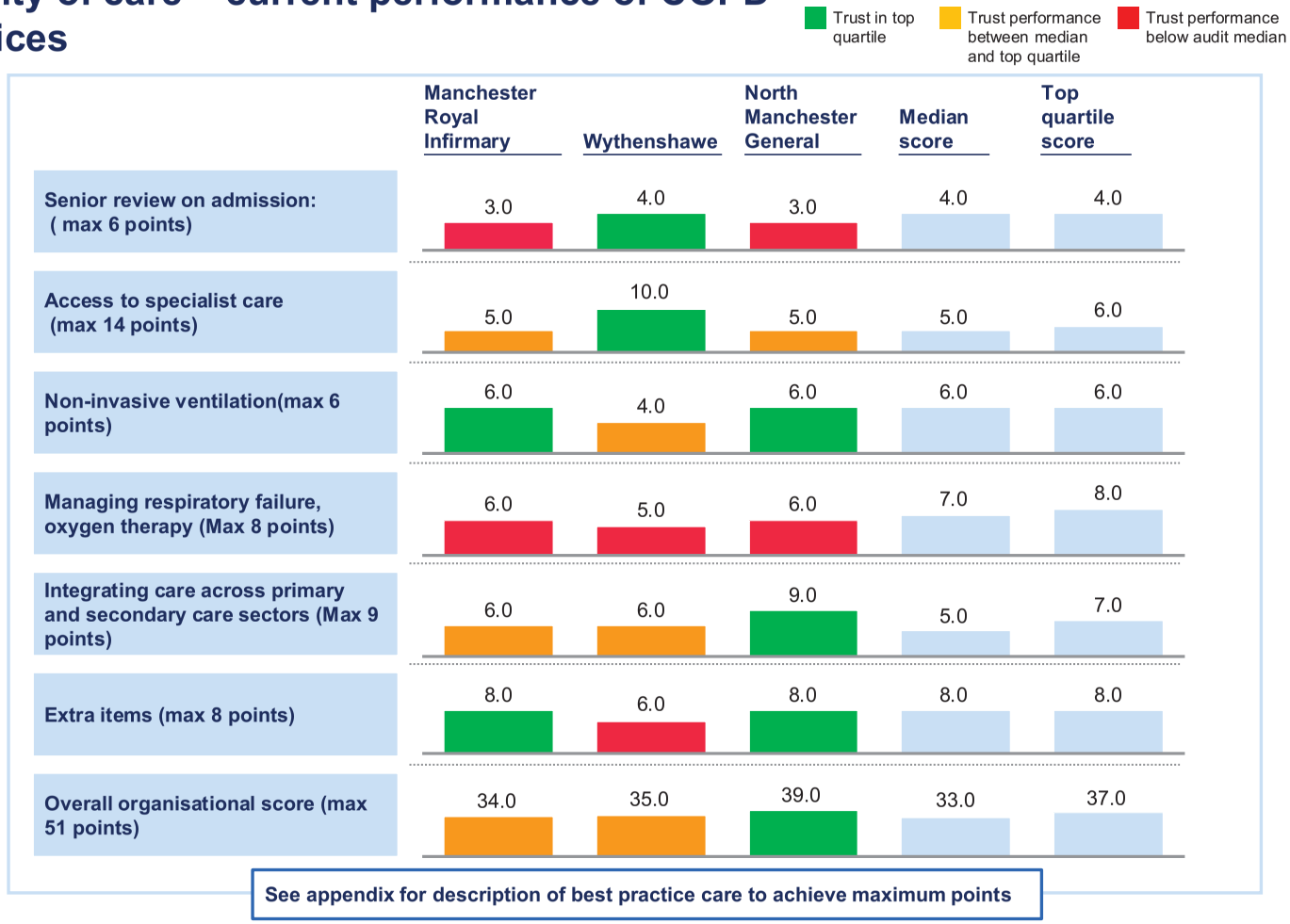
Quality of care – current performance of lung cancer services



1 Tertiary trust for lung cancer services. This is a tertiary trust that provides treatment for lung cancer patients, but where patients are not usually first seen. The cases may have been incorrectly allocated to this trust, and instead first seen at another trust in the region. The data should be interpreted with caution; 2 Compared to national England and Wales average

SOURCE: Royal College of Physicians. National Lung Cancer Audit annual report 2015 (for the period 2014)

Quality of care – current performance of COPD services



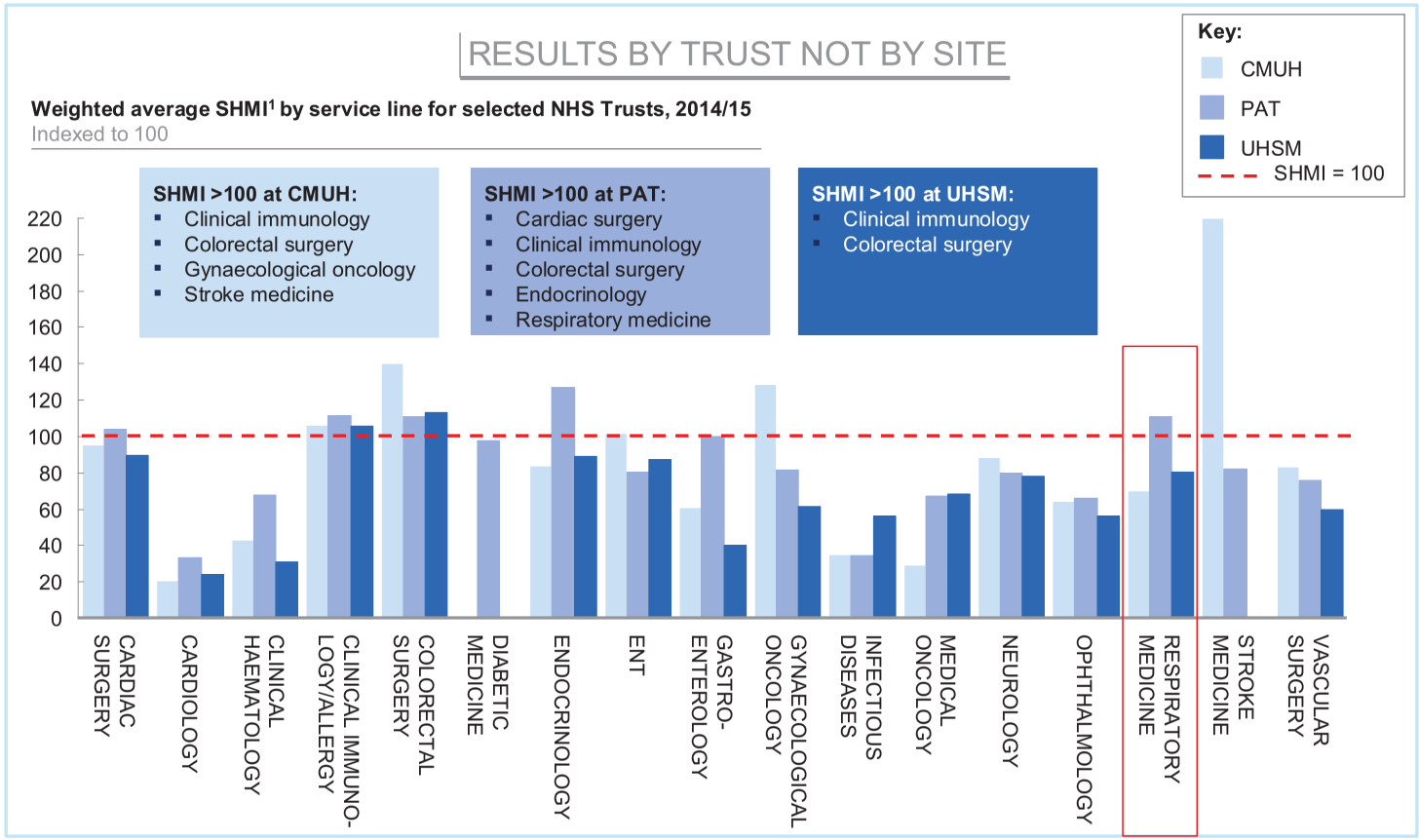
SOURCE: National COPD Audit Programme: Resources and organisation of care in acute NHS units in England and Wales 2014 | 14

COPD: Requirements to achieve maximum score per domain

Senior review on admissions ward	▪ Twice daily senior review on admissions ward, 7 days a week ▪ 2+ designated level 2 beds on the respiratory ward
Access to specialist care	▪ 7 day access to on-call respiratory consultant and SpR/trainee ▪ Daily ward rounds (7 days/week) by senior decision maker on MAU, respiratory and other wards ▪ Respiratory nurse and physiotherapist available 7 days per week for COPD patient review as necessary
Non-invasive ventilation	▪ Lead clinician responsible for NIV service ▪ Training programme available for staff providing NIV
Managing respiratory failure, oxygen therapy	▪ Oxygen policy in place ▪ Medication chart/record has dedicate place to prescribe oxygen ▪ Monitoring chart allows recording of target and actual saturation and amount of oxygen administered ▪ Oxygen training programme in place
Integrated care across primary and secondary care	▪ Discharge bundles used ▪ Unit has team(s) managing early/assisted discharge of patients with COPD 7 days per week ▪ Pulmonary rehab scheme available to COPD patients discharged following an exacerbation within 4 weeks of discharge ▪ Regular MDT meeting for patients with COPD
Extra items	▪ Unit has system of early warning detection ▪ ICU outreach service ▪ Formal smoking cessation service within the unit ▪ On-site palliative care service available for COPD patients

SOURCE: National COPD Audit Programme: Resources and organisation of care in acute NHS units in England and Wales 2014 | 15

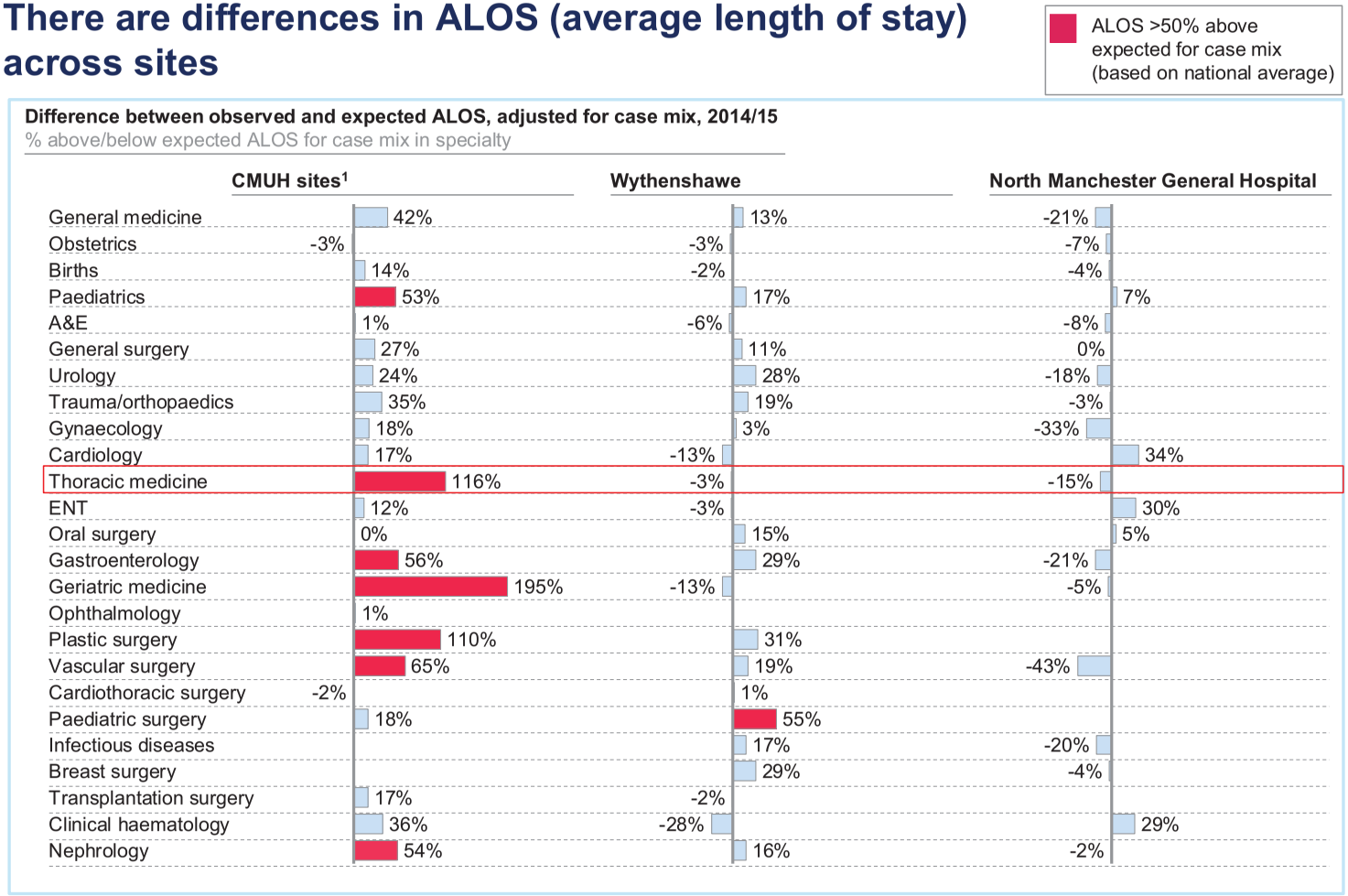
SHMI[1] data for respiratory medicine varies across Trusts



1 SHMI = summary hospital-level mortality index. Data at diagnosis level allocated to the best fit specialty (note all solid tumour cancer diagnoses, excluding gynaecological cancers, allocated to medical oncology). Diagnoses with <5 deaths in the period excluded from the analysis.

SOURCE: HSCIC,

There are differences in ALOS (average length of stay) across sites



Notes: Specialties ranked by combined volume of spells across all sites included in the analysis; only specialties with >10 inpatient admissions (elective and non-elective, excluding day cases) across all sites shown.

1 Manchester Royal Infirmary, St Mary's, Royal Manchester Children's and Manchester Royal Eye Hospital combined

SOURCE: Hospital Episode Statistics, 2014/15

CITY OF MANCHESTER SINGLE HOSPITAL SERVICE
SINGLE SERVICE MODELS – SUMMARY OF MODELS

Appendix X Respiratory

Summary

Current model

- There are currently inpatient and outpatient respiratory services on each of the three sites, with care for complex respiratory patients organised as a hub and spoke model where the hub is at UHSM which has tertiary respiratory service centres (UHSM has 13 regional and national respiratory centres)
- Each of NMGH and CMFT has circa 800 respiratory inpatient episodes per year, whereas UHSM has 4,500. NMGH performs circa 600 respiratory day-cases, CMFT circa 900 and UHSM circa 4,600.
- At both NMGH and CMFT respiratory physicians form part of the acute medical take, and at UHSM there is a separate respiratory rota.
- NMGH is part of the Pennine Acute Hospitals Trust; CMFT and UHSM operate individually

Current challenges

- There are poor health outcomes in the population related to smoking and social deprivation
- Some patients do not currently have access to consistently high quality care for acute and chronic general respiratory at all hospital sites
- Patients do not currently have equity of access to tertiary respiratory services
- Patients do not currently have access to fully integrated respiratory care

Proposed model

- As Respiratory Medicine is a significant element of the medical acute take, access to inpatient beds will need to be maintained at all three main hospital sites in the City of Manchester.
- Shared and audited protocols and pathways for acute and chronic general respiratory conditions e.g. pneumonia, asthma, COPD (chronic obstructive pulmonary disease).
- Hub and network model for complex respiratory conditions, with clear pathways into tertiary services. Network respiratory physicians can maintain high quality care through joint working with full-time specialists working at the hub.
- Early respiratory review for all appropriate patients within the first 24 hours of admission.
- Greater Manchester wide discussions over the most appropriate model of care for lung cancer services are taking place in parallel to this Single Service review.

Benefits

- Consistent delivery of high quality care across all three sites for all patients
- Equitable access for all patients to the best expertise within the respiratory service
- Better patient experience due to a more seamless experience
- Integrated electronic patient records (EPR) would provide a unique opportunity to measure benefits, and attract research funding for Real World Evidence (RWE) studies

Implementation considerations

- Shared IT systems across sites are vital

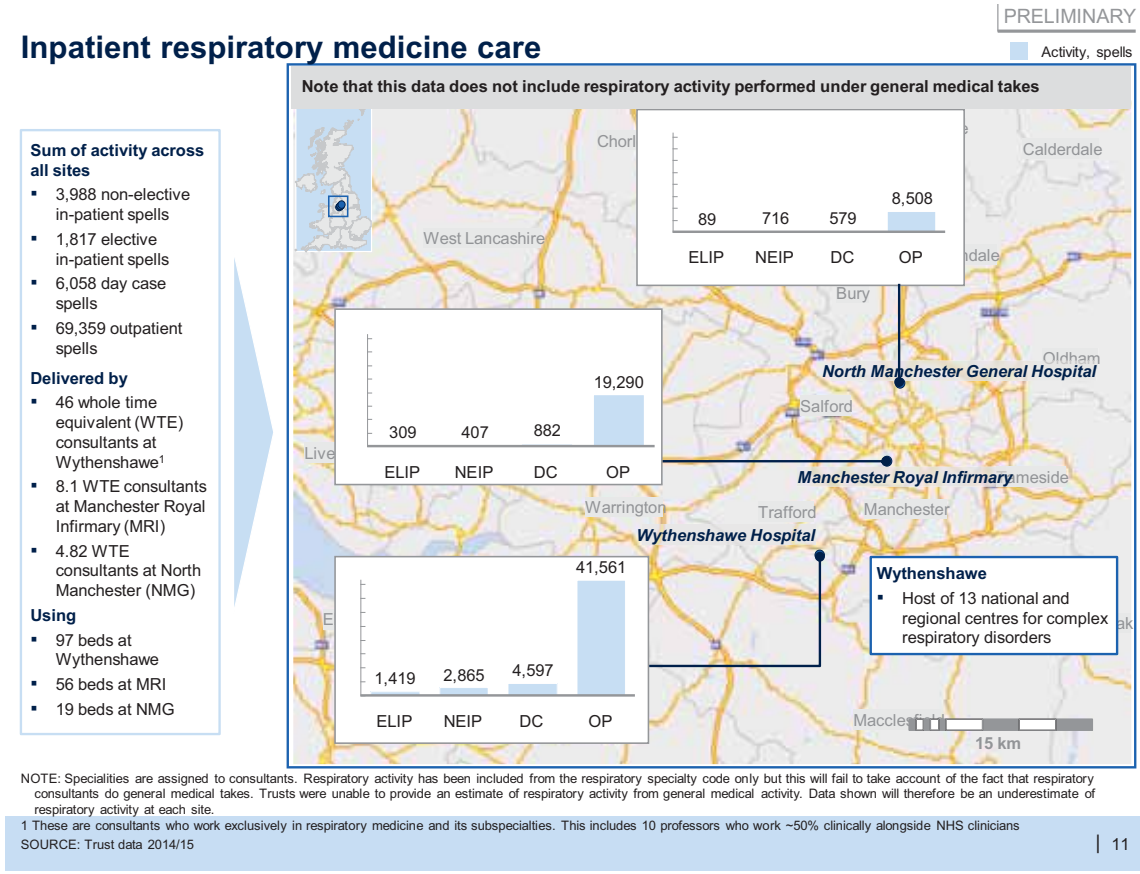
Outline of the current model
Respiratory care for acute and chronic patients is provided at all three sites, with respiratory physicians forming an integral part of the general acute medical take at NMGH and CMFT. Respiratory physicians at UHSM are able to operate a separate rota for a dedicated respiratory take, and include ten professors who work circa 50% alongside NHS clinicians in a clinical capacity.

Care for complex respiratory patients, such as difficult asthma, is already mostly arranged as a hub and network model, with the hub located at UHSM. Similarly, some respiratory care is already arranged as a single site, focused on UHSM (such as cystic fibrosis and lung transplant services).

Existing strengths of the current services include:

- Close integration of acute and community care in NMGH
- Sub-specialist expertise at UHSM - there are 13 national and regional disease centres at UHSM alone, a heart and lung transplant service, a long term ventilation weaning unit and the National Aspergillosis Centre (NAC)

A summary of current activity is shown below, although this does **not** include general medical activity undertaken by respiratory consultants:



NOTE: Specialities are assigned to consultants. Respiratory activity has been included from the respiratory specialty code only but this will fail to take account of the fact that respiratory consultants do general medical takes. Trusts were unable to provide an estimate of respiratory activity from general medical activity. Data shown will therefore be an underestimate of respiratory activity at each site.
1 These are consultants who work exclusively in respiratory medicine and its subspecialties. This includes 10 professors who work ~50% clinically alongside NHS clinicians
SOURCE: Trust data 2014/15

Outline of current and future challenges

1. Quality of care

- **There are variations in the quality of care, and access to care** [see Appendix X (a)]

- There are variations in the quality of care, and care standards across the City
  - There are variations in performance of COPD services across all sites
  - There are variations in SHMI (summary hospital-level mortality index) across all three Trusts (data not available at site level for NMGH alone)
- North, Central and South Manchester CCGs have greater than average non-elective admissions for ambulatory care sensitive conditions, with some CCGs performing in the Office of National Statistics (ONS) worst quartile
- There are variations in the proportion of non-elective stays under 24 hours for ambulatory care sensitive conditions, with some sites performing below the worst quartile
- There are variations in access for all patients to an early respiratory review during their admission (see also under **Patient experience**)
- There are barriers to collaborative working because of a lack of joined up IT systems for electronic patient records (EPR), diagnostics and video communication, and lack of joint contracts to enable staff to work cross-site. Whilst work on breaking down these barriers is well underway, a top down mandate to do so is welcomed by the clinical working group (CWG).

- **Manchester local health economy is performing worse than average on smoking related health outcomes** [see Appendix X (a)]
  - The population of Manchester has a higher than average prevalence of smoking, and higher than average rate of smoking related deaths compared to the UK (Public Health Observatory, 2015).

2. Patient experience

- **There are variations in access to care**
  - There is lack of consistent access for all patients to the same standard of care (including tertiary expertise) across all sites – for example, not all patients benefit from specialist respiratory physician input in the first 24 hours of admission.
  - Some patients are cared for in hospital for conditions that could be better managed in the community, for example, acute exacerbations of chronic obstructive pulmonary disease (COPD).

3. Workforce

- **Current challenges**
  - Not all sites have sufficient staff and dedicated respiratory capacity to see every respiratory patient within the first 24 hours of admission (only UHSM has sufficient staff to be able to provide a dedicated respiratory take, whereas on other sites the respiratory physicians form part of the acute medical take)

- **Future challenges**
  - It will become increasingly difficult for each site to recruit sufficient staff to cover three separate consultant rotas, especially if there is a move to 24/7 consultant working. Moreover, it will be difficult to share rotas for acute and chronic respiratory care across sites because clinicians at NMGH and CMFT are linked to the general medical take.

4. Finance

- **Opportunities for all providers to perform to the standards of the best**
  - There are variations in the case-mix adjusted average length of stay across all sites [see Appendix XVII]

- There are variations in the number of non-elective admissions (adjusted for case mix) across sites [see Appendix XVII]

5. Research and innovation

- **There are variations in patient access to clinical trials**
  - The number of research trials varies from 3 to 32 across the three sites
  - However, there is a pan-Manchester approach to respiratory research, with a joint Biomedical Research Centre (BRC) bid and cross-site recruitment to trials already happening.

6. Education and training

- **There are variations in opportunities to pursue specialist interests**
  - Clinicians at all sites do not currently have equal opportunities to pursue specialist interests due to lack of cross-site working

The clinical working group (CWG) have proposed the following single service model

Description	How this would work
Shared clinical protocols for ▪ Acute ▪ Chronic	▪ Acute and chronic respiratory cases are treated locally using the same clinical protocols and care pathways, with shared governance over these pathways for example: – A shared pathway non-invasive ventilation. A comprehensive Manchester Respiratory Service would have agreed and audited pathways to ensure all patients can access NIV in a timely and equitable manner – Patients with Respiratory problems are seen by a Respiratory Physician within 24 hours – either by being admitted to a bed on a Respiratory ward, or by an arrangement for Respiratory Physicians to outreach into other areas. – Optimal inpatient service provision is then daily ward rounds to ensure active management and progression ▪ Seamless integration of care across the city so that care can be transferred out of hospital when appropriate, and access to services such as community rehabilitation is strengthened ▪ Single, integrated, smoking cessation service providing care for all patients in the City of Manchester ▪ Rotas are not shared: – Respiratory Physicians will remain central to the acute medical take arrangements at MRI and NMGH for the foreseeable future – UHSM will continue to operate a triage system and a separate Respiratory rota
Hub and network model ▪ Complex	▪ Differentiated sites within the service, with complex activity focused at the 'hub' e.g. severe asthma and interstitial lung disease ▪ Complex patients from anywhere within the network have their management discussed with sub-specialist multidisciplinary teams at the hub via videoconference, and transfers are made when necessary ▪ Clinicians within the network can practice at the hub, which means that their specialist interest will have a consistent standard for those patients who remain outside the hub ▪ Common research agenda across the whole service (note that Manchester-wide collaboration already exists for respiratory)

Description of the potential impact of the single service model

<u>Benefits</u>

1. Quality of care

1.1 An opportunity for all patients to receive high quality care for acute and chronic respiratory conditions, through the use of shared pathways and protocols

Description

- Shared protocols (with audited performance) could improve the quality of care provided at all sites, as well as reduce the current variation in service provision, by standardising clinical practice throughout the service to meet the highest quality expectations. For example, the single service could instigate a shared pathway for access to non-invasive ventilation (NIV), including time-scales for escalation to treatment. Shared audit of this pathway could ensure that all patients can access NIV in a timely and equitable manner. This could reduce the number of patients who deteriorate and require mechanical ventilation because of delayed initiation of NIV, and shorten the total duration of inpatient treatment because timely therapy leads to a faster recovery.

Evidence

- There is evidence that prompt, evidence based therapy for COPD exacerbations helps to reduce lung damage, ensure faster recovery and fewer admissions (and subsequent readmissions) to hospital *(NHS Best Practice Guidance, An Outcomes Strategy for COPD and Asthma, 2012)*.

1.2 A shared smoking cessation service to tackle poor population health outcomes

Description

- A shared smoking cessation service (with a common 'DevoMANC' publicity campaign) across all sites could help tackle some of the poor health outcomes related to smoking, without the risk of duplicated activity. This would need to combine outreach into the community setting.

Evidence

- There is evidence that NHS smoking cessation services are effective in helping smokers quit *(Bauld et al, The effectiveness of NHS smoking cessation services: a systematic review, Journal of Public Health, 2009, pp.1-12)*
- NHS England recommends that CCGs work with secondary care providers, local authorities and Area Teams working together to provide an integrated smoking cessation service (NHS England Factsheet: Commissioning effective smoking cessation services, 2014)

1.2 Equity of access for all patients to tertiary services, either at a hub, or locally according to agreed guidelines for best care

Description

- Regular communication between multidisciplinary teams (MDTs) at different sites is already facilitated for severe asthma, interstitial lung disease (ILD) and laryngeal tube ventilation through regular videoconferencing, and could be expanded to include all complex respiratory conditions across the whole of the City of Manchester.
- This would enable patients all over the network (and Greater Manchester and beyond) to be assessed for complex interventions by consensus according to NICE guidelines.

Cystic fibrosis case study

Inpatient care for all cystic fibrosis patients in North West Region takes place at the Adult Cystic Fibrosis Centre at Wythenshawe, in a purpose built, state-of-the-art facility.

Care is provided by a single team of expert multidisciplinary professionals located on the same site. This pooling of resources and expertise has allowed for dedicated services to develop around the patients, such as the Lime Arts Programme, dedicated dieticians, psychologists, social work and research.

Acute admissions are arranged via a triage system, run by specialist and ward nurses with access to emergency clinic reviews prior to admission.

All new patients within the region are referred to the unit from their GP or paediatrician ensuring equity of access to the service.

- This provides substantial cost savings through targeting expensive treatments to those patients who will benefit **(see also under financial and operational benefits)**.
- Furthermore, the clinical advice received is consistently high quality and the same protocols and pathways are always followed [see Cystic Fibrosis case study].

Evidence

- NHS England has endorsed this model of care by commissioning networked models for a number of complex respiratory conditions (such as severe asthma – *NHS England Standard Contract for Respiratory: Severe Asthma, 2013/14)*

1.3 An opportunity to provide seamless integrated respiratory care across the whole of the City of Manchester

Description

- The single service model could enable all three sites to jointly work together with community care and primary care to deliver a seamless integrated respiratory care.
- Integrated care involves two aspects:
  1. Upskilling of GPs in the management of respiratory conditions in the community.
  2. Outreach of acute physicians into the community clinics to provide shared care.
- This could include new models of care delivery, such as physiotherapy-led

Integrated respiratory services: Hospitals without walls – case study

Care for ~ 600,000 patients is provided by an MDT integrated care team at King's Health Partners, covering 2 acute hospitals and the community.

The MDT consists of:

- A respiratory pharmacist, respiratory nurses, physiotherapists, smoking cessation advisor and a respiratory consultant, rotating across sites

Provide:

- 7 day respiratory review to ensure accurate diagnosis and management, and prioritise inpatients for respiratory beds
- Rapid Response Team facilitates early discharges with community support
- Joint 'virtual clinics' between primary care and specialist teams to review the diagnosis and long-term management plan of respiratory patients

Impact of the service:

- **100 fewer acute COPD admissions (34% less)** after 1 year
- The number **of total COPD admissions** has also **decreased by 8%**
- Reduction in average length of stay for COPD admissions from **4.45 days to 3.7 days (a 17% decrease)**
- Reduced used of inappropriate high dose steroid inhalers, estimated to have **saved ~£200K** in 1 CCG in 1 year
- **Increased use of high value interventions**, such as community pulmonary rehabilitation, due to awareness raising through the virtual clinics

bronchiectasis clinics in the community, supported by both primary and acute physicians as needed, and use of technology linked to the internet to perform diagnostic sleep studies for obstructive sleep apnoea patients in the community.

- It could also involve agreement on City-wide pre and post-hospital pathways of care, to facilitate the step-up and step-down of patients more easily. This could significantly reduce the number of patients who are non-electively admitted.
- Working with infectious diseases could enable the provision of a shared outpatient parenteral antimicrobial therapy service across the whole of the City of Manchester.
- This may however require some reorganisation of primary care patients in polyclinics, for example, to facilitate outreach clinics from acute physicians.
- Detailed proposals are already being developed between CMFT and UHSM for integrated COPD care, in the context of the Royal College of Physicians Future Hospitals Programme. Very similar approaches are already being implemented at NMGH, where key elements of out-of-hospital management are already in place (e.g. blood gases and chest X-rays). Reliable and timely access to effective rehab services is also essential, and is not well-established anywhere in the City of Manchester.
- None of the services currently in existence or planned would be able to provide care on a 24/7 basis. A City of Manchester-wide service would be able to establish 24/7 services that could manage many more patients outside of hospital, or with very short lengths of stay. Also, with an expanded team of specialist nurses and therapists, there would be more opportunity for skill-mixing the team, with the development of lower graded roles, which would reduce the cost of the service. The roles in the existing teams are popular, and there is no reason to think there would be any difficulty in recruiting in to them.

Evidence

- There is clear evidence to support the management of long-term respiratory conditions in an integrated community care team, with access to specialist respiratory advice *(NHS Best Practice Guidance, An Outcomes Strategy for COPD and Asthma, 2012)*.
- There are examples from across the UK of integrated respiratory care teams delivering significant improvements in the quality and efficiency of patient care – see case study of Kings Health Partners Integrated Respiratory Service *(Royal College of Physicians Your Story – Integrated respiratory care: hospitals without walls, accessed online in March 2016 at http://bit.ly/1LL94wS)*

2. Patient experience

2.1 Access for all patients to a respiratory review within the first 24 hours of admission

Description

- In a single service model, some respiratory physicians could outreach into other sites in order to provide early input to newly admitted respiratory patients, and daily ward rounds for all other respiratory inpatients to ensure active management of their care.

Evidence

- There is evidence that prompt, evidence based therapy for COPD exacerbations helps to reduce lung damage, ensure faster recovery and fewer admissions (and subsequent readmissions) to hospital *(NHS Best Practice Guidance, An Outcomes Strategy for COPD and Asthma, 2012)*.
- There is evidence that 10% of acute admissions for COPD are in patients without a prior diagnosis. Furthermore, 25% of COPD diagnoses are incorrect. Early respiratory input may therefore ensure an accurate diagnosis and appropriate treatment *(NHS Best Practice Guidance, An Outcomes Strategy for COPD and Asthma, 2012)*.

2.2 More co-ordinated care for respiratory patients, closer to home

Description

- For acute and chronic respiratory conditions, closer integration of acute and community services could enable care to be delivered closer to home.
- The specialist MDT at the hub could co-ordinate the care of patients within the network to the most appropriate part of the single service, resulting in fewer contacts between the patient and different parts of the services.
- Videoconference facilities would enable all clinicians within the network to access advice from the specialist multidisciplinary teams at the hub. This would enable them to manage complex patients locally as far as possible, and arrange transfers to the hub as needed.

3. Workforce

- See under **Education and training** section.

4. Financial and operational efficiencies [see Appendix XVII]

4.1 Reduced non-elective admissions due to greater integration of primary and acute care, and a hub and network model for complex care

Description

- The use of shared protocols and pathways throughout the service could enable care for some patients back into the community. This relies on seamless integration of primary and acute care across the city.
- Complex patients can be cared for locally with specialist MDT advice from the hub via videoconference, preventing unnecessary non-elective admissions.

High level estimate of cost saving

- ~ 1-6% reduction in the cost of non-elective activity = £0.06-0.36M

4.2 Reduced variation in first-to-follow up outpatient appointment ratio

Description

- There are existing variations in the first-to-follow up ratios across sites, which may partly be explained by differing case complexity at each site.
- If this ratio could be standardised to the median of all UK Trusts, then there is a potential efficiency saving.

High level estimate of cost saving

- A conservative estimate for this would be a 12% reduction in outpatient costs = ~£0.6M across all sites.

4.3 More efficient use of existing workforce

Description

- Sharing of staff across all sites could enable the service to be more sustainably staffed.

High level estimate of cost saving

- ~5% reduction in staffing costs = ~£0.6M.

4.4 Reduction in average length of stay by standardising clinical pathways

Description

- There are existing variations in the case-mix adjusted average length of stay across sites [see appendix XVII].

High level estimate of cost saving

- If the same standard of care could be achieved across all sites, this would be equivalent to a ~19% reduction in the average length of stay = ~£1.3M.

4.5 Targeting of expensive drugs to the most appropriate patients

Description

- In asthma, specifically, it has been estimated that the most severe 5% of all patients invoke at least 50% of the total health care costs *(Serra-Battles J et al. Costs of asthma according to the degree of severity. Eur Respir J 1998; 12:1322-6.)*
- By managing complex patients in a hub and network model, the hub can act as a gatekeeper to expensive drugs, in the same way that access to omalizumab and bronchial thermoplasty has been controlled by a single point of access MDT in severe asthma.
    - Internally collected data from the severe asthma pathway in UHSM shows that in 2015 ~9% of patients were not approved for omalizumab, equating to a cost saving of ~£420K. It is worth noting that these referrals were from centres with specialised asthma services already, and as such, were more likely to be approved.
    - This is an underestimate of the potential cost savings from targeted treatment because it does not include other respiratory conditions that are managed in this way (such as interstitial lung disease), and the quality of referrals improves over time, so the initial cost savings are likely to be higher.
- The need to govern the use of biologics is becoming even more important as newer drugs are released onto the market, such as Natalizumab for severe asthma.
    - In an effort to keep track of prescribing, all pharmacies in Manchester will use Blueteq systems for all individual funding requests from April 2016 onwards.

High level estimate of cost saving

- ~5-10% reduction in the cost of consumables = ~£0.2-0.4M

5. Research and innovation

5.1 The opportunity to use joined up EPR to attract "real world" research studies

Description

- There are limited benefits from the single service model for respiratory research, because on an existing pan-Manchester approach, which includes a joint BRC bid (as described above)
- The full benefit for research would come from a common electronic patient record (EPR) system, which could be used to attract investment for 'real world' research studies, and improve the efficiency of existing trial recruitment by using search tools to quickly identify eligible patients for trials.

Evidence

- The Salford Lung Study is the world's first open-label phase III pragmatic randomised controlled trial (pRCT) that aims to prospectively examine the effectiveness of vilanterol/fluticasone furoate against existing therapy for COPD and asthma, in a large, unselected population of ~7000 patients *(New JP, Bakerly ND, Leather D, Woodcock A. Obtaining real-world evidence: the Salford Lung Study. Thorax 2014; 69: 1152–4.)*

- EPR systems are used to identify patients, provide data on outcomes and health economics and provide safety surveillance.
- In total, it is estimated to have brought ~£60M investment into the local economy.

6. Education and training

6.1 The opportunity for clinicians to develop specialisation exists in the hub and network

Description

- In the hub and network model, clinicians throughout the service have the opportunity to practice at the hub. This means that their specialist interest will have a consistent standard for those patients who remain outside the hub, or who have shared care within the network.

Implementation considerations

Implementing the service requires some **key enablers** to be in place, most notably mechanisms for ensuring the consistent implementation of shared pathways. This would include shared audit and incident investigation, but also, potentially, some managerial oversight.

There would also need to be a common IT platform, common diagnostic standards, and processes that enable clinicians to work cross site (such as joint contracts, reciprocal car parking provision and videoconferencing facilities). Key elements of diagnostic support include imaging (e.g. PET-CT) and specialist pathology (e.g. microbiology, immunology and histopathology). A Manchester Respiratory Service would need to be well-supported by City-wide diagnostic services, with effective image sharing and informatics infrastructure. If the full research benefits are to be realised, then common EPR would need to be in place across the City of Manchester with links to primary care IT.

One of the key **implementation considerations** for the single service model is **patient access**. With the hub and network model, some specialist activity that currently takes place at all sites may be centralised at the hub, requiring patients to travel further (as is currently the case with cystic fibrosis patients). However, there is some evidence that patients are willing to travel further in order to access specialist care:

"There are two reasons why I would be willing to travel further for my severe asthma care – to get an accurate initial diagnosis and as a way to monitor how I'm coping with frequent oral steroids" – Val Hudson, a person with severe asthma (quotation taken from 'A Network-Based Approach for Specialised Severe Asthma Services: A proposal to support specialised commissioning for adult severe asthma services, 2014').

Furthermore, accessibility for some patients may improve with the use of videoconferencing facilities that enable clinicians to care for patients locally, and through closer integration of primary and acute care.

City of Manchester Single Hospital Service

Rheumatology

Appendix XI (a)

- **Single service model and benefits**
- Activity and audit data

Rheumatology: summary

Current model	▪ Individual services operating independently on 3 sites ▪ Considerable collaboration through shared protocols and networks, e.g. Manchester biologics pathway
Current challenges	▪ Variation in quality of care and service provision ▪ Cost of some rheumatology drugs (biologics) is extremely high
Proposed model	▪ 3 secondary care units operating with shared pathways and protocols ▪ Single (virtual) biologics service across all sites with research links ▪ Share some staff and assets for example research staff
Opportunities	▪ Increased study recruitment and equity of access to clinical trials ▪ Cost savings from more efficient use of biologics ▪ Improved engagement with primary care
Implementation considerations	▪ Patients less able to travel due to disability ▪ Need to build stronger links to community to transfer care out of hospital ▪ Disruption to existing models of care overlapping with sites in the City of Manchester

SOURCE: Clinical working group

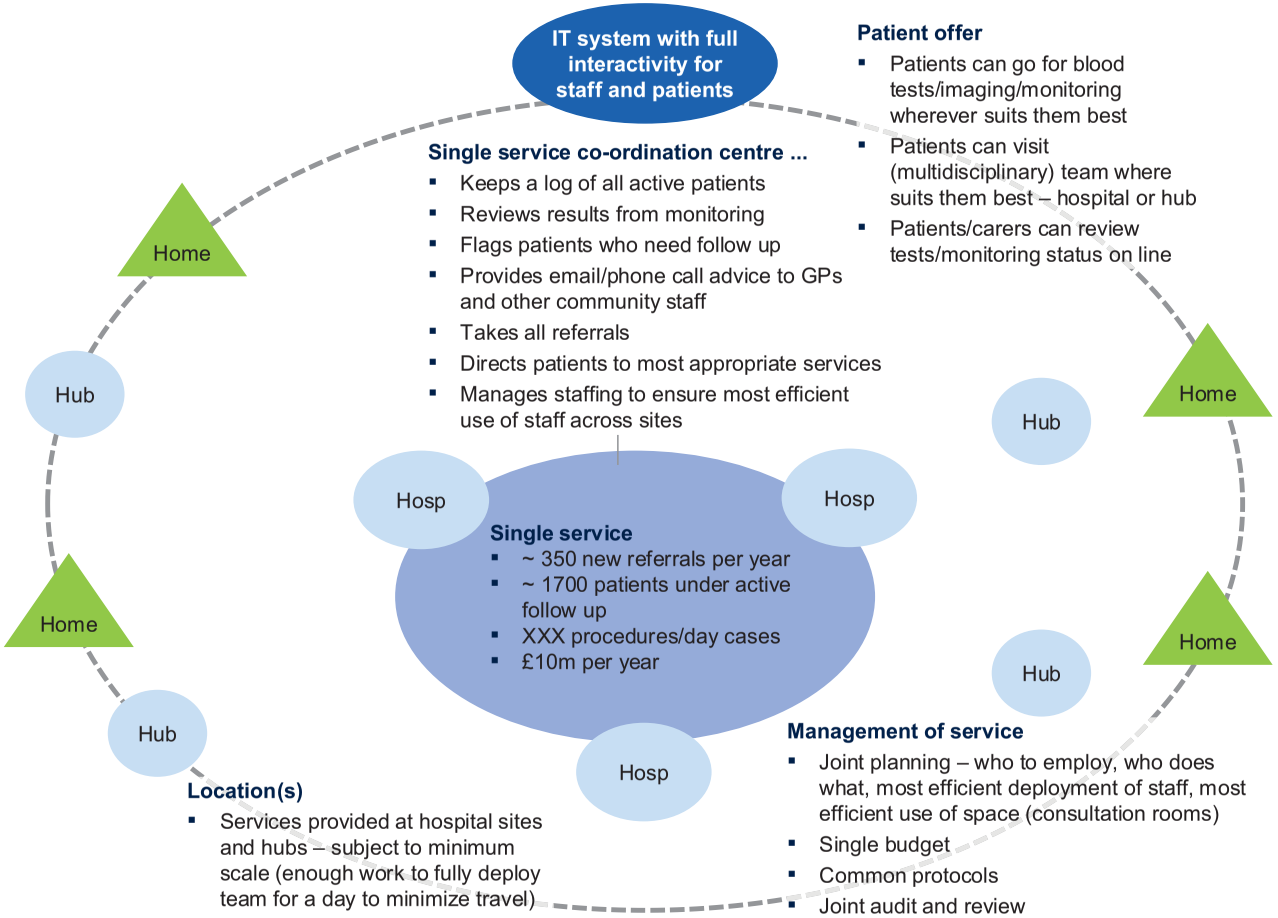
Rheumatology: model

Description	How this would work
▪ Shared clinical pathways and protocols	▪ Care ideally delivered as locally as possible due to difficulty of mobility in this patient population ▪ Continued sharing of clinical protocols across the service to reduce the variation in quality of care ▪ Sharing of best practice, such as the virtual biologics clinic, across all sites – Could lead to the creation of a single virtual biologics network for the City with research studies linked to this service ▪ Shared learning of research across sites, via regular research meetings ▪ Continued centralisation of some highly complex rheumatology care, such as Behcet's disease, at sites that are co-located with necessary specialties (for Behcet's, this means specialist ophthalmology and oral surgery input at CMFT)
 ▪ Shared staff and assets, shared patients ▪ Single 'virtual' coordination centre	▪ Shared staff and shared patients, with a single 'virtual' coordination centre – Services to continue to be provided at all hospital sites and in community settings – A single service coordination centre matches capacity and demand so that resources are deployed efficiently (e.g. buildings/rooms can be contracted on an 'as needed' basis and staff are deployed to sites subject to minimum scale (enough work to fully deploy team for a day to minimise travel)) – The coordination centre acts as a single point of entry to the system that takes all referrals, triages them, and directs patients to the most appropriate part of the service – Email/phone advice line to GPs – Shared records of all patients with proactive 'virtual' monitoring instead of outpatient appointments. Patients and their carers can view/monitor the results of investigations online ▪ Patients are able to access investigations and treatment at any site, based on capacity and waiting lists (for example, patients can access physiotherapy services wherever is most convenient for them within the single service) ▪ Single management structure with single budget ▪ A shared IT system that both patients and staff can interact with is vital to ensure this model is deliverable

SOURCE: Clinical working group

Rheumatology single service

ILLUSTRATIVE



SOURCE: Clinical working group

5

From and to …

ILLUSTRATIVE

Examples	From	To
Referrals for first appointment	▪ Variations in referrals from one GP to another ▪ Number of referrals which could be better managed via other services	▪ Consistent assessment and triage of referrals to ensure patients directed to most appropriate staff/service
Advice to GPs and other community staff and patients	▪ Current email advisory service at CMFT, not at other sites ▪ Patient helpline at some sites, not others	▪ Single service providing advice via email or phone to GPs across whole of Manchester ▪ Single service providing advice via email or phone to patients
Management of patients with fibromyalgia and chronic pain	▪ Variations in current service provision with some referred to psychological support, chronic pain clinics and others not/on long waiting list	▪ Investment in cognitive behavioural therapy (CBT) services and pain clinic to enable redirection of patients to most appropriate service
High ratio of follow up to new outpatients	▪ High number of patients remain on follow up to enable monitoring of condition ▪ Reactive monitoring	▪ Online access to all blood test results (and other metrics) enable remote monitoring with patients called in if/when required ▪ Proactive monitoring, reviewing all patients on an ongoing basis across Manchester
Fixed costs	▪ Allocation of fixed costs of hospitals	▪ Buildings/rooms contracted for on an 'as needed' basis
Administrative burden	▪ Considerable time spent writing notes, discharge letters ▪ Considerable time spent booking appointments, coordinating patients	▪ Online booking and patient management to capture patient information, ongoing management of patient, all test results and to flag patients who need follow up

SOURCE: Clinical working group

6

Rheumatology: impact

✓ Strong evidence ✓ Some evidence

Category	Impact	Evidence	
Quality of care	▪ Variations in the quality of care across sites would reduce by using shared pathways. Also, patient safety would be improved and delays to treatment will be reduced	▪ There are existing variations in quality of care ▪ Evidence from the high-cost drug pathway at UHSM that variations have been reduced by use of a shared pathway	✓ ✓
	▪ Use of technology to proactively monitor blood test results	▪ There is evidence that patient initiated self-monitoring for stable patients reduces healthcare use (McBain et al, 2015)	✓
Patient experience	▪ Shared resources improve patient access, as they could choose to have physio/OT/investigations/day case procedures at wherever is most convenient for them (which would include knowledge of current waiting times)		
	▪ Work with commissioners to improve community based support services	▪ Evidence from case study (Haywood rheumatology centre) of the benefits of more integrated working with community teams	✓
Workforce	▪ Virtual reviews using the biologics pathway frees up staff time ▪ Potential to share staff across sites	▪ There are currently 1 to 4 WTE consultants and 1.8 to 2.8 WTE specialist nurses at each site. Together, there would be a combined workforce of 8.35 WTE consultants and 7.4 specialist nurses, who would be able to cover a joint rota more flexibly.	✓
Financial and operational efficiency	▪ Reduced non elective admissions from a GP advice line, proactive computerised monitoring of bloods and closer working with commissioners to strengthen the community services		
	▪ Potential for shared staff across sites	▪ As above	✓
	▪ Reduced ratio of first to follow-up outpatient appointments through more proactive, virtual monitoring, and shared referral pathways and protocols	▪ There are existing variations in first to follow-up ratios across sites	✓
	▪ Reduction in the average length of stay from shared protocols and pathways for inpatient care	▪ There are existing variations in the average length of stay for patients across sites	✓
	▪ Shared use of the Virtual Biologics Clinic (VBC) for rheumatoid arthritis and Blueteq software for individual funding requests would: – Save cost of drugs due to improved adherence to pathway (only prescribed to appropriate patients and stopped when ineffective) and enhanced research recruitment (trial drugs are free) – Improve recruitment of patients to clinical trials	▪ In CMFT, use of the VBC has resulted in annual cost savings of ~£113K	✓
	▪ Reduction in fixed costs due to allocation of resources on an 'as needs' basis		
Research and innovation	▪ Research staff would move between sites helping to enable patient equity of access to clinical trials between sites; this could also increase study recruitment	▪ Current research activity varies across sites, from 8 to 30 trials ▪ Evidence that trial organisers seek single point of access sites for research	✓
Education and training	▪ No significant benefits identified		

SOURCE: Clinical working group

Rheumatology – impact summary

Category	Shared clinical pathways and protocols	A single Virtual Biologics Clinic	Shared best practice – Blueteq	Access for patients to investiga-tions and treatment at any site	Some shared staff	Joint research meetings	Shared use of computer-ised blood test monitoring to reduce follow-up	GP advice line with share triage of all referrals	Working with commissio-ners to improve community services	Potential for pooled resources managed in a virtual coordinat-ion centre
Quality of care	✓	✓	✓	✓	✓		✓	✓	✓	✓
Patient experience	✓	✓	✓	✓	✓		✓	✓	✓	✓
Workforce	✓	✓		✓	✓		✓	✓	✓	✓
Financial and operational efficiency	✓	✓	✓	✓	✓		✓	✓	✓	✓
Research and innovation	✓	✓			✓	✓				
Education and training	✓	✓			✓	✓		✓		

SOURCE: Clinical working group

- Single service model and benefits
- **Activity and audit data**

Inpatient and outpatient rheumatology care

Sum of activity across all sites

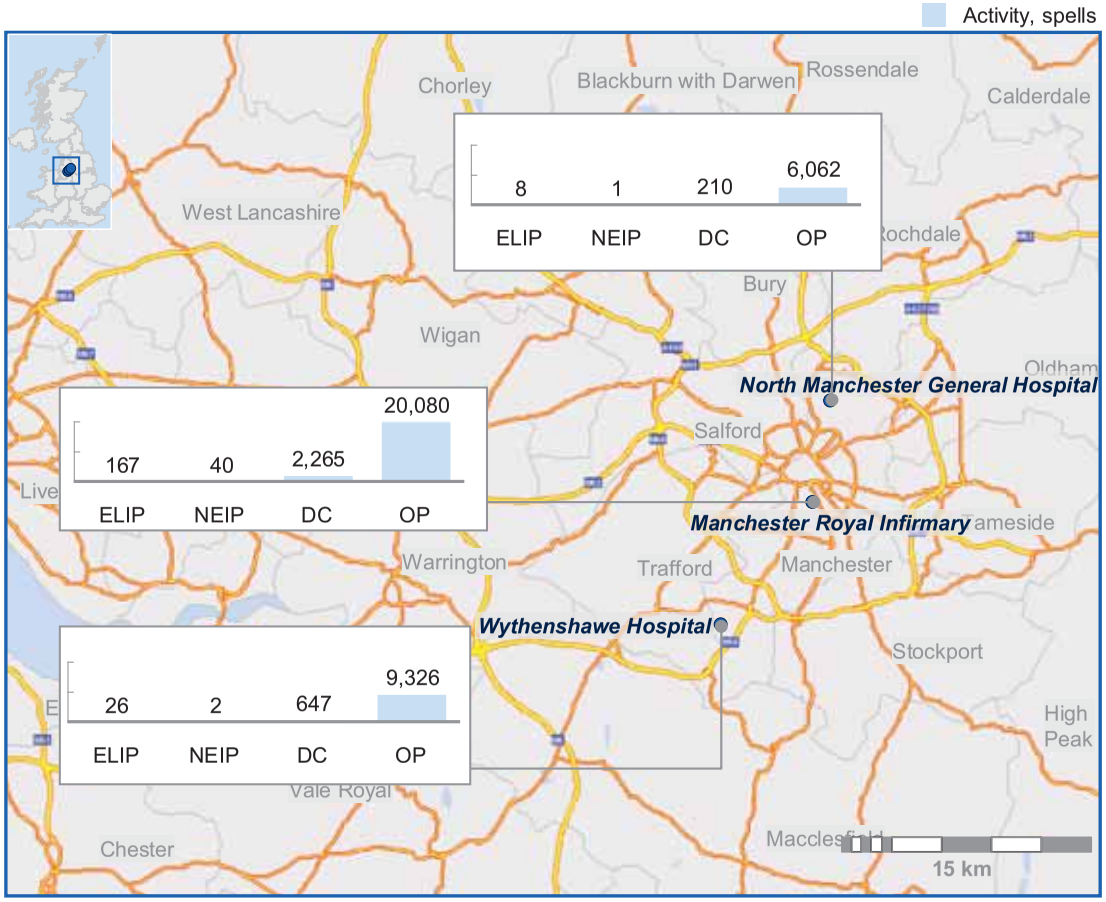
- 201 elective inpatient spells
- 43 non-elective inpatient spells
- 3,122 day case spells
- 35,468 outpatient spells

Delivered by

- 1 whole time equivalent (WTE) consultants at North Manchester General (NMG)
- 4 WTE consultants at Manchester Royal Infirmary (MRI)
- 3.35 WTE consultants at University Hospital of South Manchester (UHSM)

Using

- No dedicated inpatient beds at NMG, MRI and UHSM



SOURCE: Trust data 14/15

Rheumatology: current workforce and asset utilisation

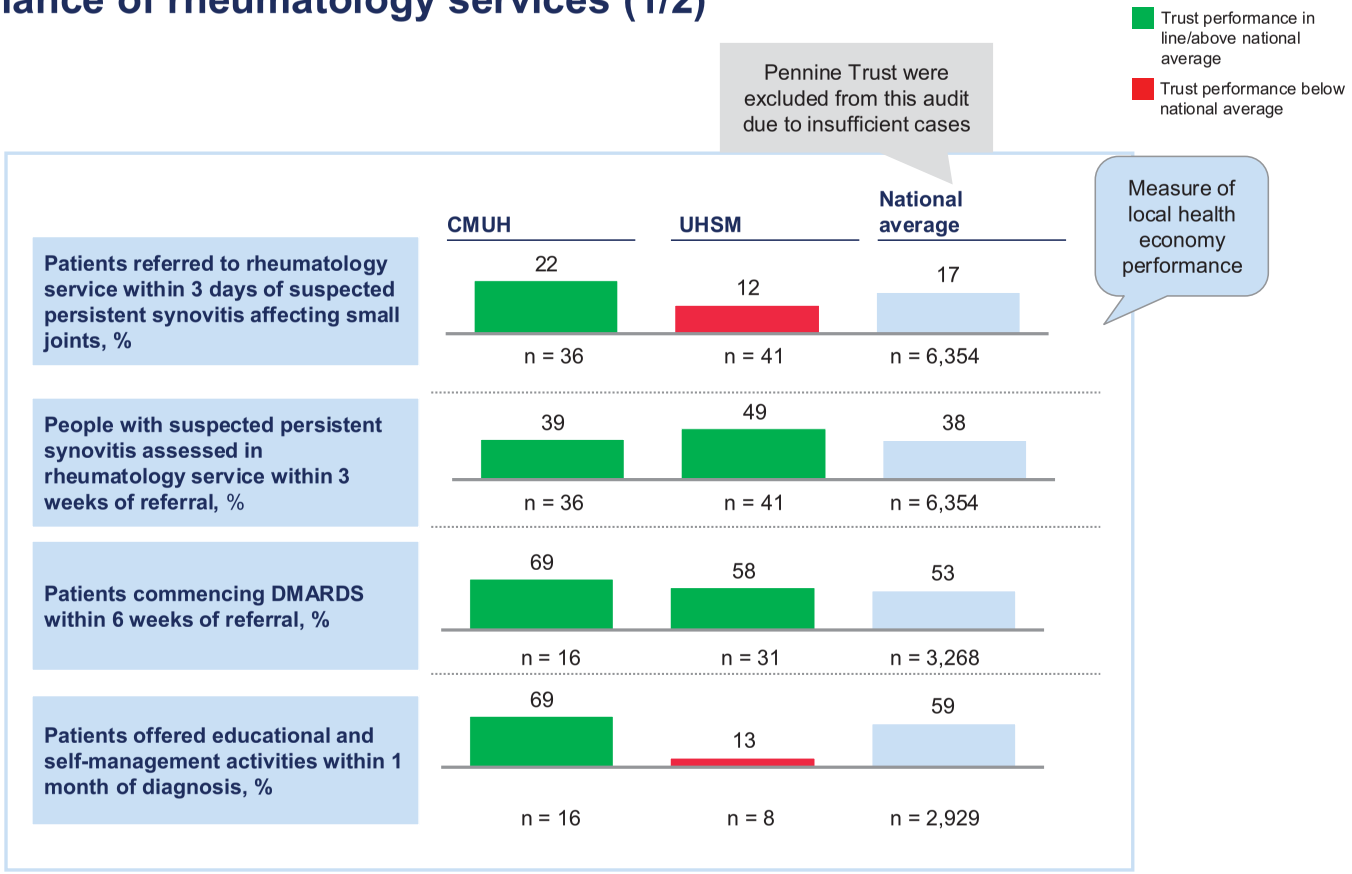
Medical WTEs, #	NMGH	UHSM	CMFT	Total
Consultants	1[2]	3.35	4[2]	**8.35**
Junior doctors (all grades)[1]	0.5[2]	3	4[2]	**7.5**
Specialist nurses	1.8[2]	2.8[2]	2.8[2]	**7.4**
				23.25

Utilisation of assets, #	NMGH	UHSM	CMFT	Total
Number of beds	0	0	0	**0**
Average bed days per week	0	13.87	7	
Average length of stay	2.4	0.07	3.5	

1 Includes trust grade doctors;
2 Data from Clinical Working Group

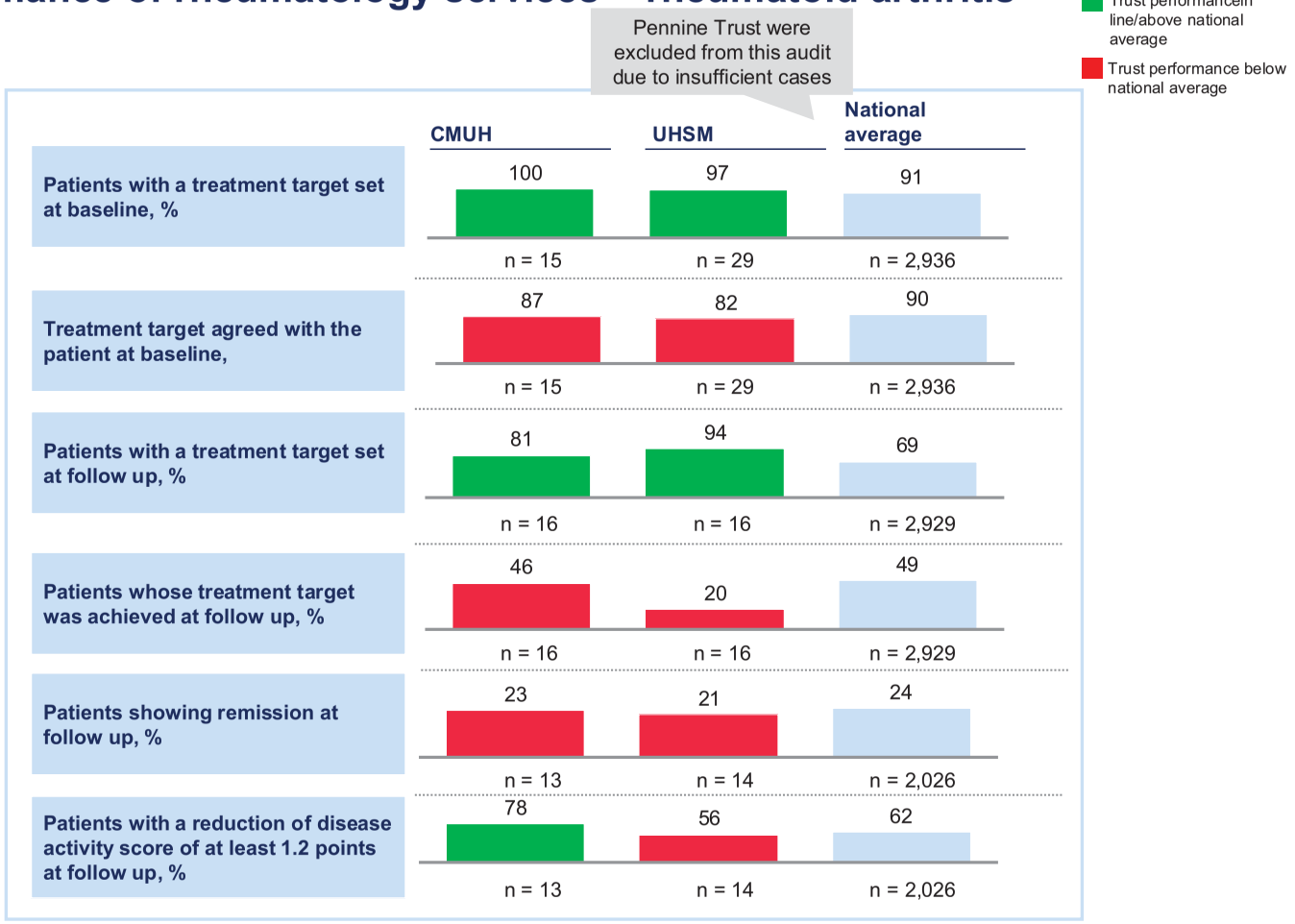
SOURCE: Trust data, March 2016

Performance of rheumatology services (1/2)



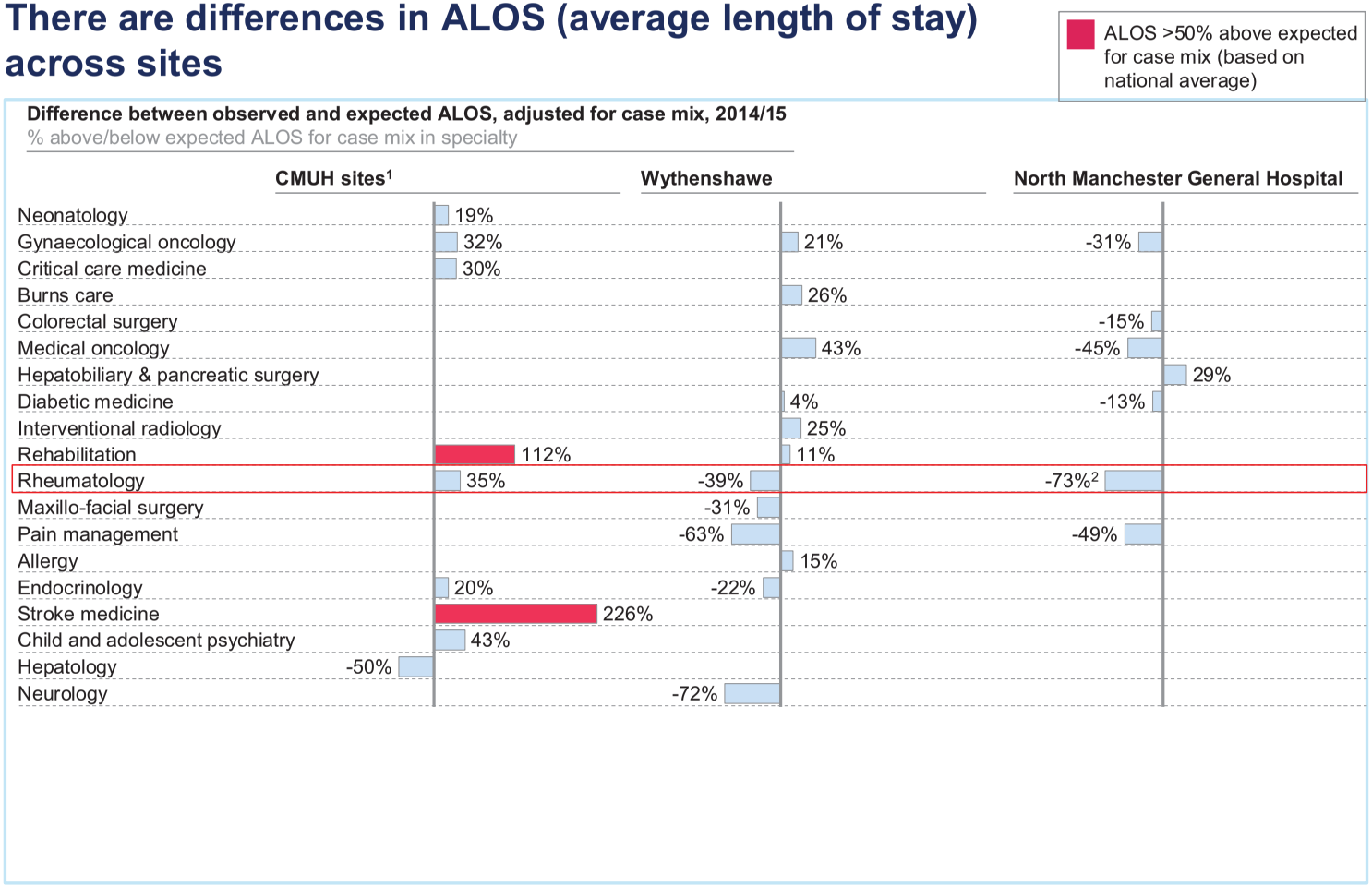
SOURCE: British Society for Rheumatology, National Clinical Audit for Rheumatoid and Early Inflammatory Arthritis, 2015

Performance of rheumatology services – rheumatoid arthritis (2/2)



SOURCE: British Society for Rheumatology, National Clinical Audit for Rheumatoid and Early Inflammatory Arthritis, 2015 | 13

There are differences in ALOS (average length of stay) across sites



Notes: Specialties ranked by combined volume of spells across all sites included in the analysis; only specialties with a total of >10 inpatient admissions (elective and non-elective, excluding day cases) across all sites shown.

1 Manchester Royal Infirmary, St Mary's, Royal Manchester Children's and Manchester Royal Eye Hospital combined; 2 Only 8 data points available

SOURCE: Hospital Episode Statistics, 2014/15

CITY OF MANCHESTER SINGLE HOSPITAL SERVICE
SINGLE SERVICE MODELS – SUMMARY OF MODELS

Appendix XI Rheumatology

Summary

Current model

- Individual services operating independently but with considerable collaboration across sites
- Care at North Manchester General hospital is delivered as part of a Pennine-wide rheumatology service, with a 'hub' at Rochdale Infirmary

Current challenges

- Highly expensive medications
- High numbers of follow-up patients, creating a significant administrative burden
- Variation in access to support services e.g. psychological support for Fibromyalgia
- Difficulty accessing test results and/or patient notes from different sites across Manchester

Proposed model

- Single service delivered as locally as possible, underpinned by shared pathways and protocols with shared peer review and audit. Specifically unified protocols to ensure rapid discharge (when appropriate) and less frequent follow-up in chronic disease
- Development of innovative methods for certain groups such as "patient initiated follow-up", Skype, telephone follow-up
- Development of community based support services for chronic pain/fibromyalgia, with common protocols for referral, thus reducing unnecessary secondary care involvement
- Single GP helpline to advise if new patient referral is appropriate.
- Potential for shared staff, resources, research teams and patients across the whole City, coordinated from a single service coordination centre, which matches resources and demand
- Choice of location for patients for monitoring tests with enhanced community phlebotomy services (as part of developments to out of hospital care)
- Improved access to community based physio services (as part of developments to out of hospital care)
- Potential for a single management structure and a pooled budget
- Shared use of computerised blood monitoring ("TA monitor": currently at UHSM and NMGH) across all 3 sites to enable safe drug monitoring and shared databases of patients without secondary care appointments needed for drugs monitoring.
- Common IT system enabling better patient access using, for example, iPads.

Opportunities for benefits

- Reduced follow up appointments
- Possible reduced new referrals
- Reduced administrative costs
- Greater control over the cost of expensive medications

Implementation considerations

- Patients less able to travel due to physical disability

- Shared IT system is vital to enable delivery of this model

Outline of the current model

General rheumatology care is currently provided locally at each site, with the majority of activity being undertaken in outpatient clinics and day-case units. The majority of day-case admissions are for infusions of medication, and these take place at all sites. A small amount of inpatient care is provided, but these patients usually come under the care of the general medical team, and as such, no site has dedicated rheumatology inpatient beds.

There is already existing differentiation of sites, with tertiary care being provided at CMFT. This only applies to a small number of rheumatology patients, and the transfer arrangements are currently working well. For example, some patients with Behcet's or vasculitis who require an ophthalmology or oral surgery opinion, are seen at CMFT as well as locally.

The NMGH service is closely interlinked with the Pennine Rheumatology service, which is run as a hub and spoke model with Rochdale as the hub. Staff are currently shared across the North East region.

UHSM has access to a more specialist rheumatological rehabilitation service, including a large hydrotherapy pool, at Stepping Hill. The UHSM, Macclesfield and Stockport teams share continuing professional development activities including clinical meetings, journal clubs and educational meetings 3 times per month. Medical student teaching is shared between UHSM and Stockport. Trafford patients are also seen at UHSM (35% of all patients) and UHSM are also working with Trafford CCG to develop a community-based model for these patients.

A summary of the current rheumatology activity is shown below:

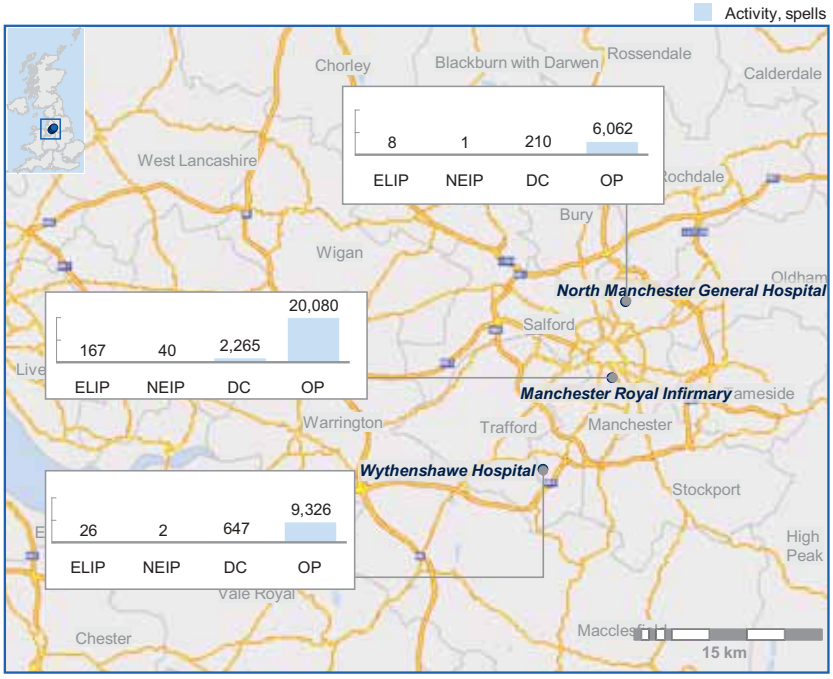
Inpatient and outpatient rheumatology care

PRELIMINARY

Sum of activity across all sites
- 201 elective inpatient spells
- 43 non-elective inpatient spells
- 3,122 day case spells
- 35,468 outpatient spells

Delivered by
- 1 whole time equivalent (WTE) consultants at North Manchester General (NMG)
- 4 WTE consultants at Manchester Royal Infirmary (MRI)
- 3.35 WTE consultants at University Hospital of South Manchester (UHSM)

Using
- No dedicated inpatient beds at NMG, MRI and UHSM



SOURCE: Trust data 14/15 | 12

Outline of current and future challenges

1. Quality of care

- The National Clinical Audit for Rheumatoid and Early Inflammatory Arthritis is a relatively new audit and has small number of patients included so needs to be treated with caution – but does suggest some opportunities for all sites to raise the standard of care provided [see Appendix XI (a)]

2. Patient experience

- **Access to care is more challenging in this cohort**
  - Patients are less able to travel long distances to receive care due to physical disability
- **High number of follow-up appointments**
  - Patients sometimes struggle to get routine blood tests done in the community, meaning that they have to come to the hospital for blood tests.
  - Patients are brought back to clinic in person for the results of monitoring blood tests, rather than 'virtually' monitoring them. This leads to a high outpatient follow-up rate.

3. Workforce

- **Future workforce pressures**
  - The need to recruit a full team of staff to 3 separate sites presents a risk to the long-term stability of staffing across the service.

- There are considerable administrative costs associated with chasing test results and organizing ongoing monitoring of patients

4. **Financial and operational efficiency**

- **Cost of some rheumatology drugs (biologics) is extremely high.**
  - Governance over the prescription of these drugs is varied across sites – for example, UHSM uses 'Blueteq' (an online system for individual funding requests), whereas other sites do not.

- **Opportunities for all providers to perform to the standards of the best**
  - There is considerable scope to reduce numbers of face to face follow up appointments through better use of technology to support ongoing monitoring
  - There is potential to support some patients better through alternative services e.g. psychological support for patients with fibromyalgia

5. **Research and innovation**

- **Inequity of access for all patients to clinical research trials**
  - The number of clinical trials varies from 8 to 30 across sites, meaning that some patients have greater access to research trials depending on where they are cared for.

6. **Education and training**

- **No challenges identified**

The CWG (clinical working group) have proposed the following single service model for rheumatology

Description	How this would work
▪ Shared clinical pathways and protocols	▪ Care ideally delivered as locally as possible due to difficulty of mobility in this patient population ▪ Continued sharing of clinical protocols across the service to reduce the variation in quality of care ▪ Sharing of best practice, such as the virtual biologics clinic, across all sites – Could lead to the creation of a single virtual biologics network for the City with research studies linked to this service ▪ Shared learning of research across sites, via regular research meetings ▪ Continued centralisation of some highly complex rheumatology care, such as Behcet's disease, at sites that are co-located with necessary specialties (for Behcet's, this means specialist ophthalmology and oral surgery input at CMFT)
▪ Shared staff and assets, shared patients ▪ Single 'virtual' coordination centre	▪ Shared staff and shared patients, with a single 'virtual' coordination centre – Services to continue to be provided at all hospital sites and in community settings – A single service coordination centre matches capacity and demand so that resources are deployed efficiently (e.g. buildings/rooms can be contracted on an 'as needed' basis and staff are deployed to sites subject to minimum scale (enough work to fully deploy team for a day to minimise travel)) – The coordination centre acts as a single point of entry to the system that takes all referrals, triages them, and directs patients to the most appropriate part of the service – Email/phone advice line to GPs – Shared records of all patients with proactive 'virtual' monitoring instead of outpatient appointments. Patients and their carers can view/monitor the results of investigations online ▪ Patients are able to access investigations and treatment at any site, based on capacity and waiting lists (for example, patients can access physiotherapy services wherever is most convenient for them within the single service) ▪ Single management structure with single budget ▪ A shared IT system that both patients and staff can interact with is vital to ensure this model is deliverable

Rheumatology single service

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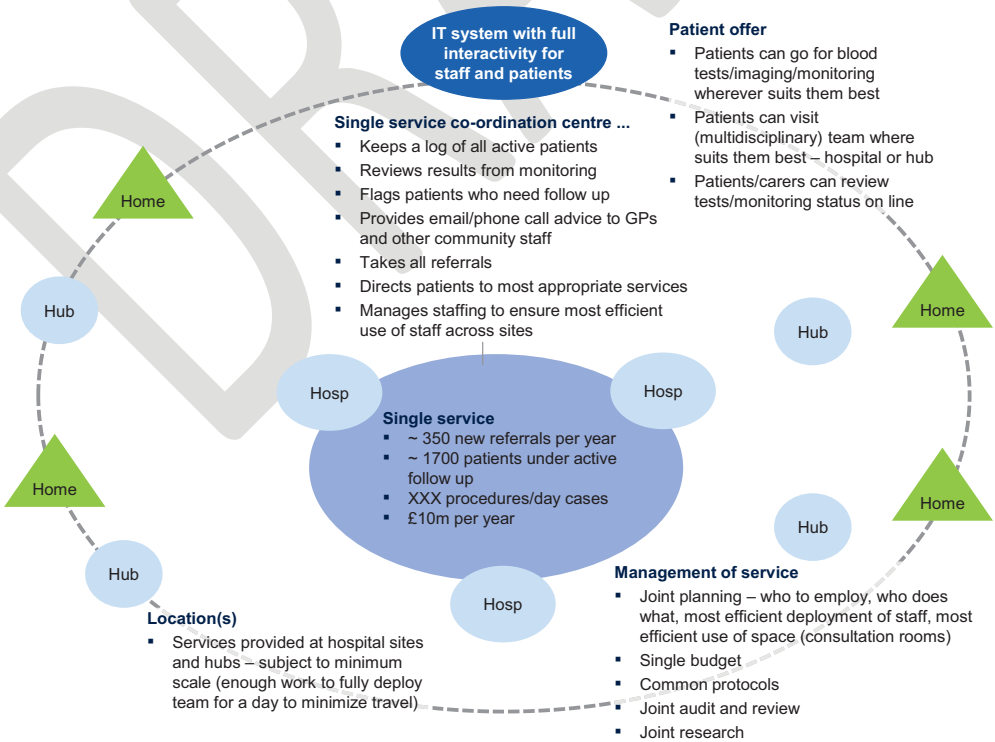


Description of potential impact of the single service model

Benefits

1. Quality of care

1.1 Reduced variation in the quality of care across sites

Description

- Quality of care could be improved through the use of shared protocols and pathways that would reduce variations in care. This would particularly apply to protocols for referral to specialist care and for ongoing monitoring and follow up of patients.
    - Currently UHSM uses 'Blueteq' to manage individual funding requests for patients who require highly expensive drugs (notably, biologics).
    - This means that patients are able to received approval for their treatment faster, which leads to a better quality of care for patients
    - Dissemination of this knowledge across all sites – and even across specialties – would allow improve the operational efficiency of the whole service. The use of online software to manage funding requests saves up to a day of staff time, as each request is automated and reports can be produced in minutes instead of hours. It also reduces the number of inputting mistakes made by clinicians and reduces the amount of missing data *(Blueteq website [accessed in March 2016])*.

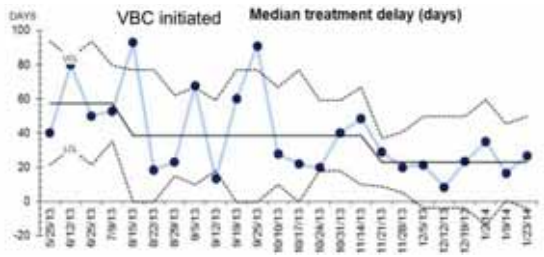
1.2 Creation of a single Virtual Biologics Clinic across the whole of the City of Manchester

Description

- An example of sharing best practice is the 'Virtual Biologics Clinic', which is currently only used at CMFT, and in part at USHM [see case study].
- Rolling this out fully at UHSM and NMGH would enable the care for all severe rheumatoid arthritis patients to be streamlined in a well-governed process across the whole City.
- The four major benefits of this are:
    1. Improved patient access to appropriate treatment, by using 'virtual reviews' instead of clinic appointments to initiate the pathway, thus speeding up the process.
    2. Improved patient safety (from clearer clinical governance over the prescribing, monitoring and follow-up of patients on these drugs)

Case study: the Manchester Virtual Biologics Clinic

- The virtual biologics clinic (VBC) was implemented in 2013 for all patients with rheumatoid arthritis
- All patients starting a biologic are assessed 'virtually' by a Rheumatologist, Specialist Nurse, Specialist Pharmacist and Research Nurse, and their treatment is monitored along the pathway
- Since inception:
    - median **treatment delay fell from 41 days to 19** days (see graph)
    - compliance with the enhanced **safety checklist** increased from **50% to 100%**
    - **Recruitment of patients to research studies increased** from 60 patients to >100
    - **Estimated annual cost savings ~ £113K**[1]



[1] attributed to pathway adherence and enhanced research recruitment

3. The opportunity to link the database to research studies, which would enable more efficient recruitment of participants to clinical trials using search tools for specific patients who fit certain research criteria.
4. Financial savings (from the prevention of misuse of expensive drugs in patients for whom they are not indicated, or do not work, and from greater recruitment to clinical trials where trial medication is free).

1.4 Creation of an advice email/telephone line for GPs

- If staff and resources could be pooled, there would be sufficient capabilities to be able to establish an advice line for GPs.
- This would help to prevent unnecessary admissions and referrals to hospital, as well as prioritise those patients who need to be seen urgently.

1.5 Use of technology to proactively monitor patients

Description

- At some sites, patients are being brought back to clinic in order to review routine blood test results, whereas at others, there is already computerised blood monitoring.
- In the single service model, computerised blood monitoring could be rolled out across all sites, so that routine results could be proactively monitored without the need for outpatient appointments for this purpose.
- Patients could also monitor their own results online, enabling them to proactively manage their care.
- In this way, patients would only have to be called into clinic if an action was needed, which would reduce the number of follow-up appointments and associated administrative burden.

Evidence

- There is evidence that patient initiated self-monitoring for stable patients with rheumatoid arthritis or psoriatic arthritis on methotrexate can result in significantly lower healthcare use (McBain et al, A patient-initiated DMARD self-monitoring service for people with rheumatoid or psoriatic arthritis on methotrexate: a randomised controlled trial, Ann Rheum Dis (2015)):
    - Patients are trained how to understand and interpret their blood test results and use this information to initiate care from their clinical nurse specialist (CNS)
    - The patient-initiated DMARD self-monitoring service was associated with 54.55% fewer visits to the CNS ($p<0.0001$), 6.80% fewer visits to the rheumatologist ($p=0.23$) and 38.80% fewer visits to the general practitioner ($p=0.07$), compared with control participants.

2. Patient experience

2.1 Improved access to diagnostics and treatment

Description

- In the single service model, patients could potentially access investigations (such as blood tests and imaging) and treatment (such as infusions of medication and physiotherapy) at whichever site is most convenient for them. They could also be provided with live capacity information, enabling them to choose the site with the shortest waiting list.
- There is also the potential to create more satellite phlebotomy and physiotherapy services, in order to improve accessibility.

Integrated rheumatology services: Haywood Rheumatology Centre – case study

Care for ~ 0.6-1M patients is provided by a 'hub and spoke' model, with the hub as an 10-bed inpatient unit at Haywood and community spokes.

The MDT consists of:

- 7 WTE consultants, 4.5 nurses and allied health professionals, specialised therapists and 4 GPs with a special interest in rheumatology.

Uses a single coordination centre to direct patients to the most appropriate part of the service:

- Single point of entry via GP referral
- Specialist triage to direct patients to either the inpatient unit, therapy (such as physiotherapy) or rehabilitation services
- 24-hour on-call service to the 'spokes' and in-reach into the hospital, transferring patients to the Haywood for specialist rheumatology care

Preliminary impact of the service:

- Reduction in **waiting time** to see a specialist from **13 weeks** to **4 weeks**
- 90-96% patient satisfaction

Evidence

- There are examples from around the UK of rheumatology hubs that integrate acute and community care and diagnostics, to provide faster access for patients to investigations and treatment
- This not only improves patient access to care and satisfaction with the service, but there is evidence that closer integration leads to operational benefits (reduced waiting times), workforce benefits (new career development opportunities) and research benefits (more streamlined recruitment to trials through a single point of access) – see Haywood Rheumatology Centre case study *(Haywood Rheumatology Centre case study, The King's Fund, 2014)*

2.2 Work with commissioners to improve community based support services

Description

- There are existing variations in the access for patients with chronic pain and fibromyalgia to psychological support and chronic pain clinics
- In a single service model, there could be a joint approach to improving community based support services, thus reducing unnecessary secondary care involvement with these groups of patients

3. Workforce

3.1 Potential to share some staff, such as research nurses, across sites

Description

- Sharing staff across sites enables the workforce to be more sustainable, because fewer additional staff would be needed for a joint rota compared to 3 individual rotas.
- Sharing staff could also enable more robust cover for sickness absence.

Evidence

- For example, there are currently 1, 3.35 and 4 WTE consultants and 1.8, 2.8 and 2.8 WTE specialist nurses at each site. Together, this would be a combined workforce of 8.35 WTE consultants and 7.4 specialist nurses, who would be able to cover a joint rota more flexibly.

4. Financial and operational efficiency [see Appendix XVII]

4.2 Shared staff ensures the financial sustainability of the service

Description

- A pooled workforce could enable rotas to be jointly covered more easily, without the need for as many additional WTE staff in the future.
- An online booking and patient management system, with the associated reduction in outpatient follow-ups across the service (through more 'virtual' reviews) could reduce the administrative staff costs.

High level estimate of cost saving

- ~10% reduction in staffing costs = ~£0.2M

4.3 Reduced variation in first-to-follow up outpatient appointment ratio

Description

- There are existing variations in the first-to-follow up ratios across sites
- If this ratio could be standardised to the top quartile of all UK Trusts, then there is a potential efficiency saving
- This could be enabled through shared computerised blood monitoring throughout the service

High level estimate of cost saving

- A conservative estimate for this would be a ~ 10% reduction in the cost of outpatient activity = ~£0.2M

4.5 Reduction in the cost of consumables, by targeting expensive medication at the most appropriate patients.

Description

- Creation of a single shared Virtual Biologics Clinic, and the use of Blueteq software for all individual funding requests, would ensure that the most expensive medications are targeted at the most appropriate patients.
- It could also boost recruitment to clinical trials, which in turn would reduce the cost of consumables because trial medication is free.

High level estimate of cost saving

- ~10% reduction in the cost of consumables = ~£0.2M

4.6 Reduction in fixed costs due to allocation of assets on an 'as needed' basis

Description

- Use of a single service 'virtual' coordination centre would enable resources to be allocated depending on activity demands. This means that buildings and rooms could be contracted for on an 'as needed' basis, which would reduce the amount of money spent on fixed costs.

High level estimate of cost saving

- *Unquantified*

5. Research and innovation

5.1 Greater awareness of research activity across sites

Description

- The Clinical Working Group (CWG) expressed an interest in holding regular research meetings, which would enhance the awareness of each other's research activities, leading to greater research collaboration across sites.

6. Education and training

No significant benefits identified.

Implementation considerations

Patient access is of particular importance in this patient group due to poor mobility secondary to physical disability. In recognition of this, the single service model proposed facilitates the delivery of care as close to home as possible.

If resources such as physiotherapy and blood tests were to be shared across sites, it would require shared IT and diagnostic standards to be in place. If patients were to be able to choose a site depending on capacity, there would have to be an online patient flow management tool in place, with live reporting of waiting times.

There would also need to be appropriate processes in place to allow staff (such as research nurses) to work cross site.

City of Manchester Single Hospital Service

Maternity services

Appendix XII (a)

- **Single service model and benefits**
- Case studies
- Activity and audit data

Maternity services: summary

Current model	▪ Individual services operating independently on separate sites
Current challenges	▪ Community midwifery care is subject to geographical boundaries that patients continually cross – 60% of women delivering at St Mary's do not live in the St Mary's community midwifery area ▪ Lack of joined up antenatal processes across sites, which causes patient safety issues when patients transfer between them ▪ Distrust of laboratory blood group between sites, resulting in duplicated blood tests ▪ Problems recruiting and retaining midwives, with competition for staff between sites ▪ Under-utilised midwife led care at all sites
Proposed model	▪ A single integrated community midwifery service, with shared notes (ideally digital), ideally self-registration available to women (e.g. a self-registration kiosk where women can enter their own notes instead of a 2-hour midwife led process) ▪ Same standards of care throughout the service - co-located obstetric and midwife-led units, with the default for all routine care being a midwife-led delivery (opt out) ▪ Shared pathways and protocols for common conditions with unified governance and audit ▪ Some potential to transfer low complexity cases across sites depending on capacity and choice ▪ One cross city rota for complex obstetrical hemorrhage cases (for example, cesarean hysterectomy or placenta accreta), staffed by urologists, interventional radiology, gynaecology-oncology specialists (would be an additional rota above and beyond existing rotas) ▪ Single site registration for clinical trials ▪ Potential for joint MDT management of complex cases
Opportunities	▪ Reduced variation in quality of care – less handovers, less repetition of notes taking ▪ Better use of current available capacity by making midwife-led care the default option ▪ Opportunity to transfer care into the community and for patients to take more ownership ▪ Offer consistent and equal specialist care to complex patients across the city ▪ Achieve critical mass to be considered a leader in the research community
Implementation considerations	▪ Common IT with a single electronically generated maternity handheld record is vital ▪ There is an inextricable link between obstetrics and gynaecology which needs to be considered

SOURCE: Clinical working group

Maternity services: model

*Discussed but **not agreed** by the clinical working group*

Description	How this would work
Shared clinical protocols	▪ Shared clinical protocols and pathways to eliminate variations in care ▪ Shared audit and governance over these pathways ▪ Common IT with a single electronically generated maternity record to support risk assessment and consistency of care ▪ Same standards of care throughout the service - co-located obstetric and midwife-led units, with the default for all routine care being a midwife-led delivery
Shared clinical staff and shared patients across sites	▪ A single community midwifery service, without any geographical boundaries, for all the pregnant women in the City of Manchester ▪ Pool expertise to enable the provision of specialist 24/7 cover (for example, an elective placenta accreta service and major obstetrical haemorrhage service) ▪ Pool several patient populations and provider resources to allow for new centres of sub-specialisation to develop (for example, joint obstetric/gastroenterology services) ▪ Outreach / in-reach clinics between the three hospital sites ▪ Share the same research agenda
Differentiated sites	▪ Potential for City-wide multidisciplinary team meetings using videoconferencing, to discuss complex cases ▪ Potential to transfer of low complexity patients across sites depending on capacity and demand (and patient choice)

SOURCE: Clinical working group

Maternity services: impact

✓ Strong evidence ✓ Some evidence

Category	Impact	Evidence	
Quality of care	▪ Shared pathways and protocols reduce variations in the quality of care across sites ▪ Improved patient safety because of shared patient records and diagnostic results across all sites, including the community	▪ There are existing variations in quality of care and barriers to coordinated care because of fragmented IT systems ▪ Cochrane review shows that variations in care have been eradicated through use of shared pathways	✓
	▪ Creation of a single community midwifery service enables transfer of care out of hospital ('defaulting to the community')	▪ Evidence that joined up community services improve the quality of care (National Maternity Review, 2016)	✓
	▪ Development of new specialist obstetrics services (e.g. joint obstetric/ medical clinics, an oncology service for obstetric patients and a morbidly adherent placenta service) because of some sharing of staff and patients across sites – e.g. outreach sub-specialist clinics	▪ Evidence that patient outcomes improve under a specialist obstetrics services	✓
Patient experience	▪ Low complexity patients could be transferred according to capacity demands and patient choice. In this scenario, patients would receive the same high quality care without any associated delays. This facilitates better staffing to demand and less use of agency cover.		
	▪ Use of technology to speed up booking visits	▪ The National Maternity Review (2016) endorses the use of technology to improve the patient experience, particularly at booking visits	✓
Workforce	▪ Shared sub-specialist staff across sites enables the staffing of a 24/7 placenta accreta rota and major haemorrhage rota	▪ Currently there are not enough sub-specialist consultants at each site to sustain 3 separate 24/7 rotas but by pooling resources, a single 24/7 rota could be created to cover all sites	✓
	▪ Single community midwifery service with joint recruitment and rotations across sites/into the community leads to better utilisation of midwives and better retention of staff **(also under finance and operational efficiency)**	▪ The National Maternity Review (2016) highlights that one of the elements to ensuring continued professional development for midwives is rotations of midwives between hospital and community	✓
Financial and operational efficiency	▪ Reduced non-elective admissions due to transfer of care to single community midwifery service ▪ A more effective community midwifery service could also enable more follow-ups to take place out of hospital, therefore reducing outpatient activity	▪ The National Maternity Review (2016) supports the vision for greater community care: "Local maternity systems should have as their central principle the concept of 'defaulting to the community"	✓
	▪ Potential for reduced cost of obstetric on-call cover if rotas shared across differentiated sites	▪ Currently individual rotas are too small (13 to 22 WTE consultants) - together there would be 50.64 WTE consultants to cover 24/7 emergency access *(Note this was not agreed by the CWG)*	✓
	▪ Reduced average length of stay through the use of shared pathways and protocols	▪ There are variations in the case mix adjusted average length of stay across sites. If all providers could perform to the standard of the best, this could deliver a 9% reduction in the average length of stay = ~£0.9M	✓
	▪ Reduced duplication of tests between the community and hospitals because of joined up IT	▪ An estimate of the current level of duplication of tests is ~6% (Commonwealth Fund report)	✓
Research and innovation	▪ Equity of access for all patients to research trials	▪ There are variations in the number of clinical trials across sites, and evidence of improved outcomes in research active centres (Ozdemir et al)	✓
	▪ Establishment of a single research office would help to attract more research income	▪ Trial organisers seek research sites with a streamlined, single point of access for administration, access to a large pool of patients, and trial coordination support (The Academy of Medical Sciences, 2011)	✓
Education & training	▪ Rotational posts for midwives could provide greater clinical exposure and new career development opportunities	▪ There is some evidence that inter-professional education can improve patient outcomes and collaboration between staff (Reeves, et al)	✓

SOURCE: Clinical working group

Maternity services – impact summary

*Discussed but **not agreed** by the clinical working group*

Category	Shared pathways and protocols with shared audit	A single community midwifery service across the whole City	Default for low-risk births to be the community	A shared electronic maternity record for all patients	Online self-booking	Development of more sub-specialty expertise by pooling populations	Shared staff for new 24/7 placenta accreta and major obstetric haemorrhage rotas	Shared recruitment of staff	Rotation of midwives throughout the service	Shared research agenda and office	Potential to transfer low-risk patients according to capacity and choice
Quality of care	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Patient experience	✓	✓	✓	✓	✓	✓	✓			✓	✓
Workforce	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Financial and operational efficiency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Research and innovation	✓	✓		✓		✓				✓	
Education and training	✓	✓	✓			✓	✓		✓	✓	

SOURCE: Clinical working group

- Single service model and benefits
- **Case studies**
- Activity and audit data

Case Study: Intrapartum maternity services in Sweden

Service line definition

- Maternity care is provided through the national health system
- Midwife-led care is the norm for normal risk mothers covering ante-natal, intra-partum and post-natal care
  - Midwives work in teams and one-to-one continuity of care is not the norm
  - Midwives transfer patients to obstetrician-led care according to established clinical protocols

Service delivery model

- Maternity services are tiered and providers have clearly defined risk profiles
  - Each provider is only able to deliver care for patients within their clearly defined risk profile (based on gestational age and other factors)
- Pregnant women are considered suitable for midwife-led care unless risk factors are present
  - Gestation at time of delivery outside of 37 to 42 weeks +6
  - Multiple pregnancy
  - Previous c-section unless following by a subsequent normal delivery
  - Co-morbidities including high blood pressure, diabetes, gestational diabetes, epilepsy and risk factors
- 99% of births take place in hospitals with different maternity unit models
  - Obstetrician-led maternity units – where midwives deliver care but with more direct access to obstetrician support (i.e. no formal transfer of care required)
  - Birth centres (not available everywhere and always located within a hospital complex) with emphasis on low-intervention approach to delivery but obstetricians available on site when required
- C-section rate is very low (14.8%) split approximately equally between elective and emergency procedures

Comparison to NHS

- In Sweden, midwife-led care is the norm, where in the NHS obstetrician-led care accounts for the vast majority
- Contrary to the NHS, maternity services in Sweden follow a clear tiered model, where lower acuity units can provide care to low risk patients
- Clear referral agreements are in place to allow for tiered services

SOURCE: Regelbok för förlossningsenheter, 2013 (Swedish language publication); Gottvall et al, Safety of birth centre care: perinatal mortality over a 10 year period, BJOG, 2004, Vol 111, 71-8

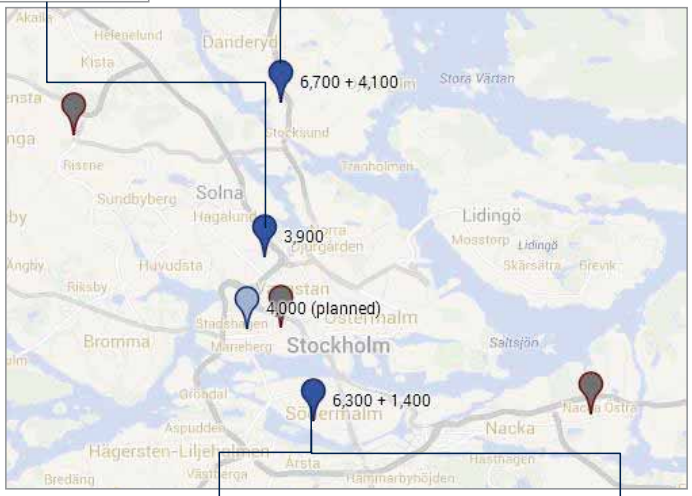
Clear transfer agreements exists for maternity services in Stockholm County

- Maternity unit
- Planned maternity unit (2018)
- No maternity unit
- # Births per year
- Transfer agreement

Karolinska Solna
- Public hospital
- 3,916 births in 2013 (13% share)
- 22+ wks gestation
- 20 NICU beds
- Specialist unit for very premature deliveries

Danderyds
- Public hospital
- 6,711 births in 2013 (23% share)
- 28+ wks gestation
- 20 NICU beds (run by Karolinska)

BB Stockholm
- Private hospital
- 4,111 births in 2013 (14% share)
- 28+ wks gestation
- Neonatal transfer agreement with Danderyds



Sodertalje
- Public hospital
- 1,680 births in 2013 (6% share)
- 37+ wks gestation
- Transfer agreement for NICU with Karolinska Huddinge

Karolinska Huddinge
- Public hospital
- 4,955 births in 2013 (17% share)
- 26+ wks gestation
- 18 NICU beds
- Specialist for HIV

Södersjukhuset
- Public hospital
- 6,260 births in 2013 (21% share)
- 28+ wks gestation
- 30 NICU beds

Södra BB
- Public hospital
- Birth unit (on site of Sodersjukhuset)
- 1,400 births in 2013 (5% share)
- 37+ wks gestation uncomplicated vaginal births only; no epidurals

SOURCE: Hospital websites; Genomlysning av Stockholms läns förlossningsenheter, Hälso-och sjukvårdsförvaltningen, Stockholms Läns Landsting, 2014

Case Study: Intrapartum maternity services in Victoria, Australia

Service line definition

- Pregnancies are stratified by risk (see Appendix for definitions): Normal/Moderate complexity/High complexity
- The risk level – level of needs combined with gestational age at time of delivery – determines the level of provider that the patient can choose from (e.g. a moderately complex pregnancy must be delivered at a ≥level 4 provider)
- Patients treated at lower tier providers must be informed of (and consent to) the associated risks

Service delivery model

- **Maternity services are delivered by managed clinical networks**:
  - Providers in a network have a defined service delivery level (from 1 to 6) with the lowest level delivering ante/postnatal care only. And the highest level leading state-wide tertiary services. With each increase in service delivery level the complexity profile of services that can be delivered increases in line with the workforce and service requirements
  - More senior service level providers are required to offer escalation services and 24/7specialist advice to lower level service providers in their network
  - Level 5 (regional) and 6 (state) service providers provide clinical leadership for the lower level providers in their network and level 6 providers are accountable for emergency obstetric retrieval procedures services
  - However, few hospitals publish their level and there is no central enforcement[1]

- **Obstetric workforce patterns are broadly comparable to the NHS with some key differences**
  - 64% of births are obstetrician-led; 29% midwife-led; 6.4% GP-led; 0.6% have no recorded (or inadequately recorded) care provider
  - GPs with specialist training in obstetrics and delivery rights (GP Obstetricians) are a core part of the maternity care workforce
  - GPs with specialist training in anaesthetics (GP Anaesthetists) provide epidurals etc in lower tier units

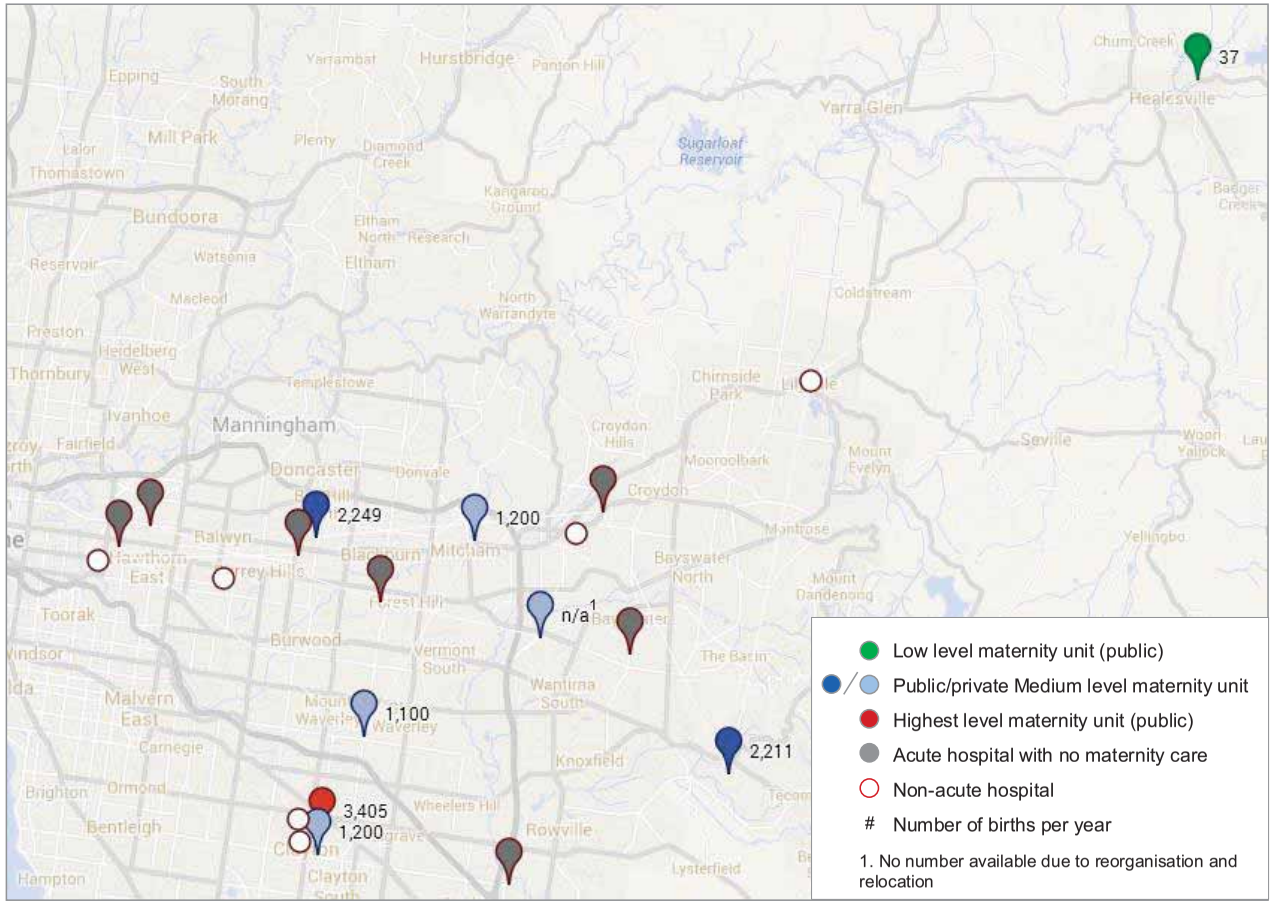
Comparison to NHS

- Maternity services in Australia are tiered, whereas in England there is a one-size-fits-all approach
- Within the tiering system, providers in Australia are allowed to provide lower levels of care than in England, provided they inform patients and have referral relationships with higher level care providers
- Contrary to the NHS, in Australia GPs can provide maternity services in the form of GP obstetricians and GP anaesthetists

SOURCE: QCMB: The National Maternity Services Capability Framework; RANZCOG, Standards of Maternity Care in Australia and New Zealand, 2014; Victoria Maternity Services Performance Indicators www.health.vic.gov.au/maternitycare/publications.htm

1. Information from Danielle Cosgriff, Health Information Manager at Department of Health Victoria

In the Eastern Met region, there is a tertiary hospital providing high-level maternity care, and one low-level unit in a rural area



SOURCE: Victoria Department of Health; hospital websites; Victorian maternity services performance indicators

- Single service model and benefits
- Case studies
- **Activity and audit data**

Inpatient obstetric care

Sum of activity across all sites

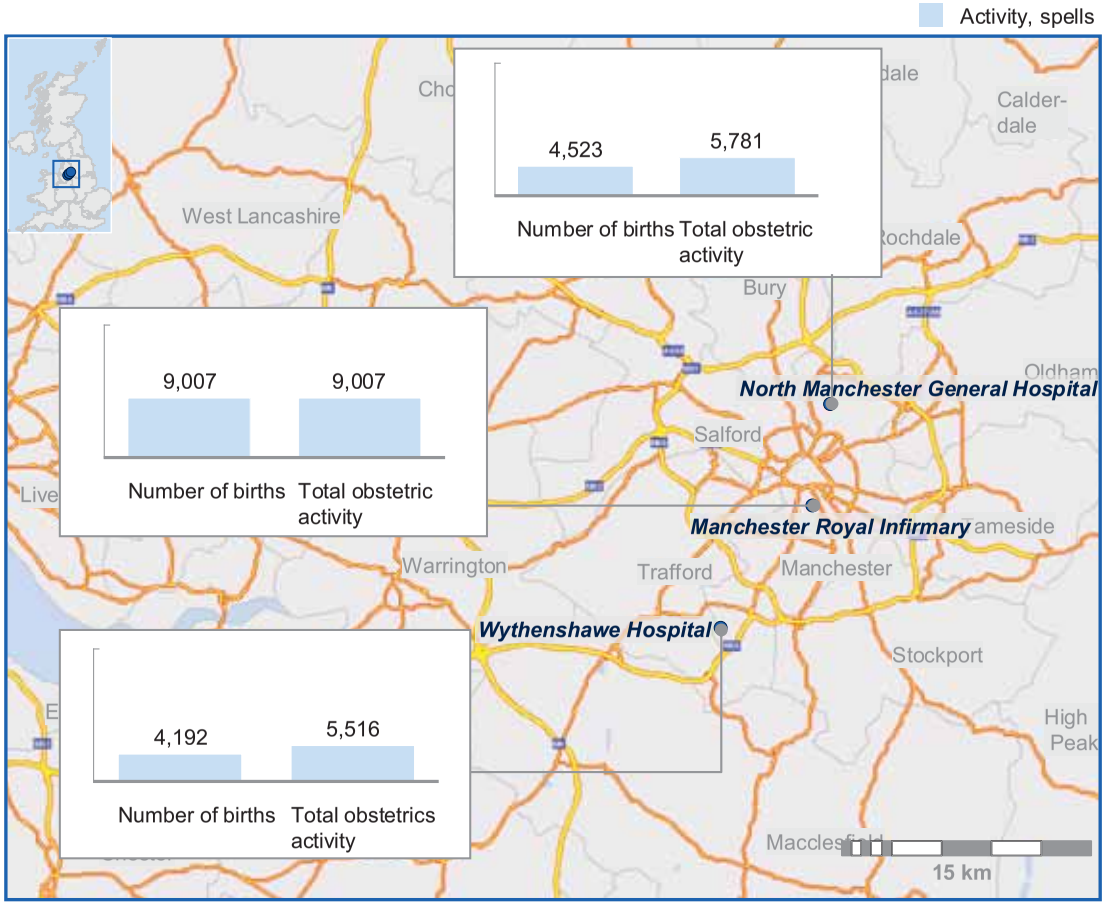
- 17,722 births
- 20,304 obstetric spells, including these births

Delivered by

- 15.1 whole time equivalent (WTE) consultants at North Manchester General (NMG)[2]
- 22.03 WTE consultants at St Mary's Hospital (part of Central Manchester Foundation Trust, CMFT)
- 13.51 WTE consultants at University Hospital of South Manchester (UHSM)[2]

Using

- 63 inpatient beds at NMG
- 87 inpatient beds at St Mary's
- 49 inpatient beds at UHSM



1 Total obstetric activity will include births, but one birth may relate to multiple obstetric spells. Includes midwifery activity.
2 Includes gynaecology WTEs

SOURCE: Trust data 14/15

Maternity services: current workforce and asset utilisation

PRELIMINARY DATA – awaiting Trust validation

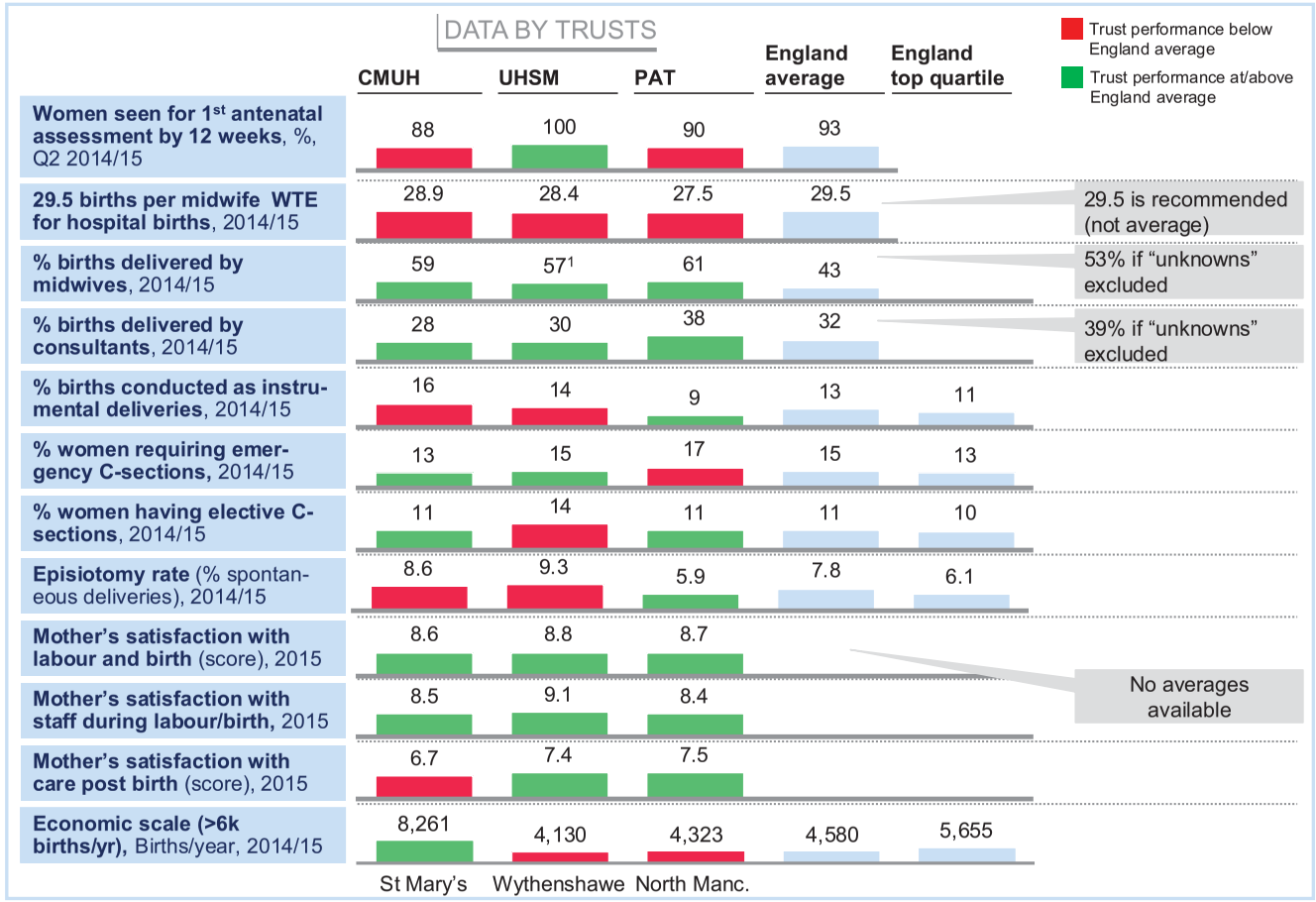
Medical WTEs, #	NMGH	UHSM	CMFT	Total
Consultants	15.1[1]	13.51	22.03	**50.64**
Junior doctors (all grades)[2]	25	21	47	**93**
Midwives based on the ward[3]	106	181	336	**623**
Specialist nurses	4	2	0	**6**
				772.64

Utilisation of assets, #	NMGH	UHSM	CMFT	Total
Number of beds	63	49	87	**199**
Average bed days per week	216	328	568	
Number of critical care beds used per week	0	-	-	
Average length of stay	1.9	2.09	1.5	
Number of theatres	2	2[4]	3	**7**
Number of emergency theatres	-	1	2	**3**
Total number of theatre sessions per week	-	20	30	**50**
Total number of emergency theatre sessions per week	-	10	As required	

1 Includes gynaecology WTEs; 2 Includes trust grade doctors; 3 Excludes community based midwives and midwives who cover the standalone midwifery birthing unit; 4 One of these is theatres is always available for emergency C-sections

SOURCE: Trust data 14/15

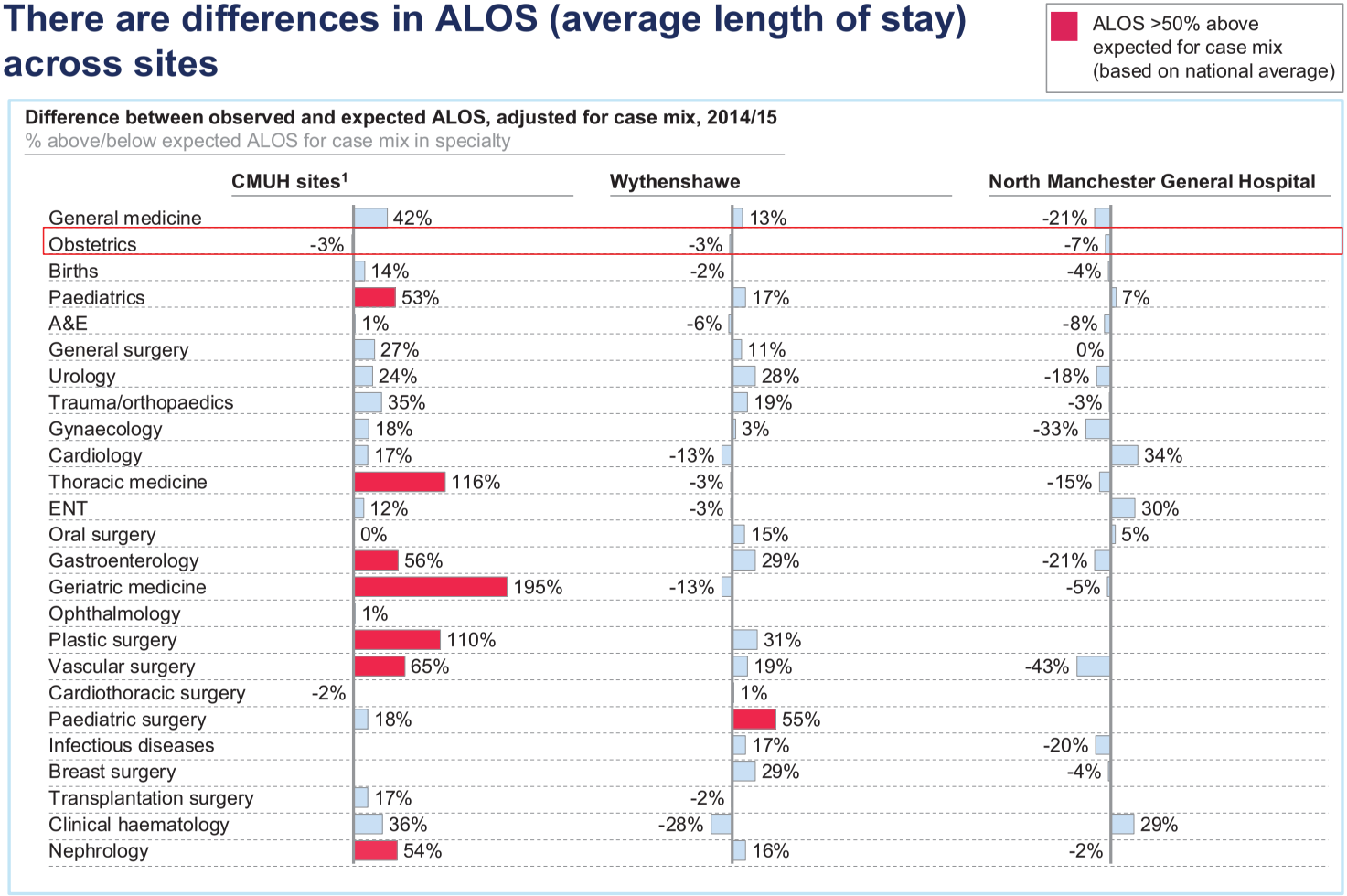
Performance of maternity units



1 Data for 2013/14 due to very poor level of recording of this metric in 2014/15 dataset

SOURCE: Maternity Provider Level Analysis, Hospital Episode Statistics, HSCIC 2014/15; CQC Maternity Survey | 15

There are differences in ALOS (average length of stay) across sites



Notes: Specialties ranked by combined volume of spells across all sites included in the analysis; only specialties with >10 inpatient admissions (elective and non-elective, excluding day cases) across all sites shown.

1 Manchester Royal Infirmary, St Mary's, Royal Manchester Children's and Manchester Royal Eye Hospital combined

SOURCE: Hospital Episode Statistics, 2014/15

16

CITY OF MANCHESTER SINGLE HOSPITAL SERVICE
SINGLE SERVICE MODELS – SUMMARY OF MODELS

Appendix XII Maternity services

Summary

Current model

- There are currently obstetric services at all three sites – North Manchester has ~ 4,500 births a year, UHSM 4,200 births a year and St Mary's hospital (at CMFT) 9,000 births a year
- North Manchester is part of Pennine Acute Hospitals; UHSM and CMFT operate individually.
- There is a shared fetal medicine service across sites.

Current challenges

- There are currently variations in the quality of care across sites for example Women seen for 1st antenatal assessment by 12 weeks, %, Q2 2014/15 varies between 88 and 100 percent
- There are currently difficulties in staffing, with a shortage of ultra-sonographers in particular
- There is duplication of testing and imaging across services, for example, women get scanned in the community and then again in hospital; women get blood tests in one hospital as part of pre-delivery testing and then they are repeated in another hospital
- Due to geographical boundaries, community midwife services do not always link with the hospital where the woman is to give birth (for example, Pennine Acute Hospital Trust (PAHT) provides post-natal care to circa 2,000 women who do not deliver at PAHT)

Proposed model

- Shared pathways and protocols across the three sites, with the default for routine deliveries being midwife-led care
- A joint Placenta Accreta elective service
- New sub-specialised services with outreach/in-reach clinics across sites
- A single community midwife service for the whole City of Manchester
- Potential to optimise capacity and demand with low complexity women being treated according to available capacity (this will require possible changes to the operating model at different sites to account for any impact on the Gynaecological services)

Benefits

- Safer, more streamlined care with less duplication
- Better and equitable access to specialist services
- Better research opportunities for staff
- Better recruitment and retention of staff across all staff groups

Implementation considerations

- There is an inextricable link between obstetrics and gynaecology i.e. some consultants practice both specialties, so any changes to obstetrical 'resident consultant' rotas will have knock-on impact on next-day gynaecological work load
- Unified IT and shared governance are vital

Outline of the current model

Obstetric care is currently provided at all three sites. CMFT is the largest site with ~9,000 births, and provides a number of tertiary services for highly complex deliveries. UHSM and NMGH both have ~4,500 deliveries each per year. CMFT has a level 3 neonatal intensive care unit (NICU) and UHSM and NMGH both have level 2 NICUs. Fetal medicine is shared across the 3 sites, but outside of this, there is no significant cross-collaboration.

A summary of the current obstetric activity across all 3 sites is shown below:

Inpatient obstetric care

PRELIMINARY

Sum of activity across all sites
- 17,722 births
- 20,304 obstetric spells, including these births

Delivered by
- 15.1 whole time equivalent (WTE) consultants at North Manchester General (NMG)[2]
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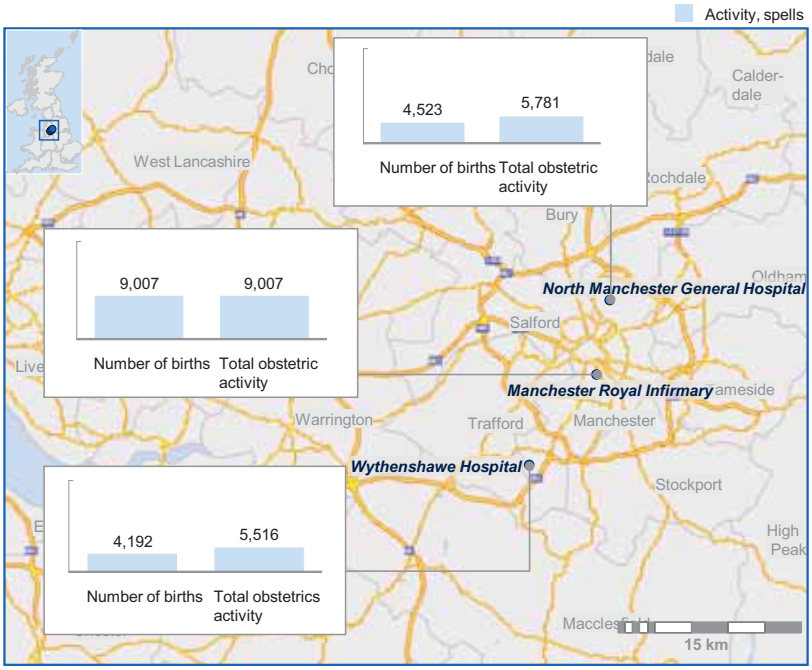


1 Total obstetric activity will include births, but one birth may relate to multiple obstetric spells. Includes midwifery activity.
2 Includes gynaecology WTEs

SOURCE: Trust data 14/15 | 14

Outline of current and future challenges

1. **Quality of care**
   - **There are current variations in the quality of care**
     - The CQC maternity survey 2014/15 demonstrated variations across sites and an opportunity for all sites to improve the standard of care provided [see appendix XII (a)]
     - The Clinical Working Group (CWG) described how some women are referred to outpatient sub-specialist clinics when not indicated, or for outpatient clinics when care could have been provided in the community (for example, placement of pessaries or drug induced medical abortions)

   - **Consistent and robust provision of services**
     - Critical rotas, such as out of hours cover for emergency haemorrhage, are not staffed in a robust way (for example, all consultants, including those who have sub-specialised in fertility, are required to cover this rota).

   - **Fragmentation of care due to geographical, IT and cultural barriers**
     - Patients move across sites but their health records and investigation results do not, causing potential patient safety issues, duplication of activity and delays in care.

        - There are 3 separate antenatal processes with their own paper documentation – one for each site. This means that patient records are not shared across sites and activity is duplicated.
        - For example, blood group results are not trusted across sites, so a woman has to have a repeat blood test for group and save every time she accesses care at a new site.
    - Community midwifery services are run by each hospital and are limited by geographical boundaries, whereas women from any geographical area can choose to have their baby at any hospital – this creates a situation where PAHT provides post-natal care to circa 2,000 women who do not deliver at PAHT, meaning that the co-ordination of perinatal care between community and hospital is fragmented.

2. **Patient experience**

- **There is under-utilisation of midwife led care for uncomplicated deliveries**
    - The Clinical Working Group (CWG) described a situation of over-medicalisation of uncomplicated deliveries, with care being preferentially provided in obstetric rather than midwife-led units.

- **Fragmentation and duplication of care**
    - As described in Quality of Care challenges

3. **Workforce**

- **There is difficulty staffing on call rotas**
    - Allocation of Programmed Activity (PA) sessions for consultants skews activity towards on call requirements, this means that consultants do not have enough PAs left to do other activity
    - This means that some consultants are unable to maintain their skills and competence because the majority of their PA sessions are used for out of hours rota cover.

- **Difficulty recruiting and retaining midwives**
    - There is competition for recruitment of midwives across providers making it challenging to fill posts

4. **Financial and operational efficiency**

- **Opportunities for all providers to perform to the standards of the best**
    - There is a variation in the average length of stay (adjusted for case mix) across sites [see Appendix XVII]
    - There are variations in the number of non-elective admissions (adjusted for case mix) across sites [see Appendix XVII]

- **Alignment of demand and capacity**
    - There is currently a lack of capacity at St Mary's hospital and UHSM (utilisation rates of 93% and 95% respectively)
    - Under-utilisation of midwifery led units at all sites, where only UHSM making at scale use of its midwifery led unit

5. **Research and innovation**

- **Inequity of access for all patients to clinical research trials**

- The number of clinical trials varies from 0 to 20 across sites, meaning that some patients have greater access to research trials depending on where they are cared for.

6. Education and training

- **Variations in clinical exposure**
  - Because practices are currently operating independently, there are limited opportunities for shared learning and continued education for trained staff.

The CWG (clinical working group) have proposed the following single service model for maternity services

*Discussed but **not agreed** by the clinical working group*

Description	How this would work
Shared clinical protocols	▪ Shared clinical protocols and pathways to eliminate variations in care ▪ Shared audit and governance over these pathways ▪ Common IT with a single electronically generated maternity record to support risk assessment and consistency of care ▪ Same standards of care throughout the service - co-located obstetric and midwife-led units, with the default for all routine care being a midwife-led delivery
Shared clinical staff and shared patients across sites	▪ A single community midwifery service, without any geographical boundaries, for all the pregnant women in the City of Manchester ▪ Pool expertise to enable the provision of specialist 24/7 cover (for example, an elective placenta accreta service and major obstetrical haemorrhage service) ▪ Pool several patient populations and provider resources to allow for new centres of sub-specialisation to develop (for example, joint obstetric/gastroenterology services) ▪ Outreach / in-reach clinics between the three hospital sites ▪ Share the same research agenda
Differentiated sites	▪ Potential for City-wide multidisciplinary team meetings using videoconferencing, to discuss complex cases ▪ Potential to transfer of low complexity patients across sites depending on capacity and demand (and patient choice)

Description of potential impact of the single service model

<u>Benefits</u>

1. Quality of care

1.1 Reduced variation in the provision of care

Description

- Having shared standards throughout the service, through the use of common pathways and protocols, reduces the variation in the quality of care provided, and brings all providers up to the standards of the highest.
- There could also be shared audit of these pathways with pre-defined metrics, to ensure robust clinical governance throughout the entire service. This would improve the safety of care for all patients.

Evidence

- It is outlined in the National Maternity Review (2016) that: *"Providers and commissioners should work together in local maternity systems covering populations of 500,000 to 1.5 million, with all providers working to common agreed standards and protocols."*

1.2 A single community midwifery service across the whole of the City of Manchester

Description

- Removal of geographical boundaries between current community midwifery services and providers enables the closer integration of community and acute care.
- The use of shared protocols and pathways for common perinatal investigations and interventions, such as blood group analysis, flu vaccines, smoking cessation and mental health screening, would reduce the variation in care across the City.
- The use of shared, electronic maternity records allows all professionals to access patient notes and diagnostics.
- This would ensure that all professionals involved in the delivery of care are aware of a patient's clinical risk and social circumstances, which could improve the safety of care. For example, having a shared protocol for blood group analysis and shared communication of this result across the service would reduce the risk of transfusion error, and remove the need for repeat blood testing. This will require that the different CCGs work together to commission the same standard of community midwifery across the City.
- Operational and financial efficiencies can be realised from a single community midwifery service model by removing duplicated activity from the system (for example, tests done in the community no longer need to be repeated in hospital). An additional efficiency saving would result from the reduction in administration costs of recharges between services – also under section 4.

Evidence

- The National Maternity Review (2016) noted the issue of fragmented community care, and the negative effects on the quality of care provided:
  "…some women are unable to choose the service they want because it sits on the wrong side of an administrative boundary.
  We found almost total unanimity from mothers that they want their midwife to be with them from the start, through pregnancy, birth and then after birth. Time and again mothers said that they hardly ever saw the same professional twice, they found themselves repeating the same story because their notes had not been read. That is unacceptable, inefficient and must change."
- The Review therefore recommends that
  - Every woman should have a midwife, who is part of a small team of 4 to 6 midwives, based in the community who knows the women and family, and can provide continuity throughout the pregnancy, birth and postnatal period
  - Each team of midwives should have an identified obstetrician who can get to know and understand their service and can advise on issues as appropriate.
  - The woman's midwife should liaise closely with obstetric, neonatal and other services ensuring that she gets the care she needs and that it is **joined up** with the care she is receiving in the community.

1.3 Better use of capacity, with the default being midwife led care

Description

- A combination of shared pathways and standards throughout the single service and a single community midwifery service would allow for the default for care to be a midwife led delivery, rather than inpatient obstetric care.

- This would enable capacity at all sites to be better used, with activity transferred from inpatient obstetric units to midwife led birth centres – see also under the **Patient Experience** section.
- There was discussion in the CWG about the potential for low complexity patients to be transferred according to capacity demands and patient choice. In this scenario, patients would receive exactly the same high quality care, due to the use of shared protocols and pathways, but without any associated delays.

Evidence

- The National Maternity Review (2016) supports this vision for care:
    - *Local maternity systems should have as their central principle the concept of **'defaulting to the community'**, as described in this report, by which women can receive clinically appropriate care as close to home as possible. This will mean that they need to promote and support the establishment of community hubs across their network, connecting them with obstetric and specialist services, and developing clinical governance, including standards and protocols to ensure that women and babies get the care they need, when they need it."*

1.4 Development of new sub-specialty services

Description

- Another benefit of the single service model is the opportunity for new specialist services to develop, by pooling patient populations to create sufficient need and providing greater opportunities for maternity services to link with other specialties. Examples of these include joint obstetric/medical clinics and an oncology service for obstetric patients.
- By working together as a single service, clinicians also have the opportunity to manage these highly complex patients in a collaborative way, facilitated through city-wide videoconference MDTs.

1.5 Provision of a new 24/7 placenta accreta elective service by pooling sub-specialists

Description

- In addition, sharing clinicians across all sites would enable specialist 24/7 on-call rotas to be more easily staffed (such as a joint placenta accreta elective service). Sub-specialist clinicians in the service could also provide outreach clinics at other sites.

Evidence

- Currently there are not enough sub-specialist consultants at each site to sustain 3 separate 24/7 rotas for major obstetric haemorrhage and a placenta accreta elective service
- By pooling resources in the single service model, a single 24/7 rota could be created to cover all sites

1.6 Shared governance across the service

Description

- There is the opportunity to share learning from incident investigations and audit across all sites. This could create an environment of greater transparency, learning and education that not only drives up the quality of care, but is attractive to staff, helping to recruit and retain the workforce.

2. Patient experience

2.1 Care closer to home

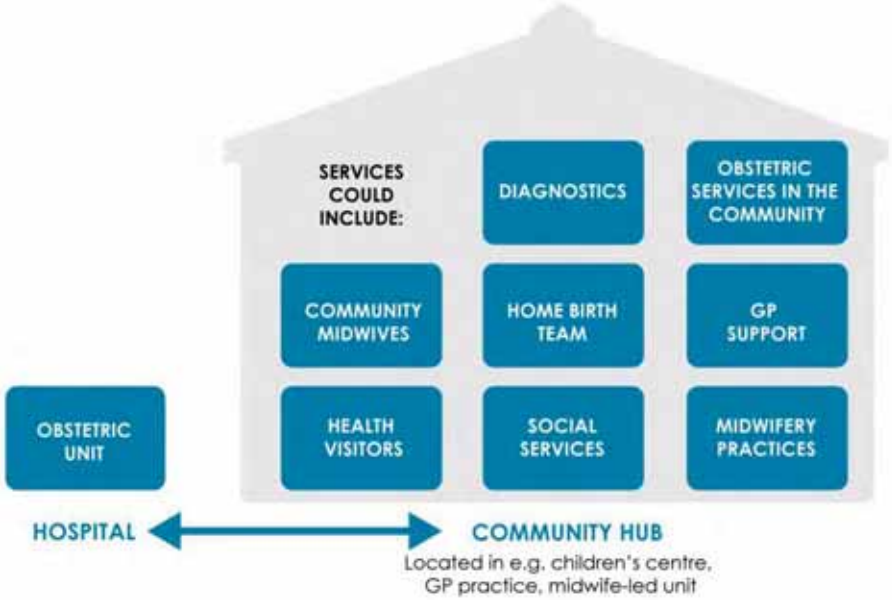
Description

- Patient experience could improve significantly under a single midwifery service, as more investigations, interventions (such as prophylactic anti-D, ultrasound services and smoking cessation advice), and deliveries could be transferred into the community bringing care closer to home.
- By removing geographical boundaries between community midwifery services and acute providers, patient access to community midwifery services becomes easier and the option of home births can be promoted, therefore improving patient choice.

Evidence

- The move to shift maternity care out of hospitals and into the community is reinforced in the National Maternity Review (2016).
- The vision articulated by the Review is for the default for care to be in the community, with care being coordinated from 'community hubs', which can act as 'one stop shops' for all routine care, and a 'rapid triage service' to more specialised care as needed – see Figure 1.
- The Review specifically highlights the benefit that greater continuity of care *"can enable midwives to get to know women better, and increase mutual trust."*

Figure 1. Community hubs



2.2 Use of technology to speed up booking visits

Description

- Consultations that are currently carried out in hospitals could also be transferred to the community, such as booking visits. This could improve access by removing the need for patients to repeatedly travel to hospital for routine care. This needs to be carefully planned, however, to reduce travel time for staff – there would need to be sufficient activity in any community hubs to avoid any staff travel time during the day.
- Technology could be used throughout the single service to allow women to complete their antenatal history online themselves, prior to their booking visit, which would free up time in the consultation.

Evidence

- The National Maternity Review (2016) recommends that:
  - *"NHS providers should invest in technological solutions that…[are] accessible via a mobile device so that midwives can use it at booking and that it is*

accessible by staff at the community hub and hospital services, and connect with hospital records systems".

3. Workforce

3.1 Shared recruitment of midwives

Description

- By working as a single service, providers could share the recruitment of midwives, which would eliminate the competition between providers
- This could also enhance the training of midwifery (and other) staff, by allowing them to rotate across all sites in the single service, and therefore gain maximum clinical exposure.

Evidence

- The National Maternity Review (2016) highlights that one of the elements to ensuring continued professional development for midwives is:
    - *"Rotations of midwives between hospital and community (e.g. supporting home births) to maintain skills and promote a continuity model."*

4. Financial and operational efficiency [see Appendix XVII]

4.1 Reduced non-elective admissions due to transfer of care to single community midwifery service

Description

- This could be achieved by establishing an integrated community and acute service across the whole of the City of Manchester, with more effective care being able to take place outside hospitals (as outlined in sections 1.2, 1.3, 2.1 and 2.2).

High level estimate of cost saving

- 5-20% reduction in the cost of non-elective activity = ~£1.8-7.1M

4.2 Reduced outpatient activity due to transfer of care to single community midwifery service and shared referral criteria

Description

- As above, a more closely integrated community and acute service could enable routine activity that is currently done in hospital outpatients to be transferred to the community.
- Shared pathways and protocols would ensure that patients who fulfilled predefined criteria were followed up in clinic, therefore reducing the level of unnecessary appointments.

High level estimate of cost saving

- ~5% reduction in the cost of outpatient activity = ~£0.4M

4.3 Reduce average length of stay for obstetric inpatients

Description

- There are existing variations in the case-mix adjusted average length of stay across sites.
- Evidence from a Cochrane Review of clinical pathways found that 11 out of 15 studies showed significant reduction in length of stay for patients on standardised pathways compared to usual care *(T Rotter et al., "Clinical pathways: effects on professional practice, patient outcomes, length of stay and hospital costs" Cochrane Database of Systematic Reviews 2010 7(3)).*

- The establishment of a 'community hub', as recommended in the National Maternity Review (2016), would enable rapid referral of patients to the most appropriate expert, thereby further reducing the inpatient length of stay.

High level estimate of cost saving

- If the same standard of care could be achieved across all sites, this could deliver a 9% reduction in the average length of stay= ~£0.9M.

4.4 Reduced duplication of tests due to shared IT and diagnostic standards across all sites

Description

- Shared processes and governance over diagnostics would help ensure that results from one site are as valid as results from another.
- There is existing duplication of investigations and activity due to lack of a joined up IT system for patient notes and diagnostics.
- There are opportunities to reduce the cost of consumables through joint procurement.

High level estimate of cost saving

- ~10% reduction in the cost of consumables = ~£1.2M

5. Research and innovation

5.1 Equity of access for all patients to research

Description

- There is an existing inequity of access for patients to obstetric clinical trials, depending on which site they are treated at.
- By working as a single service, patients could be recruited to research trials across the whole service. This could improve overall patient outcomes.

Evidence

- There is evidence that patient outcomes are improved if they are cared for in research active trusts, even after controlling for size and staffing level of Trusts (Ozdemir BA, Karthikesalingam A, Sinha S, Poloniecki JD, Hinchliffe RJ, Thompson MM, et al. (2015) Research Activity and the Association with Mortality. PLoS ONE 10(2): e0118253. doi:10.1371/journal.pone.0118253)

5.2 Increased research activity in Manchester

Description

- The single service would register as a single site for multi-centre clinical trials and research would be coordinated from a single office, leading to a reduction in research administration and improved efficiency in trial recruitment due to a larger pool of patients.
- This, in turn, would improve the research and training prestige of the service, further attracting clinical academics to Manchester.

Evidence

- Commercial (and non-commercial) trial organisers seek research sites with a streamlined, single point of access for administration, access to a large pool of patients, and trial coordination support (The Academy of Medical Sciences, 2011).
- Therefore, the single service model is more likely to be able to attract new research income from clinical trials than the status quo.

5.3 The single service model also makes it easier to translate research findings and innovative practices into the NHS

Description

- The single service model also makes it easier to translate research findings and innovative practices into the NHS, due to the use of single care pathways and protocols that can be rapidly updated and disseminated to reflect changes in the evidence.

6. Education and training

6.1 An opportunity for midwives to benefit from rotating through the service

Description

- By rotating through a larger variety of community and acute services, there is a potential benefit for practicing midwives to gain greater clinical exposure and build collaborative relations with teams across multiple sites, therefore continuing their professional development.

Evidence

- There is some evidence that inter-professional education can improve patient outcomes and collaboration between staff *(Reeves S, et al. Interprofessional education: effects on professional practice and healthcare outcomes (update). Cochrane Database of Systematic Reviews 2013, Issue 3. Art. No.: CD002213)*

Implementation considerations

A number of **key enablers** need to be in place in order for this service to work, including shared IT, common diagnostic requesting and reporting, and processes to allow midwives to work across the whole of the City. In addition, all CCGs would need to work together to commission the same standard of midwifery service across the whole City.

Changes to maternity services are inextricably linked to gynaecology, with some clinicians specialising in both, so the impact of this on rotas needs to be considered. Shared IT is absolutely crucial to enable for the single service to function, both across providers and into the community. A robust governance structure is needed to ensure consistent implementation of the shared pathways, and clear accountability for patients throughout the service.

If capacity management is to be implemented across sites, with low complexity patients being transferred according to capacity and patient choice, then an electronic patient flow management system would be needed.

Additional benefits from more radical models

There are some additional benefits from more radical models of maternity services – case studies are included in the appendix. Further differentiation of sites to create one high risk unit and two lower/medium risk units, with a shared team across them, could deliver the following additional benefits:

1. Quality of care

1.7 Pooling of activity allows for greater development of sub-specialisation

Description

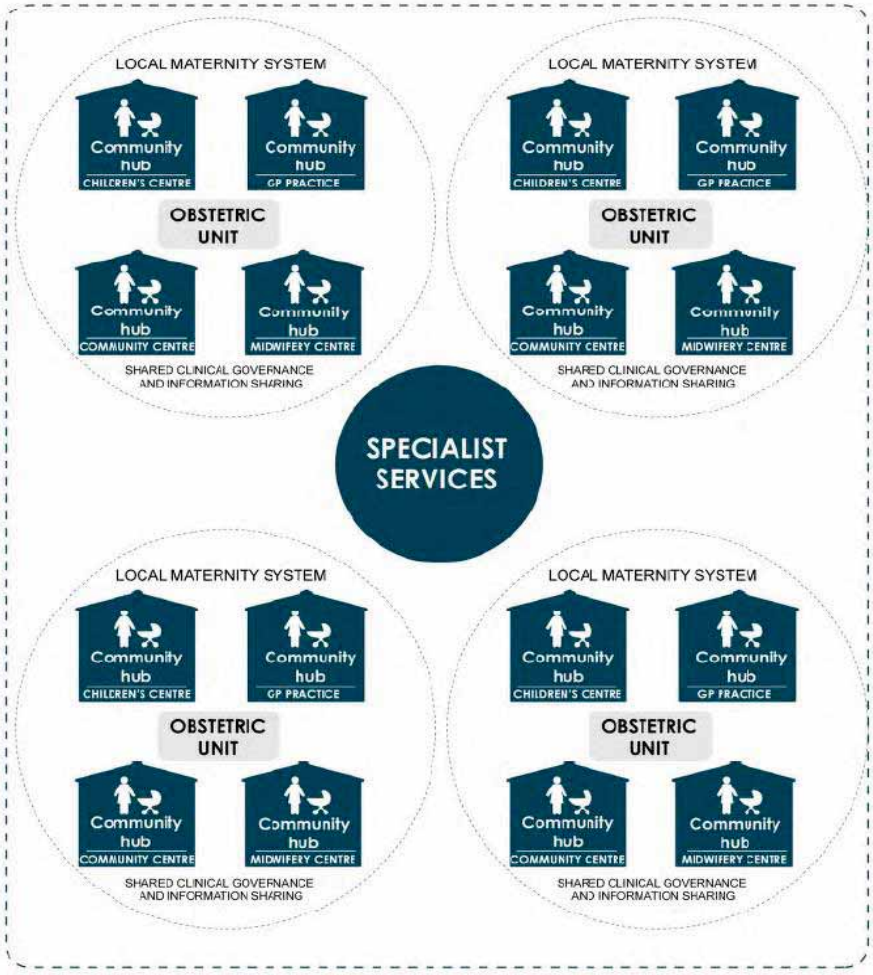
- Pooling sub-specialist activity on a single site could enable sufficient scales of activity and resources to develop world-class expertise.
- Patients with complex needs would then be transferred to the sub-specialist centre for care at the appropriate time.

Evidence

- 12 Maternity Clinical Networks already exist in the UK – see figure 2. The National Maternity Review (2016) suggests that:

  - "They will need to foster workforce co-ordination and training, to ensure that there is adequate clinical cover across all providers, and that resources can be shared across the system where necessary."
  - "To ensure that specialist services are available to women and babies with more complex needs, and that they receive consistently high quality treatment in centres with the right facilities and expertise, as close to their homes as possible."
- In Australia and Sweden, maternity units are tiered according to the services they provide with clear transfer agreements between the different units. There is no evidence to suggest a clear relationship between tiering and outcome data.
- The potential model of differentiating inpatient units may help to deliver the aims articulated in the National Maternity Review. However, the impact of these changes on patient choice and travel times needs to be considered.

Figure 2 – Maternity clinical networks



3. Workforce

3.2 More efficient use of existing workforce

Description

- A pooled team of staff could operate across differentiated units, with high risk and low risk sites. The high risk site would require a 24/7 consultant, but the low risk site would have a lower requirement on-call rota (for example, having a resident registrar (of the appropriate grade) with a consultant over the phone).
- Pooling staff and rotating them across all sites would mean that there would be less frequent on-call requirements. This would enable consultants to use more of their time to maintain their necessary skill mix and pursue research and teaching interests, whilst still covering their out-of-hours obligations.

High level estimate of cost saving

- ~5% reduction in staff costs = ~£0.5M

City of Manchester Single Hospital Service

Critical Care

Appendix XIII (a)

- **Single service model and benefits**
- Case studies
- Activity and audit data

Critical care: summary

Current model	▪ Individual services operating independently on 3 sites ▪ Shared clinical pathways from the Critical Care Network, but no incentive to implement these consistently across sites
Current challenges	▪ Sustainability of staffing 3 sites, with particular challenges at NMGH ▪ Lack of capacity at all sites – although there is an opportunity to improve this through better patient flows and reduction in delayed discharges ▪ Variation in quality of care ▪ Interdependency between decisions on other services and what then happens with Critical Care – there is a lack of clarity of the future configuration of dependent services
Proposed model	▪ Horizon 1: shared protocols with a unified audit process and shared ownership of performance data by all within the service, to encourage consistent implementation of pathways. Combined research agenda and joint procurement. ▪ Horizon 2: shared cover for rota gaps, shared transfer and retrieval arrangements, potential for sharing of nursing and medical staff across sites, specialist advice across all services via videoconferencing ▪ Horizon 3: differentiation of sites, with access to 24/7 sub-specialist advice and transfer arrangements across the whole service
Opportunities	▪ Reduced variation in the quality of care ▪ More efficient procurement ▪ Equity of access for patients to research, and greater research activity ▪ More flexible training opportunities for all staff
Implementation considerations	▪ Different cultures at organisations – could be overcome by improved transparency and joint training and working ▪ Lack of willingness of staff to work across multiple sites – could be overcome by familiarisation with other sites and standardised care protocols ▪ Shared IT is vital for a shared transfer and retrieval process to work

SOURCE: Clinical working group

Critical care: model

*Discussed but **not agreed** by the clinical working group*

Description	How this would work
Horizon 1 ▪ Shared clinical pathways and protocols	▪ Shared clinical protocols and pathways to reduce the variations in quality of care ▪ Sharing of best practice and learning (for example, a shared discharge protocol to limit the number of delayed discharges) ▪ Shared audit process with shared ownership of performance data by all within the service, to encourage consistent implementation of these pathways ▪ Shared research and education agenda ▪ Joint procurement for the whole service
 **Horizon 2** ▪ Shared clinical staff	▪ Create a pool of "bank" staff across the service that can be used to fill short-term rota gaps (rather than using locums) ▪ Shared transfer and retrieval process/team ▪ Potential for nursing staff to be shared across sites ▪ Potential to share staff to meet capacity requirements – if a patient cannot be transferred, additional beds could be opened at that site, and staff from other sites would move to provide appropriate cover
 **Horizon 3** ▪ Differentiated sites	▪ Differentiation of case mix across the sites, with shared transfer and retrieval arrangements of patients between sites as needed ▪ Development of sub-specialisation at the hub ▪ 24/7 access for the whole service to specialist advice ▪ Potential to consolidate to 2 sites, depending on the configuration of other services

SOURCE: Clinical input

Critical Care: impact

✓ Strong evidence ✓ Some evidence

Category	Impact	Evidence	
Quality of care	▪ Reduced variation in the quality of care for patients across sites because of use of shared pathways and protocols with shared audit of these (horizon 1)	▪ The ICNARC audit shows some variation in the performance of units ▪ There is evidence from a Cochrane Review that the use of shared pathways can improve patient outcomes by delivering consistently high quality care, and reduce length of stay	✓
	▪ Shared transfer and retrieval process across all sites ensures safe transfers for all patients (only relevant if sites became more differentiated which was **not** agreed)	▪ Evidence that single retrieval teams can safely transfer patients between sites, and that patient outcomes are not compromised (Intensive care society guidelines for the transport of critically ill patients)	✓
	▪ Differentiation of sites to maintain and develop sub-specialist care, as suggested in Model 3 (discussed by **not** agreed)	▪ There are some countries that recommend minimum ICU volumes based on the need to maintain staff expertise and cost efficiency (examples from Australia and the Netherlands)	✓
Patient experience	▪ Equity of access to the best expertise within the service		
Workforce	▪ Potential to create an internal "bank" of staff to fill vacancies		
	▪ Potential to share staff across sites, which could ease the pressures to staff 3 sites and improve the learning experience of the workforce (Model 2) ▪ Opportunity to maintain skill sets and pursue areas of clinical interest by further differentiation of sites (Model 3)	▪ Currently individual rotas support 60-220 nurses per site – together this would be ~400 pooled workforce ▪ There are currently insufficient staff to cover a 1 in 8 rota at each site at present – if sites were consolidated and rotas were shared, there would be enough staff to cover a joint rota, without the need for additional WTEs	✓
Financial and operational efficiency	▪ Improved processes and operational efficiency from shared learning around delayed discharges	▪ 0.2 to 3.3% of bed days are occupied by delayed discharges (of 24 hrs or more) across sites – therefore all sites could share learning to improve this ▪ There is evidence from a Cochrane Review that the use of shared pathways can reduce length of stay	✓
	▪ Single retrieval team across all sites (only relevant if sites became more differentiated which was **not** agreed)	▪ A single retrieval team is already in place for Trafford hospital so there would be minimum financial investment needed to extend it	✓
	▪ Joint procurement	▪ Joint procurement of consumables across the service could reduce costs, in line with recommendations from the Carter Review (Feb, 2016)	✓
	▪ Reduced locum spend (as above)		
	▪ Potential to share staff across differentiated sites (Model 3)	▪ As above	✓
Research and innovation	▪ Registering as a single research office would give all patients equal access to research trials and enable the service to attract more trials/funding	▪ Total current research activity is 23 clinical trials with an annual trial income of £366K – this varies across sites ▪ Commercial (and non-commercial) trial organisers seek research sites with a streamlined, single point of access for administration, access to a large pool of patients, and trial coordination support (The Academy of Medical Sciences, 2011)	✓
Education and training	▪ Opportunity for nursing staff to rotate across sites, gaining greater clinical exposure	▪ A survey of critical care rotation programmes for nursing staff in Newcastle reported improved clinical skills and experience, improved inter-departmental relations and heightened staff motivation *(Richards A, et al.)*	✓

SOURCE: Clinical working group

Critical care – impact summary

✓ *Discussed but **not agreed** by the clinical working group*

Category	Shared clinical pathways and protocols with unified governance	Seamless transfer pathways across the City	Shared transfer and retrieval service across sites	Potential to share nurses across sites	Joint procureme -nt	Internal 'bank' of staff to fill rota gaps	Shared research agenda and office	Potential to share all staff across sites	Potential to differentia -te sites[1]
Quality of care	✓	✓	✓	✓		✓	✓		✓
Patient experience	✓	✓	✓	✓		✓	✓	✓	
Workforce	✓	✓	✓	✓		✓	✓	✓	✓
Financial and operational efficiency	✓	✓	✓	✓	✓	✓	✓	✓	✓
Research and innovation	✓						✓		✓
Education and training	✓			✓			✓	✓	✓

1 For example, potential to go down to two sites with transfer and retrieval arrangements in place

SOURCE: Clinical working group

- Single service model and benefits
- **Case studies**
- Activity and audit data

Case Study: Critical care services in Victoria, Australia

Service line definition

- In Victoria ICUs are split in 3 levels:
  - 1. Provide immediate resuscitation and short term cardio-respiratory support (1 public hospital)[1]
  - 2. Provide a high standard of general intensive care, including complex multi-system life support (13 public hospitals)[1]
  - 3. Tertiary referral unit, providing comprehensive care including complex multi-system life support (9 public hospitals)[1]
- In addition, there are 13 Coronary Care Units (CCU) and 3 High Dependency Units (HDU)[1]

Service delivery model

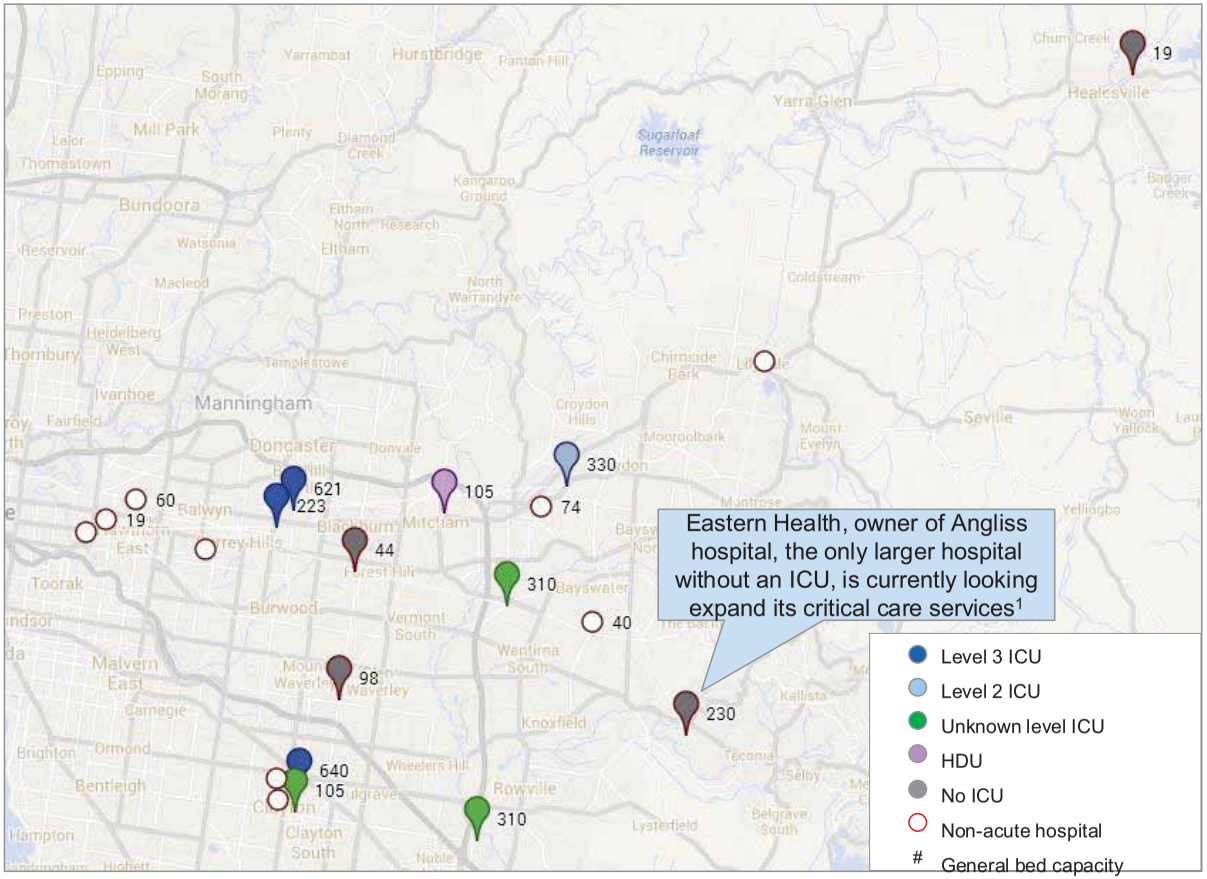
- Adult Retrieval Victoria (ARV) coordinates critical care in the state2
  - It is a single contact point for major trauma advice, adult critical care advice, critical care bed access, and retrieval of critical care adult patients statewide
  - They liaise closely with public and private hospital critical care units (ICU/HDU/CCU/ED) to facilitate access to critical care beds, and monitor the availability of critical care beds in the state to optimise the use of resources
- Critical care workforce shortages are being experienced across all jurisdictions and remain a major constraint to increasing ICU capacity3
- A service planning framework for the organisation and the distribution of intensive care services statewide has been recommended but not yet implemented3
- ICU configuration is similar to the NHS, with new models being tested
  - ICUs (level 2 and 3) require a Fellow of the College of Intensive Care Medicine as a director4
  - There are minimum staffing, size and volume requirements based on the level of the ICU4
  - Alternate models of care such as ICU Liaison Nurse (LN) and Medical Emergency Teams (MET) have been piloted, reviewed and are being extended3

Comparison to NHS

- As in England, most acute hospitals in Victoria provide critical care
- While different levels of patient acuity exist with regards to intensive care units in England, Victoria has a more clearly defined system of tiered care
- Standards are also set based on each tier
- A central coordination system and liaison services enable to operation of different tiers of care by creating a clear transfer and escalation network

SOURCE: 1. Critical Care services in Victoria, Victoria Department of Health; 2. Adult Retrieval Victoria; 3. Victoria's intensive care services - Future directions, Victoria Department of Health, 2009; 4. Minimum Standards For Intensive Care Units, College of Intensive Care Medicine

Almost all large acute hospitals in the Eastern Met region have some level of ICU



SOURCE: Critical Care Services in Victoria, Victoria Department of Health; hospital websites ; 1. Eastern Health 2022 - The Strategic Clinical Service Plan 2012–2022

Case Study: Critical care in Arkansas

Service line definition

- A Critical Care Unit is a section of the hospital where intensive care nursing, necessary monitoring and treatment equipment and supplies are provided to those patients who, in the opinion of the attending physician, require such specialized services
- Critical care beds in US hospitals are categorised by specialty and acuity. The main categories are adult medical/surgical, cardiac, paediatric, neonatal and burns. Acuity levels and requirements are set out in national clinical guidelines, for example those published by the Society for Critical Care Medicine, but these are not nationally mandated or monitored

Service delivery model

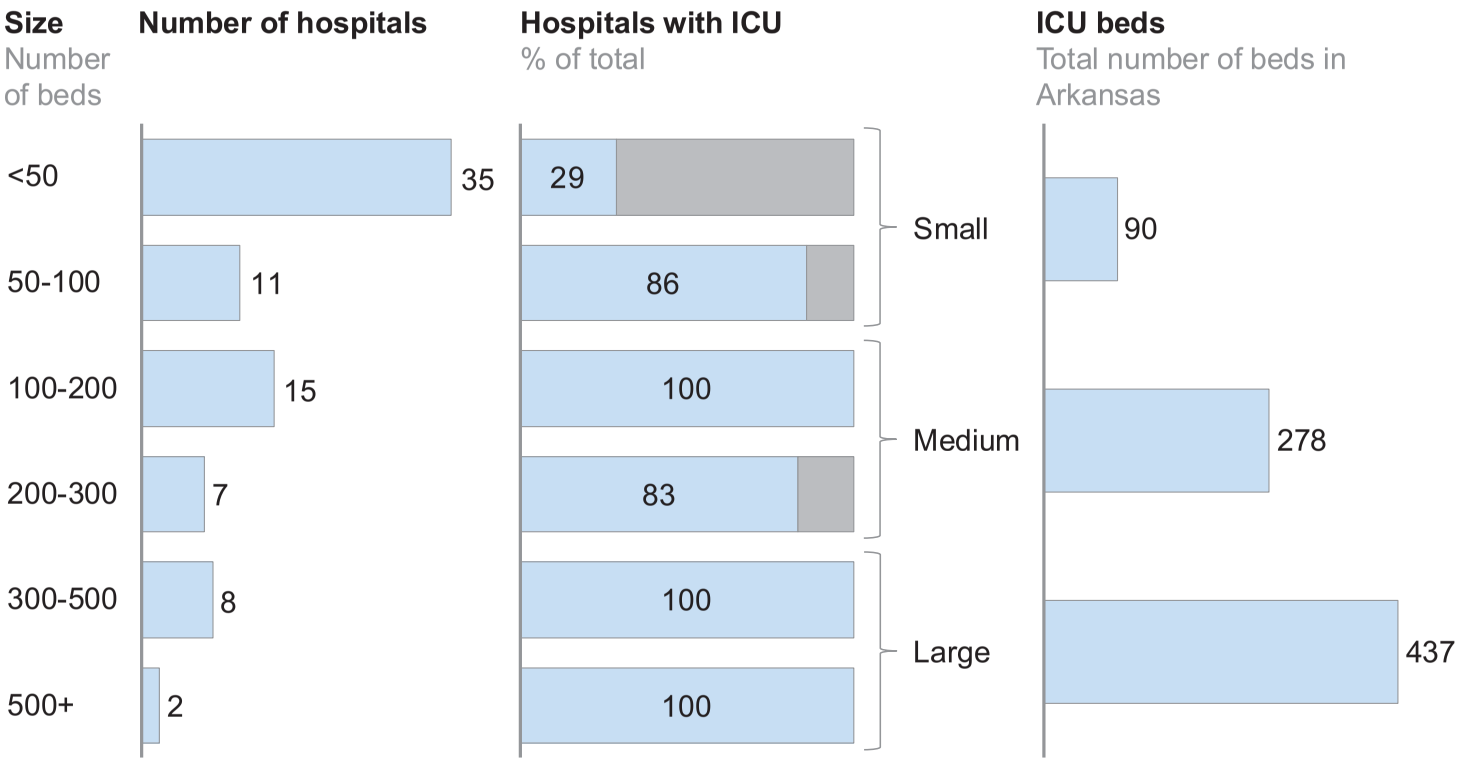
- Acute hospitals are required to provide facilities for higher-dependency care appropriate to the services that they provide. The level and scale of service provision is not centrally determined and accreditation requirements only set out the minimum level of nurse coverage that is required.
- Around half of all acute (medical/surgical) hospitals have dedicated Intensive Care beds
  - In general, dedicated ICU beds are not available at the smaller Critical Access hospitals
  - Patients requiring this level of care would be transferred to another hospital with the appropriate level of service provision
- Ten acute hospitals provide neonatal intensive care beds. Only the state tertiary children's hospital – Arkansas Children's Hospital – provides paediatric intensive care beds, serving the state population of 2.9 million.
- Recently, there has been a state-level effort to calibrate and coordinate neonatal intensive care services across the state, in order to standardize and, to some extent rationalize, the level of services available. This process is ongoing.
- Some hospital systems (private for-profit or not-for-profit chains) operate an e-ICU system whereby multiple sites are monitored and managed from a central location.

Comparison to NHS

- As there are many more smaller acute providers in Arkansas, as compared to the NHS, there are a larger proportion of sites that operate without on-site dedicated Intensive Care Units
- eICU is far more developed than in the NHS driven both by a number of factors including (but not limited to) a greater willingness to invest in technology, more hospital chains operating under a unified management, and more smaller sites and dispersed population centres

SOURCE: Rules and Regulations for Free-Standing Birthing Centers, and Rules and Regulations for Hospitals and Related Institutions in Arkansas 2007, Arkansas Department of Health; Expert interviews (conducted by external research team); AHA survey data 2013

While many small hospitals have ICU beds, the majority of beds are in larger hospitals



SOURCE: AHA Annual survey, 2013

eICU systems are supporting small, remote hospitals delivering critical care in Arkansas

Baptist Health's eICU

Baptist Health

- Baptist health is a health system which operates seven hospitals in Arkansas
- They have introduced eICU technology, which allows for critical care patient monitoring throughout the system at a central remote location
- The physicians and nurses staffed in the eICU control center act as additional support to monitor critically ill patients
- The eICU system currently includes two critical care units at BHMC-Little Rock and one at BHMC-North Little Rock, but will eventually cover the entire system

The technology

- The main system monitors vital signs, medications, blood test results, X-rays and other diagnostic information from bedside monitors and medical records
- In addition, special software enables the central team to monitor every critical care patient at once
- All the ICU rooms in the hospitals are equipped with cameras as well as microphones, to allow the central team to observe patients and interact with the local staff

Quality outcomes

- eICU are increasing quality by increasing intensivist coverage, where currently only 13% of patients in critical care is seen by an intensivist

SOURCE: Baptist Health, https://www.baptist-health.com/technology/eicu.aspx

- Single service model and benefits
- Case studies
- **Activity and audit data**

Critical care: current workforce and asset utilisation

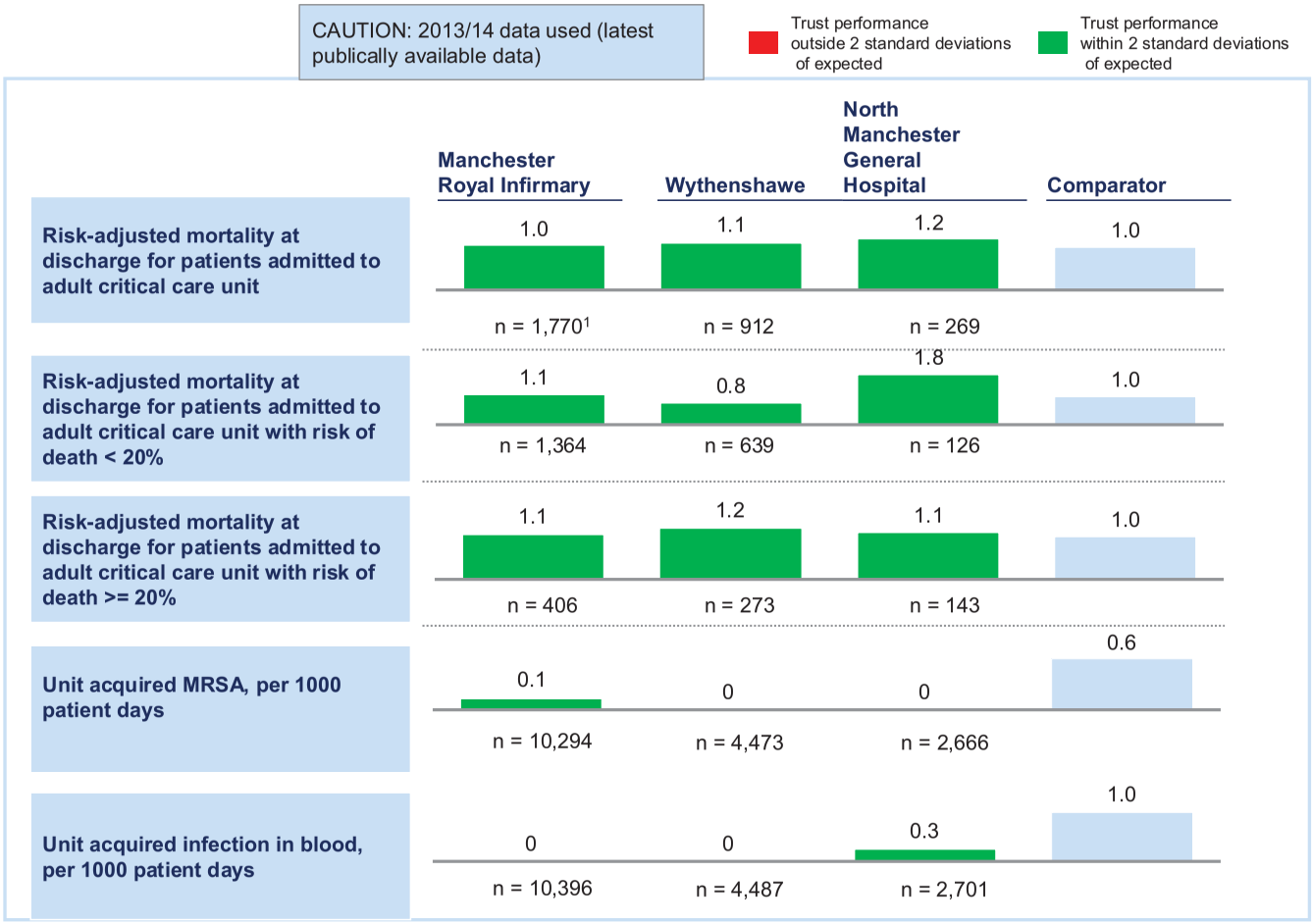
Medical WTEs, #	NMGH	UHSM	CMFT	Total
Consultants	5.5[4]	16	21	**42.5**
Junior doctors (all grades)[1]	24[2]	20	41	**85**
Ward nurses	63	120[4]	220[4]	**403**
Specialist nurses	0	5	0	**5**
				535.5

Utilisation of assets, #	NMGH	UHSM	CMFT	Total
Number of beds	12	17[3]	38	**67**
Average bed days per week	-	114	241	
Average length of stay	-	-	20	
Total number of L3 patients per year[4]	268	280	7-800	

1 Includes trust grade doctors
2 Includes anaesthetic WTEs;
3 As well as this, there are 2 burns ICU beds and 2 burns HDU beds
4 Data from Clinical Working Group

SOURCE: Trust data 14/15

Performance of critical care units (1/2)



1 n = total number of admissions to adult ICU/HDU/critical care

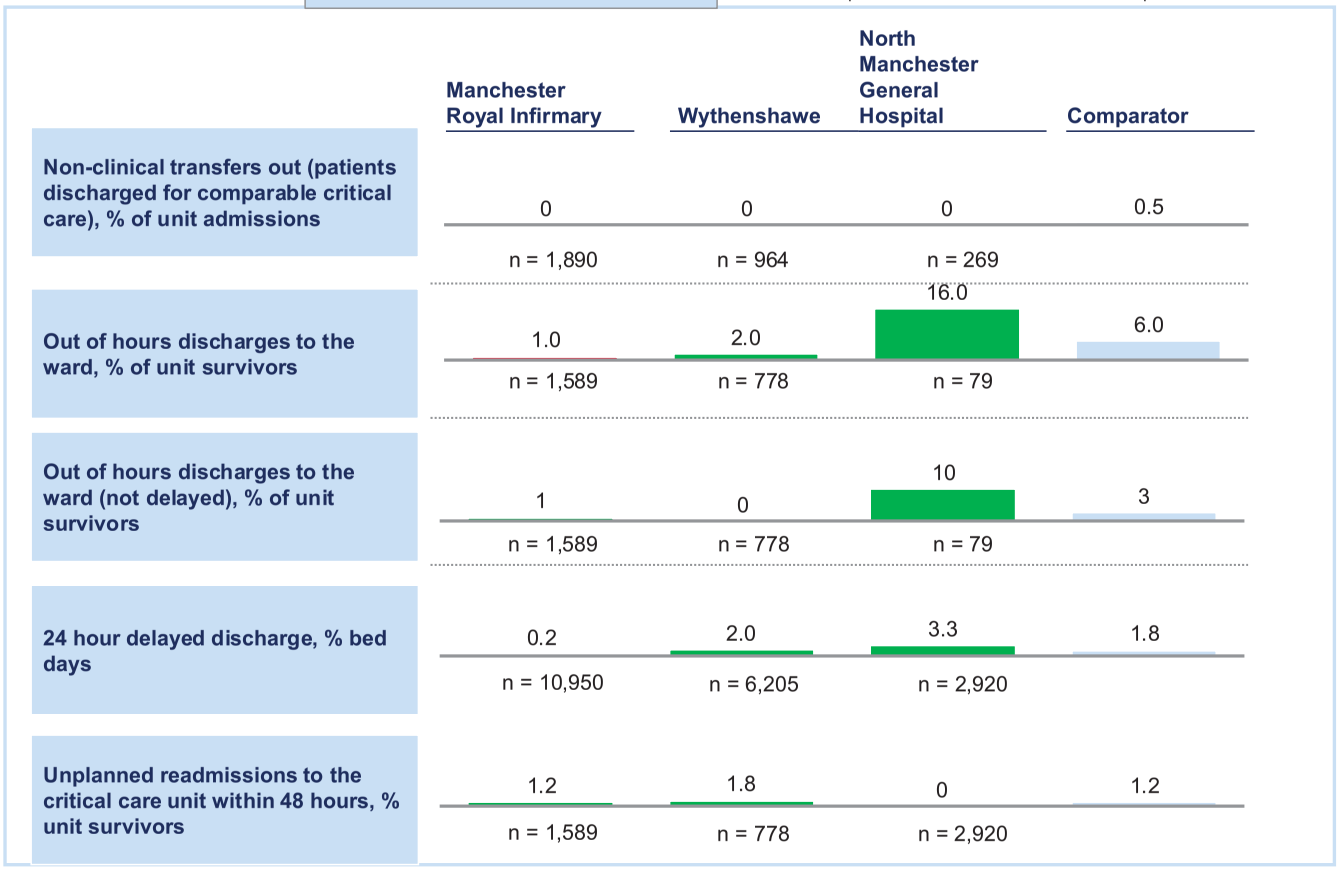
SOURCE: ICNARC Annual Quality Report 2013/14 for adult, general (ICU, ICU/HDU) critical care

Performance of critical care units (2/2)

CAUTION: 2013/14 data used (latest publically available data)

Trust performance outside 2 standard deviations of expected

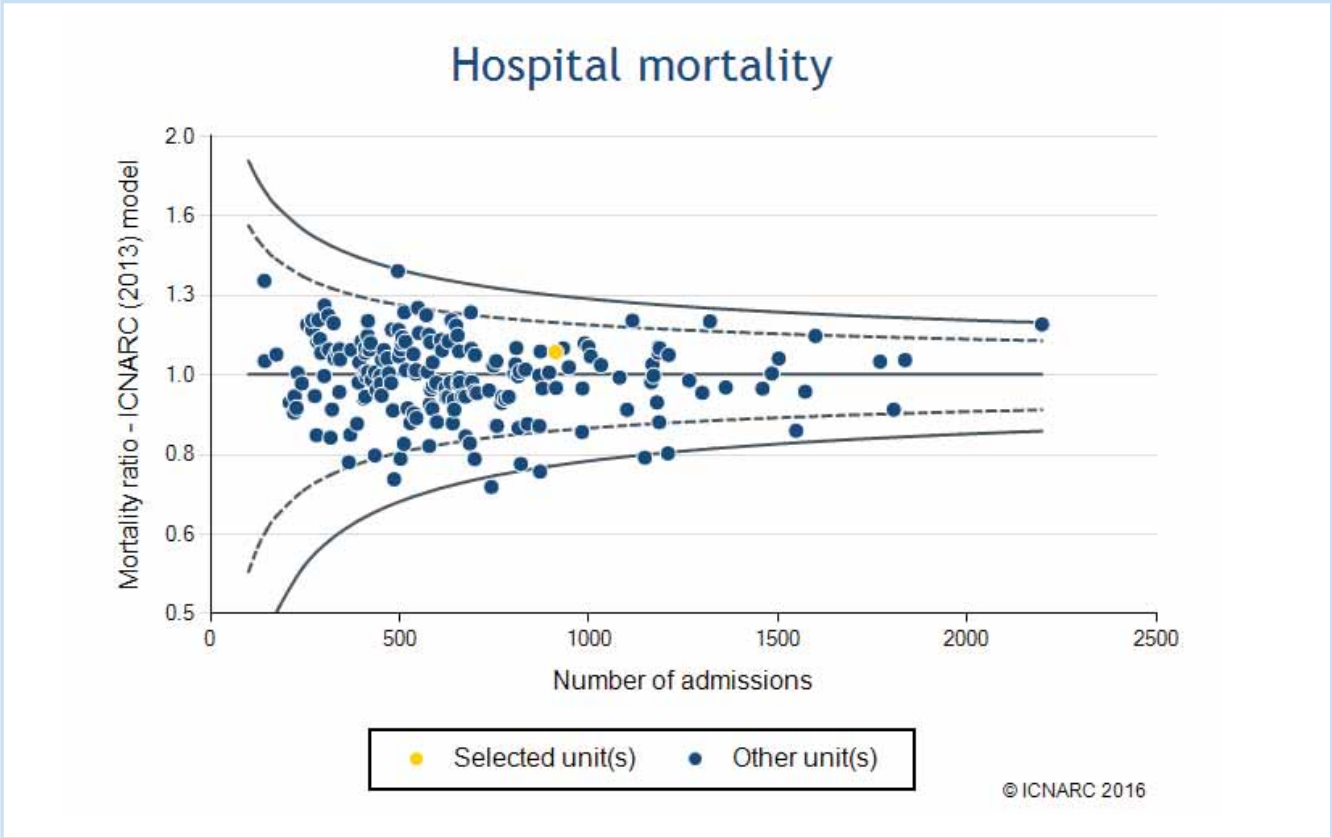
Trust performance within 2 standard deviations of expected



n = total number of admissions to adult ICU/HDU/critical care

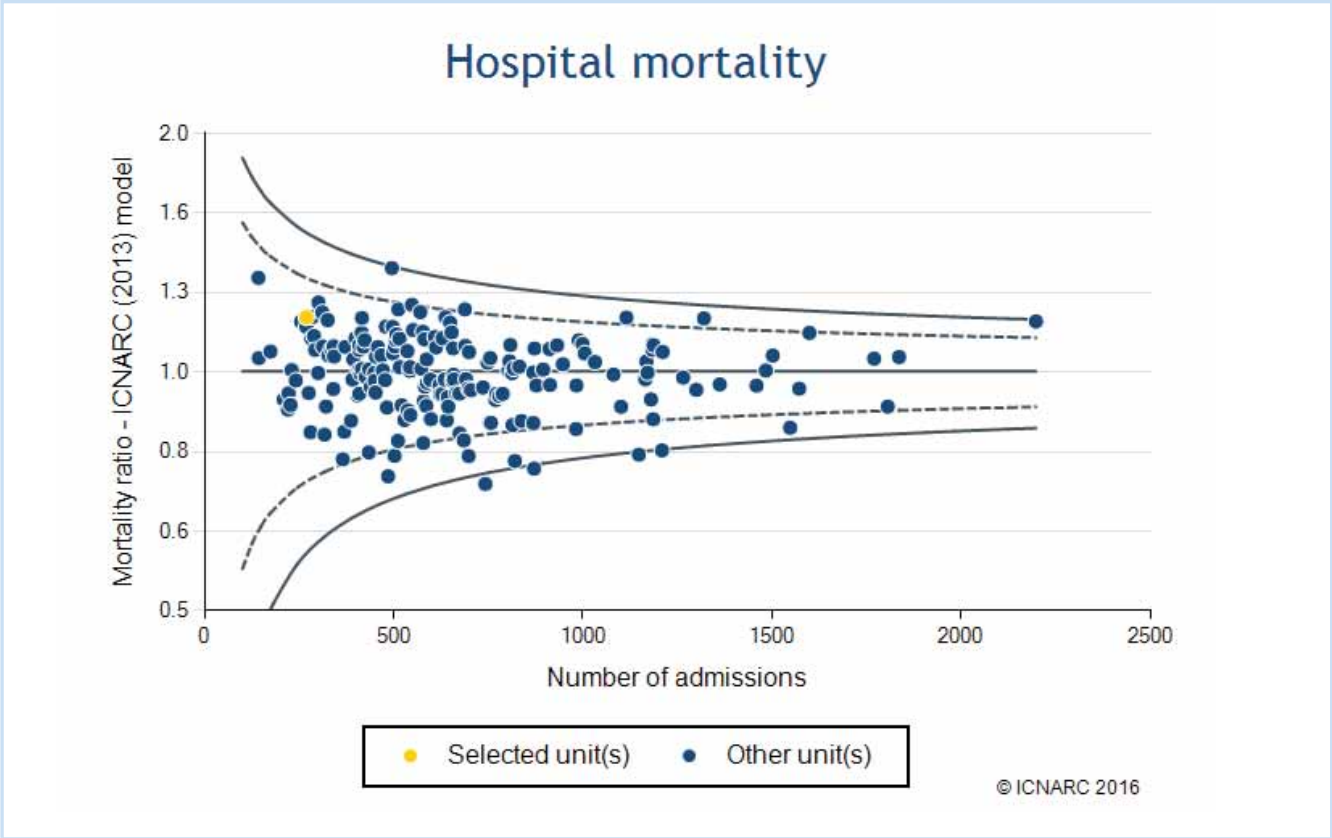
SOURCE: ICNARC Annual Quality Report 2013/14 for adult, general (ICU, ICU/HDU) critical care

Wythenshawe – detailed hospital mortality ratio



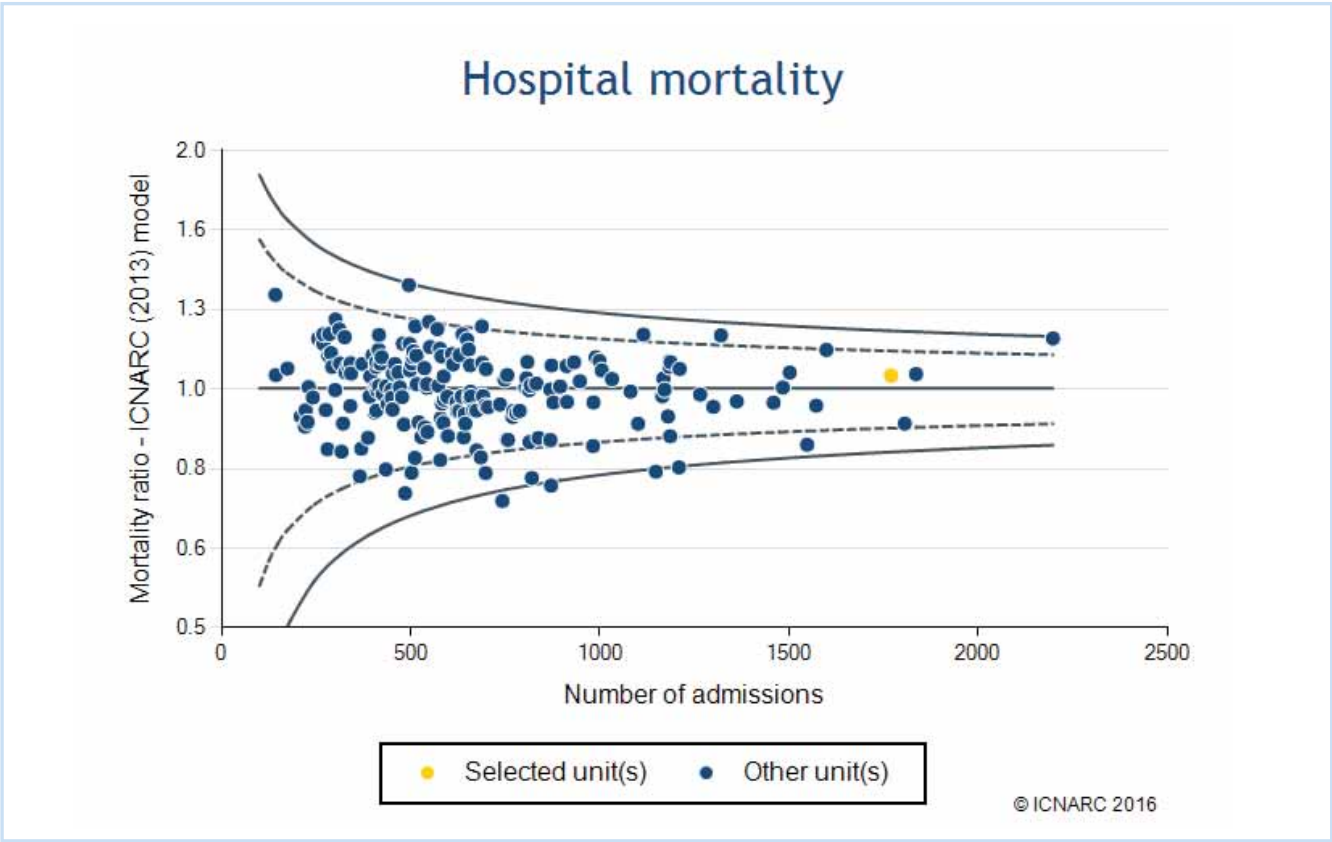
SOURCE: ICNARC Annual Quality Report 2013/14 for adult, general (ICU, ICU/HDU) critical care | 17

North Manchester – detailed hospital mortality ratio



SOURCE: ICNARC Annual Quality Report 2013/14 for adult, general (ICU, ICU/HDU) critical care

Manchester Royal Infirmary – detailed hospital mortality ratio



SOURCE: ICNARC Annual Quality Report 2013/14 for adult, general (ICU, ICU/HDU) critical care

CITY OF MANCHESTER SINGLE HOSPITAL SERVICE
SINGLE SERVICE MODELS – SUMMARY OF MODELS

Appendix XIII Critical care

Summary

Current model

- There are currently Level 2/3 critical care units at each of the three hospitals. The unit at North Manchester hospital is linked in with the other critical care units at Pennine Acute Hospitals Trust (PAHT)
- The other two critical care units operate independently

Current challenges

- The sustainability of staffing all three sites on a 24x7 basis is uncertain, especially for consultants
- NMGH is one of the smaller units across England with c300 admissions per year, while MRI is one of the biggest with c2,000 admissions per year.There is insufficient capacity at all sites to meet demand, with some sites landlocked and unable to physically expand

Proposed model

- Model 1: shared pathways/protocols
- Model 2: pooling staff to create a joint Bank to deal with staffing pressures (for doctors and nurses) and greater cross-site working for the nursing staff
- Model 3: differentiation of sites with two sites maintaining level 2/3 and third site with stabilisation and retrieval service (this option interdependent with configuration of other services, e.g. ID)

Opportunities for benefits

- Better able to cope with workforce and capacity challenges for example NMGH currently has 5.5 sustentative consultant WTE to run 24/7 rota

Implementation considerations

- Interdependencies of critical care with other specialties
- Cultural differences between sites
- Shared IT is crucial

Outline of the current model

Critical care services are currently provided at each of the three sites (UHSM, CMFT, NMGH). They are all Level 2/3 units. The units function independently with some collaboration already existing for use of highly expensive resources such as ECMO (extra corporeal membrane oxygenation), where patients are transferred between sites. There is a retrieval service for Trafford hospital, which is provided by CMFT. North Manchester site is closely linked with critical care across Pennine Acute Hospitals Trust.

Outline of current and future challenges

1. Quality of care

- **Current variations in the quality of care**
  - Whilst all units are performing in line with expectations set out by the ICNARC (Intensive Care National Audit & Research Centre) audit, NMGH is one of the smaller units across England (with c300 cases), while MRI is one of the biggest (with c2,000

cases). There is some evidence that above 200 intensively ventilated patients per year may lead to improved outcomes.
  - There is a Critical Care Network in place across Greater Manchester
  - Standardised care pathways and protocols already exist to a degree, from the Critical Care Network, but there is no strong incentive to implement these consistently across sites.
- **Absolute interdependency of critical care with other specialties**
  - A number of specialties require co-location with critical care, such as inpatient infectious diseases, some of the more complex acute medicine and more complex surgery.
  - Members of the CWG noted that the choice of the resulting model (1 to 3) is interdependent with decisions across other specialties.

2. Patient experience

- **Lack of smooth transfer arrangements across the City of Manchester**
  - The CWG described difficulties in sometimes repatriating patients who are transferred between sites for clinical reasons, such as for ECMO.

3. Workforce

- **There are staff shortages at some sites**
  - There is currently a difficulty recruiting staff, particularly at NMGH, where 5.5 consultants are in post for an establishment of 8 WTEs.
- **Sustainability of skilled staff at three separate units**
  - Ensuring sufficient skills and capabilities amongst existing staff was raised by the CWG as a potential future challenge because of the lower volumes and exposure to a more limited case mix

4. Financial and operational efficiency

- **Economy of scale**
  - Maintaining full complement of staff 24/7 for sites with small volumes is not financially efficient
- **Delayed discharges**
  - Three is an opportunity to reduce delayed discharges out of Critical Care across all sites (which, in turn, will create capacity needed for the service)

5. Research and innovation

- **Inequity of access for patients to clinical research trials**
  - The number of clinical trials varies across sites from 0 to 19, meaning that patients have a greater chance of being recruited to a study depending on which site they are cared for.

6. Education and training

- **Variations in clinical exposure**
  - Because practices are currently operating independently, there are limited opportunities for shared learning and continued education for trained staff.

The CWG (clinical working group) have proposed the following single service model for critical care

These descriptions encompass three models (horizons), with the notion that progression from model 1 to model 3 could happen over time. Model 1 is shared clinical pathways and protocols, model 2 is shared clinical staff and model 3 is a hub and spoke model.

*Discussed but **not agreed** by the clinical working group*

Description	How this would work
Horizon 1 ▪ Shared clinical pathways and protocols	▪ Shared clinical protocols and pathways to reduce the variations in quality of care ▪ Sharing of best practice and learning (for example, a shared discharge protocol to limit the number of delayed discharges) ▪ Shared audit process with shared ownership of performance data by all within the service, to encourage consistent implementation of these pathways ▪ Shared research and education agenda ▪ Joint procurement for the whole service
Horizon 2 ▪ Shared clinical staff	▪ Create a pool of "bank" staff across the service that can be used to fill short-term rota gaps (rather than using locums) ▪ Shared transfer and retrieval process/team ▪ Potential for nursing staff to be shared across sites ▪ Potential to share staff to meet capacity requirements – if a patient cannot be transferred, additional beds could be opened at that site, and staff from other sites would move to provide appropriate cover
Horizon 3 ▪ Differentiated sites	▪ Differentiation of case mix across the sites, with shared transfer and retrieval arrangements of patients between sites as needed ▪ Development of sub-specialisation at the hub ▪ 24/7 access for the whole service to specialist advice ▪ Potential to consolidate to 2 sites, depending on the configuration of other services

Description of potential impact of the single service model

Benefits

1. Quality of care

1.1 Reduced variation in the provision of care through shared pathways and protocols

Description

- Quality of care could be improved in model 1, through the use of shared clinical pathways and protocols.
- Shared audit and governance of these pathways, with joint accountability for performance data (such as summary hospital-level mortality indicator results) across the whole service, could encourage implementation of these pathways.
- One example of a shared pathway could be a shared outreach protocol to stop the deterioration of patients outside of critical care. Critical care doctors and nurses could outreach to the rest of the hospital to help to prevent avoidable admissions. This could be facilitated by a shared electronic monitoring system to enable proactive rather than reactive surveillance of patients. The possibility of creating an additional level of critical care between level 2 and ward based care was discussed. This would enable patients to be managed outside of critical care if appropriate.
- There are also opportunities to share best practice outside of formalised clinical pathways. One example of this is the opportunity for all sites to learn from each other's experiences with delayed discharges.

Evidence

- Sharing pathways such as electronic monitoring to detect early deterioration of patients could have a substantial impact on quality of care:
  - Patients monitored with the software 'Visensia' had a statistically significantly shorter average duration of any instability, shorter average duration of physiologically significant instability, and fewer episodes of serious and persistent instability. Using the software, abnormal physiological episodes developing into major events, such as cardiac arrest, could be predicted with a sensitivity of 63% and specificity of 52% (NICE guidelines: 'Visensia for early detection of deteriorating vital signs in adults in hospital' 2015).
  - Wireless monitors slipped under the mattress to monitor and alert nurses to changes in breathing and heart rate was linked to shorter lengths of stay (4.0 to 3.6 days), lower intensive care unit days (63.5 vs 120.1/1000 patients) and significantly lower rates of code blue events (6.3 to 0.9 per 1000 patients) (Brown, Harvey et al. 'Continuous Monitoring in an Inpatient Medical-Surgical Unit: A Controlled Clinical Trial', The American Journal of Medicine 2014).

1.2 Reduced variation in care by creating seamless transfer pathways across the City of Manchester

Description

- Unification of the referral pathways across the City would enable patients to be transferred directly to the appropriate specialist site, therefore reducing the delay in receiving specialist care and shortening their overall length of stay.
- For example, UHSM already has a retrieval service for all patients with acute severe respiratory failure who may need extracorporeal membrane oxygenation (ECMO). Rather than repatriating these patients to the referring hospital, a single service pathway could stipulate that they remain at USHM to benefit from access to the long-term ventilation and weaning unit and specialist respiratory team input on site.

Evidence

- There is evidence from a Cochrane Review that the use of shared pathways can reduce length of stay:
  - The review also found that 11 out of 15 studies showed significant reduction in length of stay for patients on pathway compared to usual care *(T Rotter et al., "Clinical pathways: effects on professional practice, patient outcomes, length of stay and hospital costs" Cochrane Database of Systematic Reviews 2010 7(3)*).

2. Patient experience

As outlined under Quality of Care benefits.

3. Workforce

3.1 Creation of an internal 'bank' of staff

Description

- Model 2 would help to reduce the amount of locum spend per site, by creating an internal 'bank' of staff that could be accessed for last minute vacancy requirements.
- However, whilst the cost saving benefits from reducing locum spend may be significant now, they may reduce considerably when the national cap on locum pay is introduced. There would, however, remain a benefit from covering rota gaps with staff who are familiar with the service and therefore more productive.

3.2 Potential to share staff across sites

Description

- Model 2 includes the potential to share nursing and medical staff across sites.
- This would enable better matching of demand and capacity, whereby staff could be moved to the sites where patients need to be treated. This does, however, create two challenges:
    1. Ensuring that staff are familiar with all sites to be able to deliver a consistently high standard of care
    2. Agreement from staff to work across sites, otherwise there would be a risk of loss of staff to non 'single hospital service' hospitals
- This enables staff to gain greater exposure to a variety of clinical cases, by rotating them across the whole service.

Evidence

- It was raised in the CWG that always practicing at one site can lead to staff feeling "stale" and less challenged professionally over time
- There is some evidence of the benefits of nursing rotations across critical care units:
    - A survey of critical care rotation programmes for nursing staff in Newcastle reported improved clinical skills and experience, improved inter-departmental relations and heightened staff motivation *(Richards A, et al. Critical care staff rotation: outcomes of a survey and pilot study (2003), Nursing in Critical Care, 8(2); 84-89).*

4. Financial and operational efficiency

4.1 Reduced locum spend

Description

- Creating an internal 'bank' of staff could reduce the amount that each site spends on locum staff
- There could also be a pay limit for agency staff to stop competition between sites from driving up costs.

High level estimate of cost saving

- Unquantified at present

4.2 Reduced length of stay from shared pathways

Description

- Variations in length of stay, and the number of delayed discharges, may be reduced by using shared pathways and protocols across all sites
- There could also be an outreach protocol to prevent avoidable deterioration of patients outside of critical care, and reduce unnecessary admissions. This provides financial savings because patients require the highest intensity care for less time.

High level estimate of cost saving

- ~2% reduction in average length of stay = £0.6M

4.3 Reduction in cost of consumables through shared procurement

Description

- Joint procurement of consumables across the service could reduce costs, in line with recommendations from the Carter Review (Feb, 2016).
- Some large scale purchases that have been recently made may limit these opportunities in the short term, but there is still scope for additional savings from smaller, high volume items.

High level estimate of cost saving

- ~10% reduction in the cost of consumables = ~£1M

5. Research and innovation

5.1 Equity of access for all patients to research

Description

- There is an existing inequity of access for patients to critical care clinical trials, depending on which site they are treated at.
- By working as a single service, patients could be recruited to research trials across the whole service. This could improve overall patient outcomes.

5.2 Increased research activity in Manchester

Description

- Research would be coordinated from a single office in the single service model, leading to a reduction in research administration and improved efficiency in trial recruitment due to a larger pool of patients.
- This, in turn, would provide greater opportunities for staff to pursue research interests, helping to attract more clinical academics to Manchester, and retaining existing staff within the service.

Evidence

- Commercial (and non-commercial) trial organisers seek research sites with a streamlined, single point of access for administration, access to a large pool of patients, and trial coordination support (The Academy of Medical Sciences, 2011).
- Therefore, the single service model is more likely to be able to attract new research income from clinical trials than the status quo.

5.3 The single service model also makes it easier to translate research findings and innovative practices into the NHS

Description

- The single service model also makes it easier to translate research findings and innovative practices into the NHS, due to the use of single care pathways and protocols that can be rapidly updated and disseminated to reflect changes in the evidence.

6. Education and training

As outlined under Workforce benefits (sections 3.2 and 3.3).

<u>Implementation considerations</u>

The CWG felt that the likelihood of getting to Model 3 largely depended on the outcomes of reconfigurations across the City for other co-dependent specialties.

Patient access to critical care is unaffected in Models 1 and 2 but could potentially be impacted in Model 3, as patients with complex needs would be cared for at the appropriate sub-specialist site, which may require them to travel further than before. This is arguably offset by the fact that they access more specialized, higher quality, care when they arrive. A retrieval service would need to be implemented to support this model and additional capacity at the accepting site would be needed.

There is some evidence that transfers by a dedicated retrieval service (which is already in place for CMFT and Trafford hospitals) improves patient outcomes compared to a non-specialist transfer team. There are also logistical advantages of having a dedicated transport

team in place for critically ill patient transfers *(Guidelines for the transport of the critically ill adult (2011), Intensive Care Society).*

Sharing staff in Model 2 was felt to be difficult due to the geography of the City, and the fact that cohesive local teams who knew each other well were crucial to the delivery of the highest quality care. There are also cultural differences between sites, which may hinder collaborative working as a single service, and the risk of loss of staff to non 'single hospital service' hospitals if they are unwilling to work across sites. However, some of these challenges could be overcome with improved transparency, shared working and training, and improved familiarisation between sites.

A number of **key enablers** need to be in place according to which Model is implemented. In all Models, shared governance over the development and implementation of clinical pathways and protocols needs to be robust. There also needs to be acceptance and ownership of shared performance measures (such as SHMI) across sites. In Model 2, in addition to shared governance, there need to be processes for some staff to work cross site. In Model 3, in addition to the enablers in Models 1 and 2, shared IT, robust transport systems and shared diagnostics are also required.

Additional benefits from more radical models

There are additional benefits from more radical models of critical care services, such differentiating sites as suggested in Model 3 – example case studies are included in the appendix. It was noted that the future configuration of critical services, including any reduction in the number of sites hosting critical care, depended heavily on the future configuration of other service lines. Further differentiation of sites, with a shared team across them, could deliver the following additional benefits:

1. Quality of care

1.3 Differentiation of sites to maintain and develop sub-specialist care, as suggested in Model 3

Description

- There is some rationale for further differentiation of sites, possibly from 3 to 2 sites, in order to provide sufficient volumes of patients to enable staff to maintain their skill mix and expertise.
- This could also create new opportunities for further sub-specialisation, by pooling sufficient patient populations with the necessary resources and co-dependent specialties to allow expertise to develop (in the same way that the cardiothoracic and burns critical care units have already developed at UHSM).
- Staff would be able to rotate across sites to gain exposure to different sub-specialties and ensure that clinical competencies were maintained.
- The whole service would then benefit by having equity of access to 24/7 sub-specialist advice, with shared transfer and retrieval arrangements for patients who needed to be admitted to particular sites according to the sub-specialisms available there.

Evidence

- There are some countries that recommend minimum ICU volumes based on the need to maintain staff expertise and cost efficiency:
    - Australia has a minimum standard of 8 level 3 ICU beds and 200 level 2 mechanically ventilated patients per year *(Minimum standards for ICU, College of Intensive Medicine of Australia and New Zealand, 2011).*

  - The Netherlands have a minimum standard of 12 level 2/3 ICU beds and 1,500 ventilation days for level 3 patients per year *(Nederlandse Vereniging voor Anesthesiologie – Richtlijn Organisation en werkwijze op intensive care-afdelingen voor volwassenen in Nederland, 2006)*
- There is already a mandate for certain types of sub-specialised critical care (such as ECMO, burns units, cardiothoracic surgery critical care) to be provided in specialised units instead of general critical care units, with more intensive staffing and resource requirements *(Guidelines for the Provision of Intensive Care Services, 2015).*

3. Workforce

3.3 Opportunity to maintain skill sets and pursue areas of clinical interest by further differentiation of sites

Description

- Model 3 helps staff to retain their skills and expertise by differentiating sites into sub-specialist units.
- This could also help to attract and retain staff within the service by offering opportunities for clinicians to pursue areas of specialist interest.
- There are currently insufficient staff to cover a 1 in 8 rota at each site at present – if sites were consolidated and rotas were shared, there would be enough staff to cover a joint rota, without the need for additional WTEs.

High level estimate of cost saving

- ~12% reduction in staff costs = £0.7M

City of Manchester Single Hospital Service

Paediatric medicine

Appendix XIV (a)

- **Single service model and benefits**
- Case studies
- Activity and audit data

Secondary paediatrics: summary

Current model	▪ Individual services operating independently on separate sites ▪ Tertiary care provided by Royal Manchester Children's Hospital
Current challenges	▪ Recruitment/retention of doctors and nurses (loss of highly skilled nursing staff) ▪ Different clinical care pathways leads to variations in the quality of care ▪ Some capacity constraints – depends on time of year and on protocols for admission to wards/HDU ▪ High levels of children presenting to A&E and variable and high numbers of non-elective admissions for ambulatory care sensitive conditions
Proposed model	▪ Step change in primary care with children's services provided in hubs (open til late, 7 days a week) by skilled up GPs with support from paediatricians[1] ▪ Single governance structure, single management structure, including community & CAMHS, with common pathways and protocols – able to direct to most appropriate service ▪ Cross cover arrangements across sites with pooled staff e.g. SpR cover, shared radiology support ▪ Shared education and training for staff ▪ Potential to differentiate services by site was discussed but not agreed
Opportunities	▪ Reduced hospital activity (elective and emergency)[1] ▪ Reduce variation of care with common protocols and easier referral to specialists ▪ Improve recruitment and retention of specialist staff ▪ Some potential to manage the flow of patients towards sites with the most available capacity – and to share staff to manage vacancies/shortages more effectively
Implementation considerations	▪ Need shared IT systems ▪ Neonatal services are co-dependent with paediatrics (rotas are shared for clinicians)

1 Draw on lessons from SE London where acutes have supported major redesign of primary care services for children with step change reduction in referral rates and emergency attendances and admissions

SOURCE: Clinical working group

Secondary paediatrics: model

*Discussed but **not agreed** by the clinical working group*

Description	How this would work
Shared clinical protocols and pathways[1]	▪ Standardised clinical protocols implemented at all sites to reduce the current variations in quality of care and promote best practice ▪ Shared pathways throughout the service - for example, shared guidelines for outpatient referrals to ensure children are directed to the appropriate service immediately ▪ Shared governance over these pathways and protocols ▪ Upskilling of nursing colleagues throughout the service to enable transfer of care from paediatricians to advanced nurse practitioner colleagues ▪ Links with community care are strengthened, including upskilling of GPs (creation of primary care hubs with GPs with a special interest in paediatrics, supported by a paediatric community nursing team), so that admissions can be avoided and care can be transferred out of hospital when appropriate ▪ Opportunities for service improvement initiatives across all 3 services
Shared clinical staff and shared patients across sites	▪ Single governance structure with single management team ▪ Potential to include paediatric community services (medical and community nursing) in the single governance structure ▪ Some potential to manage the flow of patients towards sites with the most available capacity ▪ The potential for sharing rotas/staff across sites was discussed – particularly in relation to how each workforce could meet the requirements for a 24/7 rota and sharing staff to address vacancies/particular staffing problems at different sites ▪ Potential for a shared radiology reporting service, starting with reporting of emergency CT scans
Differentiated sites	▪ Potential to differentiate services by site e.g. fewer “low complexity” children at RMCH ▪ A potential model could be 1 inpatient unit with 2 paediatric assessment units, staffed by a joint team

SOURCE: Clinical working group

Secondary paediatrics: impact

✓ Strong evidence ✓ Some evidence

Category	Impact	Evidence	
Quality of care	▪ Reduced variation in the quality of care using shared pathways ▪ Shared referral pathways to enable children to be rapidly directed to the most appropriate specialist service	▪ Quality of neonatal and paediatric diabetes care vary across sites, according to national audit data ▪ Evidence from a Cochrane Review that use of shared pathways can improve patient outcomes by reducing the variation in care, and reduce length of stay ▪ Description from the CWG that the use of High Flow oxygen therapy for respiratory distress varies across sites (at some site, it is administered on the ward whereas in others it is administered in HDU. If all sites could implement the same clinical protocol for High Flow oxygen, then the pressure on HDU capacity could be eased)	✓
	▪ Reduced NEL admissions and A&E attendance due to proactive care in the community through upskilling and reorganisation of community care into 'hubs' (**also under finance and operational efficiency)**	▪ Variation across sites in rates of admission, average length of stay and consultant presence ▪ The British Association for Community Child Health (BACCH) supports integration across the whole pathway ▪ There are examples of successful integration of children's services from across the UK (Imperial Child Health Hubs, Homerton Hospital)	✓
Patient experience	▪ More coordinated care due to shared IT, and shorter waiting times from use of a shared patient flow system so that patients are directed to the site with the most available capacity		
Workforce	▪ Greater ability to support 24/7 access and primary and community care by sharing workload across bigger group of staff – *this was discussed but not agreed by the clinical working group*	▪ Currently individual rotas are too small (9 to 11 WTE consultants) - together there would be 30.74 WTE consultants to cover 24/7 emergency access. *Note that this would have a significant impact on neonatal rotas as consultants in North and South Manchester cover both* ▪ One team could reduce competition for staff between sites and create more career development and training opportunities	✓
	▪ Greater ability to recruit/train and retain Advanced Paediatric Nurse Practitioners (APNPs). ▪ Transfer of activity to APNPs.	▪ Recognition from the Royal College of GPs Commissioning a Good Child Health Service guidelines (2013) of the importance of the advanced nurse practitioner role	✓
Financial and operational efficiency	▪ Reduced NEL admissions due to proactive care in the community through upskilling primary care and enhanced access to advice	▪ Case study of the impact on admissions of integrated paediatric care – Imperial Child Health Hub Case Study	✓
	▪ Reduced follow-up rates due to standardised pathways	▪ First to FU ratio could reduce from 1.3 (weighted average across all sites) to 0.99 (average of the top quartile UK Trusts)	✓
	▪ Greater ability to support 24/7 access and primary and community care by sharing workload across bigger group of staff (see also under workforce)	▪ As above	✓
	▪ Reduced average length of stay from shared protocols and pathways	▪ There are variations in the case mix adjusted average length of stay across sites. If the same standard of care could be achieved across all sites, this would be equivalent to an 11% reduction in the average length of stay = ~ £1M	✓
Research and innovation	▪ No significant benefits identified		
Education & training	▪ Rotational posts for the whole workforce could improve clinical exposure and offer new career development opportunities	▪ There is some evidence that inter-professional education can improve patient outcomes and collaboration between staff *(Reeves S, et al)*	✓

SOURCE: Clinical working group

Secondary paediatrics – impact summary

*Discussed but **not agreed** by the clinical working group*

Category	Shared clinical pathways and protocols	Shared outpatient referral pathways	Shared protocols for transfers between sites	Potential to redirect patients according to capacity	Integrated care with communit-y to reduce avoidable admissio-ns	Potential for shared governan-ce with communit-y paediatric teams	Shared recruitme-nt and training of ANPs[1]	Rotations across sites for all trainees	Shared quality improvem-ent projects	Potential for differentia-tion of sites with one team
Quality of care	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Patient experience	✓	✓	✓	✓	✓	✓	✓		✓	✓
Workforce	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Financial and operational efficiency	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Research and innovation	✓				✓	✓			✓	✓
Education and training	✓				✓	✓	✓	✓	✓	✓

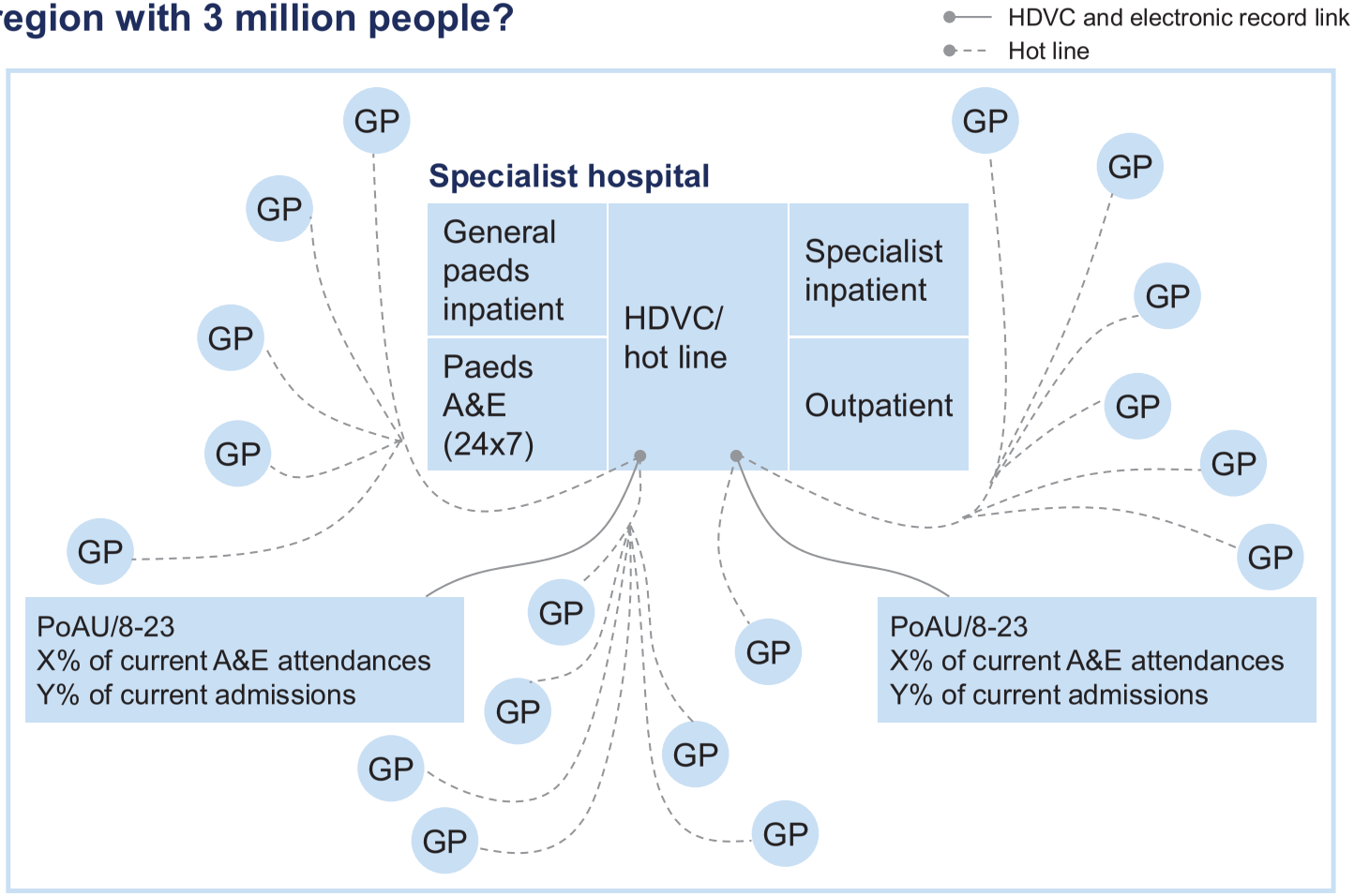
1 Advanced Nurse Practitioners

SOURCE: Clinical working group

- Single service model and benefits
- **Case studies**
- Activity and audit data

What could the future for paediatric care look like for a region with 3 million people?

ILLUSTRATIVE



Case Study: An integrated Child Care Hub in West London

CASE STUDY

Service delivery model

Care for ~ 4000 patients is arranged in Child Care Hubs of 2-3 GP practices, supported by paediatric consultants from St Mary's Hospital, who provide **outreach** clinics and MDT case conferences in the community, and 24 hour phone and email advice "**hot lines**" for GPs. To be part of the hub, all practices must agree to provide their patients with same-day **open access** to paediatric advice.The service has been **co-designed with patients** to ensure that their needs are being met.

- All the hubs adopt these 3 main principles:
  - Specialist **outreach**
  - **Open access** for all patients with "**hot lines**" for GPs to specialists
  - **Co-design** of services with **patients**

Pre-pilot results showed:

- **112 fewer outpatient referrals** from GPs
- A 'did not attend **(DNA)' rate of <2%** for outreach clinics at the hub, compared to 14-25% in hospital outpatients
- **3-5 week shorter waiting time** to be seen in an outreach clinic compared to hospital outpatients
- Some evidence of a **reduction in asthma emergency admissions**, attributed to the 'Itchy, Sneezy, Wheezy' self-management programme
- **94%** of parents preferred being seen in community hubs than at a hospital
- To **break even** over a two-year period, the hub would need to reduce paediatric outpatient referrals by 20 per cent, A&E attendances by 10 per cent and admissions by 2 per cent – figures that interviewees say are eminently achievable.

Comparison to Manchester

- Care for large paediatric populations is delivered jointly by acute and primary care physicians
- This whole-population approach means that issues such as **access to care** can be tackled together
  - GPs have access to specialist advice
  - Patients have same day access to GPs
- This is different to the current set-up in Manchester, where there is little integration between primary and acute care

SOURCE: Imperial Child Health Hub Case Study – The King's Fund

Case study: Paediatric Assessment and Decisions Area (PANDA) at Salford

CASE STUDY

Service delivery model

(PANDA) manages ~ 20,000 acutely ill or injured children annually, with the most common admissions being due to respiratory problems. Salford Royal FT is a teaching hospital with a major trauma centre serving both adults and children; however the Trust has **no inpatient children's services**.

Service design

- In response to local population health care needs, a children's observation and assessment unit was developed to manage acutely ill children
- PANDA Unit is consultant led, and operates for **24 hours providing dedicated emergency and short stay care for patients < 16 yrs**
- Gate-keeping Paediatric and Emergency Medicine Consultants triage patients to the most appropriate setting of care
- Staffing model works to support care in the community, and includes a) Integrated Children's Community Nurses, b) Advanced Nurse Practitioners and a c) rapid referral services

Impact

- Unit delivers **early supported discharge** by providing a dedicated team of Children's Community Nursing staff that support integrated care between Panda and primary care services
- **85%** of children are seen and treated within the four hour emergency care standard.
- **<13% of children with acute illness or injury will be admitted to an observation bed on PANDA**
- There has also been a reduction from **16% to 2%** of children being **admitted** from an emergency department to paediatric inpatient bed
- **ALOS on the PANDA unit ~ 11 hours.**

Comparison to Manchester

- Care for large paediatric populations is delivered predominantly through a paediatric assessment and decision unit, rather than an inpatient ward
- Consultant paediatricians triage patients to the most appropriate care setting
- Integrated MDT helps to transfer care to community
  - Community nurses
  - Raid referral services
- This is different to the current set-up in the City of Manchester, where there are no paediatric assessment and decision units

SOURCE: Royal College of Nursing report 2014 - Specialist and advanced children's and young people's nursing practice in contemporary health care: guidance for nurses and commissioners, Salford Royal Trust newsletter 2009

Case Study: Inpatient paediatrics in Ontario

Service line definition

- The general age limit in use to define paediatric care is up to 18 years but there is no absolute standard and age cut-offs vary by service or provider
- The electronic Child Health Record captures full medical information up to age 19

Service delivery model

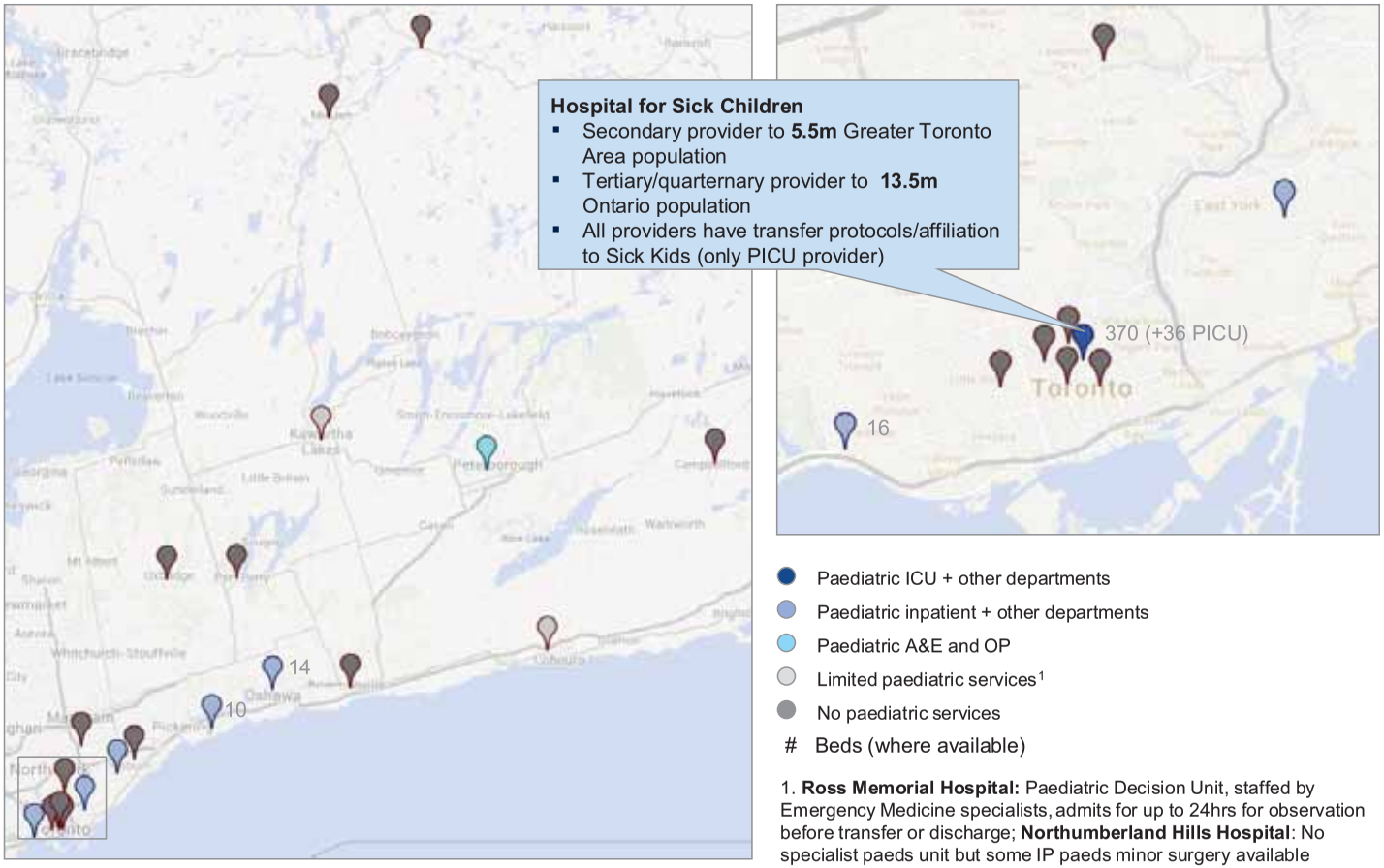
- Primary and out-of-hospital care is provided by Family Practitioners and Primary Care Paediatricians
  - Some of these are organised into multi-specialty polyclinics (e.g. with diagnostics and a wide range of outpatient specialists available at a single community site)
  - Geographic distribution of paediatricians is uneven and higher rates of child A&E attendances have been observed in areas with lower local availability of primary care paediatricians
- Children's Treatment Centres provide a range of out-of-hospital services
  - including speech/language therapy, physiotherapy, audiology, weight management clinics, family and social support, and some outpatient clinics but do not provide primary care or inpatient admissions
- Inpatient care is provided by a limited number of acute hospitals
  - Most specialist secondary/tertiary care is provided at specialist hospitals such as The Hospital for Sick Children in Toronto
  - Most providers (acute hospitals, Children's Treatment Centres and primary care providers) are connected via a single integrated electronic Child Health Record, called the eChild Health Network which captures the full medical history and covers ~80% of Ontario children

Comparison to NHS

- Inpatient paediatric care is far more centralised in Ontario compared to the NHS
- Specialist providers deliver secondary and tertiary, emergency and elective, service to a large catchment population. This is unlike the NHS, where specialist centres tend to serve a more limited population for secondary care, with larger catchments only for tertiary services
- Unlike the NHS, paediatric services (primary, secondary, tertiary, as well as some social services) are connected via a single integrated patient record

SOURCES: Electronic Child Health Network website; Ontario Ministry of Finance; Ontario Ministry of Health and Long Term Care; Guttmann A et al, Primary care physician supply and children's health care use, access and outcomes: findings from Canada, Pediatrics, 2010, 125, 1119-1126

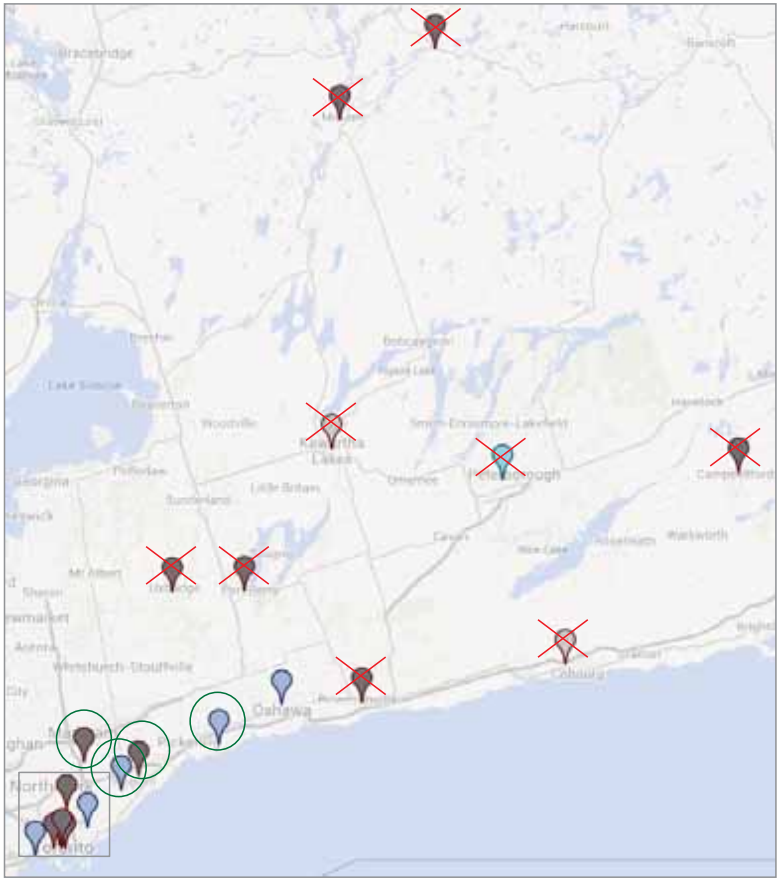
Inpatient paediatric care is highly centralised around a single secondary/tertiary hospital serving a 6-14 million catchment population

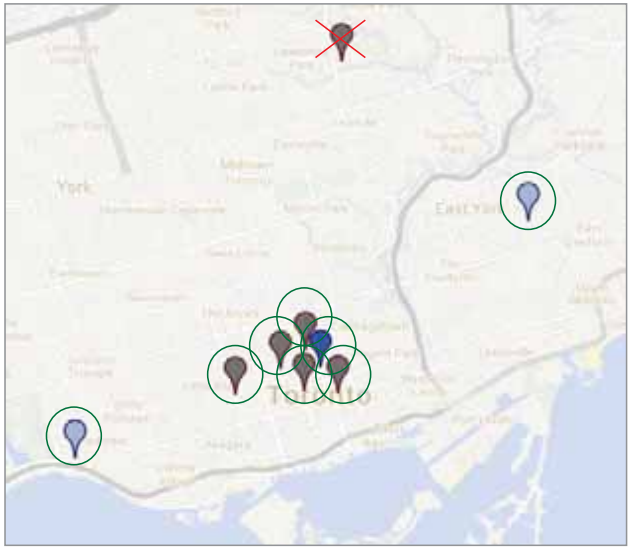


1. **Ross Memorial Hospital:** Paediatric Decision Unit, staffed by Emergency Medicine specialists, admits for up to 24hrs for observation before transfer or discharge; **Northumberland Hills Hospital**: No specialist paeds unit but some IP paeds minor surgery available

SOURCE: Central Toronto LHIN; Central East LHIN; hospital websites and Annual Reports

The eChild Health Network connects most providers of paediatric care via a single integrated electronic health record system





- Ontario has a single, integrated electronic Child Health Record used by most providers across all settings of care that offer paediatric services. Roll-out is voluntary and ongoing with continued efforts to reach non-participating providers
- The eChild Health Network was created to improve Safeguarding/Protection but is increasingly used to improve medical care quality

◯ Connected to the Child Health Network
✕ Not connected

SOURCE: Central Toronto LHIN; Central East LHIN; hospital websites and Annual Reports

Case Study: Inpatient paediatrics in Sweden

Service line definition

- Paediatrics in Sweden is concerned with children and adolescents under the age of 18 years that seek health care
- Paediatric surgery is a sub-specialty within surgery
- There is no age limit when a child is allowed to participate and decide in a care situation. The child's right to decide for itself is related to the child's maturity, how difficult the decision is and what significance it has for the child's continued health

Service delivery model

- The larger acute hospitals have specialised children's hospitals with paediatric A&Es to deliver paediatric care. In the Stockholm county region, serving a population of ~2 million, two acute hospitals provide inpatient paediatrics:
  - Sodersjuhuset has Sachsska Children and Adolescents Hospital
  - Karolinska has united the paediatrics services of both locations into one hospital, Astrid Lindgren Children's Hospital
- These specialised children's hospitals also run local clinics to provide specialist care close to home
- Other acute hospitals will provide limited paediatric services, with often no inpatient care
  - Some hospitals have paediatric outpatient or A&E services
- A significant portion of paediatric health care is conducted in primary care institutions
  - All families with children in Sweden are offered preventative health care with health examinations and vaccinations for children at Child Health Centers[1], which is free

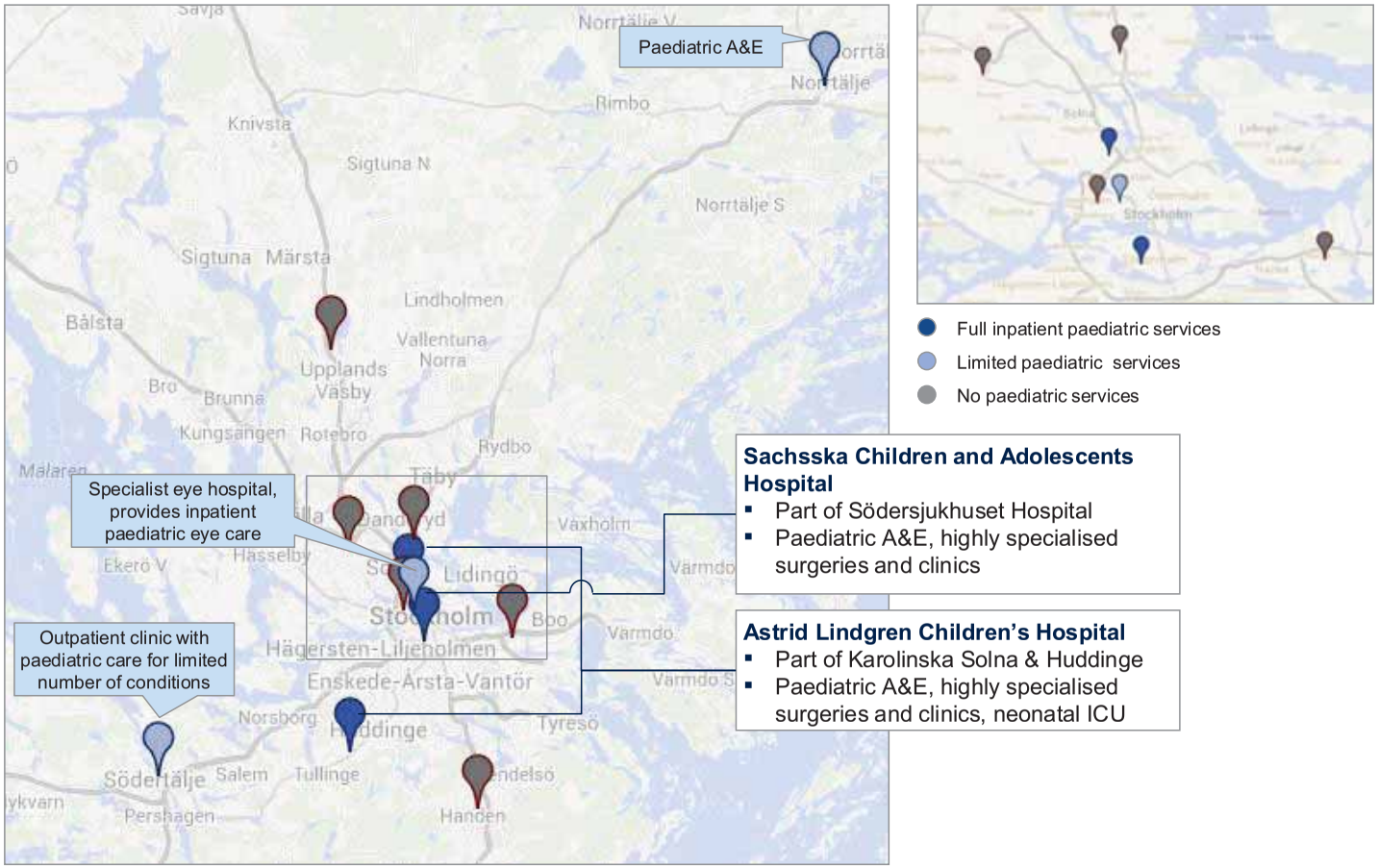
Comparison to NHS

- Paediatric care in Sweden is highly centralised, with only two providers taking inpatient paediatric admissions, compared to the NHS where centralisation is limited
- Outpatient paediatric care is provided in local clinics, but run by the specialised hospitals

1 In Sweden refered to as "BVC" (barnavårdscentraler)

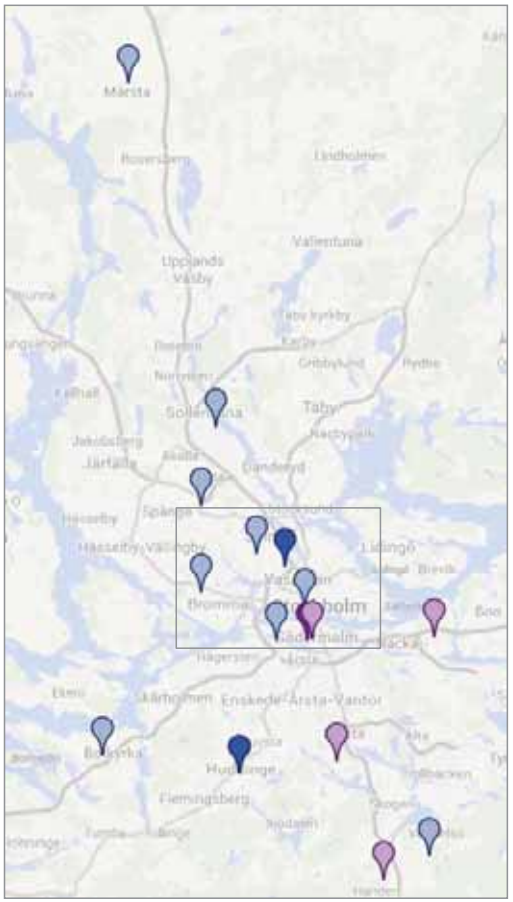
SOURCE: Swedish National Board of Health and Welfare, The Swedish Paediatric Society; hospital websites

Inpatient paediatric care in Stockholm County is provided by two paediatric hospitals

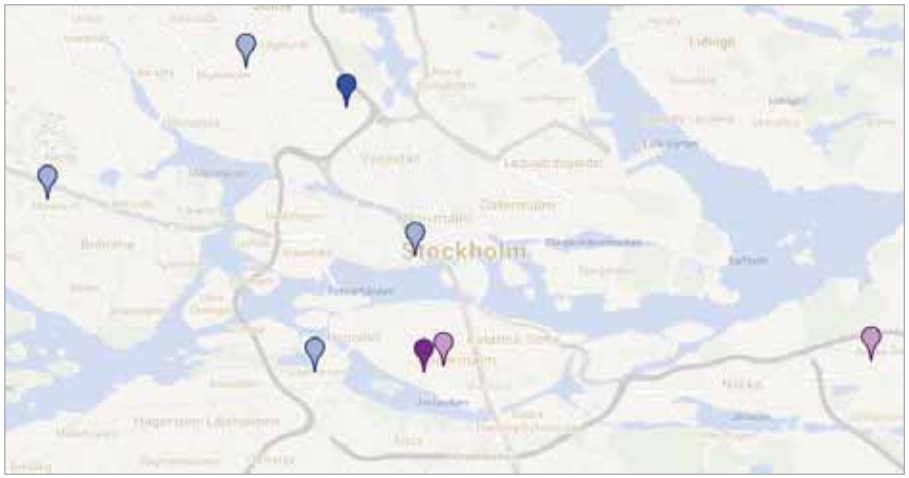


SOURCE: Hospital websites

Both Astrid Lindgren and Sachsska provide specialised paediatric care through a network of clinics



- The clinics are staffed with paediatric specialists and nurses, and provide specialist paediatric care on conditions such as ADHD, asthma, psychosomatic illnesses and obesity
- They are open during normal hours
- The clinics and doctors have close links to the hospitals and can refer patients there if needed



- Astrid Lindgren Children's Hospital (Solna & Huddinge locations)
- Astrid Lindgren clinics
- Sachsska Children and Adolescents Hospital
- Sachsska clinics

SOURCE: Hospital websites

- Single service model and benefits
- Case studies
- **Activity and audit data**

Inpatient general paediatric care

PRELIMINARY DATA – awaiting Trust validation

Sum of activity across all sites

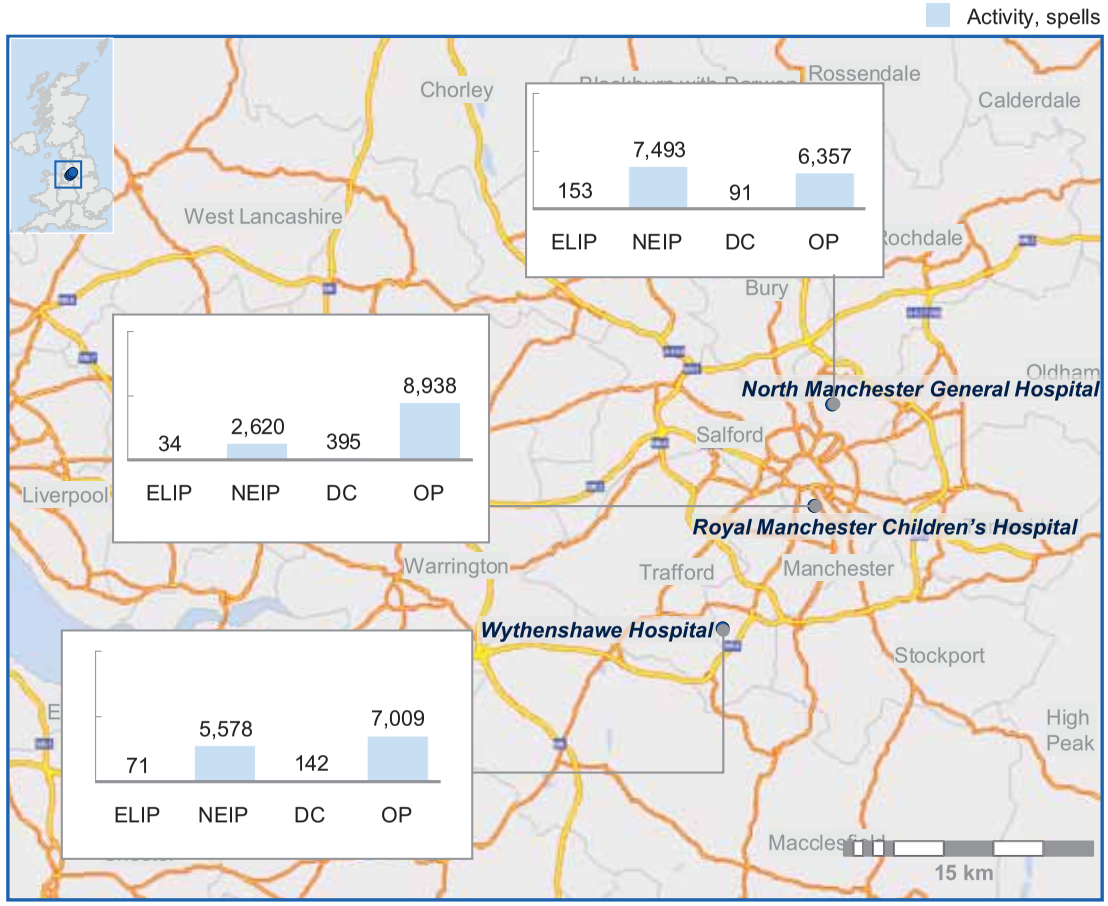
- 258 elective inpatient spells
- 15,691 non elective inpatient spells
- 628 day case spells
- 22,304 outpatient spells[1]

Delivered by

- 9.74 WTE consultants at North Manchester General (NMG)
- 11 WTE consultants at Royal Manchester Children's Hospital (part of Central Manchester Foundation Trust, CMFT)[2]
- 10 WTE consultants at University Hospital of South Manchester (UHSM)

Using

- 26 beds at NMGH[2]
- 28 beds at CMFT
- 42 beds at UHSM (24 inpatient beds, 10 POAU beds and 8 day case unit beds)[3]



1 Excludes sub-specialty and nurse led clinics;2 data from clinical working groups; 3 There are an additional 8 inpatient beds that can be opened if more capacity is required

SOURCE: Trust data 14/15

Paediatric medicine: current workforce and asset utilisation

PRELIMINARY DATA – awaiting Trust validation

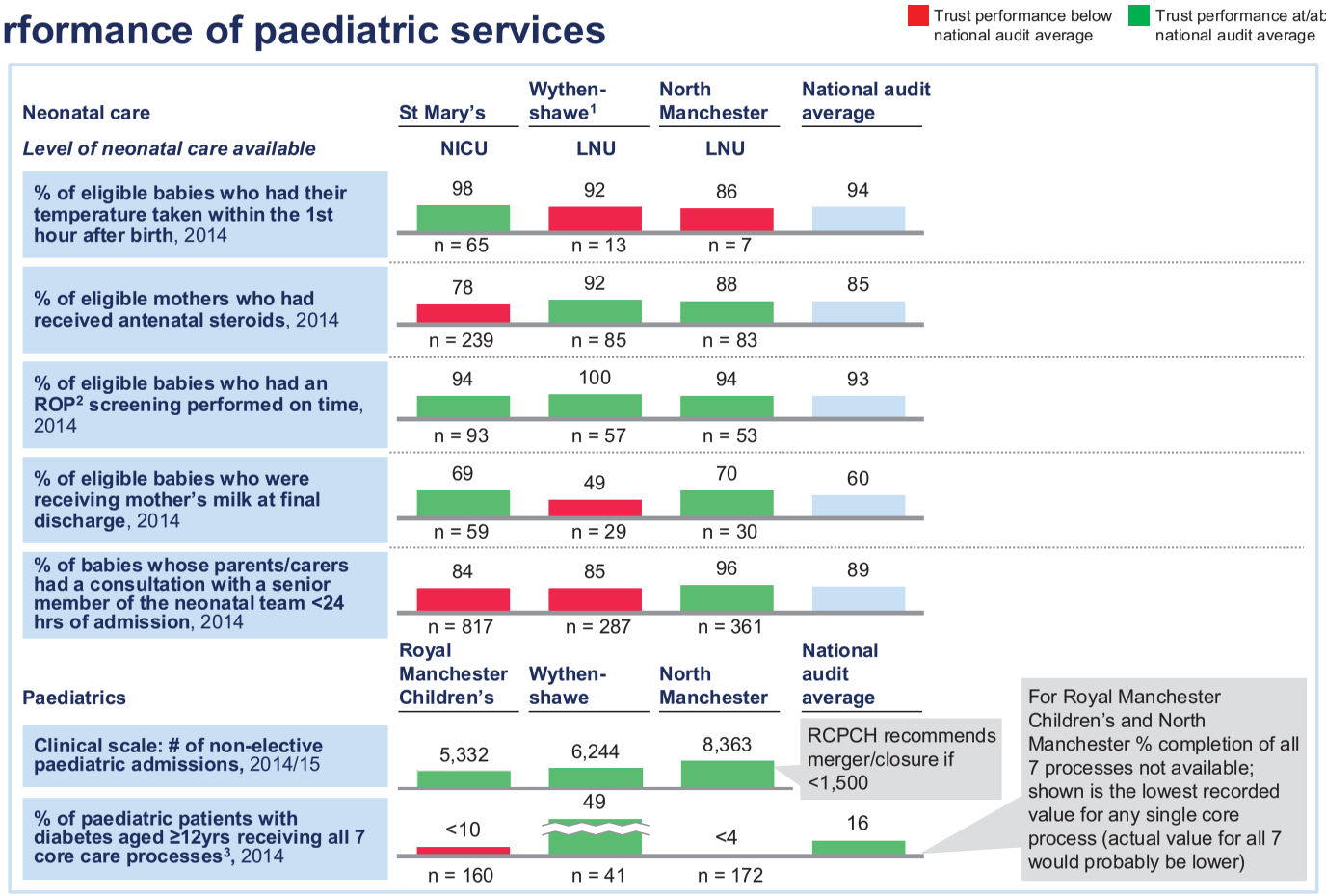
Medical WTEs, #	NMGH	UHSM	CMFT	Total
Consultants	9.74	10	11[3]	**30.74**
Junior doctors (all grades)[1]	23	21	(79)[4]	**123**
Ward nurses	(63)[2]	78	(226)[4]	**367**
Specialist nurses	(7)[2]	14	0	**21**
				541.74

Utilisation of assets, #	NMGH	UHSM	CMFT	Total
Number of beds	26[3]	42	28	**96**
Average bed days per week	156	282	264	
Average length of stay	1.1	1.53	5.5	

1 Includes trust grade doctors;
2 Trust-wide figures for Pennine Acute (unable to disaggregate data for NMGH)
3 Data from Clinical Working Group
4 Includes staff for tertiary paediatrics as well as secondary paediatrics

SOURCE: Trust data 14/15

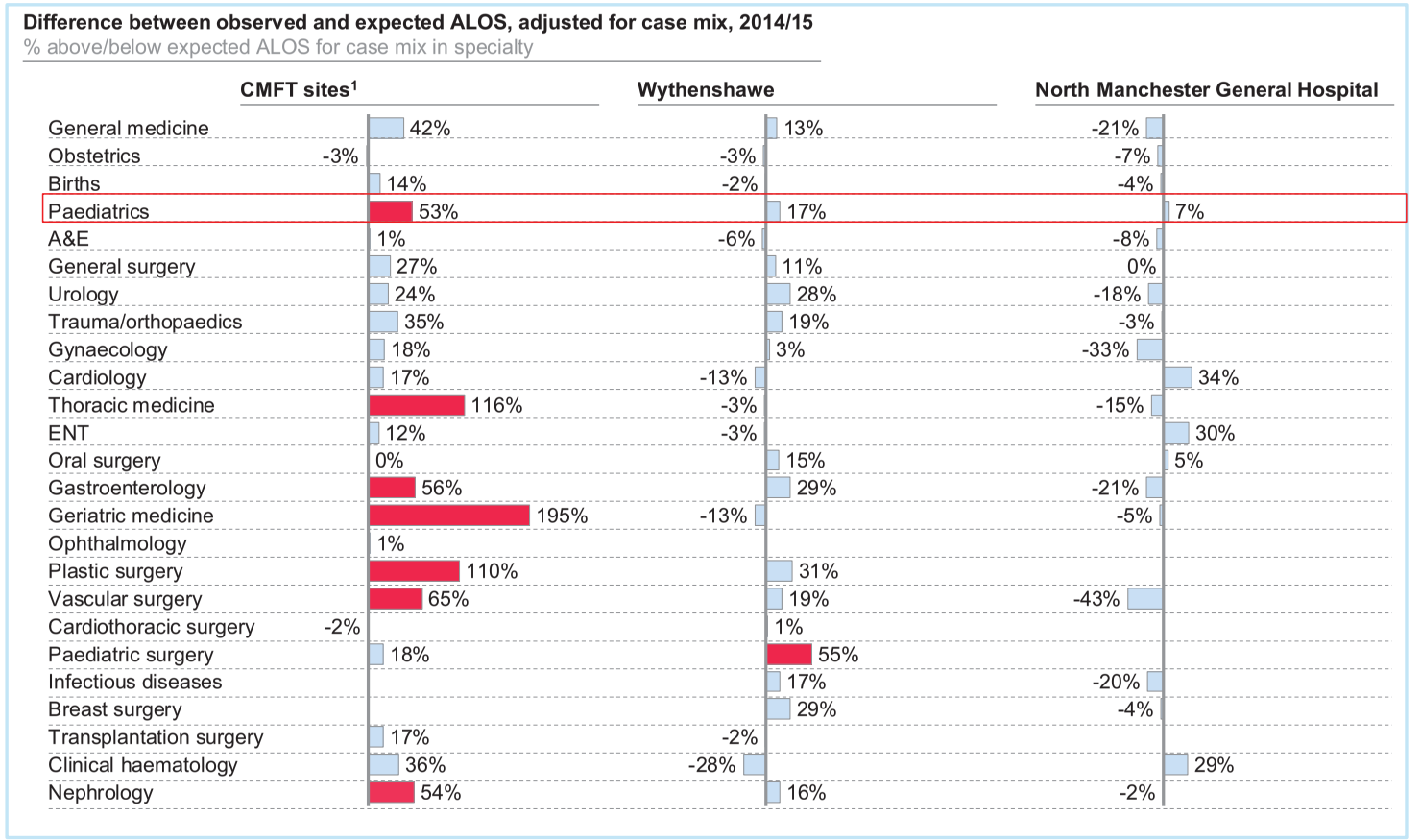
Performance of paediatric services



Notes: NICU = Neonatal Intensive Care Unity; LNU = Local Neonatal Unit; n = total eligible (sample size); RCPCH = Royal College of Paediatrics and Child Health
1 Audit submission is for UHSM as a whole but as the LNU is based at Wythenshawe, we have assumed the data applies to this site.
2 All babies with a gestational age of <32 weeks or <150g at birth should receive a Retinopathy of Prematurity (ROP) screening in accordance with current national guidelines
3 The 7 core processes are recorded HbA1c, blood pressure, cholesterol, BMI, albuminuria, eye screening, and foot examination

SOURCE: National Neonatal Audit Programme, Unit level data, 2014; National Paediatric Diabetes Audit, 2014

There are differences in ALOS (average length of stay) across sites



Notes: Specialties ranked by combined volume of spells across all sites included in the analysis; only specialties with >10 inpatient admissions (elective and non-elective, excluding day cases) across all sites shown.

1 Manchester Royal Infirmary, St Mary's, Royal Manchester Children's and Manchester Royal Eye Hospital combined

SOURCE: Hospital Episode Statistics, 2014/15

CITY OF MANCHESTER SINGLE HOSPITAL SERVICE
SINGLE SERVICE MODELS – SUMMARY OF MODELS

Appendix XIV Paediatrics

Summary

Current model

- Each of the three hospitals has an inpatient paediatric service
- Central Manchester (Royal Manchester Children's Hospital) also provides specialist/ tertiary paediatric services for children from across the North West of England
- The units currently operate independently

Current challenges

- There are poor population health outcomes across the City of Manchester with life expectancy at birth the second lowest in England and Wales *(ONS 2012-14)*
- There are very high rates of children attending A&E across all three hospitals with high rates of hospital admission
- Approaches to triage and management of children vary across the three sites
- There are variations in quality of care across the City [see Appendix XIV (a)]
- There are challenges recruiting and retaining staff – with a loss of some highly skilled staff to community roles at some sites and difficulties providing sufficient staff to maintain a 24/7 consultant led inpatient service across all three sites

Proposed model

- Shared clinical pathways and protocols with shared governance across all three sites
- Step change in availability and quality of care for children outside of hospital to significantly reduce A&E attendances and admissions
- Shared staff across sites to support rotas and enable easier transfer of patients across sites to improve access
- The potential to further differentiate sites was discussed but not agreed

Opportunities for benefits

- Enhanced primary and community care so reducing need to attend hospitals and reducing rates of hospital admission
- Reduced variation in the provision and quality of care through shared protocols and patient pathways
- Improved access to secondary and tertiary services when required

Implementation considerations

- Governance structures overseeing clinical pathways and protocols needs to be clear
- Shared IT is vital

Outline of the current model

General paediatric care is provided at all three sites, with tertiary care provided at Royal Manchester Children's Hospital (RMCH). There is a significant level of collaboration between RMCH and its referring sites for the relevant tertiary conditions, with RMCH providing outreach clinics to other sites, but outside of this there is little cross-site working. Paediatric plastic surgery services for the region are provided by UHSM, and there are a number of sub-specialty clinics at UHSM for children with diabetes, epilepsy, cystic fibrosis and asymptomatic heart murmurs.

At UHSM, inpatient paediatric care is supported by a well-functioning paediatric observation and assessment unit (POAU), which is open 24 hours a day, seven days a week; 75% of cases are discharged from the POAU. There is also an eight bedded day-case unit at UHSM which is staffed flexibly depending on planned activity.

Paediatric care at North Manchester Hospital is closely linked to the rest of the Pennine Acute Hospitals Trust. There is a tertiary (Level Three) neonatal care unit at TheRoyal Oldham Hospital with secondary care paediatrics provided at both the Royal Oldham and North Manchester Hospitals. There are frequent transfers of paediatric patients between North Manchester and Royal Oldham for capacity reasons.

Paediatricians at North Manchester and UHSM cover neonatal rotas as well as the secondary paediatrics rotas.

A summary of the current activity is shown below:

Inpatient general paediatric care

PRELIMINARY

PRELIMINARY DATA – awaiting Trust validation

Sum of activity across all sites
- 258 elective inpatient spells
- 15,691 non elective inpatient spells
- 628 day case spells
- 22,304 outpatient spells[1]

Delivered by
- 9.74 WTE consultants at North Manchester General (NMG)
- 11 WTE consultants at Royal Manchester Children's Hospital (part of Central Manchester Foundation Trust, CMFT)[2]
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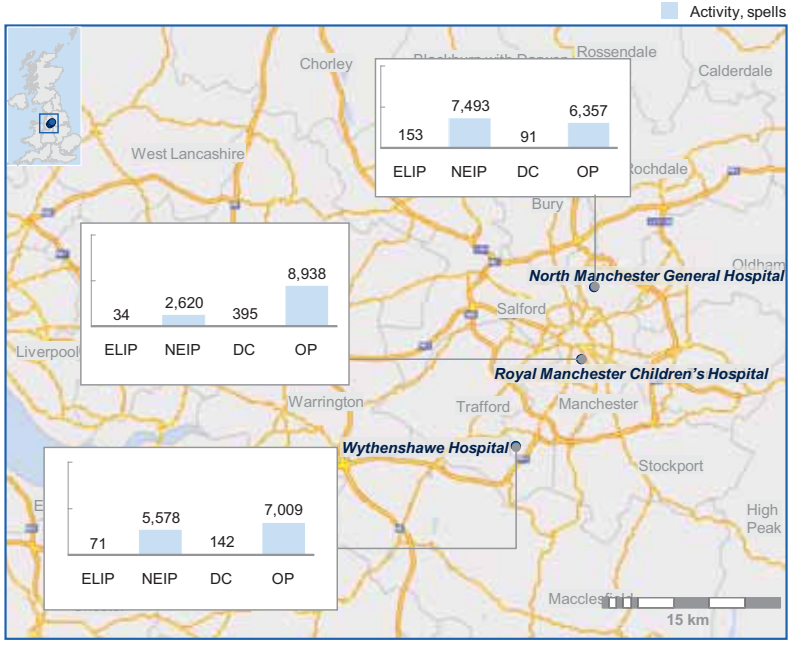


1 Excludes sub-specialty and nurse led clinics;2 data from clinical working groups; 3 There are an additional 8 inpatient beds that can be opened if more capacity is required
SOURCE: Trust data 14/15

18

Outline of current and future challenges

1. Quality of care

- **There are currently variations in the quality of care provided across the three sites**
  - National audit data indicates that there is some variation in the quality of care across the three sites, with an opportunity for all providers to improve the overall

quality of care provided [see Appendix XIV (a)], for example, the National Neonatal Care Audit shows variation I quality with:

- % of eligible babies who had their temperature taken within the 1st hour after birth varying between 86-98%
- % of eligible mothers who had received antenatal steroids varying between 78-92%
- % of eligible babies who were receiving mother's milk at final discharge varying between 49-70%
- % of babies whose parents/carers had a consultation with a senior member of the neonatal team <24 hrs of admission varying between 84-96%

- There are multiple pathways for the same paediatric conditions for example high flow oxygen for respiratory distress is administered on the ward in some sites, and on HDU at other sites.

- **The Manchester local health economy is poorly performing compared in terms of child health measures compared to the rest of England** (Public Health Observatory, 2015 and Child Health Profile, 2014)
  - The child mortality rate (1-17 years) is significantly worse than the England average
  - 25% of year 6 children are classified as obese
  - The number of under-18 alcohol specific hospital stays is significantly worse than the England average
  - The number of under-18 conceptions significantly worse than the England and regional averages

- **Future challenges to the provision of inpatient paediatric care at all three sites**
  - It is increasingly difficult to sustain three acute inpatient paediatric services across the City of Manchester. The sustainability of the North Manchester General site is unclear, pending a review of the future of paediatric care in the North East sector.

2. Patient experience

- **There are high rates of admissions for care that could be provided in the community**
  - A&E attendances (0-4 years) are significantly higher than the England average *(Child Health Profile, 2014)*
  - Hospital admissions for asthma (under 19 years) are significantly higher than the England average *(Child Health Profile, 2014)*

- **Variations in capacity negatively impacts on patient experience**
  - There are some capacity constraints across sites, depending on the time of year and protocols for admissions to the ward/HDU.
  - The Clinical Working Group (CWG) described instances at some sites where children were waiting for up to 24 hours in A&E for an inpatient bed.

3. Workforce

- **There are challenges to the sustainability of the workforce**
  - There are currently difficulties in attracting and retaining some clinical staff, e.g., highly skilled paediatric nurses and A&E consultants.
  - The ability to attract and retain staff may become increasingly difficult as antisocial hours payments reduce.

- It will become increasingly difficult for each site to recruit and retain sufficient staff to cover three separate 24/7 rotas.

4. Financial and operational efficiency

- The case-mix adjusted average length of stay varies across all sites, providing an opportunity for financial and operational efficiency gains [see appendix XVII]

5. Research and innovation

- There is currently inequity of access for patients to clinical trials – while all sites contribute towards national trials, it is recognised that there could be more opportunities if research efforts were combined.

6. Education and training

- There are variations in the training experience for staff across sites and variations in the opportunities for staff to pursue sub-specialist interests across sites.

The CWG has proposed the following single service model for paediatrics

*Discussed but **not agreed** by the clinical working group*

Description	How this would work
Shared clinical protocols and pathways[1]	▪ Standardised clinical protocols implemented at all sites to reduce the current variations in quality of care and promote best practice ▪ Shared pathways throughout the service - for example, shared guidelines for outpatient referrals to ensure children are directed to the appropriate service immediately ▪ Shared governance over these pathways and protocols ▪ Upskilling of nursing colleagues throughout the service to enable transfer of care from paediatricians to advanced nurse practitioner colleagues ▪ Links with community care are strengthened, including upskilling of GPs (creation of primary care hubs with GPs with a special interest in paediatrics, supported by a paediatric community nursing team), so that admissions can be avoided and care can be transferred out of hospital when appropriate ▪ Opportunities for service improvement initiatives across all 3 services
 Shared clinical staff and shared patients across sites	▪ Single governance structure with single management team ▪ Potential to include paediatric community services (medical and community nursing) in the single governance structure ▪ Some potential to manage the flow of patients towards sites with the most available capacity ▪ The potential for sharing rotas/staff across sites was discussed – particularly in relation to how each workforce could meet the requirements for a 24/7 rota and sharing staff to address vacancies/particular staffing problems at different sites ▪ Potential for a shared radiology reporting service, starting with reporting of emergency CT scans
 Differentiated sites	▪ Potential to differentiate services by site e.g. fewer “low complexity” children at RMCH ▪ A potential model could be 1 inpatient unit with 2 paediatric assessment units, staffed by a joint team

Description of potential impact of the single service model

<u>Benefits</u>

1. Quality of care

1.1 Reduced variation in the provision of care through shared pathways and protocols

Description

- Standardisation of clinical practice using shared protocols and pathways could reduce the variation in care that currently exists, and bring all providers up to the same high quality standards as expected in national audits.
- One example of existing variations in care is the use of High Flow oxygen therapy for respiratory distress; at some sites, this is administered on the ward whereas in others it is administered in HDU. If all sites could implement the same clinical protocol for High Flow oxygen, then the pressure on HDU capacity could be eased. It could also reduce the overall length of stay for patients because escalation of treatment occurs earlier, enabling a faster recovery, and there are no delays associated with transferring patients between wards or sites

1.2 Shared referral pathways to enable children to be rapidly directed to the most appropriate specialist service

Description

- By standardising clinical pathways across all sites, patients can be directed to the most appropriate parts of the service, therefore avoiding duplication of care and reducing the overall pathway length.
- For example, if there were shared guidelines for all outpatient referrals, then patients would be able to reach the appropriate specialist immediately rather than seeing a general paediatrician first and having to be re-referred from there. Similarly, inappropriate referrals could be reduced.

1.3 Closer integration with community care to address the population health challenges and prevent avoidable hospital admissions

Description

- There are three aspects to improving integration of community and acute care:
  1. Shared pathways for pre and post-hospital care, integrating the clinical pathways across community and acute care to jointly tackle some of the population health challenges, such as alcohol related admissions.
  2. Share governance over acute and community services.
     - Creating joint accountability for the population health outcomes for the City of Manchester.
  3. Upskilling of GPs to enable transfer of activity into the community
     - By upskilling GPs (to create more GPs with a specialist interest in paediatrics), a greater proportion of activity could take place in the community and the number of outpatient and emergency admissions could be reduced, therefore easing the pressures on the acute service.
     - This could be facilitated by having a ‘link paediatrician’ for each primary care hub.
     - Most A&E attendances are self-referrals so the CWG felt there was a need to focus on increasing parents' confidence and ability to manage common childhood illnesses at home, as well as providing suitable community based services that they can self-refer to.
- This will require a step change in primary care with children’s services provided in hubs (open until at least 8pm , seven days a week) by skilled-up GPs with support from paediatricians.

- There are already plans to reorganise primary and community services into 12 hubs across Manchester which will enable longer opening hours and a significant shift of care into the community, e.g. prevention, early interventions and urgent care.
- Health visitors have a role in prevention, early intervention and parent support. As CMFT provide the city wide health visitor service, there is a potential to shape their involvement too.

Evidence

- There is some evidence that lack of out-of-hours access to primary care has led to an increase in short stay paediatric admissions for minor illnesses *(Saxena S. et al., 'Increasing short-stay unplanned hospital admissions among children in England; time trends analysis 1997 - 2006,' PLoS ONE, 2009, 4 (10), p. 7,484).*
- The British Association for Community Child Health (BACCH) supports integration across the whole pathway, including:
  - Cooperation between all the organisations/services/teams that contribute to the pathway
  - Improved access to range of services in a timely manner
  - A great [sic] emphasis on prevention, health promotion and health protection at all times (The meaning of "integrated care" for children and families in the UK, BACCH position statement, 2012)
- The National Service Framework for Children (2003) outlined the importance of fully integrated care, across organisational boundaries:
  - "It is essential that robust relationships and arrangements are developed within and between organisations to ensure that the child's experience is as 'joined up' and seamless as possible."
- There are examples of successful integration of children's services from across the UK:
  - In Homerton Hospital, children were presenting to A&E with conditions that should have been managed in the community. Therefore, shared protocols and pathways were agreed between GPs, paediatricians and emergency department staff and a triage system introduced in A&E. As a result, children arriving in the emergency department are redirected to the most appropriate service for their needs - either a children's observation unit, primary urgent care or the emergency department *(Teams without walls – the value of medical innovation and leadership, Report of the Working Group of the Royal College of Physicians, Royal College of GPs and Royal College of Paediatrics and Child Health, 2008).*
  - In North West London, care for a population of ~4000 children is arranged in community hubs, with 2-3 GP practices and outreach

Imperial child health general practice hubs – case study

Care for ~ 4000 patients is arranged in hubs of 2-3 GP practices, with outreach clinics from paediatric consultants and a 24 hour phone and email advice "hot lines" for GPs.

Pre-pilot results showed:

- **112 fewer outpatient referrals** from GPs
- A 'did not attend **(DNA)' rate of <2%** for outreach clinics at the hub, compared to 14-25% in hospital outpatients
- **3-5 week shorter waiting time** to be seen in an outreach clinic compared to hospital outpatients
- Some evidence of a **reduction in asthma emergency admissions**, attributed to the 'Itchy, Sneezy, Wheezy' self-management programme
- **94%** of parents preferred being seen in community hubs than at a hospital
- To **break even** over a two-year period, the hub would need to reduce paediatric outpatient referrals by 20 per cent, A&E attendances by 10 per cent and admissions by 2 per cent – figures that interviewees say are eminently achievable.

support from paediatric consultants from St Mary's Hospital. GPs have access via phone and email to specialist consultants. Pre-pilot data showed the potential for these hubs to have a significant benefit on referrals, cost and patient satisfaction – see case study *(Imperial child health general practice hubs Case Study, The King's Fund, 2014).*

2. Patient experience

2.1 Appropriate care takes place in the community as opposed to in hospitals

Description

- As outlined in section 1.3

2.2 Capacity management

Description

- The CWG discussed the potential to manage the flow of patients towards sites with the most available capacity. It was noted that this could currently only be workable for patients with secondary, not tertiary, medical needs, because secondary care is available at all sites, whereas tertiary care is only available at RMCH.
- This would require an electronic patient flow management tool to be in place that could report on real-time bed, staff and theatre capacity. Patients could then be directed by the GP, ambulance service or self-refer to the site with the shortest waiting time.

2.3 Better transfers between sites

Description

- Patient experience could benefit from improved transfers between sites. This could be realised in two ways:
  1. Use of an electronic patient flow management system to redirect patients to the site with the most available capacity. This prevents the need for transfer between sites for capacity issues.
  2. The use of shared clinical pathways at all sites would standardise the way that transfers are undertaken. The shared pathways could include uniform criteria and a single point of access for all transfers, such as an online referral portal. This would reduce the amount of time that referring clinicians currently spend navigating through different bureaucratic processes for each accepting site, and enable quicker, safer transfers.
- This in turn, would reduce the overall length of stay for patients, leading to better clinical outcomes and greater patient satisfaction.

Evidence

- The National Service Framework for Children (2003) outlines that tertiary and secondary services should jointly develop evidence based referral guidelines, shared care protocols and reliable arrangements for emergency transfers between sites

3. Workforce

3.1 A greater role for advanced nurse practitioners

Description

- Although there were different views on the topic, some members of the CWG felt that advanced nurse practitioners are very effective in care delivery and could be used

more, thereby reducing the need for doctors in some areas and allowing for more consolidated consultant rotas.

- The single service could jointly tackle the challenge of loss of advanced nurse practitioners by pooling the training offered, creating a more enriched course from the variety of patients and teachers across all three sites. It was discussed, but not agreed, that there could also be a binding contract for all trainees for two years after the completion of training. By implementing a binding contract across the whole service, no individual site is disadvantaged by this agreement and the whole service benefits from the retention of staff.
- This model of recruitment and training could be applied to the whole children's nursing workforce, not just advanced nurse practitioners.

Evidence

- There is recognition from the Royal College of GPs Commissioning a Good Child Health Service guidelines (2013) of the importance of the advanced nurse practitioner role:
    - *"Experienced children's nurses working as advanced nurse practitioners in GP practices and some walk-in centres could effectively assess, treat and discharge many children with minor injuries and illnesses. These nurses should be commissioned to provide health promotion, support and advice to young people, parents and families as part of the wider team."*

4. Financial and operational efficiency [see Appendix XVII]

4.1 Reduced non-elective admissions due to the use of shared protocols and pathways

Description

- This could be achieved by closer integration with primary and community care, as outlined in section 1.3

High level estimate of cost saving

- 10% reduction in non-elective admission costs = ~£1.6M

4.2 Reduced variation in first-to-follow up outpatient appointment ratio

Description

- There are variations in the first-to-follow up ratios across sites, some of which may be due to differences in case complexity
- If this ratio could be standardised to the top quartile of all England Trusts, then there is a potential efficiency saving

High level estimate of cost saving

- A conservative estimate for this would be a 6% reduction in the cost of outpatient activity = ~£0.08M

4.3 Reduction in average length of stay by standardising clinical pathways

Description

- There are existing variations in the case-mix adjusted average length of stay across sites
- Evidence from a Cochrane Review of clinical pathways found that 11 out of 15 studies showed significant reduction in length of stay for patients on standardised pathways compared to usual care *(T Rotter et al., "Clinical pathways: effects on professional practice, patient outcomes, length of stay and hospital costs" Cochrane Database of Systematic Reviews 2010 7(3)).*

High level estimate of cost saving

- If the same standard of care could be achieved across all sites, this would be equivalent to an 11% reduction in the average length of stay = ~ £1M

4.3 Reduction in the cost of consumables through joint procurement

Description

- Joint procurement across all sites could deliver an efficiency saving from reducing the cost of consumables, in line with the Carter Report recommendations
- Shared IT would also reduce the amount of duplicated tests and appointments across sites

High level estimate of cost saving

- ~ 10% reduction in the cost of consumables = ~£0.4M

5. Research and innovation

No significant benefits identified as there are few secondary paediatric clinical trials.

6. Education and training

6.1 Opportunities to improve training opportunities by rotating staff across sites

Description

- Rotational posts across sites would benefit staff by giving them greater clinical exposure and opportunities for more collaborative working with teams across sites.

Evidence

- There is some evidence that inter-professional education can improve patient outcomes and collaboration between staff *(Reeves S, et al. Interprofessional education: effects on professional practice and healthcare outcomes (update). Cochrane Database of Systematic Reviews 2013, issue 3. art. no.: CD002213)*

Implementation considerations

The primary enabler for the shared protocols to work is a robust governance structure, potentially incorporating both acute and community services. This is required to ensure that pathways are implemented consistently, reviewed regularly and kept clinically up to date. Shared IT would also be required (making it possible to see patient records and investigation results no matter where they are present), as well as (potentially) processes to allow cross-site working for clinicians. The CWG also emphasised the need for trust between clinicians across the organisations in order to work together to support the children of Manchester.

Implementation considerations include the inextricable link between neonatal and paediatric care, and the link between NMGH and the rest of the Pennine sites; the impact of any change on rotas on both of these needs to be considered carefully. Furthermore, in order to be able to deliver the above service, input from co-dependent specialties and support services are needed – for example, for full seven day working to be in place, out of hours paediatric sub-specialist reporting for imaging is required. Some members of the CWG felt that the changes in primary care (reorganisation of services into 12 hubs across Manchester) needed to happen first, before considering the organisation of inpatient care.

Additional benefits from more radical models

There are some additional benefits from more radical paediatric models – case studies are included in the appendix. Further differentiation of sites (to create one inpatient unit and two

paediatric assessment and decision units, with a pooled team of staff across all sites) could deliver the following benefits:

1. Quality of care

1.4 Further differentiation of sites by case mix

Description

- In this model of care, secondary and tertiary care is delivered by a specialist site, with other hospitals providing an assessment and decision unit (POAU), linked to the specialist site via an electronic health record and transfer protocols.
- The potential advantages of further site differentiation are the ability to avoid triplication of activity across the three sites, and the further development of clinical expertise at the specialist site.
- A common bed pool, accessible to all, would redress disparity between site of access (demand) with capacity
- The formation of GP hubs with extended opening hours working alongside POAUs would also facilitate care being delivered closer to home.

3. Workforce

3.2 Shared rotas

Description

- The potential for sharing rotas/staff across sites was discussed – particularly in relation to how to meet the requirements for a 24/7 rota and sharing staff to address vacancies/particular staffing problems at different sites. However, there is currently no consensus amongst clinicians for how a model of shared staff between sites could operate.
- Sharing staff would enable the existing workforce to meet the rota requirements together (at present, there are 9 to 11 WTE consultants at each site, creating a combined workforce of over 30 consultants, from which a joint rota could be staffed). This would, however, impact on the neonatal rota because clinicians at North Manchester and UHSM cover both paediatrics and neonates.
- A single medical workforce would create enhanced opportunities for personal development and progression and improved recruitment and retention.
- An additional benefit of a pooled workforce is the ability to fill last-minute vacancies to with existing staff rather than locums.
- The CWG felt that the ability to attract and retain staff, and the ability to work seamlessly with community paediatricians, would be much easier if working together as one team

High level estimate of cost saving

- ~10% reduction in staffing costs = ~£0.6M

City of Manchester Single Hospital Service – Clinical Working Group

Education and training breakout group

Appendix XIX

- **Summary**

Education and training: summary

Current model	▪ Education of students and staff is established throughout the North West region, involving multiple institutions ▪ Universities and Health Education England work across the North West with the education providers in acute, community and primary care to deliver this
Current challenges	▪ For medical students there are two large sector hospitals; UHSM and CMFT. The sector hospitals arrange training with students rotated to other providers as needed, This results in: – Duplication of training efforts – Varied access to sub-specialties and interesting cases and differential student experiences – Travel cost and time can often be an issue for medical/healthcare students between and during their placements ▪ There are high attrition rates from both nursing, medical and allied health professional (AHP) roles ▪ Gaps in medical training rotations (when trainees are out of programme for maternity leave, research time etc) place workload pressures on all staff and adversely affect the trainees learning experiences - this will be exacerbated the removal of locum training appointments from this year ▪ From 2017, bursaries will stop and there will be a move towards loans. There will also be very little (if any) CPD funding for nursing and AHP's. ▪ Impending imposition of the junior doctors' contract and it's implications for education
Proposed model	▪ Faculty development including shared training programmes to ensure compliance with the GMC standards for medical trainers and professional learning needs analysis for non-medical trainers ▪ Procurement of educational resources ▪ Development of attractive posts for trust employed training grade doctors; given the approximate attrition rate of 50% between FY2 and higher training this is the obvious target level ▪ For nurse training Practice Education Facilitators can work with the GM universities to develop student pathways that involve any redesigned services. ▪ Rotational plans for specific services and professional groups including education can be developed – there are examples being implemented at UHSM & CMFT already and we can work with service / professional leads to build a framework. ▪ Shared governance and training programmes for medical foundation training ▪ Shared induction arrangements ▪ Adoption of initiatives in workplace based education such as the LOAF & BREAD educational checklist and the surgical "better training better care" initiative ▪ Shared educational governance policies
Opportunities	▪ Optimise curriculum delivery, clinical exposure and address inequalities in the student and trainee experience ▪ Widen student and trainee exposure to different clinical environments ▪ Development of a city wide training faculty in line with MMU and HENW standards ▪ Equal access to apprenticeships across the city of Manchester could improve recruitment of AHPs and nurses, the collaborative use of funding from the Apprentice Levy for the development of bespoke Higher Apprentices such as non-medical prescribing and mentoring to up skill staff ▪ Reduction in duplication of training will lead to efficiency in cost for training providers
Implementation considerations	▪ The need to minimise student travel during placements within the city (an oyster card system was suggested) ▪ Collaborative working between teams and shared governance arrangements will help enable training curricula, bother under- and post- graduate to evolve and change ▪ Education providers will need to continue to work with the Universities and HENW to ensure these are accommodated and effectively quality managed ▪ Changes will need to be compatible with the revised medical school curriculum for medical students and agreed by the University of Manchester. ▪ Changes for junior doctor track rotations will need to be agreed by the Deanery/GMC. ▪ Need to ensure any reorganisation of services does not result in a lower student capacity as this will impact on future recruitment and the quality of graduates

SOURCE: Clinical working group

City of Manchester Single Hospital Service

Cardiac services

Appendix XV (a)

- **Single service model and benefits**
- Case studies
- Activity and audit data

Cardiac services (cardiology and cardiac surgery): summary

Current model	▪ Individual services operating independently on separate sites
Current challenges	▪ Whilst the area benefits from access to highly specialist care for complex patients, there is variation in the quality of care provided for more routine cardiac patients, leading to poor health outcomes for cardiovascular diseases in this population ▪ Existing capacity is not used efficiently ▪ Workforce challenges – fewer cardiologists available in DGHs[1] ▪ Lack of consistent 24/7 service provision at all sites – for example, no site is able to individually support a 7 day pacing list ▪ Limited clinical trial activity due to sub-optimal research support, difficulty attracting clinical academics
Proposed model	▪ Joint 24/7 cardiac device service with a 7 day pacing list and access to specialist advice. Repatriation of patients to DGH[1] after procedure ▪ Shared waiting lists for cardiac surgery (initially for semi-urgent patients then possibly extended) with cross-site working for surgeons. Expanded use of CATS[2] to enable demand to be matched to live capacity ▪ Joint cardiac surgery rotas for aortic dissection, heart transplant and general cardiac surgery ▪ Standardised care pathways, including pre and post admission, with common audit (submission to national audits as one site), joint morbidity and mortality meetings and joint peer review ▪ Upskilling of primary care to tackle population health issues jointly ▪ Pooled trainees to offer a better training experience ▪ Potential to share support staff throughout the service (e.g. specialist nurses, echocardiologists) ▪ Shared recruitment of shortage staff (e.g. echocardiologists) with common pay and incentives ▪ Differentiation across sites is needed, but not agreed - differentiation could be by sub-specialty ▪ A single site offering a single service was also proposed, but not agreed
Opportunities	▪ Efficiency gains from reduced duplication of services ▪ Improve outcomes and reduced length of stay from standardisation of care ▪ New research opportunities ▪ Better working with primary and community care ▪ Improved recruitment to a joined up work ▪ Patients gain equity of access to clinical trials and the combined service attracts more clinical trials
Implementation considerations	▪ Common IT ▪ Common pay and incentives ▪ Common governance structures with transparency and the ability to act when changes are needed

1 District general hospitals; 2 Cardiac Acute Transfer System

SOURCE: Clinical working group

Cardiac services (cardiology and cardiac surgery): model

Description	How this would work
Shared clinical protocols	▪ Standardised pathways for common cardiac conditions (like chest pain and heart failure) to be implemented at all sites ▪ Joint audit (national audit data submitted as a single site rather than 3) and peer review ▪ Links with community care are strengthened so that care can be transferred out of hospital when appropriate, e.g. expanding community outpatient clinics and upskilling specialist and more generic cardiac nurses to provide community services
 Shared clinical staff and shared patients across sites	▪ Pooling of staff would enable the creation of 24/7 service for cardiac devices ▪ Sharing of support staff (e.g. electrophysiologists) across sites with joint recruitment ▪ Potential for cross site surgical working with the introduction of joint cardiac surgery rotas for aortic dissection, heart transplant and general cardiac surgery ▪ Patients could also be shared across sites, enabling better management of capacity – for example, in house urgent cardiac surgery patients could have their surgery at the centre with the shortest waiting list, using the Cardiac Acute Transfer System (CATS) to match live capacity with demand ▪ All members of staff have common pay and incentives ▪ Pooled trainees with shared training courses to offer a better educational experience
 Differentiated sites or single service on a single site	▪ In cardiac surgery, sites could be differentiated by procedure, for example all mitral valve surgery takes place on one site ▪ In cardiology, there is a potential to differentiate sites; one way to do this might be via an emergency/elective split ▪ The potential to pool all cardiac services onto a single site was also discussed and it was agreed that this should be the ultimate long term ambition

SOURCE: Clinical working group

Cardiac services (cardiology and cardiac surgery): impact

✓ Strong evidence ✓ Some evidence

Category	Impact	Evidence	
Quality of care	▪ Shared clinical pathways and protocols throughout the service for common cardiac conditions reduce variation in care and facilitate an increase in the overall quality of care to the standards set by national audit committees	▪ NICOR audit data shows variations in care across sites ▪ Cochrane Review shows that variations in care have been eradicated through use of shared pathways	✓
	▪ Closer integration with community care to reduce non elective admissions and address the population health challenges	▪ Examples from Liverpool/Kaiser Permanente of integrated care in practice ▪ Evidence from managed disease networks closer integration can reduce emergency admissions for angina *(Guthrie et al)*	✓
	▪ Potential to eventually pool all cardiac services on a single site	▪ There is some evidence that high-volume cardiac surgery programs deliver improved outcomes at lower cost *(Auerbach et al)*	✓
Patient experience	▪ Faster access to specialist care: – Single, pooled waiting list for all elective cardiac surgery would enable patients to be directed to the site with the shortest waiting time – Joint rota for 24/7 cardiac device service	▪ Evidence that pooled elective waiting lists can reduce waiting times [A guide to commissioning cardiac surgical services – Lancashire and Cumbria cardiac network case study] ▪ The Heart Rhythm UK standards (2011) recommends that arrangements for 24-hour cover should be in place for all cardiac device patients	✓
Workforce	▪ Shared rotas are more sustainable and hence better workforce retention. Also enable joint recruitment of shortage staff, like echocardiologists	▪ Together, there would be a combined workforce of 13 cardiac surgeons and 28 cardiologist consultants, who would be able to cover a shared rota more sustainably then if 3 individual rotas were required	✓
Financial and operational efficiency	▪ Reduction in average length of stay by standardising clinical pathways	▪ There are existing variations in the case-mix adjusted average length of stay across sites ▪ Shared pathways can reduce these variations (Cochrane Review)	✓
	▪ Standardised clinical pathways could be implemented in the outpatient setting, reducing variation in the ratio of follow-up to first appointments across all sites.	▪ First to FU ratio could reduce from 2.4 (current weighted average) to 1.5 (national median)	✓
	▪ Reduction in avoidable hospital admissions because of more integrated care with the community – For example, a single heart failure protocol for the whole City could incorporate a community rapid response team to assess patients prior to admission, and facilitate early discharges	▪ Cardiac ACS conditions currently being admitted as inpatients ▪ Evidence that hospital at home/telemedicine/aggressive case management avoids hospital admissions for CCF patients [The Kings Fund – avoiding hospital admissions]	✓ ✓
	▪ Greater ability to create 24/7 device service by sharing workload across bigger group of staff	▪ Together, there would be a combined workforce of 13 cardiac surgeons and 28 cardiologist consultants, who would be able to cover a shared rota more sustainably then if 3 individual rotas were required	✓
	▪ Reduced duplication of tests and activity	▪ There is existing duplication of investigations and activity due to lack of a joined up IT system for patient notes and diagnostics.	✓
	▪ Consolidation of activity onto fewer sites would allow the exiting of fixed costs and duplicate staffing rotas	▪ Exiting one mid-tier rota could save ~ £1.5M. Consolidation of activity on one site could save 50% of fixed costs = ~ £1.1M	✓
Research and innovation	▪ Equity of access for all patients to research	▪ There are existing variations in the number of cardiology trials across sites, from 20 to 38. There is evidence of improve patient outcomes in research active centres (Ozdemir et al)	✓
	▪ Establishment of a single research office would help to attract more research income	▪ Trial organisers seek research sites with a streamlined, single point of access for administration, access to a large pool of patients, and trial coordination support (The Academy of Medical Sciences, 2011)	✓
Education and training	▪ Single service offers a more varied education and training environment to all professionals as they rotate through sites or as consultants rotate through sites	▪ There is some evidence that inter-professional education can improve patient outcomes and collaboration between staff *(Reeves S, et al)*	✓

SOURCE: Clinical working group

Cardiac services – impact summary

Category	Shared pathways and protocols with shared audit	Integrated care across the whole City	Shared staff for a new 24/7 cardiac device service	Pooled waiting list for urgent in-house cardiac surgery with cross site working	Expansion of CATS[1] to match demand and capacity	Potential to share surgical rotas for aortic dissection/ heart transplant	Shared recruitment and rotation of support staff (ECHO/EP[2])	Developme-nt of more sub-specialty expertise by pooling populations	Shared research agenda and office	Potential to consolidate sites
Quality of care	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Patient experience	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Workforce	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Financial and operational efficiency	✓	✓	✓	✓	✓		✓			✓
Research and innovation	✓	✓						✓	✓	✓
Education and training	✓	✓	✓	✓		✓	✓	✓	✓	✓

1 Cardiac Acute Transfer System; 2 ECHO (Echocardiography), EP (Electrophysiology)

SOURCE: Clinical working group

- Single service model and benefits
- **Case studies**
- Activity and audit data

CASE STUDY

Case Study: North Central and North East London have already achieved centralisation of specialist cardiovascular and cancer services

Merging of cardiac services between Barts Health NHS Trust and UCLH[1] NHS Foundation Trust

Context

- Capacity constraints and overlapping catchment areas led to the consolidation of cardiac services from The Heart Hospital (UCLH) and The London Chest Hospital (Barts) to St. Bartholomew's Hospital (Barts) in late 2014
- New state-of-the-art building with strong academic links to Queen Mary and UCL [2] will increase research activity and industry collaborations
- Covers a population of 6 million people
- Europe's largest specialised cardiovascular centre

Contractual Arrangements

- All stakeholders were engaged through feedback and consultation before final decision was made
- Project management for new centre run by Barts Health, with UCLH staff involved in work streams
- Transitional funding for UCLH by tripartite agreement with Barts and NHS London
- Specialist physicians and nurses located at St. Bartholomew's Hospital after consolidation will be contracted by Barts Health NHS Trust

Operational Model

- Consolidation of services onto one physical site offering the latest technologies and equipment
- Heart Attack Centres located at The Royal Free and St. Bartholomew (closed at The Heart Hospital and London Chest Hospital)
- Cardiology now offered on single site (as opposed to three previously)
- Easier access point for patients and reduced duplication of services (see map below)

1 University College London Hospitals 2 University College London

SOURCE: World class outcomes for a unique population (UCLPartners, 2013); Final decision on the future of North and East London Specialised Cancer and Cardiac services (NHS England, 2014); Improving Specialist Cancer and Cardiovascular Services in North and East London and West Essex (Business Case, NHS England, 2014)

Case Study: A pan-network approach for cardiac surgery in Lancashire and Cumbria

CASE STUDY

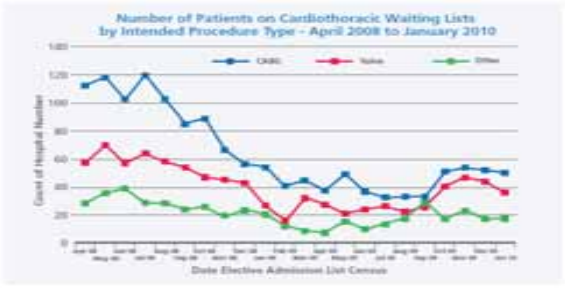
Service delivery model

The Lancashire and Cumbria cardiac network were at risk of breaching the 18 week target for cardiac surgery in 2008/9. This was in part due to **variations in surgical referral patterns** and **length of surgeon specific waiting lists.** In response, they instigated the following changes:

- Pooled waiting lists for all first referrals and those patients with one and two vessel disease
- A uniform procedure for referring patients for cardiac surgery from all hospitals
  - Including multidisciplinary team review of all patients referred for cardiac surgery, via a videoconference meeting
- A shared pre-operative pathway throughout the network
- Implementation of an electronic theatre scheduling tool that could coordinate the booking of theatre cases with live theatre capacity and resources information
- Collection and monitoring of performance data, like RTT (Referral to Treatment)

The result was:

- A **reduction in waiting times** for surgery **to 6 weeks** across the network
- A reduction in the **number of patients on the waiting list** from **120 to 79**



Comparison to Manchester

- All referrals are through a single MDT point of entry, with shared pathways for pre-operative work-up and an electronic patient flow management system in place across the network to manage capacity and demand
- Surgeons pool waiting lists so that patients have access to surgery as soon as possible
- In Manchester, cardiac surgery waiting lists are not pooled, and the cardiac acute transfer system (CATS) is not yet extended across the whole network

SOURCE: NHS Improvement – A guide to commissioning cardiac surgical services 2013

- Single service model and benefits
- Case studies
- **Activity and audit data**
  - **Cardiology**
  - Cardiac surgery

Inpatient cardiology care

Sum of activity across all sites

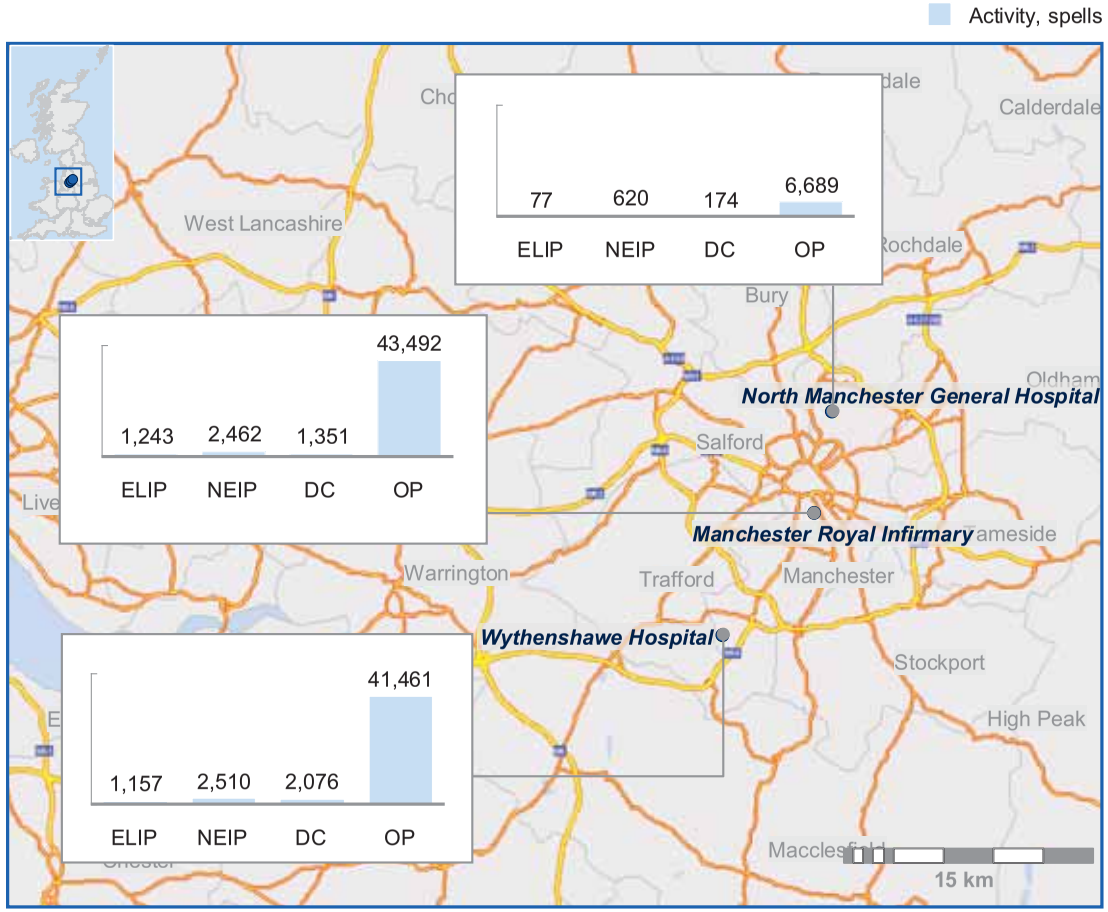
- 2,477 elective inpatient spells
- 5,592 non elective inpatient spells
- 3,601 day case spells
- 91,642 outpatient spells

Delivered by

- 3.84 whole time equivalent (WTE) cardiology consultants at North Manchester General (NMG)
- 10.06 WTE consultants at Manchester Royal Infirmary (part of Central Manchester Foundation Trust, CMFT)
- 14.53 WTE consultants at University Hospital of South Manchester (UHSM)

Using

- 6 beds at NMG[1], 19 dedicated cardiology beds at CMFT and 47 mixed cardiology and cardiac surgery beds at UHSM



1 Part of a 25 bed cardiorespiratory ward so exact bed allocation may change

SOURCE: Trust data 14/15

Cardiology: current workforce and asset utilisation

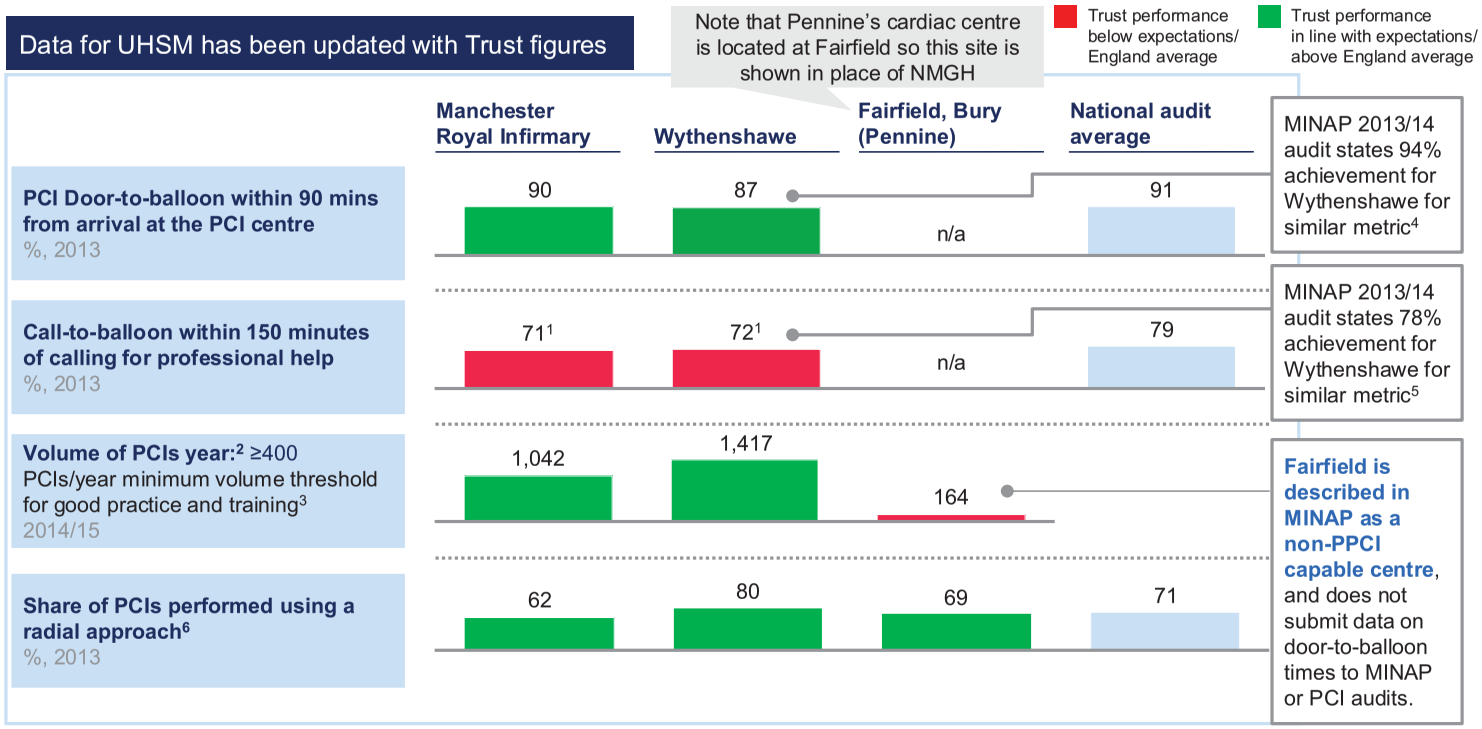
Medical WTEs, #	NMGH	UHSM	CMFT	Total
Consultants	3.84	14.53	10.06	**28.43**
Junior doctors (all grades)[1]	0[2]	18	17	**35**
Ward nurses	14	92	75	**181**
Specialist nurses	0	9	0	**9**
				253.43

Utilisation of assets, #	NMGH	UHSM	CMFT	Total
Number of beds	6	47[3]	19	**72**
Average bed days per week	103	356	334	
Average length of stay	7.7	2.22	4.4	
Number of cath labs on site	0	4 (+1)[4]	7	**11 (+1)[4]**
Total number of cath lab sessions per week	N/A	49	56	**105**
Total number of emergency cath lab sessions per week	N/A	As required	10	
Total number of unused cath lab sessions per week	N/A	0	10	

1 Includes trust grade doctors; 2 There are 33 junior doctors for general medicine – unable to disaggregate those that are allocated to cardiology; 3 Joint cardiology and cardiac surgery ward – unable to disaggregate dedicated cardiology beds; 4 The fifth cath lab is in development

SOURCE: Trust data 14/15

Performance of cardiology services

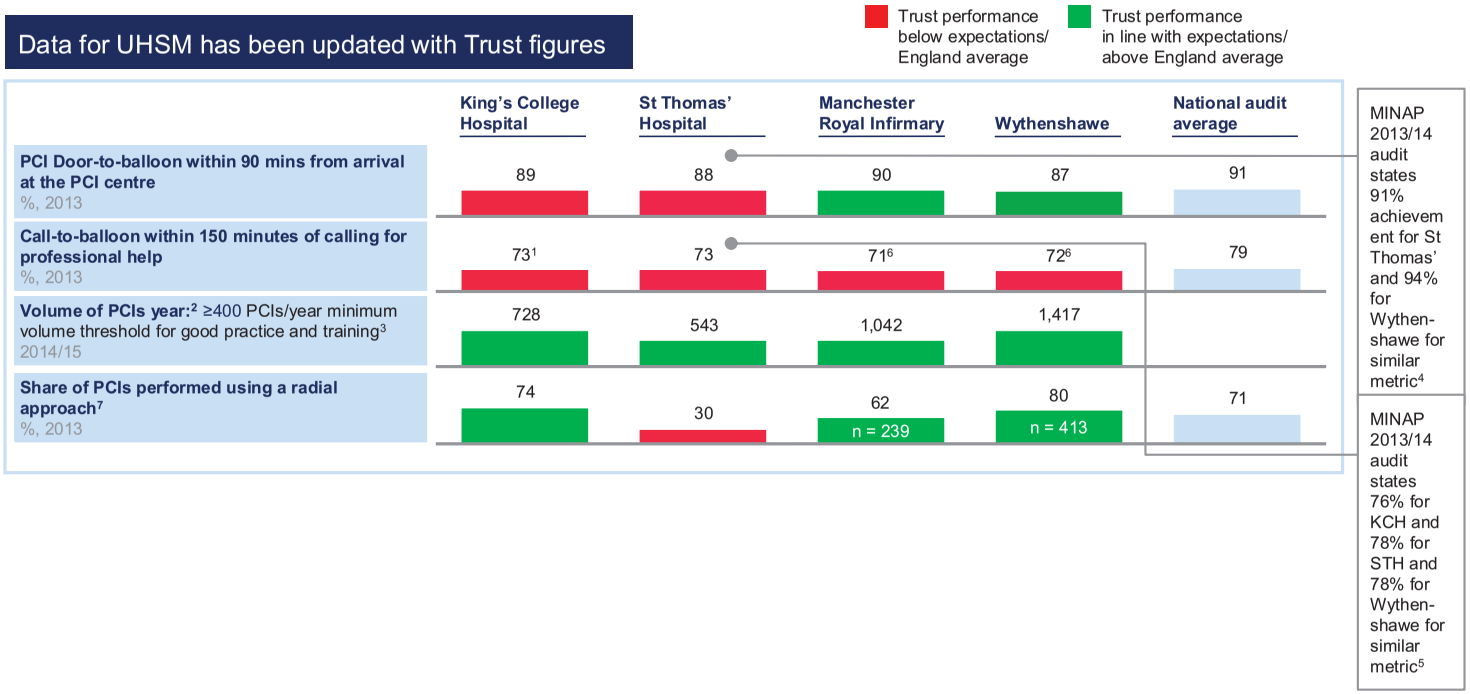


1 >3 Standard Deviations from national audit mean;
2 Defined as HRG EA31Z (Percutaneous Coronary Intervention (0-2 Stents) – data obtained from HES (see source);
3 http://www.bcis.org.uk/resources/documents/pci_recommendations_2005.pdf;
4 Metric: "Eligible patients who received pPCI within 90 minutes of arrive at Heart Attack Centre (door-to-balloon)";
5 Metric: "Eligible patients who received pPCI within 150 minutes of calling for help (call-to-balloon) including those admitted directly or transferred to Heart Attack Centre
6 This metric is used because: "There is robust evidence that shows this is associated with a reduction in complication rate mainly because it is easier to stop any bleeding, and there are fewer nearby structures that can be damaged." National Audit of Percutaneous Coronary Interventions, Annual Public Report, 2013

SOURCES: National Audit of Percutaneous Coronary Interventions, Annual Public Report, 2013 (NICOR: National Institute for Cardiovascular Outcomes Research); Hospital Episode Statistics, HSCIC, 2014/15, Trust data

Performance of cardiology units in the UK

Data for UHSM has been updated with Trust figures



1 >2 standard deviations from the mean
2 Defined as HRG EA31Z (Percutaneous Coronary Intervention (0-2 Stents) – data obtained from HES (see source);
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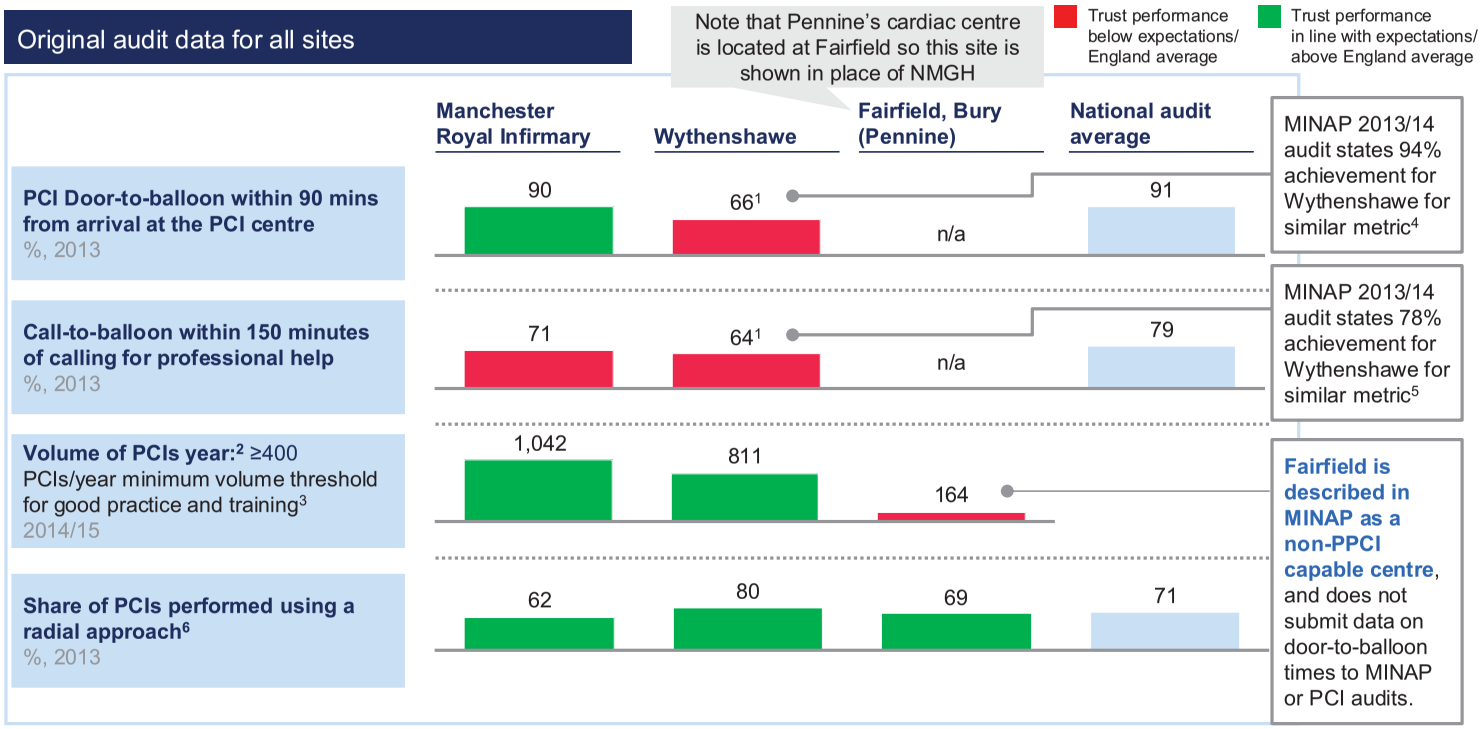
8 Poor audit data completeness (red flag – 64.1%);

SOURCES: National Audit of Percutaneous Coronary Interventions, Annual Public Report, 2013 (NICOR: National Institute for Cardiovascular Outcomes Research); Hospital Episode Statistics, HSCIC, 2014/15, Trust data

Performance of cardiology services



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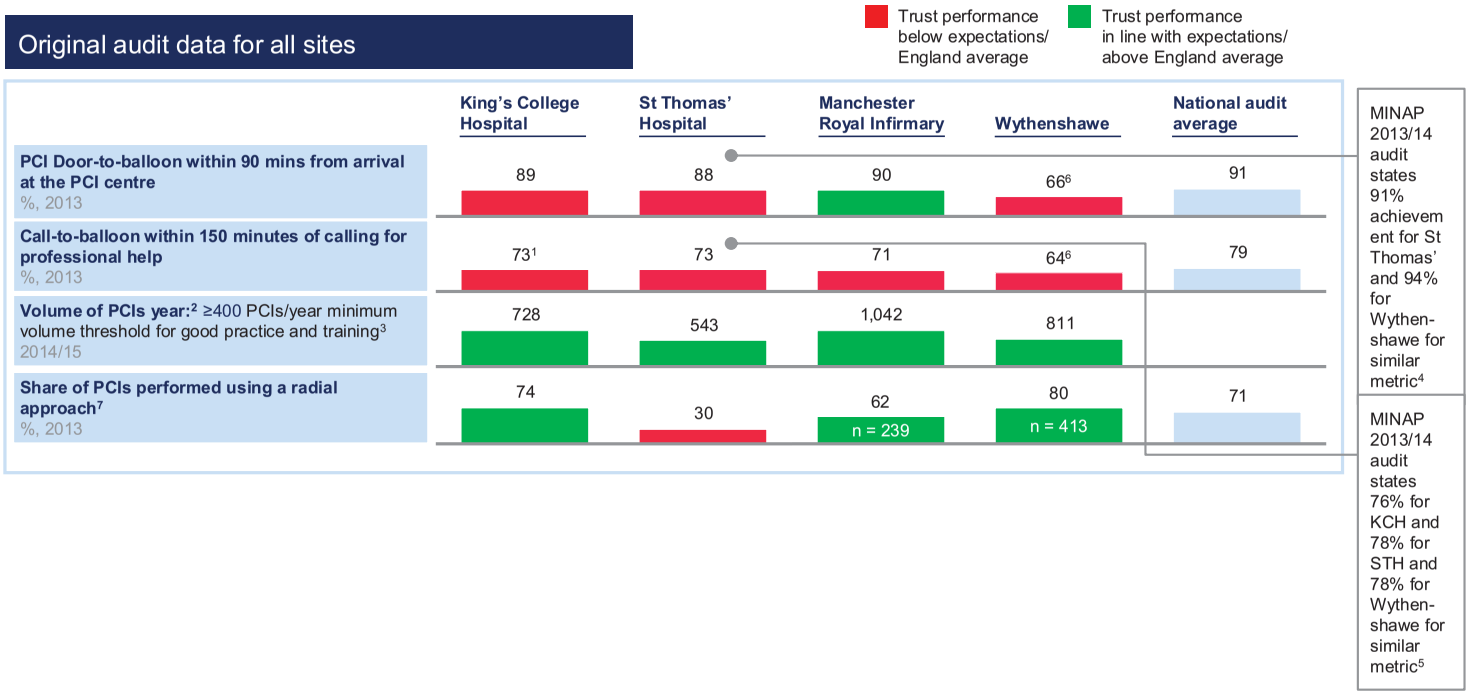
SOURCES: National Audit of Percutaneous Coronary Interventions, Annual Public Report, 2013 (NICOR: National Institute for Cardiovascular Outcomes Research); Hospital Episode Statistics, HSCIC, 2014/15

Performance of cardiology units in the UK

Original audit data for all sites



1 >2 standard deviations from the mean
2 Defined as HRG EA31Z (Percutaneous Coronary Intervention (0-2 Stents);
3 http://www.bcis.org.uk/resources/documents/pci_recommendations_2005.pdf;
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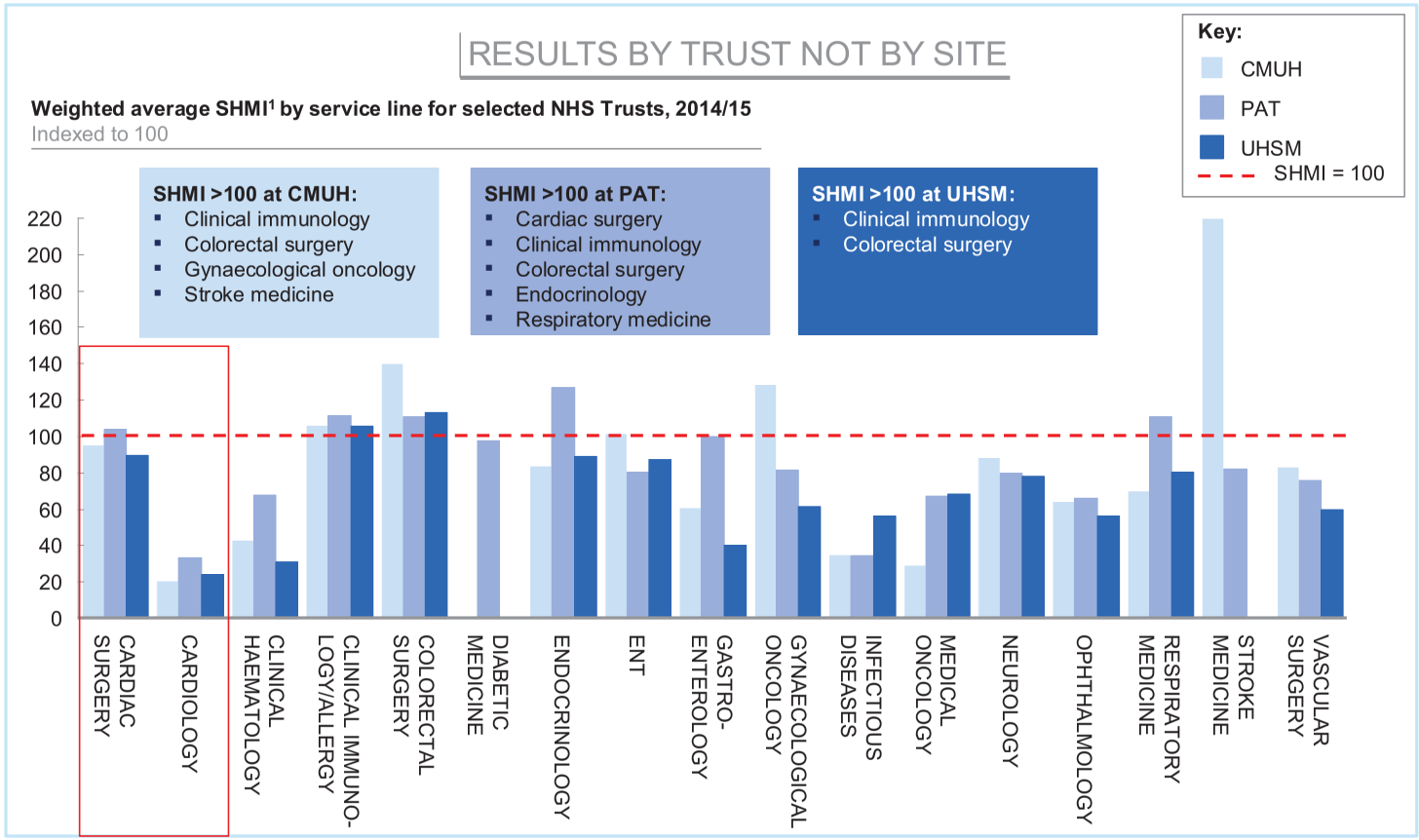
8 Poor audit data completeness (red flag – 64.1%);

SOURCES: National Audit of Percutaneous Coronary Interventions, Annual Public Report, 2013 (NICOR: National Institute for Cardiovascular Outcomes Research); Hospital Episode Statistics, HSCIC, 2014/15

SHMI[1] data for cardiac services varies across Trusts



1 SHMI = summary hospital-level mortality index. Data at diagnosis level allocated to the best fit specialty (note all solid tumour cancer diagnoses, excluding gynaecological cancers, allocated to medical oncology). Diagnoses with <5 deaths in the period excluded from the analysis.

SOURCE: HSCIC,

There are differences in ALOS (average length of stay) across sites

ALOS >50% above expected for case mix (based on national average)

Difference between observed and expected ALOS, adjusted for case mix, 2014/15
% above/below expected ALOS for case mix in specialty

	CMUH sites[1]	Wythenshawe	North Manchester General Hospital
General medicine	42%	13%	-21%
Obstetrics	-3%	-3%	-7%
Births	14%	-2%	-4%
Paediatrics	53%	17%	7%
A&E	1%	-6%	-8%
General surgery	27%	11%	0%
Urology	24%	28%	-18%
Trauma/orthopaedics	35%	19%	-3%
Gynaecology	18%	3%	-33%
Cardiology	17%	-13%	34%
Thoracic medicine	116%	-3%	-15%
ENT	12%	-3%	30%
Oral surgery	0%	15%	5%
Gastroenterology	56%	29%	-21%
Geriatric medicine	195%	-13%	-5%
Ophthalmology	1%		
Plastic surgery	110%	31%	
Vascular surgery	65%	19%	-43%
Cardiothoracic surgery	-2%	1%	
Paediatric surgery	18%	55%	
Infectious diseases		17%	-20%
Breast surgery		29%	-4%
Transplantation surgery	17%	-2%	
Clinical haematology	36%	-28%	29%
Nephrology	54%	16%	-2%

Notes: Specialties ranked by combined volume of spells across all sites included in the analysis; only specialties with >10 inpatient admissions (elective and non-elective, excluding day cases) across all sites shown.

1 Manchester Royal Infirmary, St Mary's, Royal Manchester Children's and Manchester Royal Eye Hospital combined

SOURCE: Hospital Episode Statistics, 2014/15

- Single service model and benefits
- Case studies
- **Activity and audit data**
  - Cardiology
  - **Cardiac surgery**

Inpatient cardiac surgery care

Sum of activity at both sites

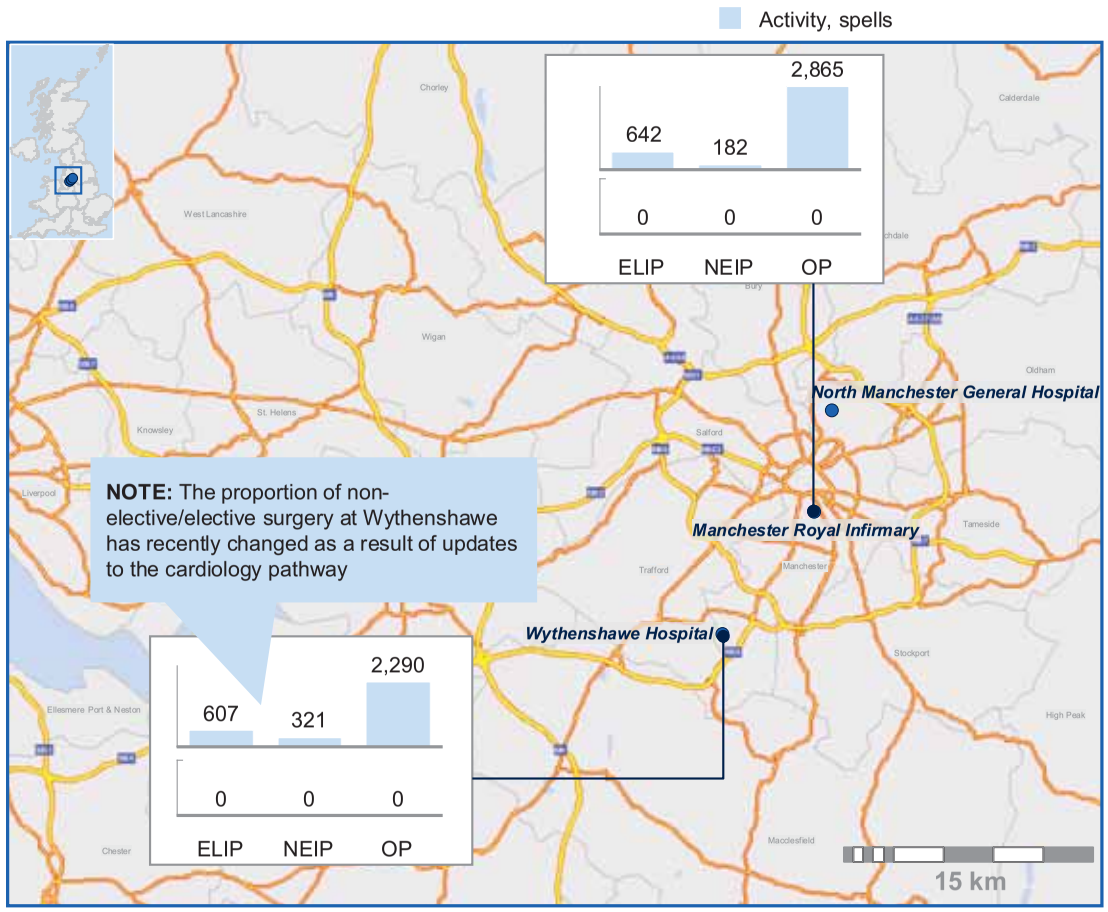
- 1,249 elective inpatient spells
- 503 non-elective inpatient spells
- 5,155 outpatient spells

Delivered by

- 6 whole time equivalent (WTE) consultants at Manchester Royal Infirmary (MRI)
- 7 cardiac surgeons at Wythenshawe

Using

- 58 cardiology and cardiothoracic surgery beds and 13 critical care beds for cardiac surgery at MRI
- 47 cardiothoracic surgery beds including a shared 31 bedded cardiothoracic critical care unit at Wythenshawe



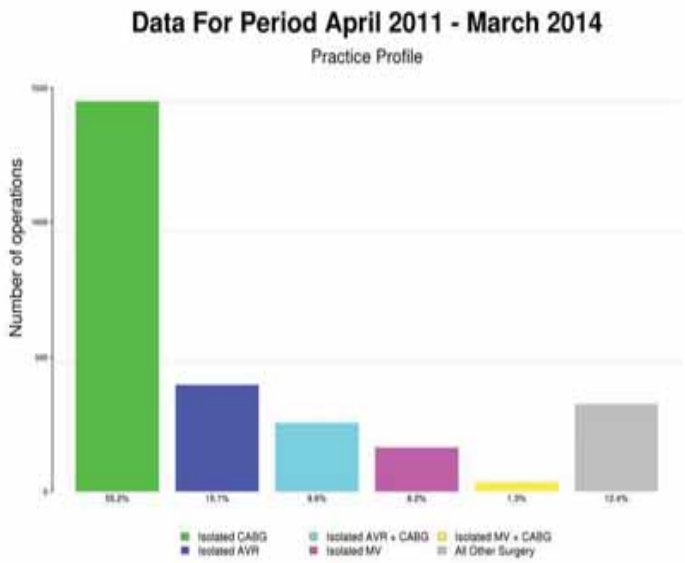
SOURCE: Trust data 2014/15

Inpatient cardiac surgery procedures (2011-2014)

Wythenshawe Hospital

2625 operations over 3 years delivered by

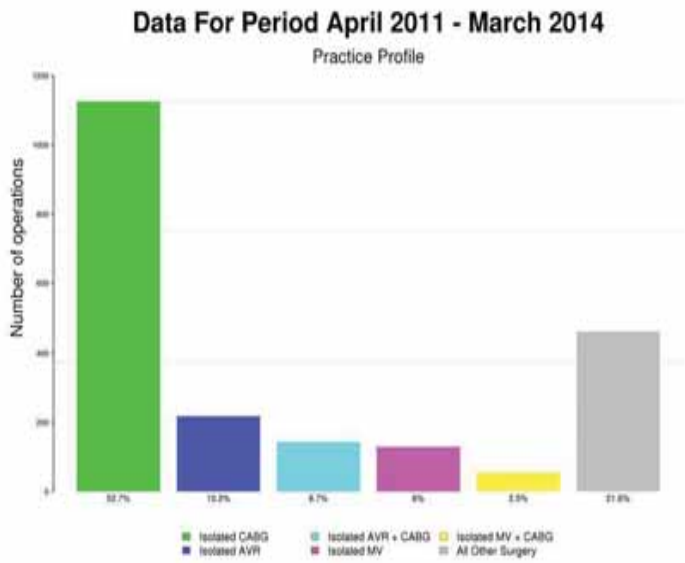
- 9 cardiac surgeons
- **Risk adjusted in-hospital-survival rate 98.01%**



Manchester Royal Infirmary

2134 operations over 3 years delivered by

- 8 cardiac surgeons
- **Risk adjusted in-hospital-survival rate 97.67%**



CABG (coronary artery bypass graft), AVR (aortic valve replacement), MV (mitral valve procedure)

SOURCE: Society for cardiothoracic surgery in Great Britain and Ireland - cardiac surgery audit | 22

Cardiac surgery: current workforce and asset utilisation

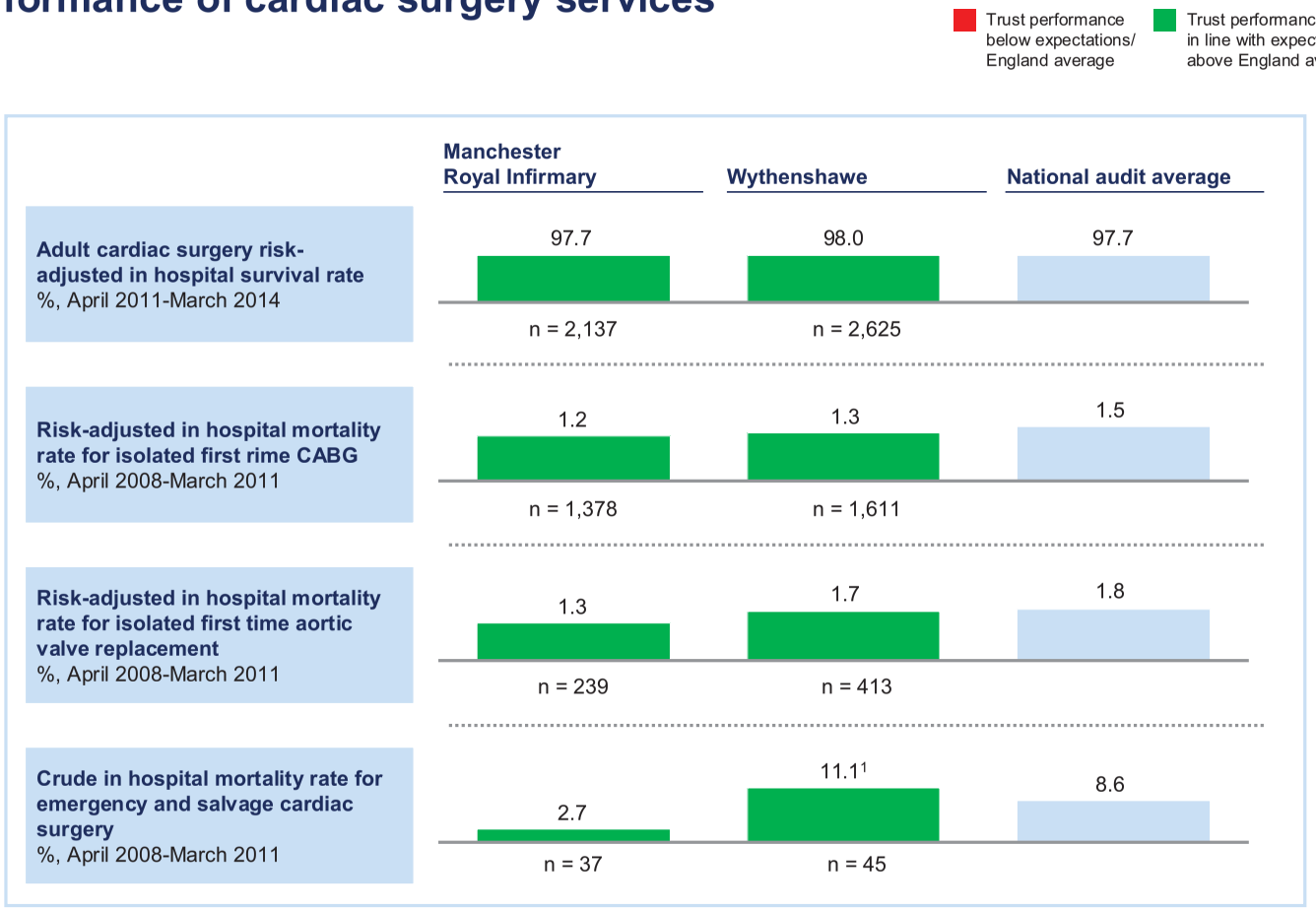
Medical WTEs, #	UHSM	CMFT	Total
Consultants	7[8]	6	12
Junior doctors (all grades)[1]	26[2]	13	39
Ward nurses	70[3]	117	187
Specialist nurses	2[4]	0	2
			240

Utilisation of assets, #	UHSM	CMFT	Total
Number of beds	32[5]	58[7]	105
Average bed days per week	261	183	
Average length of stay	13.5	9.4	
Number of theatres	4	3	7
Total number of theatre sessions per week	23[8]	TBD	
Total number of emergency theatre sessions per week	As required	0	
Total number of unused theatre sessions per week	0	9	

1 Includes trust grade doctors; 2 Joint cardiothoracic surgeons; 3 Excludes 21 WTE nurses on the transplant ward and 180 WTE nurses on the cardiothoracic critical care unit; 4 Excludes 5.5 WTE specialist transplant nurses; 5 Joint cardiothoracic ward, therefore beds are used flexibly depending on patient need (~ 32 cardiac surgery, 16 transplant, 16 thoracic surgery, 31 cardiothoracic critical care); 6 The total cardiothoracic critical care bed days per week is 195 (includes cardiac and thoracic surgery and transplant and cardiology); 7 mixed cardiology/cardiac surgery ward; 8 data provided by Clinical Working Group

SOURCE: Trust data 14/15

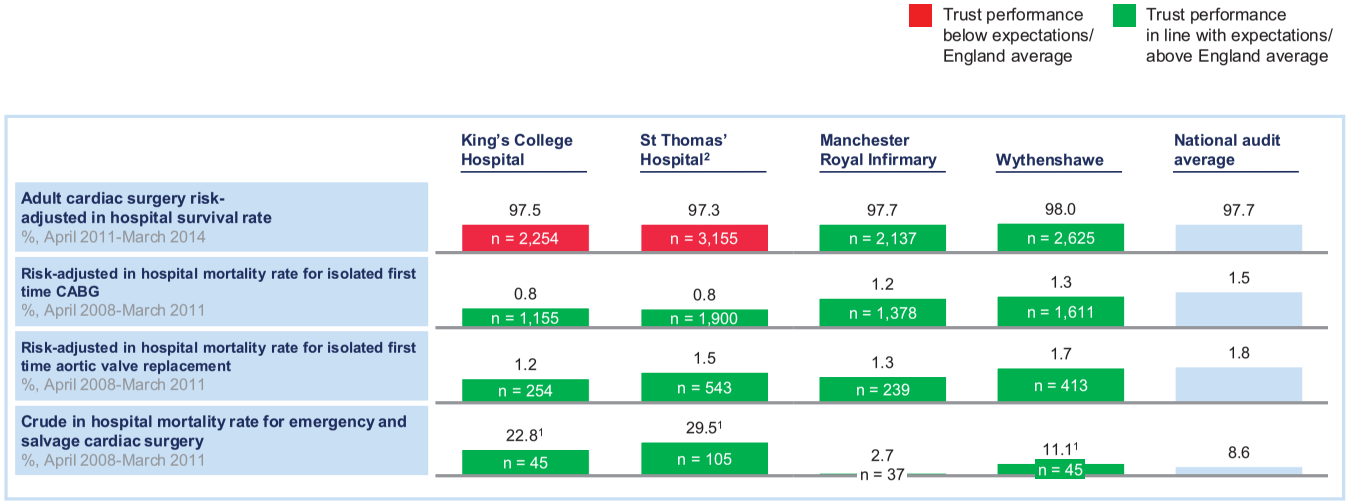
Performance of cardiac surgery services



1 Although mortality is higher than the UK average, it was not highlighted in the audit report as an abnormal result. No confidence interval given for national average

SOURCES: UK Cardiothoracic Centres and Outcomes, http://scts.org/patients/hospitals/default.aspx?location=North+West&procedure=none; National Audit of Cardiac Ablation, 2013/14, British Heart Rhythm Society; NICOR, National Adult Cardiac Surgery Audit,2010/11; National Audit of Percutaneous Coronary Interventions, Annual Public Report, 2013

Performance of cardiac surgery units in the UK



1 Although mortality is higher than the UK average, it was not highlighted in the audit report as an abnormal result. No confidence interval given for national average
2 Guys' and St Thomas' Hospital for cardiac surgery risk-adjusted in hospital survival rate

SOURCES: UK Cardiothoracic Centres and Outcomes, http://scts.org/patients/hospitals/default.aspx?location=North+West&procedure=none; National Audit of Cardiac Ablation, 2013/14, British Heart Rhythm Society; NICOR, National Adult Cardiac Surgery Audit,2010/11; National Audit of Percutaneous Coronary Interventions, Annual Public Report, 2013; Hospital Episode Statistics, HSCIC, 2014/15; MINAP, Public Report 2014

CITY OF MANCHESTER SINGLE HOSPITAL SERVICE
SINGLE SERVICE MODELS – SUMMARY OF MODELS

Appendix XV Cardiac services

Summary

Current model

- UHSM and CMFT offer both cardiology and cardiac surgery. Each of the two has similar scale, with circa 2,500 non-elective inpatient episodes, 1,100 elective inpatient episodes, 1,300-2,000 day cases and 42,000 outpatient appointments.
- UHSM and CMFT operate individually with some collaboration and consultants working across sites on complex cases, ad hoc
- PAHT offering cardiology services, but not on the NMGH site specifically

Current challenges

- Cardiovascular health outcomes for the population fall below UK averages (for example, the national audit average for "call to balloon within 150 minutes of calling for professional help" is 79% in 2013, and in the same year it was 71% for CMFT and 64% for UHSM) , and there is variation in outcomes
- Workforce challenges – difficulty recruiting and retaining staff, especially middle grade doctors and in cardiac surgery difficulties to perform enough activity at scale in each of sub-specialties in each of the two sites
- Limited clinical trial activity

Proposed model

- Shared pathways and protocols for common cardiac conditions, such as congestive heart failure
- Shared staff and rotas for certain aspects of the service, for example aortic surgery, heart transplant and LVAD (Left Ventricular Assist Device)
- Shared waiting lists for cardiac surgery where patients get access to the earliest slot at any of the two sites
- A single research office and agenda
- Closer working with community services to facilitate transfer of care out of hospitals
- Ultimate long term vision of having all cardiac services on a single site

Benefits

- Improved quality of care and ultimately health outcomes
- Reputation/branding/research/education/high quality care and an efficient service could all be maximised in a single service, which would then allow Manchester cardiac services to compete with some of the best in the world

Implementation considerations

- Common pay and incentives
- Processes for cross-site working, such as common IT
- Common governance structures with transparency and the ability to act when changes are needed

Outline of the current model

Manchester provides cardiac services for a circa 3 million population with challenging health needs. Cardiology care is provided at all hospitals. There are 4 catheter laboratory sites for PPCI primary percutaneous coronary interventions (University Hospital of South Manchester

(UHSM), Manchester Royal Infirmary (MRI, CMFT), Fairfield and Wigan) and two heart attack centres (MRI and UHSM).

The City of Manchester also benefits from access to highly specialised care for complex cardiac patients, with two tertiary cardiac surgery centres (at MRI and UHSM), and a cardiothoracic transplant centre at UHSM - one of only five in the UK. A summary of current activity for cardiac surgery is provided below:

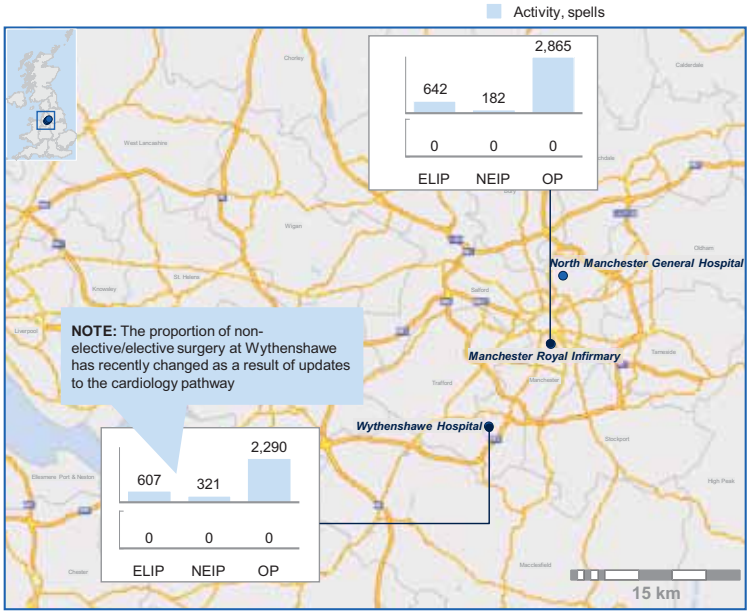
Inpatient cardiac surgery care

PRELIMINARY

Sum of activity at both sites
- 1,249 elective inpatient spells
- 503 non-elective inpatient spells
- 5,155 outpatient spells

Delivered by
- 6 whole time equivalent (WTE) consultants at Manchester Royal Infirmary (MRI)
- 7 cardiac surgeons at Wythenshawe

Using
- 58 cardiology and cardiothoracic surgery beds and 13 critical care beds for cardiac surgery at MRI
- 47 cardiothoracic surgery beds including a shared 31 bedded cardiothoracic critical care unit at Wythenshawe



SOURCE: Trust data 2014/15 | 26

A summary of cardiology activity is shown below:

Inpatient cardiology care

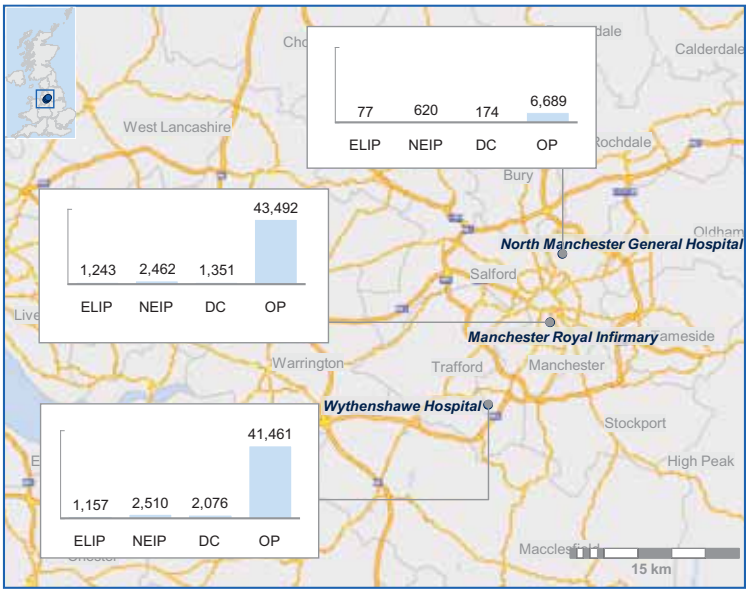
PRELIMINARY

Activity, spells

Sum of activity across all sites
- 2,477 elective inpatient spells
- 5,592 non elective inpatient spells
- 3,601 day case spells
- 91,642 outpatient spells

Delivered by
- 3.84 whole time equivalent (WTE) cardiology consultants at North Manchester General (NMG)
- 10.06 WTE consultants at Manchester Royal Infirmary (part of Central Manchester Foundation Trust, CMFT)
- 14.53 WTE consultants at University Hospital of South Manchester (UHSM)

Using
- 6 beds at NMG[1], 19 dedicated cardiology beds at CMFT and 47 mixed cardiology and cardiac surgery beds at UHSM



1 Part of a 25 bed cardiorespiratory ward so exact bed allocation may change

SOURCE: Trust data 14/15 | 15

Outline of current and future challenges

1. Quality of care

- **Current variations in the provision of care for cardiac patients** [see Appendix XV (a)]
  - There are variations in clinical practice between sites:
    - A case mix adjusted analysis of ambulatory care sensitive cardiac conditions shows that there are higher than average non-elective (NEL) admissions for chest pain, congestive cardiac failure and supraventricular tachycardias at some sites, whereas there are lower than NEL average admissions at other sites.
  - Variations in the performance of individual units according to national audit data.

- **Currently, the Manchester local health economy is performing worse than average on cardiovascular health outcomes** [see Appendix XV (a)]
  - Manchester has some of the poorest health outcomes for cardiovascular disease in the country (Public Health England, 2015).
    - The under 75 mortality rate from cardiovascular disease is higher than both the UK and regional averages, putting Manchester in the worst quartile in the UK.

2. Patient experience

- **Variations in access to care**
  - There is lack of consistent 24/7 cardiology cover across sites.
  - There are variations in the waiting times for cardiac surgery across sites.

3. Workforce

- **Existing challenges**
  - No site can individually support a cardiac device service rota, seven days a week.
  - All sites struggle to recruit and retain cardiology support staff, particularly echocardiologists and electrophysiologists.
  - There are variations in pay and conditions across sites for some support staff.

- **Future challenges**
  - It will become increasingly difficult for each site to recruit sufficient staff to cover three separate 24/7 rotas.

4. Financial and operational efficiencies

- **Opportunities for all providers to perform to the standards of the best**
  - There is a variation in the average length of stay (adjusted for case mix) across sites [see Appendix XVII].
  - There are variations in the number of non-elective admissions (adjusted for case mix) across sites [see Appendix XVII].

5. Research and innovation

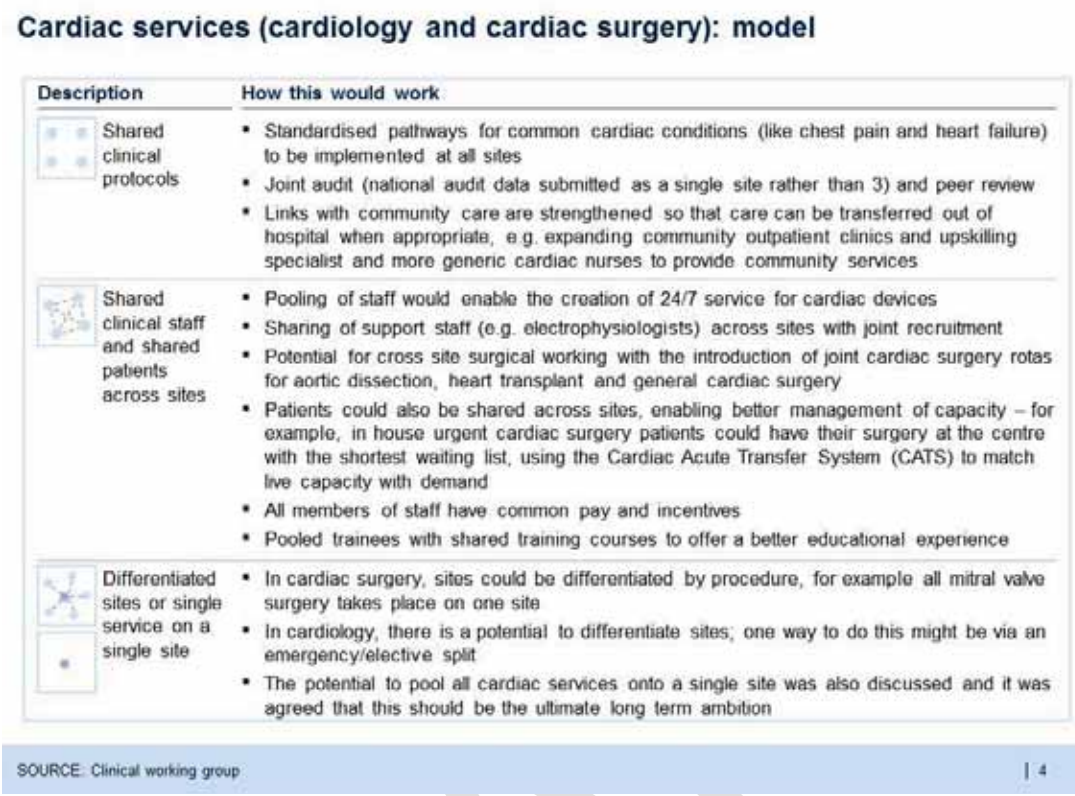
- **Inequity of access for all patients to clinical trials**
  - The number of research trials varies from 20 to 38 in cardiology across sites, meaning that some patients have a greater chance of being recruited to a trial based on where they are cared for.

- **Barriers to conducting research**
  - The CWG (clinical working group) felt that there was insufficient infrastructure to support research across all sites.
  - As a result, there are difficulties in attracting clinical academics to Manchester.

6. Education and training

- **Variations in clinical exposure amongst trained staff**
  - Because services are currently operating independently, there are limited opportunities for trained staff to benefit from exposure to wide variety of clinical cases.

The CWG (clinical working group) have proposed the following single service model for cardiac services



Cardiac services (cardiology and cardiac surgery): model

Description	How this would work
Shared clinical protocols	• Standardised pathways for common cardiac conditions (like chest pain and heart failure) to be implemented at all sites • Joint audit (national audit data submitted as a single site rather than 3) and peer review • Links with community care are strengthened so that care can be transferred out of hospital when appropriate, e.g. expanding community outpatient clinics and upskilling specialist and more generic cardiac nurses to provide community services
Shared clinical staff and shared patients across sites	• Pooling of staff would enable the creation of 24/7 service for cardiac devices • Sharing of support staff (e.g. electrophysiologists) across sites with joint recruitment • Potential for cross site surgical working with the introduction of joint cardiac surgery rotas for aortic dissection, heart transplant and general cardiac surgery • Patients could also be shared across sites, enabling better management of capacity – for example, in house urgent cardiac surgery patients could have their surgery at the centre with the shortest waiting list, using the Cardiac Acute Transfer System (CATS) to match live capacity with demand • All members of staff have common pay and incentives • Pooled trainees with shared training courses to offer a better educational experience
Differentiated sites or single service on a single site	• In cardiac surgery, sites could be differentiated by procedure, for example all mitral valve surgery takes place on one site • In cardiology, there is a potential to differentiate sites; one way to do this might be via an emergency/elective split • The potential to pool all cardiac services onto a single site was also discussed and it was agreed that this should be the ultimate long term ambition

SOURCE: Clinical working group | 4

Description of potential impact of the single service model

Benefits

1. Quality of care

1.1 Reduced variation in the provision of care through the use of shared pathways and protocols

Description

- Quality of care for patients could be improved through the use of shared clinical pathways and protocols throughout the service for common cardiac conditions, like chest pain and heart failure, with shared governance throughout the service to ensure consistent implementation.
- This would not only reduce the variation in care provided, but also bring the overall quality of care up to the highest standards set by national audit committees
- By introducing standardised enhanced recovery pathways throughout the service, the average length of stay for patients could be reduced. This not only benefits patients, but helps to improve the operational and financial efficiency of the service.
- Joint peer review and ownership of City-wide audit data could reinforce the shared governance of these pathways. For example, the whole service could submit data as one site for national audits, creating service-wide accountability for the results.

1.2 Closer integration with community care to address the population health challenges and prevent avoidable hospital admissions

Description

- Shared pre and post-hospital pathways, designed jointly with community care could enable cardiac patients across the whole of the City of Manchester to be cared for in a more seamless fashion.
- For example, community and acute physicians could jointly agree on:
  - Step up criteria: referral pathways, work-up diagnostics, criteria for direct access re-admission
  - Step down criteria: discharge protocols and after care, lifestyle prescriptions and home medication (including IV diuresis at home for heart failure patients)
- The existing community cardiology outpatient clinics could be expanded, with triage of patients into those that require community cardiology services and those that require general community services
  - Pacemaker follow-up, heart failure, cardiac rehabilitation could all be provided in the community, although some community based diagnostic equipment would be needed
- The single service model would facilitate the upskilling of specialist and general cardiac nurses to provide community services, based on the model for community cardiac care in Liverpool.

Evidence of improved population health outcomes

- Liverpool Community Health NHS Trust provide a nurse-led community service where patients with cardiac conditions can be reviewed in the community (Community Cardiac Service leaflet – available online at www.liverpool-communityhealth.nhs.uk).
- The service includes:
  - Community reviews for patients with heart failure symptoms who are referred by the GP, and are unable to attend the hospital clinic because they are housebound.
  - Support and information to patients recovering from a heart attack, including rehabilitation, medication, symptoms and lifestyle advice.
  - Cardiac rehabilitation nurses who will contact patients on their return home from hospital following cardiac events, procedures or surgery.
- There is evidence from international examples that closer integration between

Kaiser Permanente's approach to tackling heart disease - case study

Kaiser Permanente is a non-profit health maintenance organisation serving 9.5M people in the US.

It has taken an integrated, system-wide approach to tackling heart disease, through:

- **Primary prevention interventions** such as lifestyle changes
  - taking a wider approach to population health by improving access to green spaces and healthy food in schools
- **Secondary prevention** through the Collaborative Cardiac Care Service (CCCS) :
  - Post discharge, patients are assigned a personal nurse to guide them through a 3-6 month rehabilitation programme to encourage lifestyle change
  - Their care is then taken over by a pharmacist who ensures they receive medication that has been known to decrease the risk of future heart problems
  - Electronic health records are used to help proactively manage each patient, by prompting pharmacists if patients fail to pick up their prescription, or highlighting high cholesterol results that may require a change in medication
  - **In a retrospective cohort study, CCCS patients had an 89% reduction in overall mortality and 88% reduction in cardiac mortality compared with patients receiving standard care**
  - **Health care expenditure for CCCS enrollees was on average $60 less/day**
- **High quality acute care** for cardiac patients
  - Underpinned by shared pathways and protocols

community and acute providers can improve the health outcomes for patients, as well as reduce avoidable hospital admissions (see Kaiser Permanente's approach to tackling heart disease – case study. *Delate et al., "Reduced health care expenditures after enrollment in a collaborative cardiac care service," Pharmacotherapy 2010, 30(11)).*

- However, the challenge of tackling poor population health outcomes will require collaboration across the whole healthcare system, not just organisations – from NHS acute providers, to local authorities, the third sector and patients themselves *(Alderwick et al. "Population health systems – going beyond integrated care" The Kings Fund, 2015).*

Evidence of reduced emergency hospital admissions

- There is evidence from managed disease networks in Scotland that closer integration between primary and secondary care can reduce emergency admissions for angina *(Guthrie et al, Delivering health care through managed clinical networks (MCNs): lessons from the North, NIHR report, 2010).*
- The King's Fund recommend that providers (and commissioners) consider implementing multidisciplinary interventions (using a team to bridge the gap between hospital admission and discharge) and telemonitoring for patients with heart failure, based on evidence that they can reduce emergency admissions *(Purdy, Avoiding hospital admissions – what does the research evidence say? The King's Fund, 2010).*

1.3 Potential to differentiate or consolidate surgical sites

Description

- The Clinical Working Group (CWG) agreed on a shared ambition to differentiate sites first and eventually then consolidate services on a single site:
  - For cardiac surgery, differentiation could potentially be based on procedure– for example, all mitral valve surgery could be performed at one site, rather than two.
  - The potential to differentiate cardiology activity by elective/acute activity was also discussed, but not agreed.
- Consolidation of activity could deliver the following benefits:
  - Attainment of critical volumes of activity to maintain and develop clinical expertise
  - Closer collaborations between staff – both clinical and academic
  - Establishment of a centre of excellence that would attract and retain high calibre staff and trainees

Evidence

- There is some evidence that consolidation of surgery allows critical minimum volumes to be met in order to maintain surgical competence, and that high volume cardiac surgeons are associated with a lower operative mortality.
- However, there are no internationally recognised standards for minimum volumes of cardiac surgery:
  - The Leapfrog Group (a national non-profit watchdog based in the US) published minimum volumes for a short list of procedures in 2007, however they no longer use this with the hospital safety scoring system and the evidence seems quite contested on what the cut-off minimum volumes should be, and in which procedures the (volume/outcomes) relationship clearly exists (The Leapfrog Group, Factsheet – surgeon volume, 2007).
  - More recent activity on this in the US has recommended minimum volumes for mitral valve repair, but the cut-off is too low to be relevant to the activity performed in Manchester (10 operations per year per doctor) (U.S. news article, Low Volume Hospitals – What to Ask, available online:

http://www.usnews.com/news/articles/2015/05/18/low-volume-hospitals-what-to-ask).

- There is some evidence that high-volume cardiac surgery programs deliver improved outcomes at lower cost
- In an observational study of 81,289 adults undergoing coronary artery bypass surgery in a sample of US hospitals, lowest-volume hospitals had 19.8 percent higher costs (95 percent CI, 3.9 percent to 38.0 percent higher); adjusting for care quality did not eliminate differences in costs. Low surgeon volume was also associated with higher costs, though less strongly (Auerbach et al., Archives of Internal Medicine, 2010;170(14):1202-1208)

2. Patient experience

2.1 Faster access to specialist care

Description

- Patient experience could be improved in two ways:
  1) Pooling the specialist workforce to create a new 24/7 joint cardiac device service, which would provide specialist advice as well as a seven day pacing list.
  2) Creating a single, pooled waiting list for some cardiac surgery, which would enable patients to be directed to the site with the shortest waiting time. This would initially be instigated for all semi-urgent cases, with the most clinically urgent cases being triaged to the top of the list. There would also be shared pre and post-operative protocols and pathways for all patients throughout the service.
    - There is an opportunity to expand the Manchester Cardiac Acute Transfer System to provide full transparency on all cardiac surgery patients (demand) and available theatre and bed capacity (supply) on a live basis to all surgeons and cardiologists – enabling them to match demand and supply in an effective and transparent way, and therefore move towards achieving the target of providing a surgical intervention to patients within five days.
- Both of these would benefit patients by improving access to pacemaker insertions and cardiac surgery.

Evidence for improved access to pacemaker implantation

- The Heart Rhythm UK standards for implantation and follow-up of Cardiac Rhythm Management Devices (2011) recommends

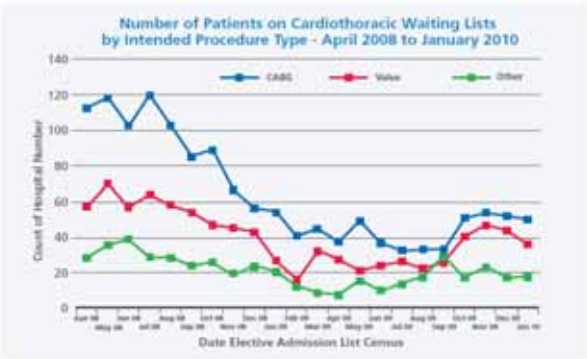
Lancashire Cardiac Centre - case study

The Lancashire and Cumbria cardiac network were at risk of breaching the 18 week target for cardiac surgery in 2008/9. In response, they instigated a change in working that included:

- Pooled waiting lists for all first referrals and those patients with one and two vessel disease
- A uniform procedure for referring patients for cardiac surgery
  - Including multidisciplinary team review of all patients referred for cardiac surgery, via a videoconference meeting
- A shared pre-operative pathway throughout the network
- Implementation of an electronic theatre scheduling tool that could coordinate the booking of theatre cases with live theatre capacity and resources information

The result was:

- A reduction in waiting times for surgery to 6 weeks across the network
- A reduction in the number of patients on the waiting list from 120 to 79



that arrangements for 24-hour cover should be in place for all cardiac device patients.
- The Canadian Cardiovascular Society recommend that implantation of urgent/semi-urgent pacemaker devices should occur within three days, partly based on evidence of a positive correlation between the length of waiting times and adverse events in these patients *(Simpson et al. Universal access – but when? Treating the right patient at the right time: Access to electrophysiology services in Canada. The Canadian Journal of Cardiology. 2006;22(9):741-746).*

Evidence for improved access to cardiac surgery
- There are some examples from around the UK of significant reductions in waiting times for cardiac surgery by pooling waiting lists *(NHS Improvement, A guide to commissioning cardiac surgical services, 2013)* – see Lancashire Cardiac Centre case study.

3. Workforce

3.1 Greater ability to meet the staffing needs of the future

Description
- In order to address the **workforce** challenges, the Clinical Working Group have proposed the model of shared rotas for some aspects of the single service, such as the joint 24/7 cardiac device service and potentially, a shared aortic dissection and heart transplant rota
- They also discussed the potential to share cardiac support staff, such as electrophysiologists (EP) and echocardiologists across sites
- Pooling the cardiac surgery workforce would allow sub-specialisation, which could improve the efficiency of surgical procedures and enable pursuit of individual clinical interests (for example, into transplant, aortic surgery or mitral valve surgery etc.)
- Joint recruitment of staff for the single service could prevent competition for staff between sites
- Rotational posts, to allow greater exposure during training, and harmonised pay and conditions throughout the single service could improve staff retention

Evidence
- Together, there would be a combined workforce of 13 cardiac surgeons and 28 cardiologist consultants, who would be able to cover a shared rota more sustainably then if three individual rotas were required.

4. Financial and operational efficiency [see Appendix XVII]

4.1 Reduced non-elective admissions due to the use of shared protocols and pathways

Description
- This could be achieved by closer integration with primary and community care, as outlined in section 1.2

High level estimate of cost saving
- 5-10 percent reduction in non-elective costs = ~£1-2 million

4.2 Reduced variation in first-to-follow up outpatient appointment ratio

Description
- There are existing variations in the first-to-follow up ratios across sites

- If this ratio could be standardised to the top quartile of all UK Trusts, then there is a potential efficiency saving

High level estimate of cost saving

- A conservative estimate for this would be a 7-10 percent reduction in outpatient costs = ~£0.3 million across all sites

4.3 More efficient use of existing workforce

Description

- Shared cardiac support staff across all sites could enable the service to be more sustainably staffed

High level estimate of cost saving

- Unquantified

4.4 Reduction in average length of stay by standardising clinical pathways

Description

- There are existing variations in the case-mix adjusted average length of stay across sites; if the same standard of care could be achieved across all sites, this could deliver a potential cost saving.
- Evidence from a Cochrane Review of clinical pathways found that 11 out of 15 studies showed significant reduction in length of stay for patients on standardised pathways compared to usual care *(T Rotter et al., "Clinical pathways: effects on professional practice, patient outcomes, length of stay and hospital costs" Cochrane Database of Systematic Reviews 2010 7(3)).*

High level estimate of cost saving

- Ten percent reduction in average length of stay costs = ~£0.9 million

4.5 Reduced duplication of tests due to shared IT and diagnostic standards across all sites

Description

- There is existing duplication of investigations and activity due to lack of a joined up IT system for patient notes and diagnostics.
- There is also the potential to deliver cost savings from joint procurement.

High level estimate of cost saving

- Ten percent reduction in the cost of consumables = ~£1.5 miillion

4.6 Exiting of some fixed costs due to more efficient use of existing capacity

Description

- Redistribution of cardiac patients across sites could improve operational efficiency (for example, using pooled rotas and the Cardiac Acute Transfer System to direct surgical patients to the site with the shortest waiting time)

High level estimate of cost saving

- Five percent reduction in fixed costs = ~£0.5 million

4.7 Exit of one mid-tier rota and additional fixed costs from consolidation of cardiac surgery on a single site

Description

- Consolidation of cardiac activity on one site would allow the exit of fixed costs and mid-tier rotas from one site

High level estimate of cost saving

- Exiting one mid-tier rota would save ~£1.5 million

- Consolidation of activity on one site would save 50 percent of fixed costs = ~£1.1 million, however, this would be offset by capital requirements at the receiving site to accommodate the increase in activity

5. Research and innovation

5.1 Equity of access for all patients to participation in clinical trials

Description

- There is an existing inequity of access for patients to cardiology clinical trials, depending on which site they are treated at.
- By working as a single service, patients could be recruited to research trials across the whole service. This could improve overall patient outcomes.

Evidence

- There is evidence that patient outcomes are improved if they are cared for in research active trusts, even after controlling for size and staffing level of Trusts (Ozdemir BA, Karthikesalingam A, Sinha S, Poloniecki JD, Hinchliffe RJ, Thompson MM, et al. (2015) Research Activity and the Association with Mortality. PLoS ONE 10(2): e0118253. doi:10.1371/journal.pone.0118253)

5.2 An opportunity to boost the research profile for cardiac services in Manchester

Description

- By pooling resources and coordinating the existing research efforts under a single research office, it would be possible to reduce duplicated activity and help concentrate efforts on the highest value research projects, making better use of existing research grants.

Evidence

- Commercial (and non-commercial) trial organisers seek research sites with a streamlined, single point of access for administration, access to a large pool of patients, and trial coordination support (The Academy of Medical Sciences, 2011).
- Therefore, the single service model is more likely to be able to attract new research income from clinical trials than the status quo.

5.3 The single service model also makes it easier to translate research findings and innovative practices into the NHS

Description

- The single service model also makes it easier to translate research findings and innovative practices into the NHS, due to the use of single care pathways and protocols that can be rapidly updated and disseminated to reflect changes in the evidence.

6. Education and training

6.1 Rotation of clinical support staff through the service creates a better training experience

Description

- Clinical support staff may benefit from exposure to a wider variety of clinical cases across the service, therefore creating a better training experience.
- Shared training courses could be developed across the city for all staff groups (including sonographers, physiologists, nurses, community clinicians).

Evidence

- There is some evidence that inter-professional education can improve patient outcomes and collaboration between staff *(Reeves S, et al. Interprofessional education: effects on professional practice and healthcare outcomes (update). Cochrane Database of Systematic Reviews 2013, Issue 3. Art. No.: CD002213)*

Implementation considerations

There is already a collegiate and cooperative ethos amongst the cardiac clinicians within Manchester. There is a shared long term ambition to consolidate all cardiac surgery onto a single site as this will be the best platform to provide a quality focussed, efficient service that has a nationally (and internationally) recognised research agenda/reputation and can attract/retain the best staff.

Organisational boundaries and capital implications were the limiting factors to achieving this ambition (the group felt that if they came under a single organisation, issues about the location of this single site would disappear). A common IT platform is an imperative for cross-site working, as are the appropriate organisational arrangements for enabling staff to work across site, such as joined up HR.

The plans that they have developed thus far (shared protocols, cardiac device rota, pooling of staff, pooling of waiting lists, single rotas, differentiated sites) are the steps along the way to achieving the above vision of the future.

City of Manchester Single Hospital Service Review

Position statement on Back Office savings

1. The closer alignment of hospital services in the City of Manchester could present opportunities to achieve savings in the current overhead cost base, including corporate support, facilities management and "top office" functions. It must be recognised, however, that all three Acute trusts in the city have already been actively addressing these savings opportunities within the most recent 2 years.

2. Significant reductions in back-office and support costs were made as part of a formal Turnaround programme in UHSM through 2014/15 financial year. The sustainability of some corporate functions at the resulting reduced level of resource, has been under review internally over recent months as a number of the reductions have had detrimental impact on income recovery and cost control. UHSM will have delivered a further £20m in cost savings in 15/16 and with the introduction of an EPR system in 16/17 will see further reductions, there is limited scope for further incremental reductions.

3. For PAHT, there has been a long-standing programme of rationalisation of back office functions across the Trust. The benefits of economies of scale across the second largest Acute Trust in the North West of England, have progressively been taken. Options which were predicated on bringing the back office functions associated with North Manchester General Hospital into closer alignment with the equivalent services at UHSM and CMFT, would create an obvious risk of reduced economies of scale across the remainder of PAHT services - that could outweigh the potential savings within the City of Manchester even over a 5-year period, once the costs of implementation have been taken into account.

4. CMFT has launched an Internal Turnaround programme in January 2016 which includes a targeted 20% reduction in costs across all corporate support functions, almost two-thirds of these savings will be in place by April 2016.

5. A back-office services work programme has been initially developed, following 'idea generation' work across Acute Trust Finance Directors in the context of GM Devolution. This work programme is at an early stage of development but is focussed on tackling all aspects of corporate services where opportunities for economies of scale underpinned by common, standardised core business processes, might exist. A similar programme is under way to identify and pursue relevant Estates opportunities.

6. Any assessment of what further opportunities might be more effectively pursued at 'city of Manchester hospital services' level, therefore needs to proceed from an appreciation of these existing levels of active delivery of back office savings within the three Trusts, together with the commitment of all three Boards, to pursuing the Devolution opportunities through the work programmes now established.

7. The picture is sufficiently complex that it is unlikely that it would be possible to make a meaningful assessment of the savings potential simply by apportioning or pro rating existing savings assessments. It is most meaningful to think of savings from "overhead" costs in three categories:
    i. Corporate support services such as payroll, recruitment, occupational health, procurement, IT support and research management. These are the services where most action has been taken already. Some services are amenable to early savings (ie "commodity" services such as payroll), but others are more challenging and take significantly longer to deliver (e.g. savings in IT functions may be

possible, but are largely dependent of complex and time-consuming information system integration processes).

ii. Estates and facilities management services (i.e. “hard” and “soft” FM). UHSM and CMFT are tied into very long-term PFI contract arrangements which would severely limit the potential for Estate and FM service rationalisation.

iii. “Top office” costs (i.e. the costs associated with the Board, the Executive Team, the Governing Body and associated corporate functions such as contract and income management, strategic financial management, corporate and strategic informatics, performance management, quality and risk management, and strategic and commercial development). There are more substantial cost savings to be achieved across some of these corporate functions, but these improvements could only be realised at a material scale in the context of formal joint working arrangements which reach the level of full integration, if the scale of clinical benefits from establishing Single Hospital Services creates the case, and if the follow-on stage of generating governance options determines that this option is a preferred delivery model.

8. There are a wide range of unknowns in the current Single Hospital Service Review process, and more widely in GM Devolution planning processes. The level of confidence that it is possible to sustain in this environment is limited, and projection of potential savings is extremely challenging. Based on the “traditional” back office (i.e. corporate support service) areas described at i) above, the potential additional savings across the City of Manchester from the Single Hospital Service proposals would be very modest. The potential savings associated with rationalisation of estates and facilities management functions (item ii) above) are impossible to quantify until detailed service models have been developed.

9. The savings to be generated from “top office” functions (item iii) above are potentially greater. Published data on the maximum costs savings in this area are not widely available. The best local comparator in recent times is probably the savings achieved in integrating Trafford Hospitals into CMFT. Corporate cost savings of £5.5m were delivered in that example case.

City of Manchester Single Hospital Service – Illustration of financial opportunity

Appendix XVII
March 2016

Caveats for financial analyses

What the analyses are:	What the analyses are not:
▪ Tools to encourage discussions on what you would need to believe for a single service model to save money	▪ An exhaustive examination and options appraisal of the financial implications for every model
▪ An illustration of where value may lie when moving to single service models and what the scale of this might be	▪ Detailed modelling to show exactly how these changes would be achieved in terms of site and staff
▪ Potential savings for the health system in the city of Manchester	▪ A list of savings directly for providers (changes illustrated often reduce activity which could save the health system money, but would put pressure on providers as they would no longer have this income)
▪ Estimates of cost that could be avoided in the future, not necessarily costs that could be taken out of the current baseline	▪ A detailed consideration of the financial impacts beyond the city of Manchester as per Healthier Together review

Contents

Context of the review

Clinical sustainability	▪ Growing demand from epidemiological and demographic factors ▪ Problems in recruiting and retaining staff in some specialties and professions ▪ Competition between Trusts for staff – we are “fishing from the same pool” ▪ Limited ability to influence workforce supply ▪ Constrained on sub-specialisation ▪ Struggle to meet agreed best practice standards
Operational targets	▪ No Trust is achieving the A&E four hour wait ▪ Other targets (RTT, Diagnostic waits, Cancer standards) are very difficult to sustain ▪ Enormous operational pressures
Financial outlook	▪ Health and social care system in Manchester has a £284m forecast deficit by 2021, if we do not change anything - £163m for health and £121m for social care ▪ All Trusts are facing severe financial challenges in 2015/16, and this will get worse for 2016/17 and beyond ▪ Access to capital is likely to be extremely tight

These challenges can be viewed in the context of a "Do Nothing" deficit of ~£160 M by 2021/22

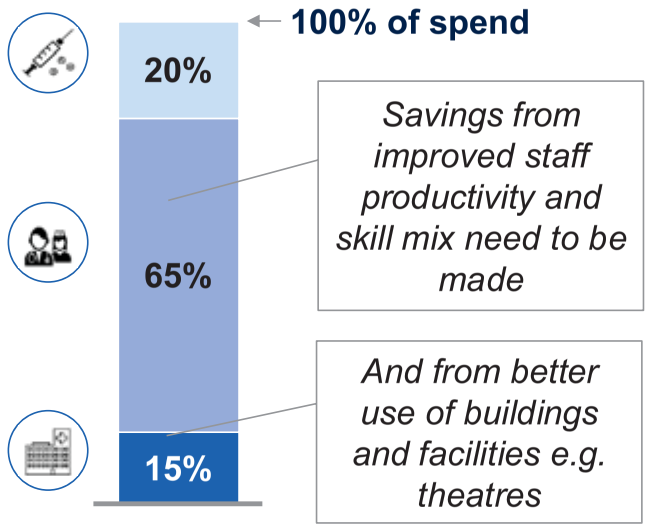
ILLUSTRATIVE

To address the "Do Nothing" deficit will require ~10% reduction in costs from 2021/22 levels

Savings can be made in only 3 places:

- Drugs and other consumables
- Workforce
- Estates and assets

This will require costs to be reduced across the board – which will in turn require cross provider working

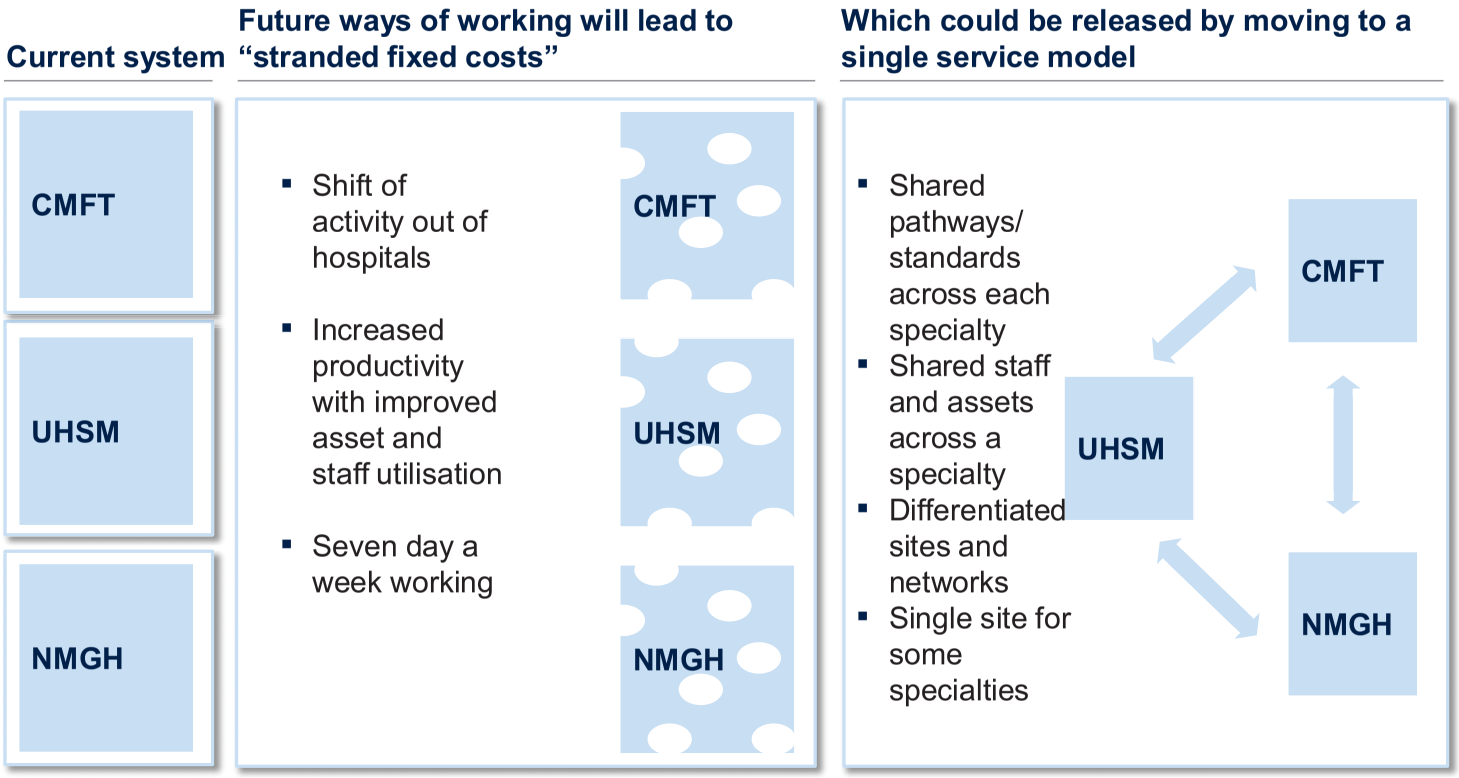


Proposed changes to out of hospital care

- The commissioners have indicated that there will be a single contract for out of hospital services, including urgent care, from April 2016
- A single LCO (Local Care Organisation) for Manchester will be the delivery vehicle to hold and deliver a single contract for out of hospital services across 12 neighbourhood teams
- The aim will be to provide greater coordination between primary care, social care, community services, third sector partners, General Practice and Acute & Mental Health providers
- As a result, there is an expectation that there will be a 20% reduction in acute hospital activity by 2020.

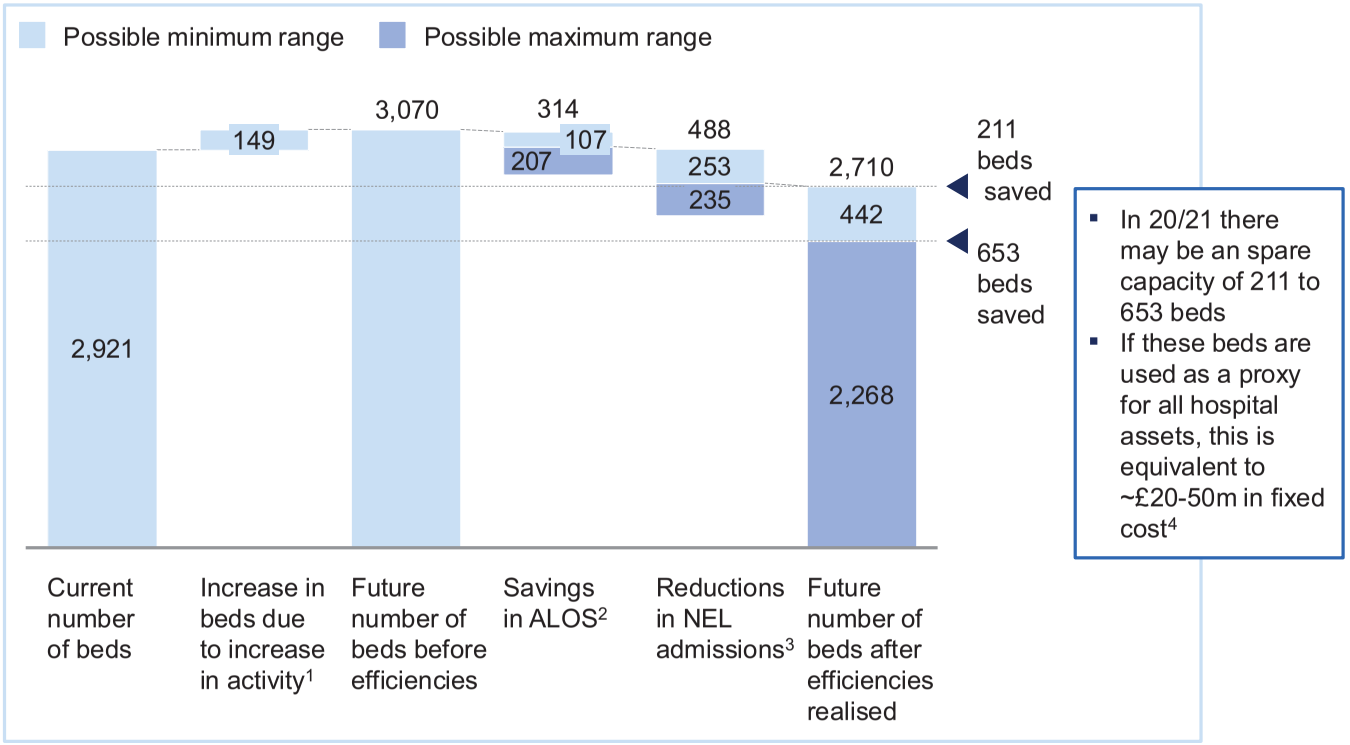
Possible high level impact and responses to future challenges

ILLUSTRATIVE



Depending on changes in activity, length of stay and movement of activity into the community, stranded fixed costs could be ~£20-50m by 2020/21

ILLUSTRATIVE



1: 1% increase based on extrapolation of 3 years of activity across the 3 sites; 2: -0.7% to -1.4% based on reduction in ALOS over 3 years across 3 sites and across all England Trusts; 3: -10% to -20% based on ACSC analysis across the 3 sites and assumption in reduction in NEL admissions made by Manchester Local Care Organisation; 4: Assumes changes in bed volume represent changes in all fixed cost and fixed cost is 15% of 14/15 total hospital cost

SOURCE: HSCIC 2010-2015

Exemplar specialties were selected to illustrate how a single service model might meet these challenges

To demonstrate this impact the steering group have selected the following specialties to act as exemplars for the impact of single services

- Cardiac services
- Respiratory services
- Secondary paediatrics
- Maternity services
- Radiology
- Infectious diseases
- Critical care
- Rheumatology

Contents

ILLUSTRATIVE

Illustrative potential financial benefits of a single service model can be shown across the following categories

X% Calculated based on variation between sites
X% Illustrative, based on clinical view a saving could be made

	Potential to reduce activity and duplication of effort (%)	Potential to reduce unit cost of activity (%)					Approx. saving off current baseline *(including illustrative savings)* (£M)
		Medical staff cost	Nursing staff cost (ALOS)[1]	Other staff cost	Consumables	Fixed cost	
Cardiac Services	5-10% NEL 7-10% outpatient	*50% mid-tier rota*	10% ALOS[2]	…	*10% consumables*	*5% assets*	5-6
Respiratory services	1-6% NEL 12% outpatient	5% staff	19% ALOS	…	5-10% consumables	…	3
Maternity services	*5-20% NEL* *5% outpatient*	*5% staff*	9% ALOS	…	*10% consumables*	…	5-10
Secondary care paediatrics	*10% NEL* 6% outpatient	*10% staff*	11% ALOS	…	*10% consumables*	…	4
Radiology, including interventional radiology	*6% Reduction in tests*	*5-10% staff*	…	…	*10% consumables*	…	1-2
Infectious disease	*5-7% NEL* 8% outpatient	…	4% ALOS	…	*10% consumables*	…	0.5
Rheumatology	10% outpatient	*10% staff*	*Unquantified*[3]	…	*10% consumables*	*Unquantified*	1
Critical care	…	12% staff	2% ALOS	…	*10% consumables*	…	2
Back office cost	**£5.5m of back office savings were made in the Trafford merger (dependent on organisational options and not included in the total)**						
Total	*Value is highly dependent on other changes to the model of care, most notably in integrated care and therefore will double count integrated care savings substantially:*						22 - 29

Savings illustrated need to be considered against future increases in costs, for example if activity were to increase by 20% in the future, in the new single service model there may only be a need for 10% more staff not the 20% that would be required with no change in the model

1 Savings calculations use case mix adjusted ALOS variation analysis, a unified OPAT service is an example mechanism for these savings; 2 weighted average saving of cardiology and cardiac services; 3 Variation suggests a 41% potential ALOS saving, this has not been used as the low number of inpatient spells makes accurate calculation of case mix adjusted ALOS inaccurate

ILLUSTRATIVE

Illustrative potential financial benefits of a single service model can be shown across the following categories

£M Calculated based on variation between sites
£M Illustrative, based on clinical view a saving could be made

	Potential to reduce activity and duplication of effort (£M)	Potential to reduce unit cost of activity (£M)					Approx. saving off current baseline *(including illustrative savings)* (£M)
		Medical staff cost	Nursing staff cost (ALOS)	Other staff cost	Consumables	Fixed cost	
Cardiac Services	£1-2M NEL £0.3M outpatient	*£1.2-1.5M staff*[3]	£0.9M ALOS[2]	…	*£1.5M consumables*	*£0.5M*	5-6
Respiratory services	£0.06-0.4M NEL £0.6M outpatient	£0.6M staff	£1.3M ALOS	…	£0.2-0.4M consumables[5]	…	3
Maternity services	*£1.8-7.1M NEL* *£0.4M outpatient*	*£0.5M staff*[4]	£0.9M ALOS	…	*£1.2M consumables*	…	5-10
Secondary care paediatrics	£1.6M NEL £0.08M outpatient	*£0.6M staff*[4]	£1M ALOS	…	*£0.4M consumables*	…	4
Radiology, including interventional radiology	*Unquantified*	*£0.9-1.8M staff*[6]	…	…	*£0.1M consumables*	…	1-2
Infectious disease	*£0.1-0.2M NEL* £0.1M outpatient	…	£0.07M ALOS	…	*£0.1M consumables*	…	0.5
Rheumatology	£0.2M outpatient	*£0.2M staff*[4]	*Unquantified*[1]	…	*£0.2M consumables*	*Unquantified*	1
Critical care	…	£0.7M staff	£0.6M ALOS	…	*£1M consumables*	…	2
Back office cost	**£5.5m of back office savings were made in the Trafford merger (dependent on organisational options and not included in the total)**						
Total	*Value is highly dependent on other changes to the model of care, most notably in integrated care and therefore will double count integrated care savings substantially:*						22 - 29

Savings illustrated need to be considered against future increases in costs, for example if activity were to increase by 20% in the future, in the new single service model there may only be a need for 10% more staff not the 20% that would be required with no change in the model

1 Variation suggests a 41% potential ALOS saving, this has not been used as the low number of inpatient spells makes accurate calculation of case mix adjusted ALOS inaccurate; 2 weighted average saving of cardiology and cardiac services; 3 Based on a high level calculation - one mid tier rota on one site supported by 8-10 mid tier doctors, each with a fully loaded cost to the Trust of GBP 150,000 per year; 4 Based on assumption that 1 WTE costs £200K; 5 Based on evidence that in severe asthma, 5% of patients are responsible for 50% of drug costs, and treatment avoidance is achieved in 10% of these patients; 6 Calculated from staff costs for UHSM and CMFT radiology benchmarking data 14/15

ILLUSTRATIVE

The rationale for the financial benefits of a single service model can be illustrated across the following categories (1/2)

● Requires single service ○ Does not require single service

	Estimated cost saving	Calculation	Rationale	Degree to which this is enabled by single service
Cardiac Services	5% NEL activity	ACSC (ambulatory care sensitive conditions) analysis	▪ Improved pathways enable care to be transferred to community (e.g. better heart failure pathway could help admission avoidance)	◐
	5% NEL activity	# of transfers/clinician validation	▪ Investigations conducted at different sites are no longer duplicated	◕
	7-10% OP activity	1st to FU ratio	▪ Reduced follow-up ratio due to shared pathways	○
	50% mid tier rotas	High level estimate	▪ Consolidation of surgery on one site enables exit of duplicate middle tier rota at one site	●
	10% ALOS	Case mix adjusted ALOS	▪ Reduced variations in length of stay due to shared pathways/sharing best practice	○
	10% consumables	Illustrative	▪ Joint procurement reduces consumables and other variable costs	●
	5% fixed costs	Illustrative	▪ Redistribution of patients according to capacity improves operational efficiency (e.g. shared elective surgery waiting lists)	●
Respiratory	1% NEL activity	HRG codes: # complex cases/transfers	▪ Complex patients go straight to the hub, therefore reduced number of contacts with the service ▪ Complex patients can be cared for locally with MDT advice via videoconference, preventing unnecessary transfers	◐
	5% NEL activity	ACSC analysis	▪ Transfer of care into community due to shared clinical pathways, which promote best practice, and GP upskilling	◔
	12% OP activity	1st to FU ratio	▪ Reduced follow-up ratio due to shared pathways	○
	5% staff	Illustrative	▪ Shared rotas enable 24/7 rotas to be covered more easily in the future, without the need for as many additional WTEs	●
	19% ALOS	Case mix adjusted ALOS	▪ Reduced variations in length of stay due to shared pathways/sharing best practice	○
	5-10% consumables	High level estimate	▪ Expensive treatments (e.g. biologics) are targeted at the most appropriate patients by having expert input/shared pathways	◐
Maternity services	5-20% NEL activity	Illustrative	▪ Transfer of care to community due to more effective community midwife service	●
	5% OP activity	Clinical validation	▪ Reduced follow-up of non-complex patients in hospital due to shared pathways	○
	5% staff	Illustrative	▪ Shared rotas enable 24/7 rotas to be covered more easily in the future, without the need for as many additional WTEs	●
	9% ALOS	Case mix adjusted ALOS	▪ Reduced variations in length of stay due to shared pathways/sharing best practice	○
	10% consumables	Illustrative	▪ Joined up IT and diagnostics prevents duplication of tests; joint procurement reduced cost of consumables	●
Peadiatrics	10% NEL activity	Clinical validation	▪ Reduced emergency admissions from standardised pathways and upskilling of community	◔
	6% OP activity	1st to FU ratio	▪ Reduced follow-up ratio due to shared pathways	○
	10% staff	Clinical validation	▪ Shared staff enable rotas to be covered more easily in the future, without the need for as many additional WTEs	●
	11% ALOS	Case mix adjusted ALOS	▪ Shared pathways and best practice enable all providers to reach the ALOS of the best	◔
	10% consumables	Illustrative	▪ Joint procurement reduces consumables and other variable costs	●

- Values are illustrative, but build upon the analyses detailed below to encourage discussions amongst clinicians
- Savings illustrated need to be considered against future increases in costs, for example if activity were to increase by 20% in the future, in the new single service model there may only be a need for 10% more staff not the 20% that would be required with no change in the model

ILLUSTRATIVE

The rationale for the financial benefits of a single service model can be illustrated across the following categories (2/2)

● Requires single service ● Does not require single service

	Estimated cost saving	Possible method of validation	Rationale	Degree to which this is enabled by single service model
Radiology	6% NEL activity	National estimates of test duplication	▪ Reduced duplication due to shared PACS and expert opinion initially	◐
	5-10% staff	# of WTEs	▪ Transfer of activity from radiologists to sonographers reduces staff costs ▪ Greater utilisation of existing equipment means fewer additional WTE radiographers needed in future ▪ Sub-specialist reporting improves the efficiency of staff, meaning that fewer than predicted additional WTEs will be needed in future ▪ Shared staffing for vascular services enables a 24/7 rota to be covered more easily with the existing WTE staff	●
	10% consumables	Illustrative	▪ Joint procurement reduces consumables and other variables costs	●
Infectious diseases	5% NEL activity	Illustrative	▪ Reduction in duplication of tests due to shared IT/reporting systems	●
	2% NEL activity	Illustrative	▪ Prevention of emergency admission due to sharing of doctor/patient communication platform	◐
	8% OP activity	1st to FU ratio	▪ Reduced follow-up ratio due to shared pathways	○
	4-10% ALOS	Case mix adjusted ALOS Trust data - # bed days saved from OPAT	▪ Reduced variations in length of stay due to shared pathways/sharing best practice ▪ Introduction of consult service and standardisation of OPAT will significantly reduce inpatient activity through early discharges [NB this saves ALOS across all inpatient specialties – not ID alone]	◕
	10% consumables	Illustrative	▪ Greater trial enrolment and shared pathways for expensive drugs will reduce consumables costs (trial drugs are free) and improved antimicrobial stewardship	●
Rheuma-tology	10% OP activity	1st to FU ratio	▪ Reduced follow-up ratio due to shared pathways	○
	10% staff	Clinical validation	▪ Shared staff enable rotas to be covered more easily in the future, without the need for as many additional WTEs	●
	Unquantified	Case mix adjusted ALOS	▪ Reduced variations in length of stay due to shared pathways/sharing best practice	○
	10% consumables	Illustrative	▪ Shared pathways for expensive drugs will reduce consumables costs	◔
	Unquantified	Illustrative	▪ Reduction in fixed costs due to allocation of assets on an 'as needed' basis	●
Critical care	12% staff	Number of WTEs needed to staff 3 rotas compared to 1 joint rota	▪ Shared staff across sites ▪ Reduced locum spend due to pooled staff for vacancy filling ▪ Expansion of retrieval team across the whole of the City	◕
	2% ALOS	Clinician validation	▪ Shared pathways enables more effective care to be delivered, therefore reducing length of stay (e.g reduction in delayed discharges)	◔
	10% consumables	Illustrative	▪ Joint procurement reduces consumables and other variables costs	●
Back office cost	**Savings in back office costs to be calculated as a percentage of GM wide savings**			

- Values are illustrative, but build upon the analyses detailed below to encourage discussions amongst clinicians
- Savings illustrated need to be considered against future increases in costs, for example if activity were to increase by 20% in the future, in the new single service model there may only be a need for 10% more staff not the 20% that would be required with no change in the model

Contents

REDUCTION IN NEL ACTIVITY

Performance below worst quartile

Single service models may enable NEL activity to be transferred to community

Comparison of Manchester ambulatory care sensitive conditions (ACSC) to national and ONS benchmarks[1]

CCG performance is below ONS worst quartile

	ACS	NHS Central Manchester CCG	NHS North Manchester CCG	NHS South Manchester CCG	National median	National worst quartile	ONS median	ONS worst quartile	Activity saved if moving to ONS median	Cost of activity saved (£K)
Cardiology	NEIP Angina per 1000 WP	16.2	12.7	11.3	8.6	11.4	9.4	12.2	2,831	3,731
	NEIP Congestive heart failure per 1000 WP	9.6	10.6	8.9	11.1	12.7	11.3	12.9	0	0
	NEIP Hypertension per 1000 WP	2.2	3.3	2.1	1.7	2.1	1.5	2.1	496	712
Respiratory	NEIP Asthma per 1000 WP	29.3	21.0	21.2	10.4	13.4	13.5	17.7	7,749	5,176
	NEIP COPD per 1000 WP	27.3	36.3	36.7	21.2	26.3	23.9	27.9	7,019	10,828
	NEIP Influenza and Pneumonia per 1000 WP	21.7	45.0	39.7	33.1	38.2	34.3	37.6	3,595	8,376
Infectious diseases	NEIP Other vaccine preventable diseases per 1000 WP	6.2	6.1	1.5	0.7	1.2	1.0	1.7	2,351	2,708

1 ONS clusters are grouped by a variety of sociodemographic variables based on their variation from the UK mean. ~22% of the population live in this cluster

SOURCE: HES 2014/15 (c/o HSCIC)

REDUCTION IN NEL ACTIVITY

Single service models may help reduce the number of non-elective admissions that result in overnight stays

Performance below median
Performance below worst quartile

Comparison of proportion of ambulatory NEL spells to national averages and suggested best practice guidelines

	% NEL stays which were not overnight	UHSM	CMFT	NMGH	National median	National worst quartile	Recommended range	Cost saving if moving to best site (£K)[1]
Cardiology	Chest pain	37.0	36.7	60.1	42.0	32.5	30-60%	102
	CCF	4.9	7.4	12.5	10.4	7.5	30-60%	31
	Asupraventricular tachycardias	25.2	23.3	32.6	30.2	22.6	30-60%	305
Respiratory	Asthma	29.8	17.5	46.7	22.1	17.5	10-30%	203
	COPD	26.5	13.1	36.4	17.7	14.4	10-30%	89
	Community acquired pneumonia	10.4	5.1	18.9	11.4	7.5	10-30%	73
	Pleural effusions	5.6	5.6	17.2	13.6	6.5	60-90%	35
	Pneumothorax	6.1	2.6	20.7	6.6	3.2	10-30%	11
	Lower respiratory tract infections without COPD	30.3	18.5	39.3	28.1	19.9	30-60%	11
Rheumatology	Acutely hot painful joint	39.8	46.2	60.5	48.4	36.2	30-60%	170
Maternity services	Ectopic pregnancy	6.5	15.1	27.5	15.2	10.1	30-60%	87

1: Total saving if all sites move to conversion rate of best site. Assuming saving is approx. average short stay tariff = £764
SOURCE: HES 2014/15; NHS Institute for Innovation and Improvement "The Directory of Ambulatory Emergency Care for Adults - 3rd edition")

REDUCTION IN NEL ACTIVITY AND COST OF CONSUMABLES

Single service models may reduce duplication of NEL activity and duplication of tests

Benefits from ensuring patients are treated by the right team as soon as possible

	Description of benefit	Potential impact
Shared pathways and protocols	▪ Shared pathways throughout the whole service ensure that referrals to the right team can happen more easily ▪ This reduces delays in the referral and transfer process so patients receive treatment quicker	▪ Previous work has shown that where patients are transferred between sites to access specialist care, average length of stay increases by 0.9 to 1.6 days ▪ Access time to specific key services such as Cath labs when not available on site can increase by half a day on average ▪ If all patients had equity of access to timely treatment, clinical outcomes, length of stay and patient experience would all improve ▪ Such length of stay changes may for example save up to £66-118K in cardiology[1] ▪ Shared pathways and protocols could facilitate some of these LOS changes, but as patients would still need to be transferred these savings could only be fully realised if the patient goes straight to the correct site in a hub and network model
Hub and network model	▪ Since all activity is concentrated at the site of the hub, there is no need to transfer patients as they are all admitted to the hub immediately ▪ Patients are seen by the right team immediately	

Benefits from removing the need for repeat tests will be smaller

	Description of benefit	Potential impact
Shared IT and diagnostics systems enabled within a single service model	▪ Tests may be repeated in hospitals after already being ordered by clinicians based outside of the acute hospital	▪ Duplication in testing between acute hospitals and community and primary care may be as much as 6% of tests, but will require further integration with out of hospital care to reduce[2,3]
	▪ Tests may be repeated when patients move from one hospital to another	▪ Duplication when moving between hospitals does occur, but as this happens less frequently the total cost savings are likely to be low

1: Assumes transfers from North Manchester only are saved, assumes no model in place with rest of Pennine, assumes £222 per bed day saved (as per average excess bedday tariff)
2: http://www.commonwealthfund.org/~/media/files/publications/fund-report/2014/jun/1755_davis_mirror_mirror_2014.pdf, 3 A preliminary look at duplicate testing associated with lack of electronic health record interoperability for transferred patients, J Am Med Inform Assoc. 2010 May-Jun; 17(3): 341–344. (note paper is used to substantiate duplication of test is similar to % of duplication over last two years – interpreted as clinically unnecessary duplication)
SOURCE: Trust data 2013/14

REDUCTION IN OP ACTIVITY

Single service models may reduce outpatient activity

Predicted cost savings if outpatient follow-up rates are rationalised to the median or top quartile new to follow-up rates

	Average ratio at all 3 sites[1]	National average	Top quartile	Cost saving if follow-up rate moved to median[2], £K	Cost saving if follow-up rate moved to top quartile[2], £K	Cost saving as % of current spend[3]	Realistic % cost saving for Manchester population[4]
Cardiac	2.4	1.7	0.6	138	281	38%	10%
Cardiology	1.3	3.0	0.9	0	1,207	27%	7%
Critical care	Data not reliable – no routine follow-ups						
Infectious diseases	3.2	4.1	1.6	492	832	30%	8%
Interventional radiology	Data not reliable – no routine follow-ups						
Obstetrics	Data not reliable – routine follow-ups take place in the community so are not captured in HES database						
Paediatrics	1.3	2.0	1.0	0	343	25%	6%
Rheumatology	3.7	5.2	2.9	0	439	20%	10%
Respiratory	4.1	2.5	1.5	2,366	3,088	48%	12%
				1,680	6,235		

1 Averages are weighted by activity. For cardiac surgery the average is given across 2 sites only (UHSM and CMFT); 2 Cost assumption of £100 per appointment; 3 % cost saving is calculated using the median value, unless this is zero, in which case the top quartile value is used ;4 Reduced to take into account case complexity of local population by 50% in rheumatology and 75% in all other specialties

SOURCE: HES 2014/15; activity for each specialty is included for UHSM, North Manchester and CMFT (MRI, St Mary's and Royal Manchester Children's Hospital)

Contents

REDUCTION IN MEDICAL STAFF COST

ILLUSTRATIVE

Single service models may reduce the future need for medical WTEs through joint rotas

Predicted cost to move to 24/7 staffing model

	Number of consultants				Number of consultants required to staff 24/7 rota at each site (if applicable)[5]				Cost to staff 24/7 rota if applicable, £K			
Specialty	**CMFT**	**UHSM**	**NMGH**	**Total**	**CMFT**	**UHSM**	**NMGH**	**Total**	**CMFT**	**UHSM**	**NMGH**	**Shared staff[4]**
▪ Cardiac surgery	6.00	7.00	0	13.00	N/A	N/A	N/A	N/A	-	-	-	-
▪ Cardiology	10.06	14.53	3.84	28.43	8	8	8	24	0	0	832	0
▪ Respiratory medicine	8.10	46	4.82	58.92	8	8	8	24	0	0	636	0
▪ Obstetrics	22.03	13.51[1]	15.10[1]	50.64	18	9	9	36	0	0	0	0
▪ Paediatric medicine	11.00	10.00	9.74	30.74	10	10	10	30	0	0	0	0
▪ Total radiology (interventional radiology)	22.23 (TBC)	17.00 (4.00[2])	10.00[3] (1.91)	49.23 (5.91)	8	8	8	24	0	0	0	0
▪ Infectious diseases	(6.30)[6]	4.8	5.97	17.07	8	8	8	24	1,600	640	406	0
▪ Rheumatology	4.75	3.35	2.00	10.1	N/A	N/A	N/A	N/A	-	-	-	-
▪ Critical care	14.60	16	5.5	29.85	9	9	9	27	0	0	700	0
Total	**139.57**	**119.19**	**69.18**	**293.89**	**69**	**51**	**51**	**171**	**1,600**	**640**	**2,574**	**0**

1 Includes gynaecology WTEs therefore ability to staff an obstetric rota will vary depending on gynaecology responsibilities; 2 figure is for vascular IR only; 3 figure is for whole of Pennine Trust; 4 Assumes 24/7 rota at each site, but staff numbers can be rebalanced between sites; 5 Assumes 8 WTEs needed for site for a 1 in 8 on-call rota, 9 in obstetrics and critical care, and 10 in paediatrics where there are more intensive on-call requirements; 6 These are GUM physicians so may not have the skill mix to contribute to a 24/7 ID rota;

SOURCE: Trust data FY 2014-15, radiology benchmarking reporting data 2014/15 for CMFT, 2013/14 for UHSM

REDUCTION IN RADIOLOGY FIXED COSTS

ILLUSTRATIVE

The single service model for radiology may improve scanner utilisation

		Utilisation of radiology equipment and resource			
		CMFT	UHSM	NMGH	Total
Staff	▪ Consultants	22.23	17	21.09	**60**
	▪ Junior doctors	9	9	7.76	**26**
	▪ Radiographers[1]	95.74	53.83	51.86	**201**
	▪ Sonographers	21.49	6.89	0	**28**
Equipment Number of machines	▪ X-ray machines	35	10	5	**50**
	▪ CT-scanners	3	3	2	**8**
	▪ MRI scanners	2	1	1	**4**
Activity Average # scans per day[2]	▪ X-rays	508	339	89	**935**
	▪ CT-scans	103	93	44	**240**
	▪ MRI scans	52	28	17	**97**
Utilisation Average # scans per machine	▪ X-rays	15	34	18	**-**
	▪ CT-scans	34	31	22	**-**
	▪ MRI scans	26	28	17	**-**
Minimum equipment required at max capacity	▪ X-ray machines	15	10	3	**28**
	▪ CT-scanners	3	3	1	**7**
	▪ MRI scanners	2	1	1	**4**

- Improved productivity across all sites may reduce the amount of new equipment required in future
- Cost savings associated with reduced X-ray equipment would need to come from associated staff
- The implementation considerations of this include: impact on staff (particularly radiographers), impact on access to scanning equipment and potential transition costs

1 Excludes mammographers; 2 Based on annual figures, assuming scans take place 7 days per week, includes both outpatient and inpatient activity

SOURCE: Trust data FY 2014-15, radiology benchmarking data for CMFT (2015) and UHSM (2014)

REDUCTION IN NURSING STAFF COST

Single service models may reduce the average length of stay (ALOS), therefore reducing nursing staff costs

ALOS >50% above expected for case mix (based on national average)

Insufficient data points for accurate calculation

Predicted cost savings if the difference between observed and expected ALOS was rationalised to the best out of the 3 sites

% above/below expected ALOS for case mix in specialty, 2014/15

	CMFT sites[1]	UHSM	NMGH	% reduction in bed days if best ALOS achieved[2]	Cost savings if best ALOS achieved, £K[3]
Paediatrics	53%	17%	7%	11%	1,041
Cardiology	17%	-13%	34%	16%	924
Respiratory	116%	-3%	-15%	19%	1,319
Cardiac surgery	-2%	0%		1%	31
Infectious diseases		17%	-20%	4%	73
Critical care medicine	30%			-	-
Interventional radiology		25%		-	-
Rheumatology	35%	-39%	-73%[4]	41%	8
Births	14%	-2%	-4%	9%	875

1 Manchester Royal Infirmary, St Mary's, Royal Manchester Children's and Manchester Royal Eye Hospital combined
2 Weighted average (using activity) across all 3 sites is shown; 'best' ALOS is taken to mean the lowest ALOS out of these 3 sites
3 Cost savings are calculated using an assumption of £222 per bed day (average tariff for excess bed-day); weighted average (using activity) across all 3 sites is shown
4 Only 8 data points available, not included savings calculations

SOURCE: Hospital Episode Statistics, 2014/15

REDUCTION IN NURSING STAFF COST

The ID single service model for Outpatient Parenteral Antimicrobial Therapy (OPAT) may enable 1% bed days to be saved across all specialties

Current OPAT service

- OPAT is run by a variety of providers in North, South and Central
- The service is currently fragmented:
  - There are no uniform pathways and no shared governance across the City
  - There is no ID input to the service in Central, which is inconsistent with the best practice guidelines for OPAT services
- This means there is an opportunity to improve the service, and maximise the operational and financial benefits from it
- The ID team at UHSM have been running an OPAT service for 1 year, with monthly audits of performance against best practice metrics
- Using their performance data, an estimation has been made for the potential number of bed days saved across the City

Example of operational efficiencies of OPAT

Specialty	Bed days saved by using OPAT, # of bed days saved per year (% of total bed days)[1] UHSM	CMFT	NMGH	Total
Maximum bed savings at each site	2,534 (1%)	3,239 (1%)	1,198 (1%)	6,971
Likely additional bed savings at each site	0	639	0	639

- A single OPAT service for the whole of Manchester could realise **~1% savings** in the total adult inpatient bed days at each site
- This amounts to a maximum total saving of up to **~£1.5M** across all sites[2]
- Because OPAT is already in place in all 3 sites, but functioning sub-optimally at CMFT, the actual cost saving will be less (estimated at ~£0.14M)
- This does not include the additional cost savings from targeting the use of the correct antimicrobials to the most appropriate patients and preventing complications associated with insufficiently treated infections

1 Calculated using an assumption of 1% savings in bed days based on UHSM figures; total number of adult acute inpatient bed days per site used
2 Assumption of £222 per bed day (average tariff for excess bed-day)

SOURCE: Trust data 2014/15

REDUCTION IN COST OF CONSUMABLES

Joint procurement in the single service model may reduce the cost of consumables

Carter report recommendations

- Estimates that **~£700M can be saved across all Trusts** from better procurement
  - Based on **9.5% reduction** in spend on clinical supplies and services
  - **~£30m** in savings for hospitals across the city of Manchester[1]
- Recommend that trusts "should collaborate with at least five other trusts to share data and resources to modernise their procurement function"
- Recommend trusts to consider outsourcing of their procurement back-office
- From April 2016, trusts will be held to account for their compliance rate with the new purchasing price index
  - Minimum compliance rate is 80%
- All trusts to commit to the Department of Health's NHS Procurement Transformation Programme

1: May require further collaboration across greater Manchester to reach scale, assumes no joint procurement already in place
SOURCE: Operational productivity and performance in English NHS acute hospitals: Unwarranted variations, Department of Health (February 2016)

REDUCTION IN COST OF CONSUMABLES

Clinical trial activity and income on separate sites and combined

The activity and income of clinical trials across the city of Manchester

	Clinical trial activity, # of trials				**Clinical trial income[2],** £K			
Specialty	**CMFT**	**UHSM**	**Pennine[1]**	**Total**	**CMFT**	**UHSM**	**Pennine**	**Total**
▪ Cardiac surgery	5	6	0	11	12	1,100	-	1,541
▪ Cardiology	38	24	20	82	419	-	10	-
▪ Respiratory medicine	3	32	6	41	-	2,088	2	2,090
▪ Obstetrics	20	0	9	29	377	-	10	387
▪ Paediatric medicine	215	5	20	240	2,604	52	3	2,659
▪ Interventional radiology	0	4	0	4	20	347	-	367
▪ Infectious diseases	13	5	43	61	33	50	54[2]	137
▪ Rheumatology	30	8	9	47	1,239	70	-	1,309
▪ Critical care	19	4	0	23	271	90	5	366
Total	**343**	**88**	**107**	**538**	**4,975**	**3,797**	**85**	**8,856**

- Combined clinical trial activity across Manchester would be 538 trials.
- This could particularly help Pennine to increase their research activity
- Such a research hub could attract X% more clinical trials which could lead to £XK more income
- Participation in research trials can reduce the cost of consumables because the trial medications are free to the Trust

1 Unable to extricate the data for NMGH from Pennine Trust; 2 grant income excludes funding that academics receive through the University of Manchester
2 Clinical trial income, full research grant income is £400K

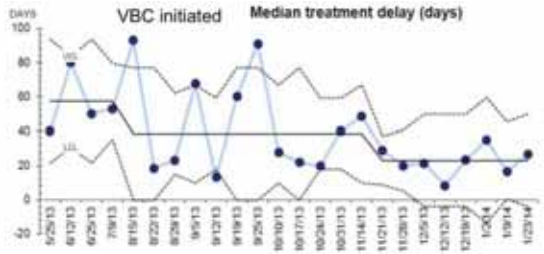
SOURCE: Trust data FY 2014-15

REDUCTION IN COST OF CONSUMABLES

The single service model may reduce the cost of consumables by targeting expensive medications at the most appropriate patients

Case study: the Manchester Virtual Biologics Clinic

- The virtual biologics clinic (VBC) was implemented in 2013 for all patients with rheumatoid arthritis
- All patients starting a biologic are assessed 'virtually' by a Rheumatologist, Specialist Nurse, Specialist Pharmacist and Research Nurse, and their treatment is monitored along the pathway
- Since inception:
  - median **treatment delay fell from 41 days to 19** days (see graph)
  - compliance with the enhanced **safety checklist** increased from **50% to 100%**
  - **Recruitment of patients to research studies increased** from 60 patients to >100
  - **Estimated annual cost savings ~ £113K**[1]



Implications for other specialties

- Multiple other specialties use expensive drug therapies and have initiated their own pathways to ensure strict clinical governance:
  - Biologics used in difficult asthma by respiratory team
  - Hepatitis C antivirals used by ID team
- There is an opportunity to:
  - Share learning and best practice with other specialties that may use similarly expensive drugs
  - Extend the use of pathways across Manchester (for example, the VBC could be fully implemented in North Manchester under a single service model for the whole of the City)

1 attributed to pathway adherence and enhanced research recruitment

SOURCE: The impact of a Virtual Biologics Clinic (VBC) on patient experience, research recruitment, and drug budget: a Quality Improvement Project.

Contents

Case-mix adjusted ALOS explained

Service line: The specialty in which the patient the patient was treated (Treatment Function code), except for composite specialties: e.g. Maternity[1] Deliveries, Maternity non-Deliveries, Cardiothoracic Surgery[2]

HRG Observed ALOS: Total inpatient bed days (elective and non-elective, excluding elective day case) for the HRG, in the service line, at the site, divided by total spells (as above) for the HRG, in the service line at the site.

HRG Expected ALOS: Total inpatient bed days (elective and non-elective, excluding elective day case) for the HRG, in the service line, at all acute NHS Trusts in England, divided by total spells (as above) for the HRG, in the service line, at all acute NHS Trusts in England.

HRG Spell Volume: The number of inpatient spells (admissions), elective and non-elective excluding elective day case, for the HRG in the service line, at the site.

For each service line (and site):

$$\sum\left(\left(\frac{\text{HRG Observed ALOS} - \text{HRG Expected ALOS}}{\text{HRG Expected ALOS}}\right) \times \text{HRG Spell Volume}\right) \times 100 = \text{\% difference in ALOS adjusted for case mix}$$

Q: What does this tell us?

A: The % difference between the ALOS in the service line and the ALOS that could be achieved if the site performed at national average level for its case mix.

1 Obstetrics and Midwife Episodes combined, split into delivery HRGs (NZ11 to NZ15) and all other HRGs.
2 Cardiothoracic surgery = Cardiac Surgery, Thoracic Surgery and Cardiothoracic Surgery

Significant improvements in long term condition outcomes are possible with rigorously implemented integrated good practice

Condition	Intervention	Impact on unscheduled activity: A&E	Adm.*	LOS	OP	GP	Impact on outcomes: Mortality	Other	Core references
Heart failure	• Multidisciplinary managed care**		↓23%-85%***				↓21-58%		• Heart, 2005, 91, 899-906 (74 trials); J Gen Intern Med,1999,14 (2),130-4 (7 trials); Chest, 2005, 127; 2042-8 (4-year study)
	• Specialist nurse interventions		↓58%	↓54%					• BMJ, 2001; 323; 715-8 (1 RCT) • JAMA, 2004, 291, 11 (18 RCTs)
	• Discharge planning and post discharge support		↓25%				↓13%	↑47% QOL	• CHD NSF Chapter 6 • Euro Heart Journal, Guidelines for the diagnosis and treatment of CHF, 2005
Asthma	• Active case management****	↓18%	↓36%			↓32%		↑29% QOL	• Cochrane, 2003 (1) (36 trials); BTS Asthma Guideline, 2004 (25 trials)
	• Specialist asthma nurses		↓10% -38%						• DH Compendium of CDM citing BMJ, 2004, 328,144; Thorax, 2001, 56, 687-90; Pub Health Med, 2002; 25; 258-60
COPD	• Early discharge planning and hospital-at-home		↓10% -30%	↓50%				↓40-70% Costs	• Thorax (NICE), 2004, 59, 39-130 (two RCTs; one for each intervention) • NHS Institute Directory of Ambulatory Emergency Care for Adults (citing NICE guidance)
	• Multidisciplinary pulmonary rehab for 6-12 weeks		↓10% -30%	↓50%					
Diabetes	• Active disease management		↓25%	↓40%			↓45%	Improved HbA1c; glycemic control	• DH CDM Compendium citing Cochrane (41 RCTs) and three RCTs • Diabetes Med, 2003(1), 32-8 (one study)
	• Specialist primary care (GPwSIs)				↓25%				

* Hospital readmission (inpatient)
** Best evidence for programs of ≥3mn, including education, lifestyle advice, exercise, home visits, nurse case managers, and regular monitoring
*** Weighted average = 27%
**** Including written care plan, supported self-monitoring, and regular practitioner reviews

But community care shift requires workforce and infrastructure development

	Skills/workforce requirements	Facilities and diagnostics
COPD	• Community specialist physician or GPwSI • Community physiotherapy, OT • Spirometry technician	• Consultation/examination facilities • Office spirometry • Plain X-ray and outpatient (HR)CT • Basic bloods
Asthma	• Community generalist, specialist, or GPwSI • Asthma educator • Spirometry technician	• Consultation/examination facilities • Office spirometry • Plain X-ray
CHF	• Community specialist or GPwSI • Community physiotherapy, OT, allied health and social work • Nutritionist	• Consultation/examination facilities • Plain X-ray and outpatient echocardiography • Basic bloods
Diabetes	• Community diabetic specialist or GPwSI • Community ophthalmologist • Podiatrist	• Consultation/examination facilities • Basics bloods and HbA1c • Renal function/protein testing • Ophthalmology equipment, e.g., slit lamp/laser

Polyclinic housing variety of community services is ideal setting for LTC care delivery:

- Consulting rooms for doctors and other health professionals
- Diagnostics – including radiology and pathology
- Pharmacy
- Facilities for basic elective procedures, e.g., endoscopy

City of Manchester Single Hospital Service – Clinical Working Group

Research and innovation

Appendix XVIII

- **Summary**
- Activity and case studies

Research and innovation: summary

PRELIMINARY

Current model	▪ Some research is coordinated across sites, and some research is conducted independently on separate sites ▪ There are different types and volumes of research at each site
Current challenges	▪ Patients have variation in access to research facilities ▪ Separate pools of patients may limit clinical trial recruitment ▪ The work of individual research groups is not always known across the whole of Manchester ▪ Research staff find it difficult to move around the City of Manchester ▪ Innovation barriers in clinical practice
Proposed model	▪ Share facilities and staff across sites and academic institutes ▪ Create 'One Manchester' research hub: – A single portal and point of entry to all clinical trials with the same process to deliver this to patients – Combines: governance, strategy, finance and communications (publicity), and enables common pathways and protocols, and joint sponsorship – Researchers can use to get to know each other and support each other – Research can link across specialties – Research generated in Manchester is owned and carried forward by Manchester
Opportunities	▪ Creation of the third largest research network in the country ▪ Equity of access for all patients to clinical trials ▪ New opportunities for "real world" studies, using electronic patient records (EPR) ▪ Improved links with academic institutions ▪ Greater opportunities for staff to be involved in research ▪ Access to increased research funding ▪ New research and guidelines are implemented in consistent pathways and protocols across sites, e.g. still birth reduction processes or pacemaker process pathways
Implementation considerations	▪ Joined up I.T. systems, including EPR ▪ Integration of research should include Salford ▪ Clarity over income streams through a central finance team and satellite teams within each provider

SOURCE: Clinical working group

- Summary
- **Activity and case studies**

PRELIMINARY

How much more research income and activity could be attracted to the City of Manchester?

The activity and income of clinical trials across the city of Manchester

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SOURCE: Trust data FY 2014-15

PRELIMINARY

How could the use of existing research funds, and the efficiency of existing research efforts be improved? (1/2)

Case study: the Manchester Virtual Biologics Clinic

- The virtual biologics clinic (VBC) was implemented in 2013 for all patients with rheumatoid arthritis
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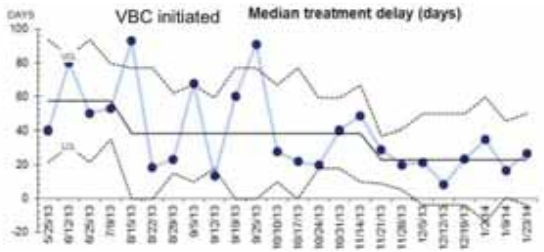

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  - Share learning and best practice with other specialties that may use similarly expensive drugs
  - Extend the use of pathways across Manchester (for example, the VBC could be fully implemented in North Manchester under a single service model for the whole of the City)

The Virtual Biologics Clinic in CMFT enabled more patients to be recruited to research trials due to the involvement of a Research Nurse in each patients' care

1 attributed to pathway adherence and enhanced research recruitment

SOURCE: The impact of a Virtual Biologics Clinic (VBC) on patient experience, research recruitment, and drug budget: a Quality Improvement Project.

PRELIMINARY

How could the use of existing research funds, and the efficiency of existing research efforts be improved? (2/2)

Respiratory group
The full benefit for research would come from a **common EPR system**, which could be used to **attract investment for 'real world' research studies**, and **improve the efficiency of existing trial recruitment** by using search tools to quickly identify eligible patients for trials.

Infectious diseases group
There is a major opportunity to access a **£10M private-public partnership** to research antimicrobial resistance at **Alderley Park**. This could be jointly bid for under the single service model.

Rheumatology group
There is an opportunity to **link the database** from a unified 'Virtual Biologics Clinic' to research studies

Rheumatology group
More inter-site research meetings could enhance the awareness of each other's studies, leading to greater research collaboration across sites

The clinical working specialty groups have begun to articulate some potential research benefits of single service models

City of Manchester Single Hospital Service Review Stage 1 Report

Commentary from Central Manchester University Hospitals NHS Foundation Trust

15 April 2016

Central Manchester University Hospitals NHS Foundation Trust welcomes the Stage 1 Report of the City of Manchester Single Hospital Service Review. The Report provides strong evidence that the development of a Single Hospital Service for the City of Manchester would create the potential for very considerable benefits across a wide range of areas, including quality of care, patient experience and financial sustainability.

The report is clearly based on an extensive process for engaging key stakeholders, including clinical teams working in front-line hospital services across the city. Whilst these teams have made good progress, the report also highlights the potential to go further in some areas, and the Trust is fully committed to supporting this process.

The Trust would like to take this opportunity to thank Sir Jonathan for the strong and effective leadership that he has shown in undertaking Stage 1 of the Review. The Trust believes that this report provides a compelling case for bringing hospital services in Manchester into much closer alignment, and establishing a comprehensive set of single service clinical models. This will be the most effective way to address the challenges that we are facing, and to ensure the provision of high-quality, consistent and sustainable hospital services that contribute effectively to improving the health of the people of Manchester.

The report provides a firm basis for moving on to the second phase of the Review – the identification of the optimal governance and leadership arrangements for delivering the benefits described in Stage 1. It is essential that this work now commences as rapidly as possible, and the Trust confirms its full support to this process.

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The Pennine Acute Hospitals NHS
NHS Trust

If calling please ask for:
Sir David Dalton

Direct line / Ext:
0161 604 5467

Our ref: DD/BH-S
Your ref:

Date 15th April 2016

Department
North Manchester General Hospital
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M8 5RB

Telephone: 0161 604 5467
E-mail: David.Dalton@pat.nhs.uk

Sir Jonathan Michael
Independent Review Director

Dear Sir Jonathan

Re: City of Manchester Single Hospital Service Draft Phase 1 Independent Report

Thank for attending the Pennine Acute Hospital NHS Trust Board Development session on the 12th April 2016, to present your findings from Phase 1 of the City of Manchester Single Hospital Service Independent Review.

The City of Manchester Single Hospital Service, which forms one of the three pillars of the Manchester Locality Plan, was commissioned by the Manchester Health and Wellbeing Board as a partnership between Central Manchester University Hospital NHS Foundation Trust (CMFT), University Hospitals South Manchester NHS Foundation Trust (UHSM) and The Pennine Acute Hospital NHS Trust (the Trust) and as such we are fully committed to the process.

The Board was pleased to hear of the level of partnership working between the three Trusts demonstrated throughout the process so far and in particular the commitment and contribution of Pennine clinicians during the development of the benefits case for single hospital services.

The Board noted the range of potential benefits identified by the eight exemplar services during phase 1 including:

- Reduced variation/increased standardisation in effectiveness and safety
- Increased specialisation
- Improved co-ordination and reduced fragmentation of care across the city
- Improved access and choice for patients
- Improved recruitment and retention
- Support to 7 day working and rota management
- Reduced reliance on bank, agency and locum staff
- Increased flexibility to meet demand

- Reduced costs in supplies and services
- Reduced staff costs from increased productivity and skills mix
- Improved operational performance
- Wider placement opportunities for students and trainees
- Increased opportunities for research, clinical trials etc.

These potential benefits are consistent with Healthier Together and the Trust's experience of operating single services across its four sites.

There are a number of considerations which the Board highlighted, which we believe would strengthen the review report. These are provided in the order of importance determined by the Board:

- It is imperative that the agreed status of the Royal Oldham Hospital as a Specialist 'high acuity' Hospital under Healthier Together is safeguarded and where appropriate, strengthened. The co-dependencies of other services, including those at North Manchester as an agreed associated Local Hospital, must be recognised. Any proposed changes to service configurations or patient numbers and patient flow within the northern sector must ensure that the status of the Royal Oldham Hospital remains intact.
- Due consideration should now be given to re-orientate the hospital based activity of Tameside so that it is aligned with and supported by the services at the Royal Oldham Hospital.
- Recognition of the complex, dynamic health and social care system in which the Trust operates in that we serve a population of 820,000 plus population across four localities.
- Recognition that the Trust serves the populations of Rochdale, Bury and Oldham, as well as North Manchester and that developments in one locality should not destabilise services in any other locality.
- Recognition that the populations of Rochdale, Bury, Oldham and North Manchester currently access services within and across the Trust in an existing pattern of single services e.g. Stroke, Rheumatology, Gastroenterology, Infectious Diseases, ENT/Max-Fax etc. and the implications of any proposed changes should be modelled for and mitigated against, before any decisions are made
- Recognition of key co-dependencies e.g. Critical Care, Vascular, Elective Access, Cardiology, Maternity, Paediatrics/Neonates, Laminar Flow Theatre Capacity etc.
- Recognition of the opportunities the Single Hospital Service model could provide in respect of the development of clinical networks
- Recognition of the limitations of available capital to support proposals and as such the potential for a Single Hospital Service to improve the outdated elements of estate at North Manchester General Hospital in order to meet the health needs of the population
- Undertaking a robust and comprehensive risk assessment
- Understanding the implications for all partners of proposed revised arrangements

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The Pennine Acute Hospitals NHS NHS Trust

- Transitional arrangements should be carefully considered and resourced
- Final arrangements should ensure that any additional costs are met and that where service provision may change, that contributions to fixed costs are maintained to assure cost neutrality.
- Sequencing of initiatives to ensure changes in primary and community settings are implemented and embedded in advance of proposals to reform inpatient services; to maximise effectiveness and minimise the risk of gaps in service or the introduction of unintended consequences.
- The decision making process on conclusion of the report should be clear and take account of the views of key stakeholders in the localities served by the Trust

In addition, the North East Sector is currently undertaking a review, led by Mike Farrar, to assess the impact on the Trust of the implementation of the four Locality Plans, Healthier Together and the Trust's own Clinical Services Transformation Programme and therefore:

- proposals from the City of Manchester Single Hospital Service Review cannot be pursued in advance of that work concluding

As you are aware the Trust has recently undergone a change of leadership in the form of Salford Royal NHS Foundation Trust's Chair and Chief Executive. This change has enabled consideration of a broader range of development opportunities for the Trust and the populations we serve, in terms of partnerships with Tameside, Salford and Wigan as part of a Group structure. We will take account of the findings of the Independent Review in our future thinking.

The Board looks forward to participating in Phase 2 of the Review and to considering the governance recommendations put forward.

Should you have any questions or require clarification on any of the points raised please do not hesitate to contact: Sandra Good, Director of Strategy and Commercial Development sandra.good@pat.nhs.uk

With best wishes

Yours sincerely

Jim Potter
Chairman

Sir David Dalton
Chief Executive

University Hospital of South Manchester NHS
NHS Foundation Trust

Chairman's office
Trust HQ
Tel: 0161 291 2021
Fax: 0161 291 2037

Wythenshawe Hospital
Southmoor Road
Wythenshawe
Manchester
M23 9LT
Tel: 0161 998 7070

18 April 2016

Sir Jonathan Michael FRCP
Independent Review Director
City of Manchester Single Hospital Service Review

By email to Alison.Olivant@uhsm.nhs.uk

Dear Jonathan,

On behalf of the University Hospital of South Manchester NHS Foundation Trust (UHSM) Board I would like to thank you for your Single Hospital Service Review Stage 1 report. We welcome the report and strongly support your recommendations.

The report demonstrates a clear understanding of the strengths of the City's health services, but also the significant challenges we face in ensuring that we improve health outcomes for the people of Manchester while ensuring that services remain clinically, financially and operationally sustainable.

The process leading to the production of the report has been positive, thorough and built on strong clinical engagement from across the City. We are grateful to the clinicians who have dedicated significant time to the review in recent months, setting aside their organisational allegiances to collectively focus on developing optimal service models to provide the best possible care for patients in Manchester. We fully support the service models that have been developed by the clinical working groups, but we also recognise, as highlighted in the report, that there may be scope to look for even more innovative models in some areas.

As you recommend, we agree that it is important that we continue to develop the single service models into more detailed operational models and start to realise their benefits as early as possible. We believe that the starting point for this work should be a principle that all services in the City work to the same clinical standards, protocols and pathways. A second, enabling, principle which we should adopt is that of jointly working towards common IT, particularly for patient records. The Board will work with CMFT and PAHT to establish the necessary arrangements and resources to adopt these principles and to begin to deliver benefits as early as possible.

Building on single service models at individual specialty level, it is very clear to us that a Single Hospital Service, built on collaboration and integration between the three trusts, is the future for hospital services in the City. It will be important to define the broad roles of the different hospitals in the Service.

This is particularly important for Wythenshawe Hospital, building on the changes from Healthier Together, in order to continue to develop its research, education and exceptional clinical services and to make best use of its high quality facilities

As a Board however, we are very conscious that the Single Hospital Service is only one part of the strategic transformation of health and social care services that is being pursued under Devolution in the City of Manchester and across the whole of Greater Manchester. It will be absolutely critical that the objectives, actions and timescales of the Single Hospital Service, Local Care Organisation, GM specialised services transformation and other strategic programmes are aligned and carefully managed.

We look forward to working with you in Stage 2 on the most appropriate governance to realise the vision of a Single Hospital Service for Manchester which you have set out in your report.

Yours sincerely

Barry Clare
Chairman

cc Alison Olivant, Programme Manager, Single Hospital Service