Congenital Heart Disease Provider Impact Assessment: National Panel Report

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1 Introduction

1. In July 2015, NHS England Board agreed the proposed CHD standards and service specifications relating to three levels of CHD service provision that had been collaboratively developed with and agreed by all stakeholders. A 'go-live' date for commissioning of the standards and the service specification was agreed for April 2016.

2. Starting in April 2015 NHS England supported an initial provider-led process to consider how hospitals might work together in order to meet the standards. On 9 October 2015 submissions from networks were received by NHS England and assessed. Overall it was considered that this work had not produced an acceptable solution, in the best interests of patients, and nor was it likely to do so even if the hospitals were given more time. NHS England concluded that developing a nationally coherent delivery model would require it to provide significant support and direction[1].

3. Between January and April 2016 hospitals providing CHD services were assessed against key selected standards by a national commissioner-led panel with clinician and patient/public representation. The panel's role was to assess each hospital's ability to meet the selected standards, based on the evidence submitted by the individual hospital trusts. The panel was not responsible for deciding what action to take as a result of that assessment. That responsibility sits with NHS England as the single national commissioner of CHD services.

4. This assessment[2] demonstrated that some hospitals met most of the standards and were likely to be able to meet the remainder by April 2017, and that others should be able to meet the requirements with further development of their plans. NHS England has since been working with those hospitals as they progress towards full compliance. Other hospitals were not meeting or likely to meet all of the relevant standards within the required timescales. Some presented a clinical and governance risk. Since then, we have been working with them to look for ways to bring them into full compliance. This has not (so far) been possible.

5. The panel's assessment was considered by NHS England's Specialised Services Commissioning Committee, at the end of June 2016. The Committee recognised that the status quo could not continue and that NHS England needed to ensure that patients, wherever they lived in the country, had access to safe, stable, high quality services. The Committee also recognised that achieving this within the current arrangement of services would be problematic.

[1] The full report of this work is available here: https://www.england.nhs.uk/commissioning/spec-services/npc-crg/chd/quick-links/

[2] The full report of this assessment is available here: https://www.england.nhs.uk/commissNational Panel reportioning/spec-services/npc-crg/chd/

6. The Specialised Services Commissioning Committee determined that, subject to appropriate public involvement and/or consultation, a change in service provision was appropriate. As a result it was proposed that in future NHS England would only commission CHD services from hospitals that are able to meet the standards within the required timeframes.

7. Proposals for service change were announced on 8 July 2016. Subject to public consultation, if implemented, our proposals would mean that in future CHD level 1 (surgical) services in England would be provided by the following hospitals:

   - **Alder Hey Children's Hospital NHS Foundation Trust** (children's services) and **Liverpool Heart and Chest Hospital NHS Foundation Trust** (adult service)
   - **Birmingham Children's Hospital NHS Foundation Trust** (children's services) and **University Hospitals Birmingham NHS Foundation Trust** (adult service)
   - **Great Ormond Street Hospital for Children NHS Foundation Trust** (children's services) and **Barts Health NHS Trust** (adult service)
   - **Guy's and St Thomas' NHS Foundation Trust** (children's and adult services)
   - **Leeds Teaching Hospitals NHS Trust** (children's and adult services)
   - **Newcastle Hospitals NHS Foundation Trust** (children's and adult services)
   - **University Hospitals Bristol NHS Foundation Trust** (children's and adult services)
   - **University Hospital Southampton NHS Foundation Trust** (children's and adult services)

8. If implemented, our proposals would result in the following changes at hospitals that currently provide level 1 (surgical) CHD services:

   - Surgery and interventional cardiology for adults should cease at **Central Manchester University Hospitals NHS Foundation Trust** (CMFT). CMFT does not undertake surgery in children.
   - Surgery and interventional cardiology for children and adults should cease at **Royal Brompton & Harefield NHS Foundation Trust**.
   - Surgery and interventional cardiology for children and adults should cease at **University Hospitals of Leicester NHS Trust**.

9. Changes are also proposed to the provision of level 2 specialist medical CHD care. While not the subject of the forthcoming consultation they will be described in our consultation materials and stakeholders invited to provide us with their views. We will also be conducting specific further engagement with patients and others who would be affected by implementation of the proposals.

10. If implemented, our proposals would mean that in future level 2 (specialist medical) CHD services in England would be provided by the following hospitals:

    - **Brighton and Sussex University Hospitals NHS Trust** (adult service)

- **Central Manchester University Hospitals NHS Foundation Trust** (children's services)
- **Norfolk & Norwich University Hospitals NHS Foundation Trust** (adult service)
- **Oxford University Hospitals NHS Foundation Trust** (children's and adult services)

11. NHS England is exploring the potential for the provision of level 2 medical services at hospitals where level 1 care would cease. We are interested in the degree of support for this approach and will test this as part of the consultation. This possibility relates to:

- **Central Manchester University Hospitals NHS Foundation Trust** (adult service)
- **University Hospitals of Leicester NHS Trust** (children's and adult services)

12. NHS England has raised with the Royal Brompton the potential for it to continue to provide level 1 adult CHD services, including surgery, by partnering with another level 1 CHD hospital in London that is able to provide care for children and young people with CHD, and which meets the required standards. To date, the Royal Brompton Hospital has indicated that it does not support this approach, but has not said that it would refuse to treat adults alone. NHS England believes that it has sufficient merits to be explored further. The Royal Brompton is also exploring with partners ways in which it could achieve compliance with the standard for paediatric co-location, but to date no plan and timetable for this to be achieved have been shared with NHS England.

13. If implemented, our proposals would result in the following changes at hospitals that currently provide level 2 specialist medical CHD care (subject to further local engagement as appropriate):

- Specialist medical care and interventional cardiology would cease at **Blackpool Teaching Hospitals NHS Foundation Trust**
- Specialist medical care and interventional cardiology would cease at **Imperial College Healthcare NHS Trust**
- Specialist medical care and interventional cardiology would cease at **Nottingham University Hospitals NHS Trust** Specialist medical care and interventional cardiology would cease at **Papworth Hospital NHS Foundation Trust**
- Specialist medical care and interventional cardiology would cease at **University of South Manchester NHS Foundation Trust**

14. NHS England is continuing discussions with **Papworth Hospital NHS Foundation Trust** about its plans to meet the requirements to continue to provide specialist medical care and interventional cardiology. If the hospital trust demonstrates that it now either meets the standards or has a robust plan to do so, NHS England will review its proposal that Level 2 CHD services should cease to be provided.

2 Part One: The impact assessment

15. NHS England has undertaken a detailed impact assessment considering the impact on patients and their families, on CHD services and other clinical services, and on hospital trusts, including financial implications, if our proposals were to be implemented. This paper reports the work of NHS England's regional teams and the National Panel in assessing the impact on hospitals providing CHD services.

2.1 Approach

16. The aim of this impact assessment was:
    - to understand how NHS England's proposals could be delivered in practice;
    - to identify the consequences of implementing the proposals for patients, provider hospitals, commissioners and others; and
    - to support planning of mitigations that may be needed to counter risks or address potentially negative consequences arising from implementing the proposed changes.
17. All level 1 and level 2 CHD hospitals were asked to review their services in light of NHS England's proposals under the following headings:
    - CHD activity
    - CHD capacity
    - Impact on other interdependent services and facilities
    - Financial and business impact
    - Workforce implications
    - Equality and health inequalities

2.2 The process

18. Requests were issued on 21 October 2016 with responses due by 7 November 2016. Responses were received from all providers except for Central Manchester University Hospitals NHS Foundation Trust[3].

19. At the same time as undertaking the impact assessment, NHS England gave the Royal Brompton and Harefield NHS Foundation Trust and University Hospitals of Leicester NHS Trust an opportunity to provide further information in relation to their ability to meet the relevant standards that have to be implemented by a future date, including in particular the interdependency/co-location requirements

[3] Central Manchester University Hospitals NHS Foundation Trust considered that its impact assessment could only be undertaken once the clinical service model for the North West has been described. It further stated that insufficient notice had been given for the request to be met.

that come into effect in 2019 and the surgical volume standards that come into effect in 2021.

20. Throughout October NHS England also undertook its own analysis of activity and expenditure using SUS data[4]. This included some analysis of other services used by patients with CHD, to understand the proportion of that service's activity which relates to CHD patients.

21. Both sets of data were considered first by specialised commissioning teams from the relevant NHS England region during the period 10-15 November 2016. This allowed for a review of both sets of data and for consideration of any wider regional implications. The impacts were then considered by a national panel drawn together to review the submissions, to moderate the regional assessments and to take a national overview.

22. The national panel met on18 November 2016 and consisted of the following members:

Chair

Will Huxter, Chair of Women's and Children's Programme of Care Board, NHS England and Programme SRO;

Patient and Public Voice

Jon Arnold, CRG Patient Representative;

Suzie Hutchinson, CRG Patient Representative;

Clinical

Dr Jacqueline Cornish, National Clinical Director for Children and Young People, NHS England;

Professor Deirdre Kelly, Chair of the CHD Implementation Group;

Dr Trevor Richens, Chair, Congenital Heart Services Clinical Reference Group;

Specialised Commissioners (national team)

Natalie Brazhda Mejia, National Lead Commissioner for congenital heart services, NHS England;

Cathy Edwards, Operational Delivery Director (National), Specialised Commissioning NHS England;

Sally Edwards, Head of Quality Surveillance Team, NHS England;

[4] The Secondary Uses Service (SUS) is the single, comprehensive repository for healthcare data in England which enables a range of reporting and analyses to support the NHS in the delivery of healthcare services. It is run on behalf of the whole NHS by NHS Digital. When a patient or service user is treated or cared for, information is collected which supports their treatment. This information is also useful to commissioners and providers of NHS-funded care for 'secondary' purposes - purposes other than direct or 'primary' clinical care - such as healthcare planning, commissioning of services and development of national policy.

Kieran McHugh, Senior Finance Manager, Financial Strategy & Allocations, NHS England;

Michael Wilson, CHD Programme Director;

Ben Parker, CHD Programme - Project Development Manager.

Specialised Commissioners (regional)

Robert Cornall, Regional Director, Specialised Commissioning, NHS England, North;

Hazel Fisher, AD Programme of Care & NW London Locality Lead (London)

Dr Vaughan Lewis, Regional Clinical Director, Specialised Commissioning, NHS England, South;

Dr Geraldine Linehan, Regional Clinical Director, Specialised Commissioning, NHS England, Midlands & East;

23. In their assessment of impact at hospitals which would no longer be commissioned as level 1 CHD hospitals under the proposals, the panel considered the following:

- Impact on CHD services including:
  - the activity that would need to be transferred to different hospitals;
  - the potential for Level 2 CHD services to be offered if Level 1 CHD services ceased to be offered.
- Impact on other interdependent services if Level 1 CHD services cease;
- Impact on the hospital trust, including financial, business and reputational considerations;
- Impact on staff;
- Risks and mitigation of any potentially negative impacts.

24. In their assessment of impact at hospitals which would continue to be commissioned as level 1 CHD hospitals under the proposals, the panel considered the following:

- Impact on CHD services including the additional activity that would need to be managed;
- Development of plans to care for additional patients;
- Facilities including availability of capital if needed;
- Workforce;
- Risks and mitigation of any potentially negative impacts.

2.3 Impact on patient flows

25. Under the proposals there would be a requirement for a number of CHD hospitals to provide additional CHD services. In the impact assessment we have used surgical procedures to indicate the volume of activity which will be required to be undertaken in these hospitals; however, the additional activity which will be required will also include some additional diagnostic, catheter interventions and outpatient care dependent in part on the patient pathways and whether Level 2 services are retained at the hospitals activity is transferring from. Undertaking this additional activity will require a number of hospitals to expand their capacity in a number of areas, including theatres, catheter labs, wards, intensive care provision and interdependent services.

26. If the former Level 1 hospitals retain Level 2 services the majority of the CHD diagnostic and outpatient activity would be able to be retained by these hospitals, with the exception of any invasive diagnostic procedures and a single pre-operative and post-operative visit to the Level 1 hospital. Level 2 hospitals also may retain some inpatient activity where this is not related to a surgical or interventional procedure. However, if these hospitals do not provide Level 2 care most CHD activity relating to diagnosis and outpatient care would also need to be transferred to other hospitals.

27. We have modelled the way in which patient flows may change if the proposals are implemented. The modelling assumes that a patient will go to their next nearest hospital[5], calculated as car journey time. The results of this modelling are

[5] The modelling included in this analysis has used the following data sources:

- NICOR – volumes of CHD surgery by group (adult/paediatrics) and provider hospital. Published data for financial years 2013/14 and 2014/15 used.
- HES – volumes of CHD surgery by MSOA, group (adult/paediatrics) and provider hospital. Data covers financial years 2006/07 to 2014/15.
- Travel times – NHS England reference file (generated via Google API) (with amended London logic, see below)

Each middle layer super output area (MSOA) was linked to its nearest provider hospital (adult/paediatrics separately) based on the travel time from MSOA to the hospital indicated by the NHS England reference data (above). For those patients who currently go to the Royal Brompton, University Hospitals of Leicester or Central Manchester University Hospitals from London the following amendments were made to their predicted flows –

- Adult patients from MSOAs south of the Thames attend Guys and St Thomas' even if travel time to Bart's is shorter
- Adult patients from MSOAs North of the Thames attend Bart's even if travel time to Guys and St Thomas' is shorter
- Paediatric patients from MSOAs south of the Thames attend Guys and St Thomas' even if travel time to GOSH is shorter
- Paediatric patients from MSOAs north of the Thames attend Bart's even if travel time to Guys and St Thomas' is shorter

HES data combined with MSOA/travel time reference data (as above) was used to establish, for those patients attending Central Manchester University Hospitals, University Hospitals of Leicester and Royal Brompton (split by

intended as a guide rather than an exact representation of what will happen. The results of this modelling are shown in tables 1 and 2 below

Table 1: Changes to surgical patient flows under our proposals based on 2013/14 NICOR data

	Patients/year From Royal Brompton			Patients/Year From CMFT			Patients/year From UHL			Grand Total	
Receiving Trust	**Adult**	**Paeds**	**Total**	**Adult**	**Paeds**	**Total**	**Adult**	**Paeds**	**Total**	**Adult**	**Paeds**
ALDER HEY CHILDREN'S NHS FOUNDATION TRUST		1	1		-	-		8	8	-	9
BARTS HEALTH NHS FOUNDATION TRUST	77		77		-	-	1		1	78	-
BIRMINGHAM CHILDREN'S HOSPITAL NHS FOUNDATION TRUST		5	5		-	-		174	174	-	179
GREAT ORMOND STREET HOSPITAL FOR CHILDREN NHS FOUNDATION TRUST		228	228		-	-		4	4	-	232
GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	30	173	203		-	-		4	4	30	177
LEEDS TEACHING HOSPITALS NHS TRUST	1	-	1	4	-	4	10	37	47	15	37
LIVERPOOL HEART AND CHEST NHS FOUNDATION TRUST	1		1	96	-	96	-		-	97	-
THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST		-	-		-	-			-	-	-
UNIVERSITY HOSPITAL SOUTHAMPTON NHS FOUNDATION TRUST	6	11	17		-	-		1	1	6	12
UNIVERSITY HOSPITALS BIRMINGHAM NHS FOUNDATION TRUST	2		2		-	-	49		49	51	-
UNIVERSITY HOSPITALS BRISTOL NHS FOUNDATION TRUST	3	2	5		-	-		2	2	3	4
Total	**120**	**420**	**540**	**100**	**-**	**100**	**60**	**230**	**290**	**280**	**650**
Data sources:											
Volumes of Surgery :	*1314 NICOR*										
Proportional use of centres :	*HES data 0607 to 1415*										

adult/paediatrics), which the nearest provider hospital would be (excluding Central Manchester University Hospitals, University Hospitals of Leicester and Royal Brompton).

These proportions were then used to estimate, pro rata, the number of cases per year which would go to each 'receiving' provider by multiplying the proportion calculated above by the quantum of surgery indicated by the NICOR data.

Table 2: Changes to surgical patient flows under our proposals based on 2014/15 NICOR data

	Patients/year From Royal Brompton			Patients/Year From CMFT			Patients/year From UHL			Grand Total		
Receiving Trust	**Adult**	**Paeds**	**Total**	**Adult**	**Paeds**	**Total**	**Adult**	**Paeds**	**Total**	**Adult**	**Paeds**	**Total**
ALDER HEY CHILDREN'S NHS FOUNDATION TRUST		1	1		-	-		8	8	-	9	9
BARTS HEALTH NHS FOUNDATION TRUST	90		90		-	-	1		1	91	-	91
BIRMINGHAM CHILDREN'S HOSPITAL NHS FOUNDATION TRUST		4	4		-	-		174	174	-	178	178
GREAT ORMOND STREET HOSPITAL FOR CHILDREN NHS FOUNDATION TRUST		201	201		-	-		4	4	-	205	205
GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	36	153	189		-	-	-	4	4	36	157	193
LEEDS TEACHING HOSPITALS NHS TRUST	1		1	4	-	4	8	37	45	13	37	50
LIVERPOOL HEART AND CHEST NHS FOUNDATION TRUST	1		1	85	-	85	-		-	86	-	86
THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST			-		-	-			-	-	-	-
UNIVERSITY HOSPITAL SOUTHAMPTON NHS FOUNDATION TRUST	7	9	16		-	-		1	1	7	10	17
UNIVERSITY HOSPITALS BIRMINGHAM NHS FOUNDATION TRUST	3		3		-	-	37		37	40	-	40
UNIVERSITY HOSPITALS BRISTOL NHS FOUNDATION TRUST	4	2	6		-	-		2	2	4	4	8
Total	**142**	**370**	**512**	**89**	**-**	**89**	**46**	**230**	**276**	**277**	**600**	**877**

Data sources:

Volumes of Surgery : 1415 NICOR

Proportional use of centres : HES data 0607 to 1415

28. If the proposals were implemented our modelling suggests that approximately 900 surgical procedures would need to be transferred to other hospitals. Up to

1300 interventional cardiology procedures would similarly need to be transferred. The likely impact on surgical volumes at each centre is summarised in table 3 below:

Table 3: Additional operations at hospitals that would continue to undertake CHD surgery under our proposals[6]

Hospital	Additional Operations	% increase
Birmingham Children's Hospital	180	36%
University Hospitals Birmingham	45	45%
Liverpool Heart and Chest	90	N/A[7]
Leeds - General Infirmary	50	10%
Guy's and St Thomas'	200	40%
Great Ormond Street	220	31%
Barts	85	110%
Southampton	20	5%

29. Under this modelling, there would be little or no change to activity at Alder Hey, Bristol or Newcastle.

30. This analysis was supplied to provider hospitals to inform their thinking about the impact of the proposals.

3 The panel's assessment of impact

31. The panel's role was to assess the likely impact of NHS England's proposals on each hospital and its services. Individual impact assessments reflecting the panel's conclusions are appended to this report. The panel was not responsible for deciding what action to take as a result of that assessment. That responsibility sits with NHS England as the single national commissioner of CHD services.

32. Since the panel completed its assessment in November 2016, NHS England has continued to maintain a dialogue with the affected hospitals as a result of which new or revised information has been provided and further analyses undertaken. NHS England's own impact assessment, current to January 2017, which is

[6] Modelling based on NICOR validated surgical activity for 2013/14 and 2014/15, averaged and rounded. Assumes patients attend their nearest centre assessed as car journey times.

[7] Liverpool Heart and Chest Hospital does not currently undertake CHD surgery.

informed both by the national panel's work, and by this subsequent work, is reported separately.

3.1 Summary of the impact at hospitals which, under the proposals, would not continue to be commissioned as Level 1 CHD hospitals

3.1.1 Royal Brompton and Harefield NHS Foundation Trust

33. Under the proposals the Royal Brompton would no longer perform surgical or interventional cardiology on people with CHD. The panel considered that the scale of this change was especially significant to the Royal Brompton's provision of paediatric services but could be reduced if it provided adult-only services at level 1 or level 2.

34. The panel accepted the Royal Brompton's view that the loss of level 1 CHD services for children would make the PICU at the Royal Brompton unviable. The panel accepted that this would therefore impact the hospital trust's ability to offer paediatric respiratory services and paediatric cardiac ECMO.

35. The panel viewed the potential financial loss to the Royal Brompton as a significant proportion of the hospital trust's overall income; however, noted that according to the financial information submitted by the hospital trust, the costs associated with providing this service were greater than the income the hospital trust received. The Royal Brompton stated that owing to the stranded costs associated with this service, they estimate an adverse impact of over £7m per year to the hospital trust's bottom line if these proposals are implemented. The panel again noted that the financial and reputational impact of the changes could be reduced if the Royal Brompton provided level 2 adult services or level 1 adult services.

36. The Royal Brompton identified approximately 430 WTE staff that would be impacted by the proposals. The panel was not able to take a view on the nature of the impact on all the staff identified but accepted that it would have a significant impact on the Royal Brompton's workforce. It considered that this impact could be reduced through collaborative working with other hospital trusts in London and the Royal Brompton continuing to provide either level 2 adult services or level 1 adult services.

37. The panel considered that the proposals would have a significant impact on the hospital trust's finances and reputation. Whilst the reputational impact will be lessened by the continued provision of a wide range of specialist services at the Royal Brompton, the financial impact of losing CHD Level 1 activity would be significant for the Royal Brompton.

3.1.2 University Hospitals of Leicester NHS Trust

38. Under the proposals University Hospitals of Leicester would no longer perform surgical or interventional cardiology on people with CHD. The panel considered that the scale of this change for the hospital trust would not be as significant as for the Royal Brompton due to the greater number of services which University Hospitals of Leicester provides. The panel also noted that this impact could be reduced if the hospital trust continued to provide level 2 services.

39. The panel accepted that the proposals would make the PICU at the Glenfield Hospital unviable but did not accept that they would result in the cessation of PICU services at Leicester Royal Infirmary. The panel also considered that the proposals would result in University Hospitals of Leicester no longer being able to provide paediatric cardiac or respiratory ECMO services. The panel noted that this would impact approximately 55 children each year.

40. The panel viewed the potential financial loss to University Hospitals of Leicester as less significant than that at the Royal Brompton due to the projected income which would be lost being smaller and the higher overall income of the hospital trust. The panel noted that the financial and reputational impact of the changes could be reduced if the hospital trust provided level 2 services.

41. University Hospitals of Leicester identified over 150 WTE staff that would be directly impacted by the proposals and a further set of roles which would be indirectly impacted. The panel was not able to take a view on the nature of the impact on all the staff identified but accepted that it would have an impact on the hospital trust's workforce. It considered that this impact would be reduced if University Hospitals of Leicester continued to provide level 2 services.

42. The panel considered that although the proposals will undoubtedly impact the hospital trust's finances and reputation, the scale of this impact is reduced by the wide range of specialised and non-specialised services which will continue to be offered by the hospital trust.

3.1.3 Central Manchester University Hospitals NHS Foundation Trust

43. Under the proposals Central Manchester University Hospitals would no longer perform surgical or interventional cardiology on adults with CHD. The panel considered that the scale of this change would be considerably less than at the Royal Brompton or University Hospitals of Leicester due to the significantly lower number of surgical or interventional procedures which are undertaken at Central Manchester. The panel also noted that this impact will be reduced if Central Manchester continues to provide level 2 services as part of the overall CHD service provision in the North West.

44. The panel did not consider that these proposals would have a significant impact on any other services within the hospital trust.

45. The panel viewed the potential financial loss to Central Manchester as much less significant due to the overall income the hospital trust currently receives for level 1 CHD services being much lower than other hospitals which would lose activity as a result of these proposals. The panel noted that the financial and reputational impact of the changes will be reduced if Central Manchester continues to provide level 2 services.

46. The panel considered that the proposals will have some impact on the hospital trust's finances and reputation, but that this will be offset by the establishment of a new model for the delivery of CHD services in the North West. The impact on Central Manchester as a hospital trust would be very limited, as it has only been undertaking a relatively low volume of CHD surgical activity.

3.1.4 Summary

47. In summary, the national panel's view was that there would be a significant impact at each of the hospital trusts where it was proposed that current level 1 or level 2 services should cease, with the greatest impact seen at the Royal Brompton, a lesser but still significant impact at University Hospitals of Leicester, and a less significant impact at Central Manchester University Hospitals.

48. The panel remained confident that the proposals could be implemented and that these risks could be reduced or mitigated through ongoing work with hospital trusts. Whilst the financial impact of these proposals was likely to be material for the Royal Brompton and University Hospitals of Leicester, the panel did not consider them sufficient to threaten the viability of the hospital trusts or their ability to continue to provide a wide range of services.

49. Detailed planning of the changes and an appropriate implementation timetable were considered important for effective management of the changes needed.

3.2 The impact at centres which, under the proposals, would continue to be commissioned as Level 1 CHD centres

3.2.1 Alder Hey Children's Hospital NHS Foundation Trust

50. No significant increase in surgical activity is expected at Alder Hey as a result of the proposals. The direct impact on Alder Hey will therefore be minimal.

51. However, under the proposals Alder Hey will form a joint level 1 centre with Liverpool Heart and Chest Hospital NHS Foundation Trust, which has not previously undertaken CHD surgery. The panel considered that Alder Hey would therefore need to act as the senior partner in the transition of Level 1 services

from Central Manchester to Liverpool Heart and Chest Hospital in order to provide assurance for the continuation of the service at Central Manchester University Hospitals and support Liverpool Heart and Chest Hospital in the development of its service.

3.2.2 Barts Health NHS Trust

52. The proposals are likely to result in increased activity at Barts Health NHS Trust. While the number of patients involved is relatively small, this still represents a doubling of activity for the hospital trust. The panel considered this scale of increase to be a significant challenge for Barts. Other factors noted by the panel as contributing to the risk posed by this change were:

- Barts only took on responsibility for delivering Level 1 CHD services for adults at the new Barts Heart Centre in 2015, following comprehensive reorganisation of cardiac services across North Central and North Central London between UCLH and Barts.
- Barts is currently in financial special measures.
- Barts had not clearly demonstrated that it had quantified the additional staff it would require.

53. As such the panel considered there to be a moderate risk associated with its ability to provide Level 1 CHD services for the increased number of patients envisaged under these proposals. The panel considered the most significant risk associated with Barts increasing its capacity to be in relation to the additional workforce they would require.

54. Barts is part of a joint level 1 centre with Great Ormond Street Hospital for Children NHS Foundation Trust. The panel considered that Great Ormond Street would therefore need to act as the senior partner in the scaling up of Level 1 services at Barts in order to provide assurance of the development of its service.

3.2.3 Birmingham Children's Hospital NHS Foundation Trust

55. The proposals are likely to result in significantly increased activity at Birmingham Children's Hospital. The number of patients involved is relatively large and represents a proportional increase in activity for Birmingham Children's Hospital of 36%.

56. Birmingham Children's Hospital is confident of its ability to increase its capacity sufficiently to provide the extra activity required under these proposals. The panel considered that it had provided very good evidence of having understood the scale of what would be required and of plans to increase capacity.

57. Birmingham Children's Hospital identified that in order to provide the extra activity required by these proposals it would need additional PICU and ward beds. It has identified a number of options for providing this additional capacity and is

currently in the process of appraising these options. It is confident it would have this additional capacity in place by early 2018 but notes the significant challenge there will be in recruiting the necessary PICU nurses for this expansion.

58. The panel did not consider there to be any significant risks associated with Birmingham Children's Hospital increasing its capacity to meet the activity required by the proposals but did note the challenges associated with the recruitment of staff, most notably PICU nurses, and the need for sufficient lead time.

3.2.4 Great Ormond Street Hospital for Children NHS Foundation Trust

59. The proposals are likely to result in significantly increased activity at Great Ormond Street Hospital. The number of patients involved is relatively large and represents an increase in activity for Great Ormond Street of 31%.

60. Great Ormond Street Hospital is confident of its ability to increase its capacity sufficiently to provide the extra activity required under these proposals. The panel considered that it had provided good evidence of having understood the scale of what would be required of it and of its plans to increase capacity.

61. Great Ormond Street identified that in order to provide the extra activity required by these proposals it would need additional PICU beds. It plans on providing this additional capacity through its new "Premier Inn Clinical Building" which will be completed in September 2017. If Great Ormond Street is required to provide extra capacity prior to this, it stated it would be able to utilise vacant capacity on its current PICU and NICU in the short term.

62. The panel did not consider there to be any significant risks associated with Great Ormond Street increasing its capacity to meet the activity required by the proposals, but did note the challenges associated with the recruitment of staff, most notably PICU nurses, and the need for sufficient lead time.

63. Great Ormond Street is part of a joint level 1 centre with Barts Health NHS Trust. The panel considered that Great Ormond Street would therefore need to act as the senior partner in the scaling up of Level 1 services at Barts in order to provide assurance of the development of its service.

3.2.5 Guy's and St Thomas' Hospitals NHS Foundation Trust

64. The proposals are likely to result in significantly increased activity at Guy's and St Thomas'. The number of patients involved is relatively large this represents a proportional increase in activity for the hospital trust of 40%.

65. Guy's and St Thomas' is confident of its ability to increase its capacity sufficiently to provide the extra activity required under these proposals. The panel considered that it had provided good evidence of having understood the scale of what would be required of it and of its plans to increase capacity.

66. Guy's and St Thomas' identified a need for both additional ward and PICU capacity in order to provide the additional activity modelled under these procedures. It has not identified the number of additional PICU and ward beds required because it is confident that the extra capacity to be provided under its planned expansion scheme will be sufficient. This will provide up to eleven ward beds and up to ten PICU beds by December 2017.

67. The panel noted that as the surgical work undertaken by Guy's and St Thomas' on behalf of Northern Ireland moves to Dublin (currently expected to happen at the end of 2017) this would free up existing capacity.

68. The panel did not consider there to be any significant risks associated with Guy's and St Thomas' absorbing the activity required by NHS England's proposals. However, the panel did note that the most significant risk related to the workforce implications of the proposals on Guy's and St Thomas' and its ability to recruit the appropriate staff, most notably PICU nurses.

3.2.6 Leeds Teaching Hospitals NHS Trust

69. The proposals are likely to result in increased activity at Leeds Teaching Hospitals. The number of patients involved is relatively modest and represents a small proportional increase in activity for Leeds of 10%.

70. Leeds Teaching Hospitals is confident of its ability to increase its capacity sufficiently to provide the extra activity required under these proposals. The panel considered that it had provided good evidence of having understood the scale of what would be required of it and of its plans to increase capacity.

71. Whilst the panel had some concerns relating to the trust's ability to increase capacity in its cardiac ward, PICU and theatre, they did not consider that these posed a significant risk to its ability to provide services for these additional patients.

3.2.7 Liverpool Heart and Chest Hospital NHS Foundation Trust

72. Liverpool Heart and Chest Hospital currently provides Level 2 CHD services. Under the proposals the hospital trust would begin performing Level 1 services including surgery and interventional cardiology on adults for the first time. This will mean a significant change in the cohort of patients and activity levels.

73. The panel considered the scale and nature of this change to be a significant challenge for Liverpool Heart and Chest Hospital and the most significant risk amongst hospitals gaining activity as a result of the proposals.

74. Liverpool Heart and Chest Hospital would be providing adult Level 1 CHD services for the first time having previously been a Level 2 centre. As a result of this it will not simply be doing more of the activity it has already been undertaking (as is the case with other hospitals gaining activity) but rather starting to undertake a type of activity it has not previously done. This increases the risks.

75. In addition, the panel was concerned that Liverpool Heart and Chest Hospital had not clearly quantified the additional capacity and workforce it would require to provide this additional activity in its submission. Therefore it could not provide convincing assurances about how and when this would be provided. These risks were seen as more significant due to Liverpool Heart and Chest Hospital's current breaching of referral to treatment waiting times (RTT) specifically in relation to cardiac surgery.

76. Under the proposals Liverpool Heart and Chest Hospital will form a joint level 1 centre with Alder Hey Children's Hospital NHS Foundation Trust. The panel considered that Alder Hey Children's Hospital would therefore need to act as the senior partner in the transition of Level 1 services from Central Manchester University Hospitals to Liverpool Heart and Chest Hospital in order to provide assurance for the continuation of the service at Central Manchester and support Liverpool Heart and Chest Hospital in the development of its service.

77. Managing the risk of this change will require close working between Central Manchester University Hospitals, Alder Hey Children's Hospital and Liverpool Heart and Chest Hospital to ensure that they have a clear understanding of the activity Liverpool Heart and Chest Hospital will be required to undertake and the systems, facilities, staffing and capacity needed to manage this activity.

3.2.8 Newcastle upon Tyne Hospitals NHS Foundation Trust

78. No significant increase in surgical activity is expected at Newcastle upon Tyne Hospitals as a result of the proposals. The impact on the hospital trust will therefore be minimal.

79. While noting that the proposals posed a minimal risk, the panel considered that real risks did arise because Newcastle upon Tyne Hospitals does not meet the 2016 activity requirement and is unlikely to be able to meet the 2021 activity requirement. It also does not meet the 2019 paediatric co-location requirements or have a realistic plan to do so by April 2019.

80. The panel considered that these shortfalls could not be ignored and that if there was to be derogation, the issues needed to be resolved by the end of the period

of derogation. This would require a plan for the future of advanced heart failure. services currently provided at Newcastle upon Tyne Hospitals.

3.2.9 University Hospitals Birmingham NHS Foundation Trust

81. The proposals are likely to result in increased activity at University Hospitals Birmingham. The number of patients involved is relatively modest although this represents a 40% increase in activity for the hospital trust.

82. University Hospitals Birmingham is confident of its ability to increase its capacity sufficiently to provide the extra activity required under these proposals. The panel considered that the hospital trust had provided good evidence of having understood the scale of what would be required of it and of its plans to increase capacity.

83. The panel did not consider that there was any significant risk associated with University Hospitals Birmingham absorbing this additional activity.

84. Due to the size of its overall adult cardiac service, including ITU provision, the level of activity it would absorb as a result of the proposed changes is not considered to be significant, and the panel was therefore confident that any transition of activity would be able to be undertaken in a timely manner.

3.2.10 University Hospitals Bristol NHS Foundation Trust

85. No significant increase in surgical activity is expected at University Hospitals Bristol as a result of the proposals. The impact on Bristol will therefore be minimal.

3.2.11 University Hospital Southampton NHS Foundation Trust

86. The proposals are likely to result in a small increase in activity at University Hospital Southampton. The number of patients involved is modest and represents a small proportional increase in activity for the hospital trust of 5%.

87. The hospital trust is confident of its ability to increase its capacity sufficiently to provide the extra activity required by the standards.

88. The panel did not consider that there was any significant risk associated with University Hospital Southampton absorbing this additional activity.

89. The panel considered that it had provided good evidence of having understood the scale of what would be required and of its plans to increase capacity. Work is already underway to expand PICU.

3.2.12 Conclusion

90. The panel considered that hospitals that would gain more patients if the proposals were to be implemented were well placed to be able to expand their capacity to be able to provide that care.

91. All the hospitals which would gain additional activity under the proposals indicated that they were able to increase capacity in order to meet this increased demand.

92. Detailed planning of the changes and an appropriate implementation timetable were considered important for effective management of the changes needed.

93. All hospitals are confident of their ability to provide high quality CHD services to these additional patients and the risks which remain largely relate to ensuring that sufficient lead in time is given to any changes, and to the detailed work of understanding the precise nature of that change. Thus the specific requirements on these hospitals has been undertaken prior to these proposals being implemented.

4 National themes

94. The national panel noted a number of themes which emerged during its assessment. Some of these related to the current services and some to what would be required were the proposals to be implemented.

4.1 Workforce

95. One of the key challenges both to current services and to any future configuration is ensuring that there are sufficient staff with the necessary skills and experience to undertake this work across the country.

96. The proposals would have a significant impact on the workforce with a number of staff currently providing Level 1 CHD services, no longer providing these within their current hospital trust and other hospitals requiring additional staff in order to accommodate the additional activity. The recruitment of the necessary workforce for this increased activity was seen as potentially challenging for a number of these hospitals, specifically, the recruitment of the PICU nurses necessary for the additional beds which would be required.

97. Those hospitals which would gain additional activity under the proposals, all stated a desire to work with the hospitals which would no longer be commissioned, to provide Level 1 services in order to maximise the possibility of retaining these skilled staff and minimising the impact of any changes.

98. NHS England would support TUPE arrangements to enable staff affected by change to transfer to other Level 1 hospitals requiring their skills.

99. Experience from previous CHD service changes shows that a number of staff, perhaps most, would prefer to be re-deployed within their current hospital trust, though in some cases staff may transfer in accordance with TUPE regulations. This may create an additional challenge both for the hospitals gaining activity, which may find it more difficult to recruit the necessary staff for the additional activity, and for the hospital trusts no longer commissioned to provide Level 1 services which may not have appropriate roles for this workforce to move into.

100. The hospitals gaining significant activity believed that, although challenging, they had a good record of recruiting staff and would be able to recruit the necessary staff as long as they were given sufficient time prior to these proposals being implemented. We also expect that some PICU nurses will transfer to these hospitals with patients. In London, where the Royal Brompton would no longer have a PICU, and where the distances between hospitals are smaller, this may make a particularly important contribution. Whilst this does represent a significant challenge to CHD services the panel anticipated that this could be managed with good planning, appropriate policies agreed between affected provider hospitals, and sufficient lead times prior to changes being made, as well as appropriate structures to support and protect staff affected by these changes.

101. A priority will be the development of a framework across organisations to ensure the best possible outcome for staff. The national panel advised that all units are resourceful and where there is a shortfall in the staff available they were confident they will continue to find ways to recruit the necessary staff, including international recruitment where necessary.

102. Sufficient experienced staff within the service is key to good patient outcomes across the care pathway. Were these proposals to be implemented, significant work would be required to ensure every effort was made to retain experienced staff, and ensure that every Level 1 hospital maintained a highly skilled and experienced workforce.

4.2 The resilience of surgical teams

103. Specific concerns were raised as part of this impact assessment over the resilience of the surgical teams at several hospitals. There is a concern that some current surgical teams are not sufficiently robust, due either to an over reliance on locums or on key individuals. There is concern that in a number of these hospitals there is a lack of clear succession planning which creates a significant risk to the service if an experienced CHD surgeon stopped working within that hospital.

104. The panel recommended that NHS England should ensure that each hospital's implementation planning ensures that appropriately robust surgical teams are in place with clear succession plans.

4.3 Managing patient flows

105. NHS England has undertaken patient flow modelling based on the assumption that patients who currently attend one of the Level 1 hospitals which may no longer be commissioned would attend their nearest hospital. This will not always be the case as patients may decide to attend a different unit for a wide range of reasons.

106. During planning and preparation for implementation, the panel recommended that further modelling may be required to explore other flows which may occur for example using public transport travel time or the pattern of referrals for other specialised paediatric services.

4.4 Communication

107. Communication of service provision and service change is paramount to the continuity of the service for patients and staff. The uncertainty which has surrounded CHD services for a number of years is extremely unhelpful for both patients and staff.

108. The panel recommended that the NHS England CHD programme should continue to offer open communication on the stages of the programme and seek to support the patients in understanding the changes and the associated timelines proposed.

109. Key to this communication is a clear articulation of the staged approach to meeting the standards which explains both the timelines which are stated within the standards and the rationale behind these.

4.5 Finance

110. The money required for the CHD service is provided through tariff which ensures that the money received is linked to patient activity. It is likely that there will be some economies of scale for providers linked with providing a higher volume of activity. As such the hospital trusts which would gain activity under these proposals are confident of being able to fund this expansion through the income which would be associated with this extra activity. The panel accepted this.

111. Two hospitals indicated that they would need to source capital funds to accommodate additional activity: University Hospitals Birmingham NHS Foundation Trust (£4M) and Great Ormond Street Hospital for Children NHS Foundation Trust (£6M). In both of these cases it is expected that the hospital trust would be able to source the capital funding from existing allocations and/or charitable funds.

4.6 PICU

112. The proposed changes would result in a loss of approximately 23 commissioned PICU beds (7 from University Hospitals of Leicester and 16 from the Royal Brompton). This includes beds not used by CHD patients.

113. The hospital trusts expected to undertake additional activity identified that if required they would be able to make available an additional 24 beds (Guy's and St Thomas' 10, Southampton 5, Birmingham Children's Hospital 5, Great Ormond Street 3[8], Leeds 1). These numbers represent the capacity that hospital trusts are planning to develop including planned expansions in PICU beds, not just those beds needed to respond to additional CHD activity.

114. The panel was assured that the proposed number of PICU beds exceeded the current capacity.

115. If these proposals were to be implemented, ongoing monitoring would be required to establish the actual patient flows and case mix going to each hospital. Staffing was noted to be an issue for many PICUs.

116. The panel noted that the national paediatric critical care review is considering the overall requirement for PICU beds in future across the country and for all patient groups.

4.7 Advanced heart failure

117. NHS England's CHD Programme did not specifically consider the provision of services relating to advanced heart failure (including paediatric and adult heart transplantation services).

118. The panel noted concerns about Newcastle upon Tyne Hospital's ability to meet the CHD standards and that if Newcastle could not meet the standards, a clear plan would be needed either to move the advanced heart failure service, or deliver it under a different model. A phased, planned transition supported by the Newcastle team would be the ideal if the service needed to move. This would

[8] GOSH also stated that it had vacant capacity on its PICU/NICU wards that could be utilised in the short-term and would be able to create additional PICU capacity in its Premier Inn Clinical Building by converting some beds which had been allocated as HDU beds into PICU beds.

minimise the risks. The panel also considered that succession planning would be an issue for the service in Newcastle.

119. The panel recommended that NHS England would need to undertake specific work on the future of advanced heart failure services in England, to ensure their ongoing provision and resilience. If this were to result in the development of an alternative model for advanced heart failure services for CHD patients then a review of the long term future of Level 1 CHD services in Newcastle would also be enabled.

4.8 ECMO

120. The optimal national model for provision of children's ECMO in the future will be considered as part of NHS England's review of paediatric critical care services. The maintenance of good outcomes will be a key consideration. The review is expected to consider the appropriate number of providers of children's ECMO, the case for minimum activity levels and the appropriate number of mobile ECMO providers.

121. The panel considered it possible that this review will produce a new model for the provision of these services which may not require a link to CHD surgeons.

4.9 Support

122. In order for these proposals to be implemented there will need to be a high level of hospital to hospital support. This is already clearly evident in certain areas of the country such as the North West where there are ongoing discussions between Central Manchester University Hospitals, Alder Hey Children's Hospital and Liverpool Heart and Chest Hospital, and in London where the panel recommends that Great Ormond Street Hospital supports Barts.

123. It will also be necessary for clear protocols to be established between Level 1 and Level 2 hospitals to ensure that care is provided in appropriate environments and patients are cared for closer to home as much as possible. In addition to this, hospitals will need to collaborate to ensure that there is clear understanding of the "ask" of those hospitals gaining activity and that appropriate services and capacity are in place. The timing of any changes is extremely important and will work better for patients where this is agreed between all affected hospitals.

124. NHS England remains committed to promoting collaborative working and will continue to work with hospitals to facilitate these conversations.

125. In addition to this, once final decisions have been made, money will be available to pump prime the formation of networks, in line with the approach to other Operational Delivery Networks for specialised services.

4.10 Level 2 services and the impact of the end of Commissioning through Evaluation for Patent Foramen Ovale (PFO)

126. Under the proposals Oxford University Hospitals NHS Foundation Trust, Norfolk and Norwich University Hospitals NHS Foundation Trust, Brighton and Sussex University Hospitals NHS Trust would be commissioned to provide Level 2 services. Both Brighton and Sussex and Oxford intend to continue to perform catheter ASD closures.

127. Following the end of Commissioning through Evaluation for PFO closures, it may now prove more difficult for these hospitals to meet the minimum requirement of 50 ASD / PFO closures per annum. Further monitoring will be required to determine whether these hospitals are able to continue performing these procedures.

128. Where hospitals are not able to perform ASD catheter closures they may still choose to provide Level 2 CHD services in the same way as Norfolk and Norwich Hospital.

4.11 Equality and health inequalities

129. Most hospitals did not identify any significant equality or health inequalities impacts associated with the proposals.

130. All responses submitted by the hospitals were considered in more detail as part of our Equality and Health Inequalities Assessment.

5 Part Two: Further assessment against the standards

5.1 Introduction

131. Assessment of the additional information submitted by University Hospitals of Leicester and the Royal Brompton in respect of standards with a future implementation date was undertaken by the national panel at the same time as the Impact Assessment.

5.1.1 Paediatric interdependency requirements

132. The standards state that by 2019 the following specialties or facilities must be located on the same hospital site as Specialist Children's Surgical Centres. They must function as part of the multidisciplinary team. In addition, consultants from the following services must be able to provide emergency bedside care (call to bedside within 30 minutes).

- Paediatric Cardiology;
- Paediatric Airway Team capable of complex airway management (composition of the team will vary between institutions);
- Paediatric Intensive Care Unit (PICU);
- High Dependency beds;
- Specialised paediatric cardiac anaesthesia;
- Perioperative extracorporeal life support (Non-nationally designated extracorporeal membrane oxygenation (ECMO));
- Paediatric Surgery;
- Paediatric Nephrology/Renal Replacement Therapy;
- Paediatric Gastroenterology.

5.1.2 Surgeon minimum activity levels and surgical team size

133. The standards state that congenital cardiac surgeons must be the primary operator in a minimum of 125 congenital heart operations per year (in adults and/or paediatrics), averaged over a three-year period. Only auditable cases may be counted, as defined by submission to the National Institute for Cardiovascular Outcomes (NICOR). They must work in teams of three by April 2016 and teams of four by April 2021.

5.2 University Hospitals of Leicester NHS Trust

5.2.1 Paediatric interdependency requirements

134. University Hospitals of Leicester stated that all paediatric specialist services, including paediatric cardiac services, will be co-located at Leicester Royal Infirmary by 2019 and they will therefore be fully compliant with the co-location requirements. This plan no longer depends on the building of a new children's hospital.

135. The panel considered whether the hospital trust's proposal to move paediatric cardiac Level 1 services to the Infirmary site would allow it to achieve full compliance with the requirements. However, the panel considered that University Hospitals of Leicester needed to set out its plans in more detail to be fully reassured that this move could and would be achieved by the required deadline.

136. University Hospitals of Leicester provided assurances that the project will not require external capital funding, as it will be funded using a combination of the hospital trust's Capital Resource Limit and charitable donations. It will be designed as part of (but is not dependent upon) the wider Children's Hospital Project, to ensure the integration of paediatric services to create a defined Children's Hospital in Leicester.

5.2.2 Surgeon minimum activity levels and surgical team size

137. University Hospitals of Leicester's surgical activity in 2015/16 was 326 procedures. 2016/17 activity data was not available to the panel.

138. The hospital trust submitted a surgical growth plan which it considers would result in it achieving the minimum level of activity required to ensure four surgeons are each able to perform a minimum of 125 procedures per year by 2021.

139. The projected increase in activity depends on population growth, technical advances, and changes to patient flows. NHS England has repeatedly stated that it has no intention of mandating patient flows and as such the panel remained unconvinced that the changes to patient flow required to achieve the necessary growth are likely to occur.

140. University Hospitals of Leicester reported that it has successfully established a complete lifetime referral pathway with Kettering General Hospital and had positive discussions with two other network hospitals to establish lifetime referral pathways. University Hospitals of Leicester suggested additional surgical cases from these partners as demonstrated in the table below:

Table 4: UHL estimated additional future referrals

Year	Partner 1	Partner 2	Partner 3
2016/17	0	0	0
2017/18	4	6	4
2018/19	8	11	7
2019/20	11	17	11
2020/21	15	22	14

141. To date these arrangements have not been established and as such, the hospital trust does not expect to see any additional activity from these until 2017/18.

142. University Hospitals of Leicester did not provide any evidence of formal agreements having been established or any basis for its assertions over the amount of additional activity it would receive from these networks.

143. The changes to referral pathways described by the hospital trust were not considered sufficient to bring about the level of growth required for it to meet the 2021 requirements. In order for these requirements to be met the hospital trust's activity would need to increase by 53% from 2015/16 levels in five years, when the previous five years have only resulted in a total growth of 24%.

144. Applying national predicted growth rates to University Hospitals of Leicester's surgical activity, and factoring in the additional referrals cited above (though evidence for these has not been provided), NHS England has estimated that the hospital trust's surgical activity in 2020/21 will be approximately 398 operations.

145. University Hospitals of Leicester's growth estimate assumes growth will continue at the rate seen at the hospital trust between 2014 and 2016 as well as technical advances and changes in its network. The basis for these assumptions, and their impact within the hospital trust's modelling, is not fully explained. One difference between the hospital trust's model and NHS England's is that University Hospitals of Leicester assumes the most recent, and higher, growth rate at the hospital will continue, while NHS England has taken a longer run perspective informed by growth rates seen across the country.

146. The panel considered it likely that University Hospitals of Leicester would reach activity levels sufficient to support a team of three surgeons each undertaking 125 operations per year, but that it was not clear when this would happen. The hospital trust's own most recent estimate was that this would be achieved by 2017/18.

147. The panel considered that University Hospitals of Leicester had not provided sufficient evidence to provide confidence that it would achieve the minimum surgical activity requirements by 2021.

5.2.3 Summary

148. Following the hospital trust's latest submission the panel considered that:

- University Hospitals of Leicester had demonstrated that it could meet the April 2019 co-location requirement though more detailed plans were required to be fully reassuring;
- The hospital trust had not demonstrated that it met the April 2016 requirement of three surgeons each performing a minimum of 125 procedures per year;
- While University Hospitals of Leicester had not provided sufficient information to know when the April 2016 requirement would be met, it was likely that this requirement would be met; and
- The hospital trust had not set out a convincing plan as to how it will meet the April 2021 requirements of four surgeons each performing a minimum of 125 procedures per year.

5.3 Royal Brompton and Harefield NHS Foundation Trust

5.3.1 Paediatric interdependency requirements

149. The Royal Brompton has previously demonstrated that it meets all of the co-location requirements with the exception of paediatric surgery and gastroenterology.

150. The hospital trust did not provide any additional information or evidence as to how it plans to meet the 2019 requirements to co-locate its paediatric CHD service with other key specialties.

151. Royal Brompton stated that although the hospital trust does not have paediatric surgery or paediatric gastroenterology co-located on site, it provides these services through its partnership with Chelsea and Westminster whose staff participate in MDTs and ward rounds and provide out of hours cover as required.

152. The hospital trust stated that it did not consider that 2019 requirements should be a part of this assessment process or that decisions should be made on the basis of these.

5.3.2 Summary

153. Following the hospital trust's latest submission the panel considered that:

- Royal Brompton had not demonstrated that it could meet the April 2019 co-location requirement for paediatric gastroenterology or paediatric surgery.

6 Conclusion

154. The panel did not consider that any of the potential impacts or risks identified through this process was sufficient to require the proposals to be altered.

155. The panel noted that if the affected hospital trusts were to continue to provide appropriate level 2 services (or in the case of Royal Brompton, adult only level 1 services, the impact would be reduced.

156. The panel was confident that those hospitals required to provide additional Level 1 services, were these proposals to be implemented, would be able to provide sufficient capacity for this.

157. The panel concluded that the additional evidence submitted did not alter their original assessment of the three trusts (Central Manchester University Hospitals – red; University Hospitals of Leicester – red/amber; Royal Brompton and Harefield – red/amber).

158. The panel considered that while the proposals would have a material impact on the hospital trusts no longer providing Level 1 services, especially the Royal Brompton and University Hospitals of Leicester, it did not consider it to be likely that these would be sufficient to threaten either their continued viability or their continued ability to provide a wide range of specialised services.

7 Next steps

159. This is a high level impact assessment intended to identify the risks associated with the proposals as they currently stand; test the plausibility of the proposals, and inform NHS England's assurance processes prior to the launch of public consultation. Whilst there remain a number of unknowns relating to the implementation of these proposals, as well as a number of risks which will require managing, there is nothing highlighted within this document which seems likely to make the proposals unviable.

160. No commissioning decisions have yet been made, as the public consultation is pending, and therefore it is not appropriate to produce a detailed implementation plan at this stage. This will be produced after commissioning decisions have been taken by the Board of NHS England, following the completion of public consultation. Throughout the consultation period and beyond NHS England will continue to work with provider hospitals to understand the impact of the changes which are being proposed and refine the impact assessment we have completed to date.

Appendices: Individual centre impact assessments

CHD impact assessment – Alder Hey Children's Hospital NHS Foundation Trust

1. Overview

NHS England's modelling suggests that Alder Hey Children's Hospital would receive fewer than ten additional procedures per year as a result of these proposals. In light of this, the panel considered that there are no new risks to Alder Hey. Under the proposals there would be a surgical team which would operate on children and adults at Alder Hey and Liverpool Heart and Chest Hospital respectively.

2. Impact on CHD services

The additional activity that would need to be managed

Alder Hey's current surgical and interventional activity is displayed in the tables below:

Surgical procedures

Year	Paediatric	Adult[9]	Total
2013/14	389	7	396
2014/15	372	4	376
2015/16	343	5	348

Catheter Procedures

Year	Paediatric	Adult	Total
2013/14	230	10	240
2014/15	253	14	267
2015/16	308	22	330

NHS England's modelling suggests that Alder Hey would receive fewer than ten additional procedures per year as a result of these proposals.

3. Development of plans to care for additional patients

Alder Hey stated that although no plans were required due to a low level of predicted increase, should Birmingham Children's Hospital's increase in activity be greater than it can accommodate, Alder Hey would be willing to consider growing its capacity.

4. Facilities including availability of capital if needed

None required as a result of these proposals.

5. Workforce

No increase required as a result of these proposals.

[9] NICOR adult procedures include anyone aged 16+

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation
As a result of these proposals the Trust has completed its impact assessment assuming it does not receive a material increase to its CHD activity. This creates an operational risk that a higher than expected number of patients receives their care from the Trust following the implementation of the proposals. This could result in the CHD service being under unexpected strain.	The Trust to develop contingency plans to provide care for a larger number of patients.

CHD Impact Assessment – Barts Health NHS Trust

1. Overview

The proposals are likely to result in increased activity at Barts. NHS England's modelling indicates that the CHD surgical activity at Barts may increase to over double its current activity. Whilst this would represent a significant increase in its CHD activity the panel noted that there is available capacity in the PFI-financed Cardiac Centre on the St Bartholomew's site and that further development of cardiac services is line with the hospital trust's strategic aims.

Barts took on responsibility for delivering Level 1 CHD services for adults at the new Barts Heart Centre in 2015, following comprehensive reorganisation of cardiac services across North Central and North Central London between UCLH and Barts. UCLH had previously provided Level 1 CHD services for adults.
Barts is currently in financial special measures. As such the panel considered there to be risk associated with their ability to provide Level 1 CHD services for the increased number of patients envisaged under these proposals.

The panel considered the most significant risk associated with Barts increasing its capacity to be in relation to the additional workforce it would require. This risk was increased as a result of their failure to clearly demonstrate that they had quantified the additional staff they would require.

Barts was confident of being able to provide the additional capacity necessary to provide services to these additional patients. In conjunction with Great Ormond Street Hospital for Children, it has begun discussions with Guy's and St Thomas' and University Hospital Southampton to discuss what a network solution might look like which ensured that all hospitals met the 2021 requirements of surgeons working in teams of four who perform a minimum of 125 procedures a year.

Barts should continue to work closely with Great Ormond Street Hospital for Children to ensure that its CHD service continues to develop and that appropriate steps are made to ensure that the appropriate capacity is in place for any additional activity.

2. Impact on CHD services

The additional activity that would need to be managed
Bart's current surgical and interventional activity is displayed in the tables below:

Surgical procedures

Year	Adult
2013/14	85 UCLH
2014/15	69 UCLH
2015/16	60 Barts /4 UCLH

Catheter Procedures

Year	Adult
2013/14	142 UCLH
2014/15	2 Barts /129 UCLH
2015/16	164 Barts / 12 UCLH

NHS England's modelling of potential patient flows suggest that Barts would receive an additional 75-95 adult patients requiring surgical interventions. Barts have based its analysis of the capacity required on an assumption that it will receive an additional 90 surgical cases and 100 interventional cases each year. It has produced two projections one based on outpatient activity also transferring to Barts and one on it not.

3. Development of plans to care for additional patients

Barts currently provides four inpatient ward beds for its CHD service. In order to expand its capacity it has identified that it would need an additional four ward beds. Barts also has two critical care beds available for CHD which it believes would need to increase by one bed in order to provide care for these additional patients.

Barts has also identified the additional theatre sessions, catheter lab days, outpatient clinic appointments and diagnostic procedures which would be required for this additional activity. The additional diagnostic and outpatient capacity are impacted significantly by whether or not the outpatient activity transfers to Barts.

4. Facilities including availability of capital if needed

In order to provide the additional services identified Barts is relying largely on better utilisation of current facilities.

Currently there is a weekday catheter lab and operating theatre capacity available and business cases have been submitted to fund support services for additional capacity. In addition to this in order to meet additional future demands Barts is proposing extended three session operating days and seven day working which will provide capacity expansion possibilities.

Barts proposes making additional inpatient bed capacity for both ward and critical care areas through protocoled in-patient pathways which reduce the length of stay and improve efficiency.

Depending on whether or not outpatient activity transfers to Barts there may also be a need for greater outpatient capacity. Barts state that there is some outpatient capacity available and that more capacity can be generated by extended three session days and seven day working. It also proposes expanding current outreach specialist CHD clinics in regional hospitals if required.

The panel considered there to be some risks associated with Barts' proposals. It was noted that much of the additional capacity required was going to be achieved through utilisation of existing capacity and greater efficiency. Whilst this may be achievable the panel was concerned that there was risk that these efficiencies would not be achieved and did not feel assured that Barts had a plan for increasing its capacity if they were not. This risk was increased by the strain which Barts services currently seemed to be in under as demonstrated by currently being in financial special measures.

5. Workforce

Barts is confident that its current workforce plans/job planning will enable it to recruit experienced staff to support its additional catheter lab, theatre, outpatient and diagnostic activity.

If there were to be a significant growth in outpatient and diagnostic activity Barts currently have echo capacity restraints mainly due to physiology team skills mix. Its CHD physiology team are junior and in-training therefore all scans are full / detailed studies of 45 minutes duration. Recruiting experienced CHD physiologists is difficult due to a shortage of physiologists across the UK, especially those with skills in CHD. The recruitment of appropriately experienced consultant CHD cardiologists to support the expected levels of outpatient and diagnostic activity would also require targeted recruitment both within UK and EU.

In both scenarios the recruitment of ACHD Clinical Nurse Specialists (CNS) would be a challenge. CNS are crucial for ACHD services, however, there are very few who are experienced in this field. Barts has mitigated these recruitment problems by appointing experienced cardiac nurses with provision of an in-house training programme in CHD within the Barts Heart Centre.

In order to meet these challenges Barts has submitted business plans to the hospital Trust Board outlining resource requirements for implementing NHSE proposals.
It is confident that through utilising its existing recruitment strategy and campaigns for nursing and allied health professionals it would continue to attract the necessary staff.

The panel was concerned that despite recognising the challenge which Barts was likely to face in terms of workforce development it had not quantified the growth which would be required in order to provide this additional activity.

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation
In order to provide the additional capacity the hospital trust will need to recruit additional staff. There is a risk that the Trust fails to recruit the required workforce which could result in an overstretched workforce, a lack of bed capacity and a reduction in the quality of care patients receive.	The Trust to quantify the staff required for its additional activity. The Trust to work with other hospitals to ensure appropriate policies and processes are in place to support workforce affected by change The Trust to develop/provide evidence of a recruitment strategy to ensure sufficient staff are in place when required. Commissioners, providers and Health Education England work together to plan for future CHD workforce provision NHS England to ensure that sufficient lead time is given to enable workforce planning.
As a result of these proposals the Trust has completed its impact assessment based on an increase of approximately 80-90 surgical procedures per year. This creates an operational risk that a higher than expected number of patients receives their care from the Trust following the implementation of the proposals. This could result in the CHD service being under unexpected strain.	The Trust to develop contingency plans to provide care for a larger number of patients.
The Trust requires additional intensive care and ward beds in order to increase its CHD activity. This creates an operational risk that an insufficient number of the new intensive care/ward beds are made available for the CHD service. This could result in last minute cancellations, delays to procedures and increased waiting times.	The Trust to do further more detailed planning to ensure that it has identified the number of ward/intensive care beds which are likely to be developed and ensure that a sufficient number of these new beds are allocated to CHD. NHS England to ensure that sufficient lead time is given.
As a result of these proposals the Trust has completed its impact assessment based on an increase of approximately 80-90 surgical procedures per year. This creates a financial risk that a lower than expected number of patients receives their care from the Trust following the implementation of the proposals. This would result in a financial loss to the hospital trust and the potential need for downscaling of provision including loss of staff and potential redundancies.	The Trust to develop contingency plans to provide care for a smaller number of patients.

CHD Impact Assessment – Birmingham Children's Hospital NHS Foundation Trust

1. Overview

These CHD proposals are likely to result in a significant amount of additional activity at Birmingham Children's Hospital. Although the normal risks relating to growing capacity would exist, the panel is satisfied that Birmingham Children's Hospital would be able to increase its capacity in order to meet this additional demand.

Birmingham Children's Hospital was confident of being able to provide the additional capacity necessary to provide services to these additional patients. Its primary concern was over its need to develop additional PICU capacity and recruit the necessary nurses for the extra beds.

2. Impact on CHD services

The additional activity that would need to be managed

Birmingham Children's Hospital current surgical and interventional activity is displayed in the tables below:

Surgical procedures

Year	Paediatric	Adult	Total
2013/14	504	11	515
2014/15	480	8	488
2015/16	491	5	496

Catheter Procedures

Year	Paediatric	Adult	Total
2013/14	432	29	461
2014/15	465	35	500
2015/16	545	21	566

NHS England's modelling of potential patient flows suggests that Birmingham Children's Hospital would receive approximately 180 additional patients requiring surgical interventions. Using this figure Birmingham Children's Hospital estimated that 80% of University Hospitals of Leicester's activity would transfer to them were the proposals to be implemented. It also worked on the assumption that the majority of outpatient activity would continue to be provided by University Hospitals of Leicester.

The panel considered that these assumptions were appropriate to be used as a basis for Birmingham Children's Hospital's impact assessment whilst noting that it will be necessary for Birmingham Children's Hospital to consider what the impact of providing all the outpatient activity would be.

3. Development of plans to care for additional patients

NHS England currently commission 30 PICU beds from Birmingham Children's Hospital. If the proposals were to be implemented Birmingham Children's Hospital has estimated that it would require an additional five PICU beds and twelve cardiac ward beds. In addition Birmingham Children's Hospital also stated that it would need to create additional consulting rooms and expand capacity within the heart investigations unit. It will need an additional three echo machines to be able to manage the growth in activity - one extra machine in the Heart Investigations Unit, one additional machine in theatres and an additional echo machine for the expanded cardiac ward.

4. Facilities including availability of capital if needed

The hospital trust is already investing in a major site redevelopment as part of the Next Generation project and this will be finalised in late 2017. The completion of this project is extremely important as it enables a large amount of inpatient space to be decanted and transferred into the new building when it opens thereby providing vacant estate for the cardiac inpatient, PICU bed base and additional consulting rooms to expand into.

As part of Birmingham Children Hospital's planning it has identified three potential locations that will be vacated and could support the required cardiac/PICU expansion. The Director of Estates and Chief Strategy Officer are leading an options appraisal to identify the preferred option and will be developing the business case for converting these into the additional cardiac and PICU estate required. Birmingham Children's Hospital is confident this will ensure that there is adequate capacity to be able to take the additional 380 admissions per year and also manage the increased outpatient requirements.

In terms of potential scheme value Birmingham Children's Hospital has not at this stage got final redevelopment costs but its initial scoping has indicated that this will be a significant capital investment. The existing space would become available in late 2017 and Birmingham Children's Hospital plans to commence the building programme with completion in early 2018.

In terms of funding the required level of estate development Birmingham Children's Hospital will need additional capital funding. The hospital trust's preferred capital financing route for the additional investment required for cardiac services would be via the issue of Public Dividend Capital. It understands that transformative schemes such as this could be prioritised as part of allocation of the Department of Health Capital Departmental Expenditure Limit (CDEL) process.

However, the business case that Birmingham Children's Hospital would internally develop to gain internal approval for taking this forward would look at a number of downside cases that would assume either part PDC / part loan via the Independent Trust Financing Facility (ITFF) and full loan funding via the ITFF. Its initial expectation is that to fund the latter they would model over a ten year period at current rates (with some degree of sensitivity in this to cover interest rate risk). The assumption is that the ongoing revenue funding via tariff would allow the servicing of a loan (repayment of principal and interest) or PDC (dividend payment to the DH).

The panel is satisfied that Birmingham Children's Hospital has a clear plan for establishing the capacity required for the additional activity it would be likely to receive if NHS England's proposals were to be implemented. However, this capacity appeared to be dependent on capital spend and as such there remains a risk that if this to not progress as outlined by Birmingham Children's Hospital it would not be able to sufficiently increase its capacity. This risk would be increased if NHS England does not provide Birmingham Children's Hospital sufficient lead time to implement changes.

5. Workforce

The projected growth in activity will result in the need to expand the existing workforce across a number of areas, including cardiac and PICU nursing, cardiologists, cardiac nurse specialists, psychologists and staff within the Heart Investigation Unit.

Birmingham Children's Hospital has estimated that it would need the following staff:

- Cardiologist workforce – 2 WTE consultants, 2 WTE middle/junior grades and an increase the number of cardiac liaison nurses and Advanced Nurse Practitioners;
- PICU and Cardiac ward nursing – 55 WTE nurses made up of 37 WTE Qualified PICU nurses and 18 WTE cardiac ward nurses; and
- 5 WTE clinical support workers.

Birmingham Children's Hospital considers the growth in PICU and ward nursing staff represents a significant challenge, especially if TUPE transfer is not applied. To increase staff numbers at this level will require a significant recruitment programme and does risk destabilising units elsewhere through potentially poaching existing PICU and cardiac nursing staff. Birmingham Children's Hospital considered that it was critical that it is able to work with the NHS England team nationally to ensure there is an integrated and structured approach to this issue.

The panel recognised the challenge faced by Birmingham Children's Hospital in recruiting the necessary staff. It acknowledged the risk of destabilising other units through Birmingham Children's Hospital's recruitment of additional nursing staff; however, remained confident that with sufficient lead time and planning it was likely that this risk could be reduced.

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation
In order to provide the additional capacity the Trust will need to recruit additional staff. There is a risk that the Trust fails to recruit the required workforce which could result in an overstretched workforce, a lack of bed capacity and a reduction in the quality of care patients receive.	The Trust to work with other hospitals to ensure appropriate policies and processes are in place to support workforce affected by change The Trust to develop/provide evidence of a recruitment strategy to ensure sufficient staff are in place when required. Commissioners, providers and Health Education England work together to plan for future CHD

Risk	Mitigation
	workforce provision NHS England to ensure that sufficient lead time is given to enable workforce planning.
The Trust is undertaking a new building programme which will provide additional space for intensive care/ward beds. There is a risk of delays/problems with the building programme which increases the operational risk that sufficient ICU/ward capacity is not available. This could result in last minute cancellations, delays to procedures and increased waiting times.	Birmingham Children's Hospital to continue developing plans to reduce the risk of delays occurring. Birmingham Children's Hospital also to ensure there is enough slack in the plan to allow for delays. Birmingham Children's Hospital to develop a contingency plan for how additional capacity could be created without this building work being completed. NHS England to ensure that sufficient lead time is given.
In order to provide the additional capacity the Trust will need to recruit additional staff. There is a risk that Birmingham Children's Hospital's recruitment of staff results in under staffing in other hospitals in the region.	Birmingham Children's Hospital to work with other hospitals and NHS England to develop a co-ordinated approach to recruiting the necessary staff Commissioners, providers and HEE work together to plan for future CHD workforce provision
As a result of these proposals the Trust has completed its impact assessment on an increase based on approximately 180 additional surgical procedures. This creates an operational risk that a higher than expected number of patients receives their care from the Trust following the implementation of the proposals. This could result in the CHD service being under unexpected strain.	The Trust to develop contingency plans to provide care for a larger number of patients.
As a result of these proposals the Trust has completed its impact assessment on an increase based on approximately 180 additional surgical procedures. This creates a financial risk that a lower than expected number of patients receives their care from the Trust following the implementation of the proposals. This would result in a financial loss to the Trust and the potential need for downscaling of provision including loss of staff and potential redundancies.	The Trust to develop contingency plans to provide care for a smaller number of patients.

CHD Impact Assessment – University Hospitals Bristol NHS Foundation Trust

1. Overview

These CHD proposals are unlikely to result in any significant amount of additional activity at University Hospitals Bristol. The most significant risk for University Hospitals Bristol remains that it fails to achieve the minimum activity required for four surgeons to perform 125 procedures each year by 2021.

NHS England's modelling suggests that Bristol would receive fewer than ten additional procedures per year as a result of these proposals. There are therefore no new risks to University Hospitals Bristol.

2. Impact on CHD services

The additional activity that would need to be managed

University Hospitals Bristol current surgical and interventional activity is displayed in the tables below:

Surgical procedures

Year	Paediatric	Adult	Total
2013/14	306	94	400
2014/15	306	110	416
2015/16	327	125	452

Catheter Procedures

Year	Paediatric	Adult	Total
2013/14	220	178	398
2014/15	188	168	356
2015/16	336	293	629

NHS England's modelling suggests that Bristol would only receive fewer than ten additional procedures per year as a result of these proposals

3. Development of plans to care for additional patients

University Hospitals Bristol stated that as the projected increase was within range of year to year variance it can be accommodated without additional support.

4. Facilities including availability of capital if needed

None required as a result of these proposals

5. Workforce

No increase required as a result of these proposals

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation

Risk	Mitigation
As a result of these proposals the Trust has completed its impact assessment assuming it does not receive a material increase to its CHD activity. This creates an operational risk that a higher than expected number of patients receive their care from the Trust following the implementation of the proposals. This could result in the CHD service being under unexpected strain.	The Trust to develop contingency plans to provide care for a larger number of patients.

CHD Impact Assessment – Central Manchester University Hospitals NHS Foundation Trust

1. Overview

Central Manchester University Hospitals did not complete an impact assessment. However, following publication of NHS England's proposals there have been constructive conversations between Central Manchester University Hospitals, Liverpool Heart and Chest Hospital and Alder Hey Children's Hospital regarding the appropriate configuration of Level 1 and Level 2 CHD services in the North West.

Whilst the proposals will have some impact on the Trust's finances and reputation, this will be offset by the establishment of a new model for the delivery of CHD services in the North West. The risk to Central Manchester University Hospitals as a Trust is very limited, as it has only been undertaking a relatively low volume of CHD surgical activity.

2. Impact on CHD services

2.1 The activity that would need to be transferred to different providers

Were Central Manchester University Hospitals to no longer be commissioned as a Level 1 CHD hospital, it would cease performing any surgical or catheter procedures on people with CHD. This activity would need to be transferred to other hospitals with the majority of the adult activity transferring to Liverpool Heart and Chest Hospital as shown in the table below.

	Patients/year From CMFT		
Receiving Trust	Adult	Paediatric	Total
LEEDS TEACHING HOSPITALS NHS TRUST	4	-	4
LIVERPOOL HEART AND CHEST NHS FOUNDATION TRUST	96	-	96
Total	**100**	**-**	**100**

The most recent activity as reported by the National Congenital Heart Disease Audit is displayed in the tables below. The 15/16 activity is as yet unvalidated.

Surgical procedures

Year	Adult
2013/14	99
2014/15	89
2015/16	88

Catheter Procedures

Year	Adult
2013/14	85
2014/15	88

Year	Adult
2015/16	180

2.2 The potential for Level 2 CHD services to be offered if Level 1 CHD services ceased to be offered.

Level 2 hospitals represent a significant part of the model of care described by the standards for CHD services. They are able to provide the vast majority of the ongoing CHD care required by patients with the exception of any care requiring surgical intervention and the majority of that which requires catheter intervention.

Central Manchester University Hospitals currently provide Level 2 CHD services for children and are currently exploring the possibility or providing these services for adults. This would enable the majority of adult patients in and around Manchester to receive most of their care closer to home with only care relating to a surgical or interventional procedure requiring a Level 1 hospital.

3. Impact on other interdependent services if Level 1 CHD services cease.

Due to the relatively low volume of Level 1 CHD activity undertaken at Central Manchester University Hospitals, the panel did not expect the proposals to have any significant impact on other services within the hospital trust.

4. Impact on the hospital trust including financial, business and reputational considerations

Financial impact – Central Manchester University Hospital's overall income for 2015/16 was £967m and the value of its contract for specialised services is approximately £348m. While the panel accepted that the proposed changes would have a financial impact the contract value of the hospital trust's CHD activity is approximately £1m**.**

The financial value of Central Manchester University Hospital's CHD activity therefore represents 0.1% of the hospital trust's total income and 0.3% of its total specialised services income. The financial loss would be smaller that this if the hospital trust continues to provide Level 2 specialist medical CHD services.

Reputational impact

The panel accepted that the loss of Level 1 CHD services would have a reputational impact on Central Manchester University Hospitals. Being one of only ten centres to offer these services enhances the hospital trust's reputation as a hospital providing high quality specialist services; impacts on its ability to recruit and retain staff; and increases its ability to be involved in specialist research. The reputational impact would be reduced if Central Manchester University Hospitals was to continue to provide Level 2 services in partnership with Alder Hey Children's Hospital and Liverpool Heart and Chest Hospital.

The panel noted that the reputational impact of these proposals must be considered in the light of Central Manchester University Hospital's overall provision of specialised services. The hospital trust would continue to offer a wide range of

specialised services and as such the panel was confident that the hospital trust would continue to be a highly valued hospital within the NHS.

5. Impact on staff

Due to the relatively low volume of surgical and interventional CHD activity at Central Manchester University Hospitals, the impact on staff is significantly lower than on other hospitals which would no longer be providing Level 1 services under the proposals.

The members of the panel considered that in their experience of service change, the majority of staff do not transfer over to alternative providers of these services from the centres which are decommissioned. Whilst Central Manchester University Hospital's CHD surgeon is likely to move to a Level 1 CHD hospital, the panel considered it reasonable to expect that many staff currently providing Level 1 services at Central Manchester University Hospitals would seek to take up alternative roles within the hospital trust, rather than moving to another hospital. This would become more likely if Central Manchester University Hospitals was to provide Level 2 services, as more CHD roles would be retained within the hospital trust. Detailed discussion about this will continue as the North West model develops.

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation
The loss of Level 1 CHD activity affects a significant number of staff currently working in this service. This creates a risk of disruption to staff and potentially redundancies.	Central Manchester to work closely with staff impacted by the change to ensure that staff are given the appropriate support. Ensure appropriate policies and processes are in place to support workforce affected by change. Ensure that sufficient lead time is given to enable workforce planning.
Disruption to staff including redundancies as a result of the loss of Level 1 CHD activity	NHS England to develop contingency plans to reduce the impact if this was to occur. Central Manchester to continue working with Liverpool Heart and Chest Hospital and Alder Hey Children's Hospital to ensure the appropriate configuration of services in the North West. Central Manchester to monitor vacancy rates and inform NHS England should there be any indication that services are under threat due to staff vacancies.
As a result of no longer providing Level 1 CHD services the Trust will lose income it receives for the associated procedures and care through tariff. This creates a financial risk to the Trust.	Seek to minimise the financial impact through ensuring appropriate costs are saved as a result of not providing Level 1 services and that the maximum revenue is maintained through the provision of Level 2 services.

CHD Impact Assessment – Great Ormond Street Hospital for Children NHS Foundation Trust

1. Overview

The CHD proposals are likely to result in a significant amount of additional activity at Great Ormond Street. Although the normal risks relating to growing capacity exist, the panel is satisfied that Great Ormond Street would be able to increase its capacity in order to meet this additional demand.

Great Ormond Street Hospital is confident of being able to provide the additional capacity necessary to provide services to these additional patients. It has begun discussions with Guy's and St Thomas' and University Hospital Southampton regarding what a network solution might look like which ensured that all centres met the 2021 requirements of surgeons working in teams of four who perform a minimum of 125 procedures a year.

2. Impact on CHD services

The additional activity that would need to be managed

Great Ormond Street's current surgical and interventional activity is displayed in the tables below:

Surgical procedures

Year	Paediatric	Adult	VADs[10]	Total
2013/14	704	15	4	719
2014/15	678	9	18	687
2015/16	655	8	14	663

Catheter Procedures

Year	Paediatric	Adult	Total
2013/14	335	30	365
2014/15	329	22	351
2015/16	465	43	508

NHS England's modelling of potential patient flows suggest that Great Ormond Street would receive an additional 205-235 paediatric patients requiring surgical interventions. However, Great Ormond Street completed this assessment on the basis of receiving additional activity based on 154 paediatric surgical cases on the assumption that a larger amount of activity from the Royal Brompton would go to Southampton. Great Ormond Street confirms that if required it would be able to take approximately 200 additional cases at short notice.

[10] VADs are Ventricular Assist Devices and these operations are countable under the standards. The numbers shown are based on data submitted to NICOR but not validated or reported by them

3. Development of plans to care for additional patients

Great Ormond Street's cardiology ward currently consists of 16 beds (eight of which are for CHD). In addition, it also has eight beds in its cardiology HDU (four for CHD) and six beds in its day care ward. In order to expand capacity Great Ormond Street has identified that it would need an additional 2.2 cardiology ward beds, 1.1 HDU beds and 2 day care beds. Great Ormond Street has a 21 bedded PICU (11 for CHD) which it believes it would need to increase by 3.1 beds in order to provide care for these additional patients. In 15/16 their PICU and ward utilisation was 92-93%.

Great Ormond Street has also identified the additional theatre sessions, catheter lab days, outpatient clinic appointments and diagnostic procedures it would require for this additional activity. It does not envisage any issues with meeting the additional requirements for theatre sessions, diagnostic activity, catheter labs or outpatient provision.

4. Facilities including availability of capital if needed

In September 2017 the new Premier Inn Clinical Building is opening at Great Ormond Street, which will provide additional inpatient beds plus operating theatre capacity.

There is some flexibility in how Great Ormond Street allocate these beds, with beds which were originally proposed as HDU beds able to be converted into ICU beds, if required. There would be a capital cost associated with this. Early indicative costs associated with this work are in the region of £6 million. Any necessary work to convert HDU beds to ICU beds would not be able to start until May 2017. However Great Ormond Street confirmed that there is vacant capacity on its PICU/NICU wards that could be utilised in the short-term.

As a result of this Great Ormond Street have modelled on the basis that it would receive additional patients from April 2018.

5. Workforce

Great Ormond Street considers itself able to recruit and retain high quality staff. It recognises nurse recruitment as one of the key challenges associated with expanding activity and would hope that many nurses who work at the Royal Brompton would want to transfer to Great Ormond Street which would retain these essential skills within London.

They have estimated the following additional WTE staffing requirements:

- **Nursing**
  - ICU - 22.4
  - Ward (Inc. HDU) - 10.6
- **Consultant Cardiologists**
  - (Ward cardiologist, general cardiologist, CMR consultant) - 3
  - CICU Consultants - 2
  - Interventional Cardiologist - 1
  - Junior Doctor - 5
- **Support Staff**
  - Echo Tech (Band 7) - 2
  - Physiologists (Band 6) - 2
  - Catheter Lab Nurses - 3

- Cardiac Radiographers - 2
- Perfusionist - 1

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation
In order to provide the additional capacity the Trust will need to recruit additional staff. There is a risk that the Trust fails to recruit the required workforce which could result in an overstretched workforce, a lack of bed capacity and a reduction in the quality of care patients receive.	The Trust to work with other Trusts to ensure appropriate policies and processes are in place to support workforce affected by change The Trust to develop/provide evidence of a recruitment strategy to ensure sufficient staff are in place when required. Commissioners, providers and HEE work together to plan for future CHD workforce provision NHS England to ensure that sufficient lead time is given to enable workforce planning.
As a result of these proposals the Trust has completed its impact assessment assuming a 16% increase of surgical procedures and a 42% increase of other CHD services. This creates an operational risk that a higher than expected number of patients receive their care from the Trust following the implementation of the proposals. This could result in the CHD service being under unexpected strain.	The Trust to develop contingency plans to provide care for a larger number of patients.
The Trust requires additional intensive care and ward beds in order to increase its CHD activity. This creates an operational risk that an insufficient number of the new intensive care/ward beds are made available for the CHD service. This could result in last minute cancellations, delays to procedures and increased waiting times.	The Trust to do further more detailed planning to ensure that it has identified the number of ward/intensive care beds which are likely to be developed and ensure that a sufficient number of these new beds are allocated to CHD. NHS England to ensure that sufficient lead time is given.
As a result of these proposals the Trust has completed its impact assessment assuming a 16% increase of surgical procedures and a 42% increase of other CHD services. This creates a financial risk that a lower than expected number of patients receive their care from the Trust following the implementation of the proposals. This would result in a financial loss to the Trust and the potential need for downscaling of provision including loss of staff and potential redundancies.	The Trust to develop contingency plans to provide care for a smaller number of patients.

CHD Impact Assessment – Guy's and St Thomas' NHS Foundation Trust

1. Overview

These CHD proposals are likely to result in a significant amount of additional activity at Guy's and St Thomas'. Although the normal risks relating to growing capacity exist, the panel is satisfied that Guy's and St Thomas' would be able to increase its capacity in order to meet this additional demand.

Guy's and St Thomas' is confident of being able to provide the additional capacity necessary to provide services to these additional patients. It has begun discussions with Great Ormond Street/Barts and Southampton to discuss what a network solution might look like which ensured that all centres met the 2021 requirements of surgeons working in teams of four who perform a minimum of 125 procedures a year.

2. Impact on CHD services

The additional activity that would need to be managed

Guy's and St Thomas' current surgical and interventional activity is displayed in the tables below:

Surgical procedures

Year	Paediatric	Adult	Total
2013/14	431	81	512
2014/15	424	68	492
2015/16	414	85	499

Catheter Procedures

Year	Paediatric	Adult	Total
2013/14	201	145	365
2014/15	247	151	351
2015/16	262	174	508

NHS England's modelling of potential patient flows suggests that Guy's and St Thomas' would receive an additional 190-210 patients requiring surgical interventions. However, Guy's and St Thomas' completed this assessment on the basis that it would receive additional activity based on 186 surgical cases, on the assumption that a larger amount of activity from the Royal Brompton would go to Southampton. Guy's and St Thomas' also included a reduction of 83 paediatric patients in their projections, due to the current plans for the patients which are currently referred to Guy's and St Thomas' for surgery from Belfast to be referred to Dublin in the future. As a result of this Guy's and St Thomas' has projected a 16% increase in paediatric surgical activity and a 42% increase in other paediatric services (which would previously have been provided by Belfast) and adults.

The panel considered that these assumptions were appropriate to be used as a basis for Guy's and St Thomas' impact assessment.

3. Development of plans to care for additional patients

Guy's and St Thomas' currently has access to 14 inpatient paediatric cardiology ward beds (including six HDU beds). In addition is also has access to 66 inpatient adult cardiology beds plus 6 CCU beds. Guy's and St Thomas' has a 20 bedded PICU (seven of which are dedicated cardiac beds) and 54 adult critical care beds.

Guy's and St Thomas' identified that it would need to provide an additional ten surgical cases a month and that this would require additional theatre sessions; however, for all other areas it did not quantify the additional capacity which it would require to provide the additional activity. Guy's and St Thomas' has not identified the additional capacity it would need (with the exception of theatre capacity) but rather identified the additional facilities it will have available as a result of its capital expansion.

4. Facilities including availability of capital if needed

Guy's and St Thomas' capital expansion includes an additional:

- four paediatric cardiology ward beds (from Jan 2018);
- three adult cardiology ward beds (from April 2017);
- ten additional four hour paediatric MRI and catheter lab sessions (from October 2018);
- ten PICU beds (from March 2018);
- eleven adult ICU beds (from Dec 2017 – awaiting business case);
- three additional paediatric clinic rooms (end of 2017);
- three additional adult diagnostic and clinic rooms (March 2017).

Guy's and St Thomas' have estimated that in order to perform the additional surgical procedures an additional ten cases per month will be required. It will perform these procedures through an additional four sessions of four hours each, which are available on Wednesday afternoons every month and through increasing its weekend surgical lists from two to four per month.

As a result of this additional capacity Guy's and St Thomas' will have available it does not expect there to be any significant issues with increasing its capacity in order to provide Level 1 services for the additional patients suggested by NHS England's modelling.

The panel is satisfied that there is sufficient capacity within Guy's and St Thomas' facilities to provide CHD services for the additional patients suggested by NHS England's modelling. However, a clearer demonstration of the proportion of this Guy's and St Thomas' additional capacity which would be required for this group would reduce the risk that the appropriate facilities are not made available to provide these additional CHD services.

5. Workforce

The recruitment of the necessary staffs is an integral part of Guy's and St Thomas' capital expansion with staff recruitment, induction and training phased to the opening of additional facilities. Guy's and St Thomas' has a good record in staff recruitment and retention, with regular experience of responding successfully to the increased staffing needs of new facilities. Guy's and St Thomas' also stated that it considers

that TUPE is likely to apply and want to work with partner organisations as soon as possible to attract as many existing CHD staff to the Trust as possible, ensuring they all have clear options and that none of these very valuable staff are lost to the service.

The panel was reassured to hear that the recruitment of the workforce was an integral part of their expansion it would have been further assured had the staffing required for this increase in CHD activity been quantified. Given the challenges faced by all trusts in recruiting staff, specifically nurse specialists, assurance that the scale of the requirement is understood by those centres receiving activity is seen as an important first step in minimising this risk.

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation
In order to provide the additional capacity the Trust will need to recruit additional staff. There is a risk that the Trust fails to recruit the required workforce which could result in an overstretched workforce, a lack of bed capacity and a reduction in the quality of care patients receive.	The Trust to quantify the staff required for its additional activity. The Trust to work with other Trusts to ensure appropriate policies and processes are in place to support workforce affected by change The Trust to develop/provide evidence of a recruitment strategy to ensure sufficient staff are in place when required. Commissioners, providers and HEE work together to plan for future CHD workforce provision NHS England to ensure that sufficient lead time is given to enable workforce planning.
As a result of these proposals the Trust has completed its impact assessment assuming a 16% increase of surgical procedures and a 42% increase of other CHD services. This creates an operational risk that a higher than expected number of patients receive their care from the Trust following the implementation of the proposals. This is particularly significant due to the risk that the activity from Northern Ireland does not all move to Dublin prior to the proposals being implemented This could result in the CHD service being under unexpected strain.	The Trust to develop contingency plans to provide care for a larger number of patients.
The Trust requires additional intensive care and ward beds in order to increase its CHD activity. This creates an operational risk that an insufficient number of the new intensive care/ward beds are made available for the CHD service. This could result in last minute cancellations, delays to procedures and	The Trust to do further more detailed planning to ensure that it has identified the number of ward/intensive care beds which are likely to be developed and ensure that a sufficient number of these new beds are allocated to CHD.

Risk	Mitigation
increased waiting times.	NHS England to ensure that sufficient lead time is given.
As a result of these proposals the Trust has completed its impact assessment assuming a 16% increase of surgical procedures and a 42% increase of other CHD services. This creates a financial risk that a lower than expected number of patients receive their care from the Trust following the implementation of the proposals. This would result in a financial loss to the Trust and the potential need for downscaling of provision including loss of staff and potential redundancies.	The Trust to develop contingency plans to provide care for a smaller number of patients.

As part of the fact check exercise Guy's & St Thomas' provided assurances that they had undertaken the necessary action to mitigate the risks identified within this assessment.

CHD Impact Assessment – Leeds Teaching Hospitals NHS Trust

1. Overview

These CHD proposals are likely to result in some additional activity at Leeds Teaching Hospitals. Although the normal risks relating to growing capacity would exist, the panel is satisfied that the hospital trust would be able to increase its capacity in order to meet this additional demand.

Leeds Teaching Hospitals NHS Trust is confident of being able to provide the additional capacity necessary to provide services to these additional patients. The most significant risks related to the hospital trust's ability to expand its cardiac ward, PICU and theatre capacity.

2. Impact on CHD services

The additional activity that would need to be managed

Leeds Teaching Hospitals' current surgical and interventional activity is displayed in the tables below:

Surgical procedures

Year	Paediatric	Adult	Total
2013/14	390	93	483
2014/15	373	118	491
2015/16	390	104	494

Catheter Procedures

Year	Paediatric	Adult	Total
2013/14	198	134	332
2014/15	215	145	360
2015/16	441	244	685

NHS England's modelling of potential patient flows suggests that Leeds Teaching Hospitals would receive an approximately 50 additional patients requiring surgical interventions per year. The hospital trust used this figure as the basis for the growth in catheter interventions, diagnostic activity and outpatient services it would be likely to experience.

The panel is satisfied that this is an appropriate basis for its impact assessment; however, acknowledged that the outpatient and diagnostic activity assumptions may change if UHL was to provide Level 2 services.

3. Development of plans to care for additional patients

Leeds Teaching Hospitals currently has ten paediatric cardiology ward beds, six HDU beds and 16 PICU beds. In addition to this it has 17 adult cardiology beds and 15 adult ICU beds.

The panel noted that in the information provided by Leeds Teaching Hospitals, some months showed its cardiac ward running at 99% occupancy. In addition, regional commissioners noted that the hospital trust's PICU capacity had been under strain this year.

In order to meet the demands of the additional activity indicated by NHS England's modelling Leeds Teaching Hospitals has identified that it would require an additional cardiac ward bed and an additional PICU bed. An additional MRI session, catheter lab session and outpatient clinic each week would also be required.

4. Facilities including availability of capital if needed

Leeds Teaching Hospitals indicated that the one additional cardiac ward bed required can be accommodated by adaptations on the ward and that PICU provision could increase by four beds from 16 to 20 if required. The hospital trust also hopes to develop day case pathways in the medium term for some diagnostic and intervention procedures.

The adult ward is a combined cardiac and vascular ward with a total capacity for 28 patients. Currently, 15 beds are designated for adults with acquired and congenital heart disease, but Leeds Teaching Hospitals could look to review this if demand required. Critical care is based on cardiac ICU wards with 15 beds. The hospital trust considers this to be adequate capacity and will keep this under review.

Leeds Teaching Hospitals also states that the additional theatre activity can be supported through productivity gains.

The panel was satisfied that Leeds Teaching Hospitals would be able to develop sufficient capacity to provide CHD services for the additional patients suggested by NHS England's modelling. However, the panel is unclear whether the hospital trust would be able to increase its ward capacity by more than one bed, if this was to be required. The risk associated with this was considered to be more significant due to the high occupancy rates within the cardiac ward. In addition, there is a risk associated with theatre capacity if this relied on productivity gains. More details on the nature of the productivity gains and a contingency if these were not achieved would reduce this risk.

5. Workforce

Leeds Teaching Hospitals has established a Cardiac Surgery Improvement Programme Board, led by an Executive Director. The programme board has various work streams including a focused group delivering workforce planning. The hospital trust also confirmed that it would welcome applications from any staff displaced by the proposed changes.

The panel was reassured to hear that Leeds Teaching Hospitals had a clear focus on workforce planning for cardiac surgery. However, it would have been further assured had the staffing required for this increase in CHD activity been quantified. Given the challenges faced by all trusts in recruiting staff, specifically nurse specialists, assurance that the scale of the requirement was understood by those centres receiving activity was seen as an important first step in minimising this risk.

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation
The Trust has identified that it requires one additional intensive care bed in order to increase its CHD activity by the amount indicated by NHS England's modelling. This creates an operational risk that an insufficient number of the new intensive care beds are made available for the CHD service. This could result in last minute cancellations, delays to procedures and increased waiting times.	The Trust to make contingency plans for situations where more than one additional ward bed is required. NHS England to ensure that sufficient lead time is given.
The Trust has identified productivity gains in its theatres which can be achieved to accommodate the addition activity indicated by NHS England's modelling. This creates an operational risk that fails to achieve sufficient productivity gains in its theatres. This could result in last minute cancellations, delays to procedures and increased waiting times.	The Trust to make contingency plans for situations where sufficient productivity gains are not achieved. NHS England to ensure that sufficient lead time is given.
In order to provide the additional capacity the Trust will need to recruit additional staff. There is a risk that the Trust fails to recruit the required workforce which could result in an overstretched workforce, a lack of bed capacity and a reduction in the quality of care patients receive.	The Trust to quantify the staff required for its additional activity. The Trust to work with other Trusts to ensure appropriate policies and processes are in place to support workforce affected by change The Trust to develop/provide evidence of a recruitment strategy to ensure sufficient staff are in place when required. Commissioners, providers and HEE work together to plan for future CHD workforce provision NHS England to ensure that sufficient lead time is given to enable workforce

Risk	Mitigation
	planning.
As a result of these proposals the Trust has completed its impact assessment on an increase based on approximately 50 additional surgical procedures. This creates an operational risk that a higher than expected number of patients receive their care from the Trust following the implementation of the proposals. This could result in the CHD service being under unexpected strain.	The Trust to develop contingency plans to provide care for a larger number of patients.
As a result of these proposals the Trust has completed its impact assessment on an increase based on approximately 50 additional surgical procedures. This creates a financial risk that a lower than expected number of patients receive their care from the Trust following the implementation of the proposals. This would result in a financial loss to the Trust and the potential need for downscaling of provision including loss of staff and potential redundancies.	The Trust to develop contingency plans to provide care for a smaller number of patients.

As part of the fact check exercise Leeds provided assurances that they had undertaken the necessary action to mitigate the risks identified within this assessment.

CHD Impact Assessment – Liverpool Heart and Chest Hospital NHS Foundation Trust

1. Overview

Liverpool Heart and Chest Hospital currently provides Level 2 CHD services and under the CHD proposals would begin providing Level 1 services including surgery and interventional cardiology on adults. This is a significant change in its activity and the panel has concerns over its understanding of all the capacity which will be required to provide these services and ability to meet this. The risks associated with this are seen as more significant due to Liverpool Heart and Chest Hospital's current breaching of referral to treatment waiting times (RTT) specifically in relation to cardiac surgery

These risks can be reduced through ongoing close working between Central Manchester University Hospitals, Alder Hey Children's Hospital and Liverpool Heart and Chest Hospital to ensure that Liverpool Heart and Chest Hospital has a clear understanding of the activity it will be required to undertake and the facilities, staffing and capacity associated with this activity.

Liverpool Heart and Chest Hospital is confident of being able to provide the additional capacity necessary to provide services to these additional patients. Due to the new nature of the activity it would be undertaking, the panel considered it to be of increased importance that the changes required have been clearly understood and quantified and that plans are in place to ensure that the necessary capacity and workforce is in place to provide Level 1 adult services.

2. Impact on CHD services

The additional activity that would need to be managed

Liverpool Heart and Chest Hospital's current surgical and interventional activity is displayed in the tables below:

Surgical procedures

Year	Adult
2013/14	23
2014/15	19
2015/16	11

Catheter Procedures

Year	Adult
2013/14	139
2014/15	96
2015/16	67

NHS England's modelling of potential patient flows suggest that Liverpool Heart and Chest Hospital would receive an additional 75-90 adult patients requiring surgical

interventions. Liverpool Heart and Chest Hospital has based its modelling on receiving an additional 86 surgical cases and 97 ACHD interventions which the panel considered to be a reasonable basis for their impact analysis.

Liverpool Heart and Chest Hospital does not currently have a level 1 adult CHD service and will need to establish a new service supported by Alder Hey and Central Manchester.

Although the table shows CHD surgery at Liverpool Heart and Chest Hospital most of the procedures concerned were either aortic surgery (patients referred to an aortic specialist surgeon including referrals from CHD surgeons) or cases that do not require a CHD surgeon (based on the definitions of adult CHD surgery established before NHS England's work in this area).

3. Development of plans to care for additional patients

Liverpool Heart and Chest Hospital has not been providing Level 1 CHD services prior to this and so did not provide evidence of any current capacity with the exception of outpatient clinics. Liverpool Heart and Chest Hospital has stated that it will require one critical care bed and two or three cardiology beds. It acknowledges that these estimates will require validating once more data is available on current activity undertaken by Central Manchester University Hospitals. Liverpool Heart and Chest Hospital will also require four hours of theatre time and one catheter lab session each week.

Liverpool Heart and Chest Hospital has also identified an additional four to six outreach clinics would be required; but would require information on outreach clinics currently delivered at other sites across the North West.

The panel recognised that there was still a significant level of uncertainty around the capacity which Liverpool Heart and Chest Hospital would require to begin delivering Level 1 CHD services. This increased the risk of sufficient capacity not being available at Liverpool Heart and Chest Hospital if the proposals were to be implemented. This risk could be reduced through ongoing discussions between Liverpool Heart and Chest Hospital, Alder Hey and Central Manchester University Hospitals to provide greater clarity over the capacity required.

4. Facilities including availability of capital if needed

Liverpool Heart and Chest Hospital stated that the North West Partnership has agreed a business case in relation to the additional capacity requirements. It confirmed that the additional capacity could be operationalised within 6 to 9 months of a commissioning intention being confirmed.

Whilst the panel is reassured by the fact an agreed business case was in place, it remained concerned that the extent of the capacity is not yet clear and that the details of the business case were not provided. It was therefore not possible to get assurance that the necessary facilities would be in place to provide this additional activity if the proposals were to be implemented

5. Workforce

Liverpool Heart and Chest Hospital identified that it would require an additional cardiac surgeon who would work across both the paediatric and adult centres and two ACHD cardiologists.

In addition, Liverpool Heart and Chest Hospital intends to recruit cardiac anaesthetists and cardiac nurse specialists, but the required number of these has not been established. The hospital trust intends to receive the necessary cardiac anaesthetist cover from Alder Hey until it has recruited its own. It stated that the recruitment although some of these posts may be recruited through TUPE arrangements; however, it is confident that these could be recruited were this to not be possible.

The panel is concerned that the workforce requirements have not been clearly quantified and recognised the need for sufficient lead time to be given to minimise the risk of Liverpool Heart and Chest Hospital failing to recruit the necessary workforce.

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation
In order to provide Level 1 CHD capacity the Trust will need to recruit additional staff. There is a risk that the Trust fails to recruit the required workforce which could result in an overstretched workforce, a lack of bed capacity and a reduction in the quality of care patients receive. In addition this could result in Liverpool Heart and Chest being unable to provide Level 1 services	The Trust to work with other Trusts to ensure appropriate policies and processes are in place to support workforce affected by change The Trust to develop/provide evidence of a recruitment strategy to ensure sufficient staff are in place when required. Commissioners, providers and HEE work together to plan for future CHD workforce provision NHS England to ensure that sufficient lead time is given to enable workforce planning.
The Trust requires additional theatre, cath lab, intensive care and ward capacity in order to increase its CHD activity. This creates an operational risk that insufficient capacity is made available for the CHD service. This could result in last minute cancellations, delays to procedures and increased waiting times. In addition this could result in Liverpool Heart and Chest being unable to provide Level 1 services	The Trust to do further more detailed planning to ensure that it has identified the number of ward/intensive care beds which are likely to be developed and ensure that a sufficient number of these new beds are allocated to CHD. NHS England to ensure that sufficient lead time is given.
As a result of these proposals the Trust has completed its impact assessment on an increase based on approximately 80-90 additional surgical procedures. This creates a financial risk that a lower than expected	The Trust to develop contingency plans to provide care for a smaller number of patients.

Risk	Mitigation
number of patients receive their care from the Trust following the implementation of the proposals. This would result in a financial loss to the Trust and the potential need for downscaling of provision including loss of staff and potential redundancies.	
As a result of these proposals the Trust has completed its impact assessment on an increase based on approximately 80-90 additional surgical procedures. This creates an operational risk that a higher than expected number of patients receive their care from the Trust following the implementation of the proposals. This could result in the CHD service being under unexpected strain.	The Trust to develop contingency plans to provide care for a larger number of patients.

As part of the fact check exercise Liverpool Heart and Chest Hospital provided assurances that they had undertaken the necessary action to mitigate the risks identified within this assessment.

CHD Impact Assessment – Newcastle upon Tyne Hospitals NHS Foundation Trust

1. Overview

The CHD proposals are unlikely to result in any significant amount of additional activity at Newcastle upon Tyne Hospitals. The most significant risks for the hospital trust remain that it fails to achieve the minimum activity required for four surgeons to perform 125 procedures each year and that it fails to meet the requirement for co-location of key paediatric services by 2019.

NHS England's modelling suggests that Newcastle upon Tyne Hospitals would not receive any additional procedures as a result of these proposals. There are therefore no new risks to the hospital trust.

2. Impact on CHD services

The additional activity that would need to be managed

Newcastle upon Tyne Hospital's current surgical and interventional activity is displayed in the tables below:

Surgical procedures

Year	Paediatric	Adult	VADS[11]	Total
2013/14	248	71	43	362
2014/15	237	63	23	323
2015/16	261	67	9	337

Catheter Procedures

Year	Paediatric	Adult	Total
2013/14	136	74	210
2014/15	140	54	194
2015/16	285	132	417

NHS England's modelling suggests that Newcastle upon Tyne Hospitals would not receive any additional procedures per year as a result of these proposals

3. Development of plans to care for additional patients

Newcastle upon Tyne Hospitals stated that it had internally modelled various scenarios of CHD activity growth and anticipated that additional capacity could be provided; assuming that suitable notification of any expected growth was given.

4. Facilities including availability of capital if needed

None required as a result of these proposals.

[11] VADs are Ventricular Assist Devices and these operations are countable under the standards. The numbers shown are based on data submitted to NICOR but not validated or reported by them

5. Workforce

No increase required as a result of these proposals.

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation
As a result of these proposals the Trust has completed its impact assessment assuming it does not receive a material increase to its CHD activity (as per NHS England's modelling). This creates an operational risk that a higher than expected number of patients receive their care from the Trust following the implementation of the proposals. This could result in the CHD service being under unexpected strain.	The Trust has developed contingency plans which model how they would provide care for a larger number of patients.

CHD Impact Assessment – Royal Brompton and Harefield NHS Foundation Trust

1. Overview

If implemented, these proposals will have a significant impact on the hospital trust's finances and reputation. Whilst the reputational impact will be lessened by the continued provision of a wide range of specialist services at the Royal Brompton the financial impact of losing CHD Level 1 activity would be significant for the Royal Brompton.

The Royal Brompton considers the proposals to pose significant risks to it as a hospital trust. It considers that the financial implications of these proposals to be sufficient to destabilise the hospital trust's financial position.

The panel considered that the financial risks are more significant at the Royal Brompton than at any other hospital trust that would be affected by implementation of the proposals, due to the proportion it represents of its overall income and the impact the changes are likely to have on other services, specifically paediatric services within the hospital.

2. Impact on CHD services

2.1 The activity that would need to be transferred to different providers

Were the Royal Brompton to no longer be commissioned as a Level 1 CHD hospital, it would cease performing any surgical or catheter procedures on people with CHD. This activity would need to be transferred to other hospitals and NHS England's modelling suggests that the majority of this would transfer to one of the other Level 1 hospitals within London. The table below describes the potential additional patients received by different hospitals were the Royal Brompton to no longer perform CHD surgery.

	Likely Patients/year From RBH		
Receiving Trust	Adult	Paediatric	Total
ALDER HEY CHILDREN'S NHS FOUNDATION TRUST		1	1
BARTS HEALTH NHS FOUNDATION TRUST	77		77
BIRMINGHAM CHILDREN'S HOSPITAL NHS FOUNDATION TRUST		5	5
GREAT ORMOND STREET HOSPITAL FOR CHILDREN NHS FOUNDATION TRUST		228	228
GUY'S AND ST THOMAS' NHS FOUNDATION TRUST	30	173	203
LEEDS TEACHING HOSPITALS NHS TRUST	1	-	1
LIVERPOOL HEART AND CHEST NHS FOUNDATION TRUST	1		1
UNIVERSITY HOSPITAL SOUTHAMPTON NHS FOUNDATION TRUST	6	11	17
UNIVERSITY HOSPITALS BIRMINGHAM NHS FOUNDATION TRUST	2		2
UNIVERSITY HOSPITALS BRISTOL NHS FOUNDATION TRUST	3	2	5
Total	**120**	**420**	**540**

The most recent activity as reported by the National Congenital Heart Disease Audit is displayed in the tables below. The 15/16 activity is as yet unvalidated.

Surgical procedures

Year	Paediatric	Adult	Total
2013/14	412	125	537
2014/15	370	142	512
2015/16	390	132	522

Catheter Procedures

Year	Paediatric	Adult	Total
2013/14	255	86	341
2014/15	303	242	545
2015/16	424	342	764

Diagnostic Activity

The Royal Brompton also stated that it performed the following diagnostic activity in 2015/16

	Paediatrics	Adults	Total
Outreach Clinic Echo procedures	6739	108	6847
Outreach Neonatal Echo procedures	98	N/A	98
Fetal Echo scans	2966	N/A	2966
Paediatric Sleep Studies (CHD & non-CHD)	1243	N/A	1243
Paediatric Bronchoscopy procedures (non-CHD)	188	N/A	188
CT	277	217	494
Exercise Tests	515	368	883
Flouroscopy Tests	546	312	858
Holter Monitor Tests	892	206	1098
MRI	329	495	824
Nuclear Medicine Tests	38	54	92
Ultra Sound Tests	439	71	510
Bone Density Tests	24	4	28
Paediatric Lung Function (CHD [3%] and non-CHD)	425	N/A	425

Outpatient activity

The Royal Brompton also stated that it performed the following outpatient activity in 2015/16:

	Paediatrics	Adults	Total
Outpatient Visits	10829	3527	14356
Outreach Clinic Visits	7094	108	7202
Outreach Neonatal Visits	171	N/A	171[12]

2.2 The potential for adult only services to be offered

Level 2 hospitals represent a significant part of the model of care described by the standards for CHD services. They are able to provide the vast majority of the ongoing CHD care required by patients with the exception of any care requiring surgical intervention and the majority of that which requires catheter intervention. Although these have not been designated as Level 2 hospitals prior to the standards being agreed, Oxford University Hospitals and the University Hospital of Wales (Cardiff) have been operating successfully, providing Level 2 services in partnership with proposed Level 1 provider hospitals University Hospital Southampton and University Hospitals Bristol respectively.

[12] Due to the way outpatient appointments are coded it has not been possible for NHS England to validate outpatient activity using the data available to it.

The Royal Brompton stated that the definition of Level 2 services is unclear especially in the context of other Level 1 services being provided in London. It doubted that it would be in the patient's interest for them to attend one hospital for an interventional procedure and then another in the same city for other admissions, appointments, follow up care and diagnostic assessments.

The panel noted that the Royal Brompton would not be able to provide paediatric Level 2 services without a PICU.

The panel considered that if Level 1 services ceased it would be possible for adult Level 2 services to be provided at the Royal Brompton. As a Level 2 centre for adults the Royal Brompton may be able to retain their adult ASD and PFO catheter closures, of which they performed 81 procedures last year. It may also retain a large proportion of their diagnostic and outpatient activity as well as some inpatient activity where this was required for patients not undergoing surgical or interventional activity.

This would enable patients currently receiving their CHD care from the Royal Brompton the opportunity to continue receiving the majority of their care from this centre, and potentially enable some patients receiving level 1 CHD services from another provider to receive much of their care closer to home. Interdependent services would also be more likely to retain a higher volume of the activity they provide to people with CHD under this model as the majority of their care would remain at the Royal Brompton.

Whilst this would lessen the financial impact of the proposals on the Royal Brompton to a limited degree the vast majority of its CHD income relates to inpatient activity linked to a surgical or interventional procedure and therefore the Royal Brompton have identified just over £3m income from CHD activity not relating to surgery or catheter interventions. However, this almost totally related to paediatric services and as such if the Royal Brompton were to only offer adult Level 2 services, it is unlikely this would provide significant income to the hospital trust.

The panel noted that both NHS England and one of the CHD charities have asked Royal Brompton to consider the potential for it to continue to provide level 1 adult CHD services, including surgery (by partnering with another level 1 CHD hospital in London that is able to provide care for children and young people with CHD that meets the required standards). To date, the Royal Brompton Hospital has indicated that it does not support this approach, but it has not said that they would refuse to treat adults alone. The panel considered that such a proposal would reduce the impact of the changes on patients and reduce the financial impact on Royal Brompton though not the knock on effect on other paediatric services.

3. Impact on other interdependent services if L1 CHD services cease.

The Royal Brompton considers the loss of Level 1 CHD services as likely to have a significant impact on a range of other services within the hospital trust. The two services they believe will be most impacted are its PICU and respiratory provision.

3.1 PICU and HDU

The Royal Brompton has a PICU with 16 beds which is primarily used by its paediatric cardiac patients. According to both the data the hospital trust submitted

and the data NHS England extracted from PICANet, approximately 86% of all activity within their PICU relates to cardiac patients and therefore it seems unlikely that they would be able to sustain a PICU if Level 1 CHD activity is no longer commissioned from them.

In addition, the Royal Brompton has eight paediatric HDU beds which would also become unviable, as most of the work requiring these beds again relates to cardiac patients.

The panel considered that the loss of Level 1 CHD services at the Royal Brompton is highly likely to make their PICU unviable and that this would impact the Royal Brompton's ability to offer other specialist paediatric services within the hospital.

3.2 Specialist respiratory services

While common paediatric respiratory conditions are managed in local hospitals or primary care settings, complex and rare conditions (including for example difficult asthma, primary ciliary dyskinesia and bronchiectasis) are managed in conjunction with a specialist paediatric respiratory centre. Much of the specialist work is done on an outpatient basis.

Specialist paediatric respiratory services are provided by a number of other hospitals in England, including for example Great Ormond Street Hospital in London.

The Royal Brompton considers it likely that its PICU would no longer be viable if our proposals are implemented, because paediatric cardiac patients are a large proportion of its work and it might not have enough other patients to stay open. The panel accepted that this was an accurate assessment. The Trust considers that this would have a serious detrimental effect on children's respiratory services which also use the PICU.

The Royal Brompton's specialist paediatric respiratory service is the largest in the UK and provides services for a range of patients including:

- Cystic Fibrosis (305 patients)
- Difficult Asthma (150 patients)
- Primary Ciliary Dyskinesia (135 patients)

The panel considered that there would be an impact on paediatric respiratory services, if paediatric cardiac services and PICU were no longer provided by the Royal Brompton. It considered that adult respiratory services would be less affected but that it was likely there would be some effect on patient numbers without the feed into adult services from children's services.

The panel noted that while it might be possible to provide some aspects of paediatric respiratory services at the Royal Brompton, this might not be desirable given that without PICU or paediatric cardiac services this would be the Brompton's only paediatric service.

The panel noted that it was unable to make a detailed assessment of the impact on respiratory services because NHS England's work has focussed on congenital heart

disease and has not examined paediatric respiratory services and the panel's membership therefore reflected that focus.

3.3 Other services

Royal Brompton also identified a number of services as potentially impacted by these proposals. These are listed below. Although a high level summary of the impact was provided more work is needed to better understand, and corroborate, the scale and nature of any impact on these services.

The panel considered that there would be an impact on the other adult specialist services offered by the Royal Brompton but considered that these reductions were likely to be a small proportion of the overall activity within these services. The impact may also be smaller if the Royal Brompton continues to offer level 1 adult CHD services..

The panel considered that there would be a significant impact on the other paediatric specialist services offered by the Royal Brompton.

Paediatric

- Lose expertise needed for general paediatric cardiology services including specialist imaging and specialist services (such as for Kawasaki disease);
- Paediatric electrophysiology – they do not believe that offering these services would be in the best interest of patients were they not also performing the interventions. Also they do not believe they would be able to staff this without those staff also having exposure to invasive procedures. In addition the lack of intensive care and surgical backup would make some of their more complex activity unsafe;
- Fetal cardiology – Service would be lost due to the integration of this work and the Royal Brompton's CHD activity;
- Anaesthetic services – They estimate they will lose at least 2 WTE posts.

Adult

- Pulmonary hypertension – They state that 60% of workload from CHD and 50% of workforce and that therefore this service would not be viable and close;
- Pregnancy and cardiac disease service at Chelsea and Westminster – They state this would not be viable as they need access to cardiac surgery, ITU and ECMO;
- Complex adult EP – They estimate they would lose 2 WTE consultants;
- Complex imaging – They believe that they would lose the whole team;
- Inherited cardiac conditions – Reduced activity as they would not be able to deal with whole families who are diagnosed and treated at the same time due to lack of PICU;
- Research and training and education opportunities would reduce.

4. Impact on the Trust including financial, business and reputational considerations

The panel considered a number of risks associate with these proposals in relation to the Royal Brompton.

Financial impact – The Royal Brompton's overall income for 2015/16 was £370m and the value of their contract for specialised services is approximately £226m. NHS England's original estimate if the CHD activity is lost was £35m; however, the panel considered it reasonable to include the loss of other specialised paediatric activity and therefore the Royal Brompton's estimate of £47m was considered more reasonable. The table below shows the estimated financial impact using both data submitted by the trust and analysis by NHS England

	Trust Submitted	SLAM data	SUS data
CHD Services		27,711,373	16,205,846[13]
PICU		7,641,020	
Total income lost	47,571,142[14]	35,352,393[15]	

The loss of revenue to the hospital trust would therefore represent approximately 13% of the hospital trust's total income[16] and 21% of its total specialised services income.[17] The panel noted that although there was a significant loss of income as a result of these proposals the Royal Brompton's figures reported that the overall these services brought in a total income of just over £47.5m but cost the hospital trust almost £53m. As a result they presented an overall loss of almost £5.5m per year from these services. The hospital trust stated that owing to the stranded costs associated with this service they estimate an adverse impact of over £7m per year to the Trust's bottom line if these proposals are implemented.

Reputational impact

The panel accepted that the loss of Level 1 CHD services would have a reputational impact on the Royal Brompton. Being one of only ten hospitals to offer these services enhances the Royal Brompton's reputation as a specialist heart and lung hospital and impacts on its ability to recruit and retain staff and increases its ability to be involved in specialist research.

The Royal Brompton's reputation would also be impacted if they were no longer able to provide specialist paediatric respiratory services.

The panel noted that the reputational impact of these proposals largely related to its reputation for providing specialist paediatric services and that its reputation as a specialist adult hospital should not be significantly impacted by the proposals. As such the panel was confident that the Royal Brompton would continue to be a highly valued hospital within the NHS offering a wide range of adult specialised services.

[13] Based on spells relating to people with CHD at national tariff (excluding devices)
[14] Include all paediatric non cardiac and paediatric cardiac which is not CHD.
[15] Based on all the income from all services accessed by people who had been treated for CHD
[16] This is based on the total income lost as submitted by the Trust divided by their entire income.
[17] This is based on the total income lost as submitted by the Trust divided by the value of their specialised services contract.

5. Impact on staff

The Royal Brompton considers that these proposals would have a wide ranging impact on its workforce. It has specifically identified a range of staff including Paediatric CHD, Paediatric Respiratory, Paediatric Intensive Care, Long Term Ventilation (LTV), Primary Dyskinesia Ciliary (PCD), Adult CHD, Morphology Unit and Pulmonary Hypertension which totals to approximately 430 WTEs.

The Royal Brompton states that if the current proposals proceed, the affected colleagues will consider offers and opportunities outside the UK as well as domestic opportunities.

The panel considered that the potential for staff to move to other hospitals within the same city providing this work increased the likelihood of this workforce transferring to new providers. In addition, a number of these roles may not be specific to CHD and therefore work should be done with other provider hospitals in London (for example through STPs) to determine other vacancies and opportunities within London for this workforce.

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation
As a result of no longer providing Level 1 CHD services the Trust will lose income it receives for the associated procedures and care through tariff. This is likely to be approximately £47m. This creates a financial risk to the Trust.	Seek to minimise the financial impact through ensuring appropriate costs are saved as a result of not providing Level 1 services
The loss of Level 1 CHD activity affects a significant number of staff currently working in this, and interdependent, services. The Royal Brompton estimates this to be approximately 430 WTE staff. This creates a risk of disruption to staff and potentially redundancies.	Royal Brompton to work closely with its workforce to ensure those impacted by the change are given the appropriate support. Ensure appropriate policies and processes are in place to support workforce affected by change. Ensure that sufficient lead time is given to enable workforce planning. Work collaboratively with other trusts in London to ensure that local opportunities are identified for all staff.
No longer providing Level 1 CHD services makes the paediatric respiratory services at the Trust unviable. As a result of this there is likely to be a reduction in activity in the Trust's adult respiratory service. This creates an operational and financial risk.	The Royal Brompton to work with NHS England and other trusts to develop appropriate patient pathways. The Royal Brompton to monitor activity rates and inform NHS England should there be a significant risk of it becoming unviable.
Losing Level 1 CHD services has an impact on the reputation of the Trust. This creates a	NHS England to develop contingency plans to reduce the

Risk	Mitigation
reputational risk which may impact on its ability to recruit staff	impact if this was to occur. The Royal Brompton to monitor vacancy rates and inform NHS England should there be any indication that services are under threat due to staff vacancies.

CHD Impact Assessment – University Hospital Southampton NHS Foundation Trust

1. Overview

The CHD proposals are unlikely to result in any significant amount of additional activity at University Hospital Southampton. The most significant risk for the hospital trust remains that it fails to achieve the minimum activity required for four surgeons to perform 125 procedures each year by 2021. This risk has been reduced in part through the ongoing collaborative working between Southampton, Great Ormond Street and Guy's and St Thomas'.

If University Hospital Southampton gained sufficient activity to meet the standards it would be able to establish a more robust service. Whilst the normal risks of workforce recruitment would exist if the hospital trust was to grow its activity, there is no significant risk that it would not be able to increase its capacity to provide Level 1 CHD services for these additional patients.

The modelling provided did not suggest that University Hospital Southampton would receive a high number of additional CHD patients requiring surgical interventions. However, it completed this assessment on the basis of receiving the additional activity required to meet the standard relating to surgical activity. The hospital trust is confident that it would be able to increase its capacity by enough to provide Level 1 services for this larger cohort of patients.

2. Impact on CHD services

The additional activity that would need to be managed

University Hospital Southampton' s current surgical and interventional activity is displayed in the tables below:

Surgical procedures

Year	Paediatric	Adult	Total
2013/14	309	78	388
2014/15	289	76	365
2015/16	323	67	390

Catheter Procedures

Year	Paediatric	Adult	Total
2013/14	188	103	291
2014/15	180	102	282
2015/16	223	126	349

The modelling produced by NHS England suggests that University Hospital Southampton would perform fewer than 20 additional surgical procedures each year under the proposals were patients to go to their nearest hospitals. However, in order to meet the standards University Hospital Southampton would require over 100 additional procedures. Therefore, in the interests of ensuring that the impact of

meeting the standards has been considered, it has based its impact assessment on a 30% increase of their activity.

3. Development of plans to care for additional patients

University Hospital Southampton's children's cardiac ward currently consists of 20 beds (reducing to 16 staffed beds over the weekend). In order to expand their capacity to meet the minimum surgical requirements of 500 procedures the hospital trust has identified that it would need an additional 2-4 high care beds which would take the total number of beds to 23. It believes this would be achievable by late 2017. It would also need to expand their young adult ward from 11 beds to 17.

University Hospital Southampton has a 14 bedded PICU, which it believes it would need to increase by a minimum of one bed in order to perform these additional procedures. This seems lower than is likely to be required to provide the level of care required for the additional patients; however, the hospital trust currently has an agreement and funding for an additional two PICU beds and has earmarked space to allow a further three bed expansion. The hospital trust has agreed this in principle if demand exists. Also, two new HDU beds are planned for child health and will be operational in April 2017. This will release capacity in PICU, especially to allow the early discharge of long-term ventilation patients.

University Hospital Southampton currently performs all CHD surgery in one theatre, five days per week running at about 85% utilisation. It believes by increasing its utilisation to 100% it can perform the additional surgeries required to meet the standards. Whilst this does pose a risk to the hospital trust's ability to provide this care without it having a detrimental impact on patient care and waiting times, it is possible that this could be improved by performing non-emergency CHD surgery on weekends.

University Hospital Southampton does not envisage any issues with meeting the additional requirements for diagnostic activity, catheter labs or outpatient provision.

4. Facilities including availability of capital if needed

University Hospital Southampton's expansion plan does not require new-build capital expenditure.

The PICU expansion of further two beds has already been completed. The hospital trust has agreed in principle further PICU expansion into adjacent areas, if demand exists. The children's cardiac ward requires internal changes only and has space to expand within its existing footprint. It is confident that their own charity (Wessex Heartbeat) will fund the internal changes required. The Young Adult Ward already has the existing beds and extra capacity. Expansion in staffing numbers will be funded by the income generated by the extra work performed.

University Hospital Southampton also has a plan to expand children's cardiac outpatient facilities by developing two new areas. The first is the refurbishment of an old building (Wordsworth House and Normand House) on the UHS site. Some non-cardiac children's outpatient services will be moved to the new site to release capacity within the children's outpatient department. University Hospital Southampton states that this will be operational late 2017 or early 2018. The second area lies

adjacent to their children's cardiac ward and will house three new consulting rooms and a counselling area. The funding has been donated from charitable funds; plans have been drawn up and these expanded facilities are due to be available by late 2017.

5. Workforce

University Hospital Southampton considers itself able to recruit and retain high quality staff. It would welcome staff from centres which are no longer commissioned to provide Level 1 services and would hope to be able to transfer some staff from London in order to help it recruit the workforce required to expand its activity. Some of the staff have a long lead time to employment after recruitment begins and the hospital trust would therefore not expect to have to attracted all the necessary staff until the end 2017 or mid-2018.

They have identified the following additional staffing as being required:

- 1 Congenital Cardiac Surgeon;
- 1 Paediatric Cardiology Interventionist;
- 1 Paediatric Cardiologist (Imaging specialist);
- 2 Cardiac Anaesthetist ± ODA;
- 2 Cardiac nurse specialists;
- Children's CHD ward nurse expansion (phased to 12 depending on in-patient growth);
- PICU nurse expansion;
- Theatre team expansion;
- Allied staff expansion.

More work is needed to quantify the number of PICU nurses required as the recruitment of these is a challenge for all trusts. The theatre team expansion required should also be quantified.

6. Risks and mitigation of any potentially negative impacts

University Hospital Southampton does not have any significant risks associated with expanding its capacity to meet the standards. There are some risks associated with its ability to recruit the appropriate workforce for this expansion. In addition, a number of the risks associated with increasing its capacity would be increased were it not given an appropriate lead time including the risks associated with PICU and ward capacity, workforce recruitment and theatre capacity. However, the most significant risk associated with these proposals is that the hospital trust fails to meet the 2021 standards requirements of having four surgeons who all perform a minimum of 125 procedures per year. This risk has been reduced in part through the ongoing collaborative working between Southampton, Great Ormond Street and Guy's and St Thomas'.

CHD Impact Assessment – University Hospitals Birmingham NHS Foundation Trust

1. Overview

These CHD proposals are likely to result in a significant amount of additional adult activity at University Hospitals Birmingham. Although the normal risks relating to growing capacity would exist, the panel is satisfied that University Hospitals Birmingham would be able to increase its capacity in order to meet this additional demand.

University Hospitals Birmingham is confident of being able to provide the capacity necessary to provide services to these additional patients. Whilst the growth was significant in terms of University Hospitals Birmingham's CHD activity it would only make up a small proportion of their overall cardiac work and therefore many of the risks associated with facilities including critical care capacity were reduced.

2. Impact on CHD services

The additional activity that would need to be managed

University Hospitals Birmingham's current surgical and interventional activity is displayed in the tables below:

Surgical procedures

Year	Adult
2013/14	137
2014/15	86
2015/16	60

Catheter Procedures

Year	Adult
2013/14	50
2014/15	20
2015/16	112

NHS England's modelling of potential patient flows suggests that Birmingham Children's Hospital would receive approximately an additional 40-50 patients requiring surgical interventions. Using this figure University Hospitals Birmingham created a number of scenarios for catheter interventions, depending on whether UHL remained as a Level 2 centre or not and whether ASD and PFO closures also transferred to University Hospitals Birmingham. It used these scenarios to calculate the additional diagnostic and outpatient activity which would be required as well.

The panel consider that these assumptions are appropriate to be used as a basis for University Hospitals Birmingham impact assessment.

3. Development of plans to care for additional patients

University Hospitals Birmingham has the largest ITU in the country with the ability to flex up at short notice if required. The notional capacity for its CHD activity includes 32 cardiology ward beds, 36 cardiac surgery ward beds and 12 critical care beds. They also have four hours of theatre time and eight hours of catheter lab time for CHD each week as well as eleven CHD clinics per week.

If University Hospitals Birmingham was to receive the projected activity it has estimated that it would require an additional two ward beds, two ITU beds, between two and four hours of catheter lab provision each week and four hours of theatre capacity each week.

4. Facilities including availability of capital if needed

University Hospitals Birmingham stated that it was currently under significant pressure due to increasing emergency medical admissions, and increasing demand for complex and non-complex surgery. This increase in demand has resulted in capacity constraints for both inpatient and critical care beds.

University Hospitals Birmingham considered the inpatient bed requirements for the additional work to be relatively small and anticipated that this could be absorbed into the Level 1 bed capacity across cardiology and cardiac surgery if small improvements in length of stay can be achieved.

The additional critical care activity would require up to an additional two beds, and University Hospitals Birmingham does not think it would be possible to absorb this into existing capacity. University Hospitals Birmingham considers that the additional beds could be accommodated within the footprint of its existing critical care but equipment and associated staffing would be required. As a result a lead time of 6-12 months would be required to recruit and fully train critical care nurses.

University Hospitals Birmingham has stated that its catheter labs are reaching maximum capacity and theatres are capacity constrained. In order to increase this capacity University Hospitals Birmingham is considering developing a hybrid theatre which would allow both the surgical work and any interventional work to be accommodated. It stated that some external capital support would be required for this and estimate the cost of developing this theatre to be £4-5m.

The panel is satisfied that the scale of the increased activity for University Hospitals Birmingham would be able to be absorbed within its current estate as long as sufficient lead time is given to open additional beds and recruit the necessary staff. The panel is concerned about University Hospitals Birmingham's statement that external capital would be required to expand their theatre/catheter lab capacity; however, the panel does not consider that the relatively modest increased demand on these facilities would alone be sufficient to require the development of this new facility.

5. Workforce

The anticipated increase in activity would require additional resource including consultant PA's. With respect to surgical activity the Trust anticipates that this could be delivered through increases in existing job plans and therefore deliverable within a

relatively short timeframe. University Hospitals Birmingham is currently recruiting an additional ACHD consultant. It is anticipated that following appointment cardiology consultant manpower would be available to meet the increase in activity.

The additional resource required by other staff groups would be added to existing staff groups and the Trust does not anticipate any delays in providing this additional capacity.

The panel is satisfied the University Hospitals Birmingham would be able to recruit the necessary staff to increase their CHD activity. It would however, have been more assured had the other additional staff, including ITU nurses, been quantified by University Hospitals Birmingham.

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation
The Trust is exploring the construction of a hybrid theatre in order to provide additional cath lab and theatre capacity. There is a risk that the Trust fails to secure funding for this which would have an operational impact. There is a risk that the Trust may not have sufficient capacity for the additional activity. This could result in last minute cancellations, delays to procedures and increased waiting times.	The Trust to either develop plans for providing the additional activity without the hybrid theatre or provide confirmation that the capital for this has been secured. NHS England to ensure that sufficient lead time is given.
In order to provide the additional capacity the Trust will need to recruit additional staff. There is a risk that the Trust fails to recruit the required workforce which could result in an overstretched workforce, a lack of bed capacity and a reduction in the quality of care patients receive.	The Trust to work with other Trusts to ensure appropriate policies and processes are in place to support workforce affected by change The Trust to develop/provide evidence of a recruitment strategy to ensure sufficient staff are in place when required. NHS England to ensure that sufficient lead time is given to enable workforce planning.
As a result of these proposals the Trust has completed its impact assessment on an increase based on approximately 50 additional surgical procedures. This creates an operational risk that a higher than expected number of patients receive their care from the Trust following the implementation of the proposals. This could result in the CHD service being under unexpected strain.	The Trust to develop contingency plans to provide care for a larger number of patients.
As a result of these proposals the Trust has completed its impact assessment on an increase based on approximately 50 additional surgical procedures. This creates a financial risk that a lower than expected number of patients receive their care	The Trust to develop contingency plans to provide care for a smaller number of patients.

Risk	Mitigation
from the Trust following the implementation of the proposals. This would result in a financial loss to the Trust and the potential need for downscaling of provision including loss of staff and potential redundancies.	

CHD Impact Assessment – University Hospitals of Leicester NHS Trust

1. Overview

Whilst the proposals will undoubtedly impact on the hospital trust's finances and reputation, the level of risk is reduced by the wide range of specialised and non-specialised services which will continue to be offered by University Hospitals Leicester.

University Hospitals of Leicester considers the proposal to stop commissioning Level 1 services from it to be likely to have a significant impact on its finances, reputation and ability to provide other services. It considers that further work is required to understand what the impact of providing Level 2 services would be.

The panel considers that the risks associated with commissioning these services from other centres are less than those associated with continuing to commission them from University Hospitals of Leicester.

2. Impact on CHD services

2.1 The activity that would need to be transferred to different providers

Were University Hospitals of Leicester to no longer be commissioned as a Level 1 CHD hospital, it would cease performing any surgical or catheter procedures on people with CHD. This activity would need to be transferred to other centres with the majority of the paediatric activity transferring to Birmingham Children's Hospital and the majority of the adult activity transferring to University Hospitals Birmingham. The table below describes the potential additional patients received by different hospitals were University Hospitals of Leicester to no longer perform CHD surgery.

	Patients/year From UHL		
Receiving Trust	Adult	Paediatric	Total
ALDER HEY CHILDREN'S NHS FOUNDATION TRUST		8	8
BARTS HEALTH NHS FOUNDATION TRUST	1		1
BIRMINGHAM CHILDREN'S HOSPITAL NHS FOUNDATION TRUST		174	174
GREAT ORMOND STREET HOSPITAL FOR CHILDREN NHS FOUNDATION TRUST		4	4
GUY'S AND ST THOMAS' NHS FOUNDATION TRUST		4	4
LEEDS TEACHING HOSPITALS NHS TRUST	10	37	47
UNIVERSITY HOSPITAL SOUTHAMPTON NHS FOUNDATION		1	1

	Patients/year From UHL		
Receiving Trust	Adult	Paediatric	Total
TRUST			
UNIVERSITY HOSPITALS BIRMINGHAM NHS FOUNDATION TRUST	49		49
UNIVERSITY HOSPITALS BRISTOL NHS FOUNDATION TRUST		2	2
Total	**60**	**230**	**290**

The most recent activity as reported by the National Congenital Heart Disease Audit is displayed in the tables below. The 15/16 activity is as yet unvalidated.

Surgical procedures

Year	Paediatric	Adult	Total
2013/14	241	57	298
2014/15	239	47	286
2015/16	277	49	326

Catheter Procedures

Year	Paediatric	Adult	Total
2013/14	147	110	257
2014/15	220	117	337
2015/16	209	129	338

Outpatient activity

In addition to the inpatient activity associated with these patients University Hospitals of Leicester also stated that it provides the following outpatient activity each year[18]:

Paediatric Appointments	Adult Appointments	Paediatric Network Clinics	Adult Network Clinics
8642	1904	254	68

2.2 The potential for Level 2 CHD services to be offered if Level 1 CHD services ceased to be offered.

Level 2 centres represent a significant part of the model of care described by the standards for CHD services. They are able to provide the vast majority of the ongoing CHD care required by patients with the exception of any care requiring surgical intervention and the majority of that which requires catheter intervention. Although these have not been designated as Level 2 hospitals prior to the standards being agreed, Oxford University Hospitals and the University Hospital of Wales (Cardiff) have been operating successfully providing Level 2 services in partnership with University Hospital Southampton and University Hospitals Bristol respectively.

[18] Due to the way outpatient appointments are coded it is not possible for NHS England to externally validate this figure.

University Hospitals of Leicester considers the concept of Level 2 centres to be unproven. The hospital trust has stated that it would require clarity over the viability and success of a Level 2 model, particularly in the ability of a Level 2 hospital to attract and retain the number and quality of staff required prior to considering this.

The panel considered that if Level 1 services ceased it would be possible for Level 2 services to be provided at University Hospitals of Leicester, working in partnership with the Birmingham hospitals. A high proportion of outpatient activity would then be able to remain at University Hospitals of Leicester, with the exception of one pre-operative and one post-operative visit to the Level 1 hospital. Outpatient appointments relating to surgical or interventional activity account for up to 15% of outpatient appointments p.a.[19] It also may be able to retain its adult ASD and PFO catheter closures of which it performed 58 procedures last year. It would retain some inpatient activity where this was required for patients not undergoing surgical or interventional activity.

This would enable patients in the East Midlands to continue receiving the majority of their care in the same place as now, in Leicester. It would also increase the likelihood of University Hospitals of Leicester being able to retain the CHD staff required to support services. Interdependent services would retain more of the activity they provided to people with CHD under this model as the majority of their care would remain at University Hospitals of Leicester.

Whilst this would lessen the financial impact of the proposals on University Hospitals of Leicester, the vast majority of its CHD income (82%) relates to inpatient activity linked to a surgical or interventional procedure and therefore the hospital trust has suggested only about £3.3m of its commissioned income would be retained if it provided Level 2 services.

3. Impact on other interdependent services if L1 CHD services cease.

University Hospitals of Leicester considers the loss of Level 1 CHD services as likely to have a significant impact on a range of other services within the hospital trust. The two services it believes will be most impacted are their PICU and ECMO provision.

3.1 PICU

University Hospitals of Leicester has two paediatric intensive care units, one at the Leicester Royal Infirmary and one at Glenfield Hospital. If University Hospitals of Leicester continues to provide Level 1 paediatric cardiac surgery we understand that it plans to move this service from Glenfield to the Infirmary, so the future of the PICU at Glenfield is uncertain whether or not NHS England's proposals are agreed.

CHD activity accounts for the majority of PICU activity at the Glenfield hospital. It is likely that the PICU at Glenfield would be unviable if it was to stop providing Level 1 CHD services. University Hospitals of Leicester also has a PICU at Leicester Royal Infirmary.

[19] This is based on two appointments for each surgical/interventional procedure in 2015/16 divided by the total number of outpatient appointments rounded up to the nearest 5% (664*2/10546 = 12.59%)

The hospital trust expressed concerns that the loss of CHD activity would negatively impact its ability to retain or recruit qualified PICU consultants and nurses for their PICU at Leicester Royal Infirmary. It considers that this could be sufficient to threaten the continued operation of the PICU at the Infirmary.

The panel noted that most trusts with PICUs do not provide CHD services and that the activity within the Leicester Royal Infimary PICU was largely unrelated to CHD activity.

3.2 ECMO

Respiratory ECMO for children is currently provided by five centres in England: Alder Hey; Birmingham Children's Hospital; Great Ormond Street; University Hospitals of Leicester; and Newcastle upon Tyne Hospitals. There is also a paediatric respiratory ECMO centre at the Royal Hospital for Children in Glasgow. On average in the past five years respiratory ECMO has been used in just under 80 children each year in England, though the number of cases has been falling and this year is expected to be fewer than 70. Of the English centres, only University Hospitals of Leicester is currently commissioned to retrieve patients on 'mobile' ECMO which results in University Hospitals of Leicester providing around half of all respiratory ECMO for children. The Glasgow centre also provides mobile ECMO.

Because of the reliance of paediatric ECMO services on a paediatric cardiac surgeon we would expect that if our proposals were to be implemented, University Hospitals of Leicester would no longer be able to provide cardiac, respiratory and mobile ECMO for children. Taken together this would affect around 55 children a year.

We would expect University Hospitals of Leicester to be able to continue to provide respiratory ECMO for adults because this does not require the support of congenital heart surgeons. There are other providers of adult respiratory ECMO where the support is provided by adult cardiac surgery services (not congenital cardiac).

The optimal national model for provision of children's ECMO in the future will be considered as part of NHS England's review of paediatric critical care services. The maintenance of good outcomes will be a key consideration. The review is expected to consider the appropriate number of providers of children's ECMO, the case for minimum activity levels and the appropriate number of mobile ECMO providers.

NHS England will take steps to minimise any negative impact arising if the proposals are implemented by:

- ensuring that we commission appropriate levels of children's respiratory ECMO and mobile ECMO from an appropriate number of providers;
- working with Birmingham Children's Hospital (and University Hospitals Birmingham which provides the adult part of the CHD service) to undertake the necessary planning and preparation to manage any increase in ECMO activity if the proposals are agreed;
- establishing formal geographically-based networks for children's respiratory ECMO, like those for adult respiratory ECMO. This approach will minimise long transfers, balancing the activity between the centres, thus maintaining expertise in children's respiratory ECMO at the commissioned centres. Initially

networks will be introduced around Alder Hey and Birmingham Children's Hospital;
- training for staff at centres that have to date provided lower volumes of children's respiratory ECMO;
- peer review / audit of referrals and patients accepted for treatment, to ensure best practice is followed; and
- continued reporting of outcomes to the Extra Corporeal Life Support Organization (ELSO). NHS England would also continue to coordinate national audit days to which all centres that deliver ECMO – whether cardiac or respiratory – are already invited to present their data.

University Hospitals of Leicester received just over £4m for their paediatric ECMO provision in 2015/16 which they would no longer receive under these proposals.

3.3 Other services

University Hospitals of Leicester also identified a number of services as potentially impacted by these proposals. These are listed below. The scale and nature of any impact on these services was not described by the hospital trust in any detail and has not been corroborated.

The panel considers that much of the activity which related to the interdependent services identified by University Hospitals of Leicester may be able to remain in the Trust if it remained a Level 2 CHD centre. Providing Level 2 services would increase the likelihood of University Hospitals of Leicester retaining the staff required to support these services. In addition through providing the majority of the CHD services required by patients it would reduce the risk of patients accessing these other interdependent services at a different hospital.

Whilst there may be a reduction in University Hospitals of Leicester's activity in some of the services it identified the panel considered that these reductions are likely to be a small proportion of the overall activity within these services.

The services identified by University Hospitals of Leicester are listed below.

List of other services University Hospitals of Leicester identified as potentially impacted by the proposals

Paediatric
- Fetal cardiology – This will depend in part on whether they continue as a Level 2 centre or not.
- Long term ventilation and specialist paediatric surgery – This is dependent on PICU and with the continuation of PICU at the Leicester Royal Infirmary should be able to continue.
- Fetal medicine – Significant amount of this is supportive of cardiac programme and therefore may move to the Level 1 hospital.
- Research and training activities relating to CHD.
- Specialist neonatal surgery for those with concomitant cardiac problems will need to be delivered in a Level 1 hospital

- Technical physiology – University Hospitals of Leicester is concerned about its ability to attract and retain highly skilled staff.
- In house delivery of complex babies – Planned to be in Level 1 hospitals.
- Paediatric orthopaedic/ ENT/ General surgery on cardiac patients - Spinal patients and general surgical problems, dental cases etc. will all require cardiac anaesthetic input.

Adult

- High risk obstetric cardiology service – There is a concern that they will lose their regional service including outpatient care, high risk deliveries in cardiac patients and inpatient antenatal care.
- MRI cardiac specialists – They state that they will be unable to undertake MRI under general anaesthesia.
- Outpatients – University Hospitals of Leicester envisages a reduction in volume and therefore a concern over the retention of specialist sonographers
- Non cardiac surgical procedures on congenital cardiac patients (Gynae, Orthopaedic, Dental) – University Hospitals of Leicester envisages a reduction in volume, dependent on regional agreements with the level 1 hospital.

4. Impact on the Trust including financial, business and reputational considerations

The regional panel considered a number of risks associated with these proposals in relation to University Hospitals of Leicester.

Financial impact – University Hospitals of Leicester's overall income for 2015/16 was £866m and the value of its contract for specialised services is approximated at £234m. While the panel accepted that the proposed changes would have a financial effect, NHS England's estimate is £14m rather than the £19-20m estimate provided by University Hospitals of Leicester. Part of the reason for this difference is a difference in view on the impact of the proposals on PICU. University Hospitals of Leicester's estimate expects that the hospital trust would no longer be able to provide PICU services. The panel considered that there was no reason why PICU services could not continue at the Infirmary site even if the Glenfield PICU needed to close. The table below shows the estimated financial impact using both data submitted by the trust and analysis by NHS England

	Trust Submitted	SLAM data	SUS data
CHD Services		5,831,555	10,608,805[20]
PICU		4,073,042[21]	
Paediatric ECMO		4,083,645	
Total income lost	19,536,337[22]	13,988,242	

[20] Based on spells relating to people with CHD at national tariff
[21] Includes all PICU activity at the Glenfield Hospital
[22] £17,963,572 commissioned by NHS England

	Trust Submitted	SLAM data	SUS data
Income retained if Level 2 centre	4,149,307[23]		
Total income lost if Level 2 centre	15,387,030		

The loss of revenue to the Trust would therefore represent between 1.62% and 2.26% of the Trust's total income[24] and between 6% and 8% of its total specialised services income.[25].

The loss envisaged by the Trust may be offset to some extent if it is agreed that University Hospitals of Leicester should provide Level 2 specialist medical CHD services.

Reputational impact

The panel accepts that the loss of Level 1 CHD services would have a reputational impact on University Hospitals of Leicester. Being one of only ten centres to offer these services enhances University Hospitals of Leicester's reputation as a hospital providing high quality specialist services and impacts on its ability to recruit and retain staff and increases its ability to be involved in specialist research.

University Hospitals of Leicester's reputation would also be impacted if it no longer to provides respiratory ECMO services. As one of only five centres in England providing these services for children, the only provider of mobile ECMO services for children in England, and also the largest provider University Hospitals of Leicester has both a national and international reputation as a paediatric respiratory ECMO centre. The panel considered that adult ECMO would still be able to be provided at University Hospitals of Leicester and this would reduce the reputational impact.

The panel noted that the reputational impact of these proposals must be considered in the light of University Hospitals of Leicester's overall provision of specialised services. The volume of respiratory ECMO cases is low and in total University Hospitals of Leicester's activity relating to CHD services and paediatric respiratory ECMO only account for between 6% and 8% of their overall specialised activity. As such the panel is confident that University Hospitals of Leicester would continue to be a highly valued hospital within the NHS offering a wide range of specialised services.

5. Impact on staff

University Hospitals of Leicester considers that these proposals would have a wide ranging impact on its workforce. It considers that its entire workforce would be affected should this proposal be implemented. University Hospitals of Leicester specifically identified a range of staff including administrative and clerical staff, estates and ancillary, medical and dental and nursing and midwifery who work solely for East Midlands Congenital Cardiac Service. This totals over 150 WTEs.

[23] £3,289,050 commissioned by NHS England

[24] This is based on the total income identified regardless of whether it is commissioned or not.

[25] This is calculated as the range using all the revenue identified using SLAM data and the total of NHS England commissioned revenue divided by their total income for specialised services.

In addition to the staff directly impacted, University Hospitals of Leicester also identified other roles such as those working in theatres, imaging, outpatient care, catheter labs and intensive care which would be impacted.

University Hospitals of Leicester states that informal reaction from their highly skilled staff is that many of them would prefer to take up posts elsewhere in the Trust if possible. The members of the panel considered that their experiences of service change was that the majority of staff do not transfer to the alternative providers of these services from the centres which are decommissioned. Whilst the CHD surgeons would look to move to a Level 1 CHD hospital rather than find another role within University Hospitals of Leicester, the panel considered it is reasonable to expect that many staff currently providing Level 1 services at University Hospitals of Leicester would seek to take up alternative roles within the hospital trust rather than moving to another hospital. This would become more likely if University Hospitals of Leicester provided Level 2 services as more CHD roles would be retained within the Trust.

6. Risks and mitigation of any potentially negative impacts

Risk	Mitigation
The loss of Level 1 CHD activity affects a significant number of staff currently working in this service. UHL estimate this to be over 150 WTE staff. In addition they believe this will impact a much wider (as yet unquantified) number of employees. This creates a risk of disruption to staff and potentially redundancies.	UHL to work closely with staff impacted by the change to ensure that staff are given the appropriate support. Ensure appropriate policies and processes are in place to support workforce affected by change. Ensure that sufficient lead time is given to enable workforce planning.
As a result of no longer providing Level 1 CHD services the Trust will lose the income it receives for the associated procedures and care through tariff. This is likely to be between £14 and £20m. This creates a financial risk to the Trust.	Seek to minimise the financial impact through ensuring appropriate costs are saved as a result of not providing Level 1 services and ensuring the maximum revenue is maintained through the provision of Level 2 services.
Losing Level 1 CHD services has an impact on the reputation of the Trust. This creates a reputational risk which may impact on UHL's ability to recruit staff	NHS England to develop contingency plans to reduce the impact if this was to occur. UHL to monitor vacancy rates and inform NHS England should there be any indication that services are under threat due to staff vacancies.