

# Sheffield Children's NHS Foundation Trust



## Impact Assessment of the Safe and Sustainable Children's Cardiac Surgical Review on the Embrace Transport Service.

### Purpose of this Document

- This paper summarises the key issues surrounding the Impact of the Safe and Sustainable Children's review on the Embrace Transport Service

### Summary of Recommendations

1.	That further work is under taken to explore the impact on transport networks nationally of the options described within the Safe and Sustainable review.
2.	That further work is undertaken as to the financial implications of the developments required by Embrace to meet the increased workload of the service under each of the four options of the Safe and Sustainable review.

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# **Impact Assessment of the Safe and Sustainable Children's Cardiac Surgical Review on the Embrace Transport Service.**

## **Executive Summary**

It is unclear within this region as to the impact upon the Embrace transport service with regards to the Safe and Sustainable cardiac review. Current transport services have been set up to meet specific models of care and their patient flows.

It is unlikely that any transport service will be able to meet a significant increase in demand for its service without further financial investment.

Embrace have had limited contact with transport services from other regions regarding paediatric cardiac activity. Therefore the assumption is that overall activity and impact on paediatric and neonatal transport services is presently unknown.

Embrace would recommend that further work is undertaken to explore the impact on transport networks nationally of the options described within the Safe and Sustainable review.

In addition Embrace would recommend that work is undertaken as to the financial implications of the developments required by the service to meet the increased workload under each of the 4 options of the Safe and Sustainable review.

## 1. Background

Embrace is the United Kingdom's first combined infant and children's transport service. It undertakes neonatal transfers alongside paediatric retrievals for the 23 hospitals in the Yorkshire and Humber region, serving four tertiary neonatal units and two paediatric intensive care units. Established in a phased approach from December 2009, Embrace undertook just over 2000 transfers in its first full year of operation.

As the provider of infant and children's transport services within the region Embrace recognises that there will be transport implications associated with any paediatric service reconfiguration such as those associated with children's cardiac surgery, neurosurgery and trauma services.

This paper models the service implications for Embrace of the proposals put forward as part of the Safe and Sustainable Review of Children's Congenital Cardiac Services.

## 2. Safe and Sustainable Review of Children's Congenital Cardiac Services in England

The review, published in February 2011, has proposed four options for the rationalisation of paediatric cardiac surgical units with the reconfiguration of some existing surgical units as cardiology centres.

The four options in relation to Yorkshire and Humber are described below:

	Specialist Surgical Centres to include:	Cardiology Centres to include:
Option A	<ul style="list-style-type: none"> <li>○ Freeman Hospital, Newcastle</li> <li>○ Alder Hey Children's Hospital, Liverpool</li> <li>○ Glenfield Hospital, Leicester</li> </ul>	<ul style="list-style-type: none"> <li>○ Leeds General Infirmary</li> </ul>
	Yorkshire and the Humber would be divided between the Newcastle, Liverpool and Leicester Networks. Therefore, dependent upon which part of the region in which they lived, children would travel to Newcastle, Liverpool or Leicester for their surgery.	
Option B	<ul style="list-style-type: none"> <li>○ Freeman Hospital, Newcastle</li> <li>○ Alder Hey Children's Hospital, Liverpool</li> </ul>	<ul style="list-style-type: none"> <li>○ Leeds General Infirmary</li> </ul>

	<ul style="list-style-type: none"> <li>o Glenfield Hospital, Leicester</li> <li>o Birmingham Childrens Hospital</li> </ul>	
	East and South Yorkshire and Humberside would form part of the Newcastle Network and children from these areas would therefore travel to Newcastle for surgical services whilst those in West Yorkshire (Bradford, Halifax and Huddersfield) would form part of the Liverpool Network and travel to Liverpool.	
Option C	<ul style="list-style-type: none"> <li>o Freeman Hospital, Newcastle</li> <li>o Alder Hey Children's Hospital, Liverpool</li> </ul>	<ul style="list-style-type: none"> <li>o Leeds General Infirmary</li> <li>o Glenfield Hospital, Leicester</li> </ul>
	East and South Yorkshire and Humberside would form part of the Newcastle Network and children from these areas would therefore travel to Newcastle for surgical services whilst those in West Yorkshire (Bradford, Halifax and Huddersfield) would form part of the Liverpool Network and travel to Liverpool.	
Option D	<ul style="list-style-type: none"> <li>o Leeds General Infirmary</li> <li>o Alder Hey Children's Hospital, Liverpool</li> </ul>	<ul style="list-style-type: none"> <li>o Glenfield Hospital, Leicester</li> <li>o Freeman Hospital, Newcastle</li> </ul>
	Yorkshire and the Humber would form part of an extended Leeds Network and children from the region would continue to travel to Leeds for their surgical services.	

With each of the proposed options the Safe and Sustainable review has highlighted a number of factors that need to be considered. Two of these relate directly to transport but only the second of these directly affects retrievals and therefore the Embrace service. These were described below:

Factors	Option A	Option B	Option C	Option D
Access and journey times: Proportion who would see an increase in travel time of more than 1.5 hours	3.6%	6.2%	6.2%	3.6%
Retrieval Times	Compliant with Paediatric Intensive Care Society standards*	Compliant with Paediatric Intensive Care Society standards*	Compliant with Paediatric Intensive Care Society standards*	Compliant with Paediatric Intensive Care Society standards*

\* The paediatric intensive care standard described is that of a 3-hour threshold

### 3. Modelling of data

Data was modelled for the 2010/11 year of Embrace activity. In addition data provided by Leeds has enabled us to model the potential increase in activity associated with patients born in or from the Leeds area who would have to move under any of the option. Journey times have been estimated utilising the RAC travel website journey planner tool.

There were a total of 224 transfers undertaken by Embrace with a cardiac diagnosis during 2010 / 11. In addition there were up to 188 children within the Leeds Paediatric Cardiac Centre at the Leeds General Infirmary (LGI) that may have to be transferred out under some of the options proposed.

### 4. Specific Factors for Safe and Sustainable Review

The Safe and Sustainable Review indicated that proposed changes to patient flows should not have a traveling time above 3 hours. Embrace took the transport activity and the LGI patient's for 2010/11 and modelled the effect of the options on transport times. The model below assumes that 100% of the activity will go out of region.

Factors	Option A	Option B	Option C	Option D
Proportion of transfers where increase in travel time of more than 1.5 hours	53.2% incl LGI* 13.8% excl LGI	73.3% incl LGI 50.9% excl LGI	73.3% incl LGI 50.9% excl LGI	N/A (From within region)
Retrieval Times (journey > 3 hours)	0.0% (Compliant)	0.0% (Compliant)	0.0% (Compliant)	N/A (From within region)

\* The transfer time from Leeds General Infirmary (LGI) to the Freeman Hospital, Newcastle is 1hr 59 mins and therefore in excess of the additional 1.5 hours.

### 5. Impact on Embrace

When comparing the options it can be seen that with the exception of Option D where LGI remains as a paediatric cardiac surgical centre, a significant proportion of transfers will take longer than at present. In addition there would be a significant number of transfers out of Leeds that are not undertaken at present as well as the repatriation of children following their surgery.

The proportion of children that will need to be transferred out of region in Options A, B and C depends upon the services that continue to be provided at the Leeds Cardiology Centre. Babies and children require transport for a number of cardiac related conditions not all of which require care in a cardiac surgical unit or are directly related to a surgical need/intervention. Those that are transferred to a cardiac surgical centre may not all be taken to a paediatric cardiac ICU. Some may be taken to the NICU, or paediatric cardiac HDU. In addition a proportion of transfers into Leeds would require onward transfer to a surgical centre after assessment.

Following completion of the surgical episode of care many patients would require repatriation to their local DGH or regional cardiology unit.

Appendix 1 shows a summary of the modelling undertaken on the impact of redesignation of cardiac centres on Embrace. This model, based upon 2010 data has taken a 'worse case' scenario in which all infants and children with a cardiac diagnosis are treated at the cardiac surgical centre rather than a cardiology centre. Of these 50% require a back transfer to their base hospital.

#### Option A

The impact on Embrace from the re-designation of cardiac centres in Option A will be significant. The modelling suggests that just less than 2,000 hours of additional Embrace time will be required annually to meet the increased demand. This is equivalent to 5.2 additional hours / day. However, only 13.8% of non-LGI patients would find that their transfer times would increase by 1.5 hours or more.

#### Option B / C

Options B and C will have the same impact on Embrace with just under 2,200 additional hours required annually to meet the increased demand. This is equivalent to 6.0 additional hours / day. There is a proportionally greater increase in journey times under these options with 50.9% of non-LGI patients having an increase in transfer times of 1.5 hours or more.

#### Option D

Option D may have little or no impact upon Embrace. Patients from the present Newcastle Network should be brought in by either the paediatric or neonatal retrieval teams from the Northern Region. However, there are hospitals at the Yorkshire border who may find it easier to use Embrace rather than the Newcastle transport services. It is not clear if the Newcastle retrieval services have modelled the increase workload related with the additional activity, associated with this option especially as the paediatric retrieval team is not a stand alone service such as Embrace.

There is potential that Embrace could undertake some of this activity although the level of such activity for Embrace is not known at present.

## **6. Discussion**

At present Embrace undertakes transfers out of the Yorkshire and Humber Region for specialist care that is not available within the region, for capacity issues and for patient repatriation.

From the overall recorded transport activity in 2010/11 there were 112 out of region transfers, The majority of these were planned neonatal and paediatric transports for specialist services (of which 18 where cardiac).

An increase to the number of out of region transfers both acute and planned will have a significant impact upon the Embrace service including the following areas:

#### Staffing of Embrace

Embrace is based upon a model of staffing (numbers and shift patterns) that has been developed to meet the present transport requirements within the Yorkshire and Humber Region. The modelling above suggests that in each of the three options where Leeds becomes a cardiac centre there will be an increase in the number of

longer (out of region) transfers. This will effect the staffing / shift model. It is clear that this could not be achieved with the present number of staff without significant overruns in shifts and periods where there was inadequate Embrace cover for the region.

This situation could be partially mitigated through the use of aeromedical transport but this also has limitations such as weather and night flying.

The most realistic model to develop is that of further investment in Embrace through an increase in the number of teams (driver, nurse and doctor) available to the service, long side an increase in the number of ambulances to meet demand and increased activity.

It is likely that the last option, where Leeds continues as a cardiac surgical centre will also have implications on the number of out of region transfers but the level of this activity is not known.

#### Weather Conditions

Weather conditions impact on patient transport. Currently during harsh weather conditions, each transport is risk assessed with regards to the safety of the team and the patient's acute condition. Adverse weather is likely to impact more with reconfiguration of services due to the longer distances required to be travelled.

#### Patient stability during long road journeys

Although Safe and Sustainable has used a timescale for retrievals of 3 hours there are patients in whom the length of transfers may have an impact on their outcome. This becomes more significant at a time of poor weather or significant traffic flow when even short road journeys can be extended indefinitely.

#### Communication with Clinical Teams

In the current service model, Embrace conference calls all relevant clinical staff into telephone discussions. In the options where Leeds is not the cardiac surgical centre there will be multiple centres that need to be included in discussions dependant upon which part of the region the patient comes from.

## **7. Summary**

Within the Safe and Sustainable consultation paper, the impact of the transport of cardiac children for cardiac surgery to new designation centres has not been fully explored.

It is unclear within this region as to the impact upon the Embrace transport service. Transport services have been set up to meet specific models of care with their patient flows. It is unlikely that any transport service will be able to meet a significant increase in demand for its service without further financial investment.

Embrace have had limited contact with transport services from other regions regarding paediatric cardiac activity. Therefore the assumption is that overall activity and impact on paediatric and neonatal transport services is presently unknown.

The drive to reduce transportation time is leading to the exploration of air transportation which again would need financial investment.

Recommendations:

1. Embrace would recommend that further work is under taken to explore the impact on transport networks nationally of the options described within the Safe and Sustainable review.
2. That further work is undertaken as to the financial implications of the developments required by Embrace to meet the increased workload of the service under each of the four options of the Safe and Sustainable review.



**Appendix 1: Model to describe the effect of the Safe and Sustainable Children’s Cardiac Surgery Review upon Embrace, the Yorkshire and Humber Infant and Children’s Transport Service**

	Initial Referral to Cardiac Centre			Estimation of 50% requiring repatriation			Total Transport ( NB this excludes handover, stabilisation time)		
	No of cardiac referrals retrievals	Mileage Undertaken	Transport Time for Referral Hours - decimal	No of back transfers	Mileage Undertaken	Transport time for Back Transfer Hours - decimal	Total Transfers	Total Mileage	Total Hours
	No	Miles	Hours - decimal	No	Miles	Hours - decimal	No	Miles	Hours - decimal
<b>Option D - current pathway no Leeds activity to transport</b>	224.0	19,597.0	454.0	112.0	9,798.5	227.0	336.0	29,395.5	681.1
<b>Option A includes Leeds activity</b>	412.0	88,845.7	1,755.6	206.0	44,422.9	877.8	618.0	133,268.6	2,633.4
<b>Option B or C includes Leeds Activity</b>	412.0	92,847.3	1,910.7	206.0	46,423.7	955.3	618.0	139,271.0	2,866.0

**Assumptions:**

1. All cardiac activity presently undertaken by Embrace is transferred out to the designated cardiac surgical centre.
2. LGI will transfer out its present cardiac activity.
3. 50% of transfers out will require repatriation through back transfers by Embrace.
4. There is no change in the length of stabilisation and handover times.