Flying to Save Young Lives
Meeting the future need for emergency paediatric and neonatal transfers by helicopter
This report is published by The Air Ambulance Service charity, which funds and operates the national Children’s Air Ambulance and two Helicopter Emergency Medical Services (HEMS).

It is based on data compiled by the Children’s Air Ambulance over the period January 2014 to June 2015.

The report is authored by Richard Clayton, Director of Operations, The Air Ambulance Service.

The author is grateful for the help and assistance of clinicians and clinical partners.

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Meeting the future need for emergency paediatric and neonatal transfers by helicopter

This report from The Air Ambulance Service assesses the current use of helicopters for emergency paediatric and neonatal transfers in the UK and the urgent need to develop new services to meet demand.

It is the charity’s vision that every child in the UK who requires an emergency helicopter transfer should get one.

Executive summary

Emergency helicopter transfer services for sick children in the UK currently have capacity to meet only 30% of demand for life-saving flights.

To meet demand for transfers – and remove inequity of access to services – a significant expansion of service provision and capability is required.

Key improvements identified in the report include:

› Moving to a seven day a week service
› Increasing aircraft operating hours
› Improving aircraft capability
› Improving hospital infrastructure
› Better and more equitable commissioning

The Children’s Air Ambulance recommends adoption of the report’s findings to ensure all demand for paediatric and neonatal transfers is met by 2020.
Clinical need

Every year, approximately 6,000 babies and children in the UK require an emergency transfer between local hospitals and specialist paediatric centres.1

However, due to the distances involved, the severity of illness, and the need to save time, an estimated 600 children per year would benefit from transfer by helicopter, which is up to four times quicker, on average, than road transport.

The most common medical conditions for children requiring urgent transfer are Cardiac, Respiratory, Neurological and Gastrointestinal.1

Current provision

The Children’s Air Ambulance, the UK’s first and only dedicated paediatric helicopter transfer service, has been flying in England and Wales since 2013.

It is run by The Air Ambulance Service charity and receives no government funding.

Based at Coventry Airport, the Children’s Air Ambulance works in partnership with specialist NHS paediatric transport teams covering London, South East, South Coast, South West, North West, Yorkshire, North East and Wales.

Currently, the Children’s Air Ambulance has capacity to meet around 30% of the requests it receives to rapidly transport children by helicopter.

Alex, who weighed just 2lbs 2oz at birth, was in and out of hospital for the first four months of his life. While at his local hospital in Margate, he rapidly deteriorated, developing bronchiolitis and experiencing severe breathing difficulties. He needed an urgent transfer to specialist care in London. Due to the severity of his condition, he needed continuous ventilation, and had to spend as little time out of hospital as possible. Thanks to the Children’s Air Ambulance and the South Thames Retrieval Team, Alex got to the care he needed in just 28 minutes.

Bella was six months old and on holiday with her parents when she started to become ill. After being put to bed one night, her parents heard her scream and found her unresponsive and grey. She was rushed to hospital in Ipswich, which then arranged for her to be taken to Addenbrooke’s Hospital in Cambridge, where scans revealed that half of her heart was failing to function properly and confirmed she would need urgent open-heart surgery at Leeds General Infirmary – 150 miles away. She was flown to Leeds by the Children’s Air Ambulance, arriving in just 57 minutes, while the same journey by road took her parents four hours. She will be three years old this November, and has grown into an independent, happy little girl.

Demand

Figure 1 illustrates potential mission numbers for paediatric transfers. Data shows the busiest months for mission requests are October through to April, when children are at their most vulnerable from cardiac and respiratory diseases.

The green line indicates the total number of monthly helicopter transfer missions identified by clinicians.

The grey line indicates the total number of transfer mission requests made to the Children’s Air Ambulance.

Operating hours

Currently, the Children’s Air Ambulance service operates between 07:00-17:00 / 09:00-19:00 (depending on time of year). The data in Figure 2 shows a demand for services to be available 07:00 – 03:00.

Operating days

Currently, the service is available Monday to Friday. The data in Figure 3 shows a demand for seven-day-a-week services.
Aircraft capability

To meet demand for longer flying hours, quicker journey times and service resilience, helicopters providing paediatric transfers should have:

- Incubator carrying capability
- Extracorporeal Membrane Oxygenation (ECMO)
- A fourth passenger seat for a guardian/parent to travel with their child
- Night flying capability
- Greater endurance (reducing the number of fuel stops)
- Better bad weather capability
- A modern clinical interior and lighter stretcher with more modern clinical equipment.

The current service operated by the Children’s Air Ambulance uses an AgustaWestland 109. The aircraft is restricted by the weight it can carry – it can only carry so much fuel, people and equipment on board before reaching its operational limit.

Replacement by a larger and better equipped aircraft, such as the AgustaWestland 169, will deliver all these benefits.

Aircraft availability

Aircraft availability and rapid response times are key requirements of NHS clinical partner teams.

Data shows the provision of two aircraft in the right geographic locations (one to the west of London serving the London area, the South East, South West, Home Counties and Wales; and one based in Lancs / Yorks serving the Midlands and the North) will have a significant impact on availability and response times.

- 90 min – 215 miles
- 75 min – 180 miles
- 60 min – 140 miles
- 45 min – 105 miles
- 30 min – 70 miles
- 15 min – 35 miles
Hospital helipads

The majority of paediatric and neonatal specialist units, along with most District General Hospitals, do not have a helicopter landing pad equipped with the type of lighting needed for helicopters to land at night.

The Children’s Air Ambulance is therefore committed to working in partnership with hospitals and providers to improve helipad infrastructure wherever possible.

“To have a second helicopter and flight team dedicated to moving critically ill children into paediatric intensive care units in the South of the country, including London, would be a great step forward in ensuring that we offer the very best, world class transfer service to these children and families.”

Dr Shelley Riphagen,
Lead Consultant,
Evelina London Children’s Hospital
**Equity of access**

According to clinical partners, some areas of England are unable to access specialist NHS air transport teams. This is a particular problem for neonatal patients requiring transfer from areas covered by non-flying teams.

It is estimated by clinical partners that it may be difficult – or impossible – to request helicopter transfers for approximately 20% of paediatric patients and 90% of neonatal patients.

Clinical partners believe this issue can be addressed through a national commissioning structure.

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In addition, clinical partners confirm access to current service is also limited by:

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<thead>
<tr>
<th><strong>Size of the aircraft</strong></th>
<th><strong>Number of aircraft</strong></th>
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<tr>
<td>- space for patient stretcher and three seats, difficult environment to provide critical care, only room for two clinical staff.</td>
<td>- one helicopter restricts the equity of access when the aircraft is off-line for maintenance, training or simultaneous requests.</td>
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<th><strong>Location of aircraft</strong></th>
<th><strong>Limited hours of operation</strong></th>
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<tr>
<td>- although central, the location in Coventry means the helicopter has to fly for at least 30 minutes to pick up the clinical teams which are based at major paediatric centres across the country.</td>
<td>- the need for critical care can occur at any time of the day or night and often doesn’t match to the limited hours of the current operation Monday – Friday during daylight hours.</td>
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<th><strong>Restricted access to hospital landing sites</strong></th>
<th><strong>Lack of lit landing sites</strong></th>
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<td>- the benefits to the patient are maximised if there is an on-site helipad with a short trolley push to the intensive care. Some specialist paediatric centres have no appropriate landing facilities at all.</td>
<td>- this restricts activity particularly in the winter.</td>
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<th><strong>Transport specific equipment</strong></th>
<th><strong>Too many teams flying too few patients</strong></th>
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<td>- to provide the highest level of care for all patients, specialist equipment is required such as an incubator for premature babies and ECMO equipment to support very sick babies with their heart and lung functions during flight.</td>
<td>- results in lack of exposure and limited opportunities to improve skills/systems.</td>
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Recommendations

It is the view of The Air Ambulance Service that emergency paediatric and neonatal helicopter transfer services should:

- Operate seven days per week
- Fly 07:00 – 03:00
- Improve helipad infrastructure at key hospitals
- Improve helicopter capability (night flying, increased range, larger interior)
- Be available to all in need
- Improve availability through provision of a second aircraft

“We know patients are in the best hands travelling with the Children’s Air Ambulance. They’ve quickly become a valued partner and a key part of the care we offer our most critically ill patients. The prospect of two helicopters, one North and one South, would mean shorter travel times so children get the care they need even more quickly.”

Dr Steve Hancock,
Lead Consultant,
Embrace Yorkshire & Humber Infant & Children’s Transport Service