

Neonatal air ambulance takes off in Wales



Rhian Smith, Advanced Neonatal Nurse Practitioner, Glan Clwyd Hospital, Wales

If you have visited north Wales you may describe it as beautiful, mountainous or possibly having lots of sheep. If you have ever driven in north Wales then your choice of words might be slightly less complimentary: “awful, narrow roads, takes ages to get anywhere, not those mountains again!” This is the territory in which the North Wales Cymru-inter-Hospital Acute Neonatal Transport Service (CHANTS) operates.

We are a team of consultant neonatologists, nurses and advanced neonatal nurse practitioners (ANNPs) based at Glan Clwyd Hospital that carry out the majority of neonatal transfers around, into and out of north Wales (with some exceptions carried out by the Cheshire and Mersey Neonatal Transport Team). Because of the terrain, the team is very familiar with long transfer times.

North Wales is a tourist area and we are often faced with the consequences of holidaying pregnant women who are admitted to hospital to deliver their baby during their stay. When the baby is well enough to travel, a transfer closer to home is necessary. Likewise, as is well known in the neonatal community, *in utero* transfer distances to obtain a neonatal cot space are increasing and the situation in Wales is no different to the rest of the UK.

A new arrangement to offer neonatal air transfers

Wales is serviced by four charity-funded air ambulances and the majority of the medical staff is provided by the Emergency Medical Retrieval and Transfer Service (EMRTS Cymru). The highly trained EMRTS teams comprise doctors and critical care practitioners (CCPs) who respond to emergency calls and deliver excellent pre-hospital care.

CHANTS North and South were approached in the spring of 2016 to discuss working towards a memorandum of understanding (MOU) between the CHANTS teams, Wales Air Ambulance Charity (WAA, a charity funded by the people of

Wales) and EMRTS Cymru, to offer neonatal air transfers in Wales using a state-of-the-art transport incubator that was built to fit the air ambulance.

The £70,000 bespoke incubator was designed and built by International Biomedical in Switzerland, a company specialising in developing innovative products for neonatal and paediatric care. The incubator is fitted to a sled base in the helicopter; within the incubator the baby is safely secured in an infant harness tested to aviation emergency landing conditions.¹

The MOU and accompanying standard operating procedures (SOPs) define the circumstances where air support may be made available to teams who are usually road based. An example of where transfer by air might be more appropriate is where a baby and accompanying team have a journey in excess of two hours. Although the WAA equipment includes a ventilator with a neonatal mode, the initial SOPs were for high- and low-dependency transfers, rather than intensive care.

Training for the role

Training of neonatal medical and nursing staff from North Wales CHANTS took place in early August 2016. This included orientation to the transport incubator, ventilator and harness for the infant. The role of the CCPs on neonatal transfers includes in-depth familiarity with the equipment carried and support with this for the neonatal staff. By far the most exciting part of the training was the short test flights to familiarise with the cabin size, noise and challenges of delivering care in the air, as well as an understanding of safety and etiquette during air transfers to ensure the pilot is not disturbed during critical phases of the flight.

The first neonatal transfer

Shortly before this training took place, an *in utero* transport request was received from a unit in south Wales for capacity reasons. The road transfer was accepted and soon after arrival at Glan Clwyd Hospital, baby Noah was born at 27 weeks' gestation. Following a period of intensive care, Noah was deemed fit for transfer to his local unit, a journey by road of over three hours each way. Discussion took place among the clinical teams, Noah's parents and WAA and the first neonatal transfer using the Children's Wales Air Ambulance (the specialist division of the WAA) was planned.

On the day of the transfer the CCP and pilot flew from south Wales with the transport equipment. The time taken to switch Noah to continuous positive airway pressure (CPAP) using the WAA equipment took longer than anticipated because of issues with the ventilator circuit – although this was a good example of expert advice offered to the CCP from an EMRTS consultant who provided cover for clinical and logistical issues relating to transport.

By limiting transfers to non-intensive care cases (at present), the



Preparing for take off: ANNP Rhian Smith (right) and consultant neonatologist Tarek El-Aalem.



The first neonatal transfer by the Children's Wales Air Ambulance.



Jason Hughes (EMRTS Cymru), Rhian, Tarek and pilot Ray.



Baby Noah, ready for air transfer.

Welsh model has negated some of the clinical challenges that have been identified by others,² such as physiological instability of a critically unwell patient. However, other challenges, eg those of a cramped cabin and other environmental factors, were experienced during the transfer. As this transfer took place in late summer, it was heat rather than the cold or wind that caused discomfort.

Thankfully the actual flight was uneventful. It was important to regularly view the monitor as it is not possible to have audible alarms. I was pleased that I had attended a familiarisation flight as this reduced my anxiety; however, it still came as quite a surprise that the 'helipad' at the receiving hospital was a field designated for the purpose. WAA has an air support desk that deals with many of the logistical issues, eg arranging secondary road transfers from the landing site, so responsibility for these does not fall to the transferring team.

After the handover and a short break at the receiving hospital while the aircraft was refuelled, we returned to north Wales. I was actually much more nervous on the return flight; the responsibility of caring for Noah must have taken my mind off the fact that I was in the air, travelling quite fast in a red metal box, not quite understanding the principles of how it was flying.

It was such an honour to be a part of the first neonatal air transfer and to re-unite Noah with his parents who had travelled by road; one of my best ever days at work.

Working together

The need to work together is paramount. Staff from the neonatal transport team are very familiar with the care needs of a 1kg baby, but the equipment is less familiar. For the CCPs, the air ambulance and its equipment feels like home, but they may have never seen or touched a premature infant before. Assembling personnel required for a transfer also needs to include consideration of

logistical issues on the ground for transfer to/from the helipad and lifting the transport incubator into the aircraft – the WAA transport incubator weighs in excess of 100kg. Communication within the team is also important, especially as there are times during the flight when only the pilot and CCP, acting as navigator, have permission to speak.

Since this first transfer the north Wales' team has completed two other air transfers in partnership with WAA and EMRTS. A video-conference debrief took place between the teams to identify learning points for taking forward, these included discussion around some difficulty with equipment, specifically the harness and access to the baby while in-flight – it isn't possible to just pull over to check a cannula when you are in a helicopter.

The equipment carried by the North Wales CHANTS team has been reviewed to avoid duplication with the EMRTS kit bags. Logistical issues for staff have also been considered as there is a risk of not being able to return back to base the same day, eg due to adverse weather conditions affecting permission to fly on a non-emergency transfer.

EMRTS and North Wales CHANTS are able to conclude that the transfers have safely and successfully returned babies nearer to home through an effective partnership working between all parties.

References

1. **Emergency Medical Retrieval and Transfer Service.** 2016 [Online]. www.emrts.cymru/wales-first-flight-incubator [accessed 6 March 2017].
2. **Braithwaite I, Cox S.** Considerations for infant aeromedical transport in England. *Infant* 2016;12:118-22.

Let readers know what's going on in your unit.
Contact lisa@infantgrapevine.co.uk