

# Preparing for a low incidence-high risk event with conjoined twins

A tertiary neonatal unit in Leeds and the regional specialised transport service (Embrace) simulated the care of conjoined twins to enable local training and formation of guidelines. Preparation for a 'low incidence-high risk event' such as this, should assist both sets of multidisciplinary staff to care for these high-risk patients, should the need arise.

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Embrace, the Yorkshire and Humber Infant and Children's Transport Service, is a combined neonatal and paediatric transport service that transfers critically ill patients by air and ground. Previous reports have described Embrace's transport simulation training philosophy<sup>1,2</sup>, yet providing high fidelity simulation training in an ambulance or in the clinical setting can be challenging due to safety and cost constraints<sup>3</sup>.

The Leeds General Infirmary tertiary neonatal unit (NNU) and the Embrace transport service used intra-hospital collaborative simulation to guide the training and education of staff who may care for conjoined twins. This condition in pregnancy is a rare occurrence – the prevalence has been estimated at one in 50,000 to 100,000 births<sup>4</sup>. Since Embrace became operational in 2009, there have

been no conjoined twins born within the Yorkshire and Humber region, although such a case was recently anticipated. Should the situation have arisen, there would have been a real possibility that the care of the infants would be continued in a specialist centre and they would require transfer. This anticipated low frequency-high risk event prompted the training exercise and was highlighted as a scenario that may benefit from simulation learning<sup>5</sup>.

## Simulation learning

The Leeds tertiary NNU carried out a simulated exercise, with medical and nursing staff, to allow the logistics of a potential conjoined twin delivery and stabilisation to be thought through in a systematic way. Embrace simulated the ongoing scenario should the infants require transfer to another specialist centre

## Keywords

Embrace; transport service; conjoined twins; simulation learning; low incidence-high risk event

## Key points

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1. Conjoined twins are rare yet require highly skilled care.
2. Simulation was used to educate staff in two specialist areas by sharing knowledge, experience and learning through collaborative working.
3. The complexities of caring for conjoined twins in the NICU and during transfer between hospitals are considered.



FIGURE 1 Baby manikins simulated to represent conjoined twins.



**FIGURE 2** Simulating the initial resuscitation of conjoined twins.

by ambulance. For both scenarios, two baby manikins were attached to each other to resemble how the conjoined twins might present (**FIGURE 1**)<sup>6</sup>. This gave staff an insight into how they might potentially position the babies and care for them both on a resuscitation unit (**FIGURE 2**), in an incubator and then in a transport incubator. This simulated exercise covered such issues as the technique of intubation, identification of infants and obtaining vascular access. At Embrace, equipment was set up and, using the manikins in the incubator, the potential ambulance scenario of a blocked airway needing manual ventilation was simulated.

Air transportation was not considered appropriate at this time due to the amount of equipment and personnel who may be needed to accompany such infants. Flight considerations could be discussed in the future should the Embrace flight capabilities evolve enough to carry two full teams.

## Evaluation

The simulated delivery and stabilisation on labour ward and on the NNU highlighted a range of equipment and logistical issues. This process enabled construction of a detailed plan of:

- equipment set up at delivery
- the roles and responsibilities of various members of staff

- preparation of the cot space on the NNU. The simulation at Embrace was carried out *in situ* in the ambulance, giving staff as realistic an experience as possible. The exercise was successfully carried out with three multi-professional groups: nurses, advanced nurse practitioners and ambulance drivers. A number of issues regarding equipment and use of personnel were highlighted, particularly the need for a full team of doctor or advanced nurse practitioner and transport nurse for each twin. Problems explored and their solutions included:

- the colour coding of each twin and equipment pertaining to that twin
- use of a second lightweight monitor positioned on the incubator for maximum access and safety in the ambulance
- how to secure and position the twins, their endotracheal tubes, ventilator tubing and monitoring wires in the incubator (**FIGURE 3**)
- how best to access the twins in an emergency. Each nurse sat forward facing with easy access to the monitors and pumps. The doctors sat facing towards the rear in one of the four seats in the specially adapted ambulance.

Verbal feedback from learners showed that the simulation experience was useful and gave them a chance to consider the practicalities of moving this, rarely cared for, patient group. A teaching record was completed to identify clinical governance links and clinical skills and competencies.

## Discussion

Through collaborative working between the tertiary NNU in Leeds and the regional specialised transport service, simulation was used to prepare a multidisciplinary group in two specialist settings for the potentially low incidence-high risk event of conjoined twins. The simulated scenarios enabled a detailed and cohesive plan to be drawn up covering delivery, stabilisation and safe transfer of these high-risk infants. The resulting plan was made widely



**FIGURE 3** Simulating positioning of the twins within an incubator.

available around the NNU and at Embrace to enable ideas to be shared and understood. It was also shared with other local neonatal units and the transport link nurses, should conjoined twins ever present in labour. The exercise highlights the power of simulation as a pre-briefing tool to enable the multidisciplinary team to proactively manage a high-risk situation.

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